

## SAFETY DATA SHEET

This safety data sheet was created pursuant to the requirements of: UK REACH Regulations (SI 2019/758 as amended)

Supercedes date 11-Mar-2020 Revision date 09-Feb-2025 Revision Number 6

### SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product Code(s) 20187

Safety data sheet number 20187

Product Name DISODIUM TETRABORATE, ANHYDROUS

Index No 005-011-00-4

**EC Number** 215-540-4

**CAS No** 1303-96-4

Synonyms Borax decahydrate, DISODIUM TETRABORATE DECAHYDRATE, BORAX, BORAX

DECAHYDRATE NF GRADES, BORAX DECAHYDRATE SP GRADES, BORAX

DECAHYDRATE EP GRADES, BORAX 10 HYDRAT, BORAX EP GRANULER, BORAX 10 HYDRATE CRYSTAL POWDER, BORAX TECH 10AQ GRAN, BORAX TG, BORAX DECAHYDRATE - TECHNICAL, BORAX DECAHYD GRAN, SODIUM TETRABORATE DECAHYDRATE, DISODIUM TETRABORATE, BORAX DECAHYD SP GRAN, BORAX

DECAHYD GRAN ETS

Pure substance/mixture Substance

Contains SODIUM TETRABORATE DECAHYDRATE

Formula Na2B4O7.10H2O

Molecular weight 381.37 g/mol

#### 1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended use Industrial use

Borosilicate glass

Ceramics
Detergent
Fiberglass
Starch glue
Binding agent
Chemical production
Complexing agent
Corrosion inhibitor
Anti Scaling agent

Fertiliser
Flame retardant
Flux agents for casting

Flux agents for casting Chemical intermediate Laboratory chemicals

Lubricants and lubricant additives

Oxidising agents

Photosenstive agents and other photo chemicals

pH control

plating agents and metal surface treating agents

Process regulator Processing aid. Stabiliser

Surface active agents Viscosity modifiers

For further information, see attached Exposure Scenario

#### Uses advised against

## Consumer use

### 1.3. Details of the supplier of the safety data sheet

#### Supplier

Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford GBR

For further information, please contact

E-mail address SDS.EMEA@univarsolutions.com

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

1.4. Emergency telephone number

Emergency Telephone SGS - +32 (0)3 575 55 55 (24h)

### **SECTION 2: Hazards identification**

#### 2.1. Classification of the substance or mixture

Serious eye damage/eye irritation	Category 2 - (H319)
Reproductive toxicity	Category 1B - (H360FD)

#### 2.2. Label elements

Contains SODIUM TETRABORATE DECAHYDRATE



#### Signal word Danger

#### **Hazard statements**

H319 - Causes serious eye irritation H360FD - May damage fertility. May damage the unborn child Restricted to professional users

#### **Precautionary statements**

P201 - Obtain special instructions before use

P202 - Do not handle until all safety precautions have been read and understood

P280 - Wear protective gloves/protective clothing/eye protection/face protection

P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

P308 + P313 - IF exposed or concerned: Get medical advice/attention P501 - Dispose of contents/ container to an approved waste disposal plant

#### 2.3. Other hazards

No information available.

## SECTION 3: Composition/information on ingredients

#### 3.1 Substances

Chemical name	Weight-%	EC No (EU Index No)	UK REACH registration number	Classification according to GB CLP (SI 2020/1567 as	Specific concentration limit (SCL)	M-Factor	M-Factor (long-term)
SODIUM TETRABORATE DECAHYDRATE 1303-96-4	> 99.4 %	215-540-4 (005-011-00 -4)	-	amended) Repr. 1B (H360FD)	Repr. 1B :: C>=8.5%	-	-

#### Full text of H- and EUH-phrases: see section 16

Chemical name	CAS No	SVHC candidates
SODIUM TETRABORATE	1303-96-4	X
DECAHYDRATE		

### **SECTION 4: First aid measures**

#### 4.1. Description of first aid measures

**Inhalation** IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.

Rinse mouth thoroughly with water. Get medical attention if symptoms occur.

**Eye contact** Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.

Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if

symptoms occur.

Skin contact IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin

with water/shower. Get medical attention if symptoms occur.

Ingestion Rinse mouth thoroughly with water. Do NOT induce vomiting. Drink plenty of water. Get

medical attention if symptoms occur.

#### 4.2. Most important symptoms and effects, both acute and delayed

Symptoms May damage fertility. May damage the unborn child.

**Inhalation** Overexposure may cause the following adverse effects. Dust may irritate respiratory tracts.

Coughing and/ or wheezing.

Eyes Causes serious eye irritation. Overexposure may cause the following adverse effects. May

cause redness and tearing of the eyes. Pain. Irritation.

**Dermal** Symptoms of accidental over-exposure to high doses of inorganic borate salts have been

associated with ingestion or absorption through large areas of severely damaged skin.

Antiemetic (Vomiting and Nausea). Diarrhoea. delayed effects of skin redness and peeling.

Ingestion Symptoms of accidental over-exposure to high doses of inorganic borate salts have been

> associated with ingestion or absorption through large areas of severely damaged skin. Antiemetic (Vomiting and Nausea) Diarrhoea. delayed effects of skin redness and peeling.

### 4.3. Indication of any immediate medical attention and special treatment needed

Note to doctors Supportive care only is required for adult ingestion of less than a few grams of the product.

For ingestion of larger amounts, maintain fluid and electrolyte balance and maintain adequate kidney function. Gastric lavage is only recommended for heavily exposed, symptomatic patients in whom emesis has not emptied the stomach. Hemodialysis should be reserved for patients with massive acute absorption, especially for patients with compromised renal function. Boron analyses of urine or blood are only useful for verifying exposure and are not useful for evaluating severity of poisoning or as a guide in treatment.

## **SECTION 5: Firefighting measures**

5.1. Extinguishing media

Water spray. Dry chemical. powder. Foam. Use extinguishing measures that are Suitable Extinguishing Media

appropriate to local circumstances and the surrounding environment.

CAUTION: Use of water spray when fighting fire may be inefficient. Large Fire

Unsuitable extinguishing media Do not scatter spilled material with high pressure water streams.

5.2. Special hazards arising from the substance or mixture

Specific hazards arising from the

chemical

When heated and in case of fire, toxic vapours/gases may be formed. The product is not

flammable, combustible or explosive.

**Hazardous combustion products** Carbon oxides.

5.3. Advice for firefighters

Special protective equipment and precautions for fire-fighters

Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear.

Use personal protection equipment.

## SECTION 6: Accidental release measures

#### 6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions Ensure adequate ventilation. Use personal protection recommended in Section 8. Avoid

contact with eyes, skin and clothing. Avoid breathing dust. No action shall be taken involving

any personal risk or without suitable training.

Other information Refer to protective measures listed in Sections 7 and 8.

Use personal protection recommended in Section 8. For emergency responders

6.2. Environmental precautions

See Section 12 for additional Ecological Information. **Environmental precautions** 

6.3. Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so.

Methods for cleaning up Move containers from fire area if you can do it without risk. Keep upwind. Remove spillage

with vacuum cleaner. If not possible, collect spillage with shovel, broom or the like. Take up mechanically, placing in appropriate containers for disposal. Do not allow run-off from

fire-fighting to enter drains or water courses.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

6.4. Reference to other sections

**Reference to other sections** See section 8 for more information. See section 13 for more information.

## SECTION 7: Handling and storage

#### 7.1. Precautions for safe handling

Advice on safe handling Ensure adequate ventilation. Use personal protection recommended in Section 8. Avoid

contact with eyes, skin and clothing. Do not breathe dust. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid

spilling.

General hygiene considerations Wash work clothing and protective equipment separately from regular wash. Do not eat,

drink or smoke when using the product. Wash hands before breaks and immediately after handling the product. Remove contaminated clothing and protective equipment before entering eating areas. Handle in accordance with good industrial hygiene and safety

practice.

#### 7.2. Conditions for safe storage, including any incompatibilities

Storage Conditions Keep container tightly closed in a dry and well-ventilated place. Store indoors. Keep at

temperatures between 5 and 30 °C. Store locked up.

#### 7.3. Specific end use(s)

#### Specific use(s)

See section 1 for more information.

Risk Management Methods (RMM) The information required is contained in this Safety Data Sheet.

## SECTION 8: Exposure controls/personal protection

#### 8.1. Control parameters

#### **Exposure Limits**

Chemical name	United Kingdom
SODIUM TETRABORATE DECAHYDRATE	TWA: 5 mg/m <sup>3</sup>
1303-96-4	STEL: 15 mg/m <sup>3</sup>

Biological occupational exposure limits

This product, as supplied, does not contain any hazardous materials with biological limits established by the region specific regulatory bodies.

### Derived No Effect Level (DNEL) - Workers

Chemical name	Oral	Dermal	Inhalation
SODIUM TETRABORATE		599.6 mg/kg/day [4] [6]	12.76 mg/m³ [4] [6]
DECAHYDRATE			22.3 mg/m³ [5] [6]
1303-96-4			22.3 mg/m³ [5] [7]

[4]	Systemic health effects.
[5]	Local health effects.
[6]	Long term.
[7]	Short term.

#### Derived No Effect Level (DNEL) - General Public

Chemical name	Oral	Dermal	Inhalation
SODIUM TETRABOR DECAHYDRATE	1.51 mg/kg/day [4] [6] 1.51 mg/kg/day [4] [7]	303.5 mg/kg/day [4] [6]	6.5 mg/m³ [4] [6] 22.3 mg/m³ [5] [6]
1303-96-4			22.3 mg/m³ [5] [7]

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[4] Systemic health effects.
[5] Local health effects.
[6] Long term.
[7] Short term.

#### **Predicted No Effect Concentration (PNEC)**

Chemical name	Freshwater	Freshwater	Marine water	Marine water	Air
		(intermittent release)		(intermittent release)	
SODIUM TETRABORATE	2.9 mg/l	13.7 mg/l	2.9 mg/l		
DECAHYDRATE					
1303-96-4					

Chemical name	Freshwater sediment	Marine sediment	Sewage treatment	Soil	Food chain
SODIUM TETRABORATE			10 mg/l	5.7 mg/kg dwt	
DECAHYDRATE 1303-96-4					

#### 8.2. Exposure controls

**Engineering controls** No information available.

Personal protective equipment

**Eye/face protection** Wear safety glasses with side shields (or goggles). Use eye protection according to EN 166.

**Hand protection** Wear suitable gloves. Gloves must conform to standard EN 374.

**Skin and body protection** Wear appropriate clothing to prevent reasonably probable skin contact.

Respiratory protection
Use effective dust masks.

Use appropriate respiratory protection.

General hygiene considerations

Wash work clothing and protective equipment separately from regular wash. Do not eat, drink or smoke when using the product. Wash hands before breaks and immediately after handling the product. Remove contaminated clothing and protective equipment before entering eating areas. Handle in accordance with good industrial hygiene and safety practice.

## SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state Solid

Appearance solid Crystalline solid granules Powder

Colour white Odourless.

Odour threshold No information available

The product is not flammable.

Not applicable.

Water.

No information available.

No information available.

<u>Property</u> <u>Values</u> <u>Remarks • Method</u>

Melting point / freezing point > 741 °C

Initial boiling point and boiling range1575 °C

Flammability
Flammability Limit in Air

Upper flammability or explosive

limits

Lower flammability or explosive

limits

Flash point The product is not flammable.

Autoignition temperature Not applicable.

Decomposition temperature No information available.

**pH** 9.2 solution (1 %).

pH (as aqueous solution)

No information available.

Kinematic viscosity

Dynamic viscosity

Not applicable.

Not applicable.

Water solubility Soluble in water

4.7% @ 20°C 65.6% @ 100°C

Solubility(ies)

Partition coefficient -0.757

Vapour pressurenegligible.Relative density1.71 - 1.7220 °C.

Bulk density 1.71 - 1.72 20 C.

No information available

**Liquid Density** No information available No information available Relative vapour density No information available Not applicable.

Particle characteristics

Particle Size No information available
Particle Size Distribution No information available

**Explosive properties**Not considered to be explosive.

Oxidising properties Does not meet the criteria for classification as oxidising

9.2. Other information

Molecular weight 381.37 g/mol

#### SECTION 10: Stability and reactivity

10.1. Reactivity

**Reactivity** No known effects under normal use conditions.

10.2. Chemical stability

**Stability** Stable under normal conditions.

**Explosion data** 

Sensitivity to mechanical impact None. Sensitivity to static discharge None.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions Reaction with strong reducing agents such as metal hydrides or alkali metals will generate

hydrogen gas which could create an explosive hazard.

10.4. Conditions to avoid

Conditions to avoid None known based on information supplied.

10.5. Incompatible materials

Incompatible materials

Avoid contact with strong reducing agents such as metal hydrides, acetic anhydride or alkali

metals

10.6. Hazardous decomposition products

Hazardous decomposition products Carbon oxides.

## SECTION 11: Toxicological information

#### 11.1. Information on toxicological effects

#### Information on likely routes of exposure

#### **Product Information**

**Inhalation** Inhalation of dust in high concentration may cause irritation of respiratory system.

Overexposure may cause the following adverse effects. Dust may irritate respiratory tracts.

Coughing and/ or wheezing.

Eye contact Causes serious eye irritation. Overexposure may cause the following adverse effects. May

cause redness and tearing of the eyes. Pain. Irritation.

**Skin contact**Non-irritating during normal use. Overexposure may cause the following adverse effects.

Symptoms of accidental over-exposure to high doses of inorganic borate salts have been associated with ingestion or absorption through large areas of severely damaged skin. Antiemetic (Vomiting and Nausea). Diarrhoea. delayed effects of skin redness and peeling.

**Ingestion** Symptoms of accidental over-exposure to high doses of inorganic borate salts have been

associated with ingestion or absorption through large areas of severely damaged skin. Antiemetic (Vomiting and Nausea). Diarrhoea. delayed effects of skin redness and peeling.

#### Symptoms related to the physical, chemical and toxicological characteristics

**Symptoms** May damage fertility. May damage the unborn child.

Acute toxicity

Numerical measures of toxicity

**Component Information** 

Method

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
SODIUM TETRABORATE	5150 - 6000 mg/kg (Rat)	> 2000 mg/kg ( Rabbit )	> 2.03 mg/l (Rat) 4 h
DECAHYDRATE			

#### Delayed and immediate effects as well as chronic effects from short and long-term exposure

**Skin corrosion/irritation**Non-irritating during normal use. Based on available data the classification criteria are not met.

 Species
 Exposure route
 Effective dose
 Exposure time
 Results

 Rabbit
 Dermal
 0.5 g moistened with
 non-irritant

saline

#### Serious eye damage/eye irritation Causes serious eye irritation.

Method	Species	Exposure route	Effective dose	Exposure time	Results
	Rabbit	eye	0.08 mL		Irritant

Respiratory or skin sensitisation Not a skin sensitiser. Based on available data the classification criteria are not met.

#### SODIUM TETRABORATE DECAHYDRATE (1303-96-4)

	Method	Species	Exposure route	Results
Ī		Guinea pig	Dermal	Not a skin sensitiser

**Germ cell mutagenicity** Based on available data the classification criteria are not met.

Carcinogenicity Based on available data the classification criteria are not met.

**Reproductive toxicity** May damage fertility. May damage the unborn child.

The table below indicates ingredients above the cut-off threshold considered as relevant which are listed as reproductive toxins.

Chemical name	United Kingdom	
SODIUM TETRABORATE DECAHYDRATE	Repr. 1B	

**STOT - single exposure** Based on available data the classification criteria are not met.

**STOT - repeated exposure**Based on available data the classification criteria are not met.

**Aspiration hazard** Based on available data the classification criteria are not met.

Other adverse effects No information available.

## **SECTION 12: Ecological information**

#### 12.1. Toxicity

**Ecotoxicity** Not considered to be harmful to aquatic life.

#### SODIUM TETRABORATE DECAHYDRATE (1303-96-4)

Method	Species	Endpoint type	Effective dose	Exposure time	Results
	Fish Limanda	LC50	74 mg/L		
	limanda				
	Fish Pimephales	LC50	79.7 mg/L		
	promelas				
	Algae	EC50	66 mg/L	72 hours	
	Phaeodactylum				
	tricornutum				
	Algae	EC50	54 mg/L	72 hours	
	Phaeodactylum				
	tricornutum				
Chronic toxicity	Brachydanio rerio	NOEC	6.4 mg/L	34 days	

#### 12.2. Persistence and degradability

Persistence and degradability Boron is naturally occurring and ubiquitous in the environment. Disodium tetraborate

decahydrate decomposes in the environment to natural borate.

12.3. Bioaccumulative potential

Bioaccumulation MATERIAL DOES NOT BIOACCUMULATE.

**Component Information** 

Chemical name	Partition coefficient
SODIUM TETRABORATE DECAHYDRATE	-0.757

#### 12.4. Mobility in soil

Mobility in soil Soluble in water.

#### 12.5. Results of PBT and vPvB assessment

PBT and vPvB assessment The product does not contain any substance(s) classified as PBT or vPvB.

#### 12.6. Other adverse effects

No information available.

## **SECTION 13: Disposal considerations**

#### 13.1. Waste treatment methods

Waste from residues/unused products

Dispose of in accordance with local regulations. Dispose of waste in accordance with

environmental legislation.

Contaminated packaging Do not reuse empty containers.

## SECTION 14: Transport information

14.1 UN number or ID number Not regulated

14.2

14.3 Transport hazard class(es) Not regulated 14.4 Packing group Not regulated

14.5 Environmental hazards No

14.6 Special precautions for user

**Special Provisions** None

**IMDG** 

14.1 UN number or ID number Not regulated 14.3 Transport hazard class(es) Not regulated 14.4 Packing group Not regulated

14.5 Environmental hazards No

14.6 Special precautions for user

**Special Provisions** None

No information available 14.7 Maritime transport in bulk

according to IMO instruments

RID

14.1 UN number or ID number Not regulated 14.2 UN proper shipping name Not regulated 14.3 Transport hazard class(es) Not regulated 14.4 Packing group Not regulated No

14.5 Environmental hazards

14.6 Special precautions for user

**Special Provisions** None

ADR

14.1 UN number or ID number Not regulated 14.2 UN proper shipping name Not regulated Not regulated 14.3 Transport hazard class(es) Not regulated 14.4 Packing group

14.5 Environmental hazards No

14.6 Special precautions for user

**Special Provisions** None

### SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

**National regulations** 

#### Authorisations and/or restrictions on use:

This product contains one or more substances subject to restriction (UK REACH - Annex XVII).

Chemical name		Substance subject to authorisation per
	Annex XVII	REACH Annex XIV
SODIUM TETRABORATE DECAHYDRATE -	Use restricted. See item 30.	-
1303-96-4	Restricted Reproductive Toxin 1B	

#### **Persistent Organic Pollutants**

Not applicable

#### **Export Notification requirements**

Not applicable

#### Named dangerous substances per COMAH Regulations 2015 (as amended)

Not applicable

#### The Ozone-Depleting Substances Regulations 2015

Not applicable

#### The Biocidal Products Regulations 2001 (as amended)

Not applicable

#### The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (as amended)

Not applicable

#### Poisons Act 1972 (Explosive Precursors) Regulations (as Amended)

Not applicable

#### **International Inventories**

**TSCA** Contact supplier for inventory compliance status DSL/NDSL Contact supplier for inventory compliance status **EINECS/ELINCS** Contact supplier for inventory compliance status Contact supplier for inventory compliance status **ENCS IECSC** Contact supplier for inventory compliance status **KECI** Contact supplier for inventory compliance status Contact supplier for inventory compliance status **PICCS** AIIC Contact supplier for inventory compliance status **NZIoC** Contact supplier for inventory compliance status

#### Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

**EINECS/ELINCS** - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

**ENCS** - Japan Existing and New Chemical Substances

IECSC - China Inventory of Existing Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

**PICCS** - Philippines Inventory of Chemicals and Chemical Substances

AIIC - Australian Inventory of Industrial Chemicals

**NZIoC** - New Zealand Inventory of Chemicals

#### 15.2. Chemical safety assessment

Chemical Safety Report No information available

#### **SECTION 16: Other information**

#### Key or legend to abbreviations and acronyms used in the safety data sheet

#### Full text of H-Statements referred to under section 3

H360FD - May damage fertility. May damage the unborn child

#### Legend

SVHC: Substances of Very High Concern for Authorisation:

Legend Section 8: Exposure controls/personal protection

TWA TWA (time-weighted average) STEL STEL (Short Term Exposure Limit)

Ceiling Maximum limit value \* Skin designation

+ Sensitisers

01 '6' 6'

Revision Note SDS sections updated 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Classification	procedure
	cording to Regulation (EC) No

Classification according to Regulation (EC) No. 1272/2008 [CLP]	Method Used
Acute oral toxicity	Calculation method
Acute dermal toxicity	Calculation method
Acute inhalation toxicity - gas	Calculation method
Acute inhalation toxicity - vapour	Calculation method
Acute inhalation toxicity - dust/mist	Calculation method
Skin corrosion/irritation	Calculation method
Serious eye damage/eye irritation	Calculation method
Respiratory sensitisation	Calculation method
Skin sensitisation	Calculation method
Mutagenicity	Calculation method
Carcinogenicity	Calculation method
STOT - single exposure	Calculation method
STOT - repeated exposure	Calculation method
Acute aquatic toxicity	Calculation method
Chronic aquatic toxicity	Calculation method
Aspiration hazard	Calculation method
Ozone	Calculation method

#### Key literature references and sources for data used to compile the SDS

Agency for Toxic Substances and Disease Registry (ATSDR)

U.S. Environmental Protection Agency ChemView Database

European Food Safety Authority (EFSA)

European Chemicals Agency (ECHA) Committee for Risk Assessment (ECHA\_RAC)

European Chemicals Agency (ECHA) (ECHA\_API)

**Environmental Protection Agency** 

Acute Exposure Guideline Level(s) (AEGL(s))

U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act

U.S. Environmental Protection Agency High Production Volume Chemicals

Food Research Journal

Hazardous Substance Database

International Uniform Chemical Information Database (IUCLID)

National Institute of Technology and Evaluation (NITE)

Australian National Industrial Chemicals Notification and Assessment Scheme (NICNAS)

NIOSH (National Institute for Occupational Safety and Health)

National Library of Medicine's ChemID Plus (NLM CIP)

National Library of Medicine's PubMed database (NLM PUBMED)

U.S. National Toxicology Program (NTP)

New Zealand's Chemical Classification and Information Database (CCID)

Organisation for Economic Co-operation and Development Environment, Health, and Safety Publications

Organisation for Economic Co-operation and Development High Production Volume Chemicals Programme

Organisation for Economic Co-operation and Development Screening Information Data Set

World Health Organization

Prepared By Lisa Bland

Supercedes date 11-Mar-2020

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This material safety data sheet complies with the requirements of UK REACH Regulations (SI 2019/758 as amended) Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work

#### **Disclaimer**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the

date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

**End of Safety Data Sheet** 

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## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

## Section 1 - Title

Title Formulation & (re)packing of substances and mixtures

**Type** Worker

Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites

Environmental release category(ies) ERC2 - Formulation of preparations (mixtures)

Process category(ies) PROC1 - Use in closed process, no likelihood of exposure

PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC3 - Use in closed batch process (synthesis or formulation)

PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non dedicated facilities

PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at dedicated facilities

PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,

including weighing)

PROC15 - Use as laboratory reagent

PROC28 - Manual maintenance (cleaning and repair) of machinery

Product category(ies) PC0 - Other Products

Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

## Section 2 - Operational conditions and risk management measures

### Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC2 - Formulation of preparations (mixtures)

#### **Amounts used**

Туре	Daily amount per site
Value	<= 66660
Units	kg/d

Туре	Annual amount per site
Value	<= 10000
Units	t(ons)/year

Conditions and measures related to municipal sewage treatment plant

Comunication and incusance related to	manorpar corrago a camora plant
Type	Municipal STP
Assumed domestic sewage treatment	>= 2000 m3/day
plant flow	

Conditions and measures related to external treatment of waste for disposal

Disposal Dispose of waste product or used containers according to local regulations
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Control of worker exposure	
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to
	vessels/large containers at non dedicated facilities

Covers concentrations up to PS% Physical form of product Use frequency Covers daily exposures up to 8 hours (unless stated differently). Technical conditions and measures to Undertake operation under enclosed conditions control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent (limit releases, dispersion and exposure Indoor/Outdoor use  PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities  Covers concentrations up to Solid, medium dustiness or Paste Exposure duration Organisational measures to prevent (limit releases) (aspersion and exposure Indoor/Outdoor use  Process category(ies)  PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities  Covers concentrations up to 100% Solid, medium dustiness or Paste Exposure duration Use frequency Covers daily exposures up to 8 hours (unless stated differently).  Technical conditions and measures to process fully enclosed (air tight) and the integrity of the enclosure is monitored control dispersion from source towards a month (containment is not breached) Automate activity where possible Sa6/37/39 - Wear suitable protective clothing, gloves and eye/face protection personal protection, hygiene and health evaluation Organisational measures to prevent (limit releases, dispersion and exposure Conditions and measures to prevent (limit releases, dispersion and exposure) Covers category(ies)  PROC1 - Use in closed process, no likelihood of exposure Covers concentrations up to 25% Physical form of product Solid, medium dustiness Exposure duration Lycan duration L	with a
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Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure  Indoor/Outdoor use  Clean equipment and the work area every day Demonstrable and effective housekeeping practices are in place  Outdoor  Process category(ies)  Covers concentrations up to Physical form of product  Exposure duration  Overs daily exposures up to 8 hours (unless stated differently).  Handle substance within a closed system Automated task	
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/limit releases, dispersion and exposure       Demonstrable and effective housekeeping practices are in place         Indoor/Outdoor use       Outdoor         Process category(ies)       PROC1 - Use in closed process, no likelihood of exposure         Covers concentrations up to       > 25%         Physical form of product       Solid, medium dustiness         Exposure duration       Avoid carrying out activities involving exposure for more than 4 hours         Use frequency       Covers daily exposures up to 8 hours (unless stated differently).         Technical conditions and measures to control dispersion from source towards       Handle substance within a closed system	
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Process category(ies)  PROC1 - Use in closed process, no likelihood of exposure  Covers concentrations up to > 25%  Physical form of product Solid, medium dustiness  Exposure duration Avoid carrying out activities involving exposure for more than 4 hours  Use frequency Covers daily exposures up to 8 hours (unless stated differently).  Technical conditions and measures to control dispersion from source towards  Automated task	
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Physical form of product  Exposure duration  Avoid carrying out activities involving exposure for more than 4 hours  Use frequency  Covers daily exposures up to 8 hours (unless stated differently).  Technical conditions and measures to control dispersion from source towards  Automated task	
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Technical conditions and measures to Handle substance within a closed system control dispersion from source towards Automated task	
control dispersion from source towards Automated task	
Conditions and measures related to S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection	
personal protection, hygiene and	
health evaluation health evaluation	
Organisational measures to prevent	
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use Covers indoor and outdoor use	
Process category(ies) PROC8a - Transfer of substance or preparation (charging/discharging) from/to	
vessels/large containers at non dedicated facilities	
Physical form of product Solid, medium dustiness	
Use frequency Covers daily exposures up to 8 hours (unless stated differently).	
Technical conditions and measures to Undertake operation under enclosed conditions	
control dispersion from source towards Automate activity where possible	
the worker Partial personal enclosure with ventilation	
Apply within a vented cab supplied with filtered air under positive pressure and	
protection factor of >20	with a
Ensure containment of the emission source	with a
Conditions and measures related to S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection	with a

personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Demonstrable and effective housekeeping practices are in place
exposure	
Indoor/Outdoor use	Outdoor
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
control dispersion from source towards	a month (containment is not breached)
the worker	Automate activity where possible
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 C
Assumes process temperature up to	H0 C
Dra	RDOCO Lips in closed continuous process with a consignal controlled supersure
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	la month (containment is not breached)
control dispersion from source towards	
control dispersion from source towards the worker	Automate activity where possible
the worker	Automate activity where possible
the worker Conditions and measures related to	Automate activity where possible
the worker  Conditions and measures related to personal protection, hygiene and health evaluation	Automate activity where possible S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent	Automate activity where possible
the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and	Automate activity where possible S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure	Automate activity where possible S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection Clean equipment and the work area every day
the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use	Automate activity where possible  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Outdoor
the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure	Automate activity where possible S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection Clean equipment and the work area every day
the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Assumes process temperature up to	Automate activity where possible S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Outdoor 40 C
the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use	Automate activity where possible  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Outdoor  40 C  PROC8a - Transfer of substance or preparation (charging/discharging) from/to
the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Assumes process temperature up to  Process category(ies)	Automate activity where possible  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Outdoor  40 C  PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Physical form of product	Automate activity where possible  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Outdoor  40 C  PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities  Solid, medium dustiness
the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Physical form of product Exposure duration	Automate activity where possible  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Outdoor  40 C  PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours
the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Physical form of product Exposure duration Use frequency	Automate activity where possible  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Outdoor  40 C  PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).
the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Physical form of product Exposure duration Use frequency Technical conditions and measures to	Automate activity where possible  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Outdoor  40 C  PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions
the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards	Automate activity where possible  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Outdoor  40 C  PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Use in semi-automated and predominantly enclosed filling lines
the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Physical form of product Exposure duration Use frequency Technical conditions and measures to	Automate activity where possible  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Outdoor  40 C  PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Use in semi-automated and predominantly enclosed filling lines  Local exhaust ventilation - efficiency of at least 90%
the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker	Automate activity where possible  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Outdoor  40 C  PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Use in semi-automated and predominantly enclosed filling lines  Local exhaust ventilation - efficiency of at least 90%  General ventilation 3 ACH
the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to	Automate activity where possible  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Outdoor  40 C  PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Use in semi-automated and predominantly enclosed filling lines  Local exhaust ventilation - efficiency of at least 90%  General ventilation 3 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker	Automate activity where possible  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Outdoor  40 C  PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Use in semi-automated and predominantly enclosed filling lines  Local exhaust ventilation - efficiency of at least 90%  General ventilation 3 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Wear suitable gloves tested to EN 374
the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to	Automate activity where possible  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Outdoor  40 C  PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Use in semi-automated and predominantly enclosed filling lines  Local exhaust ventilation - efficiency of at least 90%  General ventilation 3 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and	Automate activity where possible  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Outdoor  40 C  PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Use in semi-automated and predominantly enclosed filling lines  Local exhaust ventilation - efficiency of at least 90%  General ventilation 3 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Wear suitable gloves tested to EN 374
the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent	Automate activity where possible  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Outdoor  40 C  PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Use in semi-automated and predominantly enclosed filling lines  Local exhaust ventilation - efficiency of at least 90%  General ventilation 3 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Wear suitable gloves tested to EN 374  See Section 8 for information on appropriate personal protective equipment
the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and	Automate activity where possible  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Outdoor  40 C  PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Use in semi-automated and predominantly enclosed filling lines  Local exhaust ventilation - efficiency of at least 90%  General ventilation 3 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Wear suitable gloves tested to EN 374  See Section 8 for information on appropriate personal protective equipment  Clean equipment and the work area every day
the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure	Automate activity where possible  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Outdoor  40 C  PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Use in semi-automated and predominantly enclosed filling lines  Local exhaust ventilation - efficiency of at least 90%  General ventilation 3 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Wear suitable gloves tested to EN 374  See Section 8 for information on appropriate personal protective equipment  Clean equipment and the work area every day  Demonstrable and effective housekeeping practices are in place
the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and	Automate activity where possible  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Outdoor  40 C  PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Use in semi-automated and predominantly enclosed filling lines  Local exhaust ventilation - efficiency of at least 90%  General ventilation 3 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Wear suitable gloves tested to EN 374  See Section 8 for information on appropriate personal protective equipment  Clean equipment and the work area every day
the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure	Automate activity where possible  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Outdoor  40 C  PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Use in semi-automated and predominantly enclosed filling lines  Local exhaust ventilation - efficiency of at least 90%  General ventilation 3 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Wear suitable gloves tested to EN 374  See Section 8 for information on appropriate personal protective equipment  Clean equipment and the work area every day  Demonstrable and effective housekeeping practices are in place

	including weighing)
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Undertake operation under enclosed conditions
	Mechanical ventilation giving at least 1 ACH
the worker	COC/OZ/OD Whom quitable protective elething relevance and qualiform restaction
Conditions and measures related to personal protection, hygiene and	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Cican equipment and the work area every day
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	Olean and and the conditions of the conditions o
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	1000 C
Assumes process temperature up to	1000 0
Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Covers concentrations up to	5%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	1000 C
Draces estadow/ice)	DDCCC Transfer of substance or preparation into small containers (dedicated filling line
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, line)
Covers concentrations up to	including weighing) 25%
Covers concentrations up to Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Lyposule dulation	
Lice frequency	
Use frequency Technical conditions and measures to	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
Technical conditions and measures to	Covers daily exposures up to 8 hours (unless stated differently).

	Machanical vantilation giving at least 4 ACLI
Conditions and massives valets if to	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,
	including weighing)
Covers concentrations up to	25%
Physical form of product	Paste
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
indon o didoo. doo	por or a made. Ama databas and
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	> 25%
	Solid
Physical form of product	
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Mechanical ventilation giving at least 3 ACH
control dispersion from source towards	
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Wet cleaning of the workplace
/limit releases, dispersion and	Clean equipment and the work area every day
exposure	ereal equipment and the west area every day
охросито	
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	
	> 25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	g, g, 11 and g, g, 11 and g, g, 10 and g
health evaluation	
Organisational measures to prevent	Wet cleaning of the workplace
/limit releases, dispersion and	Clean equipment and the work area every day
•	polean equipment and the work area every day
exposure	Covers indeed and existence was
Indoor/Outdoor use	Covers indoor and outdoor use
	IDDOOD T
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,
	including weighing)

Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	3 3
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Wet cleaning of the workplace
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC15 - Use as laboratory reagent
	· -

Process category(ies)	PROC15 - Use as laboratory reagent
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Covers indoor and outdoor use

## Section 3 - Exposure estimation

Environmental release category(ies) - ERC2 - Formulation of preparations (mixtures)

## Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.385 mg/L	0.133
Marine water	0.038 mg/L	0.013
STP: Sewage Treatment Plant	3.332 mg/L	0.333
Soil	0.165 mg/kg dw	0.029

## Derived No Effect Level (DNEL):

Calculation method	Used ART model	
	MEASE	

	MLAGE		
Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
	Worker - inhalative, long-term - systemic	0.8 mg/m <sup>3</sup>	0.552
PROC8a - Transfer of substance or	Worker - dermal, long-term -	6.825 mg/kg bw/day	0.099

			<u> </u>
preparation (charging/discharging)	systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC8a - Transfer of substance or	Worker - combined, long-term		0.651
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC8b - Transfer of substance or	Worker - inhalative, long-term	0.43 mg/m <sup>3</sup>	0.297
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at			
dedicated facilities			
PROC8b - Transfer of substance or	Worker - dermal, long-term -	2.457 mg/kg bw/day	0.036
preparation (charging/discharging)	systemic		
from/to vessels/large containers at			
dedicated facilities			
PROC8b - Transfer of substance or	Worker - combined, long-term		0.332
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at			
dedicated facilities			
PROC1 - Use in closed process, no	Worker - inhalative, long-term	0.001 mg/m <sup>3</sup>	< 0.01
likelihood of exposure	- systemic		
PROC1 - Use in closed process, no		0.003 mg/kg bw/day	< 0.01
likelihood of exposure	systemic	]	
PROC1 - Use in closed process, no	Worker - combined, long-term		< 0.01
likelihood of exposure	- systemic		
PROC8a - Transfer of substance or	Worker - inhalative, long-term	0.82 mg/m <sup>3</sup>	0.566
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC8a - Transfer of substance or	Worker - dermal, long-term -	6.825 mg/kg bw/day	0.099
preparation (charging/discharging)	systemic	10.020 mg/kg bw/day	0.000
from/to vessels/large containers at non			
dedicated facilities			
PROC8a - Transfer of substance or	Worker - combined, long-term		0.665
preparation (charging/discharging)	- systemic		0.000
from/to vessels/large containers at non			
dedicated facilities			
PROC2 - Use in closed, continuous	Worker - inhalative, long-term	0.013 mg/m <sup>3</sup>	< 0.01
process with occasional controlled	- systemic	0.010 mg/m	0.01
exposure	dydioniid		
PROC2 - Use in closed, continuous	Worker - dermal, long-term -	0.035 mg/kg bw/day	< 0.01
process with occasional controlled	systemic	lo.000 mg/kg bw/day	0.01
exposure			
PROC2 - Use in closed, continuous	Worker - combined, long-term		< 0.01
process with occasional controlled	- systemic		0.01
exposure	- systemic		
PROC2 - Use in closed, continuous	Worker - inhalative, long-term	0.011 mg/m <sup>3</sup>	< 0.01
process with occasional controlled	- systemic	0.011 mg/m²	0.01
	- systemic		
PROC2 - Use in closed, continuous	Worker dermal long term	0.035 mg/kg bw/day	< 0.01
process with occasional controlled	Worker - dermal, long-term - systemic	0.035 mg/kg bw/day	< 0.01
·	Systemic		
exposure	Marker combined language		1,001
PROC2 - Use in closed, continuous	Worker - combined, long-term		< 0.01
process with occasional controlled	- systemic		
exposure	Manhan Sahalad	0.07 / 2	0.400
PROC8a - Transfer of substance or	Worker - inhalative, long-term	υ.ο/ mg/m <sup>3</sup>	0.462
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at non			
dedicated facilities	100	00.07 // / /	0.007
PROC8a - Transfer of substance or preparation (charging/discharging)	Worker - dermal, long-term - systemic	20.37 mg/kg bw/day	0.297

from/to vessels/large containers at non			
dedicated facilities	1. 1.		0.750
PROC8a - Transfer of substance or	Worker - combined, long-term		0.759
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at non dedicated facilities			
PROC9 - Transfer of substance or	Marken inheletive lengten	0.040 / 3	0.218
	Worker - inhalative, long-term	0.316 mg/m <sup>3</sup>	0.218
preparation into small containers	- systemic		
(dedicated filling line, including weighing)			
PROC9 - Transfer of substance or	Worker - dermal, long-term -	0.518 mg/kg bw/day	< 0.01
preparation into small containers	systemic	0.516 mg/kg bw/day	0.01
(dedicated filling line, including	Systemic		
weighing)			
PROC9 - Transfer of substance or	Worker - combined, long-term		0.225
preparation into small containers	- systemic		0.223
(dedicated filling line, including	dydioniid		
weighing)			
PROC2 - Use in closed, continuous	Worker - inhalative, long-term	0.013 mg/m <sup>3</sup>	< 0.01
process with occasional controlled	- systemic	l is is ing, in	1 0.01
exposure	5,5155		
PROC2 - Use in closed, continuous	Worker - dermal, long-term -	0.035 mg/kg bw/day	< 0.01
process with occasional controlled	systemic		
exposure			
PROC2 - Use in closed, continuous	Worker - combined, long-term		< 0.01
process with occasional controlled	- systemic		
exposure			
PROC3 - Use in closed batch process	Worker - inhalative, long-term	0.253 mg/m <sup>3</sup>	0.174
(synthesis or formulation)	- systemic		
PROC3 - Use in closed batch process	Worker - dermal, long-term -	0.007 mg/kg bw/day	< 0.01
(synthesis or formulation)	systemic		
	Worker - combined, long-term		0.175
(synthesis or formulation)	- systemic		
PROC9 - Transfer of substance or	Worker - inhalative, long-term	0.008 mg/m <sup>3</sup>	< 0.01
preparation into small containers	- systemic		
(dedicated filling line, including			
weighing)			<del>                                     </del>
PROC9 - Transfer of substance or		0.031 mg/kg bw/day	< 0.01
preparation into small containers	systemic		
(dedicated filling line, including			
weighing)	Marker combined long term		. 0.01
PROC9 - Transfer of substance or preparation into small containers	Worker - combined, long-term		< 0.01
(dedicated filling line, including	- systemic		
weighing)			
PROC9 - Transfer of substance or	Worker - inhalative, long-term	0.008 mg/m <sup>3</sup>	< 0.01
preparation into small containers	- systemic	0.000 mg/m	0.01
(dedicated filling line, including	- Systemis		
weighing)			
PROC9 - Transfer of substance or	Worker - dermal, long-term -	0.031 mg/kg bw/day	< 0.01
preparation into small containers	systemic		
(dedicated filling line, including	*		
weighing)			
PROC9 - Transfer of substance or	Worker - combined, long-term		< 0.01
preparation into small containers	- systemic		
dedicated filling line, including			
weighing)			
PROC28 - Manual maintenance	Worker - inhalative, long-term	1.063 mg/m <sup>3</sup>	0.733
(cleaning and repair) of machinery	- systemic		
PROC28 - Manual maintenance		2.492 mg/kg bw/day	0.036
(cleaning and repair) of machinery	systemic		

PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - combined, long-term - systemic		0.769
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - inhalative, long-term - systemic	0.116 mg/m <sup>3</sup>	0.08
PROC28 - Manual maintenance (cleaning and repair) of machinery	systemic	2.492 mg/kg bw/day	0.036
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - combined, long-term - systemic		0.116
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative, long-term - systemic	0.013 mg/m³	< 0.01
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - dermal, long-term - systemic	0.104 mg/kg bw/day	< 0.01
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - combined, long-term - systemic		0.01
PROC15 - Use as laboratory reagent	Worker - inhalative, long-term - systemic	0.013 mg/m <sup>3</sup>	< 0.01
PROC15 - Use as laboratory reagent	Worker - dermal, long-term - systemic	0.069 mg/kg bw/day	< 0.01
PROC15 - Use as laboratory reagent	Worker - combined, long-term - systemic		< 0.01

## Section 4 - Guidance to check compliance with the exposure scenario

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

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## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

### Section 1 - Title

Title Formulation & (re)packing of substances and mixtures

**Type** Worke

Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites

Environmental release category(ies) ERC3 - Formulation in materials

Process category(ies) PROC1 - Use in closed process, no likelihood of exposure

PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC7 - Industrial spraying

PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non dedicated facilities

PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at dedicated facilities

PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,

including weighing)

PROC14 - Production of preparations or articles by tableting, compression, extrusion,

pelettising

PROC15 - Use as laboratory reagent

PROC23 - Open processing and transfer operations with minerals/metals at elevated

temperature

PROC24 - High (mechanical) energy work-up of substances bound in materials and/or

articles

PROC28 - Manual maintenance (cleaning and repair) of machinery

Product category(ies) PC0 - Other Products

Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

## Section 2 - Operational conditions and risk management measures

### Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC3 - Formulation in materials

#### **Amounts used**

Туре	Daily amount per site
Value	<= 27500
Units	kg/d

Туре	Annual amount per site
Value	<= 10000
Units	t(ons)/year

Conditions and measures related to municipal sewage treatment plant

Туре	Municipal STP
Assumed domestic sewage treatment	>= 2000 m3/day
plant flow	·

Receiving water dilution (fresh or marine)	>= 18000 m3/day				
Conditions and measures related to	external treatment of waste for disposal				
Disposal					
Control of worker exposure					
Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to				
	vessels/large containers at dedicated facilities				
Covers concentrations up to	100%				
Physical form of product	Solid, medium dustiness or Paste				
Exposure duration	Avoid carrying out operation for more than 2 hours				
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).				
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once				
the worker	a month (containment is not breached) Automate activity where possible				
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection				
personal protection, hygiene and	OSO/01/33 * Wear suitable protective clothing, gloves and eye/race protection				
health evaluation					
Organisational measures to prevent	Clean equipment and the work area every day				
/limit releases, dispersion and	Demonstrable and effective housekeeping practices are in place				
exposure					
Indoor/Outdoor use	Outdoor				
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure				
Covers concentrations up to	> 25%				
Physical form of product	Solid, medium dustiness				
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours				
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).				
Technical conditions and measures to	Handle substance within a closed system				
control dispersion from source towards					
the worker	Mechanical ventilation giving at least 1 ACH				
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection				
personal protection, hygiene and health evaluation					
Organisational measures to prevent	Clean equipment and the work area every day				
/limit releases, dispersion and	Clean equipment and the work area every day				
exposure					
Indoor/Outdoor use	Covers indoor and outdoor use				
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure				
Covers concentrations up to	> 25%				
Physical form of product	Solid, medium dustiness				
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours				
Use frequency Technical conditions and measures to	Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once				
	a month (containment is not breached)				
the worker	Automate activity where possible				
	Mechanical ventilation giving at least 1 ACH				
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection				
personal protection, hygiene and					
health evaluation					
Organisational measures to prevent	Clean equipment and the work area every day				
/limit releases, dispersion and					
exposure Indoor/Outdoor use	Indoor				
Assumes process temperature up to	Indoor 40 C				
y roodines process temperature up to	<u> </u>				
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure				

Covers concentrations up to	> 25%			
Physical form of product	Solid, low dustiness			
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours			
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).			
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once			
control dispersion from source towards	a month (containment is not breached)			
the worker	Automate activity where possible			
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection			
personal protection, hygiene and				
health evaluation				
Organisational measures to prevent	Clean equipment and the work area every day			
/limit releases, dispersion and				
exposure				
Indoor/Outdoor use	Outdoor			
Assumes process temperature up to	40 C			
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to			
	vessels/large containers at non dedicated facilities			
Physical form of product	Solid, medium dustiness			
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours			
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).			
Technical conditions and measures to	Undertake operation under enclosed conditions			
	Use in semi-automated and predominantly enclosed filling lines			
the worker	Local exhaust ventilation - efficiency of at least 90%			
	General ventilation 3 ACH			
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection			
personal protection, hygiene and	Wear suitable gloves tested to EN 374			
health evaluation	See Section 8 for information on appropriate personal protective equipment			
Organisational measures to prevent	Clean equipment and the work area every day			
/limit releases, dispersion and	Demonstrable and effective housekeeping practices are in place			
exposure				
Indoor/Outdoor use	Indoor			
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,			
	including weighing)			
Covers concentrations up to	> 25%			
Physical form of product	Solid, medium dustiness			
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours			
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).			
	Undertake operation under enclosed conditions			
control dispersion from source towards	Mechanical ventilation giving at least 1 ACH			
the worker				
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection			
personal protection, hygiene and				
health evaluation				
	Clean equipment and the work area every day			
/limit releases, dispersion and				
exposure				
Indoor/Outdoor use	Covers indoor and outdoor use			
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure			
Covers concentrations up to	> 25%			
Physical form of product	Solid, medium dustiness			
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours			
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).			
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once			
control dispersion from source towards				
the worker	Automate activity where possible			
the worker	Automate activity where possible  Mechanical ventilation giving at least 1 ACH			
the worker	Automate activity where possible			

health evaluation  Organisational measures to prevent		
Process category(ies)	personal protection, hygiene and health evaluation	
Indoor/Outdoor use Assumes process temperature up to 1000 C Process category(les) Covers concentrations up to 25% Exposure duration Sub frequency Covers daily exposures up to 8 hours (unless stated differently). Conditions and measures related to personal protection, hygiene and health evaluation Covers daily exposures up to 8 hours (unless stated differently). Conditions and measures related to personal protection and the sub covers daily exposures up to 8 hours (unless stated differently). Conditions and measures related to personal protection, hygiene and health evaluation Conditions and measures to prevent (limit releases, dispersion and exposure of the covers daily exposures (limit releases, dispersion and exposure of the covers daily exposures of the covers daily exposures of the covers daily exposures of the covers daily exposure of the covers daily exposures of the covers daily exposures up to 8 hours (unless stated differently).  Process category(les) Covers concentrations up to Process daily exposures up to 8 hours (unless stated differently).  Use in semi-automated and predominantly enclosed filling lines control dispersion from source towards (Open windows during application to ensure natural vertilation of the worker of the exposure of the covers daily exposures up to 8 hours (unless stated differently).  Covers conditions and measures to lose of the covers daily exposures up to 8 hours (unless stated differently).  Use in semi-automated and predominantly enclosed filling lines control dispersion from source towards (Open windows during application to ensure natural vertilation femsure that spray direction is only horizontal or downward Surface spraying off unless expanying off	/limit releases, dispersion and	Clean equipment and the work area every day
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Process category(ies) Covers concentrations up to 2-5% Exposure duration Day frequency Covers concentrations up to 2-5% Exposure duration Day frequency Covers duly exposures up to 8 hours (unless stated differently). Technical conditions and measures to the worker Mechanical ventilation giving at least 1 ACH Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent Ilimit releases, dispersion and exposure Indoor/Outdoor use  Process Category(ies) PROC7 - Industrial spraying Covers concentrations up to Process category(ies) PROC7 - Industrial spraying Covers daily exposures up to 8 hours (unless stated differently).  PROC7 - Industrial spraying Covers concentrations up to Process category(ies) Covers daily exposures up to 8 hours (unless stated differently).  Use in semi-automated and predominantly enclosed filling lines control dispersion from source towards of the worker  Conditions and measures related to personal protection, hygiene and health evaluation Conditions and measures related to personal protection, hygiene and health evaluation Corganisational measures to prevent (limit releases, dispersion and exposure)  Covers daily exposures up to 8 hours (unless stated differently).  Use in semi-automated and predominantly enclosed filling lines control dispersion from source towards of the worker  Conditions and measures related to personal protection, hygiene and health evaluation Conganisational measures to prevent (limit releases, dispersion and exposure)  PROC23 - Open processing and transfer operations with minerals/metals at elevated temperature  Covers concentrations up to  1%  PROC23 - Open processing and transfer operations with minerals/metals at elevated temperature  Covers concentrations up to  1%  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Covers daily		
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Exposure duration		
Use frequency  Covers daily exposures up to 8 hours (unless stated differently).  Technical conditions and measures to Process fully enclosed (air light) and the integrity of the enclosure is monitored at least once control dispersion from source towards a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH  Soff-37/39 - Wear suitable protective clothing, gloves and eye/face protection personal protection, hyglene and health evaluation  Clean equipment and the work area every day  Clean equipment and outdoor use  Covers indoor and outdoor use  Covers indoor and outdoor use  Covers category(ies)  Covers category(ies)  Covers daily exposures up to 8 hours (unless stated differently).  Technical conditions and measures to prevent liquid  Surface spraying direction is only horizontal or downward Surface spraying direction is only horizontal or downward Surface spraying direction is only horizontal or downward Surface spraying of liquids  Conditions and measures related to personal protection, hyglene and health evaluation  Organisational measures to prevent limit releases, dispersion and exposure  Indoor/Outdoor use  Covers daily exposures up to 8 hours (unless stated differently).  Technical conditions and measures via Use in semi-automated and predominantly enclosed filling ines control dispersion from source towards Ogen windows during application to ensure natural ventilation  Ensure that spray direction is only horizontal or downward Surface spraying of liquids  Surface spraying with no or low compressed air use  Low application rate (0.03 - 0.3 //minute)  Surface spraying of liquids  Clean equipment and the work area every day  Demonstrable and effective housekeeping practices are in place  Engosure duration  Avoid carrying out activities involving exposure for more than 4 hours  Covers category(ies)  PROC23 - Open processing and transfer operations with minerals/metals at elevated temperature  Covers concentrations up to  1%  Covers daily exposure		
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health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure  Indoor/Outdoor use  Clean equipment and the work area every day	Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure  Indoor/Outdoor use  Clean equipment and the work area every day	personal protection, hygiene and	
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/limit releases, dispersion and exposure Indoor/Outdoor use Covers indoor and outdoor use	Organisational measures to prevent	Clean equipment and the work area every day
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Indoor/Outdoor use Covers indoor and outdoor use	exposure	
	Indoor/Outdoor use	Covers indoor and outdoor use
		1000 C

Process category(ies)	PROC24 - High (mechanical) energy work-up of substances bound in materials and/or			
	articles			
Covers concentrations up to	> 25%			
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours			
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).			
	Handle substance within a closed system			
control dispersion from source towards				
the worker	Mechanical ventilation giving at least 1 ACH			
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection			
personal protection, hygiene and				
health evaluation				
Organisational measures to prevent	Clean equipment and the work area every day			
/limit releases, dispersion and				
exposure				
Indoor/Outdoor use	Covers indoor and outdoor use			
Process category(ies)	PROC14 - Production of preparations or articles by tableting, compression, extrusion,			
	pelettising			
Covers concentrations up to	> 25%			
Physical form of product	Solid, medium dustiness			
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours			
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).			
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once			
control dispersion from source towards	a month (containment is not breached)			
the worker	Automate activity where possible			
	Mechanical ventilation giving at least 1 ACH			
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection			
personal protection, hygiene and				
health evaluation				
Organisational measures to prevent	Clean equipment and the work area every day			
/limit releases, dispersion and				
exposure				
Indoor/Outdoor use	Covers indoor and outdoor use			
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,			
	including weighing)			
Covers concentrations up to	25%			
Physical form of product	Solid			
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours			
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).			
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once			
	a month (containment is not breached)			
the worker	Automate activity where possible			
	Mechanical ventilation giving at least 1 ACH			
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection			
personal protection, hygiene and				
health evaluation				
Organisational measures to prevent	Clean equipment and the work area every day			
/limit releases, dispersion and				
exposure				
Indoor/Outdoor use	Covers indoor and outdoor use			
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,			
	including weighing)			
Covers concentrations up to	<= 25%			
Physical form of product	Solid, low dustiness			
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours			
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).			
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once			
	a month (containment is not breached)			

the worker	Automate activity where possible			
	Mechanical ventilation giving at least 1 ACH			
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection			
personal protection, hygiene and	Wear suitable gloves tested to EN 374			
health evaluation	See Section 8 for information on appropriate personal protective equipment			
Organisational measures to prevent	Clean equipment and the work area every day			
/limit releases, dispersion and				
exposure				
Indoor/Outdoor use	Covers indoor and outdoor use			
December (i.e.)	DDCCCC Manual maintainana (danaina and manis) at manbinana			
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery			
Covers concentrations up to	> 25%			
Physical form of product	Solid, medium dustiness			
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour			
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).			
	Mechanical ventilation giving at least 3 ACH			
control dispersion from source towards				
the worker				
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection			
personal protection, hygiene and				
health evaluation				
Organisational measures to prevent	Clean equipment and the work area every day			
/limit releases, dispersion and				
exposure				
Indoor/Outdoor use	Indoor			
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,			
Process category(les)				
Cavara as a saturation of the	including weighing) > 25%			
Covers concentrations up to				
Physical form of product	Solid, medium dustiness			
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour			
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).			
Technical conditions and measures to	Mechanical ventilation giving at least 1 ACH			
control dispersion from source towards				
the worker				
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection			
personal protection, hygiene and				
health evaluation	<u></u>			
Organisational measures to prevent	Clean equipment and the work area every day			
/limit releases, dispersion and	Wet cleaning of the workplace			
exposure				
Indoor/Outdoor use	Covers indoor and outdoor use			
Process category(ies)	PROC15 - Use as laboratory reagent			
	> 25%			
Covers concentrations up to Physical form of product	Solid, medium dustiness			
Exposure duration				
Use frequency	Avoid carrying out activities involving exposure for more than 1 hour Covers daily exposures up to 8 hours (unless stated differently).			
Technical conditions and measures to				
	Mechanical ventilation giving at least 1 ACH			
control dispersion from source towards the worker				
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection			
personal protection, hygiene and	poororros - viear sullable protective clothing, gloves and eyerlace protection			
health evaluation Organisational measures to prevent	Clean equipment and the work area overy day			
/limit releases, dispersion and	Clean equipment and the work area every day			
exposure				
Indoor/Outdoor use	Covers indeer and outdoor use			
pridoor/Outdoor use	Covers indoor and outdoor use			

## Section 3 - Exposure estimation

Environmental release category(ies) - ERC3 - Formulation in materials

## Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.051 mg/L	0.0188
Marine water	0.00508 mg/L	< 0.01
STP: Sewage Treatment Plant	0 mg/L	< 0.01
Soil	0.147 mg/kg dw	0.026

### **Derived No Effect Level (DNEL):**

Calculation method Used ART model MFASE

MEASE			
Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	0.43 mg/m <sup>3</sup>	0.297
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - dermal, long-term - systemic	2.457 mg/kg bw/day	0.036
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - combined, long-term - systemic		0.332
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic	0.001 mg/m <sup>3</sup>	< 0.01
PROC1 - Use in closed process, no likelihood of exposure	Worker - dermal, long-term - systemic	0.003 mg/kg bw/day	< 0.01
PROC1 - Use in closed process, no likelihood of exposure	Worker - combined, long-term - systemic		< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.013 mg/m <sup>3</sup>	<0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.035 mg/kg bw/day	<0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		<0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.011 mg/m <sup>3</sup>	<0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.035 mg/kg bw/day	<0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		<0.01
PROC8a - Transfer of substance or	Worker - inhalative, long-term	0.67 mg/m <sup>3</sup>	0.462

from/to vessels/large containers at non dedicated fracilities PROC2a - Transfer of substance or preparation (charging/discharging) systemic systemi				
from/to vessels/large containers at non dedicated fracilities PROC2a - Transfer of substance or preparation (charging/discharging) systemic systemi	preparation (charging/discharging)	- systemic		
Identicated facilities				
PROC2a - Transfer of substance or preparation (charging/discharging) systemic preparation (charging/discharging) systemic preparation (charging/discharging) systemic preparation (charging/discharging) - systemic preparation (charging/discharging) - systemic preparation (charging/discharging) - systemic preparation (charging/discharging) - systemic preparation into small containers at non dedicated facilities  Norker - combined, long-term preparation into small containers at non dedicated facilities  Norker - inhalative, long-term preparation into small containers (dedicated filling line, including weighing)  Norker - dermal, long-term preparation into small containers (dedicated filling line, including weighing)  Norker - combined, long-term preparation into small containers (dedicated filling line, including weighing)  Norker - combined, long-term preparation into small containers (dedicated filling line, including weighing)  Norker - combined, long-term preparation into small containers (dedicated filling line, including weighing)  Norker - land land land land land land land land				
preparation (charging/discharging) from/to vessels/alrge containers at non dedicated facilities PROC8a * Transfer of substance or preparation (charging/discharging) from/to vessels/alrge containers at non dedicated facilities PROC9 * Transfer of substance or preparation into small containers (dedicated filing line, including weighing) PROC9 * Transfer of substance or preparation into small containers (dedicated filing line, including weighing) PROC9 * Transfer of substance or preparation into small containers (dedicated filing line, including weighing) PROC9 * Transfer of substance or preparation into small containers (dedicated filing line, including weighing) PROC9 * Transfer of substance or preparation into small containers (dedicated filing line, including weighing) PROC2 * Use in closed, continuous process with ocasional controlled exposure PROC2 * Use in closed, continuous process with ocasional controlled exposure PROC2 * Use in closed, continuous process with ocasional controlled exposure PROC2 * Use in closed, continuous process with ocasional controlled exposure PROC2 * Use in closed, continuous process with ocasional controlled exposure PROC2 * Use in closed, continuous process with ocasional controlled exposure PROC2 * Use in closed, continuous process with ocasional controlled exposure PROC2 * Use in closed, continuous process with ocasional controlled exposure PROC2 * Use in closed, continuous process with ocasional controlled exposure PROC2 * Use in closed, continuous process with ocasional controlled exposure PROC2 * Use in closed, continuous process with ocasional controlled exposure PROC2 * Use in closed, continuous process with ocasional controlled exposure PROC2 * Use in closed, continuous process with ocasional controlled exposure PROC2 * Open processing and transfer operations with mineral/metals at elevated temperature PROC2 * Open processing and transfer operations with mineral/metals at elevated temperature PROC2 * Open processing and transfer operations with mineral/metals at elevated		Manager de marel le man de mare	00.00///-/	0.007
from/to vessels/large containers at non dedicated facilities  PROCB - Transfer of substance or preparation (Anging/discharging) from/to vessels/large containers at non dedicated facilities  PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)  PROC9 - Transfer of substance or or preparation into small containers (dedicated filling line, including weighing)  PROC9 - Transfer of substance or or systemic (dedicated filling line, including weighing)  PROC9 - Transfer of substance or or systemic (dedicated filling line, including weighing)  PROC2 - Use in closed, continuous process with occasional controlled syposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC3 - Open processing and transfer operations with mineral/metals at elevated temperature  PROC3 - Open processing and transfer operations with mineral/metals at elevated temperat			20.38 mg/kg bw/day	0.297
Sedicated facilities   PROC38   Transfer of substance or preparation (charging/discharging)   rom/to vessels/alrage containers at non dedicated facilities   PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)   PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)   PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)   PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)   PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)   PROC9 - Transfer of substance or preparation into small controlled systemic   Systemi				
Sedicated facilities   PROC38   Transfer of substance or preparation (charging/discharging)   rom/to vessels/alrage containers at non dedicated facilities   PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)   PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)   PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)   PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)   PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)   PROC9 - Transfer of substance or preparation into small controlled systemic   Systemi	from/to vessels/large containers at non			
PROC2a - Transfer of substance or preparation (charging/discharging) prom/to vessels/large containers at non dedicated facilities  PROC3 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)  PROC3 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)  PROC3 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)  PROC3 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)  PROC3 - Use in closed, continuous process with occasional controlled synosure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC3 - Industrial spraying  Worker - dermal, long-term - systemic  Worker - inhalative, long-term - systemic  Worker - combined, long-term - systemic  Worker - combined, long-term - systemic  PROC3 - Produstrial spraying  Worker - dermal, long-term - systemic  Worker - combined, long-term - systemic  PROC3 - Produstrial spraying  Worker - dermal, long-te				
preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities PROC9 - Transfer of substance or preparation into small containers (dedicated filing line, including weighing) PROC9 - Transfer of substance or preparation into small containers (dedicated filing line, including weighing) PROC9 - Transfer of substance or preparation into small containers (dedicated filing line, including weighing) PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC3 - Industrial spraying Worker - dermal, long-term - systemic Worker - dermal, long-term - systemic  Worker - dermal, long-term - systemic  Worker - dermal, long-term - systemic  Worker - dermal, long-term - systemic  Worker - dermal, long-term - systemic  Worker - dermal, long-term - systemic  PROC3 - Industrial spraying Worker - dermal, long-term - systemic  Worker		Markey carebined languaters		0.750
from/to vessels/large containers at non dedicated facilities  PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)  PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)  PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)  PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)  Worker - combined, long-term - systemic  Worker - combined, long-term - systemic  Worker - combined, long-term - systemic  Worker - dermal, long-term - systemic  Worker - combined, long-term - systemic  Worker - dermal, long-term - systemic  Worker - inhalative, long-term - systemic  Worker - dermal, long-term - systemic  Worker - combined, long-term - systemic  Worker - combined, long-term - systemic  Worker - dermal, long-term - syste				0.759
dedicated facilities   PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)   Worker - dermal, long-term   0.316 mg/m³   0.218   - systemic (dedicated filling line, including weighing)   Worker - dermal, long-term   0.518 mg/kg bw/day   <0.01   systemic (dedicated filling line, including weighing)   Worker - dermal, long-term   - systemic (dedicated filling line, including weighing)   Worker - dermal, long-term   - systemic (dedicated filling line, including weighing)   Worker - dermal, long-term   - systemic (dedicated filling line, including weighing)   Worker - inhalative, long-term   - systemic systemic systemic systemic   Worker - dermal, long-term   - systemic   - system	preparation (charging/discharging)			
dedicated facilities   PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)   Worker - dermal, long-term   0.316 mg/m³   0.218   - systemic (dedicated filling line, including weighing)   Worker - dermal, long-term   0.518 mg/kg bw/day   <0.01   systemic (dedicated filling line, including weighing)   Worker - dermal, long-term   - systemic (dedicated filling line, including weighing)   Worker - dermal, long-term   - systemic (dedicated filling line, including weighing)   Worker - dermal, long-term   - systemic (dedicated filling line, including weighing)   Worker - inhalative, long-term   - systemic systemic systemic systemic   Worker - dermal, long-term   - systemic   - system	from/to vessels/large containers at non	i		
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systemic   cledicated filling line, including weighing		Marker inhalative long term	0.216 mg/m3	0.210
Gedicated filling line, including weighing)   PROC3 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)   Worker - dermal, long-term - systemic (dedicated filing line, including weighing)   Worker - combined, long-term - systemic (dedicated filing line, including weighing)   Worker - combined, long-term - systemic (dedicated filing line, including weighing)   PROC2 - Use in closed, continuous process with occasional controlled exposure   PROC2 - Use in closed, continuous process with occasional controlled exposure   PROC2 - Use in closed, continuous process with occasional controlled exposure   PROC2 - Use in closed, continuous process with occasional controlled exposure   PROC2 - Use in closed, continuous process with occasional controlled exposure   PROC2 - Use in closed, continuous process with occasional controlled exposure   PROC2 - Use in closed, continuous process with occasional controlled exposure   PROC2 - Use in closed, continuous process with occasional controlled exposure   PROC2 - Use in closed, continuous process with occasional controlled exposure   PROC2 - Use in closed, continuous process with occasional controlled exposure   PROC3 - Use in closed, continuous process with occasional controlled exposure   PROC3 - Use in closed, continuous process with occasional controlled exposure   PROC3 - Use in closed, continuous process with occasional controlled exposure   PROC3 - Use in closed, continuous process with occasional controlled exposure   PROC3 - Use in closed, continuous process with occasional controlled exposure   PROC3 - Use in closed, continuous process with occasional controlled exposure   PROC3 - Use in closed, continuous process with occasional controlled exposure   PROC3 - Use in closed, continuous process with occasional controlled exposure   PROC3 - Use in closed, continuous process with occasional controlled exposure   PROC3 - Use in closed, continuous process with occasional controlled   PROC3 - Use in closed, continuous pro	I		0.5 16 mg/m²	0.210
weighing) PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC3 - Use in closed, continuous worker - dermal, long-term - systemic  Worker - dermal, long-term - 0.035 mg/kg bw/day - <0.01 systemic  Worker - dermal, long-term - 0.035 mg/kg bw/day - <0.01 systemic  Worker - dermal, long-term - 0.035 mg/kg bw/day - <0.01 systemic  Worker - dermal, long-term - 0.035 mg/kg bw/day - <0.01 systemic  Worker - dermal, long-term - 0.012 mg/kg bw/day - <0.01 systemic  Worker - dermal, long-term - 0.19 mg/m³ - 0.29 systemic  Worker - dermal, long-term - 0.19 mg/m³ - 0.131 transfer operations with minerals/metals at elevated temperature  PROC23 - Open processing and transfer operations with minerals/metals at elevated temperature  PROC24 - High (mechanical) energy Worker - inhalati		- systemic		
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preparation into small containers (dedicated filling line, including weighing)  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC3 - Use in closed, continuous process with occasional controlled exposure  PROC6 - Industrial spraying  PROC7 - Industrial spraying  PROC63 - Open processing and transfer operations with minerals/metals at elevated temperature  PROC23 - Open processing and transfer operations with minerals/metals at elevated temperature  PROC23 - Open processing and transfer operations with minerals/metals at elevated temperature  PROC23 - Open processing and transfer operations with minerals/metals at elevated temperature  PROC24 - High (mechanical) energy  Worker - inhalative, long-term  - systemic  0.102 mg/kg bw/day  - 0.01  - systemic  0.102 mg/kg bw/day  - 0.103  - 1		Worker - dermal long-term -	0.518 ma/ka bw/day	-0.01
Gedicated filling line, including weighing)   PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)   PROC2 - Use in closed, continuous process with occasional controlled exposure   PROC2 - Use in closed, continuous process with occasional controlled exposure   PROC2 - Use in closed, continuous process with occasional controlled exposure   PROC2 - Use in closed, continuous process with occasional controlled exposure   PROC2 - Use in closed, continuous process with occasional controlled exposure   PROC2 - Use in closed, continuous process with occasional controlled exposure   PROC2 - Use in closed, continuous process with occasional controlled exposure   PROC2 - Use in closed, continuous process with occasional controlled exposure   PROC2 - Use in closed, continuous process with occasional controlled exposure   PROC2 - Use in closed, continuous process with occasional controlled exposure   PROC2 - Use in closed, continuous process with occasional controlled exposure   PROC2 - Use in closed, continuous process with occasional controlled exposure   PROC2 - Use in closed, continuous process with occasional controlled exposure   PROC2 - Use in closed, continuous process with occasional controlled exposure   PROC2 - Use in closed, continuous process with occasional controlled exposure   PROC2 - Use in closed, continuous process with occasional controlled   PROC2 - Use in closed, continuous process with occasional controlled   PROC2 - Use in closed, continuous process with occasional controlled   PROC2 - Use in closed, continuous process with occasional controlled   PROC2 - Use in closed, continuous process with occasional controlled   PROC2 - Use in closed, continuous process with occasional controlled   PROC2 - Use in closed, continuous process with occasional controlled   PROC2 - Use in closed, continuous process with occasional controlled   PROC2 - Use in closed, continuous process with occasional controlled   PROC2 - Use in closed, continuous process wit			0.5 to mg/kg bw/day	0.01
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PROC2 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC2 - Use in closed, continuous process with occasional controlled exposure  PROC3 - Use in closed, continuous process with occasional controlled exposure  PROC7 - Industrial spraying  Worker - combined, long-term - ysstemic  PROC23 - Open processing and transfer operations with minerals/metals at elevated temperature  PROC23 - Open processing and transfer operations with minerals/metals at elevated temperature  PROC24 - High (mechanical) energy  Worker - inhalative, long-term - systemic  Worker - combined, long-term - ysstemic	(dedicated filling line, including			
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Gedicated filling line, including weighing)   Worker - inhalative, long-term   0.013 mg/m³   <0.01				
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PROC24 - High (mechanical) energy Worker - inhalative, long-term 0.127 mg/m³ 0.088				
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materials and/or articles			
PROC24 - High (mechanical) energy		0.014 mg/kg bw/day	<0.01
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materials and/or articles			
PROC24 - High (mechanical) energy	Worker - combined, long-term		0.088
work-up of substances bound in	- systemic		
materials and/or articles			
PROC14 - Production of preparations	Worker - inhalative, long-term	0.127 mg/m <sup>3</sup>	0.088
or articles by tableting, compression,	- systemic		
extrusion, pelettising			
PROC14 - Production of preparations	Worker - dermal, long-term -	0.069 mg/kg bw/day	<0.01
or articles by tableting, compression,	systemic	Jarobag,g 2, day	
extrusion, pelettising	Systemis		
PROC14 - Production of preparations	Worker - combined, long-term		0.089
or articles by tableting, compression,	- systemic		0.009
extrusion, pelettising	- systemic		
	\\\\-\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	0.40 / 2	0.404
PROC9 - Transfer of substance or	Worker - inhalative, long-term	0.19 mg/m <sup>3</sup>	0.131
preparation into small containers	- systemic		
(dedicated filling line, including			
weighing)			
PROC9 - Transfer of substance or		0.031 mg/kg bw/day	< 0.01
preparation into small containers	systemic		
(dedicated filling line, including			
weighing)			
PROC9 - Transfer of substance or	Worker - combined, long-term		0.131
preparation into small containers	- systemic		
dedicated filling line, including	*		
weighing)			
PROC9 - Transfer of substance or	Worker - inhalative, long-term	0.038 mg/m <sup>3</sup>	0.026
preparation into small containers	- systemic	0.000 1119/111	0.020
(dedicated filling line, including	Systemio		
weighing)			
PROC9 - Transfer of substance or	Worker - dermal, long-term -	0.031 mg/kg bw/day	<0.01
		0.031 mg/kg bw/day	<0.01
preparation into small containers	systemic		
(dedicated filling line, including			
weighing)	100		0.007
PROC9 - Transfer of substance or	Worker - combined, long-term		0.027
preparation into small containers	- systemic		
(dedicated filling line, including			
weighing)			
PROC28 - Manual maintenance	Worker - inhalative, long-term	1.063 mg/m <sup>3</sup>	0.733
(cleaning and repair) of machinery	- systemic		
PROC28 - Manual maintenance	Worker - dermal, long-term -	2.493 mg/kg bw/day	0.036
(cleaning and repair) of machinery	systemic		
PROC28 - Manual maintenance	Worker - combined, long-term		0.769
(cleaning and repair) of machinery	- systemic		
PROC9 - Transfer of substance or	Worker - inhalative, long-term	0.013 mg/m <sup>3</sup>	<0.01
preparation into small containers	- systemic	· · · · · · · · · · · · · · · · · · ·	
(dedicated filling line, including	,		
weighing)			
PROC9 - Transfer of substance or	Worker - dermal, long-term -	0.104 mg/kg bw/day	< 0.01
preparation into small containers	systemic	o.104 mg/kg bw/day	0.01
(dedicated filling line, including	Systemic		
weighing)	Mankon complete and law or t	<del> </del>	0.04
PROC9 - Transfer of substance or	Worker - combined, long-term		0.01
preparation into small containers	- systemic		
(dedicated filling line, including			
weighing)			
PROC15 - Use as laboratory reagent	Worker - inhalative, long-term	0.013 mg/m <sup>3</sup>	<0.01
	- systemic		
PROC15 - Use as laboratory reagent	Worker - dermal, long-term -	0.104 mg/kg bw/day	< 0.01

	systemic	
PROC15 - Use as laboratory reagent	Worker - combined, long-term	0.01
	- systemic	

## Section 4 - Guidance to check compliance with the exposure scenario

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

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## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd

Aquarius House 6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

### Section 1 - Title

Title Manufacture of fabricated metal products, except machinery and equipment

**Type** Worker

Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites

Environmental release category(ies) ERC4 - Industrial use of processing aids in processes and products, not becoming part of

articles

PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non dedicated facilities

PROC24 - High (mechanical) energy work-up of substances bound in materials and/or

articles

PROC28 - Manual maintenance (cleaning and repair) of machinery

Product category(ies) PC0 - Other Products

Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

SU15 - Manufacture of fabricated metal products, except machinery and equipment

## Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

#### **Amounts used**

Туре	Daily amount per site
Value	<= 1500
Units	kg/d

Туре	Annual amount per site
Value	<= 500
Units	t(ons)/year

Conditions and measures related to municipal sewage treatment plant

renatione and measures related to maintipal sewage treatment plant		
Туре	Municipal STP	
Assumed domestic sewage treatment	>= 2000 m3/day	
plant flow		

Environmental factors not influenced by risk management

	, by new management
Receiving water dilution (fresh or	>= 18000 m3/day
marine)	

Conditions and measures related to external treatment of waste for disposal

Disposal	Dispose of waste product or used containers according to local regulations	
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#### Control of worker exposure

# ES00372 - Borates - Use at industrial sites; Other (PC 0); Manufacture of fabricated metal products, except machinery and equipment (SU 15)

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to	
	vessels/large containers at non dedicated facilities	
Covers concentrations up to	5%	
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour	
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).	
Technical conditions and measures to	Mechanical ventilation giving at least 1 ACH	
control dispersion from source towards		
the worker		
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection	
personal protection, hygiene and		
health evaluation		
Organisational measures to prevent	Clean equipment and the work area every day	
/limit releases, dispersion and		
exposure		
Indoor/Outdoor use	Covers indoor and outdoor use	
-	T	
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure	
Covers concentrations up to	5%	
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours	
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).	
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once	
control dispersion from source towards	a month (containment is not breached)	
the worker	Automate activity where possible	
	Mechanical ventilation giving at least 1 ACH	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection	
personal protection, hygiene and		
health evaluation		
Organisational measures to prevent	Clean equipment and the work area every day	
/limit releases, dispersion and		
exposure		
Indoor/Outdoor use	Covers indoor and outdoor use	
	Covers indoor and outdoor use 40 C	
Indoor/Outdoor use Assumes process temperature up to	40 C	
Indoor/Outdoor use	40 C  PROC24 - High (mechanical) energy work-up of substances bound in materials and/or	
Indoor/Outdoor use Assumes process temperature up to	40 C  PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles	
Indoor/Outdoor use Assumes process temperature up to	40 C  PROC24 - High (mechanical) energy work-up of substances bound in materials and/or	
Indoor/Outdoor use Assumes process temperature up to Process category(ies)	PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles  5%  Avoid carrying out activities involving exposure for more than 4 hours	
Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Covers concentrations up to Exposure duration Use frequency	PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles 5% Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently).	
Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Covers concentrations up to Exposure duration Use frequency Technical conditions and measures to	PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles 5% Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once	
Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Covers concentrations up to Exposure duration Use frequency Technical conditions and measures to	PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles 5% Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)	
Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Covers concentrations up to Exposure duration Use frequency Technical conditions and measures to	PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles 5% Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible	
Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Covers concentrations up to Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards	PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles 5% Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)	
Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Covers concentrations up to Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to	PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles 5% Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible	
Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Covers concentrations up to Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and	PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles 5% Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH	
Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Covers concentrations up to Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation	PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles 5% Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH	
Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Covers concentrations up to Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and	PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles 5% Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH	
Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Covers concentrations up to Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation	PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles  5%  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection	
Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Covers concentrations up to Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure	PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles 5% Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection	
Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Covers concentrations up to Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and	PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles 5% Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection	
Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Covers concentrations up to Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure	PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles  5%  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use	
Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Covers concentrations up to Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure	PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles 5% Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day	
Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Covers concentrations up to Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use	PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles  5%  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use  PROC28 - Manual maintenance (cleaning and repair) of machinery  5%	
Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Covers concentrations up to Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use	PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles  5%  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use  PROC28 - Manual maintenance (cleaning and repair) of machinery	
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Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Covers concentrations up to Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies) Covers concentrations up to Physical form of product Exposure duration	PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles 5% Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use  PROC28 - Manual maintenance (cleaning and repair) of machinery 5% Solid Avoid carrying out activities involving exposure for more than 1 hour	
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Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Covers concentrations up to Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards	PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles 5% Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  PROC28 - Manual maintenance (cleaning and repair) of machinery 5% Solid Avoid carrying out activities involving exposure for more than 1 hour Covers daily exposures up to 8 hours (unless stated differently). Mechanical ventilation giving at least 1 ACH	
Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Covers concentrations up to Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to	PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles 5% Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  PROC28 - Manual maintenance (cleaning and repair) of machinery 5% Solid Avoid carrying out activities involving exposure for more than 1 hour Covers daily exposures up to 8 hours (unless stated differently). Mechanical ventilation giving at least 1 ACH	

personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Wet cleaning of the workplace
/limit releases, dispersion and	Clean equipment and the work area every day
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use

## Section 3 - Exposure estimation

<u>Environmental release category(ies)</u> - <u>ERC4</u> - <u>Industrial use of processing aids in processes and products, not becoming part of articles</u>

## Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.801 mg/L	0.276
Marine water	0.08 mg/L	0.028
STP: Sewage Treatment Plant	7.497 mg/L	0.75
Soil	0.187 mg/kg dw	0.033

### **Derived No Effect Level (DNEL):**

Calculation method MEASE

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	0.001 mg/m³	< 0.01
	systemic	0.028 mg/kg bw/day	< 0.01
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - combined, long-term - systemic		< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.001 mg/m <sup>3</sup>	< 0.01
· ·	Worker - dermal, long-term - systemic	0.007 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		< 0.01
PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles	Worker - inhalative, long-term - systemic	0.253 mg/m <sup>3</sup>	0.174
, ,	Worker - dermal, long-term - systemic	0.273 mg/kg bw/day	< 0.01
PROC24 - High (mechanical) energy	Worker - combined, long-term		0.178

work-up of substances bound in	- systemic		
materials and/or articles			
PROC28 - Manual maintenance	Worker - inhalative, long-term	0.231 mg/m <sup>3</sup>	0.159
(cleaning and repair) of machinery	- systemic		
PROC28 - Manual maintenance	Worker - dermal, long-term -	0.499 mg/kg bw/day	< 0.01
(cleaning and repair) of machinery	systemic		
PROC28 - Manual maintenance	Worker - combined, long-term		0.167
(cleaning and repair) of machinery	- systemic		

## Section 4 - Guidance to check compliance with the exposure scenario

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

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# Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

**Chemical name** BORATES

Univar Solutions UK Ltd Supplier Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

## Section 1 - Title

**Title** Adhesives, sealants

**Type** 

Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites

Environmental release category(ies) ERC5 - Industrial use resulting in inclusion into or onto a matrix

**Specific Environmental Release** 

FEICA SPERC 5.1a.v3

Category

Process category(ies) PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC7 - Industrial spraying

PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at dedicated facilities

PROC10 - Roller application or brushing PROC11 - Non industrial spraying

PROC13 - Treatment of articles by dipping and pouring

PROC28 - Manual maintenance (cleaning and repair) of machinery

Product category(ies)

PC1 - Adhesives, sealants

Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

> SU6a - Manufacture of wood and wood products SU6b - Manufacture of pulp, paper and paper products SU16 - Manufacture of computer, electronic and optical products, electrical equipment SU17 - General manufacturing SU18 - Manufacture of furniture SU19 - Building

and construction work

# Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC5 - Industrial use resulting in inclusion into or onto a matrix Specific Environmental Release Category - FEICA SPERC 5.1a.v3

#### **Amounts used**

Туре	Daily amount per site
Value	<= 200
Units	kg/d

Туре	Annual amount per site
Value	<= 50
Units	t(ons)/year

Conditions and measures related to municipal sewage treatment plant

Conditions and incasures related to maintipal sewage treatment plant	
Type	Municipal STP
Assumed domestic sewage treatment	>= 2000 m3/day
plant flow	

#### **Further information**

Operational conditions	Indoor use

# Conditions and measures related to external treatment of waste for disposal

Disposal Dispose of waste product or used containers according to local regulations
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Control of worker exposure	
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 C
Process category(ies)	PROC2 - Use in closed continuous process with occasional controlled exposure

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
control dispersion from source towards	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible
	•
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	40 C

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	5%
Physical form of product	Paste
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
control dispersion from source towards the worker	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 C

Process categor	y(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure	е

Covers concentrations up to	5%
Physical form of product	Paste
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	40 C
Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to
	vessels/large containers at dedicated facilities
Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Indoor
Draces esterony(ice)	DDCCCh Transfer of substance or preparation (shouring discharging) from //s
Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to
Cayara cancantrationa un ta	vessels/large containers at dedicated facilities 5%
Covers concentrations up to	
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
l. '	a month (containment is not breached)
the worker	Automate activity where possible
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	Clean equipment and the work area every day
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure Indoor/Outdoor use	Outdoor
indoor/Outdoor use	Outdoor
Process category(ies)	
Process categorydes)	DDOCOb. Transfer of substance or proportion (shorping which against from the
1 100000 category (100)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to
	vessels/large containers at dedicated facilities
Covers concentrations up to	vessels/large containers at dedicated facilities 5%
Covers concentrations up to Physical form of product	vessels/large containers at dedicated facilities 5% Paste
Covers concentrations up to Physical form of product Exposure duration	vessels/large containers at dedicated facilities  5%  Paste  Avoid carrying out activities involving exposure for more than 4 hours
Covers concentrations up to Physical form of product Exposure duration Use frequency	vessels/large containers at dedicated facilities  5%  Paste  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to	vessels/large containers at dedicated facilities  5%  Paste  Avoid carrying out activities involving exposure for more than 4 hours

the worker	Automate activity where possible
Conditions and massives related to	Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and exposure	
Indoor/Outdoor use	Indoor
Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Covers concentrations up to	5%
Physical form of product	Paste
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and health evaluation	S50/57/59 - vveal suitable protective clothing, gloves and eyerface protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Outdoor
Process category(ies)	PROC13 - Treatment of articles by dipping and pouring
Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Use in semi-automated and predominantly enclosed filling lines Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and	Clean equipment and the work area every day
exposure Indoor/Outdoor use	Covers indoor and outdoor use
	40 C
Assumes process temperature up to	<del>1</del> U
Process category(ies)	PROC13 - Treatment of articles by dipping and pouring
Covers concentrations up to	5%
Physical form of product	Paste
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Use in semi-automated and predominantly enclosed filling lines
control dispersion from source towards the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	Wear suitable gloves tested to EN 374
health evaluation	See Section 8 for information on appropriate personal protective equipment
Organisational measures to prevent /limit releases, dispersion and	Clean equipment and the work area every day
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
	·

Assumes process temperature up to	40 C
Process category(ies)	PROC7 - Industrial spraying
Covers concentrations up to	5%
Physical form of product	Liquid
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Undertake operation under enclosed conditions
	Use in semi-automated and predominantly enclosed filling lines
the worker	Surface spraying of liquids
	Low application rate (0.03 - 0.3 l/minute)
	Ensure that spray direction is only horizontal or downward
	Surface spraying with no or low compressed air use
	General ventilation Efficiency of at least 3 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	Wear suitable gloves tested to EN 374
health evaluation	See Section 8 for information on appropriate personal protective equipment
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Demonstrable and effective housekeeping practices are in place
exposure	In de ce
Indoor/Outdoor use	Indoor
Process category(ies)	PROC11 - Non industrial spraying
Covers concentrations up to	5%
Physical form of product	Paste
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
•	Covers daily exposures up to 8 hours (unless stated differently).
Use frequency Technical conditions and measures to	Undertake operation under enclosed conditions
	Mechanical ventilation giving at least 3 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee
health evaluation	training
	Wear a respirator providing a minimum efficiency of 95%
	See Section 8 for information on appropriate personal protective equipment
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Process category/ies)	PROC10 - Roller application or brushing
Process category(ies) Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Undertake operation under enclosed conditions
	Use in semi-automated and predominantly enclosed filling lines
the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	See   1700   1700   Outland protection
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Process category/ies\	PROC10 - Roller application or brushing
Process category(ies)	5%
Covers concentrations up to	Paste
Physical form of product	
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).

Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent //mit releases, dispersion and exposure  Indoor/Outdoor use  Covers indoor and outdoor use  Process category(ies)  PROC28 - Manual maintenance (cleaning and repair) of machinery  Covers concentrations up to  Physical form of product  Exposure duration  Liquid  Exposure duration  Avoid carrying out activities involving exposure for more than 1 hour  Covers daily exposures up to 8 hours (unless stated differently).  Technical conditions and measures to prevant when the work area every day  Undertake operation under enclosed conditions  Use in semi-automated and predominantly enclosed filling lines
the worker
Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure  Indoor/Outdoor use  Covers indoor and outdoor use  Process category(ies)  PROC28 - Manual maintenance (cleaning and repair) of machinery  Covers concentrations up to  Physical form of product  Exposure duration  Avoid carrying out activities involving exposure for more than 1 hour  Use frequency  Covers and eye/face protection  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Safe/acc protection  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Safe/acc protection  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Safe/acc protectio
personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure  Indoor/Outdoor use  Covers indoor and outdoor use  Process category(ies)  PROC28 - Manual maintenance (cleaning and repair) of machinery  Covers concentrations up to  Physical form of product  Exposure duration  Avoid carrying out activities involving exposure for more than 1 hour  Use frequency  Covers daily exposures up to 8 hours (unless stated differently).  Technical conditions and measures to  Use in semi-automated and predominantly enclosed filling lines
health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Covers indoor and outdoor use  Process category(ies) PROC28 - Manual maintenance (cleaning and repair) of machinery Covers concentrations up to Physical form of product Exposure duration Use frequency Covers daily exposures up to 8 hours (unless stated differently). Technical conditions and measures to Use in semi-automated and predominantly enclosed filling lines
Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Covers indoor and outdoor use  Process category(ies) PROC28 - Manual maintenance (cleaning and repair) of machinery Covers concentrations up to 5% Physical form of product Liquid Exposure duration Avoid carrying out activities involving exposure for more than 1 hour Use frequency Covers daily exposures up to 8 hours (unless stated differently). Technical conditions and measures to Use in semi-automated and predominantly enclosed filling lines
/limit releases, dispersion and exposure Indoor/Outdoor use  Covers indoor and outdoor use  Process category(ies)  PROC28 - Manual maintenance (cleaning and repair) of machinery  Covers concentrations up to  Physical form of product  Exposure duration  Avoid carrying out activities involving exposure for more than 1 hour  Use frequency  Covers daily exposures up to 8 hours (unless stated differently).  Technical conditions and measures to  Use in semi-automated and predominantly enclosed filling lines
/limit releases, dispersion and exposure Indoor/Outdoor use  Covers indoor and outdoor use  Process category(ies)  PROC28 - Manual maintenance (cleaning and repair) of machinery  Covers concentrations up to  Physical form of product  Exposure duration  Avoid carrying out activities involving exposure for more than 1 hour  Use frequency  Covers daily exposures up to 8 hours (unless stated differently).  Technical conditions and measures to  Use in semi-automated and predominantly enclosed filling lines
Process category(ies) PROC28 - Manual maintenance (cleaning and repair) of machinery Covers concentrations up to S% Physical form of product Exposure duration Use frequency Covers daily exposures up to 8 hours (unless stated differently). Technical conditions and measures to Use in semi-automated and predominantly enclosed filling lines
Process category(ies) PROC28 - Manual maintenance (cleaning and repair) of machinery Covers concentrations up to 5% Physical form of product Exposure duration Avoid carrying out activities involving exposure for more than 1 hour Use frequency Covers daily exposures up to 8 hours (unless stated differently). Technical conditions and measures to Use in semi-automated and predominantly enclosed filling lines
Covers concentrations up to 5%  Physical form of product Liquid  Exposure duration Avoid carrying out activities involving exposure for more than 1 hour  Use frequency Covers daily exposures up to 8 hours (unless stated differently).  Technical conditions and measures to Use in semi-automated and predominantly enclosed filling lines
Covers concentrations up to 5%  Physical form of product Liquid  Exposure duration Avoid carrying out activities involving exposure for more than 1 hour  Use frequency Covers daily exposures up to 8 hours (unless stated differently).  Technical conditions and measures to Use in semi-automated and predominantly enclosed filling lines
Physical form of product Liquid  Exposure duration Avoid carrying out activities involving exposure for more than 1 hour  Use frequency Covers daily exposures up to 8 hours (unless stated differently).  Technical conditions and measures to Use in semi-automated and predominantly enclosed filling lines
Exposure duration  Avoid carrying out activities involving exposure for more than 1 hour  Use frequency  Covers daily exposures up to 8 hours (unless stated differently).  Technical conditions and measures to  Use in semi-automated and predominantly enclosed filling lines
Use frequency Covers daily exposures up to 8 hours (unless stated differently).  Technical conditions and measures to Use in semi-automated and predominantly enclosed filling lines
Use frequency Covers daily exposures up to 8 hours (unless stated differently).  Technical conditions and measures to Use in semi-automated and predominantly enclosed filling lines
Technical conditions and measures to Use in semi-automated and predominantly enclosed filling lines
control dispersion from source towards Mechanical ventilation giving at least 1 ACH
the worker
Conditions and measures related to S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and
health evaluation
Organisational measures to prevent
/limit releases, dispersion and
exposure
Indoor/Outdoor use Covers indoor and outdoor use
Process category(ies) PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to 5%
Physical form of product Paste
Exposure duration Avoid carrying out activities involving exposure for more than 1 hour
Use frequency Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to Use in semi-automated and predominantly enclosed filling lines
control dispersion from source towards Mechanical ventilation giving at least 1 ACH
the worker
Conditions and measures related to S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and
health evaluation
Organisational measures to prevent
/limit releases, dispersion and
exposure
Indoor/Outdoor use Covers indoor and outdoor use

# Section 3 - Exposure estimation

Environmental release category(ies) - ERC5 - Industrial use resulting in inclusion into or onto a matrix Specific Environmental Release Category - FEICA SPERC 5.1a.v3

# Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model
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Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.051 mg/L	0.018
Marine water	0.00508 mg/L	< 0.01
STP: Sewage Treatment Plant	0 mg/L	< 0.01

l=	la	l !
ICail	10 146 ma/ka dw	IO 036
Soll	IU. 146 IIIU/KU UW	10.076
<b>3</b> 0	10g,g	0.0_0

# Derived No Effect Level (DNEL):

	_		
Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC2 - Use in closed, continuous	Worker - inhalative, long-term	0.003 mg/m <sup>3</sup>	< 0.01
rocess with occasional controlled	- systemic		
exposure			
PROC2 - Use in closed, continuous		0.006 mg/kg bw/day	< 0.01
rocess with occasional controlled	systemic		
exposure			
PROC2 - Use in closed, continuous	Worker - combined, long-term		< 0.01
rocess with occasional controlled	- systemic		
exposure			
PROC2 - Use in closed, continuous	Worker - inhalative, long-term	0.002 mg/m <sup>3</sup>	< 0.01
rocess with occasional controlled	- systemic		
exposure			
PROC2 - Use in closed, continuous		0.006 mg/kg bw/day	< 0.01
rocess with occasional controlled	systemic		
exposure			
PROC2 - Use in closed, continuous	Worker - combined, long-term		< 0.01
rocess with occasional controlled	- systemic		
exposure			
PROC2 - Use in closed, continuous	Worker - inhalative, long-term	0.003 mg/m <sup>3</sup>	< 0.01
rocess with occasional controlled	- systemic		
exposure			
PROC2 - Use in closed, continuous		0.006 mg/kg bw/day	< 0.01
rocess with occasional controlled	systemic		
exposure			
PROC2 - Use in closed, continuous	Worker - combined, long-term		< 0.01
rocess with occasional controlled	- systemic		
exposure			
PROC2 - Use in closed, continuous	Worker - inhalative, long-term	0.002 mg/m <sup>3</sup>	< 0.01
process with occasional controlled	- systemic		
exposure			
PROC2 - Use in closed, continuous		0.006 mg/kg bw/day	< 0.01
rocess with occasional controlled	systemic		
exposure			
PROC2 - Use in closed, continuous	Worker - combined, long-term		< 0.01
process with occasional controlled	- systemic		
exposure	hw I	0.045	0.04
PROC8b - Transfer of substance or	Worker - inhalative, long-term	0.015 mg/m <sup>3</sup>	0.01
preparation (charging/discharging)	- systemic		
rom/to vessels/large containers at			
ledicated facilities	ha	0.000 // / /	1 0 04
PROC8b - Transfer of substance or		0.008 mg/kg bw/day	< 0.01
preparation (charging/discharging)	systemic		
rom/to vessels/large containers at			
ledicated facilities	<u> </u>		
PROC8b - Transfer of substance or	Worker - combined, long-term		0.01
preparation (charging/discharging)	- systemic		
rom/to vessels/large containers at			
ledicated facilities			
PROC8b - Transfer of substance or preparation (charging/discharging)	Worker - inhalative, long-term - systemic	0.013 mg/m <sup>3</sup>	< 0.01

dedicated facilities			
PROC8b - Transfer of substance or	Marker dermal long term	0.008 mg/kg bw/day	< 0.01
preparation (charging/discharging)	Worker - dermal, long-term - systemic	0.008 mg/kg bw/day	< 0.01
from/to vessels/large containers at	Systemic		
dedicated facilities			
PROC8b - Transfer of substance or	Worker - combined, long-term		< 0.01
preparation (charging/discharging)	- systemic		< 0.01
from/to vessels/large containers at	- systemic		
dedicated facilities			
PROC8b - Transfer of substance or	Worker - inhalative, long-term	0.015 mg/m3	0.01
		0.015 mg/m²	0.01
preparation (charging/discharging) from/to vessels/large containers at	- systemic		
dedicated facilities			
PROC8b - Transfer of substance or	Worker dermal lang term	0.000 mg/kg bw/dov	< 0.01
preparation (charging/discharging)	Worker - dermal, long-term - systemic	0.008 mg/kg bw/day	< 0.01
from/to vessels/large containers at	Systemic		
dedicated facilities			
PROC8b - Transfer of substance or	Worker combined long term		0.01
	Worker - combined, long-term		0.01
preparation (charging/discharging) from/to vessels/large containers at	- systemic		
dedicated facilities			
	Morkor inhalativa lang tage	0.012 mg/m³	10.01
PROC8b - Transfer of substance or	Worker - inhalative, long-term	0.013 mg/m²	< 0.01
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at dedicated facilities			
PROC8b - Transfer of substance or	Morkor dormal lang tarm	0.000 mg/kg bu/dov	. 0.01
		0.008 mg/kg bw/day	< 0.01
preparation (charging/discharging)	systemic		
from/to vessels/large containers at			
dedicated facilities	Marker combined long term		. 0.01
PROC8b - Transfer of substance or	Worker - combined, long-term		< 0.01
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at dedicated facilities			
PROC13 - Treatment of articles by	Morkor inhalativa lang tarm	0.107 m a/m3	0.088
dipping and pouring	Worker - inhalative, long-term - systemic	0.127 mg/m²	0.066
PROC13 - Treatment of articles by		0.177 mg/kg bw/day	< 0.01
	systemic	0.177 mg/kg bw/day	< 0.01
dipping and pouring PROC13 - Treatment of articles by	,		0.09
	Worker - combined, long-term		0.09
dipping and pouring PROC13 - Treatment of articles by	- systemic Worker - inhalative, long-term	0.107 m a/m3	0.000
1	_	0.127 mg/m <sup>3</sup>	0.088
dipping and pouring	- systemic	0.477 // //	. 0.04
PROC13 - Treatment of articles by	Worker - dermal, long-term -	U.177 mg/kg bw/day	< 0.01
dipping and pouring	systemic		0.00
PROC13 - Treatment of articles by	Worker - combined, long-term		0.09
dipping and pouring	- systemic	0.70 / 2	0.407
PROC7 - Industrial spraying	Worker - inhalative, long-term	0.72 mg/m <sup>3</sup>	0.497
DD007	- systemic	44.55 (1.1.7.1	0.400
PROC7 - Industrial spraying	. •	11.55 mg/kg bw/day	0.168
DD007 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	systemic		0.005
PROC7 - Industrial spraying	Worker - combined, long-term		0.665
	- systemic	1.047	0.700
PROC11 - Non industrial spraying	Worker - inhalative, long-term	1.047 mg/m <sup>3</sup>	0.722
	- systemic		
PROC11 - Non industrial spraying		4.468 mg/kg bw/day	0.065
	systemic		
PROC11 - Non industrial spraying	Worker - combined, long-term		0.787
	- systemic		
PROC10 - Roller application or	Worker - inhalative, long-term	0.253 mg/m <sup>3</sup>	0.174
brushing	- systemic		
PROC10 - Roller application or	Worker - dermal, long-term -	0.3 mg/kg bw/day	< 0.01

brushing	systemic		
PROC10 - Roller application or	Worker - combined, long-term		0.179
brushing	- systemic		
PROC10 - Roller application or	Worker - inhalative, long-term	0.253 mg/m <sup>3</sup>	0.174
brushing	- systemic		
PROC10 - Roller application or	Worker - dermal, long-term -	0.3 mg/kg bw/day	< 0.01
brushing	systemic		
PROC10 - Roller application or	Worker - combined, long-term		0.179
brushing	- systemic		
PROC28 - Manual maintenance	Worker - inhalative, long-term	0.002 mg/m <sup>3</sup>	< 0.01
(cleaning and repair) of machinery	- systemic		
PROC28 - Manual maintenance	Worker - dermal, long-term -	0.05 mg/kg bw/day	< 0.01
(cleaning and repair) of machinery	systemic		
PROC28 - Manual maintenance	Worker - combined, long-term		< 0.01
(cleaning and repair) of machinery	- systemic		
PROC28 - Manual maintenance	Worker - inhalative, long-term	0.002 mg/m <sup>3</sup>	< 0.01
(cleaning and repair) of machinery	- systemic		
PROC28 - Manual maintenance	Worker - dermal, long-term -	0.05 mg/kg bw/day	< 0.01
(cleaning and repair) of machinery	systemic		
PROC28 - Manual maintenance	Worker - combined, long-term		< 0.01
(cleaning and repair) of machinery	- systemic		

# Section 4 - Guidance to check compliance with the exposure scenario

EGHS / EN Page 46 / 345

# Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

## Section 1 - Title

Title Laboratory chemicals Scientific research and development

**Type** Worker

Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites

Environmental release category(ies) ERC4 - Industrial use of processing aids in processes and products, not becoming part of

articles ERC6b - Industrial use of reactive processing aids

Process category(ies) PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,

including weighing)

PROC15 - Use as laboratory reagent

PROC28 - Manual maintenance (cleaning and repair) of machinery

**Product category(ies)** PC21 - Laboratory chemicals

Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

SU24 - Scientific research and development

# Section 2 - Operational conditions and risk management measures

### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

- ERC6b - Industrial use of reactive processing aids

#### **Amounts used**

Туре	Daily amount per site
Value	<= 2500
Units	kg/d

Туре	Annual amount per site
Value	50
Units	t(ons)/year

Conditions and measures related to municipal sewage treatment plant

Containione and incubation related to	mamolpai cowago troatmont plant
Туре	Municipal STP
Assumed domestic sewage treatment	>= 2000 m3/day
plant flow	

Environmental factors not influenced by risk management

	a by non management
Receiving water dilution (fresh or	>= 18000 m3/day
marine)	

Conditions and measures related to external treatment of waste for disposal

Disposal	Dispose of waste product or used containers according to local regulations	
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#### Control of worker exposure

# ES00374 - Borates - Use at industrial sites; Laboratory Chemicals (PC 21); Scientific research and development (SU 24)

Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,
	including weighing)
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 15 minutes
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
and worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	good of the analysis protective destring, groves and of chase protection
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	40 C
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,
	including weighing)
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Wet cleaning of the workplace
/limit releases, dispersion and	Clean equipment and the work area every day
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC15 - Use as laboratory reagent
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency Technical conditions and measures to	Covers daily exposures up to 8 hours (unless stated differently).  Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
control dispersion from source towards	

## ES00374 - Borates - Use at industrial sites; Laboratory Chemicals (PC 21); Scientific research and development (SU 24)

the worker	
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and	Clean equipment and the work area every day
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
D	DDCCCC Manual resistances (also single and see six) of machiness

Process category(les)	PROC26 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Mechanical ventilation giving at least 3 ACH
control dispersion from source towards	
the worker	
	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
	Wear suitable gloves tested to EN 374
health evaluation	See Section 8 for information on appropriate personal protective equipment
Organisational measures to prevent	Wet cleaning of the workplace
/limit releases, dispersion and	Clean equipment and the work area every day
exposure	

# Section 3 - Exposure estimation

Environmental release category(ies) - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

- ERC6b - Industrial use of reactive processing aids

# Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

<u></u>		
Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.676 mg/L	0.233
Marine water	0.068 mg/L	0.023
STP: Sewage Treatment Plant	6.248 mg/L	0.625
Soil	0.185 mg/kg dw	0.033

#### **Derived No Effect Level (DNEL):**

Calculation method	MEASE		
Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative, long-term - systemic	0.032 mg/m <sup>3</sup>	0.022
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - dermal, long-term - systemic	0.052 mg/kg bw/day	< 0.01
PROC9 - Transfer of substance or preparation into small containers	Worker - combined, long-term - systemic		0.023

# ES00374 - Borates - Use at industrial sites; Laboratory Chemicals (PC 21); Scientific research and development (SU 24)

	1	1	
(dedicated filling line, including			
weighing)			
PROC2 - Use in closed, continuous	Worker - inhalative, long-term	0.013 mg/m <sup>3</sup>	< 0.01
process with occasional controlled	- systemic		
exposure	_		
PROC2 - Use in closed, continuous	Worker - dermal, long-term -	0.035 mg/kg bw/day	< 0.01
process with occasional controlled	systemic		
exposure			
PROC2 - Use in closed, continuous	Worker - combined, long-term		< 0.01
process with occasional controlled	- systemic		
exposure			
PROC9 - Transfer of substance or	Worker - inhalative, long-term	0.013 mg/m <sup>3</sup>	< 0.01
preparation into small containers	- systemic	[	' - ' - '
(dedicated filling line, including	*		
weighing)			
PROC9 - Transfer of substance or	Worker - dermal, long-term -	0.104 mg/kg bw/day	< 0.01
preparation into small containers	systemic		' - ' - '
(dedicated filling line, including			
weighing)			
PROC9 - Transfer of substance or	Worker - combined, long-term		0.01
preparation into small containers	- systemic		
(dedicated filling line, including	*		
weighing)			
PROC15 - Use as laboratory reagent	Worker - inhalative, long-term	0.013 mg/m <sup>3</sup>	< 0.01
The second secon	- systemic		' - ' - '
PROC15 - Use as laboratory reagent	Worker - dermal, long-term -	0.069 mg/kg bw/day	< 0.01
The second secon	systemic		' - ' - '
PROC15 - Use as laboratory reagent	Worker - combined, long-term		< 0.01
The second secon	- systemic		' - ' - '
PROC28 - Manual maintenance	Worker - inhalative, long-term	1.063 mg/m <sup>3</sup>	0.733
(cleaning and repair) of machinery	- systemic		
PROC28 - Manual maintenance		1.863 mg/kg bw/day	0.027
(cleaning and repair) of machinery	systemic	l see mg/ng smaay	
PROC28 - Manual maintenance	Worker - combined, long-term		0.76
(cleaning and repair) of machinery	- systemic		
(Sistering and ropan) or matrimory	1 5/5:5/1110		

# Section 4 - Guidance to check compliance with the exposure scenario

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# Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

# Section 1 - Title

Title Products such as pH-regulators, flocculants, precipitants, neutralisation agents Manufacture

of pulp, paper and paper products

**Type** Worker

Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites

Environmental release category(ies) ERC4 - Industrial use of processing aids in processes and products, not becoming part of

articles ERC6b - Industrial use of reactive processing aids

Process category(ies) PROC1 - Use in closed process, no likelihood of exposure

PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC3 - Use in closed batch process (synthesis or formulation)

PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non dedicated facilities

PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at dedicated facilities

PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,

including weighing)

PROC15 - Use as laboratory reagent

PROC28 - Manual maintenance (cleaning and repair) of machinery

**Product category(ies)**PC20 - Products such as pH-regulators, flocculants, precipitants, neutralization agents
Sector(s) of use
SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

SU6b - Manufacture of pulp, paper and paper products

# Section 2 - Operational conditions and risk management measures

# Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

- ERC6b - Industrial use of reactive processing aids

#### Amounts used

Alliounto acca	
Туре	Daily amount per site
Value	<= 1250
Units	kg/d

Туре	Annual amount per site
Value	<= 25
Units	t(ons)/year

Conditions and measures related to municipal sewage treatment plant

Туре	Municipal STP
Assumed domestic sewage treatment	>= 2000 m3/day
plant flow	

#### Environmental factors not influenced by risk management

	a by not management
Receiving water dilution (fresh or	>= 18000 m3/day

ES00375 - Borates - Use at industrial sites; Products such as ph-regulators, flocculants, precipitants, neutralization agents (PC 20); Manufacture of pulp, paper and paper products (SU 6b)

marine)	
Disposal	external treatment of waste for disposal  Dispose of waste product or used containers according to local regulations
Disposai	pispose of waste product of used containers according to local regulations
Control of worker exposure	
Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to
Covers concentrations up to	vessels/large containers at dedicated facilities
Covers concentrations up to Physical form of product	100% Solid, medium dustiness or Paste
Exposure duration	Avoid carrying out operation for more than 2 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and exposure	Demonstrable and effective housekeeping practices are in place
Indoor/Outdoor use	Outdoor
indoor/Oddaoor use	Outdool
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	>25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Use in closed process
control dispersion from source towards	
the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Circuit equipment and the work area every day
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
the worker	a month (containment is not breached) Automate activity where possible
lile worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	3, 3,-1
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 C

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	>25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	Ole an ambiguous at and the construction of the construction
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure Indoor/Outdoor use	Outdoor
Assumes process temperature up to	40 C
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to
Frocess category(les)	vessels/large containers at non dedicated facilities
Physical form of product	Solid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	
	Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions
	Use in semi-automated and predominantly enclosed filling lines
the worker	Local exhaust ventilation - efficiency of at least 90%
life worker	General ventilation Efficiency of at least 3 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	Wear suitable gloves tested to EN 374
health evaluation	See Section 8 for information on appropriate personal protective equipment
Chanisational measures to prevent	Clean equipment and the work area every day
Organisational measures to prevent //limit releases, dispersion and	Clean equipment and the work area every day  Demonstrable and effective housekeeping practices are in place
/limit releases, dispersion and exposure	Demonstrable and effective housekeeping practices are in place
/limit releases, dispersion and	
/limit releases, dispersion and exposure	Demonstrable and effective housekeeping practices are in place
/limit releases, dispersion and exposure	Demonstrable and effective housekeeping practices are in place  Indoor  PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,
/limit releases, dispersion and exposure Indoor/Outdoor use	Demonstrable and effective housekeeping practices are in place  Indoor  PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
/limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies)  Covers concentrations up to	Demonstrable and effective housekeeping practices are in place  Indoor  PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) > 25%
/limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies)	Demonstrable and effective housekeeping practices are in place  Indoor  PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) > 25%  Solid, medium dustiness
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/limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies)  Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards	Demonstrable and effective housekeeping practices are in place  Indoor  PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).
/limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies)  Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker	Indoor  PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) > 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Undertake operation under enclosed conditions Mechanical ventilation giving at least 1 ACH
/limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies)  Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to	Demonstrable and effective housekeeping practices are in place  Indoor  PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) > 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Undertake operation under enclosed conditions
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/limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies)  Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent	Indoor  PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) > 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Undertake operation under enclosed conditions Mechanical ventilation giving at least 1 ACH
/limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies)  Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and	Indoor  PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)  > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
/limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies)  Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure	Indoor  PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) > 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Undertake operation under enclosed conditions Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day
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/limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies)  Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies) Covers concentrations up to	Demonstrable and effective housekeeping practices are in place  Indoor  PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) > 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Undertake operation under enclosed conditions Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use  PROC3 - Use in closed batch process (synthesis or formulation) > 25%
/limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies)  Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies) Covers concentrations up to Physical form of product	Demonstrable and effective housekeeping practices are in place  Indoor  PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) > 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Undertake operation under enclosed conditions Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use  PROC3 - Use in closed batch process (synthesis or formulation) > 25% Solid, medium dustiness
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/limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies)  Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to	Demonstrable and effective housekeeping practices are in place  Indoor  PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) > 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Undertake operation under enclosed conditions Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use  PROC3 - Use in closed batch process (synthesis or formulation) > 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours

the worker	Automate activity where possible
the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	good of 700 Troat datable protestive distring, gioves and dyorade protestion
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	40 C
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,
Covers concentrations up to	including weighing) > 25%
Covers concentrations up to Physical form of product	Solid, medium dustiness
	,
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker Conditions and measures related to	C26/27/20 Wear quitable protective elething eleves and such as a restaction
	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and health evaluation	
	Clean aguinment and the work area every day
Organisational measures to prevent /limit releases, dispersion and	Clean equipment and the work area every day Wet cleaning of the workplace
exposure	ever cleaning of the workplace
Indoor/Outdoor use	Covers indoor and outdoor use
indoor/Odddoor dse	Covers indoor and outdoor use
Process category(ies)	PROC15 - Use as laboratory reagent
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	good of 700 vivous outstand protoctive distring, gloves and cycliade protoction
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	South equipment and the man area of early and
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Use in semi-automated and predominantly enclosed filling lines
	Mechanical ventilation giving at least 1 ACH
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	Wear suitable gloves tested to EN 374
health evaluation	See Section 8 for information on appropriate personal protective equipment
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
exposure	

ES00375 - Borates - Use at industrial sites; Products such as ph-regulators, flocculants, precipitants, neutralization agents (PC 20); Manufacture of pulp, paper and paper products (SU 6b)

Indoor/Outdoor use	Covers indoor and outdoor use
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# Section 3 - Exposure estimation

Environmental release category(ies) - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

- ERC6b - Industrial use of reactive processing aids

# Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

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Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.676 mg/L	0.233
Marine water	0.068 mg/L	0.023
STP: Sewage Treatment Plant	6.248 mg/L	0.625
Soil	0.185 mg/kg dw	0.032

## **Derived No Effect Level (DNEL):**

**Calculation method**Used ART model MEASE

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	0.43 mg/m <sup>3</sup>	0.297
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - dermal, long-term - systemic	2.457 mg/kg bw/day	0.036
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - combined, long-term - systemic		0.332
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic	0.001 mg/m <sup>3</sup>	< 0.01
PROC1 - Use in closed process, no likelihood of exposure	Worker - dermal, long-term - systemic	0.003 mg/kg bw/day	< 0.01
PROC1 - Use in closed process, no likelihood of exposure	Worker - combined, long-term - systemic		< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.013 mg/m <sup>3</sup>	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.035 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.011 mg/m <sup>3</sup>	< 0.01

PROC2 - Use in closed, continuous	Worker - dermal, long-term -	0.035 mg/kg bw/day	< 0.01
process with occasional controlled	systemic		
exposure			
PROC2 - Use in closed, continuous	Worker - combined, long-term		< 0.01
process with occasional controlled	- systemic		1
exposure	-,		
PROC8a - Transfer of substance or	Worker - inhalative, long-term	0.67 mg/m <sup>3</sup>	0.462
		0.67 mg/m²	0.402
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC8a - Transfer of substance or		20.38 mg/kg bw/day	0.297
preparation (charging/discharging)	systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC8a - Transfer of substance or	Worker - combined, long-term		0.759
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC9 - Transfer of substance or	Markey inhelative languterns	0.240	0.040
	Worker - inhalative, long-term	0.316 mg/m <sup>3</sup>	0.218
preparation into small containers	- systemic		
(dedicated filling line, including			
weighing)			
PROC9 - Transfer of substance or	Worker - dermal, long-term -	0.518 mg/kg bw/day	< 0.01
preparation into small containers	systemic		
(dedicated filling line, including			
weighing)			
PROC9 - Transfer of substance or	Worker - combined, long-term		0.225
preparation into small containers	- systemic		0.220
(dedicated filling line, including	- systemic		
weighing)	NA 1 . 1 . 1	0.407	0.000
	Worker - inhalative, long-term	0.127 mg/m <sup>3</sup>	0.088
(synthesis or formulation)	- systemic		
		0.035 mg/kg bw/day	< 0.01
(synthesis or formulation)	systemic		
PROC3 - Use in closed batch process	Worker - combined, long-term		0.088
(synthesis or formulation)	- systemic		
PROC9 - Transfer of substance or	Worker - inhalative, long-term	0.013 mg/m <sup>3</sup>	< 0.01
preparation into small containers	- systemic	[	1 0.0 .
(dedicated filling line, including	Josephilo		
weighing)			
	\\\\-\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	0.404 //  /-	0.04
PROC9 - Transfer of substance or	Worker - dermal, long-term -	0.104 mg/kg bw/day	< 0.01
preparation into small containers	systemic		
(dedicated filling line, including			
weighing)			
PROC9 - Transfer of substance or	Worker - combined, long-term		0.01
preparation into small containers	- systemic		
(dedicated filling line, including			
weighing)			
PROC15 - Use as laboratory reagent	Worker - inhalative, long-term	0.013 mg/m <sup>3</sup>	< 0.01
i 10010 Osc as laboratory reagent	- systemic	0.010 mg/m	0.01
DDOC15 Lles es laborators reagant		0.000 mg/kg bu/dov	- 0.01
PROC15 - Use as laboratory reagent		0.069 mg/kg bw/day	< 0.01
DD0045_H	systemic		
PROC15 - Use as laboratory reagent	Worker - combined, long-term		< 0.01
	- systemic		
PROC28 - Manual maintenance	Worker - inhalative, long-term	1.063 mg/m <sup>3</sup>	0.733
(cleaning and repair) of machinery	- systemic		
PROC28 - Manual maintenance	Worker - dermal, long-term -	1.863 mg/kg bw/day	0.027
(cleaning and repair) of machinery	systemic		-
PROC28 - Manual maintenance	Worker - combined, long-term		0.76
ı 110020 - Ivianuai Illallilenaile	INVOINCE - COMBINED, IONG-LEMM		U.1 U

ES00375 - Borates - Use at industrial sites; Products such as ph-regulators, flocculants, precipitants, neutralization agents (PC 20); Manufacture of pulp, paper and paper products (SU 6b)

Revision date 09-Feb-2025

(cleaning and repair) of machinery	- systemic	

# Section 4 - Guidance to check compliance with the exposure scenario

EGHS / EN Page 57/345

# Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

# Section 1 - Title

Title Polymer preparations and compounds Manufacture of bulk, large scale chemicals (including

petroleum products)

**Type** Worker

Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites

Environmental release category(ies) ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)

Process category(ies) PROC1 - Use in closed process, no likelihood of exposure

PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non dedicated facilities

PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at dedicated facilities

PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,

including weighing)

**Product category(ies)** PC32 - Polymer preparations and compounds

Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU8

- Manufacture of bulk, large scale chemicals (including petroleum products)

# Section 2 - Operational conditions and risk management measures

## Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)

#### **Amounts used**

Туре	Daily amount per site
Value	<= 250
Units	kg/d

Туре	Annual amount per site
Value	<= 5
Units	t(ons)/year

Conditions and measures related to municipal sewage treatment plant

Туре	Municipal STP
Assumed domestic sewage treatment	>= 2000 m3/day
plant flow	·

#### Environmental factors not influenced by risk management

	a y control y control
Receiving water dilution (fresh or	>= 18000 m3/day
marine)	

#### Conditions and measures related to external treatment of waste for disposal

Disposal Dispose of waste product or used containers according to local regulations	Disposal	Dispose of waste product or used containers according to local regulations
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Physical form of product Exposure duration

Control of worker exposure	
Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to
	vessels/large containers at dedicated facilities
Covers concentrations up to	100%
Physical form of product	Solid, medium dustiness or Paste
Exposure duration	Avoid carrying out operation for more than 2 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
	Automate activity where possible
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	g, g,
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Demonstrable and effective housekeeping practices are in place
exposure	
Indoor/Outdoor use	Outdoor
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Use in closed process
control dispersion from source towards	
the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
	Automate activity where possible
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
	Indoor
Assumes process temperature up to	40 C
Process category/ica)	DDOC2. Use in closed, continuous process with accessional controlled exposure
<u> </u>	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	> 25%
Physical form of product Exposure duration	Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours
II AUUSUIE UUIAIIUII	rayona carryina dan acrivines involvina exposite for more iffall 4 flours

Avoid carrying out activities involving exposure for more than 4 hours

# ES00376 - Borates - Use at industrial sites; Polymer Preparations and Compounds (PC 32); Manufacture of bulk, large scale chemicals (including petroleum products) (SU 8)

li i e	
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	40 C
resumes process temperature up to	HU 0
Process seterary/iss)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to
Process category(ies)	vessels/large containers at non dedicated facilities
Division I famous of a national	Ÿ
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Undertake operation under enclosed conditions
control dispersion from source towards	Use in semi-automated and predominantly enclosed filling lines
the worker	Local exhaust ventilation - efficiency of at least 90%
	General ventilation 3 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	Wear suitable gloves tested to EN 374
health evaluation	See Section 8 for information on appropriate personal protective equipment
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Demonstrable and effective housekeeping practices are in place
exposure	Demonstrable and effective flousekeeping practices are in place
Indoor/Outdoor use	Indoor
indoor/Oddaoor use	IIIuuu
D ( )	Ţ
	IDDOCO Transfer of authorizations are proportion into appell containers (dedicated filling line   1
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,
	including weighing)
Covers concentrations up to	including weighing) > 25%
Covers concentrations up to Physical form of product	including weighing) > 25% Solid, medium dustiness
Covers concentrations up to	including weighing) > 25%
Covers concentrations up to Physical form of product	including weighing) > 25% Solid, medium dustiness
Covers concentrations up to Physical form of product Exposure duration Use frequency	including weighing) > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to	including weighing) > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to	including weighing) > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker	including weighing) > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Mechanical ventilation giving at least 1 ACH
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to	including weighing) > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and	including weighing) > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Mechanical ventilation giving at least 1 ACH
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation	including weighing) > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent	including weighing) > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Mechanical ventilation giving at least 1 ACH
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and	including weighing) > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure	including weighing) > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and	including weighing) > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use	including weighing) > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies)	including weighing) > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use  PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies) Covers concentrations up to	including weighing) > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use  PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises 100%
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies) Covers concentrations up to Physical form of product	including weighing) > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use  PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises 100%  Solid, medium dustiness
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies) Covers concentrations up to Physical form of product Use frequency	including weighing) > 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Undertake operation under enclosed conditions Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use  PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises 100%  Solid, medium dustiness Covers daily exposures up to 8 hours (unless stated differently).
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Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies) Covers concentrations up to Physical form of product Use frequency Technical conditions and measures to	including weighing) > 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Undertake operation under enclosed conditions Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use  PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises 100%  Solid, medium dustiness Covers daily exposures up to 8 hours (unless stated differently).
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies) Covers concentrations up to Physical form of product Use frequency Technical conditions and measures to	including weighing) > 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Undertake operation under enclosed conditions Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use  PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises 100% Solid, medium dustiness Covers daily exposures up to 8 hours (unless stated differently). Automate activity where possible
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies) Covers concentrations up to Physical form of product Use frequency Technical conditions and measures to control dispersion from source towards the worker	including weighing) > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use  PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises 100%  Solid, medium dustiness  Covers daily exposures up to 8 hours (unless stated differently).  Automate activity where possible  Local exhaust ventilation - efficiency of at least 90%  General ventilation 3 ACH
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies) Covers concentrations up to Physical form of product Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to	including weighing) > 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Undertake operation under enclosed conditions Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use  PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises 100%  Solid, medium dustiness Covers daily exposures up to 8 hours (unless stated differently).  Automate activity where possible Local exhaust ventilation - efficiency of at least 90%
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies) Covers concentrations up to Physical form of product Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and	including weighing) > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use  PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises 100%  Solid, medium dustiness  Covers daily exposures up to 8 hours (unless stated differently).  Automate activity where possible  Local exhaust ventilation - efficiency of at least 90%  General ventilation 3 ACH
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies) Covers concentrations up to Physical form of product Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to	including weighing) > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use  PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises 100%  Solid, medium dustiness  Covers daily exposures up to 8 hours (unless stated differently).  Automate activity where possible  Local exhaust ventilation - efficiency of at least 90%  General ventilation 3 ACH

/limit releases, dispersion and	Demonstrable and effective housekeeping practices are in place
exposure	
Indoor/Outdoor use	Indoor
Assumes process temperature up to	100 C

# Section 3 - Exposure estimation

<u>Environmental release category(ies)</u> - ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)

# Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.301 mg/L	0.104
Marine water	0.03 mg/L	0.01
STP: Sewage Treatment Plant	2.499 mg/L	0.25
Soil	0.158 mg/kg dw	0.028

# **Derived No Effect Level (DNEL):**

Calculation method Used ART model MEASE

	WILAGE		
Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	0.43 mg/m <sup>3</sup>	0.297
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - dermal, long-term - systemic	2.457 mg/kg bw/day	0.036
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - combined, long-term - systemic		0.332
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic	0.001 mg/m <sup>3</sup>	< 0.01
PROC1 - Use in closed process, no likelihood of exposure	Worker - dermal, long-term - systemic	0.003 mg/kg bw/day	< 0.01
PROC1 - Use in closed process, no likelihood of exposure	Worker - combined, long-term - systemic		< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.013 mg/m <sup>3</sup>	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.035 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		< 0.01
PROC2 - Use in closed, continuous	Worker - inhalative, long-term	0.011 mg/m <sup>3</sup>	< 0.01

# ES00376 - Borates - Use at industrial sites; Polymer Preparations and Compounds (PC 32); Manufacture of bulk, large scale chemicals (including petroleum products) (SU 8)

# Section 4 - Guidance to check compliance with the exposure scenario

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# Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

# Section 1 - Title

Title Polymer preparations and compounds General manufacturing

**Type** Worker

Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites

Environmental release category(ies) ERC6b - Industrial use of reactive processing aids

Process category(ies) PROC1 - Use in closed process, no likelihood of exposure

PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non dedicated facilities

PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at dedicated facilities

PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,

including weighing)

Product category(ies) PC32 - Polymer preparations and compounds

Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

SU17 - General manufacturing

# Section 2 - Operational conditions and risk management measures

# Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC6b - Industrial use of reactive processing aids

#### Amounts used

/ IIII G G G G G G	
Туре	Daily amount per site
Value	<= 250
Units	kg/d

Туре	Annual amount per site
Value	<= 5
Units	t(ons)/year

Conditions and measures related to municipal sewage treatment plant

Туре	Municipal STP
Assumed domestic sewage treatment	>= 2000 m3/day
plant flow	

#### Environmental factors not influenced by risk management

Environmental factors not initiations by not management		
Receiving water dilution (fresh or	>= 18000 m3/day	
marine)		

#### Conditions and measures related to external treatment of waste for disposal

Disposal	Dispose of waste product or used containers according to local regulations

Control of worker exposure	
Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to
1 Toccss category(les)	vessels/large containers at dedicated facilities
Covers concentrations up to	100%
Covers concentrations up to	Solid, medium dustiness or Paste
Physical form of product	, ,
Exposure duration	Avoid carrying out operation for more than 2 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Demonstrable and effective housekeeping practices are in place
exposure	
Indoor/Outdoor use	Outdoor
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Use in closed process
control dispersion from source towards	
the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
	<del>_</del>
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
the worker	
ine worker	a month (containment is not breached)
	a month (containment is not breached) Automate activity where possible
Conditions and measures related to	a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	a month (containment is not breached) Automate activity where possible
personal protection, hygiene and	a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH
personal protection, hygiene and health evaluation	sa month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and health evaluation Organisational measures to prevent	a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH
personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and	sa month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure	sa month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day
personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use	Sa month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor
personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure	sa month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day
personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to	a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor 40 C
personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies)	a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor 40 C  PROC2 - Use in closed, continuous process with occasional controlled exposure
personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to	a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor 40 C  PROC2 - Use in closed, continuous process with occasional controlled exposure > 25%
personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Physical form of product	a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor 40 C  PROC2 - Use in closed, continuous process with occasional controlled exposure > 25% Solid, medium dustiness
personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Physical form of product Exposure duration	a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor 40 C  PROC2 - Use in closed, continuous process with occasional controlled exposure > 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours
personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Physical form of product	a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor 40 C  PROC2 - Use in closed, continuous process with occasional controlled exposure > 25% Solid, medium dustiness

	a month (containment is not breached)
the worker	Automate activity where possible
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	40 C
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to
i react salegely (los)	vessels/large containers at non dedicated facilities
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Undertake operation under enclosed conditions
	Use in semi-automated and predominantly enclosed filling lines
the worker	Local exhaust ventilation - efficiency of at least 90%
	General ventilation Efficiency of at least 3 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	Wear suitable gloves tested to EN 374
health evaluation	See Section 8 for information on appropriate personal protective equipment
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Demonstrable and effective housekeeping practices are in place
exposure	
Indoor/Outdoor use	Indoor
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,
	including weighing)
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Undertake operation under enclosed conditions
	Mechanical ventilation giving at least 1 ACH
the worker	inostration groung at react 17.671
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	Society of the second s
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
	Clean equipment and the work area every day
/limit releases, dispersion and exposure	
	Cayana indoor and a stdoor see
Indoor/Outdoor use	Covers indoor and outdoor use
<b>5</b>	
Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Covers concentrations up to	100%
Physical form of product	Solid, medium dustiness
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Automate activity where possible
	Handling of very large amounts of product
the worker	Local exhaust ventilation - efficiency of at least 90%
	General ventilation 3 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	3, g
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Demonstrable and effective housekeeping practices are in place
and	

exposure	
Assumes process temperature up to	100 C

# Section 3 - Exposure estimation

Environmental release category(ies) - ERC6b - Industrial use of reactive processing aids

# Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.676 mg/l	0.233
Marine water	0.068 mg/l	0.023
STP: Sewage Treatment Plant	6.248 mg/l	0.625
Soil	0.179 mg/kg dw	0.031

#### **Derived No Effect Level (DNEL):**

Calculation method Used ART model MEASE

	WEASE		
Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	0.43 mg/m <sup>3</sup>	0.297
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - dermal, long-term - systemic	2.457 mg/kg bw/day	0.036
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - combined, long-term - systemic		0.332
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic	0.001 mg/m <sup>3</sup>	< 0.01
PROC1 - Use in closed process, no likelihood of exposure	Worker - dermal, long-term - systemic	0.003 mg/kg bw/day	< 0.01
PROC1 - Use in closed process, no likelihood of exposure	Worker - combined, long-term - systemic		< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.013 mg/m <sup>3</sup>	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.035 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.011 mg/m³	< 0.01
PROC2 - Use in closed, continuous	Worker - dermal, long-term -	0.035 mg/kg bw/day	< 0.01

	Τ	T	
r.	systemic		
exposure			
,	Worker - combined, long-term		< 0.01
process with occasional controlled	- systemic		
exposure			
	Worker - inhalative, long-term	0.67 mg/m <sup>3</sup>	0.462
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC8a - Transfer of substance or	Worker - dermal, long-term -	20.38 mg/kg bw/day	0.297
	systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC8a - Transfer of substance or	Worker - combined, long-term		0.759
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC9 - Transfer of substance or	Worker - inhalative, long-term	0.316 mg/m <sup>3</sup>	0.218
preparation into small containers	- systemic		
(dedicated filling line, including			
weighing)			
PROC9 - Transfer of substance or	Worker - dermal, long-term -	0.252 mg/kg bw/day	< 0.01
preparation into small containers	systemic		
(dedicated filling line, including			
weighing)			
PROC9 - Transfer of substance or	Worker - combined, long-term		0.222
preparation into small containers	- systemic		
(dedicated filling line, including			
weighing)			
PROC4 - Use in batch and other	Worker - inhalative, long-term	0.48 mg/m <sup>3</sup>	0.331
process (synthesis) where opportunity	- systemic		
for exposure arises			
		4.435 mg/kg bw/day	0.065
process (synthesis) where opportunity	systemic		
for exposure arises			
PROC4 - Use in batch and other	Worker - combined, long-term		0.396
process (synthesis) where opportunity	- systemic		
for exposure arises			

# Section 4 - Guidance to check compliance with the exposure scenario

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# Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

## Section 1 - Title

Title Building and construction work

**Type** Worker

Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites

Environmental release category(ies) ERC5 - Industrial use resulting in inclusion into or onto a matrix

PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC11 - Non industrial spraying

PROC28 - Manual maintenance (cleaning and repair) of machinery

**Product category(ies)** PC0 - Other Products

Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

SU19 - Building and construction work

# Section 2 - Operational conditions and risk management measures

## Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC5 - Industrial use resulting in inclusion into or onto a matrix

#### Amounts used

7 tillo allico acca		
Туре	Daily amount per site	
Value	<= 1000	
Units	kg/d	

Туре	Annual amount per site
Value	<= 20
Units	t(ons)/year

Conditions and measures related to municipal sewage treatment plant

Туре	Municipal STP
Assumed domestic sewage treatment	>= 2000 m3/day
plant flow	

**Environmental factors not influenced by risk management** 

Receiving water dilution (fresh or	>= 18000 m3/day
marine)	

Conditions and measures related to external treatment of waste for disposal

Disposal	Dispose of waste product or used containers according to local regulations
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Control of worker exposure	
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	5%
Physical form of product	Solid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours

# ES00378 - Borates - Use at industrial sites; Other (PC 0); Building and construction work (SU 19)

Loo fraguency	Covers deily expecures up to 9 hours (upless stated differently)
Use frequency Technical conditions and measures to	Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
	Automate activity where possible
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	336/37/39 - Wear suitable protective clothing, gloves and eye/race protection
health evaluation	
	Clean equipment and the work area every day
/limit releases, dispersion and	Clean equipment and the work area every day
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
	40 C
Assumes process temperature up to	HO C
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	5%
Physical form of product	Solid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency Technical conditions and measures to	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
control dispersion from source towards the worker	a month (containment is not breached) Automate activity where possible
Conditions and measures related to	Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
	556/57/59 - Wear Suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	Clean aguinment and the work area every day
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure Indoor/Outdoor use	Covers indeer and outdeer use
indoor/Outdoor use	Covers indoor and outdoor use
14	140.0
Assumes process temperature up to	40 C
Process category(ies)	PROC11 - Non industrial spraying
Process category(ies) Covers concentrations up to	PROC11 - Non industrial spraying 5%
Process category(ies) Covers concentrations up to Physical form of product	PROC11 - Non industrial spraying 5% Solid
Process category(ies) Covers concentrations up to Physical form of product Exposure duration	PROC11 - Non industrial spraying 5% Solid Avoid carrying out activities involving exposure for more than 4 hours
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency	PROC11 - Non industrial spraying 5% Solid Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently).
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to	PROC11 - Non industrial spraying 5% Solid Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Mechanical ventilation giving at least 1 ACH
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards	PROC11 - Non industrial spraying 5% Solid Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Mechanical ventilation giving at least 1 ACH
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker	PROC11 - Non industrial spraying 5% Solid Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Mechanical ventilation giving at least 1 ACH
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to	PROC11 - Non industrial spraying  5%  Solid  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and	PROC11 - Non industrial spraying  5%  Solid  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Wear a respirator providing a minimum efficiency of 95%
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to	PROC11 - Non industrial spraying  5%  Solid  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Wear a respirator providing a minimum efficiency of 95%  Wear suitable gloves tested to EN 374
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation	PROC11 - Non industrial spraying  5%  Solid  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Wear a respirator providing a minimum efficiency of 95%  Wear suitable gloves tested to EN 374  See Section 8 for information on appropriate personal protective equipment
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent	PROC11 - Non industrial spraying  5%  Solid  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Wear a respirator providing a minimum efficiency of 95%  Wear suitable gloves tested to EN 374
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and	PROC11 - Non industrial spraying  5%  Solid  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Wear a respirator providing a minimum efficiency of 95%  Wear suitable gloves tested to EN 374  See Section 8 for information on appropriate personal protective equipment
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent	PROC11 - Non industrial spraying  5%  Solid  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Wear a respirator providing a minimum efficiency of 95%  Wear suitable gloves tested to EN 374  See Section 8 for information on appropriate personal protective equipment  Clean equipment and the work area every day
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure	PROC11 - Non industrial spraying  5%  Solid  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Wear a respirator providing a minimum efficiency of 95%  Wear suitable gloves tested to EN 374  See Section 8 for information on appropriate personal protective equipment
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Process category(ies)	PROC11 - Non industrial spraying  5%  Solid  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Wear a respirator providing a minimum efficiency of 95%  Wear suitable gloves tested to EN 374  See Section 8 for information on appropriate personal protective equipment  Clean equipment and the work area every day
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use	PROC11 - Non industrial spraying  5%  Solid  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Wear a respirator providing a minimum efficiency of 95%  Wear suitable gloves tested to EN 374  See Section 8 for information on appropriate personal protective equipment  Clean equipment and the work area every day  Covers indoor and outdoor use  PROC28 - Manual maintenance (cleaning and repair) of machinery  5%
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Process category(ies)	PROC11 - Non industrial spraying  5%  Solid  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Wear a respirator providing a minimum efficiency of 95%  Wear suitable gloves tested to EN 374  See Section 8 for information on appropriate personal protective equipment  Clean equipment and the work area every day  PROC28 - Manual maintenance (cleaning and repair) of machinery
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies) Covers concentrations up to	PROC11 - Non industrial spraying  5%  Solid  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Wear a respirator providing a minimum efficiency of 95%  Wear suitable gloves tested to EN 374  See Section 8 for information on appropriate personal protective equipment  Clean equipment and the work area every day  Covers indoor and outdoor use  PROC28 - Manual maintenance (cleaning and repair) of machinery  5%
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies) Covers concentrations up to Physical form of product Exposure duration	PROC11 - Non industrial spraying  5%  Solid  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Wear a respirator providing a minimum efficiency of 95%  Wear suitable gloves tested to EN 374  See Section 8 for information on appropriate personal protective equipment  Clean equipment and the work area every day  Covers indoor and outdoor use  PROC28 - Manual maintenance (cleaning and repair) of machinery  5%  Solid  Avoid carrying out activities involving exposure for more than 1 hour
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Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards	PROC11 - Non industrial spraying  5%  Solid  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Wear a respirator providing a minimum efficiency of 95%  Wear suitable gloves tested to EN 374  See Section 8 for information on appropriate personal protective equipment  Clean equipment and the work area every day  Covers indoor and outdoor use  PROC28 - Manual maintenance (cleaning and repair) of machinery  5%  Solid  Avoid carrying out activities involving exposure for more than 1 hour  Covers daily exposures up to 8 hours (unless stated differently).
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Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker	PROC11 - Non industrial spraying 5% Solid Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection Wear a respirator providing a minimum efficiency of 95% Wear suitable gloves tested to EN 374 See Section 8 for information on appropriate personal protective equipment Clean equipment and the work area every day  Covers indoor and outdoor use  PROC28 - Manual maintenance (cleaning and repair) of machinery 5% Solid Avoid carrying out activities involving exposure for more than 1 hour Covers daily exposures up to 8 hours (unless stated differently). Use in semi-automated and predominantly enclosed filling lines Mechanical ventilation giving at least 1 ACH

1 -	Clean equipment and the work area every day Wet cleaning of the workplace
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use

# Section 3 - Exposure estimation

Environmental release category(ies) - ERC5 - Industrial use resulting in inclusion into or onto a matrix

# Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.051 mg/l	0.018
Marine water	0.00508 mg/l	< 0.01
STP: Sewage Treatment Plant	0 mg/l	< 0.01
Soil	0.146 mg/kg dw	0.026

# Derived No Effect Level (DNEL):

Calculation method	MEASE		
Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.025 mg/m <sup>3</sup>	0.017
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.007 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		0.017
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.025 mg/m <sup>3</sup>	0.017
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.007 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		0.017
PROC11 - Non industrial spraying	Worker - inhalative, long-term - systemic	1.04 mg/m <sup>3</sup>	0.717
PROC11 - Non industrial spraying	Worker - dermal, long-term - systemic	4.076 mg/kg bw/day	0.059
PROC11 - Non industrial spraying	Worker - combined, long-term - systemic		0.777
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - inhalative, long-term - systemic	1.063 mg/m <sup>3</sup>	0.733
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - dermal, long-term - systemic	0.499 mg/kg bw/day	< 0.01
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - combined, long-term - systemic		0.74

# Section 4 - Guidance to check compliance with the exposure scenario

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# Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

## Section 1 - Title

Title Products such as pH-regulators, flocculants, precipitants, neutralisation agents

**Type** Worker

Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites

Environmental release category(ies) ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)

Process category(ies) PROC0 - Other Process

PROC1 - Use in closed process, no likelihood of exposure

PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC3 - Use in closed batch process (synthesis or formulation)

PROC7 - Industrial spraying

PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at dedicated facilities

PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,

including weighing)

PROC13 - Treatment of articles by dipping and pouring

PROC15 - Use as laboratory reagent

PROC28 - Manual maintenance (cleaning and repair) of machinery

**Product category(ies)**PC20 - Products such as pH-regulators, flocculants, precipitants, neutralization agents
Sector(s) of use
SU0 - Other SU3 - Industrial uses: Uses of substances as such or in preparations at

industrial sites SU13 - Manufacture of other non-metallic mineral products

# Section 2 - Operational conditions and risk management measures

# Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)

#### **Amounts used**

Туре	Daily amount per site
Value	<= 1500
Units	kg/d

Туре	Annual amount per site
Value	<= 150
Units	t(ons)/year

Conditions and measures related to municipal sewage treatment plant

Туре	Municipal STP
Assumed domestic sewage treatment	>= 2000 m3/day
plant flow	

Environmental factors not influenced by risk management

Receiving water dilution (fresh or	>= 18000 m3/day
marine)	
•	

Disposal	Dispose of waste product or used containers according to local regulations	
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Control of worker exposure	
Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Covers concentrations up to	100%
Physical form of product	Solid, medium dustiness or Paste
Exposure duration	Avoid carrying out operation for more than 2 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and exposure	Demonstrable and effective housekeeping practices are in place
Indoor/Outdoor use	Outdoor
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	
control dispersion from source towards	Automated task
the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	100%
Physical form of product	Solid, high dustiness
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
control dispersion from source towards the worker	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Regular inspection and maintenance of equipment and machines Supervision in place to check that the RMMs in place are being used correctly and OCs followed
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 C

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
control dispersion from source towards	a month (containment is not breached)
the worker	Automate activity where possible
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection

# ES00379 - Borates - Use at industrial sites; Products such as ph-regulators, flocculants, precipitants, neutralization agents (PC 20); Various sectors (SU 0, SU 13)

personal protection, hygiene and health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	40 C
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	1000 C
Assumes process temperature up to	11000 C
Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Covers concentrations up to	> 25%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
and women	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	g, g,
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	40 C
Process category(ies)	PROC13 - Treatment of articles by dipping and pouring
Covers concentrations up to	> 25%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Undertake operation under enclosed conditions
	Use in semi-automated and predominantly enclosed filling lines
the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	Clean aguinment and the work area averaged
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	40 C

Process category(ies)	PROC7 - Industrial spraying
Covers concentrations up to	> 25%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	3, 3
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	, ,
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	> 25%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Use in closed process
control dispersion from source towards	Automated task
the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Dragge estagen/ice)	DDOC29 Manual maintanance (alegaing and renair) of machinery
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	> 25%
Physical form of product	Solid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Use in semi-automated and predominantly enclosed filling lines
	Mechanical ventilation giving at least 3 ACH
the worker  Conditions and measures related to	COC/OZ/OO Maga suitable mastestive elething aleves and evertoes an experience
	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and health evaluation	
	Clean equipment and the work area every day
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
indoon/Oddaoon use	Covers indoor and oddoor dise
Process category(ies)	PROC0 - Other Process
Covers concentrations up to	5%
Physical form of product	Solid, low dustiness
Exposure duration	Avoid carrying out operation for more than 15 minutes
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	
ILLIC WOLLIGI	
	S36/37/39 - Wear suitable protective clothing, gloves and eve/face protection
Conditions and measures related to personal protection, hygiene and	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection

health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Wet cleaning of the workplace
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent	Clean equipment and the work area every day
I	Wet cleaning of the workplace
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
- ·	
Process category(ies)	PROC15 - Use as laboratory reagent
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Covers indoor and outdoor use

## Section 3 - Exposure estimation

Environmental release category(ies) - ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)

## Predicted No Effect Concentration (PNEC)

Calculation method	Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.051 mg/l	0.018
Marine water	0.00508 mg/l	< 0.01
STP: Sewage Treatment Plant	0 mg/l	< 0.01
Soil	0.147 mg/kg dw	0.026

## **Derived No Effect Level (DNEL):**

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio
l Tocess category(les)	Exposure route	predicted exposure level	(RCR)
PROC8b - Transfer of substance or preparation (charging/discharging)	Worker - inhalative, long-term - systemic	0.43 mg/m <sup>3</sup>	0.297
from/to vessels/large containers at dedicated facilities	N/s de se de ses el les se tense	0.457	0.000
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at	Worker - dermal, long-term - systemic	2.457 mg/kg bw/day	0.036
dedicated facilities			
PROC8b - Transfer of substance or	Worker - combined, long-term		0.332
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at			
dedicated facilities			
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic		< 0.01
PROC1 - Use in closed process, no likelihood of exposure	systemic	0.003 mg/kg bw/day	< 0.01
PROC1 - Use in closed process, no	Worker - combined, long-term		< 0.01
PROC2 - Use in closed, continuous	- systemic Worker - inhalative, long-term	1 mg/m <sup>3</sup>	0.69
process with occasional controlled	- systemic		0.69
exposure	- systernic		
PROC2 - Use in closed, continuous	Worker - dermal, long-term -	1.37 mg/kg bw/day	0.02
process with occasional controlled	systemic	l	
exposure			
PROC2 - Use in closed, continuous	Worker - combined, long-term		0.71
process with occasional controlled	- systemic		
exposure			
PROC2 - Use in closed, continuous	Worker - inhalative, long-term	0.011 mg/m <sup>3</sup>	< 0.01
process with occasional controlled	- systemic		
exposure		0.005 # 1 / 1	1004
PROC2 - Use in closed, continuous		0.035 mg/kg bw/day	< 0.01
process with occasional controlled	systemic		
PROC2 - Use in closed, continuous	Worker - combined, long-term		< 0.01
process with occasional controlled	- systemic		0.01
exposure	- systemic		
PROC2 - Use in closed, continuous	Worker - inhalative, long-term	0.013 mg/m <sup>3</sup>	< 0.01
process with occasional controlled	- systemic	[	
exposure	*		
PROC2 - Use in closed, continuous	Worker - dermal, long-term -	0.035 mg/kg bw/day	< 0.01
process with occasional controlled	systemic		
exposure			
PROC2 - Use in closed, continuous	Worker - combined, long-term		< 0.01
process with occasional controlled	- systemic		
exposure	NA( )	0.040	1004
(synthesis or formulation)	Worker - inhalative, long-term - systemic		< 0.01
PROC3 - Use in closed batch process		0.035 mg/kg bw/day	< 0.01
(synthesis or formulation)	systemic		
	Worker - combined, long-term		< 0.01
(synthesis or formulation)	- systemic	0.407/3	0.000
PROC13 - Treatment of articles by	Worker - inhalative, long-term	U.1∠/ mg/m³ 	0.088
dipping and pouring PROC13 - Treatment of articles by	- systemic Worker - dermal, long-term -	0.887 mg/kg bw/day	0.013
i NOC13 - Healthent of afficies by	pvorker - dermai, iong-term -	p.oor mg/kg bw/day	0.013

ES00379 - Borates - Use at industrial sites; Products such as ph-regulators, flocculants, precipitants, neutralization agents (PC 20); Various sectors (SU 0, SU 13)

dinning and nauring	ovetemie		
dipping and pouring	systemic		0.404
PROC13 - Treatment of articles by	Worker - combined, long-term		0.101
dipping and pouring	- systemic		
PROC7 - Industrial spraying	Worker - inhalative, long-term - systemic	0.127 mg/m <sup>3</sup>	0.088
PROC7 - Industrial spraying	Worker - dermal, long-term - systemic	0.15 mg/kg bw/day	< 0.01
PROC7 - Industrial spraying	Worker - combined, long-term - systemic		0.09
PROC1 - Use in closed process, no	Worker - inhalative, long-term	0.001 mg/m <sup>3</sup>	< 0.01
likelihood of exposure	- systemic	l see i mg/m	0.01
PROC1 - Use in closed process, no	Worker - dermal, long-term -	0.003 mg/kg bw/day	< 0.01
likelihood of exposure	systemic	and a might grant and grant and grant gr	
PROC1 - Use in closed process, no	Worker - combined, long-term		< 0.01
likelihood of exposure	- systemic		
PROC28 - Manual maintenance	Worker - inhalative, long-term	1.063 mg/m <sup>3</sup>	0.733
(cleaning and repair) of machinery	- systemic	""	
PROC28 - Manual maintenance		2.493 mg/kg bw/day	0.036
(cleaning and repair) of machinery	systemic		
PROC28 - Manual maintenance	Worker - combined, long-term		0.769
(cleaning and repair) of machinery	- systemic		
PROC0 - Other Process	Worker - inhalative, long-term	0.116 mg/m <sup>3</sup>	0.08
	- systemic		
PROC0 - Other Process	Worker - dermal, long-term - systemic	0.186 mg/kg bw/day	< 0.01
PROC0 - Other Process	Worker - combined, long-term - systemic		0.083
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative, long-term - systemic	0.013 mg/m <sup>3</sup>	< 0.01
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - dermal, long-term - systemic	0.104 mg/kg bw/day	< 0.01
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - combined, long-term - systemic		0.01
PROC15 - Use as laboratory reagent	Worker - inhalative, long-term - systemic	0.013 mg/m <sup>3</sup>	< 0.01
PROC15 - Use as laboratory reagent	Worker - dermal, long-term - systemic	0.069 mg/kg bw/day	< 0.01
PROC15 - Use as laboratory reagent	Worker - combined, long-term - systemic		< 0.01

## Section 4 - Guidance to check compliance with the exposure scenario

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

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## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

## Section 1 - Title

Title Laboratory chemicals Manufacture of bulk, large scale chemicals (including petroleum

products)

**Type** Worker

Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites

Environmental release category(ies) ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)

Process category(ies) PROC1 - Use in closed process, no likelihood of exposure

PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non dedicated facilities

PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at dedicated facilities

PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,

including weighing)

PROC15 - Use as laboratory reagent

PROC28 - Manual maintenance (cleaning and repair) of machinery

**Product category(ies)** PC21 - Laboratory chemicals

Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU8

- Manufacture of bulk, large scale chemicals (including petroleum products)

## Section 2 - Operational conditions and risk management measures

## Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)

#### **Amounts used**

Туре	Daily amount per site
Value	<= 250
Units	kg/d

Туре	Annual amount per site
Value	<= 25
Units	t(ons)/year

Conditions and measures related to municipal sewage treatment plant

Туре	Municipal STP
Assumed domestic sewage treatment	>= 2000 m3/day
plant flow	

Environmental factors not influenced by risk management

Receiving water dilution (fresh or	>= 18000 m3/day
marine)	

Disposal

Control of worker exposure	
Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Covers concentrations up to	100%
Physical form of product	Solid, medium dustiness or Paste
Exposure duration	Avoid carrying out operation for more than 2 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Demonstrable and effective housekeeping practices are in place
exposure	Outdoor
Indoor/Outdoor use	Outdoor
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Use in closed process
control dispersion from source towards	
the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	good of the analysis protostive destining, gives and of chase protostion
health evaluation	
Organisational measures to prevent /limit releases, dispersion and	Clean equipment and the work area every day
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and exposure	
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 C
- icoanico proceso temperataro ap to	1.0 0
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
7 1	,

Dispose of waste product or used containers according to local regulations

Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours	
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).	
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once	
	a month (containment is not breached)	
the worker	Automate activity where possible	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection	
personal protection, hygiene and		
health evaluation		
Organisational measures to prevent	Clean equipment and the work area every day	
/limit releases, dispersion and		
exposure		
Indoor/Outdoor use	Outdoor	
Assumes process temperature up to	40 C	
Process category/ics)	DDOC92 Transfer of substance or proparation (charging/discharging) from/to	
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	
Covers concentrations up to	> 25%	
Covers concentrations up to	Solid, medium dustiness	
Physical form of product		
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours	
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).	
	Undertake operation under enclosed conditions	
	Use in semi-automated and predominantly enclosed filling lines	
the worker	Local exhaust ventilation - efficiency of at least 90%	
	General ventilation Efficiency of at least 3 ACH	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection	
	Wear suitable gloves tested to EN 374	
health evaluation	See Section 8 for information on appropriate personal protective equipment	
Organisational measures to prevent	Clean equipment and the work area every day	
/limit releases, dispersion and	Demonstrable and effective housekeeping practices are in place	
exposure		
Indoor/Outdoor use	Indoor	
Process category/ics)	DPOCO Transfer of substance or proparation into small containers (dedicated filling line	
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,	
Cavara annountrations un ta	including weighing)	
Covers concentrations up to	> 25%	
Physical form of product	Solid, medium dustiness	
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours	
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).	
	Undertake operation under enclosed conditions	
the worker	Mechanical ventilation giving at least 1 ACH	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection	
personal protection, hygiene and	1000/01/00 Treal sultable protective dollning, gloves and eye/lace protection	
health evaluation		
Organisational measures to prevent	Clean equipment and the work area every day	
/limit releases, dispersion and	Cican equipment and the work area every day	
exposure		
Indoor/Outdoor use	Covers indoor and outdoor use	
	Section in Social Control of the Con	
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure	
Covers concentrations up to	> 25%	
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours	
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).	
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once	
	a month (containment is not breached)	
	Automate activity where possible	
	Mechanical ventilation giving at least 1 ACH	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection	

personal protection, hygiene and	
health evaluation	
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Covers indoor and outdoor use
	40 C
Assumes process temperature up to	40 C
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	> 25%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
control dispersion from source towards	a month (containment is not breached)
the worker	Automate activity where possible
O ditions and assessment of the	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	Clean aguinment and the work area every day:
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure Indoor/Outdoor use	Covers indoor and outdoor use
	500 C
Assumes process temperature up to	500 C
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	> 25%
Physical form of product	Solid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Use in semi-automated and predominantly enclosed filling lines
control dispersion from source towards	Mechanical ventilation giving at least 3 ACH
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
	DDCCC Transfer of substance or preparation into small containers (dedicated filling line
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,
Cavara annountrations un ta	including weighing)
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	C2C/27/20 We are quitable protective elething relevance and ave/face protection
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	Cloan equipment and the work area every day
Organisational measures to prevent /limit releases, dispersion and	Clean equipment and the work area every day Wet cleaning of the workplace
1 · · · · · · · · · · · · · · · · · · ·	Inversion and the workplace
exposure Indoor/Outdoor use	Covers indoor and outdoor use
indoon/Oddoon dae	טטיפוס ווועטטו מווע טענעטטו עסכ
Process category(ies)	PROC15 - Use as laboratory reagent

Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
	Clean equipment and the work area every day Wet cleaning of the workplace
Indoor/Outdoor use	Covers indoor and outdoor use

## Section 3 - Exposure estimation

Environmental release category(ies) - ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)

## Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.301 mg/l	0.104
Marine water	0.03 mg/l	0.01
STP: Sewage Treatment Plant	2.499 mg/l	0.25
Soil	0.162 mg/kg dw	0.028

#### **Derived No Effect Level (DNEL):**

Calculation method Used ART model MEASE

	WILTIOL		
Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	0.43 mg/m <sup>3</sup>	0.297
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - dermal, long-term - systemic	2.457 mg/kg bw/day	0.036
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - combined, long-term - systemic		0.332
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic	0.001 mg/m <sup>3</sup>	< 0.01
PROC1 - Use in closed process, no likelihood of exposure	Worker - dermal, long-term - systemic	0.003 mg/kg bw/day	< 0.01
PROC1 - Use in closed process, no likelihood of exposure	Worker - combined, long-term - systemic		< 0.01

PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.013 mg/m <sup>3</sup>	< 0.01
PROC2 - Use in closed, continuous	Worker - dermal, long-term - systemic	0.035 mg/kg bw/day	< 0.01
	Worker - combined, long-term - systemic		< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.011 mg/m <sup>3</sup>	< 0.01
	Worker - dermal, long-term - systemic	0.035 mg/kg bw/day	< 0.01
	Worker - combined, long-term - systemic		< 0.01
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	0.67 mg/m <sup>3</sup>	0.462
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	systemic	20.38 mg/kg bw/day	0.297
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - combined, long-term - systemic		0.759
	Worker - inhalative, long-term - systemic	0.316 mg/m³	0.218
PROC9 - Transfer of substance or	Worker - dermal, long-term - systemic	0.518 mg/kg bw/day	< 0.01
	Worker - combined, long-term - systemic		0.225
	Worker - inhalative, long-term - systemic	0.013 mg/m <sup>3</sup>	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.035 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	-	0.261
process with occasional controlled exposure	systemic	0.035 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled	Worker - combined, long-term - systemic		0.262

exposure			
PROC28 - Manual maintenance	Worker - inhalative, long-term	1 063 mg/m <sup>3</sup>	0.733
(cleaning and repair) of machinery	- systemic	11.000 mg/m	0.7 33
PROC28 - Manual maintenance		2.493 mg/kg bw/day	0.036
(cleaning and repair) of machinery	systemic	2.495 mg/kg bw/day	0.030
PROC28 - Manual maintenance	,		0.769
	Worker - combined, long-term - systemic		0.769
(cleaning and repair) of machinery		0.042/3	. 0.04
PROC9 - Transfer of substance or	Worker - inhalative, long-term	0.013 mg/m <sup>3</sup>	< 0.01
preparation into small containers	- systemic		
(dedicated filling line, including			
weighing)		0.404 //	0.04
PROC9 - Transfer of substance or		0.104 mg/kg bw/day	< 0.01
preparation into small containers	systemic		
(dedicated filling line, including			
weighing)			
PROC9 - Transfer of substance or	Worker - combined, long-term		0.01
preparation into small containers	- systemic		
(dedicated filling line, including			
weighing)			
PROC15 - Use as laboratory reagent	Worker - inhalative, long-term	0.013 mg/m <sup>3</sup>	< 0.01
	- systemic		
PROC15 - Use as laboratory reagent	Worker - dermal, long-term -	0.069 mg/kg bw/day	< 0.01
	systemic	]	
PROC15 - Use as laboratory reagent	Worker - combined, long-term		< 0.01
	- systemic		

## Section 4 - Guidance to check compliance with the exposure scenario

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

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## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

## Section 1 - Title

Title Laboratory chemicals Manufacture of fine chemicals

**Type** Worke

Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites

Environmental release category(ies) ERC6b - Industrial use of reactive processing aids ERC6c - Industrial use of monomers for

manufacture of thermoplastics

Process category(ies) PROC1 - Use in closed process, no likelihood of exposure

PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non dedicated facilities

PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at dedicated facilities

PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,

including weighing)

PROC15 - Use as laboratory reagent

PROC28 - Manual maintenance (cleaning and repair) of machinery

**Product category(ies)** PC21 - Laboratory chemicals

Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU9

- Manufacture of fine chemicals

## Section 2 - Operational conditions and risk management measures

## Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC6b - Industrial use of reactive processing aids

- ERC6c - Industrial use of monomers for manufacture of thermoplastics

#### Amounts used

Туре	Daily amount per site
Value	<= 250
Units	kg/d

Туре	Annual amount per site
Value	<= 25
Units	t(ons)/year

Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP
Assumed domestic sewage treatment	>= 2000 m3/day
plant flow	

Environmental factors not influenced by risk management

Receiving water dilution (fresh or	>= 18000 m3/day
marine)	

Disposal

Exposure duration

Disposal	Dispose of waste product or used containers according to local regulations		
Control of worker exposure			
Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to		
	vessels/large containers at dedicated facilities		
Covers concentrations up to	100%		
Physical form of product	Solid, medium dustiness or Paste		
Exposure duration	Avoid carrying out operation for more than 2 hours		
Use frequency			
Technical conditions and measures to	Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least one		
	a month (containment is not breached)		
the worker	Automate activity where possible		
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection		
personal protection, hygiene and	good of the state		
health evaluation			
Organisational measures to prevent	Clean equipment and the work area every day		
/limit releases, dispersion and	Demonstrable and effective housekeeping practices are in place		
exposure	pomonosiasto ana onocino notasticoping prasticos are in plass		
Indoor/Outdoor use	Outdoor		
	<u>,                                      </u>		
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure		
Covers concentrations up to	> 25%		
Physical form of product	Solid, medium dustiness		
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours		
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).		
Technical conditions and measures to	Use in closed process		
control dispersion from source towards			
the worker	Mechanical ventilation giving at least 1 ACH		
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection		
personal protection, hygiene and	3,3		
health evaluation			
Organisational measures to prevent	Clean equipment and the work area every day		
/limit releases, dispersion and			
exposure			
Indoor/Outdoor use	Covers indoor and outdoor use		
-	T		
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure		
Covers concentrations up to	> 25%		
Physical form of product	Solid, medium dustiness		
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours		
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).		
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once		
	a month (containment is not breached)		
the worker	Automate activity where possible		
	Mechanical ventilation giving at least 1 ACH		
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection		
personal protection, hygiene and			
health evaluation			
Organisational measures to prevent	Clean equipment and the work area every day		
/limit releases, dispersion and			
exposure	Un de se		
Indoor/Outdoor use	Indoor		
Assumes process temperature up to	40 C		
Dungang antaga = //a-a)	DDOCO Has in alread continuous accounting to the second se		
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure		
Covers concentrations up to	> 25%		
Physical form of product	Solid, medium dustiness		
	LUVIDIA CORRUPA CUE COMUNICO INVOLVINA OVIDACUES FOR MORO FROM A ROURS		

Avoid carrying out activities involving exposure for more than 4 hours

Dispose of waste product or used containers according to local regulations

Llas fraguency	Covers daily expecures up to 9 hours (upless stated differently)
	Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
	Automate activity where possible
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	groups and sumasis protestive dealining, groups and systems protestion
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	40 C
Process category(ies)	DDOCSo. Transfer of substance or preparation (sharging/discharging) from/to
Process category(les)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Undertake operation under enclosed conditions
	Use in semi-automated and predominantly enclosed filling lines
the worker	Local exhaust ventilation - efficiency of at least 90%
	General ventilation Efficiency of at least 3 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	Wear suitable gloves tested to EN 374
health evaluation	See Section 8 for information on appropriate personal protective equipment
	Clean equipment and the work area every day
/limit releases, dispersion and	Demonstrable and effective housekeeping practices are in place
exposure	·
Indoor/Outdoor use	Indoor
I	I
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,
	including weighing)
Covers concentrations up to	including weighing) > 25%
Covers concentrations up to Physical form of product	including weighing) > 25% Solid, medium dustiness
Covers concentrations up to Physical form of product Exposure duration	including weighing) > 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours
Covers concentrations up to Physical form of product Exposure duration Use frequency	including weighing) > 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently).
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to	including weighing) > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards	including weighing) > 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently).
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker	including weighing) > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Mechanical ventilation giving at least 1 ACH
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to	including weighing) > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and	including weighing) > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Mechanical ventilation giving at least 1 ACH
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation	including weighing) > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent	including weighing) > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Mechanical ventilation giving at least 1 ACH
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation	including weighing) > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and	including weighing) > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use	including weighing) > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies)	including weighing) > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use  PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies) Covers concentrations up to	including weighing)  > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use  PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25%
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies) Covers concentrations up to Exposure duration	including weighing)  > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use  PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25%  Avoid carrying out activities involving exposure for more than 4 hours
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies) Covers concentrations up to Exposure duration Use frequency	including weighing)  > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use  PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25%  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).
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Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies) Covers concentrations up to Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards	including weighing)  > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use  PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25%  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies) Covers concentrations up to Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker	including weighing)  > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use  PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25%  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies) Covers concentrations up to Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker	including weighing)  > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use  PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25%  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies) Covers concentrations up to Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to	including weighing)  > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use  PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25%  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible
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Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies) Covers concentrations up to Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation	including weighing)  > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use  PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25%  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH

/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	40 C
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	> 25%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
life worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
	330/37/39 - Wear suitable protective clothing, gloves and eye/race protection
personal protection, hygiene and health evaluation	
	Clean equipment and the work area every day
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	500 C
	,
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	> 25%
Physical form of product	Solid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Use in semi-automated and predominantly enclosed filling lines
	Mechanical ventilation giving at least 3 ACH
the worker	Introduction giving at loads of North
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Cloud equipment and the work area every day
exposure	
exposure	
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,
Frocess category(les)	including weighing)
Covers concentrations up to	> 25%
Covers concentrations up to	
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Wet cleaning of the workplace
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC15 - Use as laboratory reagent
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	1
L	
the worker	

Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use

## Section 3 - Exposure estimation

<u>Environmental release category(ies)</u> - ERC6b - Industrial use of reactive processing aids - ERC6c - Industrial use of monomers for manufacture of thermoplastics

## Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.676 mg/l	0.233
Marine water	0.068 mg/l	0.023
STP: Sewage Treatment Plant	6.248 mg/l	0.625
Soil	0.18 mg/kg dw	0.032

## **Derived No Effect Level (DNEL):**

Calculation method Used ART model MEASE

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	0.43 mg/m <sup>3</sup>	0.297
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - dermal, long-term - systemic	2.457 mg/kg bw/day	0.036
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - combined, long-term - systemic		0.332
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic	0.001 mg/m <sup>3</sup>	< 0.01
PROC1 - Use in closed process, no likelihood of exposure	Worker - dermal, long-term - systemic	0.003 mg/kg bw/day	< 0.01
PROC1 - Use in closed process, no likelihood of exposure	Worker - combined, long-term - systemic		< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.013 mg/m <sup>3</sup>	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.035 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled	Worker - combined, long-term - systemic		< 0.01

exposure			
PROC2 - Use in closed, continuous	Worker - inhalative, long-term	0.011 mg/m <sup>3</sup>	< 0.01
process with occasional controlled	- systemic		
exposure	-		
PROC2 - Use in closed, continuous	Worker - dermal, long-term -	0.035 mg/kg bw/day	< 0.01
process with occasional controlled	systemic	lo.000 mg/kg bw/day	C 0.01
ļ.	Systemic		
exposure	\\\\-\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		0.04
PROC2 - Use in closed, continuous	Worker - combined, long-term		< 0.01
process with occasional controlled	- systemic		
exposure			
PROC8a - Transfer of substance or	Worker - inhalative, long-term	0.67 mg/m <sup>3</sup>	0.462
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at non	_		
dedicated facilities			
PROC8a - Transfer of substance or	Worker - dermal, long-term -	20.38 mg/kg bw/day	0.297
preparation (charging/discharging)	systemic		0.20
from/to vessels/large containers at non			
dedicated facilities			
	Markey combined levelan		0.750
PROC8a - Transfer of substance or	Worker - combined, long-term		0.759
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC9 - Transfer of substance or	Worker - inhalative, long-term	0.316 mg/m <sup>3</sup>	0.218
preparation into small containers	- systemic		
(dedicated filling line, including	-		
weighing)			
PROC9 - Transfer of substance or	Worker - dermal, long-term -	0.518 mg/kg bw/day	< 0.01
preparation into small containers	systemic	l is ing/kg bw/day	7 0.0 1
(dedicated filling line, including	Systemic		
weighing)			
	\\\\-\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		0.005
PROC9 - Transfer of substance or	Worker - combined, long-term		0.225
preparation into small containers	- systemic		
(dedicated filling line, including			
weighing)			
PROC2 - Use in closed, continuous	Worker - inhalative, long-term	0.013 mg/m <sup>3</sup>	< 0.01
process with occasional controlled	- systemic		
exposure			
JONE COULD			
	Worker - dermal, long-term -	0.035 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous	. •	0.035 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled	Worker - dermal, long-term - systemic	0.035 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	systemic	,	
PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous	systemic  Worker - combined, long-term	,	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled	systemic	,	
PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure	systemic  Worker - combined, long-term - systemic		< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous	systemic  Worker - combined, long-term - systemic  Worker - inhalative, long-term		
PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled	systemic  Worker - combined, long-term - systemic		< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure	systemic  Worker - combined, long-term - systemic  Worker - inhalative, long-term - systemic	0.379 mg/m³	< 0.01 0.261
PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled	systemic  Worker - combined, long-term - systemic  Worker - inhalative, long-term - systemic		< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure	systemic  Worker - combined, long-term - systemic  Worker - inhalative, long-term - systemic	0.379 mg/m³	< 0.01 0.261
PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure	systemic  Worker - combined, long-term - systemic  Worker - inhalative, long-term - systemic  Worker - dermal, long-term -	0.379 mg/m³	< 0.01 0.261
PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure	systemic  Worker - combined, long-term - systemic  Worker - inhalative, long-term - systemic  Worker - dermal, long-term - systemic	0.379 mg/m³ 0.035 mg/kg bw/day	< 0.01 0.261 < 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous	systemic  Worker - combined, long-term - systemic  Worker - inhalative, long-term - systemic  Worker - dermal, long-term - systemic  Worker - combined, long-term	0.379 mg/m³ 0.035 mg/kg bw/day	< 0.01 0.261
PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled	systemic  Worker - combined, long-term - systemic  Worker - inhalative, long-term - systemic  Worker - dermal, long-term - systemic	0.379 mg/m³ 0.035 mg/kg bw/day	< 0.01 0.261 < 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure	systemic  Worker - combined, long-term - systemic  Worker - inhalative, long-term - systemic  Worker - dermal, long-term - systemic  Worker - combined, long-term - systemic	0.379 mg/m³ 0.035 mg/kg bw/day	< 0.01 0.261 < 0.01 0.262
PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC28 - Manual maintenance	systemic  Worker - combined, long-term - systemic  Worker - inhalative, long-term - systemic  Worker - dermal, long-term - systemic  Worker - combined, long-term - systemic  Worker - inhalative, long-term	0.379 mg/m³ 0.035 mg/kg bw/day	< 0.01 0.261 < 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC28 - Manual maintenance (cleaning and repair) of machinery	systemic  Worker - combined, long-term - systemic  Worker - inhalative, long-term - systemic  Worker - dermal, long-term - systemic  Worker - combined, long-term - systemic  Worker - inhalative, long-term - systemic	0.379 mg/m³  0.035 mg/kg bw/day  1.063 mg/m³	< 0.01 0.261 < 0.01 0.262 0.733
PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC28 - Manual maintenance (cleaning and repair) of machinery PROC28 - Manual maintenance	systemic  Worker - combined, long-term - systemic  Worker - inhalative, long-term - systemic  Worker - dermal, long-term - systemic  Worker - combined, long-term - systemic  Worker - inhalative, long-term - systemic  Worker - dermal, long-term -	0.379 mg/m³ 0.035 mg/kg bw/day	< 0.01 0.261 < 0.01 0.262
PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC28 - Manual maintenance (cleaning and repair) of machinery	systemic  Worker - combined, long-term - systemic  Worker - inhalative, long-term - systemic  Worker - dermal, long-term - systemic  Worker - combined, long-term - systemic  Worker - inhalative, long-term - systemic	0.379 mg/m³  0.035 mg/kg bw/day  1.063 mg/m³	< 0.01  0.261  < 0.01  0.262  0.733  0.036
PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC28 - Manual maintenance (cleaning and repair) of machinery PROC28 - Manual maintenance	systemic  Worker - combined, long-term - systemic  Worker - inhalative, long-term - systemic  Worker - dermal, long-term - systemic  Worker - combined, long-term - systemic  Worker - inhalative, long-term - systemic  Worker - dermal, long-term - systemic	0.379 mg/m³  0.035 mg/kg bw/day  1.063 mg/m³  2.493 mg/kg bw/day	< 0.01 0.261 < 0.01 0.262 0.733
PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC28 - Manual maintenance (cleaning and repair) of machinery PROC28 - Manual maintenance (cleaning and repair) of machinery PROC28 - Manual maintenance	systemic  Worker - combined, long-term - systemic  Worker - inhalative, long-term - systemic  Worker - dermal, long-term - systemic  Worker - combined, long-term - systemic  Worker - inhalative, long-term - systemic  Worker - dermal, long-term - systemic  Worker - combined, long-term	0.379 mg/m³  0.035 mg/kg bw/day  1.063 mg/m³  2.493 mg/kg bw/day	< 0.01  0.261  < 0.01  0.262  0.733  0.036
PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC28 - Manual maintenance (cleaning and repair) of machinery PROC28 - Manual maintenance (cleaning and repair) of machinery	systemic  Worker - combined, long-term - systemic  Worker - inhalative, long-term - systemic  Worker - dermal, long-term - systemic  Worker - combined, long-term - systemic  Worker - inhalative, long-term - systemic  Worker - dermal, long-term - systemic  Worker - combined, long-term - systemic	0.379 mg/m³  0.035 mg/kg bw/day  1.063 mg/m³  2.493 mg/kg bw/day	< 0.01  0.261  < 0.01  0.262  0.733  0.036  0.769
PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC2 - Use in closed, continuous process with occasional controlled exposure PROC28 - Manual maintenance (cleaning and repair) of machinery PROC28 - Manual maintenance (cleaning and repair) of machinery PROC28 - Manual maintenance	systemic  Worker - combined, long-term - systemic  Worker - inhalative, long-term - systemic  Worker - dermal, long-term - systemic  Worker - combined, long-term - systemic  Worker - inhalative, long-term - systemic  Worker - dermal, long-term - systemic  Worker - combined, long-term	0.379 mg/m³  0.035 mg/kg bw/day  1.063 mg/m³  2.493 mg/kg bw/day	< 0.01  0.261  < 0.01  0.262  0.733  0.036

(dedicated filling line, including weighing)			
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - dermal, long-term - systemic	0.104 mg/kg bw/day	< 0.01
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - combined, long-term - systemic		0.01
PROC15 - Use as laboratory reagent	Worker - inhalative, long-term - systemic	0.013 mg/m <sup>3</sup>	< 0.01
PROC15 - Use as laboratory reagent	Worker - dermal, long-term - systemic	0.069 mg/kg bw/day	< 0.01
PROC15 - Use as laboratory reagent	Worker - combined, long-term - systemic		< 0.01

## Section 4 - Guidance to check compliance with the exposure scenario

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

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## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

## Section 1 - Title

Title paint and Coatings

**Type** Worker

Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites

Environmental release category(ies) ERC5 - Industrial use resulting in inclusion into or onto a matrix

PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC7 - Industrial spraying

PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non dedicated facilities PROC10 - Roller application or brushing

PROC13 - Treatment of articles by dipping and pouring

PROC28 - Manual maintenance (cleaning and repair) of machinery

**Product category(ies)** PC9a - Coatings and paints, thinners, paint removers PC18 - Ink and toners

Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU7

- Printing and reproduction of recorded media SU19 - Building and construction work

## Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC5 - Industrial use resulting in inclusion into or onto a matrix

#### Amounts used

Туре	Daily amount per site
Value	<= 250
Units	kg/d

Туре	Annual amount per site
Value	<= 50
Units	t(ons)/year

Conditions and measures related to municipal sewage treatment plant

Туре	Municipal STP
Assumed domestic sewage treatment	>= 2000 m3/day
plant flow	

Conditions and measures related to external treatment of waste for disposal

Disposal	Dispose of waste product or used containers according to local regulations

Control of worker exposure	
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Covers concentrations up to	<= 5%
Physical form of product	Liquid

Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Undertake operation under enclosed conditions
	Use in semi-automated and predominantly enclosed filling lines
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	<= 5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
	Automate activity where possible
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	21.11.11 Trad. Salidate protestive distining, giorne and dyoridoe protestion
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	, ,
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	40 C
	PROC7 - Industrial spraying
Covers concentrations up to	<= 5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Undertake operation under enclosed conditions
	Use in semi-automated and predominantly enclosed filling lines
the worker	Fill containers/cans at dedicated fill points supplied with local extract ventilation
	Mechanical ventilation giving at least 1 ACH
	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
	Wear a respirator providing a minimum efficiency of 90%
health evaluation	See Section 8 for information on appropriate personal protective equipment
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	Covers in deep and outdoor ves
Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC10 - Roller application or brushing
Covers concentrations up to	<= 5%
povoro concontrationo ap to	
	Liquid
Physical form of product	Liquid  Avoid carrying out activities involving exposure for more than 4 hours
Physical form of product Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Physical form of product Exposure duration Use frequency	Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently).
Physical form of product  Exposure duration  Use frequency  Technical conditions and measures to	Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Undertake operation under enclosed conditions
Physical form of product  Exposure duration  Use frequency  Technical conditions and measures to control dispersion from source towards	Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Undertake operation under enclosed conditions Use in semi-automated and predominantly enclosed filling lines
Physical form of product  Exposure duration  Use frequency  Technical conditions and measures to control dispersion from source towards the worker	Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Undertake operation under enclosed conditions Use in semi-automated and predominantly enclosed filling lines Mechanical ventilation giving at least 1 ACH
Physical form of product  Exposure duration  Use frequency  Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to	Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Undertake operation under enclosed conditions Use in semi-automated and predominantly enclosed filling lines
Physical form of product  Exposure duration  Use frequency  Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and	Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Undertake operation under enclosed conditions Use in semi-automated and predominantly enclosed filling lines Mechanical ventilation giving at least 1 ACH
Physical form of product  Exposure duration  Use frequency  Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation	Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Undertake operation under enclosed conditions Use in semi-automated and predominantly enclosed filling lines Mechanical ventilation giving at least 1 ACH

/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
	PROC13 - Treatment of articles by dipping and pouring
Covers concentrations up to	<= 5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Undertake operation under enclosed conditions
	Use in semi-automated and predominantly enclosed filling lines
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	40 C
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	<= 5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Use in semi-automated and predominantly enclosed filling lines
control dispersion from source towards	Mechanical ventilation giving at least 1 ACH
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use

## Section 3 - Exposure estimation

Environmental release category(ies) - ERC5 - Industrial use resulting in inclusion into or onto a matrix

## Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.051 mg/l	0.018
Marine water	0.00508 mg/l	< 0.01
STP: Sewage Treatment Plant	0 mg/l	< 0.01
Soil	0.147 mg/kg dw	0.026

## Derived No Effect Level (DNEL):

Calculation method	MEASE		
Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio

			(RCR)
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities		Ç	0.088
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	systemic	0.035 mg/kg bw/day	< 0.01
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities			0.088
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	Ū	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.007 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		< 0.01
PROC7 - Industrial spraying	Worker - inhalative, long-term - systemic	0.334 mg/m <sup>3</sup>	0.23
PROC7 - Industrial spraying	systemic	5.401 mg/kg bw/day	0.079
PROC7 - Industrial spraying	Worker - combined, long-term - systemic		0.309
PROC10 - Roller application or brushing	Worker - inhalative, long-term - systemic	0.253 mg/m <sup>3</sup>	0.174
PROC10 - Roller application or brushing	Worker - dermal, long-term - systemic	0.3 mg/kg bw/day	< 0.01
PROC10 - Roller application or brushing	Worker - combined, long-term - systemic		0.179
PROC13 - Treatment of articles by dipping and pouring	Worker - inhalative, long-term - systemic	0.025 mg/m <sup>3</sup>	0.017
PROC13 - Treatment of articles by dipping and pouring	Worker - dermal, long-term - systemic	0.177 mg/kg bw/day	< 0.01
PROC13 - Treatment of articles by dipping and pouring	Worker - combined, long-term - systemic		0.02
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - inhalative, long-term - systemic	0.007 mg/m <sup>3</sup>	< 0.01
PROC28 - Manual maintenance (cleaning and repair) of machinery		0.15 mg/kg bw/day	< 0.01
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - combined, long-term - systemic		< 0.01

## Section 4 - Guidance to check compliance with the exposure scenario

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

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## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

## Section 1 - Title

Title Building and construction work

**Type** Worker

Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites

Environmental release category(ies) ERC5 - Industrial use resulting in inclusion into or onto a matrix

Process category(ies) PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non dedicated facilities

PROC21 - Low energy manipulation of substances bound in materials and/or articles

PROC28 - Manual maintenance (cleaning and repair) of machinery

Product category(ies) PC0 - Other Products PC8 - Biocidal Products (e.g. disinfectants, pest control)

Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

SU19 - Building and construction work

## Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC5 - Industrial use resulting in inclusion into or onto a matrix

#### **Amounts used**

Туре	Daily amount per site
Value	<= 280
Units	kg/d

Туре	Annual amount per site
Value	<= 28
Units	t(ons)/year

Conditions and measures related to municipal sewage treatment plant

Туре	Municipal STP
Assumed domestic sewage treatment	>= 2000 m3/day
plant flow	

Environmental factors not influenced by risk management

Pacciving water dilution (fresh or	>= 18000 m3/day
Receiving water dilution (fresh or	>= 18000 m3/day
marina)	
marine)	

Conditions and measures related to external treatment of waste for disposal

Disposal	Dispose of waste product or used containers according to local regulations	
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Control of worker exposure	
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to
	vessels/large containers at non dedicated facilities

## ES00383 - Borates - Use at industrial sites; Various products (PC 0, PC 8); Building and construction work (SU 19)

-	
Covers concentrations up to	1%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	1%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
•	Covers daily exposures up to 8 hours (unless stated differently).
Use frequency Technical conditions and measures to	
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached) Automate activity where possible
line worker	
Conditions and massives related to	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	40 C
Process category(ies)	PROC21 - Low energy manipulation of substances bound in materials and/or articles
Covers concentrations up to	1%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	1%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Use in semi-automated and predominantly enclosed filling lines
	Mechanical ventilation giving at least 1 ACH
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	lolean equipment and the work area every day
ymmit releases, uispersiolli allu	

exposure	
Indoor/Outdoor use	Covers indoor and outdoor use

## Section 3 - Exposure estimation

Environmental release category(ies) - ERC5 - Industrial use resulting in inclusion into or onto a matrix

## Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.051 mg/l	0.018
Marine water	0.00508 mg/l	< 0.01
STP: Sewage Treatment Plant	0 mg/l	< 0.01
Soil	0.147 mg/kg dw	0.026

## **Derived No Effect Level (DNEL):**

Calculation method	MEASE		
Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	0.001 mg/m³	< 0.01
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	systemic	0.041 mg/kg bw/day	< 0.01
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities			< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.001 mg/m <sup>3</sup>	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.003 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles	Worker - inhalative, long-term - systemic	0.001 mg/m <sup>3</sup>	< 0.01
articles	systemic	0.069 mg/kg bw/day	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles	- systemic		< 0.01
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - inhalative, long-term - systemic		0.08
PROC28 - Manual maintenance	Worker - dermal, long-term -	0.249 mg/kg bw/day	< 0.01

(cleaning and repair) of machinery	systemic	
PROC28 - Manual maintenance	Worker - combined, long-term	0.084
(cleaning and repair) of machinery	- systemic	

## Section 4 - Guidance to check compliance with the exposure scenario

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

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## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

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Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

## Section 1 - Title

Title Manufacture of other non-metallic mineral products

**Type** Worker

Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites

Environmental release category(ies) ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)

Process category(ies) PROC0 - Other Process

PROC1 - Use in closed process, no likelihood of exposure

PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at dedicated facilities

PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,

including weighing)

PROC15 - Use as laboratory reagent

PROC28 - Manual maintenance (cleaning and repair) of machinery

Product category(ies) PC0 - Other Products

Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

SU13 - Manufacture of other non-metallic mineral products

## Section 2 - Operational conditions and risk management measures

## Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)

#### **Amounts used**

Туре	Daily amount per site
Value	<= 1000
Units	kg/d

Туре	Annual amount per site
Value	<= 300
Units	t(ons)/year

Conditions and measures related to municipal sewage treatment plant

	The state of the s
Туре	Onsite STP
Assumed domestic sewage treatment	>= 2000 me/day
plant flow	
Sludge treatment	No application of sewage sludge to soil

Conditions and measures related to external treatment of waste for disposal

ln· ·	
Il lignogal	Dispose of waste product or used containers according to local regulations
Disposai	propose of waste product of used containers according to local regulations

Control of worker exposure	
Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to

## ES00384 - Borates - Use at industrial sites; Other (PC 0); Manufacture of other non-metallic mineral products, e.g. plasters, cement (SU 13)

	vessels/large containers at dedicated facilities
Covers concentrations up to	100%
Physical form of product	Solid, medium dustiness or Paste
Exposure duration	Avoid carrying out operation for more than 2 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	Sold of the state of the stat
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Demonstrable and effective housekeeping practices are in place
exposure	Pomonorable and encouve neaconcepting practices are in place
Indoor/Outdoor use	Outdoor
indoon outdoor doc	Journal
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
	·
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Use in closed process
control dispersion from source towards	
the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	Outron in door and out door are
exposure Indoor/Outdoor use	Covers indoor and outdoor use
Indoor/Outdoor use	
Indoor/Outdoor use  Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Indoor/Outdoor use  Process category(ies)  Covers concentrations up to	PROC2 - Use in closed, continuous process with occasional controlled exposure > 25%
Process category(ies) Covers concentrations up to Physical form of product	PROC2 - Use in closed, continuous process with occasional controlled exposure > 25% Solid, medium dustiness
Process category(ies) Covers concentrations up to Physical form of product Exposure duration	PROC2 - Use in closed, continuous process with occasional controlled exposure > 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency	PROC2 - Use in closed, continuous process with occasional controlled exposure > 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently).
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to	PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards	PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to	PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker	PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to	PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and	PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation	PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent	PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and	PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure	PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use	PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure	PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to	PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor  40 C
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to	PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor  40 C  PROC2 - Use in closed, continuous process with occasional controlled exposure
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to	PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor  40 C  PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25%
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Physical form of product	PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor  40 C  PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25%  Solid, medium dustiness
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Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Physical form of product	PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor  40 C  PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to	PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor  40 C  PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards	PROC2 - Use in closed, continuous process with occasional controlled exposure > 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor 40 C  PROC2 - Use in closed, continuous process with occasional controlled exposure > 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to	PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor  40 C  PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once

## ES00384 - Borates - Use at industrial sites; Other (PC 0); Manufacture of other non-metallic mineral products, e.g. plasters, cement (SU 13)

Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
	olean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	40 C
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	
	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	1000 C
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Mechanical ventilation giving at least 3 ACH
control dispersion from source towards	
the worker	
	COC/OZ/OO. We are still below to this solution along the state of the solution and the state of the solution along the state of the
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Indoor
indoor/Oddaoor use	indoor
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
	Outdoor
Indoor/Outdoor use	Outdoor
	·
Process category(ies)	PROC0 - Other Process
Covers concentrations up to	5%
Physical form of product	Solid, low dustiness
Physical form of product	

Exposure duration	Avoid carrying out operation for more than 15 minutes
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Wet cleaning of the workplace
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,
	including weighing)
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Wet cleaning of the workplace
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
-	
Process category(ies)	PROC15 - Use as laboratory reagent
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use

## Section 3 - Exposure estimation

<u>Environmental release category(ies)</u> - <u>ERC6a</u> - <u>Industrial use resulting in manufacture of another substance (use of intermediates)</u>

## Predicted No Effect Concentration (PNEC)

Calculation method	Used EUSES model
F · ·	P 6 1 1 1

		-
Environment	predicted exposure level	Risk characterisation ratio (RCR)

Freshwater	0.051 mg/l	0.018
Marine water	0.00508 mg/l	< 0.01
STP: Sewage Treatment Plant	0 mg/l	< 0.01
Soil	0.147 mg/kg dw	0.026

## **Derived No Effect Level (DNEL):**

Calculation method	Used ART model

	MEASE		
Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	0.43 mg/m <sup>3</sup>	0.297
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - dermal, long-term - systemic	2.457 mg/kg bw/day	0.036
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - combined, long-term - systemic		0.332
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic	0.001 mg/m <sup>3</sup>	< 0.01
PROC1 - Use in closed process, no likelihood of exposure	Worker - dermal, long-term - systemic	0.003 mg/kg bw/day	< 0.01
PROC1 - Use in closed process, no likelihood of exposure	Worker - combined, long-term - systemic		< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.013 mg/m³	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.035 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.011 mg/m <sup>3</sup>	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.035 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.013 mg/m <sup>3</sup>	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.035 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		< 0.01
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - inhalative, long-term - systemic	1.063 mg/m <sup>3</sup>	0.733

## ES00384 - Borates - Use at industrial sites; Other (PC 0); Manufacture of other non-metallic mineral products, e.g. plasters, cement (SU 13)

PROC28 - Manual maintenance	Worker - dermal, long-term -	2.493 mg/kg bw/day	0.036
(cleaning and repair) of machinery	systemic	Li 100 mg/ng 5 m/day	0.000
PROC28 - Manual maintenance	Worker - combined, long-term		0.769
(cleaning and repair) of machinery	- systemic		
PROC28 - Manual maintenance	Worker - inhalative, long-term	0.998 mg/m <sup>3</sup>	0.688
(cleaning and repair) of machinery	- systemic		
PROC28 - Manual maintenance	Worker - dermal, long-term -	2.493 mg/kg bw/day	0.036
(cleaning and repair) of machinery	systemic		
PROC28 - Manual maintenance	Worker - combined, long-term		0.769
(cleaning and repair) of machinery	- systemic		
PROC0 - Other Process	Worker - inhalative, long-term - systemic	0.116 mg/m <sup>3</sup>	0.08
PROC0 - Other Process	Worker - dermal, long-term - systemic	0.186 mg/kg bw/day	< 0.01
PROC0 - Other Process	Worker - combined, long-term - systemic		0.083
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative, long-term - systemic	0.013 mg/m <sup>3</sup>	< 0.01
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - dermal, long-term - systemic	0.104 mg/kg bw/day	< 0.01
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - combined, long-term - systemic		0.01
PROC15 - Use as laboratory reagent	Worker - inhalative, long-term - systemic	0.013 mg/m <sup>3</sup>	< 0.01
PROC15 - Use as laboratory reagent	Worker - dermal, long-term - systemic	0.069 mg/kg bw/day	< 0.01
PROC15 - Use as laboratory reagent	Worker - combined, long-term - systemic		< 0.01

## Section 4 - Guidance to check compliance with the exposure scenario

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

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## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

## Section 1 - Title

Title Lubricants, greases, release products

**Type** Worke

Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites

Environmental release category(ies) ERC4 - Industrial use of processing aids in processes and products, not becoming part of

articles ERC7 - Industrial use of substances in closed systems

PROC1 - Use in closed process, no likelihood of exposure

PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at dedicated facilities

PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,

including weighing)

PROC28 - Manual maintenance (cleaning and repair) of machinery

Product category(ies) PC16 - Heat transfer fluids PC17 - Hydraulic fluids PC24 - Lubricants, greases, release

products

Sector(s) of use SU0 - Other SU3 - Industrial uses: Uses of substances as such or in preparations at

industrial sites

## Section 2 - Operational conditions and risk management measures

## Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

- ERC7 - Industrial use of substances in closed systems

#### **Amounts used**

Туре	Daily amount per site
Value	<= 20000
Units	kg/d

Туре	Annual amount per site
Value	<= 400
Units	t(ons)/year

Conditions and measures related to municipal sewage treatment plant

Туре	Onsite STP
Assumed domestic sewage treatment	>= 2000 m3/day
plant flow	
Sludge treatment	No application of sewage sludge to soil

Environmental factors not influenced by risk management

Receiving water dilution (fresh or	>= 18000 m3/day
marine)	

Disposal

Disposai	Dispose of waste product or used containers according to local regulations
Control of worker own come	
Control of worker exposure Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,
Process category(les)	including weighing)
Covers concentrations up to	25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Undertake operation under enclosed conditions
	Use in semi-automated and predominantly enclosed filling lines
the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	37.5
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to
Course consentration i	vessels/large containers at dedicated facilities
Covers concentrations up to	25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Undertake operation under enclosed conditions
the worker	Use in semi-automated and predominantly enclosed filling lines
Conditions and measures related to	Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
- ·	
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
the worker	a month (containment is not breached) Automate activity where possible
lile worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	, ,
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	40 C
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,
	including weighing)
Covers concentrations up to	25%
Physical form of product	Liquid

Dispose of waste product or used containers according to local regulations

Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Undertake operation under enclosed conditions
control dispersion from source towards	Use in semi-automated and predominantly enclosed filling lines
the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency Technical conditions and measures to	Covers daily exposures up to 8 hours (unless stated differently).  Use in closed process
control dispersion from source towards	
the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	600/01/00 Wear suitable protective distring, gloves and eyerface protection
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	olouri oquipmont and the work area every day
exposure	
-	Indoor
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Use in closed process
control dispersion from source towards	
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Outdoor
Droope entogen/ice)	DDOC29 Manual maintananas (classing and rangis) of reachings:
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards the worker	
	C26/27/20 Wear quitable protective elething eleves and availage protection
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	Clean aguinment and the work area every day
health evaluation Organisational measures to prevent	Clean equipment and the work area every day
health evaluation Organisational measures to prevent /limit releases, dispersion and	Clean equipment and the work area every day
health evaluation Organisational measures to prevent	Clean equipment and the work area every day  Covers indoor and outdoor use

	,
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	> 25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)
the worker	Automate activity where possible
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 C
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	> 25%
Physical form of product	Liquid

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	> 25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
control dispersion from source towards	a month (containment is not breached)
the worker	Automate activity where possible
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	40 C

Environmental release category(ies) - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

- ERC7 - Industrial use of substances in closed systems

# Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Jaioaiation motiloa	0000 20020 mode.	
Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.051 mg/l	0.018
Marine water	0.00508 mg/l	< 0.01
STP: Sewage Treatment Plant	0.0000002 mg/l	< 0.01
Soil	0.141 mg/kg dw	0.025

## **Derived No Effect Level (DNEL):**

Calculation method	MEASE		
Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio

		1	(DCD)
PROC9 - Transfer of substance or	Marker inhelative lang term	0.000 m a/m3	(RCR)
preparation into small containers	Worker - inhalative, long-term	0.008 mg/m <sup>2</sup>	< 0.01
(dedicated filling line, including	- systemic		
weighing)			
PROC9 - Transfer of substance or	Worker - dermal, long-term -	0.031 mg/kg bw/day	< 0.01
preparation into small containers	systemic	0.031 mg/kg bw/day	< 0.01
(dedicated filling line, including	Systemic		
weighing)			
PROC9 - Transfer of substance or	Worker - combined, long-term		< 0.01
preparation into small containers	- systemic		< 0.01
(dedicated filling line, including	- systemic		
weighing)			
PROC8b - Transfer of substance or	Worker - inhalative, long-term	0.046 mg/m <sup>3</sup>	0.032
preparation (charging/discharging)	- systemic	0.046 mg/m²	0.032
from/to vessels/large containers at	- systernic		
dedicated facilities			
PROC8b - Transfer of substance or	Worker - dermal, long-term -	0.248 mg/kg bw/day	< 0.01
preparation (charging/discharging)	systemic	0.246 mg/kg bw/day	< 0.01
from/to vessels/large containers at	Systemic		
dedicated facilities			
PROC8b - Transfer of substance or	Worker - combined, long-term		0.035
	- systemic		0.035
preparation (charging/discharging) from/to vessels/large containers at	- systemic		
dedicated facilities			
PROC2 - Use in closed, continuous	Worker - inhalative, long-term	0.000 mg/m³	< 0.01
		0.006 mg/m²	< 0.01
process with occasional controlled	- systemic		
exposure	Marker dermal leng term	0.021 mg/kg bw/dov	. 0.01
PROC2 - Use in closed, continuous		0.021 mg/kg bw/day	< 0.01
process with occasional controlled	systemic		
PROC2 - Use in closed, continuous	Marker combined long term		. 0.01
· · · · · · · · · · · · · · · · · · ·	Worker - combined, long-term		< 0.01
process with occasional controlled	- systemic		
PROC9 - Transfer of substance or	Marker inhelative lang term	0.000 mg/m3	10.01
	Worker - inhalative, long-term	0.006 mg/m <sup>2</sup>	< 0.01
preparation into small containers (dedicated filling line, including	- systemic		
weighing) PROC9 - Transfer of substance or	Marker dermal leng term	0.021 mg/kg bw/dov	10.01
		0.031 mg/kg bw/day	< 0.01
preparation into small containers	systemic		
(dedicated filling line, including weighing)			
	Montes as a male in a state of the man		. 0.04
PROC9 - Transfer of substance or preparation into small containers	Worker - combined, long-term		< 0.01
	- systemic		
(dedicated filling line, including weighing)			
PROC1 - Use in closed process, no	Marker inhelative lang term	0.001 mg/m <sup>3</sup>	- 0.01
	Worker - inhalative, long-term	U.UU i mg/m°	< 0.01
likelihood of exposure	- systemic Worker - dermal, long-term -	0.002 mg/kg bw/day	- 0.01
PROC1 - Use in closed process, no	. •	0.002 mg/kg bw/day	< 0.01
likelihood of exposure	systemic Worker combined long term		z 0.01
PROC1 - Use in closed process, no	Worker - combined, long-term		< 0.01
likelihood of exposure	- systemic	0.004	. 0.04
PROC1 - Use in closed process, no	Worker - inhalative, long-term	U.UUT mg/m <sup>3</sup>	< 0.01
likelihood of exposure	- systemic	0.000 // / /	0.04
PROC1 - Use in closed process, no		0.002 mg/kg bw/day	< 0.01
likelihood of exposure	systemic		
PROC1 - Use in closed process, no	Worker - combined, long-term		< 0.01
likelihood of exposure	- systemic		0.440
PROC28 - Manual maintenance	Worker - inhalative, long-term	U.208 mg/m <sup>3</sup>	0.143
(cleaning and repair) of machinery	- systemic		
PROC28 - Manual maintenance	Worker - dermal, long-term -	4.487 mg/kg bw/day	0.065

(cleaning and repair) of machinery	systemic		
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - combined, long-term - systemic		0.209
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.013 mg/m <sup>3</sup>	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.035 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.011 mg/m <sup>3</sup>	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.035 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		< 0.01

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# Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

# Section 1 - Title

Title Lubricants, greases, release products (open systems)

**Type** Worker

Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites

Environmental release category(ies) ERC4 - Industrial use of processing aids in processes and products, not becoming part of

articles

PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC7 - Industrial spraying

PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at dedicated facilities

PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,

including weighing)

PROC10 - Roller application or brushing

PROC13 - Treatment of articles by dipping and pouring

PROC28 - Manual maintenance (cleaning and repair) of machinery

Product category(ies) PC24 - Lubricants, greases, release products

Sector(s) of use SU0 - Other SU3 - Industrial uses: Uses of substances as such or in preparations at

industrial sites

# Section 2 - Operational conditions and risk management measures

## Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

#### **Amounts used**

Туре	Daily amount per site
Value	<= 20000
Units	kg/d

Туре	Annual amount per site
Value	<= 400
Units	t(ons)/year

Conditions and measures related to municipal sewage treatment plant

Туре	Onsite STP
Assumed domestic sewage treatment	>= 2000 m3/day
plant flow	
Sludge treatment	No application of sewage sludge to soil

Environmental factors not influenced by risk management

Receiving water dilution (fresh or	>= 18000 m3/day
marine)	

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filling line,

# ES00386 - Borates - Use at industrial sites; Lubricants, Greases, Release Products (PC 24); Other (SU 0)

Evenouse dureties	
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Undertake operation under enclosed conditions
	Use in semi-automated and predominantly enclosed filling lines
the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
D	DDOOZ Industrial arrandon
Process category(ies)	PROC7 - Industrial spraying
Covers concentrations up to	25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
One distance and	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	Olean and instant and the small area areas along
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	to de co
Indoor/Outdoor use	Indoor
Process category(ies)	PROC7 - Industrial spraying
Covers concentrations up to	25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Undertake operation under enclosed conditions
LI ACRICAL CONDITIONS AND MASSIFES TO	Mideliane operation didei enclosed conditions
control dispersion from source towards	Use in semi-automated and predominantly enclosed filling lines
control dispersion from source towards the worker	Use in semi-automated and predominantly enclosed filling lines
control dispersion from source towards the worker Conditions and measures related to	Use in semi-automated and predominantly enclosed filling lines  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and	Use in semi-automated and predominantly enclosed filling lines  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Wear a respirator providing a minimum efficiency of 95%
control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation	Use in semi-automated and predominantly enclosed filling lines  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Wear a respirator providing a minimum efficiency of 95%  See Section 8 for information on appropriate personal protective equipment
control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent	Use in semi-automated and predominantly enclosed filling lines  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Wear a respirator providing a minimum efficiency of 95%
control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and	Use in semi-automated and predominantly enclosed filling lines  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Wear a respirator providing a minimum efficiency of 95%  See Section 8 for information on appropriate personal protective equipment
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control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use	Use in semi-automated and predominantly enclosed filling lines  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Wear a respirator providing a minimum efficiency of 95%  See Section 8 for information on appropriate personal protective equipment  Clean equipment and the work area every day  Outdoor
control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies)	Use in semi-automated and predominantly enclosed filling lines  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection Wear a respirator providing a minimum efficiency of 95% See Section 8 for information on appropriate personal protective equipment Clean equipment and the work area every day  Outdoor  PROC13 - Treatment of articles by dipping and pouring
control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies)  Covers concentrations up to	Use in semi-automated and predominantly enclosed filling lines  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection Wear a respirator providing a minimum efficiency of 95% See Section 8 for information on appropriate personal protective equipment Clean equipment and the work area every day  Outdoor  PROC13 - Treatment of articles by dipping and pouring 25%
control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies)  Covers concentrations up to Physical form of product	Use in semi-automated and predominantly enclosed filling lines  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection Wear a respirator providing a minimum efficiency of 95% See Section 8 for information on appropriate personal protective equipment Clean equipment and the work area every day  Outdoor  PROC13 - Treatment of articles by dipping and pouring 25% Liquid
control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies)  Covers concentrations up to Physical form of product  Exposure duration	Use in semi-automated and predominantly enclosed filling lines  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection Wear a respirator providing a minimum efficiency of 95% See Section 8 for information on appropriate personal protective equipment Clean equipment and the work area every day  Outdoor  PROC13 - Treatment of articles by dipping and pouring 25% Liquid Avoid carrying out activities involving exposure for more than 4 hours
control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies)  Covers concentrations up to  Physical form of product  Exposure duration  Use frequency  Technical conditions and measures to	Use in semi-automated and predominantly enclosed filling lines  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection Wear a respirator providing a minimum efficiency of 95% See Section 8 for information on appropriate personal protective equipment Clean equipment and the work area every day  Outdoor  PROC13 - Treatment of articles by dipping and pouring 25% Liquid Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently).
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control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies)  Covers concentrations up to Physical form of product  Exposure duration  Use frequency  Technical conditions and measures to control dispersion from source towards the worker	Use in semi-automated and predominantly enclosed filling lines  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection Wear a respirator providing a minimum efficiency of 95% See Section 8 for information on appropriate personal protective equipment Clean equipment and the work area every day  Outdoor  PROC13 - Treatment of articles by dipping and pouring 25% Liquid Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Undertake operation under enclosed conditions Use in semi-automated and predominantly enclosed filling lines Mechanical ventilation giving at least 1 ACH
control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies)  Covers concentrations up to Physical form of product  Exposure duration  Use frequency  Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to	Use in semi-automated and predominantly enclosed filling lines  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection Wear a respirator providing a minimum efficiency of 95% See Section 8 for information on appropriate personal protective equipment Clean equipment and the work area every day  Outdoor  PROC13 - Treatment of articles by dipping and pouring 25% Liquid Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Undertake operation under enclosed conditions Use in semi-automated and predominantly enclosed filling lines Mechanical ventilation giving at least 1 ACH
control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies)  Covers concentrations up to Physical form of product  Exposure duration  Use frequency  Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent	Use in semi-automated and predominantly enclosed filling lines  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection Wear a respirator providing a minimum efficiency of 95% See Section 8 for information on appropriate personal protective equipment Clean equipment and the work area every day  Outdoor  PROC13 - Treatment of articles by dipping and pouring 25% Liquid Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Undertake operation under enclosed conditions Use in semi-automated and predominantly enclosed filling lines Mechanical ventilation giving at least 1 ACH
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# ES00386 - Borates - Use at industrial sites; Lubricants, Greases, Release Products (PC 24); Other (SU 0)

exposure		
Indoor/Outdoor use	Covers indoor and outdoor use	
Assumes process temperature up to	40 C	
Assumes process temperature up to	40 C	
Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	
Covers concentrations up to	25%	
Physical form of product	Liquid	
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours	
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).	
Technical conditions and measures to	Undertake operation under enclosed conditions	
control dispersion from source towards	Automate activity where possible	
the worker	Mechanical ventilation giving at least 1 ACH	
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection	
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day	
Indoor/Outdoor use	Covers indoor and outdoor use	
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery	
Covers concentrations up to	25%	
Physical form of product	Liquid	
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours	
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).	
	Mechanical ventilation giving at least 1 ACH	
control dispersion from source towards		
the worker		
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection	
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day	
Indoor/Outdoor use	Covers indoor and outdoor use	
indoor/ediador dae	overs indeed and edition dec	
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure	
Covers concentrations up to	> 25%	
Physical form of product	Liquid	
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours	
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).	
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once	
	a month (containment is not breached)	
the worker	Automate activity where possible	
	Mechanical ventilation giving at least 1 ACH	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection	
personal protection, hygiene and		
health evaluation		
Organisational measures to prevent	Clean equipment and the work area every day	
/limit releases, dispersion and		
exposure		
Indoor/Outdoor use	Indoor	
Assumes process temperature up to	40 C	
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure	
Covers concentrations up to	> 25%	
Physical form of product	Liquid	
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours	

Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
control dispersion from source towards	a month (containment is not breached)
the worker	Automate activity where possible
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	40 C

Environmental release category(ies) - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

# Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.051 mg/l	0.018
Marine water	0.00508 mg/l	< 0.01
STP: Sewage Treatment Plant	0.0000002 mg/l	< 0.01
Soil	0.141 mg/kg dw	0.025

### **Derived No Effect Level (DNEL):**

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	0.015 mg/m <sup>3</sup>	0.01
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - dermal, long-term - systemic	0.083 mg/kg bw/day	< 0.01
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - combined, long-term - systemic		0.012
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	0.015 mg/m <sup>3</sup>	0.01
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - dermal, long-term - systemic	0.008 mg/kg bw/day	< 0.01
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at	Worker - combined, long-term - systemic		0.01

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dedicated facilities			
	Mantan inhalativa lavart	0.000/3	.0.04
PROC9 - Transfer of substance or	Worker - inhalative, long-term	U.UU2 mg/m³	< 0.01
preparation into small containers	- systemic		
(dedicated filling line, including			
weighing)			
PROC9 - Transfer of substance or	Worker - dermal, long-term -	0.006 mg/kg bw/day	< 0.01
preparation into small containers	systemic		
(dedicated filling line, including			
weighing)			
PROC9 - Transfer of substance or	Worker - combined, long-term		< 0.01
preparation into small containers	- systemic		1 0.0 1
(dedicated filling line, including	Systemis		
weighing)			
PROC10 - Roller application or	Morkor inholative lang tarm	0.750 mg/m3	0.522
	Worker - inhalative, long-term	0.759 mg/m <sup>e</sup>	0.523
brushing	- systemic		
PROC10 - Roller application or		0.9 mg/kg bw/day	0.013
brushing	systemic		
PROC10 - Roller application or	Worker - combined, long-term		0.537
brushing	- systemic		
PROC7 - Industrial spraying	Worker - inhalative, long-term	0.076 mg/m <sup>3</sup>	0.052
	- systemic	]	
PROC7 - Industrial spraying	,	0.09 mg/kg bw/day	< 0.01
i 1007 - industrial spraying	systemic	0.09 mg/kg bw/day	< 0.01
DDOC7 Industrial approving			0.054
PROC7 - Industrial spraying	Worker - combined, long-term		0.054
	- systemic		
PROC7 - Industrial spraying	Worker - inhalative, long-term	0.655 mg/m <sup>3</sup>	0.452
	- systemic		
PROC7 - Industrial spraying	Worker - dermal, long-term -	9.002 mg/kg bw/day	0.131
	systemic		
PROC7 - Industrial spraying	Worker - combined, long-term		0.583
in the second se	- systemic		
PROC13 - Treatment of articles by	Worker - inhalative, long-term	0.076 mg/m <sup>3</sup>	0.052
dipping and pouring	- systemic	0.070 mg/m²	0.032
PROC13 - Treatment of articles by		0 F32 mg/kg bw/dov	. 0.01
		0.532 mg/kg bw/day	< 0.01
dipping and pouring	systemic		0.00
PROC13 - Treatment of articles by	Worker - combined, long-term		0.06
dipping and pouring	- systemic		
PROC8b - Transfer of substance or	Worker - inhalative, long-term	0.046 mg/m <sup>3</sup>	0.032
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at			
dedicated facilities			
PROC8b - Transfer of substance or	Worker - dermal, long-term -	0.248 mg/kg bw/day	< 0.01
preparation (charging/discharging)	systemic	0.2 to mg/kg bw/day	0.01
from/to vessels/large containers at	Systemic		
1			
dedicated facilities	Morkor combined language		0.035
PROC8b - Transfer of substance or	Worker - combined, long-term		0.035
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at			
dedicated facilities			
PROC28 - Manual maintenance	Worker - inhalative, long-term	0.208 mg/m <sup>3</sup>	0.143
(cleaning and repair) of machinery	- systemic		
PROC28 - Manual maintenance	Worker - dermal, long-term -	4.487 mg/kg bw/day	0.065
(cleaning and repair) of machinery	systemic	]	
PROC28 - Manual maintenance	Worker - combined, long-term		0.309
(cleaning and repair) of machinery	- systemic		
PROC2 - Use in closed, continuous	Worker - inhalative, long-term	0.013 mg/m <sup>3</sup>	< 0.01
		o.o ro mg/m·	0.01
process with occasional controlled	- systemic		
exposure	10/	0.005 # 1 / 1	1004
PROC2 - Use in closed, continuous		0.035 mg/kg bw/day	< 0.01
process with occasional controlled	systemic	l	

exposure			
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.011 mg/m <sup>3</sup>	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.035 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		< 0.01

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# Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

## Section 1 - Title

**Title** Greasing at high energy conditions (open systems)

**Type** Worker

Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites

Environmental release category(ies) ERC4 - Industrial use of processing aids in processes and products, not becoming part of

articles

Process category(ies) PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at dedicated facilities

PROC17 - Lubrication at high energy conditions and in partly open process

PROC18 - Greasing at high energy conditions

PROC28 - Manual maintenance (cleaning and repair) of machinery PC24 - Lubricants, greases, release products PC25 - Metal working fluids

Product category(ies)

PC24 - Lubricants, greases, release products PC25 - Metal working fluids

Sector(s) of use SU0 - Other SU3 - Industrial uses: Uses of substances as such or in preparations at

industrial sites

# Section 2 - Operational conditions and risk management measures

### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

#### **Amounts used**

Туре	Daily amount per site
Value	<= 20000
Units	kg/d

Туре	Annual amount per site
Value	<= 400
Units	t(ons)/year

Conditions and measures related to municipal sewage treatment plant

Contained and incubation foliated to	mamorpar comago a calmont plant
Туре	Onsite STP
Assumed domestic sewage treatment	>= 2000 m3/day
plant flow	
Sludge treatment	No application of sewage sludge to soil

#### Environmental factors not influenced by risk management

invironmental factors not influenced by risk management	
Receiving water dilution (fresh or	>= 18000 m3/day
marine)	

#### Conditions and measures related to external treatment of waste for disposal

Disposal	Dispose of waste product or used containers according to local regulations
Disposai	pospose of waste product of used containers according to local regulations

Control of worker exposure		
	PROC8b - Transfer of substance or preparation (charging/discharging) from/to	
	vessels/large containers at dedicated facilities	
Covers concentrations up to	25%	
Physical form of product	Liquid	
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours	
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).	
	Undertake operation under enclosed conditions	
	Use in semi-automated and predominantly enclosed filling lines	
	Mechanical ventilation giving at least 1 ACH	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection	
personal protection, hygiene and		
health evaluation		
Organisational measures to prevent	Clean equipment and the work area every day	
/limit releases, dispersion and		
exposure		
Indoor/Outdoor use	Covers indoor and outdoor use	
<u> </u>	PROC17 - Lubrication at high energy conditions and in partly open process	
Covers concentrations up to	25%	
Physical form of product	Liquid	
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours	
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).	
	Supervision in place to check that the RMMs in place are being used correctly and OCs	
control dispersion from source towards		
the worker	Local exhaust ventilation - efficiency of at least 78%	
Dragon octorony(ice)	DDOC47 Lubrication at high anargy conditions and in northy anan process	
	PROC17 - Lubrication at high energy conditions and in partly open process 25%	
Covers concentrations up to		
	Liquid	
	Avoid carrying out activities involving exposure for more than 4 hours	
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).	
	Supervision in place to check that the RMMs in place are being used correctly and OCs	
control dispersion from source towards the worker	Local exhaust ventilation - efficiency of at least 78%	
lile worker	Local extraust vertiliation - efficiency of at least 70%	
Process category(ies)	PROC18 - Greasing at high energy conditions	
Covers concentrations up to	25%	
Physical form of product	Liquid	
	Avoid carrying out activities involving exposure for more than 4 hours	
	Covers daily exposures up to 8 hours (unless stated differently).	
	Undertake operation under enclosed conditions	
	Use in semi-automated and predominantly enclosed filling lines	
	Mechanical ventilation giving at least 1 ACH	
	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection	
personal protection, hygiene and	5, 6	
health evaluation		
Organisational measures to prevent	Clean equipment and the work area every day	
/limit releases, dispersion and		
exposure		
Indoor/Outdoor use	Covers indoor and outdoor use	
Assumes process temperature up to	40 C	
	PROC2 - Use in closed, continuous process with occasional controlled exposure	
Covers concentrations up to	25%	
Physical form of product	Liquid	
	Avoid carrying out activities involving exposure for more than 4 hours	
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).	
Technical conditions and measures to control dispersion from source towards	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once	

[i.	In a second of the second of t
the worker	Automate activity where possible
Conditions and massures related to	Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Conditions and measures related to personal protection, hygiene and	536/37/39 - Wear suitable protective dothing, gloves and eye/race protection
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Clean equipment and the work area every day
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	200 C
resumes process temperature up to	200 0
Process category(ies)	PROC17 - Lubrication at high energy conditions and in partly open process
Covers concentrations up to	25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Supervision in place to check that the RMMs in place are being used correctly and OCs
control dispersion from source towards	
the worker	Local exhaust ventilation - efficiency of at least 78%
Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to
	vessels/large containers at dedicated facilities
Covers concentrations up to	25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Undertake operation under enclosed conditions
control dispersion from source towards	
the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	good of the contraction of the c
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
	Innoce III is a second
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	> 25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)

the worker	Automate activity where possible Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 C

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	> 25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
control dispersion from source towards	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	40 C

<u>Environmental release category(ies)</u> - <u>ERC4</u> - <u>Industrial use of processing aids in processes and products, not becoming part of articles</u>

# Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.051 mg/l	0.018
Marine water	0.00508 mg/l	< 0.01
STP: Sewage Treatment Plant	0.0000002 mg/l	< 0.01
Soil	0.141 mg/kg dw	0.025

## **Derived No Effect Level (DNEL):**

Calculation m	ethod	MEASE

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	0.046 mg/m <sup>3</sup>	0.032
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - dermal, long-term - systemic	0.248 mg/kg bw/day	< 0.01

	1		,
PROC8b - Transfer of substance or	Worker - combined, long-term		0.035
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at			
dedicated facilities			
PROC17 - Lubrication at high energy	Worker - inhalative, long-term	0.7 mg/m <sup>3</sup>	0.483
conditions and in partly open process	- systemic		
PROC17 - Lubrication at high energy		0.012 mg/kg bw/day	< 0.01
conditions and in partly open process	systemic	l	0.01
	1 2		0.400
PROC17 - Lubrication at high energy	Worker - combined, long-term		0.483
conditions and in partly open process	- systemic		
PROC17 - Lubrication at high energy	Worker - inhalative, long-term	0.7 mg/m <sup>3</sup>	0.483
conditions and in partly open process	- systemic		
PROC17 - Lubrication at high energy	Worker - dermal, long-term -	0.012 mg/kg bw/day	< 0.01
conditions and in partly open process	systemic	]	
PROC17 - Lubrication at high energy	Worker - combined, long-term		0.483
conditions and in partly open process	- systemic		0.403
		0.750/2	0.500
PROC18 - Greasing at high energy	Worker - inhalative, long-term	0.759 mg/m <sup>2</sup>	0.523
conditions	- systemic		
PROC18 - Greasing at high energy		0.819 mg/kg bw/day	0.012
conditions	systemic		
PROC18 - Greasing at high energy	Worker - combined, long-term		0.535
conditions	- systemic		
PROC2 - Use in closed, continuous	Worker - inhalative, long-term	0.228 mg/m <sup>3</sup>	0.157
process with occasional controlled	- systemic	10.220 mg/m	0.107
ļ <del>.</del>	- systemic		
exposure	NA 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0.004 // / /	0.04
PROC2 - Use in closed, continuous		0.021 mg/kg bw/day	< 0.01
process with occasional controlled	systemic		
exposure			
PROC2 - Use in closed, continuous	Worker - combined, long-term		0.158
process with occasional controlled	- systemic		
exposure			
PROC17 - Lubrication at high energy	Worker - inhalative, long-term	0.7 mg/m <sup>3</sup>	0.483
conditions and in partly open process	- systemic	g,	0.100
PROC17 - Lubrication at high energy		0.01 mg/kg bw/day	< 0.01
		0.01 mg/kg bw/day	< 0.01
conditions and in partly open process	systemic		
PROC17 - Lubrication at high energy	Worker - combined, long-term		0.483
conditions and in partly open process	- systemic		
PROC8b - Transfer of substance or	Worker - inhalative, long-term	0.046 mg/m <sup>3</sup>	0.032
preparation (charging/discharging)	- systemic	-	
from/to vessels/large containers at			
dedicated facilities			
PROC8b - Transfer of substance or	Worker - dermal, long-term -	0.248 mg/kg bw/day	< 0.01
preparation (charging/discharging)	systemic	l	0.01
from/to vessels/large containers at	Systemic		
dedicated facilities	10.		0.005
PROC8b - Transfer of substance or	Worker - combined, long-term		0.035
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at			
dedicated facilities			<u> </u>
PROC28 - Manual maintenance	Worker - inhalative, long-term	0.208 mg/m <sup>3</sup>	0.143
(cleaning and repair) of machinery	- systemic	l	
PROC28 - Manual maintenance		4.487 mg/kg bw/day	0.065
(cleaning and repair) of machinery	systemic	1.107 mg/kg bw/day	0.000
	1 2		0.200
PROC28 - Manual maintenance	Worker - combined, long-term		0.209
(cleaning and repair) of machinery	- systemic		
PROC2 - Use in closed, continuous	Worker - inhalative, long-term	0.013 mg/m³	< 0.01
process with occasional controlled	- systemic		
exposure			
PROC2 - Use in closed, continuous	Worker - dermal, long-term -	0.035 mg/kg bw/day	< 0.01
· ·	systemic	l Ššír	
process with occasional controlled	13/3/6/11/10		
exposure	Systernic		

PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.011 mg/m <sup>3</sup>	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.035 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		< 0.01

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# Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

## Section 1 - Title

Title Leather treatment products Manufacture of textiles, leather, fur

**Type** Worke

Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites

Environmental release category(ies) ERC6b - Industrial use of reactive processing aids

PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non dedicated facilities

PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,

including weighing)

PROC10 - Roller application or brushing

PROC13 - Treatment of articles by dipping and pouring

PROC28 - Manual maintenance (cleaning and repair) of machinery PC23 - Leather tanning, dye, finishing, impregnation and care products

**Product category(ies)**PC23 - Leather tanning, dye, finishing, impregnation and care products
Sector(s) of use
SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU5

- Manufacture of textiles, leather, fur

## Section 2 - Operational conditions and risk management measures

## Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC6b - Industrial use of reactive processing aids

#### **Amounts used**

Туре	Daily amount per site
Value	<= 2597
Units	kg/d

Туре	Annual amount per site
Value	<= 200
Units	t(ons)/year

Conditions and measures related to municipal sewage treatment plant

To indicate and interest to indicate to indicate and ago to demonstrate plant	
Туре	Onsite STP
Assumed domestic sewage treatment	>= 2000 m3/day
plant flow	
Sludge treatment	No application of sewage sludge to soil

Conditions and measures related to external treatment of waste for disposal

	***************************************
Disposal	Dispose of waste product or used containers according to local regulations

Control of worker exposure	
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	> 25%

# ES00388 - Borates - Use at industrial sites; Leather treatment products (PC 23); Manufacture of textiles, leather, fur (SU 5)

	T
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 C
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,
J 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	including weighing)
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 15 minutes
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Undertake operation under enclosed conditions
	Use in semi-automated and predominantly enclosed filling lines
the worker	
Conditions and measures related to	Mechanical ventilation giving at least 1 ACH
	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	Clean any invested and the years are a second day.
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	Covers indeer and outdeer use
Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC13 - Treatment of articles by dipping and pouring
Covers concentrations up to	5%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	000/07/00 W '(
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	Clean any insert and the years are a years do
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	40 C
Process category(ies)	PROC13 - Treatment of articles by dipping and pouring
Process category(ies) Covers concentrations up to	PROC13 - Treatment of articles by dipping and pouring 5%
Process category(ies) Covers concentrations up to Exposure duration	PROC13 - Treatment of articles by dipping and pouring 5% Avoid carrying out activities involving exposure for more than 4 hours
Process category(ies) Covers concentrations up to Exposure duration Use frequency	PROC13 - Treatment of articles by dipping and pouring 5% Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently).
Process category(ies) Covers concentrations up to Exposure duration Use frequency Technical conditions and measures to	PROC13 - Treatment of articles by dipping and pouring 5% Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Mechanical ventilation giving at least 1 ACH
Process category(ies) Covers concentrations up to Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards	PROC13 - Treatment of articles by dipping and pouring 5% Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Mechanical ventilation giving at least 1 ACH
Process category(ies) Covers concentrations up to Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker	PROC13 - Treatment of articles by dipping and pouring 5% Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Mechanical ventilation giving at least 1 ACH
Process category(ies) Covers concentrations up to Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to	PROC13 - Treatment of articles by dipping and pouring 5% Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Mechanical ventilation giving at least 1 ACH
Process category(ies) Covers concentrations up to Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker	PROC13 - Treatment of articles by dipping and pouring 5% Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Mechanical ventilation giving at least 1 ACH

# ES00388 - Borates - Use at industrial sites; Leather treatment products (PC 23); Manufacture of textiles, leather, fur (SU 5)

Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
	55 C
recommon process temperature up to	<del>                                      </del>
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,
Frocess category(les)	
	including weighing)
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	·
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
indoon Cataoor asc	povers indoor and oddoor doc
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to
i rocess category(les)	vessels/large containers at non dedicated facilities
Covers consentrations vin to	
Covers concentrations up to	5%
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Use in semi-automated and predominantly enclosed filling lines
	Mechanical ventilation giving at least 1 ACH
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC13 - Treatment of articles by dipping and pouring
Covers concentrations up to	5%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	COC/OZ/OO Magazavitahla protestiva alathia protestiva alathia
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	Wear suitable gloves tested to EN 374
health evaluation	See Section 8 for information on appropriate personal protective equipment
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	40 C
Process category(ies)	PROC10 - Roller application or brushing
Covers concentrations up to	5%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	construction of the content of the c

	Undertake operation under enclosed conditions
control dispersion from source towards	Use in semi-automated and predominantly enclosed filling lines
the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	5%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	General ventilation Efficiency of at least 3 ACH
control dispersion from source towards	
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	g, g, c , c o m, c m, c m, c m, c m, c m, c
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	1
exposure	
	Indoor
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	, see
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Wet cleaning of the workplace
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
	** * * * * * * * * * * * * * * * * * * *

Environmental release category(ies) - ERC6b - Industrial use of reactive processing aids

# Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.061 mg/l	0.021
Marine water	0.00599 mg/l	< 0.01
STP: Sewage Treatment Plant	0.091 mg/l	< 0.01
Soil	0.141 mg/kg dw	0.025

# **Derived No Effect Level (DNEL):**

Calculation method	MEASE
Calculation method	IVILAGE

Calculation method	MEASE		
Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.013 mg/m <sup>3</sup>	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.035 mg/m <sup>3</sup>	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		< 0.01
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative, long-term - systemic	0.001 mg/m <sup>3</sup>	< 0.01
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - dermal, long-term - systemic	0.005 mg/m³	< 0.01
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - combined, long-term - systemic		< 0.01
PROC13 - Treatment of articles by dipping and pouring	Worker - inhalative, long-term - systemic		0.174
PROC13 - Treatment of articles by dipping and pouring	systemic	0.177 mg/m <sup>3</sup>	< 0.01
PROC13 - Treatment of articles by dipping and pouring	Worker - combined, long-term - systemic		0.177
PROC13 - Treatment of articles by dipping and pouring	Worker - inhalative, long-term - systemic	0.253 mg/m <sup>3</sup>	0.174
PROC13 - Treatment of articles by dipping and pouring	Worker - dermal, long-term - systemic	0.177 mg/m <sup>3</sup>	< 0.01
PROC13 - Treatment of articles by dipping and pouring	Worker - combined, long-term - systemic		0.177
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative, long-term - systemic	0.063 mg/m <sup>3</sup>	0.043
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - dermal, long-term - systemic	0.104 mg/m <sup>3</sup>	< 0.01
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - combined, long-term - systemic		0.045
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	0.127 mg/m <sup>3</sup>	0.088
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non	systemic	0.035 mg/m <sup>3</sup>	< 0.01

de diseate d'és cilities		<u> </u>	
dedicated facilities			
	Worker - combined, long-term		0.088
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC13 - Treatment of articles by	Worker - inhalative, long-term	0.253 mg/m <sup>3</sup>	0.174
dipping and pouring	- systemic		
PROC13 - Treatment of articles by	Worker - dermal, long-term -	0.108 mg/m <sup>3</sup>	< 0.01
dipping and pouring	systemic		
	Worker - combined, long-term		0.176
dipping and pouring	- systemic		
PROC10 - Roller application or	Worker - inhalative, long-term	0.253 mg/m <sup>3</sup>	0.174
brushing	- systemic		
PROC10 - Roller application or	Worker - dermal, long-term -	0.3 mg/m <sup>3</sup>	< 0.01
brushing	systemic		
PROC10 - Roller application or	Worker - combined, long-term		0.179
brushing	- systemic		
PROC28 - Manual maintenance	Worker - inhalative, long-term	1.063 mg/m <sup>3</sup>	0.733
(cleaning and repair) of machinery	- systemic	_	
PROC28 - Manual maintenance	Worker - dermal, long-term -	2.493 mg/m <sup>3</sup>	0.036
(cleaning and repair) of machinery	systemic		
PROC28 - Manual maintenance	Worker - combined, long-term		0.769
(cleaning and repair) of machinery	- systemic		
PROC28 - Manual maintenance	Worker - inhalative, long-term	0.069 mg/m <sup>3</sup>	0.048
(cleaning and repair) of machinery	- systemic		
PROC28 - Manual maintenance	Worker - dermal, long-term -	1.496 mg/m <sup>3</sup>	0.022
(cleaning and repair) of machinery	systemic		
	Worker - combined, long-term		0.069
(cleaning and repair) of machinery	- systemic		

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# Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

## Section 1 - Title

Title Agriculture, forestry, fishery Offshore industries

**Type** Worke

Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites

Environmental release category(ies) ERC5 - Industrial use resulting in inclusion into or onto a matrix

PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC7 - Industrial spraying

PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non dedicated facilities

PROC13 - Treatment of articles by dipping and pouring

PROC28 - Manual maintenance (cleaning and repair) of machinery

Product category(ies) PC0 - Other Products

Sector(s) of use SU1 - Agriculture, forestry, fishery SU2b - Offshore industries SU3 - Industrial uses: Uses of

substances as such or in preparations at industrial sites

# Section 2 - Operational conditions and risk management measures

### Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC5 - Industrial use resulting in inclusion into or onto a matrix

#### **Amounts used**

Туре	Daily amount per site
Value	<= 10000
Units	kg/d

Туре	Annual amount per site
Value	<= 200
Units	t(ons)/year

Conditions and measures related to municipal sewage treatment plant

Туре	Municipal STP
Assumed domestic sewage treatment	>= 2000 m3/day
plant flow	

Environmental factors not influenced by risk management

Environmental lactors not initiached by risk management		
Receiving water dilution (fresh or	>= 18000 m3/day	
marine)		

Conditions and measures related to external treatment of waste for disposal

Disposal	Dispose of waste product or used containers according to local regulations

Control of worker exposure	
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to

	vessels/large containers at non dedicated facilities	
Covers concentrations up to	25%	
Physical form of product	Liquid	
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour	
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).	
Technical conditions and measures to	Undertake operation under enclosed conditions	
	Use in semi-automated and predominantly enclosed filling lines	
the worker	Mechanical ventilation giving at least 1 ACH	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection	
personal protection, hygiene and		
health evaluation		
Organisational measures to prevent	Clean equipment and the work area every day	
/limit releases, dispersion and		
exposure Indoor/Outdoor use	Indoor	
indoor/Outdoor use	liliu00i	
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to	
l Tocess category(les)	vessels/large containers at non dedicated facilities	
Covers concentrations up to	25%	
Physical form of product	Liquid	
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour	
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).	
	Undertake operation under enclosed conditions	
	Use in semi-automated and predominantly enclosed filling lines	
the worker		
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection	
personal protection, hygiene and	OSO/01/33 - Wear Suitable protective clothing, gloves and eye/race protection	
health evaluation		
Organisational measures to prevent	Clean equipment and the work area every day	
/limit releases, dispersion and		
exposure		
Indoor/Outdoor use	Outdoor	
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure	
Covers concentrations up to	25%	
Physical form of product	Liquid	
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours	
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).	
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once	
control dispersion from source towards	a month (containment is not breached)	
the worker	Automate activity where possible	
	Mechanical ventilation giving at least 1 ACH	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection	
personal protection, hygiene and		
health evaluation	Clean equipment and the work area every dev	
Organisational measures to prevent	Clean equipment and the work area every day	
/limit releases, dispersion and		
exposure Indoor/Outdoor use	Indoor	
	40 C	
Assumes process temperature up to	<del> </del> T-O O	
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure	
Covers concentrations up to	25%	
Physical form of product	Liquid	
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours	
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).	
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once	
	a month (containment is not breached)	
the worker	Automate activity where possible	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection	
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# ES00389 - Borates - Use at industrial sites; Other (PC 0); Various sectors (SU 1, SU 2b)

Covers concentrations up to

personal protection, hygiene and	
health evaluation	
Organisational measures to prevent /limit releases, dispersion and	Clean equipment and the work area every day
exposure	
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	40 C
Process category(ies)	PROC7 - Industrial spraying
Covers concentrations up to	25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Undertake operation under enclosed conditions
control dispersion from source towards	
the worker	Use with local exhaust ventilation
	Mechanical ventilation giving at least 3 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
	Clean equipment and the work area every day
exposure	
СХРОССТС	
Process category(ies)	PROC13 - Treatment of articles by dipping and pouring
Covers concentrations up to	25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Undertake operation under enclosed conditions
	Use in semi-automated and predominantly enclosed filling lines
the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	40 C
	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	5%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
control dispersion from source towards	
	Automate activity where possible Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	Indoor
	Indoor
Assumes process temperature up to	40 C
Process category/ica	DDOC2. Use in closed continuous process with accessional controlled exposure
	PROC2 - Use in closed, continuous process with occasional controlled exposure

Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours	
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).	
control dispersion from source towards	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)	
	Automate activity where possible	
	Mechanical ventilation giving at least 1 ACH	
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection	
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day	
Indoor/Outdoor use	Outdoor	
Assumes process temperature up to	40 C	

Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day Wet cleaning of the workplace
Indoor/Outdoor use	Covers indoor and outdoor use

Environmental release category(ies) - ERC5 - Industrial use resulting in inclusion into or onto a matrix

# Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.551 mg/l	0.19
Marine water	0.055 mg/l	0.019
STP: Sewage Treatment Plant	4.998 mg/l	0.5
Soil	0.178 mg/kg dw	0.031

### **Derived No Effect Level (DNEL):**

Calculation method	MEASE
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Process category(ies)	Exposure route		Risk characterisation ratio (RCR)
	Worker - inhalative, long-term - systemic	0.038 mg/m <sup>3</sup>	0.026
	Worker - dermal, long-term - systemic	0.106 mg/kg bw/day	< 0.01

# ES00389 - Borates - Use at industrial sites; Other (PC 0); Various sectors (SU 1, SU 2b)

		1	
from/to vessels/large containers at non			
dedicated facilities			
PROC8a - Transfer of substance or	Worker - combined, long-term		0.028
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC8a - Transfer of substance or	Worker - inhalative, long-term	0.03 mg/m <sup>3</sup>	0.021
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC8a - Transfer of substance or	Worker - dermal, long-term -	0.106 mg/kg bw/day	< 0.01
preparation (charging/discharging)	systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC8a - Transfer of substance or	Worker - combined, long-term		0.022
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC2 - Use in closed, continuous	Worker - inhalative, long-term	0.008 mg/m <sup>3</sup>	< 0.01
process with occasional controlled	- systemic	l	
exposure	3,5155		
PROC2 - Use in closed, continuous	Worker - dermal, long-term -	0.021 mg/kg bw/day	< 0.01
process with occasional controlled	systemic	l	0.01
exposure			
PROC2 - Use in closed, continuous	Worker - combined, long-term		< 0.01
process with occasional controlled	- systemic		< 0.01
exposure	Systemio		
PROC2 - Use in closed, continuous	Worker - inhalative, long-term	0.007 mg/m <sup>3</sup>	< 0.01
process with occasional controlled	- systemic	0.007 mg/m²	< 0.01
exposure	- systemic		
PROC2 - Use in closed, continuous	Worker - dermal, long-term -	0.021 mg/kg bw/day	< 0.01
process with occasional controlled	systemic	0.021 mg/kg bw/day	< 0.01
exposure	Systemic		
PROC2 - Use in closed, continuous	Worker - combined, long-term		< 0.01
process with occasional controlled	- systemic		< 0.01
ļ.	- systemic		
PROC7 - Industrial spraying	Worker - inhalative, long-term	1 000 mg/m <sup>3</sup>	0.751
FROCT - Industrial spraying	- systemic	11.069 mg/m²	0.731
DDOC7 Industrial aproving		0.54 mg/kg bw/dov	.0.01
PROC7 - Industrial spraying		0.54 mg/kg bw/day	< 0.01
DD007 Industrial annualism	systemic		0.750
PROC7 - Industrial spraying	Worker - combined, long-term		0.759
DD0040 T + + + + + + + + + + + + + + + + + +	- systemic	0.070	0.050
PROC13 - Treatment of articles by	Worker - inhalative, long-term	0.076 mg/m <sup>3</sup>	0.052
dipping and pouring	- systemic		
PROC13 - Treatment of articles by		0.532mg/kg bw/day	< 0.01
dipping and pouring	systemic		
PROC13 - Treatment of articles by	Worker - combined, long-term		0.06
dipping and pouring	- systemic		
PROC2 - Use in closed, continuous	Worker - inhalative, long-term	0.001 mg/m <sup>3</sup>	< 0.01
process with occasional controlled	- systemic		
exposure			
PROC2 - Use in closed, continuous	Worker - dermal, long-term -	0.007 mg/kg bw/day	< 0.01
process with occasional controlled	systemic		
exposure			
PROC2 - Use in closed, continuous	Worker - combined, long-term		< 0.01
process with occasional controlled	- systemic		
exposure			
PROC2 - Use in closed, continuous	Worker - inhalative, long-term	0.001 mg/m <sup>3</sup>	< 0.01
process with occasional controlled	- systemic	l ~	
exposure	-		
PROC2 - Use in closed, continuous	Worker - dermal, long-term -	0.007 mg/kg bw/day	< 0.01
,			1

process with occasional controlled	systemic		
exposure			
process with occasional controlled	Worker - combined, long-term - systemic		< 0.01
exposure			
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - inhalative, long-term - systemic	0.069 mg/m <sup>3</sup>	0.048
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - dermal, long-term - systemic	1.496 mg/kg bw/day	0.022
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - combined, long-term - systemic		0.069

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# Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

# Section 1 - Title

Title Base metals and alloys Manufacture of basic metals, including alloys

**Type** Worke

Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites

Environmental release category(ies) ERC5 - Industrial use resulting in inclusion into or onto a matrix

Process category(ies) PROC0 - Other Process

PROC1 - Use in closed process, no likelihood of exposure

PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non dedicated facilities

PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at dedicated facilities

PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,

including weighing)

PROC15 - Use as laboratory reagent

PROC28 - Manual maintenance (cleaning and repair) of machinery

**Product category(ies)** PC7 - Base metals and alloys

Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

SU14 - Manufacture of basic metals, including alloys

# Section 2 - Operational conditions and risk management measures

# Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC5 - Industrial use resulting in inclusion into or onto a matrix

#### **Amounts used**

Туре	Daily amount per site
Value	<= 909
Units	kg/d

Туре	Annual amount per site
Value	<= 200
Units	t(ons)/year

Conditions and measures related to municipal sewage treatment plant

Туре	Onsite STP
Assumed domestic sewage treatment	>= 2000 m3/day
plant flow	
Sludge treatment	No application of sewage sludge to soil

Conditions and measures related to external treatment of waste for disposal

Disposal Dispose of waste product or used containers according to local regulations	
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# Control of worker exposure

# ES00390 - Borates - Use at industrial sites; Base metals and alloys (PC 7); Manufacture of basic metals, including alloys (SU 14) (ERC5)

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to		
	vessels/large containers at dedicated facilities		
Covers concentrations up to	100%		
Physical form of product	Solid, medium dustiness or Paste		
Exposure duration	Avoid carrying out operation for more than 2 hours		
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).		
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once		
the worker	a month (containment is not breached) Automate activity where possible		
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection		
personal protection, hygiene and	OSO/01/33 - Wear Suitable protective dollning, gloves and eye/lace protection		
health evaluation			
Organisational measures to prevent	Clean equipment and the work area every day		
/limit releases, dispersion and	Demonstrable and effective housekeeping practices are in place		
exposure	·		
Indoor/Outdoor use	Outdoor		
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure		
Covers concentrations up to	> 25%		
Physical form of product	Solid, medium dustiness		
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours		
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).		
	Use in closed process		
control dispersion from source towards the worker			
Conditions and measures related to	Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection		
personal protection, hygiene and			
health evaluation			
Organisational measures to prevent	Clean equipment and the work area every day		
/limit releases, dispersion and			
exposure			
Indoor/Outdoor use	Covers indoor and outdoor use		
Dun anno anto manu/ina)	DDOCO Lles in closed continuous museus with accessional controlled avecause		
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure		
Covers concentrations up to	> 25%		
Physical form of product	Solid, medium dustiness		
Exposure duration Use frequency	Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).		
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once		
	a month (containment is not breached)		
the worker	Automate activity where possible		
	Mechanical ventilation giving at least 1 ACH		
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection		
personal protection, hygiene and	3,3		
health evaluation			
Organisational measures to prevent	Clean equipment and the work area every day		
/limit releases, dispersion and			
exposure			
Indoor/Outdoor use	Indoor		
Assumes process temperature up to	40 C		
Process category/ies\	PROC2 - Use in closed, continuous process with occasional controlled exposure		
Process category(ies)  Covers concentrations up to	·		
Physical form of product	> 25% Solid, medium dustiness		
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours		
Use frequency			
	(Covers daily exposures up to 8 hours (upless stated differently)		
Technical conditions and measures to	Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once		
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once		

# ES00390 - Borates - Use at industrial sites; Base metals and alloys (PC 7); Manufacture of basic metals, including alloys (SU 14) (ERC5)

Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	40 C
<u> </u>	
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to
	vessels/large containers at non dedicated facilities
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Undertake operation under enclosed conditions
	Use in semi-automated and predominantly enclosed filling lines
the worker	Local exhaust ventilation - efficiency of at least 90%
THE WORKER	General ventilation Efficiency of at least 3 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	Wear suitable gloves tested to EN 374
health evaluation	See Section 8 for information on appropriate personal protective equipment
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Demonstrable and effective housekeeping practices are in place
exposure	
Indoor/Outdoor use	Indoor
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,
	including weighing)
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Undertake operation under enclosed conditions
control dispersion from source towards	Mechanical ventilation giving at least 1 ACH
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
WOING!	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
	330/37/39 - Wear suitable protective clothing, gloves and eye/race protection
personal protection, hygiene and health evaluation	
picaltii EvaluatiUH	
Organizational massures to service	Closp aguipment and the work area ayary day
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Clean equipment and the work area every day
	Clean equipment and the work area every day  Covers indoor and outdoor use

Assumes process temperature up to	1000 C
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	> 25%
Physical form of product	Solid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Mechanical ventilation giving at least 3 ACH
control dispersion from source towards	
the worker	000/07/00 Managaritable marketics alathing alarma and acceptance and acceptance
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	Olean and instant and the second area of the second area.
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Wet cleaning of the workplace
exposure	
Process category(ies)	PROC0 - Other Process
Covers concentrations up to	5%
Physical form of product	Solid, low dustiness
Exposure duration Use frequency	Avoid carrying out activities involving exposure for more than 15 minutes
	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards the worker	
Conditions and measures related to	C26/27/20 Mean autable protective elething gloves and availage protection
	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Wet cleaning of the workplace
exposure	wet cleaning of the workplace
схрозите	
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,
1 100000 category (100)	including weighing)
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	grand and a second second and a second a second and a second a second and a second
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Wet cleaning of the workplace
exposure	1
Process category(ies)	PROC15 - Use as laboratory reagent
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	l l

Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	

Environmental release category(ies) - ERC5 - Industrial use resulting in inclusion into or onto a matrix

# Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.279 mg/l	0.096
Marine water	0.028 mg/l	< 0.01
STP: Sewage Treatment Plant	2.272 mg/l	0.227
Soil	0.144 mg/kg dw	0.025

# **Derived No Effect Level (DNEL):**

Calculation method Used ART model

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio
1 Tocess category(les)	Exposure route	predicted exposure level	(RCR)
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	0.43 mg/m <sup>3</sup>	0.297
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - dermal, long-term - systemic	2.457 mg/kg bw/day	0.036
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - combined, long-term - systemic		0.332
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic	0.001 mg/m <sup>3</sup>	< 0.01
PROC1 - Use in closed process, no likelihood of exposure	Worker - dermal, long-term - systemic	0.003 mg/kg bw/day	< 0.01
PROC1 - Use in closed process, no likelihood of exposure	Worker - combined, long-term - systemic		< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.013 mg/m <sup>3</sup>	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.035 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	g .	< 0.01
PROC2 - Use in closed, continuous	Worker - dermal, long-term -	0.035 mg/kg bw/day	< 0.01

# ES00390 - Borates - Use at industrial sites; Base metals and alloys (PC 7); Manufacture of basic metals, including alloys (SU 14) (ERC5)

		T	
r .	systemic		
exposure			
	Worker - combined, long-term		< 0.01
process with occasional controlled	- systemic		
exposure			
PROC8a - Transfer of substance or	Worker - inhalative, long-term	0.67 mg/m <sup>3</sup>	0.462
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at non			
dedicated facilities			
	Marker dermel leng term	20.38 mg/kg bw/day	0.297
		20.36 mg/kg bw/day	0.297
	systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC8a - Transfer of substance or	Worker - combined, long-term		0.759
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at non			
dedicated facilities			
	Worker - inhalative, long-term	0.316 mg/m <sup>3</sup>	0.218
preparation into small containers	- systemic		0.2.0
(dedicated filling line, including	Systemio		
weighing)	10.	0.540 // //	
		0.518 mg/kg bw/day	< 0.01
preparation into small containers	systemic		
(dedicated filling line, including			
weighing)			
PROC9 - Transfer of substance or	Worker - combined, long-term		0.225
preparation into small containers	- systemic		
(dedicated filling line, including			
weighing)			
	Worker - inhalative, long-term	0.013 mg/m <sup>3</sup>	< 0.01
		0.013 mg/m²	0.01
process with occasional controlled	- systemic		
exposure	NAC 1 1 1 1 1 1	0.005 // / /	
		0.035 mg/kg bw/day	< 0.01
process with occasional controlled	systemic		
exposure			
PROC2 - Use in closed, continuous	Worker - combined, long-term		< 0.01
process with occasional controlled	- systemic		
exposure			
PROC28 - Manual maintenance	Worker - inhalative, long-term	1 063 mg/m <sup>3</sup>	0.733
(cleaning and repair) of machinery	- systemic	11.000 mg/m	0.700
PROC28 - Manual maintenance	·	2.402 mg/kg buy/doy	0.036
1	, ,	2.492 mg/kg bw/day	0.036
	systemic		
	Worker - combined, long-term		0.769
(cleaning and repair) of machinery	- systemic		
PROC0 - Other Process	Worker - inhalative, long-term	0.116 mg/m <sup>3</sup>	0.08
	- systemic		
PROC0 - Other Process		0.186 mg/kg bw/day	< 0.01
TROOF CITIES TROCESS	systemic	l	0.01
DDOCO Other Dreeses	Worker - combined, long-term		0.083
PROC0 - Other Process			0.003
	- systemic		
PROC9 - Transfer of substance or	Worker - inhalative, long-term	լՍ.Ս13 mg/m³	< 0.01
preparation into small containers	- systemic		
(dedicated filling line, including			
weighing)			
	Worker - dermal, long-term -	0.104 mg/kg bw/day	< 0.01
1	systemic	] 3. 3,	-
(dedicated filling line, including			
weighing)		i	i l
DDOOO Transfer of substances	\\/\_\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		0.04
PROC9 - Transfer of substance or preparation into small containers	Worker - combined, long-term - systemic		0.01

(dedicated filling line, including weighing)			
, ,	Worker - inhalative, long-term - systemic	0.013 mg/m <sup>3</sup>	< 0.01
1	Worker - dermal, long-term - systemic	0.069 mg/kg bw/day	< 0.01
, , ,	Worker - combined, long-term - systemic		< 0.01

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# Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

# Section 1 - Title

Title Base metals and alloys Manufacture of basic metals, including alloys

**Type** Worker

Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites

Environmental release category(ies) ERC6b - Industrial use of reactive processing aids

Process category(ies) PROC0 - Other Process

PROC1 - Use in closed process, no likelihood of exposure

PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non dedicated facilities

PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at dedicated facilities

PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,

including weighing)

PROC15 - Use as laboratory reagent

PROC28 - Manual maintenance (cleaning and repair) of machinery

**Product category(ies)** PC7 - Base metals and alloys

Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

SU14 - Manufacture of basic metals, including alloys

# Section 2 - Operational conditions and risk management measures

### Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC6b - Industrial use of reactive processing aids

#### **Amounts used**

Туре	Daily amount per site
Value	<= 10000
Units	kg/d

Туре	Annual amount per site
Value	<= 200
Units	t(ons)/year

Conditions and measures related to municipal sewage treatment plant

Туре	Municipal STP
Assumed domestic sewage treatment	>= 2000 m3/day
plant flow	·

#### Environmental factors not influenced by risk management

	a y control y control
Receiving water dilution (fresh or	>= 18000 m3/day
marine)	

#### Conditions and measures related to external treatment of waste for disposal

Disposal	Dispose of waste product or used containers according to local regulations
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Control of worker exposure	
Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to
	vessels/large containers at dedicated facilities
Covers concentrations up to	100%
Physical form of product	Solid, medium dustiness or Paste
Exposure duration	Avoid carrying out operation for more than 2 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	Class as vines and the great and the great
Organisational measures to prevent /limit releases, dispersion and	Clean equipment and the work area every day  Demonstrable and effective housekeeping practices are in place
exposure	Demonstrable and effective housekeeping practices are in place
Indoor/Outdoor use	Outdoor
indoor/Odddoor dse	Odidool
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Use in closed process
control dispersion from source towards	
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	group of the state
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
- ·	[
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
Conditions and measures related to	Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	536/37/39 - Wear suitable protective clothing, gloves and eyerface protection
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Circuit equipment and the work area every day
exposure	
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 C
,,	
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	, , , , , , , , , , , , , , , , , , , ,

# ES00391 - Borates - Use at industrial sites; Base metals and alloys (PC 7); Manufacture of basic metals, including alloys (SU 14) (ERC 6b)

Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
control dispersion from source towards	a month (containment is not breached)
the worker	Automate activity where possible
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	g, g
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	40 C
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to
	vessels/large containers at non dedicated facilities
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Undertake operation under enclosed conditions
control dispersion from source towards	Automate activity where possible
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	' '
exposure	
Indoor/Outdoor use	Outdoor
macon Catacor asc	O GLOOD
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,
Process category(les)	
	including weighing)
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Undertake operation under enclosed conditions
	Mechanical ventilation giving at least 1 ACH
the worker	J Comments of the comments of
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	Society of vivous customers protective dealing, groves and cyclicate protection
health evaluation	
	Clear any import and the work are a sum day.
	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
•	
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
rolosooo, aloporolori aria	

# ES00391 - Borates - Use at industrial sites; Base metals and alloys (PC 7); Manufacture of basic metals, including alloys (SU 14) (ERC 6b)

evnosure	
exposure Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	1000 C
Assumes process temperature up to	1000 C
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	> 25%
Physical form of product	Solid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Mechanical ventilation giving at least 3 ACH
control dispersion from source towards the worker	
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Wet cleaning of the workplace
exposure	
Process category(ies)	PROC0 - Other Process
Covers concentrations up to	5%
Physical form of product	Solid, low dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 15 minutes
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Wet cleaning of the workplace
exposure	Trot oldaring of the Workplado
Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Wet cleaning of the workplace
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Decree of the Control	DDOOAS Har as laboratory or the
Process category(ies)	PROC15 - Use as laboratory reagent
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards	Mechanical ventilation giving at least 1 ACH

the worker	
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Covers indoor and outdoor use

Environmental release category(ies) - ERC6b - Industrial use of reactive processing aids

## Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.551 mg/l	0.19
Marine water	0.055 mg/l	0.019
STP: Sewage Treatment Plant	4.998 mg/l	0.5
Soil	0.173 mg/kg dw	0.03

### **Derived No Effect Level (DNEL):**

Calculation method Used ART model MEASE

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	0.43 mg/m <sup>3</sup>	0.297
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - dermal, long-term - systemic	2.457 mg/kg bw/day	0.036
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - combined, long-term - systemic		0.332
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic	0.001 mg/m <sup>3</sup>	< 0.01
PROC1 - Use in closed process, no likelihood of exposure		0.003 mg/kg bw/day	< 0.01
PROC1 - Use in closed process, no likelihood of exposure	Worker - combined, long-term - systemic		< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.013 mg/m <sup>3</sup>	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.035 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled	Worker - combined, long-term - systemic		< 0.01

# ES00391 - Borates - Use at industrial sites; Base metals and alloys (PC 7); Manufacture of basic metals, including alloys (SU 14) (ERC 6b)

exposure			
PROC2 - Use in closed, continuous	Worker - inhalative, long-term	0.011 mg/m <sup>3</sup>	< 0.01
process with occasional controlled	- systemic	l ing/iii	< 0.01
exposure	- systemic		
PROC2 - Use in closed, continuous	Markey derived less at terms	0.025	.0.04
•		0.035 mg/kg bw/day	< 0.01
process with occasional controlled	systemic		
exposure	)		0.04
PROC2 - Use in closed, continuous	Worker - combined, long-term		< 0.01
process with occasional controlled	- systemic		
exposure			
PROC8a - Transfer of substance or	Worker - inhalative, long-term	0.67 mg/m <sup>3</sup>	0.462
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC8a - Transfer of substance or	Worker - dermal, long-term -	20.38 mg/kg bw/day	0.297
preparation (charging/discharging)	systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC8a - Transfer of substance or	Worker - combined, long-term		0.759
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC8a - Transfer of substance or	Worker - inhalative, long-term	1.092 mg/m <sup>3</sup>	0.753
preparation (charging/discharging)	- systemic	g,	5 55
from/to vessels/large containers at non			
dedicated facilities			
PROC8a - Transfer of substance or	Worker - dermal, long-term -	0.273 mg/kg bw/day	< 0.01
preparation (charging/discharging)	systemic	0.273 mg/kg bw/day	< 0.01
from/to vessels/large containers at non			
dedicated facilities			
PROC8a - Transfer of substance or	Worker - combined, long-term		0.757
			0.757
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at non			
dedicated facilities	Manager in body to the second	0.040	0.040
PROC9 - Transfer of substance or	Worker - inhalative, long-term	0.316 mg/m <sup>3</sup>	0.218
preparation into small containers	- systemic		
(dedicated filling line, including			
weighing)			
PROC9 - Transfer of substance or		0.518 mg/kg bw/day	< 0.01
preparation into small containers	systemic		
(dedicated filling line, including			
weighing)			
PROC9 - Transfer of substance or	Worker - combined, long-term		0.225
preparation into small containers	- systemic		
(dedicated filling line, including			
weighing)			
PROC2 - Use in closed, continuous	Worker - inhalative, long-term	0.013 mg/m <sup>3</sup>	< 0.01
process with occasional controlled	- systemic		
exposure			
PROC2 - Use in closed, continuous	Worker - dermal, long-term -	0.035 mg/kg bw/day	< 0.01
process with occasional controlled	systemic	' '	
exposure	_		
PROC2 - Use in closed, continuous	Worker - combined, long-term		< 0.01
process with occasional controlled	- systemic		
exposure	-,		
PROC28 - Manual maintenance	Worker - inhalative, long-term	1 063 mg/m <sup>3</sup>	0.733
(cleaning and repair) of machinery	- systemic	1.000 mg/m	0.700
PROC28 - Manual maintenance		2.492 mg/kg bw/day	0.036
		2.432 Hig/kg bw/day	0.030
(cleaning and repair) of machinery	Systemic Worker combined long term		0.760
PROC28 - Manual maintenance	Worker - combined, long-term		0.769

(cleaning and repair) of machinery	- systemic		
PROC0 - Other Process	Worker - inhalative, long-term - systemic	0.116 mg/m <sup>3</sup>	0.08
PROC0 - Other Process	Worker - dermal, long-term - systemic	0.186 mg/kg bw/day	< 0.01
PROC0 - Other Process	Worker - combined, long-term - systemic		0.083
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative, long-term - systemic	0.013 mg/m³	< 0.01
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - dermal, long-term - systemic	0.104 mg/kg bw/day	< 0.01
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - combined, long-term - systemic		0.01
PROC15 - Use as laboratory reagent	Worker - inhalative, long-term - systemic	0.013 mg/m <sup>3</sup>	< 0.01
PROC15 - Use as laboratory reagent	Worker - dermal, long-term - systemic	0.069 mg/kg bw/day	< 0.01
PROC15 - Use as laboratory reagent	Worker - combined, long-term - systemic		< 0.01

## Section 4 - Guidance to check compliance with the exposure scenario

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## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

## Section 1 - Title

Title Welding and soldering products, flux products Manufacture of fabricated metal products,

except machinery and equipment

**Type** Worker

Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites

Environmental release category(ies) ERC5 - Industrial use resulting in inclusion into or onto a matrix

PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non dedicated facilities

PROC28 - Manual maintenance (cleaning and repair) of machinery

Product category(ies) PC38 - Welding and soldering products, flux products

Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

SU15 - Manufacture of fabricated metal products, except machinery and equipment

## Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC5 - Industrial use resulting in inclusion into or onto a matrix

#### **Amounts used**

Туре	Daily amount per site
Value	<= 909
Units	kg/d

Туре	Annual amount per site
Value	<= 200
Units	t(ons)/year

Conditions and measures related to municipal sewage treatment plant

	The state of the s
Type	Onsite STP
Assumed domestic sewage treatment	2000 m3/day
plant flow	·
Sludge treatment	No application of sewage sludge to soil

Conditions and measures related to external treatment of waste for disposal

Control of worker exposure		
Process category(ies) PROC8a - Transfer of substance or preparation (charging/discharging) from/to		
	vessels/large containers at non dedicated facilities	
Covers concentrations up to	5%	
Physical form of product	Paste	
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour	

Use frequency	la
	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	Wear a respirator providing a minimum efficiency of 90%
health evaluation	See Section 8 for information on appropriate personal protective equipment
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	5%
Physical form of product	Paste
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	330/37/39 - Wear Suitable protective clothing, gloves and eye/face protection
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	and the state of t
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	40 C
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	5%
Physical form of product	Paste
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
control dispersion from source towards	a month (containment is not breached)
	a month (containment is not breached) Automate activity where possible
control dispersion from source towards the worker	a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH
control dispersion from source towards the worker  Conditions and measures related to	a month (containment is not breached) Automate activity where possible
control dispersion from source towards the worker	a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH
control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation	a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH
control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and	a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure	a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and	a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure	a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day
control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure  Indoor/Outdoor use  Assumes process temperature up to	a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use 40 C
control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use	a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use 40 C  PROC28 - Manual maintenance (cleaning and repair) of machinery
control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Covers concentrations up to	a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use 40 C  PROC28 - Manual maintenance (cleaning and repair) of machinery 5%
control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Covers concentrations up to Physical form of product	a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use 40 C  PROC28 - Manual maintenance (cleaning and repair) of machinery 5% Paste
control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Covers concentrations up to Physical form of product Exposure duration	a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use 40 C  PROC28 - Manual maintenance (cleaning and repair) of machinery 5% Paste Avoid carrying out activities involving exposure for more than 1 hour
control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Covers concentrations up to Physical form of product Exposure duration Use frequency	a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use 40 C  PROC28 - Manual maintenance (cleaning and repair) of machinery 5% Paste Avoid carrying out activities involving exposure for more than 1 hour Covers daily exposures up to 8 hours (unless stated differently).
control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Covers concentrations up to Physical form of product  Exposure duration Use frequency Technical conditions and measures to	a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use 40 C  PROC28 - Manual maintenance (cleaning and repair) of machinery 5% Paste Avoid carrying out activities involving exposure for more than 1 hour Covers daily exposures up to 8 hours (unless stated differently). Use in semi-automated and predominantly enclosed filling lines
control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards	a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use 40 C  PROC28 - Manual maintenance (cleaning and repair) of machinery 5% Paste Avoid carrying out activities involving exposure for more than 1 hour Covers daily exposures up to 8 hours (unless stated differently).
control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Covers concentrations up to Physical form of product  Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker	a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use 40 C  PROC28 - Manual maintenance (cleaning and repair) of machinery 5% Paste Avoid carrying out activities involving exposure for more than 1 hour Covers daily exposures up to 8 hours (unless stated differently). Use in semi-automated and predominantly enclosed filling lines Mechanical ventilation giving at least 1 ACH
control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Assumes process temperature up to  Process category(ies)  Covers concentrations up to Physical form of product Exposure duration  Use frequency  Technical conditions and measures to control dispersion from source towards	a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use 40 C  PROC28 - Manual maintenance (cleaning and repair) of machinery 5% Paste Avoid carrying out activities involving exposure for more than 1 hour Covers daily exposures up to 8 hours (unless stated differently). Use in semi-automated and predominantly enclosed filling lines

health evaluation	
Organisational measures to prevent /limit releases, dispersion and	Clean equipment and the work area every day
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use

Environmental release category(ies) - ERC5 - Industrial use resulting in inclusion into or onto a matrix

## Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.279 mg/l	0.096
Marine water	0.028 mg/l	< 0.01
STP: Sewage Treatment Plant	2.272 mg/l	0.227
Soil	0.144 mg/kg dw	0.025

#### **Derived No Effect Level (DNEL):**

Calculation method MEASE

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	0.127 mg/m <sup>3</sup>	0.088
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	systemic	0.355 mg/kg bw/day	< 0.01
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - combined, long-term - systemic		0.093
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.003 mg/m <sup>3</sup>	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.007 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.003 mg/m <sup>3</sup>	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.007 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled	Worker - combined, long-term - systemic		< 0.01

ES00392 - Borates - Use at industrial sites; Welding and soldering products, flux products (PC 38); Manufacture of fabricated metal products, except machinery and equipment (SU 15).

exposure			
PROC28 - Manual maintenance	Worker - inhalative, long-term	0.002 mg/m <sup>3</sup>	< 0.01
(cleaning and repair) of machinery	- systemic	_	
PROC28 - Manual maintenance	Worker - dermal, long-term -	0.05 mg/kg bw/day	< 0.01
(cleaning and repair) of machinery	systemic		
PROC28 - Manual maintenance	Worker - combined, long-term		< 0.01
(cleaning and repair) of machinery	- systemic		

## Section 4 - Guidance to check compliance with the exposure scenario

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## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

### Section 1 - Title

Title Welding and soldering products, flux products

**Type** Worke

Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites

Environmental release category(ies) ERC4 - Industrial use of processing aids in processes and products, not becoming part of

articles ERC6b - Industrial use of reactive processing aids

Process category(ies) PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non dedicated facilities

PROC25 - Other hot work operations with metals

PROC28 - Manual maintenance (cleaning and repair) of machinery

**Product category(ies)** PC38 - Welding and soldering products, flux products

Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

SU14 - Manufacture of basic metals, including alloys SU15 - Manufacture of fabricated metal products, except machinery and equipment SU17 - General manufacturing SU19 -

Building and construction work

### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

- ERC6b - Industrial use of reactive processing aids

#### Amounts used

Туре	Daily amount per site
Value	<= 10000
Units	kg/d

Туре	Annual amount per site
Value	<= 20
Units	t(ons)/year

Conditions and measures related to municipal sewage treatment plant

	The state of the s
Туре	Municipal STP
Assumed domestic sewage treatment	>= 2000 m3/day
plant flow	

Environmental factors not influenced by risk management

<b>5</b> 1.1 1 11 11 16 1	40000 0/1
	>= 18000 m3/dav
recourting water anation (moon or	- 10000 moracy
lmarine)	
manne)	

Conditions and measures related to external treatment of waste for disposal

Disposal	Dispose of waste product or used containers according to local regulations
Disposai	Dispose of waste product of asca containers according to local regulations

Control of worker exposure			
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to		
l recess sategory (les)	vessels/large containers at non dedicated facilities		
Covers concentrations up to	5%		
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour		
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).		
	Mechanical ventilation giving at least 1 ACH		
control dispersion from source towards	incontained ventilation giving at least 17.011		
the worker			
	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection		
personal protection, hygiene and	googe ryour cancer protective distance, give too and of critical protection.		
health evaluation			
Organisational measures to prevent	Clean equipment and the work area every day		
/limit releases, dispersion and			
exposure			
Indoor/Outdoor use	Covers indoor and outdoor use		
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure		
Covers concentrations up to	5%		
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours		
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).		
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once		
	a month (containment is not breached)		
	Automate activity where possible		
	Mechanical ventilation giving at least 1 ACH		
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection		
personal protection, hygiene and	3,0		
health evaluation			
Organisational measures to prevent	Clean equipment and the work area every day		
/limit releases, dispersion and			
exposure			
Indoor/Outdoor use	Covers indoor and outdoor use		
Assumes process temperature up to	40 C		
Process category(ies)	PROC25 - Other hot work operations with metals		
Covers concentrations up to	5%		
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours		
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).		
	Undertake operation under enclosed conditions		
	Use in semi-automated and predominantly enclosed filling lines		
the worker	Mechanical ventilation giving at least 1 ACH		
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection		
personal protection, hygiene and			
health evaluation			
	Clean equipment and the work area every day		
/limit releases, dispersion and			
exposure			
Indoor/Outdoor use	Covers indoor and outdoor use		
Assumes process temperature up to	40 C		
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery		
Covers concentrations up to	5%		
Physical form of product	Solid		
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour		
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).		
	Use in semi-automated and predominantly enclosed filling lines		
	Mechanical ventilation giving at least 1 ACH		
the worker			

Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Covers indoor and outdoor use

Environmental release category(ies) - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

- ERC6b - Industrial use of reactive processing aids

## Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.051 mg/l	0.018
Marine water	0.00508 mg/l	< 0.01
STP: Sewage Treatment Plant	0 mg/l	< 0.01
Soil	0.146 mg/kg dw	0.026

#### **Derived No Effect Level (DNEL):**

Calculation method MEASE

<u>Calculation inclined</u>	IVIL/ (OL		
Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	0.001 mg/m <sup>3</sup>	< 0.01
preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	systemic	0.028 mg/kg bw/day	< 0.01
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - combined, long-term - systemic		< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.001 mg/m <sup>3</sup>	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.007 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		< 0.01
PROC25 - Other hot work operations with metals	Worker - inhalative, long-term - systemic	0.506 mg/m <sup>3</sup>	0.349
•	Worker - dermal, long-term - systemic	0.273 mg/kg bw/day	< 0.01
PROC25 - Other hot work operations	Worker - combined, long-term		0.353

with metals	- systemic		
PROC28 - Manual maintenance	Worker - inhalative, long-term	0.231 mg/m <sup>3</sup>	0.159
(cleaning and repair) of machinery	- systemic		
PROC28 - Manual maintenance	Worker - dermal, long-term -	0.499 mg/kg bw/day	< 0.01
(cleaning and repair) of machinery	systemic		
PROC28 - Manual maintenance	Worker - combined, long-term		0.167
(cleaning and repair) of machinery	- systemic		

## Section 4 - Guidance to check compliance with the exposure scenario

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## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

### Section 1 - Title

Title Metal surface treatment

**Type** Worker

Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites

Environmental release category(ies) ERC5 - Industrial use resulting in inclusion into or onto a matrix

Process category(ies) PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC7 - Industrial spraying

PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non dedicated facilities

PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at dedicated facilities

PROC10 - Roller application or brushing

PROC13 - Treatment of articles by dipping and pouring

PROC28 - Manual maintenance (cleaning and repair) of machinery

**Product category(ies)**PC14 - Metal surface treatment products, including galvanic and electroplating products **Sector(s) of use**SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

SU14 - Manufacture of basic metals, including alloys SU17 - General manufacturing

## Section 2 - Operational conditions and risk management measures

## Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC5 - Industrial use resulting in inclusion into or onto a matrix

#### Amounts used

/ IIII G G G G G G	
Туре	Annual amount per site
Value	<= 909
Units	kg/d

Туре	Daily amount per site
Value	<= 200
Units	t(ons)/year

Conditions and measures related to municipal sewage treatment plant

Туре	Onsite STP
Assumed domestic sewage treatment	>= 2000 m3/day
plant flow	·
Sludge treatment	No application of sewage sludge to soil

Conditions and measures related to external treatment of waste for disposal

Disposal	se of waste product or used contained	ers according to local regulations

Control of worker exposure	
	PROC8a - Transfer of substance or preparation (charging/discharging) from/to
	vessels/large containers at non dedicated facilities

## ES00394 - Borates - Use at industrial sites; Metal surface treatment products (PC 14); Various sectors (SU 14, SU 17)

Covers concentrations up to 2-79.  Physical form of product Solid Exposure duration Avoid carrying out activities involving exposure for more than 1 hour Destroy and Physical form of product Solid Control dispersion from source towards be in semi-automated and predominantly enclosed filling lines Mechanical ventilation giving at least 1 ACH Conditions and measures related to personal protection, hygiene and kechanical ventilation giving at least 1 ACH Conditions and measures to prevent Clean equipment and the work area every day supposure in the ventilation of the ventilation giving at least 1 ACH Conditions and measures to prevent Clean equipment and the work area every day supposure indicated to personal protection, hygiene and kechanical ventilation giving at least 1 ACH Conditions and measures to prevent Clean equipment and the work area every day supposure indicated to prevent of the ventilation of the ventilation giving at least 1 ACH Covers consentations up to 25%.  Process category(les) PROC2 - Use in closed, continuous process with occasional controlled exposure Covers consentations up to 25%.  Physical form of product Solid Supposures up to 8 hours (unless stated differently).  Technical conditions and measures to prevent of process (hypothesia process) in the ventilation of the enclosure is monitored at least once out of personal protection, hygiene and health evaluation.  Covers daily exposures up to 8 hours (unless stated differently).  Covers daily exposures up to 8 hours (unless stated differently).  Technical conditions and measures related to personal protection, progress of the enclosure is monitored at least once out of personal protection, progress and protection and exposure in protection and protection and protection and measures to provent for more than 1 hour covers	Cayara aanaantrationa un ta	050/
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Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent //imit releases, dispersion and exposure Indoor/Outdoor use  Covers indoor and outdoor use  Process category(ies)  PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities  Covers concentrations up to 25%  Physical form of product Solid  Exposure duration  Avoid carrying out activities involving exposure for more than 1 hour  Use frequency  Covers daily exposures up to 8 hours (unless stated differently).  Technical conditions and measures to under the work area every day  Clean equipment and the work area every day  Indoor/Outdoor use  Covers indoor and outdoor use  PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities  Covers concentrations up to 25%  Physical form of product  Solid  Exposure duration  Avoid carrying out activities involving exposure for more than 1 hour  Use frequency  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  control dispersion from source towards Use in semi-automated and predominantly enclosed filling lines		Use in semi-automated and predominantly enclosed filling lines
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Process category(ies)  PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities  Covers concentrations up to  25%  Physical form of product  Exposure duration  Avoid carrying out activities involving exposure for more than 1 hour  Use frequency  Covers daily exposures up to 8 hours (unless stated differently).  Technical conditions and measures to Undertake operation under enclosed conditions control dispersion from source towards Use in semi-automated and predominantly enclosed filling lines	/limit releases, dispersion and	
Process category(ies)  PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities  Covers concentrations up to  25%  Physical form of product  Solid  Exposure duration  Avoid carrying out activities involving exposure for more than 1 hour  Use frequency  Covers daily exposures up to 8 hours (unless stated differently).  Technical conditions and measures to Undertake operation under enclosed conditions control dispersion from source towards  Use in semi-automated and predominantly enclosed filling lines	exposure	
Process category(ies)  PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities  Covers concentrations up to  25%  Physical form of product  Solid  Exposure duration  Avoid carrying out activities involving exposure for more than 1 hour  Use frequency  Covers daily exposures up to 8 hours (unless stated differently).  Technical conditions and measures to Undertake operation under enclosed conditions control dispersion from source towards  Use in semi-automated and predominantly enclosed filling lines		Covers indoor and outdoor use
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Covers concentrations up to  25%  Physical form of product  Exposure duration  Avoid carrying out activities involving exposure for more than 1 hour  Use frequency  Covers daily exposures up to 8 hours (unless stated differently).  Technical conditions and measures to Control dispersion from source towards  Use in semi-automated and predominantly enclosed filling lines	1	
Physical form of product  Exposure duration  Avoid carrying out activities involving exposure for more than 1 hour  Use frequency  Covers daily exposures up to 8 hours (unless stated differently).  Technical conditions and measures to Control dispersion from source towards  Use in semi-automated and predominantly enclosed filling lines		
Exposure duration  Avoid carrying out activities involving exposure for more than 1 hour  Use frequency  Covers daily exposures up to 8 hours (unless stated differently).  Technical conditions and measures to Undertake operation under enclosed conditions control dispersion from source towards Use in semi-automated and predominantly enclosed filling lines	Covers concentrations up to	
Use frequency Covers daily exposures up to 8 hours (unless stated differently).  Technical conditions and measures to Undertake operation under enclosed conditions control dispersion from source towards Use in semi-automated and predominantly enclosed filling lines		25%
Technical conditions and measures to Undertake operation under enclosed conditions control dispersion from source towards Use in semi-automated and predominantly enclosed filling lines	Physical form of product	25% Solid
control dispersion from source towards Use in semi-automated and predominantly enclosed filling lines	Physical form of product Exposure duration	25% Solid Avoid carrying out activities involving exposure for more than 1 hour
	Physical form of product Exposure duration Use frequency	25% Solid Avoid carrying out activities involving exposure for more than 1 hour Covers daily exposures up to 8 hours (unless stated differently).
the worker   Mechanical ventilation giving at least 1 ACH	Physical form of product Exposure duration Use frequency Technical conditions and measures to	25% Solid Avoid carrying out activities involving exposure for more than 1 hour Covers daily exposures up to 8 hours (unless stated differently). Undertake operation under enclosed conditions
	Physical form of product  Exposure duration  Use frequency  Technical conditions and measures to control dispersion from source towards	25% Solid Avoid carrying out activities involving exposure for more than 1 hour Covers daily exposures up to 8 hours (unless stated differently). Undertake operation under enclosed conditions Use in semi-automated and predominantly enclosed filling lines

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Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
	Covers indeed and outdoor use
Indoor/Outdoor use	Covers indoor and outdoor use
D	DDOO40. Transfer and of ordinlar bunding in an element of
Process category(ies)	PROC13 - Treatment of articles by dipping and pouring
Covers concentrations up to	< 1%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Undertake operation under enclosed conditions
	Mechanical ventilation giving at least 1 ACH
the worker	and the second s
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	550/57/55 - Wear suitable protective clothing, gloves and eye/race protection
health evaluation	Clean aguinment and the work area areas day
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	60 C
Process category(ies)	PROC7 - Industrial spraying
Covers concentrations up to	5%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Undertake operation under enclosed conditions
I ·	Use in semi-automated and predominantly enclosed filling lines
the worker	Use with local exhaust ventilation
	Mechanical ventilation giving at least 3 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	Wear a respirator providing a minimum efficiency of 90%
health evaluation	See Section 8 for information on appropriate personal protective equipment
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Process category(ies)	PROC7 - Industrial spraying
Covers concentrations up to	25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Use in semi-automated and predominantly enclosed filling lines
control dispersion from source towards	
	Mechanical ventilation giving at least 3 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
	Wear a respirator providing a minimum efficiency of 90%
health evaluation	See Section 8 for information on appropriate personal protective equipment
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	and a dark and an
exposure	
ONPOSUIO	
Dragge estagery/iss\	DBOC10 Pollor application or brushing
	PROC10 - Roller application or brushing
Covers concentrations up to	25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours

Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Undertake operation under enclosed conditions
	Use in semi-automated and predominantly enclosed filling lines
the worker	Mechanical ventilation giving at least 3 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	Soor or rose suitable protective clottling, gloves and eyerlace protection
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Clean equipment and the work area every day
exposure	
exposure	
Process category(ies)	PROC10 - Roller application or brushing
Covers concentrations up to	25%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Undertake operation under enclosed conditions
control dispersion from source towards	Use in semi-automated and predominantly enclosed filling lines
the worker	Mechanical ventilation giving at least 3 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Use in semi-automated and predominantly enclosed filling lines
I ·	Mechanical ventilation giving at least 1 ACH
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	

Environmental release category(ies) - ERC5 - Industrial use resulting in inclusion into or onto a matrix

## Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.279 mg/l	0.096
Marine water	0.028 mg/l	< 0.01
STP: Sewage Treatment Plant	2.272 mg/l	0.227
Soil	0.144 mg/kg dw	0.025

## Derived No Effect Level (DNEL):

Calculation method	MEASE		
Process category(ies)		predicted exposure level	Risk characterisation ratio (RCR)
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	0.759 mg/m <sup>3</sup>	0.523
	systemic	0.164 mg/kg bw/day	< 0.01
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - combined, long-term - systemic		0.526
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.076 mg/m <sup>3</sup>	0.052
	Worker - dermal, long-term - systemic	0.021 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		0.053
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	0.759 mg/m <sup>3</sup>	0.523
	Worker - dermal, long-term - systemic	0.164 mg/kg bw/day	< 0.01
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - combined, long-term - systemic		0.526
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	0.076 mg/m <sup>3</sup>	0.052
	Worker - dermal, long-term - systemic	0.164 mg/kg bw/day	< 0.01
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - combined, long-term - systemic		0.055
dipping and pouring	Worker - inhalative, long-term - systemic		0.088
PROC13 - Treatment of articles by dipping and pouring	systemic	0.089 mg/kg bw/day	< 0.01
PROC13 - Treatment of articles by dipping and pouring	Worker - combined, long-term - systemic Worker - inhalative, long-term	0.251 mg/m³	0.089
PROC7 - Industrial spraying	- systemic	-	
PROC7 - Industrial spraying	systemic	5.401 mg/kg bw/day	0.079
PROC7 - Industrial spraying	Worker - combined, long-term		0.252

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	- systemic		
PROC7 - Industrial spraying	Worker - inhalative, long-term - systemic	0.754 mg/m <sup>3</sup>	0.52
PROC7 - Industrial spraying	Worker - dermal, long-term - systemic	16.20 mg/kg bw/day	0.236
PROC7 - Industrial spraying	Worker - combined, long-term - systemic		0.756
PROC10 - Roller application or brushing	Worker - inhalative, long-term - systemic	0.419 mg/m <sup>3</sup>	0.289
PROC10 - Roller application or brushing	Worker - dermal, long-term - systemic	0.54 mg/kg bw/day	< 0.01
PROC10 - Roller application or brushing	Worker - combined, long-term - systemic		0.297
PROC10 - Roller application or brushing	Worker - inhalative, long-term - systemic	0.698 mg/m <sup>3</sup>	0.481
PROC10 - Roller application or brushing	Worker - dermal, long-term - systemic	0.9 mg/kg bw/day	0.013
PROC10 - Roller application or brushing	Worker - combined, long-term - systemic		0.494
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - inhalative, long-term - systemic	0.002 mg/m <sup>3</sup>	< 0.01
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - dermal, long-term - systemic	0.05 mg/kg bw/day	< 0.01
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - combined, long-term - systemic		< 0.01

## Section 4 - Guidance to check compliance with the exposure scenario

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## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

### Section 1 - Title

Title Base metals and alloys Manufacture of basic metals, including alloys

**Type** Worker

Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites

Environmental release category(ies) ERC6b - Industrial use of reactive processing aids

Process category(ies) PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non dedicated facilities

PROC28 - Manual maintenance (cleaning and repair) of machinery

**Product category(ies)** PC7 - Base metals and alloys

Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

SU14 - Manufacture of basic metals, including alloys

## Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC6b - Industrial use of reactive processing aids

#### **Amounts used**

Туре	Daily amount per site
Value	<= 5000
Units	kg/d

Туре	Annual amount per site
Value	<= 100
Units	t(ons)/year

Conditions and measures related to municipal sewage treatment plant

Туре	Municipal STP
Assumed domestic sewage treatment	>= 2000 m3/day
plant flow	

Environmental factors not influenced by risk management

	a a j man managaman
Receiving water dilution (fresh or	>= 18000 m3/day
marine)	

Conditions and measures related to external treatment of waste for disposal

Conditions and measures related to external treatment of waste for disposal		
Disposal	Dispose of waste product or used containers according to local regulations	

Control of worker exposure	
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities

## ES00395 - Borates - Use at industrial sites; Base metals and alloys (PC 7); Manufacture of basic metals, including alloys (SU 14)

Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	
	Undertake operation under enclosed conditions
	Use in semi-automated and predominantly enclosed filling lines
the worker Conditions and measures related to	Mechanical ventilation giving at least 3 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	536/37/39 - Wear suitable protective clothing, gloves and eye/lace protection
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Clean equipment and the work area every day
exposure	
Indoor/Outdoor use	Indoor
indoor/Odddoor dse	jiridooi
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to
	vessels/large containers at non dedicated facilities
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Undertake operation under enclosed conditions
	Use in semi-automated and predominantly enclosed filling lines
the worker	000/07/00 We are sitely most astire also him makes and are for a most astire.
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	Observations and an all the country are a source day.
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	Outdoor
Indoor/Outdoor use	Outdoor
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	> 25%
Physical form of product	ISolid medium dustiness
Physical form of product	Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Exposure duration Use frequency	Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently).
Exposure duration Use frequency Technical conditions and measures to	Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards	Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)
Exposure duration Use frequency Technical conditions and measures to	Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible
Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker	Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH
Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to	Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible
Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and	Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH
Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation	Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent	Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH
Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and	Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure	Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day
Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use	Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day
Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure	Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day
Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to	Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor  40 C
Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to	Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor  40 C  PROC2 - Use in closed, continuous process with occasional controlled exposure
Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to	Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor  40 C  PROC2 - Use in closed, continuous process with occasional controlled exposure  25%
Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Physical form of product	Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor  40 C  PROC2 - Use in closed, continuous process with occasional controlled exposure  25%  Solid, medium dustiness
Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Physical form of product Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor  40 C  PROC2 - Use in closed, continuous process with occasional controlled exposure  25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours
Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency	Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor  40 C  PROC2 - Use in closed, continuous process with occasional controlled exposure  25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).
Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to	Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor 40 C  PROC2 - Use in closed, continuous process with occasional controlled exposure 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards	Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor 40 C  PROC2 - Use in closed, continuous process with occasional controlled exposure 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)
Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to	Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor  40 C  PROC2 - Use in closed, continuous process with occasional controlled exposure  25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once

# ES00395 - Borates - Use at industrial sites; Base metals and alloys (PC 7); Manufacture of basic metals, including alloys (SU 14)

personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	40 C
rocames process temperature up to	1000
Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Covers concentrations up to	5%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Use in semi-automated and predominantly enclosed filling lines
	Mechanical ventilation giving at least 3 ACH
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 C
Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Covers concentrations up to	5%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Use in semi-automated and predominantly enclosed filling lines
control dispersion from source towards the worker	
Conditions and measures related to	COC 107/20. When a witchle protective elethics, played and aveiling protection
	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	40 C
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Use in semi-automated and predominantly enclosed filling lines
	Mechanical ventilation giving at least 3 ACH
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	233, 31, 23 11 341 34144515 protostive sistining, giovos and by oridos protostion
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Sican equipment and the work area every day
exposure	
evhognie	

Environmental release category(ies) - ERC6b - Industrial use of reactive processing aids

## Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.676 mg/l	0.233
Marine water	0.068 mg/l	0.023
STP: Sewage Treatment Plant	6.248 mg/l	0.625
Soil	0.18 mg/kg dw	0.032

### **Derived No Effect Level (DNEL):**

Calculation method MEASE

Calculation method	MEASE		
Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	1.063 mg/m <sup>3</sup>	0.733
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	systemic	0.25 mg/kg bw/day	< 0.01
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - combined, long-term - systemic		0.737
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	0.998 mg/m³	0.688
	systemic	0.25 mg/kg bw/day	< 0.01
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - combined, long-term - systemic		0.692
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.013 mg/m <sup>3</sup>	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.035 mg/kg bw/day	< 0.01
process with occasional controlled exposure	Worker - combined, long-term - systemic		< 0.01
process with occasional controlled exposure	Worker - inhalative, long-term - systemic		< 0.01
	Worker - dermal, long-term - systemic	0.021 mg/kg bw/day	< 0.01

## ES00395 - Borates - Use at industrial sites; Base metals and alloys (PC 7); Manufacture of basic metals, including alloys (SU 14)

exposure			
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		< 0.01
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - inhalative, long-term - systemic	1.063 mg/m <sup>3</sup>	0.733
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - dermal, long-term - systemic	0.324 mg/kg bw/day	< 0.01
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - combined, long-term - systemic		0.738
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - inhalative, long-term - systemic	0.998 mg/m <sup>3</sup>	0.688
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - dermal, long-term - systemic	0.324 mg/kg bw/day	< 0.01
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - combined, long-term - systemic		0.693
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - inhalative, long-term - systemic	1.063 mg/m <sup>3</sup>	0.733
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - dermal, long-term - systemic	2.493 mg/kg bw/day	0.036
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - combined, long-term - systemic		0.769

## Section 4 - Guidance to check compliance with the exposure scenario

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## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

**Chemical name** BORATES

Univar Solutions UK Ltd Supplier Aquarius House

6 Mid Point Business Park

Bradford **GBR** 

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

## Section 1 - Title

**Title** Manufacture of other non-metallic mineral products

**Type** 

Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites

Environmental release category(ies) ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)

Process category(ies) PROC0 - Other Process

PROC1 - Use in closed process, no likelihood of exposure

PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non dedicated facilities

PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at dedicated facilities

PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,

including weighing)

PROC15 - Use as laboratory reagent

PROC24 - High (mechanical) energy work-up of substances bound in materials and/or

PROC28 - Manual maintenance (cleaning and repair) of machinery

Product category(ies)

PC0 - Other Products

Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

SU13 - Manufacture of other non-metallic mineral products

## Section 2 - Operational conditions and risk management measures

## Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)

#### Amounts used

Туре	Daily amount per site
Value	<= 1000
Units	kg/d

Туре	Annual amount per site
Value	<= 20
Units	t(ons)/year

Conditions and measures related to municipal sewage treatment plant

Conditions and measures related to maintaipar sewage treatment plant	
Type	Municipal STP
Assumed domestic sewage treatment	>= 2000 m3/day
plant flow	

Environmental factors not influenced by risk management

Receiving water dilution (fresh or	>= 18000 m3/day
marine)	

Disposal	Dispose of waste product or used containers according to local regulations

Control of worker exposure	
Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to
	vessels/large containers at dedicated facilities
Covers concentrations up to	100%
Physical form of product	Solid, medium dustiness or Paste
Exposure duration	Avoid carrying out operation for more than 2 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
control dispersion from source towards	a month (containment is not breached)
the worker	Automate activity where possible
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Demonstrable and effective housekeeping practices are in place
exposure	
Indoor/Outdoor use	Outdoor
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	250/

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards	
the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Covers indoor and outdoor use

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
control dispersion from source towards	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	40 C

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to
	vessels/large containers at non dedicated facilities

# ES00396 - Borates - Use at industrial sites; Other (PC 0); Manufacture of other non-metallic mineral products, e.g. plasters, cement (SU 13)

Physical form of product	Solid, medium dustiness	
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours	
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).	
Technical conditions and measures to	Undertake operation under enclosed conditions	
control dispersion from source towards	Use in semi-automated and predominantly enclosed filling lines	
the worker	Local exhaust ventilation - efficiency of at least 90%	
	General ventilation Efficiency of at least 3 ACH	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection	
personal protection, hygiene and	Wear suitable gloves tested to EN 374	
health evaluation	See Section 8 for information on appropriate personal protective equipment	
Organisational measures to prevent	Clean equipment and the work area every day	
/limit releases, dispersion and		
exposure		
Indoor/Outdoor use	Indoor	
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,	
	including weighing)	
Covers concentrations up to	> 25%	
Physical form of product	Solid, medium dustiness	
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours	
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).	
	Undertake operation under enclosed conditions	
	Mechanical ventilation giving at least 1 ACH	
the worker	Intechalical vertiliation giving at least 1 Aort	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection	
personal protection, hygiene and	356/57/59 - Wear suitable protective clothing, gloves and eye/race protection	
health evaluation		
	Clean aguinment and the work area every day	
Organisational measures to prevent /limit releases, dispersion and	Clean equipment and the work area every day	
exposure		
Indoor/Outdoor use	Covers indoor and outdoor use	
Indoor/Outdoor use	Covers indoor and outdoor use	
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure	
Process category(ies) Covers concentrations up to	PROC2 - Use in closed, continuous process with occasional controlled exposure > 25%	
Process category(ies) Covers concentrations up to Physical form of product	PROC2 - Use in closed, continuous process with occasional controlled exposure > 25% Solid, medium dustiness	
Process category(ies) Covers concentrations up to Physical form of product Exposure duration	PROC2 - Use in closed, continuous process with occasional controlled exposure > 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours	
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency	PROC2 - Use in closed, continuous process with occasional controlled exposure > 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently).	
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to	PROC2 - Use in closed, continuous process with occasional controlled exposure > 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once	
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards	PROC2 - Use in closed, continuous process with occasional controlled exposure > 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)	
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to	PROC2 - Use in closed, continuous process with occasional controlled exposure > 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible	
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker	PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH	
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to	PROC2 - Use in closed, continuous process with occasional controlled exposure > 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible	
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and	PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH	
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation	PROC2 - Use in closed, continuous process with occasional controlled exposure > 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection	
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent	PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH	
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and	PROC2 - Use in closed, continuous process with occasional controlled exposure > 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection	
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure	PROC2 - Use in closed, continuous process with occasional controlled exposure > 25%  Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day	
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use	PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use	
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Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use	PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use  1000 C  PROC24 - High (mechanical) energy work-up of substances bound in materials and/or	
Process category(ies)  Covers concentrations up to  Physical form of product  Exposure duration  Use frequency  Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure  Indoor/Outdoor use  Assumes process temperature up to	PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use  1000 C  PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles	
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Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Covers concentrations up to Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards	PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use 1000 C  PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles  > 25% Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Use in closed process Automated task	
Process category(ies)  Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Covers concentrations up to Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker	PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25%  Solid, medium dustiness  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use  1000 C  PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles  > 25%  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Use in closed process  Automated task  Mechanical ventilation giving at least 1 ACH	
Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies)  Covers concentrations up to Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards	PROC2 - Use in closed, continuous process with occasional controlled exposure  > 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Covers indoor and outdoor use 1000 C  PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles  > 25% Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Use in closed process Automated task	

## ES00396 - Borates - Use at industrial sites; Other (PC 0); Manufacture of other non-metallic mineral products, e.g. plasters, cement (SU 13)

a and a self-self-self-self-self-self-self-self-	
personal protection, hygiene and	
health evaluation	Clean aguinment and the work area every day
Organisational measures to prevent /limit releases, dispersion and	Clean equipment and the work area every day
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
indoor/Odddoor dse	Covers indoor and oddoor dise
Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to
i locess category(les)	vessels/large containers at dedicated facilities
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
	Covers daily exposures up to 8 hours (unless stated differently).
Use frequency Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
the worker	a month (containment is not breached) Automate activity where possible
li le worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Diedit equipitient and the work area every day
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
indoon data	povers indoor and oddoor dise
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,
1 Tocos category(103)	including weighing)
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	1000/01/09 - Wear Suitable protective clothing, gloves and eye/race protection
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Wet cleaning of the workplace
exposure	vvet oleaning of the workplace
Indoor/Outdoor use	Covers indoor and outdoor use
indoon outdoor doo	poroto illusori unu outuoor uoo
Process category(ies)	PROC15 - Use as laboratory reagent
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	Source   Trout suitable protective clothing, gloves and eyerlace protection
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Sican equipment and the work area every day
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
	50.000 mile delegation and
Process category(ies)	PROC0 - Other Process

Covers concentrations up to	5%
Physical form of product	Solid, low dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 15 minutes
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day Wet cleaning of the workplace
Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	> 25%
OOVERS CONCENTIATIONS up to	> 25%
Physical form of product	> 25% Solid
Physical form of product Exposure duration Use frequency	Solid Avoid carrying out activities involving exposure for more than 1 hour Covers daily exposures up to 8 hours (unless stated differently).
Physical form of product Exposure duration Use frequency	Solid Avoid carrying out activities involving exposure for more than 1 hour Covers daily exposures up to 8 hours (unless stated differently). Mechanical ventilation giving at least 3 ACH
Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards	Solid Avoid carrying out activities involving exposure for more than 1 hour Covers daily exposures up to 8 hours (unless stated differently). Mechanical ventilation giving at least 3 ACH

Environmental release category(ies) - ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)

#### **Predicted No Effect Concentration** (PNEC)

exposure

Used EUSES model **Calculation method** 

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.051 mg/l	0.018
Marine water	0.00508 mg/l	< 0.01
STP: Sewage Treatment Plant	0 mg/l	< 0.01
Soil	0.147 mg/kg dw	0.026

### **Derived No Effect Level (DNEL):**

Calculation method	Used ART model
	MEASE

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	WIE/ (OE		
Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	0.43 mg/m <sup>3</sup>	0.297

	L	T	
		2.457 mg/kg bw/day	0.036
preparation (charging/discharging)	systemic		
from/to vessels/large containers at			
dedicated facilities			
PROC8b - Transfer of substance or	Worker - combined, long-term		0.332
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at			
dedicated facilities			
PROC1 - Use in closed process, no	Worker - inhalative, long-term	0.001 mg/m <sup>3</sup>	< 0.01
likelihood of exposure	- systemic		
PROC1 - Use in closed process, no		0.003 mg/kg bw/day	< 0.01
likelihood of exposure	systemic		
PROC1 - Use in closed process, no	Worker - combined, long-term		< 0.01
likelihood of exposure	- systemic		
PROC2 - Use in closed, continuous	Worker - inhalative, long-term	0.013 mg/m <sup>3</sup>	< 0.01
process with occasional controlled	- systemic	0.010 mg/m	0.01
exposure	Systemio		
PROC2 - Use in closed, continuous	Worker - dermal, long-term -	0.35 mg/kg bw/day	< 0.01
process with occasional controlled	systemic	0.55 mg/kg bw/day	< 0.01
·	Systemic		
PROC2 - Use in closed, continuous	Worker - combined, long-term		<0.014
,			<0.014
process with occasional controlled	- systemic		
exposure	Manhan Sahalad	0.07 / 2	0.400
PROC8a - Transfer of substance or	Worker - inhalative, long-term	0.67 mg/m <sup>3</sup>	0.462
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC8a - Transfer of substance or		20.38 mg/kg bw/day	0.297
preparation (charging/discharging)	systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC8a - Transfer of substance or	Worker - combined, long-term		0.759
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC9 - Transfer of substance or	Worker - inhalative, long-term	0.316 mg/m <sup>3</sup>	0.218
preparation into small containers	- systemic		
(dedicated filling line, including	*		
weighing)			
PROC9 - Transfer of substance or	Worker - dermal, long-term -	0.518 mg/kg bw/day	< 0.01
preparation into small containers	systemic	loio io mg/kg zw/aay	10.01
(dedicated filling line, including			
weighing)			
PROC9 - Transfer of substance or	Worker - combined, long-term		0.225
preparation into small containers	- systemic		0.223
(dedicated filling line, including	- systemic		
,			
weighing) PROC2 - Use in closed, continuous	Worker inholetive lang to me	0.012 mg/m <sup>3</sup>	10.01
· ·	Worker - inhalative, long-term	0.013 Hig/Hi <sup>e</sup>	< 0.01
process with occasional controlled	- systemic		
exposure	Morkon demand les strans	0.025 mg/kg hw/de:	10.01
PROC2 - Use in closed, continuous	, ,	0.035 mg/kg bw/day	< 0.01
process with occasional controlled	systemic		
exposure			
PROC2 - Use in closed, continuous	Worker - combined, long-term		< 0.01
process with occasional controlled	- systemic		
exposure			
PROC24 - High (mechanical) energy	Worker - inhalative, long-term	0.127 mg/m <sup>3</sup>	0.088
work-up of substances bound in	- systemic		
materials and/or articles			
PROC24 - High (mechanical) energy	Worker - dermal, long-term -	0.014 mg/kg bw/day	< 0.01

work-up of substances bound in	systemic		
materials and/or articles	Systemic		
PROC24 - High (mechanical) energy	Worker - combined, long-term		0.088
work-up of substances bound in	- systemic		0.000
materials and/or articles	*		
PROC8b - Transfer of substance or	Worker - inhalative, long-term	0.632 mg/m <sup>3</sup>	0.436
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at			
dedicated facilities			
PROC8b - Transfer of substance or		1.365 mg/kg bw/day	0.02
preparation (charging/discharging)	systemic		
from/to vessels/large containers at			
dedicated facilities	Manual and a section and the section and		0.450
PROC8b - Transfer of substance or preparation (charging/discharging)	Worker - combined, long-term - systemic		0.456
from/to vessels/large containers at	- systemic		
dedicated facilities			
PROC9 - Transfer of substance or	Worker - inhalative, long-term	0.013 mg/m <sup>3</sup>	< 0.01
preparation into small containers	- systemic	[	1 3.0
(dedicated filling line, including			
weighing)			
PROC9 - Transfer of substance or	Worker - dermal, long-term -	0.104 mg/kg bw/day	< 0.01
preparation into small containers	systemic		
(dedicated filling line, including			
weighing)			0.04
PROC9 - Transfer of substance or	Worker - combined, long-term		0.01
preparation into small containers (dedicated filling line, including	- systemic		
weighing)			
PROC15 - Use as laboratory reagent	Worker - inhalative, long-term	0.013 mg/m <sup>3</sup>	< 0.01
The state of the s	- systemic	[	1 0.01
PROC15 - Use as laboratory reagent		0.069 mg/kg bw/day	< 0.01
	systemic		
PROC15 - Use as laboratory reagent	Worker - combined, long-term		< 0.01
	- systemic		
PROC0 - Other Process	Worker - inhalative, long-term	0.116 mg/m <sup>3</sup>	0.08
	- systemic		
PROC0 - Other Process		0.186 mg/kg bw/day	< 0.01
	systemic		
PROC0 - Other Process	Worker - combined, long-term		0.083
DDOC29 Manual resistances	- systemic	1 062 mg/m3	0.722
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - inhalative, long-term	11.063 mg/m <sup>3</sup>	0.733
PROC28 - Manual maintenance	- systemic Worker - dermal, long-term -	2.492 mg/kg bw/day	0.036
(cleaning and repair) of machinery	systemic	2.432 Hig/kg DW/day	0.030
PROC28 - Manual maintenance	Worker - combined, long-term		0.769
(cleaning and repair) of machinery	- systemic		0.700
Loroaring and ropall / or madringly	1 5,5001110	l .	

## Section 4 - Guidance to check compliance with the exposure scenario

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## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

## Section 1 - Title

Title Water treatment chemicals Electricity, steam, gas water supply and sewage treatment

**Type** Worker

Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites

Environmental release category(ies) ERC4 - Industrial use of processing aids in processes and products, not becoming part of

articles ERC6b - Industrial use of reactive processing aids

Process category(ies) PROC1 - Use in closed process, no likelihood of exposure

PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non dedicated facilities

PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at dedicated facilities

PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,

including weighing)

PROC15 - Use as laboratory reagent

PROC28 - Manual maintenance (cleaning and repair) of machinery

**Product category(ies)** PC37 - Water treatment chemicals

Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

SU23 - Recycling

## Section 2 - Operational conditions and risk management measures

## Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

- ERC6b - Industrial use of reactive processing aids

#### **Amounts used**

Туре	Daily amount per site
Value	<= 15000
Units	kg/d

Туре	Annual amount per site
Value	<= 300
Units	t(ons)/year

Conditions and measures related to municipal sewage treatment plant

Туре	Municipal STP
Assumed domestic sewage treatment	>= 2000 m3/day
plant flow	

Environmental factors not influenced by risk management

Receiving water dilution (fresh or	>= 18000 m3/day	
marine)		

Physical form of product

## Conditions and measures related to external treatment of waste for disposal

Disposal	Dispose of waste	product or used containers according to local regulations
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Control of worker exposure	
Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Covers concentrations up to	100%
Physical form of product	Solid, medium dustiness or Paste
Exposure duration	Avoid carrying out operation for more than 2 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and health evaluation	1 3,3
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Demonstrable and effective housekeeping practices are in place
exposure	
Indoor/Outdoor use	Outdoor
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Use in closed process
control dispersion from source towards	Automated task
the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
	Automate activity where possible
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	1 3,3
health evaluation	
Organisational measures to prevent /limit releases, dispersion and	Clean equipment and the work area every day
exposure	Covers in deep and extraory use
Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	40 C
Draces actor==:/:-=\	DDOOG Transfer of substance or any anti-su (-b-suming / 1)
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to
	vessels/large containers at non dedicated facilities

Solid, medium dustiness

Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Undertake operation under enclosed conditions
	Use in semi-automated and predominantly enclosed filling lines
the worker	Local exhaust ventilation - efficiency of at least 90%
	General ventilation Efficiency of at least 3 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	Wear suitable gloves tested to EN 374
health evaluation	See Section 8 for information on appropriate personal protective equipment
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Indoor
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,
	including weighing)
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Undertake operation under enclosed conditions
control dispersion from source towards	Mechanical ventilation giving at least 1 ACH
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to
1 Tocess category(les)	vessels/large containers at non dedicated facilities
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Undertake operation under enclosed conditions
	Use in semi-automated and predominantly enclosed filling lines
the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
	Wear a respirator providing a minimum efficiency of 90%
health evaluation	See Section 8 for information on appropriate personal protective equipment
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	> 25%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	

Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	40 C
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	> 25%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	Clean aguinment and the work area every day
Organisational measures to prevent /limit releases, dispersion and	Clean equipment and the work area every day
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	500 C
resumes process temperature up to	p00 0
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	> 25%
Physical form of product	Solid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Mechanical ventilation giving at least 3 ACH
	Use in semi-automated and predominantly enclosed filling lines
the worker	Soo in some dutomated and prodominantly sholosed mining into
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	g, g, c - c - c - c - c - c - c - c - c - c
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Wet cleaning of the workplace
exposure	
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,
	including weighing)
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	000/07/00 Manageritable and taking alabian alama and and for a material
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Wet cleaning of the workplace
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC15 - Use as laboratory reagent
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
1	yang tarahan ang anpasana an mana anan a man

Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and	Clean equipment and the work area every day
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use

Environmental release category(ies) - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

- ERC6b - Industrial use of reactive processing aids

# Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.051 mg/l	0.018
Marine water	0.00508 mg/l	< 0.01
STP: Sewage Treatment Plant	0 mg/l	< 0.01
Soil	0.142 mg/kg dw	0.025

#### **Derived No Effect Level (DNEL):**

Calculation method Used ART model MEASE

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	0.43 mg/m <sup>3</sup>	0.297
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - dermal, long-term - systemic	2.457 mg/kg bw/day	0.036
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - combined, long-term - systemic		0.332
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic	0.001 mg/m <sup>3</sup>	< 0.01
PROC1 - Use in closed process, no likelihood of exposure	Worker - dermal, long-term - systemic	0.003 mg/kg bw/day	< 0.01
PROC1 - Use in closed process, no likelihood of exposure	Worker - combined, long-term - systemic		< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.013 mg/m <sup>3</sup>	< 0.01

	Worker - dermal, long-term - systemic	0.35 mg/kg bw/day	< 0.01
exposure			
PROC2 - Use in closed, continuous process with occasional controlled	Worker - combined, long-term - systemic		<0.014
exposure			
PROC8a - Transfer of substance or	Worker - inhalative, long-term	0.67 mg/m <sup>3</sup>	0.462
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC8a - Transfer of substance or		20.38 mg/kg bw/day	0.297
preparation (charging/discharging)	systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC8a - Transfer of substance or	Worker - combined, long-term		0.759
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at non			
dedicated facilities		0.040	0.010
PROC9 - Transfer of substance or	Worker - inhalative, long-term	0.316 mg/m <sup>3</sup>	0.218
preparation into small containers	- systemic		
(dedicated filling line, including			
weighing) PROC9 - Transfer of substance or	Markon domest long town	0.518 mg/kg bw/day	. 0.04
preparation into small containers	, ,	0.516 mg/kg bw/day	< 0.01
(dedicated filling line, including	systemic		
weighing)			
PROC9 - Transfer of substance or	Worker - combined, long-term		0.225
preparation into small containers	- systemic		0.220
(dedicated filling line, including	3,5155		
weighing)			
PROC8a - Transfer of substance or	Worker - inhalative, long-term	0.633 mg/m <sup>3</sup>	0.437
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC8a - Transfer of substance or		8.19 mg/kg bw/day	0.119
	systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC8a - Transfer of substance or	Worker - combined, long-term		0.556
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at non			
dedicated facilities PROC2 - Use in closed, continuous	Worker - inhalative, long-term	0.012 mg/m <sup>3</sup>	- 0.01
process with occasional controlled	- systemic	0.013 mg/m²	< 0.01
exposure	- systernic		
PROC2 - Use in closed, continuous	Worker - dermal, long-term -	0.035 mg/kg bw/day	< 0.01
	systemic	l see mg/ng su/day	
exposure	5,616.16		
PROC2 - Use in closed, continuous	Worker - combined, long-term		< 0.01
process with occasional controlled	- systemic		
exposure			
PROC2 - Use in closed, continuous	Worker - inhalative, long-term	0.379 mg/m <sup>3</sup>	0.261
process with occasional controlled	- systemic		
exposure			
PROC2 - Use in closed, continuous		0.035 mg/kg bw/day	< 0.01
T.	systemic		
exposure	ha		0.000
PROC2 - Use in closed, continuous	Worker - combined, long-term		0.262
process with occasional controlled	- systemic		
exposure	Worker inhelative lang term	1 063 mg/m <sup>3</sup>	0.722
PROC28 - Manual maintenance	Worker - inhalative, long-term	pr.oos mg/m²	0.733

(cleaning and repair) of machinery	- systemic		
PROC28 - Manual maintenance		2.493 mg/kg bw/day	0.036
(cleaning and repair) of machinery	systemic		
PROC28 - Manual maintenance	Worker - combined, long-term		0.769
(cleaning and repair) of machinery	- systemic		
PROC9 - Transfer of substance or	Worker - inhalative, long-term	0.013 mg/m <sup>3</sup>	< 0.01
preparation into small containers	- systemic		
(dedicated filling line, including			
weighing)			
PROC9 - Transfer of substance or	Worker - dermal, long-term -	0.104 mg/kg bw/day	< 0.01
preparation into small containers	systemic		
(dedicated filling line, including			
weighing)			
PROC9 - Transfer of substance or	Worker - combined, long-term		0.01
preparation into small containers	- systemic		
(dedicated filling line, including			
weighing)			
PROC15 - Use as laboratory reagent	Worker - inhalative, long-term	0.013 mg/m <sup>3</sup>	< 0.01
	- systemic		
PROC15 - Use as laboratory reagent	Worker - dermal, long-term -	0.069 mg/kg bw/day	< 0.01
	systemic		
PROC15 - Use as laboratory reagent	Worker - combined, long-term		< 0.01
	- systemic		

# Section 4 - Guidance to check compliance with the exposure scenario

EGHS / EN Page 184/345

#### Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

#### Section 1 - Title

**Title** Offshore industries

**Type** Worker

Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites

Environmental release category(ies) ERC6b - Industrial use of reactive processing aids

Process category(ies) PROC1 - Use in closed process, no likelihood of exposure

PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at dedicated facilities

PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,

including weighing)

PROC15 - Use as laboratory reagent

PROC28 - Manual maintenance (cleaning and repair) of machinery

Product category(ies) PC0 - Other Products

Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

SU2b - Offshore industries

#### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC6b - Industrial use of reactive processing aids

#### Amounts used

Туре	Daily amount per site
Value	<= 1000
Units	kg/d

Туре	Annual amount per site
Value	<= 20
Units	t(ons)/year

Conditions and measures related to municipal sewage treatment plant

Containione and incubation related to	mamorpar corrage treatment plant
Туре	Municipal STP
Assumed domestic sewage treatment	>= 2000 m3/day
plant flow	

Environmental factors not influenced by risk management

	and the state of t
Receiving water dilution (fresh or	>= 18000 m3/day
marine)	

Conditions and measures related to external treatment of waste for disposal

Disposal	Dispose of waste product or used containers according to local regulations
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#### Control of worker exposure

# ES00398 - Borates - Use at industrial sites; Other (PC 0); Offshore industries (SU 2b)

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to
	vessels/large containers at dedicated facilities
Covers concentrations up to	100%
Physical form of product	Solid, medium dustiness or Paste
Exposure duration	Avoid carrying out operation for more than 2 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Demonstrable and effective housekeeping practices are in place
exposure	·
Indoor/Outdoor use	Outdoor
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Use in closed process
control dispersion from source towards	
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	330/37/39 - Wear suitable protective clothing, gloves and eye/race protection
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Clean equipment and the work area every day
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
indon/oddaon do	Severa masor and catasor asc
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	> 25%
Covers concentrations up to Physical form of product	> 25% Solid, medium dustiness
Covers concentrations up to Physical form of product Exposure duration	> 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours
Covers concentrations up to Physical form of product Exposure duration Use frequency	> 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently).
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to	> 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards	> 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards	> 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker	> 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to	> 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and	> 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation	> 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent	> 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and	> 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure	> 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use	> 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use	> 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to	> 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor 40 C
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to	> 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor 40 C  PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to	> 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor 40 C  PROC2 - Use in closed, continuous process with occasional controlled exposure > 25%
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Physical form of product	> 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor 40 C  PROC2 - Use in closed, continuous process with occasional controlled exposure > 25% Solid, medium dustiness
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Physical form of product Exposure duration	> 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor 40 C  PROC2 - Use in closed, continuous process with occasional controlled exposure > 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency	> 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor 40 C  PROC2 - Use in closed, continuous process with occasional controlled exposure > 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently).
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to	> 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor 40 C  PROC2 - Use in closed, continuous process with occasional controlled exposure > 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards	> 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor 40 C  PROC2 - Use in closed, continuous process with occasional controlled exposure > 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker	> 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor 40 C  PROC2 - Use in closed, continuous process with occasional controlled exposure > 25% Solid, medium dustiness Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once

# ES00398 - Borates - Use at industrial sites; Other (PC 0); Offshore industries (SU 2b)

Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	3, 3
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	40 C
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	> 25%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	Clean aguisment and the work area every day:
Organisational measures to prevent /limit releases, dispersion and	Clean equipment and the work area every day
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
	500 C
Assumes process temperature up to	
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,
l Tocess category(les)	including weighing)
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	g. g. c.
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Wet cleaning of the workplace
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC15 - Use as laboratory reagent
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
-	T
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery

Covers concentrations up to	> 25%
Physical form of product	Solid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Mechanical ventilation giving at least 3 ACH
control dispersion from source towards	Use in semi-automated and predominantly enclosed filling lines
the worker	
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Wet cleaning of the workplace
exposure	

Environmental release category(ies) - ERC6b - Industrial use of reactive processing aids

# Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.051 mg/l	0.018
Marine water	0.00508 mg/l	< 0.01
STP: Sewage Treatment Plant	0 mg/l	< 0.01
Soil	0.146 mg/kg dw	0.026

### Derived No Effect Level (DNEL):

Calculation method Used ART model MEASE

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	0.43 mg/m <sup>3</sup>	0.297
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - dermal, long-term - systemic	2.457 mg/kg bw/day	0.036
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - combined, long-term - systemic		0.332
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic	0.001 mg/m <sup>3</sup>	< 0.01
PROC1 - Use in closed process, no likelihood of exposure	Worker - dermal, long-term - systemic	0.003 mg/kg bw/day	< 0.01
PROC1 - Use in closed process, no likelihood of exposure	Worker - combined, long-term - systemic		< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.013 mg/m <sup>3</sup>	< 0.01
PROC2 - Use in closed, continuous	Worker - dermal, long-term -	0.35 mg/kg bw/day	< 0.01

and a second sec	I	Т	
process with occasional controlled	systemic		
exposure	Mankan appalainant langutanna		0.014
PROC2 - Use in closed, continuous process with occasional controlled	Worker - combined, long-term		<0.014
	- systemic		
PROC2 - Use in closed, continuous	Marker inhelative lang term	0.012 mg/m³	< 0.01
	Worker - inhalative, long-term	0.013 mg/m <sup>2</sup>	< 0.01
process with occasional controlled	- systemic		
exposure	Mankan dannad lang tanna	0.005	. 0.04
PROC2 - Use in closed, continuous		0.035 mg/kg bw/day	< 0.01
process with occasional controlled	systemic		
exposure	\\\\-\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		0.04
PROC2 - Use in closed, continuous	Worker - combined, long-term		< 0.01
process with occasional controlled	- systemic		
exposure	NA/	0.070 / 2	0.004
PROC2 - Use in closed, continuous	Worker - inhalative, long-term	0.379 mg/m <sup>3</sup>	0.261
process with occasional controlled	- systemic		
exposure	)	0.005 // 1. / /	0.04
PROC2 - Use in closed, continuous		0.035 mg/kg bw/day	< 0.01
process with occasional controlled	systemic		
PROC2 - Use in closed, continuous	Mankan appalainant langutanna		0.000
· · · · · · · · · · · · · · · · · · ·	Worker - combined, long-term		0.262
process with occasional controlled	- systemic		
exposure	Moulton inhalativa lang tang	0.042 / 2	. 0.04
PROC9 - Transfer of substance or	Worker - inhalative, long-term	0.013 mg/m <sup>3</sup>	< 0.01
preparation into small containers (dedicated filling line, including	- systemic		
weighing)			
PROC9 - Transfer of substance or	Worker - dermal, long-term -	0.104 mg/kg bw/day	< 0.01
preparation into small containers	systemic	0.104 mg/kg bw/day	< 0.01
(dedicated filling line, including	Systemic		
weighing)			
PROC9 - Transfer of substance or	Worker - combined, long-term		0.01
preparation into small containers	- systemic		0.01
(dedicated filling line, including	- systemic		
weighing)			
PROC15 - Use as laboratory reagent	Worker - inhalative, long-term	0.013 mg/m <sup>3</sup>	< 0.01
i NOO15 - Ose as laboratory reagent	- systemic	0.013 mg/m²	0.01
PROC15 - Use as laboratory reagent		0.069 mg/kg bw/day	< 0.01
1 10015 - Ose as laboratory reagent	systemic	lo.009 mg/kg bw/day	0.01
PROC15 - Use as laboratory reagent	Worker - combined, long-term		< 0.01
1 10015 - Ose as laboratory reagent	- systemic		0.01
PROC28 - Manual maintenance	Worker - inhalative, long-term	1 063 mg/m <sup>3</sup>	0.733
(cleaning and repair) of machinery	- systemic		0.700
PROC28 - Manual maintenance		2.493 mg/kg bw/day	0.036
(cleaning and repair) of machinery	systemic	55 mg/ng 5w/day	0.000
PROC28 - Manual maintenance	Worker - combined, long-term		0.769
(cleaning and repair) of machinery	- systemic		
Lordaning and repair) of machinery	1 Systemio	l .	L

## Section 4 - Guidance to check compliance with the exposure scenario

EGHS / EN Page 189/345

### Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

#### Section 1 - Title

Title Photo-chemicals Printing and reproduction of recorded media

**Type** Worker

Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites

Environmental release category(ies) ERC4 - Industrial use of processing aids in processes and products, not becoming part of

articles

Process category(ies) PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non dedicated facilities

PROC13 - Treatment of articles by dipping and pouring

PROC28 - Manual maintenance (cleaning and repair) of machinery

Product category(ies) PC30 - Photo-chemicals

Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU7

- Printing and reproduction of recorded media

#### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

#### **Amounts used**

Туре	Daily amount per site
Value	<= 1000
Units	kg/d

Туре	Annual amount per site
Value	<= 20
Units	t(ons)/year

Conditions and measures related to municipal sewage treatment plant

Containione and incubation related to	mamorpar corrage treatment plant
Туре	Municipal STP
Assumed domestic sewage treatment	>= 2000 m3/day
plant flow	

Environmental factors not influenced by risk management

	, by new management
Receiving water dilution (fresh or	>= 18000 m3/day
marine)	

Conditions and measures related to external treatment of waste for disposal

Disposal	Dispose of waste product or used containers according to local regulations	
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#### Control of worker exposure

### ES00399 - Borates - Use at industrial sites; Photo-chemicals (PC 30); Printing and reproduction of recorded media (SU 7)

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to
	vessels/large containers at non dedicated facilities
Covers concentrations up to	5%
Physical form of product	Solid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Undertake operation under enclosed conditions
	Use in semi-automated and predominantly enclosed filling lines
the worker	Mechanical ventilation giving at least 3 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	vical suitable protective distantly, gioves and eyenade protection
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	oloan equipment and the work area every day
exposure	
СХРОЗИТС	
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to
i Tocess category(les)	vessels/large containers at non dedicated facilities
Covers concentrations up to	5%
Covers concentrations up to	
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Undertake operation under enclosed conditions
	Use in semi-automated and predominantly enclosed filling lines
the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	5%
Physical form of product	Solid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
lile worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
	536/37/39 - Wear suitable protective clothing, gloves and eye/race protection
personal protection, hygiene and	
health evaluation	Characteristics and the work and appropriate
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	40 C
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Use frequency Technical conditions and measures to	Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
Technical conditions and measures to	Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible

### ES00399 - Borates - Use at industrial sites; Photo-chemicals (PC 30); Printing and reproduction of recorded media (SU 7)

	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	40 C
Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Covers concentrations up to	5%
Exposure duration	Avoid carrying out activities involving exposure for more than 15 minutes
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in semi-automated and predominantly enclosed filling lines Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	40 C
Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 15 minutes
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Use in semi-automated and predominantly enclosed filling lines Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent	Clean equipment and the work area every day Wet cleaning of the workplace
Indoor/Outdoor use	Covers indoor and outdoor use
	40 C
	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Covers concentrations up to	< 1%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Covers indoor and outdoor use

Process category(ies)	PROC13 - Treatment of articles by dipping and pouring
Covers concentrations up to	< 1%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Mechanical ventilation giving at least 1 ACH
	Use in semi-automated and predominantly enclosed filling lines
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	Olean and instant and the sounds are a sound and
Organisational measures to prevent /limit releases, dispersion and	Clean equipment and the work area every day Wet cleaning of the workplace
exposure	vvet cleaning of the workplace
Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	40 C
process temperature up to	
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and exposure	Wet cleaning of the workplace
Indoor/Outdoor use	Covers indoor and outdoor use
indoor/Odddoor dse	Covers indoor and outdoor use
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	5%
Physical form of product	Solid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Mechanical ventilation giving at least 3 ACH
control dispersion from source towards	
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Wet cleaning of the workplace
exposure	

Environmental release category(ies) - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.151 mg/l	0.052
Marine water	0.015 mg/l	< 0.01
STP: Sewage Treatment Plant	1 mg/l	0.1
Soil	0.147 mg/kg dw	0.026

### Derived No Effect Level (DNEL):

Calculation method Used ART model

	MEASE		
Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	1.063 mg/m <sup>3</sup>	0.733
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	systemic	0.499 mg/kg bw/day	< 0.01
	Worker - combined, long-term - systemic		0.74
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	0.127 mg/m <sup>3</sup>	0.088
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	systemic	0.035 mg/kg bw/day	< 0.01
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - combined, long-term - systemic		0.088
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.025 mg/m <sup>3</sup>	0.017
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.007 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		0.017
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.003 mg/m <sup>3</sup>	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.007 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		< 0.01
PROC4 - Use in batch and other process (synthesis) where opportunity	Worker - inhalative, long-term - systemic	0.633 mg/m <sup>3</sup>	0.437

#### ES00399 - Borates - Use at industrial sites; Photo-chemicals (PC 30); Printing and reproduction of recorded media (SU 7)

Norker dermal lang term	0.177 mg/kg bw/dov	< 0.01
	U.177 mg/kg bw/day	< 0.01
systemic		
A/ 1 1 1 1 1		0.400
		0.439
systemic		
	0.633 mg/m <sup>3</sup>	0.437
systemic		
Vorker - dermal, long-term -	0.177 mg/kg bw/day	< 0.01
systemic		
•		
Vorker - combined, long-term		0.439
5,5155		
Morker - inhalative long-term	0 063 mg/m <sup>3</sup>	0.043
		0.0-0
Systemic		
A/	0.477 //  /-	0.04
	U.177 mg/kg bw/day	< 0.01
systemic		
		0.046
systemic		
Worker - inhalative, long-term	0.063 mg/m <sup>3</sup>	0.043
systemic	-	
Vorker - dermal, long-term -	0.089 mg/kg bw/day	< 0.01
systemic		
Vorker - combined, long-term		0.045
, ,		
	0 023 mg/m <sup>3</sup>	0.016
		0.010
,	0.400 mg/kg bw/dov	< 0.01
, 0	o.+33 mg/kg bw/day	0.01
,		0.004
. •		0.024
	1,000	0.700
	1.063 mg/m <sup>3</sup>	0.733
Vorker - dermal, long-term -	0.499 mg/kg bw/day	< 0.01
systemic		
Worker - combined, long-term		0.74
systemic		
	Vorker - combined, long-term systemic  Vorker - inhalative, long-term systemic  Vorker - dermal, long-term - ystemic  Vorker - inhalative, long-term systemic  Vorker - dermal, long-term - ystemic  Vorker - combined, long-term systemic  Vorker - tinhalative, long-term systemic  Vorker - dermal, long-term - ystemic  Vorker - dermal, long-term - ystemic  Vorker - combined, long-term systemic  Vorker - inhalative, long-term systemic  Vorker - dermal, long-term - ystemic  Vorker - dermal, long-term - ystemic  Vorker - dermal, long-term - ystemic  Vorker - combined, long-term systemic  Vorker - dermal, long-term - ystemic  Vorker - dermal, long-term - ystemic  Vorker - dermal, long-term - ystemic  Vorker - combined, long-term - ystemic  Vorker - combined, long-term - ystemic	Vorker - combined, long-term systemic  Vorker - inhalative, long-term on the systemic  Vorker - dermal, long-term on the systemic  Vorker - combined, long-term on the systemic  Vorker - inhalative, long-term on the systemic  Vorker - dermal, long-term on the systemic  Vorker - combined, long-term on the systemic  Vorker - combined, long-term on the systemic  Vorker - inhalative, long-term on the systemic  Vorker - dermal, long-term on the systemic  Vorker - combined, long-term on the systemic  Vorker - inhalative, long-term on the systemic  Vorker - inhalative, long-term on the systemic  Vorker - dermal, long-term on the systemic  Vorker - dermal, long-term on the systemic  Vorker - combined, long-term on the systemic  Vorker - combined, long-term on the systemic  Vorker - dermal, long-term on the systemic

# Section 4 - Guidance to check compliance with the exposure scenario

EGHS / EN Page 195 / 345

### Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

**Chemical name** BORATES

Univar Solutions UK Ltd Supplier Aquarius House

6 Mid Point Business Park

Bradford **GBR** 

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

### Section 1 - Title

**Title** Paper and board treatment products Printing and reproduction of recorded media

**Type** 

Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites

Environmental release category(ies) ERC5 - Industrial use resulting in inclusion into or onto a matrix

**Specific Environmental Release** 

CEPE SPERC 5.1a.v1

Category

Process category(ies) PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC3 - Use in closed batch process (synthesis or formulation)

PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non dedicated facilities

PROC28 - Manual maintenance (cleaning and repair) of machinery

PC26 - Paper and board dye, finishing and impregnation products; including bleaches and Product category(ies)

other processing aids

SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU7 Sector(s) of use

- Printing and reproduction of recorded media

#### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC5 - Industrial use resulting in inclusion into or onto a matrix Specific Environmental Release Category - CEPE SPERC 5.1a.v1

#### **Amounts used**

Туре	Daily amount per site
Value	<= 100
Units	kg/d

Туре	Annual amount per site
Value	<= 20
Units	t(ons)/year

Conditions and measures related to municipal sewage treatment plant

Tonalianie and mode are related to mamerical corruge a cameric plant		
Type	Municipal STP	
Assumed domestic sewage treatment	>= 2000 m3/day	
plant flow		

	I
Disposal	Dispose of waste product or used containers according to local regulations
וטוטטטסוו	Dispose of waste product or used containers according to local regulations

Control of worker exposure	
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to
	vessels/large containers at non dedicated facilities

# ES00400 - Borates - Use at industrial sites; Paper and board treatment products (PC 26); Printing and reproduction of recorded media (SU 7)

	1
Covers concentrations up to	> 25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Undertake operation under enclosed conditions
	Use in semi-automated and predominantly enclosed filling lines
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Droopes estagery/ice)	DDOC2. Has in algood, continuous process with according a controlled exposure
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	> 25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure Indoor/Outdoor use	Covers indoor and outdoor use
	40 C
Assumes process temperature up to	HO C
Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Covers concentrations up to	> 25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Automate activity where possible
control dispersion from source towards	
the worker	Mechanical ventilation giving at least 1 ACH
	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	Society of the state of the sta
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Section Squipment and the french area overy day
exposure	
Indoor/Outdoor use	
Assumes process temperature up to	Covers indoor and outdoor use
	Covers indoor and outdoor use 40 C
Process category(ies)	40 C
Process category(ies) Covers concentrations up to	40 C  PROC3 - Use in closed batch process (synthesis or formulation)
Covers concentrations up to	40 C  PROC3 - Use in closed batch process (synthesis or formulation) > 25%
Covers concentrations up to Physical form of product	PROC3 - Use in closed batch process (synthesis or formulation) > 25% Liquid
Covers concentrations up to Physical form of product Exposure duration	PROC3 - Use in closed batch process (synthesis or formulation) > 25% Liquid Avoid carrying out activities involving exposure for more than 4 hours
Covers concentrations up to Physical form of product Exposure duration Use frequency	PROC3 - Use in closed batch process (synthesis or formulation)  > 25% Liquid Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently).
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to	PROC3 - Use in closed batch process (synthesis or formulation)  > 25% Liquid  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards	PROC3 - Use in closed batch process (synthesis or formulation)  > 25% Liquid Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to	PROC3 - Use in closed batch process (synthesis or formulation)  > 25% Liquid  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once

Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	40 C

Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	> 25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
	Clean equipment and the work area every day Wet cleaning of the workplace
Indoor/Outdoor use	Indoor

<u>Environmental release category(ies) - ERC5 - Industrial use resulting in inclusion into or onto a matrix</u>

<u>Specific Environmental Release Category - CEPE SPERC 5.1a.v1</u>

# Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

<u>oaioaiatioii iiiotiioa</u>	0000 20020000.	
Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.051 mg/l	0.018
Marine water	0.00508 mg/l	< 0.01
STP: Sewage Treatment Plant	0 mg/l	< 0.01
Soil	0.144 mg/kg dw	0.025

#### **Derived No Effect Level (DNEL):**

Calculation method MEASE

Process category(ies)	Exposure route		Risk characterisation ratio (RCR)
	Worker - inhalative, long-term - systemic	0.316 mg/m³	0.218
	systemic	0.887 mg/kg bw/day	0.013
PROC8a - Transfer of substance or preparation (charging/discharging)	Worker - combined, long-term - systemic		0.231

# ES00400 - Borates - Use at industrial sites; Paper and board treatment products (PC 26); Printing and reproduction of recorded media (SU 7)

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from/to vessels/large containers at non			
dedicated facilities			
PROC2 - Use in closed, continuous	Worker - inhalative, long-term	0.013 mg/m <sup>3</sup>	< 0.01
process with occasional controlled	- systemic		
exposure			
PROC2 - Use in closed, continuous	Worker - dermal, long-term -	0.035 mg/kg bw/day	< 0.01
process with occasional controlled	systemic		
exposure			
PROC2 - Use in closed, continuous	Worker - combined, long-term		< 0.01
process with occasional controlled	- systemic		
exposure			
PROC4 - Use in batch and other	Worker - inhalative, long-term	0.835 mg/m <sup>3</sup>	0.576
process (synthesis) where opportunity	- systemic	_	
for exposure arises			
PROC4 - Use in batch and other	Worker - dermal, long-term -	0.887 mg/kg bw/day	0.013
process (synthesis) where opportunity	systemic		
for exposure arises			
PROC4 - Use in batch and other	Worker - combined, long-term		0.589
process (synthesis) where opportunity	- systemic		
for exposure arises			
PROC3 - Use in closed batch process	Worker - inhalative, long-term	0.013 mg/m <sup>3</sup>	< 0.01
(synthesis or formulation)	- systemic		
PROC3 - Use in closed batch process	Worker - dermal, long-term -	0.035 mg/kg bw/day	< 0.01
(synthesis or formulation)	systemic		
PROC3 - Use in closed batch process	Worker - combined, long-term		< 0.01
(synthesis or formulation)	- systemic		
PROC28 - Manual maintenance	Worker - inhalative, long-term	0.116 mg/m <sup>3</sup>	0.08
(cleaning and repair) of machinery	- systemic	-	
PROC28 - Manual maintenance	Worker - dermal, long-term -	2.493 mg/kg bw/day	0.036
(cleaning and repair) of machinery	systemic		
PROC28 - Manual maintenance	Worker - combined, long-term		0.116
(cleaning and repair) of machinery	- systemic		

# Section 4 - Guidance to check compliance with the exposure scenario

EGHS / EN Page 199/345

#### Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

#### Section 1 - Title

Title Non-metal-surface treatment products Manufacture of basic metals, including alloys

**Type** Worke

Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites

Environmental release category(ies) ERC6b - Industrial use of reactive processing aids

Process category(ies) PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC3 - Use in closed batch process (synthesis or formulation)

PROC7 - Industrial spraying

PROC23 - Open processing and transfer operations with minerals/metals at elevated

temperature

Product category(ies) PC15 - Non-metal-surface treatment products

Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

SU14 - Manufacture of basic metals, including alloys

#### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC6b - Industrial use of reactive processing aids

#### **Amounts used**

Туре	Daily amount per site
Value	<= 10000
Units	kg/d

Туре	Annual amount per site
Value	<= 200
Units	t(ons)/year

Conditions and measures related to municipal sewage treatment plant

Туре	Municipal STP
Assumed domestic sewage treatment	>= 2000 m3/day
plant flow	

Environmental factors not influenced by risk management

	a a j man managaman
Receiving water dilution (fresh or	>= 18000 m3/day
marine)	

Disposal	Dispose of waste product or used containers according to local regulations		

Control of worker exposure		
Process category(ies) PROC2 - Use in closed, continuous process with occasional controlled exposure		
Covers concentrations up to	5%	

Dhysical form of product	Liquid
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).
Use frequency Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
life worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
	330/37/39 - Wear suitable protective clothing, gloves and eye/race protection
personal protection, hygiene and health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Clean equipment and the work area every day
exposure Indoor/Outdoor use	Covers indoor and outdoor use
	40 C
Assumes process temperature up to	40 C
Dragon estagon/ica)	PROC3 - Use in closed batch process (synthesis or formulation)
Covers concentrations up to	5%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	Class and send the week and the week area areas and the second and
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and exposure	
EXDOSULE	
	Covers indeer and outdoor use
Indoor/Outdoor use	Covers indoor and outdoor use
	Covers indoor and outdoor use 1000 C
Indoor/Outdoor use Assumes process temperature up to	1000 C
Indoor/Outdoor use Assumes process temperature up to Process category(ies)	1000 C PROC7 - Industrial spraying
Indoor/Outdoor use Assumes process temperature up to Process category(ies) Covers concentrations up to	1000 C  PROC7 - Industrial spraying 1%
Indoor/Outdoor use Assumes process temperature up to Process category(ies) Covers concentrations up to Use frequency	PROC7 - Industrial spraying  1%  Covers daily exposures up to 8 hours (unless stated differently).
Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Use frequency Technical conditions and measures to	PROC7 - Industrial spraying  1%  Covers daily exposures up to 8 hours (unless stated differently).  Use in semi-automated and predominantly enclosed filling lines
Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Use frequency Technical conditions and measures to control dispersion from source towards	PROC7 - Industrial spraying  1%  Covers daily exposures up to 8 hours (unless stated differently).  Use in semi-automated and predominantly enclosed filling lines Ensure that spray direction is only horizontal or downward
Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Use frequency Technical conditions and measures to	PROC7 - Industrial spraying  1%  Covers daily exposures up to 8 hours (unless stated differently).  Use in semi-automated and predominantly enclosed filling lines Ensure that spray direction is only horizontal or downward Surface spraying with no or low compressed air use
Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Use frequency Technical conditions and measures to control dispersion from source towards the worker	PROC7 - Industrial spraying  1%  Covers daily exposures up to 8 hours (unless stated differently).  Use in semi-automated and predominantly enclosed filling lines  Ensure that spray direction is only horizontal or downward  Surface spraying with no or low compressed air use  Low application rate (0.03 - 0.3 l/minute)
Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Use frequency Technical conditions and measures to control dispersion from source towards the worker	PROC7 - Industrial spraying  1%  Covers daily exposures up to 8 hours (unless stated differently).  Use in semi-automated and predominantly enclosed filling lines  Ensure that spray direction is only horizontal or downward  Surface spraying with no or low compressed air use  Low application rate (0.03 - 0.3 l/minute)  Surface spraying of liquids
Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Use frequency Technical conditions and measures to control dispersion from source towards the worker	PROC7 - Industrial spraying  1%  Covers daily exposures up to 8 hours (unless stated differently).  Use in semi-automated and predominantly enclosed filling lines Ensure that spray direction is only horizontal or downward Surface spraying with no or low compressed air use Low application rate (0.03 - 0.3 l/minute) Surface spraying of liquids Provide a good standard of general ventilation. Natural ventilation is from doors, windows
Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Use frequency Technical conditions and measures to control dispersion from source towards the worker	PROC7 - Industrial spraying  1%  Covers daily exposures up to 8 hours (unless stated differently).  Use in semi-automated and predominantly enclosed filling lines Ensure that spray direction is only horizontal or downward Surface spraying with no or low compressed air use Low application rate (0.03 - 0.3 l/minute) Surface spraying of liquids Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan
Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to	PROC7 - Industrial spraying  1%  Covers daily exposures up to 8 hours (unless stated differently).  Use in semi-automated and predominantly enclosed filling lines Ensure that spray direction is only horizontal or downward Surface spraying with no or low compressed air use Low application rate (0.03 - 0.3 l/minute) Surface spraying of liquids Provide a good standard of general ventilation. Natural ventilation is from doors, windows
Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and	PROC7 - Industrial spraying  1%  Covers daily exposures up to 8 hours (unless stated differently).  Use in semi-automated and predominantly enclosed filling lines Ensure that spray direction is only horizontal or downward Surface spraying with no or low compressed air use Low application rate (0.03 - 0.3 l/minute) Surface spraying of liquids Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan
Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation	PROC7 - Industrial spraying  1%  Covers daily exposures up to 8 hours (unless stated differently).  Use in semi-automated and predominantly enclosed filling lines  Ensure that spray direction is only horizontal or downward  Surface spraying with no or low compressed air use  Low application rate (0.03 - 0.3 l/minute)  Surface spraying of liquids  Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent	PROC7 - Industrial spraying  1%  Covers daily exposures up to 8 hours (unless stated differently).  Use in semi-automated and predominantly enclosed filling lines  Ensure that spray direction is only horizontal or downward  Surface spraying with no or low compressed air use  Low application rate (0.03 - 0.3 l/minute)  Surface spraying of liquids  Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day
Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation	PROC7 - Industrial spraying  1%  Covers daily exposures up to 8 hours (unless stated differently).  Use in semi-automated and predominantly enclosed filling lines  Ensure that spray direction is only horizontal or downward  Surface spraying with no or low compressed air use  Low application rate (0.03 - 0.3 l/minute)  Surface spraying of liquids  Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and	PROC7 - Industrial spraying  1%  Covers daily exposures up to 8 hours (unless stated differently).  Use in semi-automated and predominantly enclosed filling lines  Ensure that spray direction is only horizontal or downward  Surface spraying with no or low compressed air use  Low application rate (0.03 - 0.3 l/minute)  Surface spraying of liquids  Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day
Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure	PROC7 - Industrial spraying  1%  Covers daily exposures up to 8 hours (unless stated differently).  Use in semi-automated and predominantly enclosed filling lines  Ensure that spray direction is only horizontal or downward  Surface spraying with no or low compressed air use  Low application rate (0.03 - 0.3 l/minute)  Surface spraying of liquids  Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Demonstrable and effective housekeeping practices are in place
Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use	PROC7 - Industrial spraying  1%  Covers daily exposures up to 8 hours (unless stated differently).  Use in semi-automated and predominantly enclosed filling lines  Ensure that spray direction is only horizontal or downward  Surface spraying with no or low compressed air use  Low application rate (0.03 - 0.3 l/minute)  Surface spraying of liquids  Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Demonstrable and effective housekeeping practices are in place
Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use	PROC7 - Industrial spraying  1%  Covers daily exposures up to 8 hours (unless stated differently).  Use in semi-automated and predominantly enclosed filling lines  Ensure that spray direction is only horizontal or downward  Surface spraying with no or low compressed air use  Low application rate (0.03 - 0.3 l/minute)  Surface spraying of liquids  Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Demonstrable and effective housekeeping practices are in place
Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use	PROC7 - Industrial spraying  1%  Covers daily exposures up to 8 hours (unless stated differently).  Use in semi-automated and predominantly enclosed filling lines Ensure that spray direction is only horizontal or downward Surface spraying with no or low compressed air use Low application rate (0.03 - 0.3 l/minute) Surface spraying of liquids Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day Demonstrable and effective housekeeping practices are in place Indoor  PROC23 - Open processing and transfer operations with minerals/metals at elevated
Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies) Covers concentrations up to	PROC7 - Industrial spraying  1%  Covers daily exposures up to 8 hours (unless stated differently).  Use in semi-automated and predominantly enclosed filling lines Ensure that spray direction is only horizontal or downward Surface spraying with no or low compressed air use Low application rate (0.03 - 0.3 l/minute) Surface spraying of liquids Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day Demonstrable and effective housekeeping practices are in place  Indoor  PROC23 - Open processing and transfer operations with minerals/metals at elevated temperature < 1%
Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies)  Covers concentrations up to Exposure duration	PROC7 - Industrial spraying  1%  Covers daily exposures up to 8 hours (unless stated differently).  Use in semi-automated and predominantly enclosed filling lines Ensure that spray direction is only horizontal or downward  Surface spraying with no or low compressed air use Low application rate (0.03 - 0.3 l/minute) Surface spraying of liquids Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day Demonstrable and effective housekeeping practices are in place  Indoor  PROC23 - Open processing and transfer operations with minerals/metals at elevated temperature  < 1%  Avoid carrying out activities involving exposure for more than 4 hours
Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies)  Covers concentrations up to Exposure duration Use frequency	PROC7 - Industrial spraying  1%  Covers daily exposures up to 8 hours (unless stated differently).  Use in semi-automated and predominantly enclosed filling lines Ensure that spray direction is only horizontal or downward  Surface spraying with no or low compressed air use Low application rate (0.03 - 0.3 l/minute)  Surface spraying of liquids  Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Demonstrable and effective housekeeping practices are in place  Indoor  PROC23 - Open processing and transfer operations with minerals/metals at elevated temperature  < 1%  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).
Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies)  Covers concentrations up to Exposure duration Use frequency Technical conditions and measures to	PROC7 - Industrial spraying  1%  Covers daily exposures up to 8 hours (unless stated differently).  Use in semi-automated and predominantly enclosed filling lines Ensure that spray direction is only horizontal or downward Surface spraying with no or low compressed air use Low application rate (0.03 - 0.3 l/minute) Surface spraying of liquids Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day Demonstrable and effective housekeeping practices are in place Indoor  PROC23 - Open processing and transfer operations with minerals/metals at elevated temperature < 1% Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Undertake operation under enclosed conditions
Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies)  Covers concentrations up to Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards	PROC7 - Industrial spraying  1%  Covers daily exposures up to 8 hours (unless stated differently).  Use in semi-automated and predominantly enclosed filling lines  Ensure that spray direction is only horizontal or downward  Surface spraying with no or low compressed air use  Low application rate (0.03 - 0.3 l/minute)  Surface spraying of liquids  Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Demonstrable and effective housekeeping practices are in place  Indoor  PROC23 - Open processing and transfer operations with minerals/metals at elevated temperature  < 1%  Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Use in semi-automated and predominantly enclosed filling lines
Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Use frequency Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies)  Covers concentrations up to Exposure duration Use frequency Technical conditions and measures to	PROC7 - Industrial spraying  1%  Covers daily exposures up to 8 hours (unless stated differently).  Use in semi-automated and predominantly enclosed filling lines Ensure that spray direction is only horizontal or downward Surface spraying with no or low compressed air use Low application rate (0.03 - 0.3 l/minute) Surface spraying of liquids Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day Demonstrable and effective housekeeping practices are in place Indoor  PROC23 - Open processing and transfer operations with minerals/metals at elevated temperature < 1% Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Undertake operation under enclosed conditions

personal protection, hygiene and	Wear suitable gloves tested to EN 374	
health evaluation	See Section 8 for information on appropriate personal protective equipment	
Organisational measures to prevent /limit releases, dispersion and	Clean equipment and the work area every day	
exposure		
Indoor/Outdoor use	Covers indoor and outdoor use	
Assumes process temperature up to	1000 C	

Environmental release category(ies) - ERC6b - Industrial use of reactive processing aids

# Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.551 mg/l	0.19
Marine water	0.055 mg/l	0.019
STP: Sewage Treatment Plant	4.998 mg/l	0.5
Soil	0.173 mg/kg dw	0.03

#### **Derived No Effect Level (DNEL):**

Calculation method Used ART model MFASE

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.03 mg/m <sup>3</sup>	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.007 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		< 0.01
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	0.253 mg/m <sup>3</sup>	0.174
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - dermal, long-term - systemic	0.007 mg/kg bw/day	< 0.01
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - combined, long-term - systemic		0.175
PROC7 - Industrial spraying	Worker - inhalative, long-term - systemic	0.42 mg/m <sup>3</sup>	0.29
PROC7 - Industrial spraying	Worker - dermal, long-term - systemic	7.501 mg/kg bw/day	0.109
PROC7 - Industrial spraying	Worker - combined, long-term - systemic		0.399
PROC23 - Open processing and transfer operations with minerals/metals at elevated temperature	Worker - inhalative, long-term - systemic	0.19 mg/m³	0.131
PROC23 - Open processing and transfer operations with	Worker - dermal, long-term - systemic	0.102 mg/kg bw/day	< 0.01

ES00401 - Borates - Use at industrial sites; Non-metal-surface treatment products (PC 15); Manufacture of basic metals, including alloys (SU 14

minerals/metals at elevated		
temperature		
PROC23 - Open processing and	Worker - combined, long-term	0.133
transfer operations with	- systemic	
minerals/metals at elevated		
temperature		

## Section 4 - Guidance to check compliance with the exposure scenario

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### Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

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#### Section 1 - Title

Title Adhesives, sealants

**Type** article

Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites

Environmental release category(ies) ERC12a - Industrial processing of articles with abrasive techniques (low release)

Process category(ies) PROC21 - Low energy manipulation of substances bound in materials and/or articles

Article categories AC2 - Machinery, mechanical appliances, electrical/electronic articles AC8 - Paper articles

AC11 - Wood articles

Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

#### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC12a - Industrial processing of articles with abrasive techniques (low release)

#### Amounts used

Туре	Daily amount per site
Value	<= 500
Units	kg/d

Туре	Annual amount per site
Value	<= 40
Units	t(ons)/year

Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP
Assumed domestic sewage treatment	>= 2000 m3/day
plant flow	

Environmental factors not influenced by risk management

Receiving water dilution (fresh or	>= 18000 m3/day
marine)	

Disposal	Dispose of waste product or used containers according to local regulations			

Control of worker exposure	
Process category(ies)	PROC21 - Low energy manipulation of substances bound in materials and/or articles
Covers concentrations up to	5%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
control dispersion from source towards	a month (containment is not breached)

the worker	Automate activity where possible
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Indoor

Process category(ies)	PROC21 - Low energy manipulation of substances bound in materials and/or articles
Covers concentrations up to	5%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
control dispersion from source towards	a month (containment is not breached)
the worker	Automate activity where possible
	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Outdoor

Environmental release category(ies) - ERC12a - Industrial processing of articles with abrasive techniques (low release)

# Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.676 mg/l	0.233
Marine water	0.068 mg/l	0.023
STP: Sewage Treatment Plant	6.248 mg/l	0.625
Soil	0.185 mg/kg dw	0.033

#### **Derived No Effect Level (DNEL):**

Calculation method MEASE

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC21 - Low energy manipulation of substances bound in materials and/or articles		0.003 mg/m <sup>3</sup>	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles		0.014 mg/kg bw/day	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles			< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles		0.002 mg/m <sup>3</sup>	< 0.01

PROC21 - Low energy manipulation of substances bound in materials and/or		0.014 mg/kg bw/day	< 0.01
articles	-		
PROC21 - Low energy manipulation of	Worker - combined, long-term		< 0.01
substances bound in materials and/or	- systemic		
articles			

# Section 4 - Guidance to check compliance with the exposure scenario

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### Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

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#### Section 1 - Title

Title Building and construction work

**Type** article

Main user group
Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies) ERC12a - Industrial processing of articles with abrasive techniques (low release)
Process category(ies)
PROC21 - Low energy manipulation of substances bound in materials and/or articles

Article categories AC4 - Stone, plaster, cement, glass and ceramic articles

Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

#### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC12a - Industrial processing of articles with abrasive techniques (low release)

#### **Amounts used**

Туре	Daily amount per site
Value	<= 400
Units	kg/d

Туре	Annual amount per site
Value	<= 20
Units	t(ons)/year

Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP
Assumed domestic sewage treatment	>= 2000 m3/day
plant flow	

**Environmental factors not influenced by risk management** 

Receiving water dilution (fresh or	>= 18000 m3/day
marine)	

Dis	posal	Dispose of waste product or used containers according to local regulations	

Control of worker exposure	
Process category(ies)	PROC21 - Low energy manipulation of substances bound in materials and/or articles
Covers concentrations up to	5%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
control dispersion from source towards	a month (containment is not breached)
the worker	Automate activity where possible

ES00403 - Borates - Service life (worker at industrial site); Stone, plaster, cement, glass and ceramic articles: Large surface area articles (AC 4a)

	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Indoor

### Section 3 - Exposure estimation

Environmental release category(ies) - ERC12a - Industrial processing of articles with abrasive techniques (low release)

# Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.551 mg/l	0.19
Marine water	0.055 mg/l	0.019
STP: Sewage Treatment Plant	4.998 mg/l	0.5
Soil	0.175 mg/kg dw	0.031

#### **Derived No Effect Level (DNEL):**

Calculation method MEASE

Process category(ies)	Exposure route		Risk characterisation ratio (RCR)
PROC21 - Low energy manipulation of substances bound in materials and/or articles		0.003 mg/m <sup>3</sup>	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles		0.014 mg/kg bw/day	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles			< 0.01

## Section 4 - Guidance to check compliance with the exposure scenario

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### Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

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#### Section 1 - Title

Title paint and Coatings

**Type** article

Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites Environmental release category(ies) ERC12a - Industrial processing of articles with abrasive techniques (low release)

Process category(ies) PROC21 - Low energy manipulation of substances bound in materials and/or articles

PROC24 - High (mechanical) energy work-up of substances bound in materials and/or

articles

Article categories AC7a - Metal products: cutlery, cooking utensils, pots, pans AC8 - Paper articles Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

#### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC12a - Industrial processing of articles with abrasive techniques (low release)

#### **Amounts used**

Туре	Daily amount per site
Value	<= 500
Units	kg/d

Туре	Annual amount per site
Value	<= 25
Units	t(ons)/year

Conditions and measures related to municipal sewage treatment plant

Туре	Municipal STP
Assumed domestic sewage treatment	>= 2000 m3/day
plant flow	

Environmental factors not influenced by risk management

	a by new management
Receiving water dilution (fresh or	>= 18000 m3/day
marine)	

Disposal Dispose of w	aste product or used containers according to local regulations
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Control of worker exposure		
Process category(ies)	PROC21 - Low energy manipulation of substances bound in materials and/or articles	
Covers concentrations up to	5%	
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours	
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).	
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once	

# ES00404 - Borates - Service life (worker at industrial site); Various articles (AC 7a, AC 8)

1	a month (containment is not breached)
the worker	Automate activity where possible
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Indoor
Drosess estador (ica)	DDCC24. Low energy manipulation of substances hound in materials and/or articles
Process category(ies)	PROC21 - Low energy manipulation of substances bound in materials and/or articles
Covers concentrations up to	5%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Outdoor
Process category(ies)	PROC24 - High (mechanical) energy work-up of substances bound in materials and/or
	articles
Covers concentrations up to	5%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Undertake operation under enclosed conditions
control dispersion from source towards	Use in semi-automated and predominantly enclosed filling lines
the worker	Mechanical ventilation giving at least 3 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	Wear a respirator providing a minimum efficiency of 90%
health evaluation	See Section 8 for information on appropriate personal protective equipment
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Indoor
Process category(ies)	PROC24 - High (mechanical) energy work-up of substances bound in materials and/or
, , , ,	articles
Covers concentrations up to	5%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Undertake operation under enclosed conditions
	Use in semi-automated and predominantly enclosed filling lines
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	Wear a respirator providing a minimum efficiency of 90%
health evaluation	See Section 8 for information on appropriate personal protective equipment
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	olean equipment and the work area every day
exposure	Outdoor
Indoor/Outdoor use	Outdoor

Environmental release category(ies) - ERC12a - Industrial processing of articles with abrasive techniques (low release)

# Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.676 mg/l	0.233
Marine water	0.068 mg/l	0.023
STP: Sewage Treatment Plant	6.248 mg/l	0.625
Soil	0.183 mg/kg dw	0.032

#### **Derived No Effect Level (DNEL):**

Calculation method ME	EASE
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Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC21 - Low energy manipulation of substances bound in materials and/or articles		0.003 mg/m <sup>3</sup>	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles		0.014 mg/kg bw/day	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles	Worker - combined, long-term - systemic		< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles	Worker - inhalative, long-term - systemic	0.002 mg/m <sup>3</sup>	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles	Worker - dermal, long-term - systemic	0.014 mg/kg bw/day	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles	Worker - combined, long-term - systemic		< 0.01
PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles	Worker - inhalative, long-term - systemic	0.191 mg/m³	0.132
PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles	Worker - dermal, long-term - systemic	1.496 mg/kg bw/day	0.022
PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles	Worker - combined, long-term - systemic		0.154
PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles	Worker - inhalative, long-term - systemic	0.197 mg/m <sup>3</sup>	0.136
PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles	Worker - dermal, long-term - systemic	1.638 mg/kg bw/day	0.024
PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles	Worker - combined, long-term - systemic		0.16

# Section 4 - Guidance to check compliance with the exposure scenario

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#### Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

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#### Section 1 - Title

Title Building and construction work

**Type** article

Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites

Environmental release category(ies) ERC12a - Industrial processing of articles with abrasive techniques (low release)

Process category(ies) PROC21 - Low energy manipulation of substances bound in materials and/or articles

Article categories AC4 - Stone, plaster, cement, glass and ceramic articles AC11a - Wood and wood furniture:

furniture

Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

#### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC12a - Industrial processing of articles with abrasive techniques (low release)

#### Amounts used

Туре	Daily amount per site
Value	<= 500
Units	kg/d

Туре	Annual amount per site
Value	<= 30
Units	t(ons)/year

Conditions and measures related to municipal sewage treatment plant

Туре	Municipal STP
Assumed domestic sewage treatment	>= 2000 m3/day
plant flow	·

Environmental factors not influenced by risk management

Receiving water dilution (fresh or	>= 18000 m3/day
marine)	

Disposal	Dispose of waste product or used containers according to local regulations

Control of worker exposure	
Process category(ies)	PROC21 - Low energy manipulation of substances bound in materials and/or articles
Covers concentrations up to	5%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
control dispersion from source towards	a month (containment is not breached)

the worker	Automate activity where possible
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Indoor

Process category(ies)	PROC21 - Low energy manipulation of substances bound in materials and/or articles
Covers concentrations up to	5%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
control dispersion from source towards	a month (containment is not breached)
the worker	Automate activity where possible
	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Outdoor

Environmental release category(ies) - ERC12a - Industrial processing of articles with abrasive techniques (low release)

# Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.676 mg/l	0.233
Marine water	0.068 mg/l	0.023
STP: Sewage Treatment Plant	6.248 mg/l	0.625
Soil	0.184 mg/kg dw	0.032

#### **Derived No Effect Level (DNEL):**

Calculation method MEASE

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC21 - Low energy manipulation of substances bound in materials and/or articles		0.003 mg/m <sup>3</sup>	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles		0.014 mg/kg bw/day	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles			< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles		0.002 mg/m <sup>3</sup>	< 0.01

PROC21 - Low energy manipulation of		0.014 mg/kg bw/day	< 0.01
substances bound in materials and/or	systemic		
articles			
PROC21 - Low energy manipulation of	Worker - combined, long-term		< 0.01
substances bound in materials and/or	- systemic		
articles			

# Section 4 - Guidance to check compliance with the exposure scenario

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Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

#### Section 1 - Title

**Title** Agriculture, forestry, fishery Offshore industries

Type article

Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites

Environmental release category(ies) ERC12a - Industrial processing of articles with abrasive techniques (low release)

Process category(ies) PROC21 - Low energy manipulation of substances bound in materials and/or articles

**Article categories** AC5 - Fabrics, textiles and apparel

Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC12a - Industrial processing of articles with abrasive techniques (low release)

#### **Amounts used**

Туре	Daily amount per site
Value	<= 500
Units	kg/d

Туре	Annual amount per site
Value	<= 30
Units	t(ons)/year

Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP
Assumed domestic sewage treatment	>= 2000 m3/day
plant flow	

**Environmental factors not influenced by risk management** 

Receiving water dilution (fresh or	>= 18000 m3/day
marine)	

	Disposai	Dispose of waste product or used containers according to local regulations
--	----------	--

Control of worker exposure	
Process category(ies)	PROC21 - Low energy manipulation of substances bound in materials and/or articles
Covers concentrations up to	5%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
control dispersion from source towards	a month (containment is not breached)
the worker	Automate activity where possible

	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Indoor
Process category(ies)	PPOC21 - Low energy manipulation of substances bound in materials and/or articles

Process category(ies)	PROC21 - Low energy manipulation of substances bound in materials and/or articles		
Covers concentrations up to	5%		
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours		
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).		
control dispersion from source towards	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible		
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection		
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day		
Indoor/Outdoor use	Outdoor		

Environmental release category(ies) - ERC12a - Industrial processing of articles with abrasive techniques (low release)

# Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)		
Freshwater	0.676 mg/l	0.233		
Marine water	0.068 mg/l	0.023		
STP: Sewage Treatment Plant	6.248 mg/l	0.625		
Soil	0.184 mg/kg dw	0.032		

#### **Derived No Effect Level (DNEL):**

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC21 - Low energy manipulation of substances bound in materials and/or articles		0.003 mg/m <sup>3</sup>	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles		0.014 mg/kg bw/day	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles			< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles		0.002 mg/m <sup>3</sup>	< 0.01

PROC21 - Low energy manipulation of W	Vorker - dermal, long-term -	0.014 mg/kg bw/day	< 0.01
substances bound in materials and/or sy	ystemic		
articles			
PROC21 - Low energy manipulation of W	Vorker - combined, long-term		< 0.01
substances bound in materials and/or - s	systemic		
articles	-		

#### Section 4 - Guidance to check compliance with the exposure scenario

apparel (AC 5h)

EGHS / EN Page 218/345

#### Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

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#### Section 1 - Title

Title Metal articles
Type article

Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites

Environmental release category(ies) ERC12a - Industrial processing of articles with abrasive techniques (low release)

Process category(ies) PROC21 - Low energy manipulation of substances bound in materials and/or articles

Article categories AC7 - Metal articles

Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

#### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC12a - Industrial processing of articles with abrasive techniques (low release)

#### **Amounts used**

Туре	Daily amount per site
Value	<= 1852
Units	kg/d

Туре	Annual amount per site
Value	<= 400
Units	t(ons)/year

Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP
Assumed domestic sewage treatment	>= 2000 m3/day
plant flow	

**Environmental factors not influenced by risk management** 

Receiving water dilution (fresh or	>= 18000 m3/day
marine)	

Conditions and measures related to external treatment of waste for disposal

Disposal	Dispose of waste product or used containers according to local regulations

Control of worker exposure	
Process category(ies)	PROC21 - Low energy manipulation of substances bound in materials and/or articles
Covers concentrations up to	< 1%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Mechanical ventilation giving at least 1 ACH

Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Indoor

Process category(ies)	PROC21 - Low energy manipulation of substances bound in materials and/or articles
Covers concentrations up to	< 1%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Outdoor

#### Section 3 - Exposure estimation

Environmental release category(ies) - ERC12a - Industrial processing of articles with abrasive techniques (low release)

### Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.054 mg/l	0.019
Marine water	0.00536 mg/l	< 0.01
STP: Sewage Treatment Plant	0.028 mg/l	< 0.01
Soil	0.142 mg/kg dw	0.025

#### **Derived No Effect Level (DNEL):**

Calculation method MEASE

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC21 - Low energy manipulation of substances bound in materials and/or articles		0.001 mg/m <sup>3</sup>	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles		0.069 mg/kg bw/day	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles			< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles		0.001 mg/m <sup>3</sup>	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles		0.069 mg/kg bw/day	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or			< 0.01

ES00407 - Borates - Service life (worker at industrial site); Metal articles (AC 7)	Revision date	09-Feb-2025

articles		

#### Section 4 - Guidance to check compliance with the exposure scenario

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#### Section 1 - Title

Title Manufacture of fabricated metal products, except machinery and equipment

**Type** Worker

Main user group Professional uses: Public domain (administration, education, entertainment, services,

craftsmen)

Environmental release category(ies) ERC8a - Wide dispersive indoor use of processing aids in open systems ERC8d - Wide

dispersive outdoor use of processing aids in open systems

Process category(ies) PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non dedicated facilities

PROC24 - High (mechanical) energy work-up of substances bound in materials and/or

articles

PROC28 - Manual maintenance (cleaning and repair) of machinery

Product category(ies) PC0 - Other Products

Sector(s) of use SU15 - Manufacture of fabricated metal products, except machinery and equipment SU22 -

Professional uses

#### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems

- ERC8d - Wide dispersive outdoor use of processing aids in open systems

Conditions and measures related to municipal sewage treatment plant

Type Municipal STP

Conditions and measures related to external treatment of waste for disposal

Disposal Dispose of waste product or used containers according to local regulations

Control of worker exposure	
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Covers concentrations up to	5%
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day

Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	5%
Exposure duration	- 12
•	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
the worker	a month (containment is not breached) Automate activity where possible
trie worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	030/31/33 - Wear suitable protective clothing, gloves and eyerface protection
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Olean equipment and the work area every day
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	40 C
received proceed temperature up to	
Process category(ies)	PROC24 - High (mechanical) energy work-up of substances bound in materials and/or
	articles
Covers concentrations up to	5%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Undertake operation under enclosed conditions
	Use in semi-automated and predominantly enclosed filling lines
the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	Wear a respirator providing a minimum efficiency of 90%
health evaluation	See Section 8 for information on appropriate personal protective equipment
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	ordan oquipment and the nemarou every day
exposure	
Indoor/Outdoor use	Indoor
Process category(ies)	PROC24 - High (mechanical) energy work-up of substances bound in materials and/or
	articles
Covers concentrations up to	5%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Undertake operation under enclosed conditions
control dispersion from source towards	Use in semi-automated and predominantly enclosed filling lines
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	Wear a respirator providing a minimum efficiency of 90%
health evaluation	See Section 8 for information on appropriate personal protective equipment
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Outdoor
-	
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	5%
Physical form of product	Solid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	

Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent	Wet cleaning of the workplace
/limit releases, dispersion and	Clean equipment and the work area every day
exposure	
Indoor/Outdoor use	Indoor
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	5%
Physical form of product	Solid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Wet cleaning of the workplace
/limit releases, dispersion and	Clean equipment and the work area every day

#### Section 3 - Exposure estimation

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems - ERC8d - Wide dispersive outdoor use of processing aids in open systems

Outdoor

### Predicted No Effect Concentration (PNEC)

exposure

Indoor/Outdoor use

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.052 mg/L	0.018
Marine water	0.00511 mg/L	< 0.01
STP: Sewage Treatment Plant	0.00275 mg/L	< 0.01
Soil	0.141 mg/kg dw	0.025

#### **Derived No Effect Level (DNEL):**

Calculation method	MEASE		
Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	0.001 mg/m³	< 0.01
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	systemic	0.028 mg/kg bw/day	< 0.01
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - combined, long-term - systemic		< 0.01
PROC2 - Use in closed, continuous process with occasional controlled	Worker - inhalative, long-term - systemic	0.001 mg/m <sup>3</sup>	< 0.01

ovnoguro			
exposure	lean dameal langutama	0.007 // (  /-/	. 0.04
	, 0	0.007 mg/kg bw/day	< 0.01
l	emic		
exposure			0.04
· ·	ker - combined, long-term		< 0.01
וי ו	stemic		
exposure		0.000 / 2	0.457
	ker - inhalative, long-term	0.228 mg/m <sup>3</sup>	0.157
	stemic		
materials and/or articles			
	, 0	4.914 mg/kg bw/day	0.072
1 '	emic		
materials and/or articles			
	ker - combined, long-term		0.229
	stemic		
materials and/or articles			
	ker - inhalative, long-term	0.197 mg/m <sup>3</sup>	0.136
	stemic		
materials and/or articles			
	, 0	1.638 mg/kg bw/day	0.024
1 '	emic		
materials and/or articles			
, , , , , , , , , , , , , , , , , , ,	ker - combined, long-term		0.16
1 '	stemic		
materials and/or articles			
PROC28 - Manual maintenance Wor	ker - inhalative, long-term	0.231 mg/m <sup>3</sup>	0.159
	stemic		
PROC28 - Manual maintenance Wor	ker - dermal, long-term -	0.499 mg/kg bw/day	< 0.01
	emic		
PROC28 - Manual maintenance Wor	ker - combined, long-term		0.167
(cleaning and repair) of machinery - sys	stemic		
PROC28 - Manual maintenance Wor	ker - inhalative, long-term	0.997 mg/m <sup>3</sup>	0.688
(cleaning and repair) of machinery - sys	stemic		
		0.499 mg/kg bw/day	< 0.01
	emic		
PROC28 - Manual maintenance Wor	ker - combined, long-term		0.695

#### Section 4 - Guidance to check compliance with the exposure scenario

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#### Section 1 - Title

**Title** Fertilisers Agriculture, forestry, fishery

**Type** Worker

Main user group Professional uses: Public domain (administration, education, entertainment, services,

craftsmen)

Environmental release category(ies) ERC8a - Wide dispersive indoor use of processing aids in open systems ERC8d - Wide

dispersive outdoor use of processing aids in open systems

Process category(ies) PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC3 - Use in closed batch process (synthesis or formulation)

PROC7 - Industrial spraying

PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non dedicated facilities

PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,

including weighing)

PROC11 - Non industrial spraying

PROC28 - Manual maintenance (cleaning and repair) of machinery

Product category(ies) PC12 - Fertilisers

Sector(s) of use SU1 - Agriculture, forestry, fishery SU22 - Professional uses

#### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems

- ERC8d - Wide dispersive outdoor use of processing aids in open systems

Conditions and measures related to municipal sewage treatment plant

Type Municipal STP

Conditions and measures related to external treatment of waste for disposal

Disposal Dispose of waste product or used containers according to local regulations

Control of worker exposure	
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
control dispersion from source towards the worker	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection

Organizational massures to provent	Clean aguinment and the work area every day
Organisational measures to prevent /limit releases, dispersion and	Clean equipment and the work area every day
exposure	
Indoor/Outdoor use	Indoor
	40 C
Assumes process temperature up to	40 C
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
the worker	a month (containment is not breached)
	Automate activity where possible
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure Indoor/Outdoor use	Outdoor
Assumes process temperature up to	40 C
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	25%
Physical form of product	
	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
the worker	a month (containment is not breached)
ine worker	Automate activity where possible Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	350/57/59 - Wear Suitable protective clothing, gloves and eye/face protection
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Clean equipment and the work area every day
exposure	
Indoor/Outdoor use	Indoor
	40 C
Assumes process temperature up to	40 C
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency Technical conditions and measures to	Covers daily exposures up to 8 hours (unless stated differently).  Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	1000/01/09 - Wear Suitable protective clothing, gloves and eye/race protection
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Clean equipment and the work area every day
exposure	
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	40 C
rosumes process temperature up to	<del> </del>
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
	- 1.2 22 200 in closes, commission processo than occasional controlled exposure

Covers concentrations up to	5%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
control dispersion from source towards	a month (containment is not breached)
the worker	Automate activity where possible
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 C
rosamos process temperature up to	
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	5%
Physical form of product	Solid, medium dustiness
	,
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	40 C
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to
	vessels/large containers at non dedicated facilities
Covers concentrations up to	5%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Use in semi-automated and predominantly enclosed filling lines
	Mechanical ventilation giving at least 3 ACH
the worker	livied ranical ventilation giving at least 5 Aort
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	530/37/39 - Wear suitable protective clothing, gloves and eye/race protection
health evaluation	
	Clean aguinment and the work area every day
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Indoor
D	DDCCCo. Transfer of substance and substance that (about a visit of the substance) from the
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to
	vessels/large containers at non dedicated facilities
Covers concentrations up to	5%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Use in semi-automated and predominantly enclosed filling lines
control dispersion from source towards	
control dispersion from source towards	

the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	1000/01/09 - Wear Suitable protective clothing, gloves and eye/race protection
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Clean equipment and the work area every day
- I	
exposure Indoor/Outdoor use	Outdoor
indoor/Outdoor use	Outdoor
Process category(ies)	PROC11 - Non industrial spraying
Covers concentrations up to	5%
-	
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	200/07/00 NV '' I I I I I I I I I I I I I I I I I I
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	Wear a respirator providing a minimum efficiency of 95%
health evaluation	See Section 8 for information on appropriate personal protective equipment
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
D	DDOOO Harris alread betala see as (see the size on formulation)
Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
- I	a month (containment is not breached)
the worker	Automate activity where possible
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	Wear suitable gloves tested to EN 374
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 C
Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	Wear suitable gloves tested to EN 374
health evaluation	See Section 8 for information on appropriate personal protective equipment
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Demonstrable and effective housekeeping practices are in place
exposure	
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	40 C

Dragge estadon/ica)	DDOCO Transfer of substance or preparation into small containers (dedicated filling line
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,
	including weighing)
Covers concentrations up to	25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Outdoor
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to
	vessels/large containers at non dedicated facilities
Covers concentrations up to	25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Undertake operation under enclosed conditions
	Use in semi-automated and predominantly enclosed filling lines
the worker	
Conditions and measures related to	C26/27/20 Moor quitable protective elething, gloves and eve/face protection
	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	Class and in result and the supply area assembled
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Outdoor
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Process category(ies)  Covers concentrations up to	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) 25%
Process category(ies)  Covers concentrations up to Physical form of product	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) 25% Liquid
Process category(ies)  Covers concentrations up to Physical form of product Exposure duration	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) 25% Liquid Avoid carrying out activities involving exposure for more than 1 hour
Process category(ies)  Covers concentrations up to Physical form of product Exposure duration Use frequency	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) 25% Liquid Avoid carrying out activities involving exposure for more than 1 hour Covers daily exposures up to 8 hours (unless stated differently).
Process category(ies)  Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) 25% Liquid Avoid carrying out activities involving exposure for more than 1 hour Covers daily exposures up to 8 hours (unless stated differently). Mechanical ventilation giving at least 1 ACH
Process category(ies)  Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) 25% Liquid Avoid carrying out activities involving exposure for more than 1 hour Covers daily exposures up to 8 hours (unless stated differently). Mechanical ventilation giving at least 1 ACH
Process category(ies)  Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)  25%  Liquid  Avoid carrying out activities involving exposure for more than 1 hour  Covers daily exposures up to 8 hours (unless stated differently).  Mechanical ventilation giving at least 1 ACH
Process category(ies)  Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) 25% Liquid Avoid carrying out activities involving exposure for more than 1 hour Covers daily exposures up to 8 hours (unless stated differently). Mechanical ventilation giving at least 1 ACH
Process category(ies)  Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)  25%  Liquid  Avoid carrying out activities involving exposure for more than 1 hour  Covers daily exposures up to 8 hours (unless stated differently).  Mechanical ventilation giving at least 1 ACH
Process category(ies)  Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)  25%  Liquid  Avoid carrying out activities involving exposure for more than 1 hour  Covers daily exposures up to 8 hours (unless stated differently).  Mechanical ventilation giving at least 1 ACH
Process category(ies)  Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)  25%  Liquid  Avoid carrying out activities involving exposure for more than 1 hour  Covers daily exposures up to 8 hours (unless stated differently).  Mechanical ventilation giving at least 1 ACH
Process category(ies)  Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)  25%  Liquid  Avoid carrying out activities involving exposure for more than 1 hour  Covers daily exposures up to 8 hours (unless stated differently).  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Process category(ies)  Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)  25%  Liquid  Avoid carrying out activities involving exposure for more than 1 hour  Covers daily exposures up to 8 hours (unless stated differently).  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Process category(ies)  Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)  25%  Liquid  Avoid carrying out activities involving exposure for more than 1 hour  Covers daily exposures up to 8 hours (unless stated differently).  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Process category(ies)  Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) 25% Liquid Avoid carrying out activities involving exposure for more than 1 hour Covers daily exposures up to 8 hours (unless stated differently). Mechanical ventilation giving at least 1 ACH  \$36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day
Process category(ies)  Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) 25% Liquid Avoid carrying out activities involving exposure for more than 1 hour Covers daily exposures up to 8 hours (unless stated differently). Mechanical ventilation giving at least 1 ACH  \$36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day
Process category(ies)  Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)  25%  Liquid  Avoid carrying out activities involving exposure for more than 1 hour  Covers daily exposures up to 8 hours (unless stated differently).  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day
Process category(ies)  Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)  25%  Liquid  Avoid carrying out activities involving exposure for more than 1 hour  Covers daily exposures up to 8 hours (unless stated differently).  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor  PROC8a - Transfer of substance or preparation (charging/discharging) from/to
Process category(ies)  Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies) Covers concentrations up to	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)  25% Liquid Avoid carrying out activities involving exposure for more than 1 hour Covers daily exposures up to 8 hours (unless stated differently).  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor  PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities  25%
Process category(ies)  Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies)  Covers concentrations up to Physical form of product	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) 25% Liquid Avoid carrying out activities involving exposure for more than 1 hour Covers daily exposures up to 8 hours (unless stated differently). Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor  PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities 25% Liquid
Process category(ies)  Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies)  Covers concentrations up to Physical form of product Exposure duration	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) 25% Liquid Avoid carrying out activities involving exposure for more than 1 hour Covers daily exposures up to 8 hours (unless stated differently).  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor  PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities 25% Liquid Avoid carrying out activities involving exposure for more than 1 hour
Process category(ies)  Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies)  Covers concentrations up to Physical form of product Exposure duration Use frequency	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) 25% Liquid Avoid carrying out activities involving exposure for more than 1 hour Covers daily exposures up to 8 hours (unless stated differently). Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor  PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities 25% Liquid Avoid carrying out activities involving exposure for more than 1 hour Covers daily exposures up to 8 hours (unless stated differently).
Process category(ies)  Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies)  Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) 25% Liquid Avoid carrying out activities involving exposure for more than 1 hour Covers daily exposures up to 8 hours (unless stated differently). Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor  PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities 25% Liquid Avoid carrying out activities involving exposure for more than 1 hour Covers daily exposures up to 8 hours (unless stated differently). Undertake operation under enclosed conditions
Process category(ies)  Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies)  Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)  25%  Liquid  Avoid carrying out activities involving exposure for more than 1 hour  Covers daily exposures up to 8 hours (unless stated differently).  Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor  PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities  25%  Liquid  Avoid carrying out activities involving exposure for more than 1 hour  Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions  Use in semi-automated and predominantly enclosed filling lines
Process category(ies)  Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use  Process category(ies)  Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing) 25% Liquid Avoid carrying out activities involving exposure for more than 1 hour Covers daily exposures up to 8 hours (unless stated differently). Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Indoor  PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities 25% Liquid Avoid carrying out activities involving exposure for more than 1 hour Covers daily exposures up to 8 hours (unless stated differently). Undertake operation under enclosed conditions

personal protection, hygiene and			
health evaluation			
Organisational measures to prevent	Clean equipment and the work area every day		
/limit releases, dispersion and			
exposure			
Indoor/Outdoor use	Indoor		
	PROC11 - Non industrial spraying		
Covers concentrations up to	5%		
Physical form of product	Liquid		
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours		
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).		
	Undertake operation under enclosed conditions		
control dispersion from source towards	Mechanical ventilation giving at least 1 ACH		
the worker			
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection		
	Wear suitable gloves tested to EN 374		
health evaluation	Wear a respirator providing a minimum efficiency of 95%		
	See Section 8 for information on appropriate personal protective equipment		
Organisational measures to prevent	Clean equipment and the work area every day		
/limit releases, dispersion and			
exposure			
Indoor/Outdoor use	Covers indoor and outdoor use		
	PROC7 - Industrial spraying		
Covers concentrations up to	25%		
Physical form of product	Liquid		
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours		
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).		
	Automated task		
control dispersion from source towards	Mechanical ventilation giving at least 3 ACH		
the worker			
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection		
personal protection, hygiene and			
health evaluation			
Organisational measures to prevent	Clean equipment and the work area every day		
/limit releases, dispersion and			
exposure			
- · · ·			
	PROC7 - Industrial spraying		
	25%		
Physical form of product	Liquid		
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours		
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).		
	Automated task		
control dispersion from source towards			
the worker			
	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection		
personal protection, hygiene and			
health evaluation			
Organisational measures to prevent	Clean equipment and the work area every day		
/limit releases, dispersion and			
exposure			
Indoor/Outdoor use	Outdoor		
<b>-</b>			
	PROC28 - Manual maintenance (cleaning and repair) of machinery		
Covers concentrations up to	25%		
Physical form of product	Solid, medium dustiness		
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour		

Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Mechanical ventilation giving at least 3 ACH
control dispersion from source towards	
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	Sold of 1930   Wear Suitable protective distring, gloves and eyerface protection
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Wet cleaning of the workplace
exposure	The committee of the manipulation
Indoor/Outdoor use	Indoor
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Wet cleaning of the workplace
exposure	
Indoor/Outdoor use	Outdoor
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Mechanical ventilation giving at least 3 ACH
control dispersion from source towards	
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Wet cleaning of the workplace
exposure	
Indoor/Outdoor use	Indoor
Dungan and any of	DDOOO Manual maintanana (alamin manda 1) (
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Wet cleaning of the workplace
exposure	Outdoor
Indoor/Outdoor use	Outdoor

#### Section 3 - Exposure estimation

<u>Environmental release category(ies)</u> - ERC8a - Wide dispersive indoor use of processing aids in open systems - ERC8d - Wide dispersive outdoor use of processing aids in open systems

### Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.134 mg/L	0.046
Marine water	0.013 mg/L	< 0.01
STP: Sewage Treatment Plant	0.825 mg/L	0.082
Soil	0.146 mg/kg dw	0.026

#### **Derived No Effect Level (DNEL):**

Calculation method MEASE

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.008 mg/m <sup>3</sup>	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.021 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.007 mg/m <sup>3</sup>	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.021 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.003 mg/m <sup>3</sup>	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.007 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.002 mg/m <sup>3</sup>	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.007 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		< 0.01
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	1.063 mg/m³	0.733

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PROC8a - Transfer of substance or	Worker - dermal, long-term -	0.499 mg/kg bw/day	< 0.01
preparation (charging/discharging)	systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC8a - Transfer of substance or	Worker - combined, long-term		0.74
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC8a - Transfer of substance or	Worker - inhalative, long-term	1.093 mg/m <sup>3</sup>	0.754
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC8a - Transfer of substance or	Worker - dermal, long-term -	0.546 mg/kg bw/day	< 0.01
preparation (charging/discharging)	systemic	] 9 9 ,	
from/to vessels/large containers at non			
dedicated facilities			
PROC8a - Transfer of substance or	Worker - combined, long-term		0.762
preparation (charging/discharging)			0.7 02
	- systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC11 - Non industrial spraying	Worker - inhalative, long-term	0 983 mg/m <sup>3</sup>	0.678
1 NOCTT - Northidustrial spraying		0.903 mg/m	0.070
	- systemic		
PROC11 - Non industrial spraying	Worker - dermal, long-term -	8.19 mg/kg bw/day	0.119
	systemic		
DDOC44 Non-industrial approving			0.707
PROC11 - Non industrial spraying	Worker - combined, long-term		0.797
	- systemic		
PROC3 - Use in closed batch process	Worker - inhalative, long-term	0.001 mg/m <sup>3</sup>	< 0.01
(synthesis or formulation)	- systemic	[5:55 :g,	1 0.0 .
PROC3 - Use in closed batch process	Worker - dermal, long-term -	0.001 mg/kg bw/day	< 0.01
(synthesis or formulation)	systemic		
PROC3 - Use in closed batch process			< 0.01
			0.01
(synthesis or formulation)	- systemic		
PROC3 - Use in closed batch process	Worker - inhalative, long-term	0.001 mg/m <sup>3</sup>	< 0.01
(synthesis or formulation)	- systemic	_	
PROC3 - Use in closed batch process		0.001 mg/kg bw/day	< 0.01
		0.001 mg/kg bw/day	< 0.01
(synthesis or formulation)	systemic		
PROC3 - Use in closed batch process	Worker - combined, long-term		< 0.01
(synthesis or formulation)	- systemic		
		0.007/3	0.04
PROC9 - Transfer of substance or	Worker - inhalative, long-term	0.007 mg/m <sup>3</sup>	< 0.01
preparation into small containers	- systemic		
(dedicated filling line, including			
weighing)	100	0.000 # 1 /:	1 0 0 1
PROC9 - Transfer of substance or	Worker - dermal, long-term -	0.062 mg/kg bw/day	< 0.01
preparation into small containers	systemic		
(dedicated filling line, including			
weighing)			
PROC9 - Transfer of substance or	Worker - combined, long-term		< 0.01
preparation into small containers	- systemic		
	3,5.5		
(dedicated filling line, including			
weighing)			
PROC8a - Transfer of substance or	Worker - inhalative, long-term	0.328 mg/m <sup>3</sup>	0.226
preparation (charging/discharging)			
	- systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC8a - Transfer of substance or	Worker - dermal, long-term -	0.106 mg/kg bw/day	< 0.01
		J. 100 mg/ng 5w/day	1 0.01
preparation (charging/discharging)	systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC8a - Transfer of substance or	Worker combined long term		0.228
	Worker - combined, long-term		0.220
preparation (charging/discharging)	- systemic		

	T	T	
from/to vessels/large containers at non			
dedicated facilities			
PROC9 - Transfer of substance or	Worker - inhalative, long-term	0.008 mg/m <sup>3</sup>	< 0.01
preparation into small containers	- systemic		
(dedicated filling line, including			
weighing)			
PROC9 - Transfer of substance or	Worker - dermal, long-term -	0.062 mg/kg bw/day	< 0.01
preparation into small containers	systemic		
(dedicated filling line, including			
weighing)			
PROC9 - Transfer of substance or	Worker - combined, long-term		< 0.01
preparation into small containers	- systemic		
(dedicated filling line, including	-,		
weighing)			
PROC8a - Transfer of substance or	Worker - inhalative, long-term	0 379 mg/m <sup>3</sup>	0.261
preparation (charging/discharging)	- systemic	0.575 mg/m	0.201
from/to vessels/large containers at non			
dedicated facilities			
	\\\\-\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	0.400/	0.04
PROC8a - Transfer of substance or		0.106 mg/kg bw/day	< 0.01
preparation (charging/discharging)	systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC8a - Transfer of substance or	Worker - combined, long-term		0.263
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC11 - Non industrial spraying	Worker - inhalative, long-term	0.983 mg/m <sup>3</sup>	0.678
	- systemic	_	
PROC11 - Non industrial spraying	Worker - dermal, long-term -	6.12 mg/kg bw/day	0.089
	systemic		
PROC11 - Non industrial spraying	Worker - combined, long-term		0.767
	- systemic		
PROC7 - Industrial spraying	Worker - inhalative, long-term	0.419 mg/m <sup>3</sup>	0.289
	- systemic	J	0.200
PROC7 - Industrial spraying		0.54 mg/kg bw/day	< 0.01
industrial opinioning	systemic	lg, ng z n, aay	
PROC7 - Industrial spraying	Worker - combined, long-term		0.297
i 1007 industrial spraying	- systemic		0.237
PROC7 - Industrial spraying	Worker - inhalative, long-term	0.655 mg/m <sup>3</sup>	0.452
		0.033 mg/m²	0.432
DDOCZ Industrial array in a	- systemic	0.0 == =//.=	0.042
PROC7 - Industrial spraying		0.9 mg/kg bw/day	0.013
	systemic		0.405
PROC7 - Industrial spraying	Worker - combined, long-term		0.465
	- systemic		
PROC28 - Manual maintenance	Worker - inhalative, long-term	0.638 mg/m <sup>3</sup>	0.44
(cleaning and repair) of machinery	- systemic		
PROC28 - Manual maintenance	Worker - dermal, long-term -	1.196 mg/kg bw/day	0.017
(cleaning and repair) of machinery	systemic		
PROC28 - Manual maintenance	Worker - combined, long-term		0.457
(cleaning and repair) of machinery	- systemic		
PROC28 - Manual maintenance	Worker - inhalative, long-term	0.599 mg/m <sup>3</sup>	0.413
(cleaning and repair) of machinery	- systemic		
PROC28 - Manual maintenance	Worker - dermal, long-term -	1.196 mg/kg bw/day	0.017
(cleaning and repair) of machinery	systemic	· · · · · · · · · · · · · · · · · · ·	
PROC28 - Manual maintenance	Worker - combined, long-term		0.431
(cleaning and repair) of machinery	- systemic		0.701
Note and including of the chillery		<u> </u>	+
DDOC28 - Manual maintananas		0.064 mg/m <sup>3</sup>	IO 044
PROC28 - Manual maintenance	Worker - inhalative, long-term	0.064 mg/m <sup>3</sup>	0.044
(cleaning and repair) of machinery	Worker - inhalative, long-term - systemic		
	Worker - inhalative, long-term - systemic	0.064 mg/m <sup>3</sup> 1.196 mg/kg bw/day	0.044

PROC28 - Manual maintenance	Worker - combined, long-term		0.062
(cleaning and repair) of machinery	- systemic		
PROC28 - Manual maintenance	Worker - inhalative, long-term	0.06 mg/m <sup>3</sup>	0.041
(cleaning and repair) of machinery	- systemic	_	
PROC28 - Manual maintenance	Worker - dermal, long-term -	1.196 mg/kg bw/day	0.017
(cleaning and repair) of machinery	systemic		
PROC28 - Manual maintenance	Worker - combined, long-term		0.059
(cleaning and repair) of machinery	- systemic		

#### Section 4 - Guidance to check compliance with the exposure scenario

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#### Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

#### Section 1 - Title

Title Laboratory chemicals Scientific research and development

**Type** Worker

Main user group Professional uses: Public domain (administration, education, entertainment, services,

craftsmen)

Environmental release category(ies) ERC8a - Wide dispersive indoor use of processing aids in open systems ERC8b - Wide

dispersive indoor use of reactive substances in open systems

Process category(ies) PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,

including weighing)

PROC15 - Use as laboratory reagent

PROC28 - Manual maintenance (cleaning and repair) of machinery

Product category(ies) PC21 - Laboratory chemicals

Sector(s) of use SU22 - Professional uses SU24 - Scientific research and development

#### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems

- ERC8b - Wide dispersive indoor use of reactive substances in open systems

Conditions and measures related to municipal sewage treatment plant

Type Municipal STP

Conditions and measures related to external treatment of waste for disposal

Disposal Dispose of waste product or used containers according to local regulations

Control of worker exposure	
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 15 minutes
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Undertake operation under enclosed conditions Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent //limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Covers indoor and outdoor use

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
	Covers daily exposures up to 8 hours (unless stated differently).
Use frequency	
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
· ·	a month (containment is not breached)
the worker	Automate activity where possible
0	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	40 C
Process category/ica\	DDOCQ. Transfer of substance or proparation into small containers (dedicated filling line)
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,
Covers concentrations in to	including weighing)
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Wet cleaning of the workplace
/limit releases, dispersion and	Clean equipment and the work area every day
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC15 - Use as laboratory reagent
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	
	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	g, g, o a a a a a a a a a a a a a a a a a a
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	and the montained and the mont
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
acci, caracci acc	
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 15 minutes
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
Control dispersion nom source towards	

the worker	
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
	Wet cleaning of the workplace Clean equipment and the work area every day
exposure	Shourt equipment and the work area every day
Indoor/Outdoor use	Covers indoor and outdoor use

#### Section 3 - Exposure estimation

<u>Environmental release category(ies)</u> - <u>ERC8a</u> - <u>Wide dispersive indoor use of processing aids in open systems</u> - <u>ERC8b</u> - <u>Wide dispersive indoor use of reactive substances in open systems</u>

### Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.053 mg/L	0.018
Marine water	0.00522 mg/L	< 0.01
STP: Sewage Treatment Plant	0.014 mg/L	< 0.01
Soil	0.141 mg/kg dw	0.025

#### **Derived No Effect Level (DNEL):**

Calculation method MEASE

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative, long-term - systemic	0.032 mg/m³	0.022
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - dermal, long-term - systemic	0.052 mg/kg bw/day	< 0.01
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - combined, long-term - systemic		0.023
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.013 mg/m <sup>3</sup>	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.035 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		< 0.01
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative, long-term - systemic	0.013 mg/m³	< 0.01
PROC9 - Transfer of substance or	Worker - dermal, long-term -	0.104 mg/kg bw/day	< 0.01

ES00410 - Borates - Widespread use by professional workers; Laboratory Chemicals (PC 21); Scientific research and development (SU 24)

preparation into small containers (dedicated filling line, including weighing)	systemic		
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - combined, long-term - systemic		0.01
PROC15 - Use as laboratory reagent	Worker - inhalative, long-term - systemic	0.013 mg/m <sup>3</sup>	< 0.01
PROC15 - Use as laboratory reagent	Worker - dermal, long-term - systemic	0.069 mg/kg bw/day	< 0.01
PROC15 - Use as laboratory reagent	Worker - combined, long-term - systemic		< 0.01
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - inhalative, long-term - systemic	0.578 mg/m <sup>3</sup>	0.399
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - dermal, long-term - systemic	1.246 mg/kg bw/day	0.018
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - combined, long-term - systemic		0.417

#### Section 4 - Guidance to check compliance with the exposure scenario

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#### Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

#### Section 1 - Title

Title Building and construction work

**Type** Worker

Main user group Professional uses: Public domain (administration, education, entertainment, services,

craftsmen)

Environmental release category(ies) ERC8c - Wide dispersive indoor use resulting in inclusion into or onto a matrix ERC8f -

Wide dispersive outdoor use resulting in inclusion into or onto a matrix

Process category(ies) PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC11 - Non industrial spraying

PROC28 - Manual maintenance (cleaning and repair) of machinery

Product category(ies) PC0 - Other Products

Sector(s) of use SU19 - Building and construction work SU22 - Professional uses

#### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC8c - Wide dispersive indoor use resulting in inclusion into or onto a matrix - ERC8f - Wide dispersive outdoor use resulting in inclusion into or onto a matrix

Conditions and measures related to municipal sewage treatment plant

Type Municipal STP

Conditions and measures related to external treatment of waste for disposal

Disposal Dispose of waste product or used containers according to local regulations

Control of worker exposure	
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	5%
Physical form of product	Solid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
control dispersion from source towards the worker	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent //limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	40 C

## ES00411 - Borates - Widespread use by professional workers; Other (PC 0); Building and construction work (SU19)

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure	
Covers concentrations up to	5%	
Physical form of product	Solid	
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours	
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).	
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once	
control dispersion from source towards		
	Automate activity where possible	
	Mechanical ventilation giving at least 1 ACH	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection	
personal protection, hygiene and		
health evaluation		
Organisational measures to prevent	Clean equipment and the work area every day	
/limit releases, dispersion and		
exposure		
Indoor/Outdoor use	Covers indoor and outdoor use	
Assumes process temperature up to	40 C	
Process category(ies)	PROC11 - Non industrial spraying	
Covers concentrations up to	5%	
Physical form of product	Solid	
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours	
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).	
	Mechanical ventilation giving at least 1 ACH	
control dispersion from source towards		
the worker		
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection	
personal protection, hygiene and	Wear a respirator providing a minimum efficiency of 95%	
health evaluation	Wear suitable gloves tested to EN 374	
	See Section 8 for information on appropriate personal protective equipment	
Organisational measures to prevent	Clean equipment and the work area every day	
/limit releases, dispersion and		
exposure		
Indoor/Outdoor use	Covers indoor and outdoor use	
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery	
Covers concentrations up to	5%	
Physical form of product	Solid	
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour	
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).	
	Mechanical ventilation giving at least 3 ACH	
control dispersion from source towards		
the worker		
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection	
personal protection, hygiene and		
health evaluation		
Organisational measures to prevent	Clean equipment and the work area every day	
	Wet cleaning of the workplace	
exposure		

#### Section 3 - Exposure estimation

Environmental release category(ies) - ERC8c - Wide dispersive indoor use resulting in inclusion into or onto a matrix - ERC8f - Wide dispersive outdoor use resulting in inclusion into or onto a matrix

#### (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.052 mg/l	0.018
Marine water	0.0051 mg/l	< 0.01
STP: Sewage Treatment Plant	0.00247 mg/l	< 0.01
Soil	0.141 mg/kg dw	0.025

#### **Derived No Effect Level (DNEL):**

Calculation method MEASE

Calculation method	MEAGE		
Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.007 mg/m <sup>3</sup>	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.025 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		0.017
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.025 mg/m <sup>3</sup>	0.017
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.007 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		0.017
PROC11 - Non industrial spraying	Worker - inhalative, long-term - systemic	1.04 mg/m <sup>3</sup>	0.717
PROC11 - Non industrial spraying	systemic	4.076 mg/kg bw/day	0.059
PROC11 - Non industrial spraying	Worker - combined, long-term - systemic		0.777
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - inhalative, long-term - systemic	1.063 mg/m <sup>3</sup>	0.733
PROC28 - Manual maintenance (cleaning and repair) of machinery	systemic	0.499 mg/kg bw/day	< 0.01
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - combined, long-term - systemic		0.74

#### Section 4 - Guidance to check compliance with the exposure scenario

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#### Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

#### Section 1 - Title

Title paint and Coatings

**Type** Worker

Main user group Professional uses: Public domain (administration, education, entertainment, services,

craftsmen)

Environmental release category(ies) ERC8c - Wide dispersive indoor use resulting in inclusion into or onto a matrix ERC8f -

Wide dispersive outdoor use resulting in inclusion into or onto a matrix

Process category(ies) PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non dedicated facilities PROC10 - Roller application or brushing PROC11 - Non industrial spraying

PROC13 - Treatment of articles by dipping and pouring

PROC28 - Manual maintenance (cleaning and repair) of machinery

Product category(ies) PC9a - Coatings and paints, thinners, paint removers PC18 - Ink and toners

Sector(s) of use SU7 - Printing and reproduction of recorded media SU19 - Building and construction work

SU22 - Professional uses

#### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC8c - Wide dispersive indoor use resulting in inclusion into or onto a matrix - ERC8f - Wide dispersive outdoor use resulting in inclusion into or onto a matrix

Conditions and measures related to municipal sewage treatment plant

Type Municipal STP

Conditions and measures related to external treatment of waste for disposal

Disposal Dispose of waste product or used containers according to local regulations

Control of worker exposure	
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent	Clean equipment and the work area every day

# ES00412 - Borates - Widespread use by professional workers; Various products (PC 9a, PC 18); Various sectors (SU 7, SU 19)

L	
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
control dispersion from source towards	a month (containment is not breached)
the worker	Automate activity where possible
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	1
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
	40 C
process temperature up to	
Process category(ies)	PROC11 - Non industrial spraying
	5%
Covers concentrations up to	
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Mechanical ventilation giving at least 3 ACH
control dispersion from source towards	
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
	Wear a respirator providing a minimum efficiency of 95%
health evaluation	See Section 8 for information on appropriate personal protective equipment
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Process category(ies)	PROC10 - Roller application or brushing
Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Undertake operation under enclosed conditions
	Mechanical ventilation giving at least 1 ACH
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
	Wear a respirator providing a minimum efficiency of 90%
health evaluation	1 1
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC13 - Treatment of articles by dipping and pouring
Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Undertake operation under enclosed conditions

control dispersion from source towards Mechanical ventilation giving at least 1 ACH the worker			
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection		
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day		
Indoor/Outdoor use	Covers indoor and outdoor use		
Assumes process temperature up to	40 C		

Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
	Clean equipment and the work area every day Wet cleaning of the workplace
Indoor/Outdoor use	Covers indoor and outdoor use

#### Section 3 - Exposure estimation

Environmental release category(ies) - ERC8c - Wide dispersive indoor use resulting in inclusion into or onto a matrix - ERC8f - Wide dispersive outdoor use resulting in inclusion into or onto a matrix

### Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

***************************************				
Environment	predicted exposure level	Risk characterisation ratio (RCR)		
Freshwater	0.051 mg/l	0.018		
Marine water	0.00508 mg/l	< 0.01		
STP: Sewage Treatment Plant	0 mg/l	< 0.01		
Soil	0.141 mg/kg dw	0.025		

#### **Derived No Effect Level (DNEL):**

Process category(ies)	Exposure route		Risk characterisation ratio (RCR)
	Worker - inhalative, long-term - systemic	0.397 mg/m³	0.274
	Worker - dermal, long-term - systemic	1.064 mg/kg bw/day	0.016

PROC8a - Transfer of substance or	Worker - combined, long-term		0.289
preparation (charging/discharging)	- systemic		0.203
from/to vessels/large containers at non			
dedicated facilities			
	Worker - inhalative, long-term	0.003 mg/m <sup>3</sup>	< 0.01
process with occasional controlled	- systemic	]	
exposure			
	Worker - dermal, long-term -	0.007 mg/kg bw/day	< 0.01
	systemic		
exposure			
PROC2 - Use in closed, continuous	Worker - combined, long-term		< 0.01
process with occasional controlled	- systemic		
exposure			
PROC11 - Non industrial spraying	Worker - inhalative, long-term	0.956 mg/m <sup>3</sup>	0.659
	- systemic		
PROC11 - Non industrial spraying	Worker - dermal, long-term -	7.478 mg/kg bw/day	0.109
	systemic		
PROC11 - Non industrial spraying	Worker - combined, long-term		0.768
	- systemic		
PROC10 - Roller application or	Worker - inhalative, long-term	0.152 mg/m <sup>3</sup>	0.105
brushing	- systemic		
PROC10 - Roller application or	Worker - dermal, long-term -	1.8 mg/kg bw/day	0.026
	systemic		
PROC10 - Roller application or	Worker - combined, long-term		0.131
brushing	- systemic		
PROC13 - Treatment of articles by	Worker - inhalative, long-term	0.127 mg/m <sup>3</sup>	0.088
dipping and pouring	- systemic		
PROC13 - Treatment of articles by	Worker - dermal, long-term -	0.177 mg/kg bw/day	< 0.01
	systemic		
PROC13 - Treatment of articles by	Worker - combined, long-term		0.09
dipping and pouring	- systemic		
PROC28 - Manual maintenance	Worker - inhalative, long-term	0.116 mg/m <sup>3</sup>	0.08
(cleaning and repair) of machinery	- systemic		
PROC28 - Manual maintenance	Worker - dermal, long-term -	2.493 mg/kg bw/day	0.036
	systemic		
PROC28 - Manual maintenance	Worker - combined, long-term		0.116
(cleaning and repair) of machinery	- systemic		

#### Section 4 - Guidance to check compliance with the exposure scenario

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Chemical name BORATES

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#### Section 1 - Title

Title Building and construction work

**Type** Worker

Main user group Professional uses: Public domain (administration, education, entertainment, services,

craftsmen)

Environmental release category(ies) ERC8c - Wide dispersive indoor use resulting in inclusion into or onto a matrix ERC8f -

Wide dispersive outdoor use resulting in inclusion into or onto a matrix

Process category(ies) PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non dedicated facilities

PROC21 - Low energy manipulation of substances bound in materials and/or articles

PROC28 - Manual maintenance (cleaning and repair) of machinery

Product category(ies) PC0 - Other Products PC8 - Biocidal Products (e.g. disinfectants, pest control)

Sector(s) of use SU19 - Building and construction work SU22 - Professional uses

#### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC8c - Wide dispersive indoor use resulting in inclusion into or onto a matrix - ERC8f - Wide dispersive outdoor use resulting in inclusion into or onto a matrix

Conditions and measures related to municipal sewage treatment plant

Type Municipal STP

Conditions and measures related to external treatment of waste for disposal

Disposal Dispose of waste product or used containers according to local regulations

Control of worker exposure	
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Covers concentrations up to	< 1%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Covers indoor and outdoor use

## ES00413 - Borates - Widespread use by professional workers; Various products (PC 0, PC 8); Building and construction work (SU 19)

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	< 1%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
control dispersion from source towards	a month (containment is not breached)
the worker	Automate activity where possible
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	40 C
Process category(ies)	PROC21 - Low energy manipulation of substances bound in materials and/or articles
Covers concentrations up to	< 1%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	< 1%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 15 minutes
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Wet cleaning of the workplace
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use

#### Section 3 - Exposure estimation

<u>Environmental release category(ies)</u> - <u>ERC8c</u> - <u>Wide dispersive indoor use resulting in inclusion into or onto a matrix</u> - <u>ERC8f</u> - <u>Wide dispersive outdoor use resulting in inclusion into or onto a matrix</u>

Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.052 mg/l	0.018
Marine water	0.0051 mg/l	< 0.01
STP: Sewage Treatment Plant	0.00165 mg/l	< 0.01
Soil	0.141 mg/kg dw	0.025

#### **Derived No Effect Level (DNEL):**

Calculation method MEASE

MEASE		
Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
Worker - inhalative, long-term - systemic	0.001 mg/m <sup>3</sup>	< 0.01
Worker - dermal, long-term - systemic	0.041 mg/kg bw/day	< 0.01
Worker - combined, long-term - systemic		< 0.01
Worker - inhalative, long-term - systemic	0.001 mg/m <sup>3</sup>	< 0.01
Worker - dermal, long-term - systemic	0.003 mg/kg bw/day	< 0.01
Worker - combined, long-term - systemic		< 0.01
Worker - inhalative, long-term - systemic	0.001 mg/m <sup>3</sup>	< 0.01
Worker - dermal, long-term - systemic	0.069 mg/kg bw/day	< 0.01
Worker - combined, long-term - systemic		< 0.01
Worker - inhalative, long-term - systemic	0.058 mg/m <sup>3</sup>	0.04
Worker - dermal, long-term - systemic	0.125 mg/kg bw/day	< 0.01
		0.042
	Exposure route  Worker - inhalative, long-term - systemic  Worker - dermal, long-term - systemic  Worker - combined, long-term - systemic  Worker - dermal, long-term - systemic  Worker - combined, long-term - systemic  Worker - inhalative, long-term - systemic  Worker - dermal, long-term - systemic  Worker - dermal, long-term - systemic  Worker - dermal, long-term - systemic  Worker - combined, long-term - systemic  Worker - dermal, long-term - systemic  Worker - dermal, long-term - systemic  Worker - dermal, long-term - systemic  Worker - combined, long-term - systemic  Worker - combined, long-term - systemic	Exposure route  Worker - inhalative, long-term - systemic  Worker - dermal, long-term - 0.041 mg/kg bw/day systemic  Worker - combined, long-term - systemic  Worker - inhalative, long-term - 0.001 mg/m³ - systemic  Worker - dermal, long-term - 0.003 mg/kg bw/day systemic  Worker - combined, long-term - systemic  Worker - inhalative, long-term - systemic  Worker - dermal, long-term - 0.001 mg/m³ - systemic  Worker - inhalative, long-term - 0.009 mg/kg bw/day systemic  Worker - dermal, long-term - 0.069 mg/kg bw/day systemic  Worker - combined, long-term - systemic  Worker - dermal, long-term - 0.058 mg/m³ - systemic  Worker - dermal, long-term - 0.125 mg/kg bw/day systemic  Worker - combined, long-term - systemic  Worker - combined, long-term - 0.125 mg/kg bw/day

#### Section 4 - Guidance to check compliance with the exposure scenario

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#### Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

#### Section 1 - Title

Title Washing and cleaning products

**Type** Worker

Main user group Professional uses: Public domain (administration, education, entertainment, services,

craftsmen)

Environmental release category(ies) ERC8a - Wide dispersive indoor use of processing aids in open systems

Process category(ies) PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non dedicated facilities

PROC19 - Hand-mixing with intimate contact and only PPE available PROC28 - Manual maintenance (cleaning and repair) of machinery

**Product category(ies)** PC35 - Washing and cleaning products (including solvent based products)

Sector(s) of use SU0 - Other SU22 - Professional uses

#### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems

Conditions and measures related to municipal sewage treatment plant

Туре	Municipal STP

#### **Further information**

Operational condition	ns	Indoor/Outdoor use	
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Risk management measures

Technical onsite conditions and	Product applied in aqueous process solution with negligible volatilisation
measures to reduce or limit discharges,	Spent process fluid discharged to wastewater
air emissions	

Conditions and measures related to external treatment of waste for disposal

2 is posses.	Disposal	Dispose of waste product or used containers according to local regulations
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Control of worker exposure	
	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Covers concentrations up to	< 1%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection

# ES00414 - Borates - Widespread use by professional workers; Washing and Cleaning Products (PC 35); Other (SU 0) .

personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Clean equipment and the work area every day
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
indoor/Oddaoor use	Covers indoor and odddoor dise
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	< 1%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	Procedure distance procedure distantly, gloves and by on acceptation
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Stoat Squipmont and the work area every day
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	40 C
rissamos process temperature up to	
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	< 1%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	\$36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	90 C
Process category(ies)	PROC19 - Hand-mixing with intimate contact and only PPE available
Covers concentrations up to	< 1%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Use frequency Technical conditions and measures to	Covers daily exposures up to 8 hours (unless stated differently).  Mechanical ventilation giving at least 1 ACH
	Mechanical ventilation giving at least 1 ACH
Technical conditions and measures to control dispersion from source towards the worker	Mechanical ventilation giving at least 1 ACH
Technical conditions and measures to control dispersion from source towards	Mechanical ventilation giving at least 1 ACH
Technical conditions and measures to control dispersion from source towards the worker	Mechanical ventilation giving at least 1 ACH
Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation	Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent	Mechanical ventilation giving at least 1 ACH
Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and	Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent	Mechanical ventilation giving at least 1 ACH  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection

## ES00414 - Borates - Widespread use by professional workers; Washing and Cleaning Products (PC 35); Other (SU 0) .

Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	< 1%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
	Clean equipment and the work area every day Wet cleaning of the workplace
Indoor/Outdoor use	Covers indoor and outdoor use

#### Section 3 - Exposure estimation

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems

### Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.055 mg/l	0.019
Marine water	0.00541 mg/l	< 0.01
STP: Sewage Treatment Plant	0.033 mg/l	< 0.01
Soil	0.141 mg/kg dw	0.025

#### **Derived No Effect Level (DNEL):**

Calculation method
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Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	0.063 mg/m <sup>3</sup>	0.043
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	systemic	0.177 mg/kg bw/day	< 0.01
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - combined, long-term - systemic		0.046
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.001 mg/m <sup>3</sup>	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.003 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled	Worker - combined, long-term - systemic		< 0.01

## ES00414 - Borates - Widespread use by professional workers; Washing and Cleaning Products (PC 35); Other (SU 0) .

exposure			
PROC2 - Use in closed, continuous	Worker - inhalative, long-term	0.038 mg/m <sup>3</sup>	0.026
process with occasional controlled	- systemic		
exposure			
PROC2 - Use in closed, continuous	Worker - dermal, long-term -	0.003 mg/kg bw/day	< 0.01
process with occasional controlled	systemic		
exposure			
PROC2 - Use in closed, continuous	Worker - combined, long-term		0.026
process with occasional controlled	- systemic		
exposure			
PROC19 - Hand-mixing with intimate	Worker - inhalative, long-term	0.003 mg/m <sup>3</sup>	< 0.01
contact and only PPE available	- systemic		
PROC19 - Hand-mixing with intimate	Worker - dermal, long-term -	0.027 mg/kg bw/day	< 0.01
contact and only PPE available	systemic		
PROC19 - Hand-mixing with intimate	Worker - combined, long-term		< 0.01
contact and only PPE available	- systemic		
PROC28 - Manual maintenance	Worker - inhalative, long-term	0.012 mg/m <sup>3</sup>	< 0.01
(cleaning and repair) of machinery	- systemic	-	
PROC28 - Manual maintenance	Worker - dermal, long-term -	0.249 mg/kg bw/day	< 0.01
(cleaning and repair) of machinery	systemic		
PROC28 - Manual maintenance	Worker - combined, long-term		0.01
(cleaning and repair) of machinery	- systemic		

#### Section 4 - Guidance to check compliance with the exposure scenario

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#### Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

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Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

#### Section 1 - Title

Title Lubricants, greases, release products

**Type** Worker

Main user group Professional uses: Public domain (administration, education, entertainment, services,

craftsmen)

Environmental release category(ies) ERC9a - Wide dispersive indoor use of substances in closed systems ERC9b - Wide

dispersive outdoor use of substances in closed systems

Process category(ies) PROC1 - Use in closed process, no likelihood of exposure

PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non dedicated facilities

PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at dedicated facilities

PROC20 - Heat and pressure transfer fluids in dispersive, professional use but closed

systems

**Product category(ies)** PC16 - Heat transfer fluids PC17 - Hydraulic fluids PC24 - Lubricants, greases, release

products

Sector(s) of use SU15 - Manufacture of fabricated metal products, except machinery and equipment SU17 -

General manufacturing SU22 - Professional uses

#### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC9a - Wide dispersive indoor use of substances in closed systems

- ERC9b - Wide dispersive outdoor use of substances in closed systems

Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP

Control of worker exposure	
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and	Clean equipment and the work area every day

# ES00415 - Borates - Widespread use by professional workers; Various products (PC 16, PC 17, PC 24); Various sectors (SU 15, SU 17

exposure	
Indoor/Outdoor use	Indoor
indoon/Outdoor use	indoor
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Outdoor
Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Undertake operation under enclosed conditions Use in semi-automated and predominantly enclosed filling lines Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and health evaluation	330/37/39 - Wear Sultable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
	Indoor
Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Undertake operation under enclosed conditions Use in semi-automated and predominantly enclosed filling lines
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Outdoor
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
control dispersion from source towards	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)
the worker	Automate activity where possible

## ES00415 - Borates - Widespread use by professional workers; Various products (PC 16, PC 17, PC 24); Various sectors (SU 15, SU 17

	Machanian vantilation siving at locat 4 ACII
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and health evaluation	
	Clean equipment and the work area every day
/limit releases, dispersion and	loiean equipment and the work area every day
exposure	
	Indoor
	40 C
- 100 process temperature up to	1.0 •
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
control dispersion from source towards	
the worker	Automate activity where possible
	Mechanical ventilation giving at least 1 ACH
	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	40 C
	DD0000 H ( )   ( )
	PROC20 - Heat and pressure transfer fluids in dispersive, professional use but closed
	systems
	5%
Physical form of product	Liquid  Avoid corning out activities involving exposure for more than 4 hours
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).
Use frequency Technical conditions and measures to	Ensure operatives are trained to minimise exposures
control dispersion from source towards	Ensure that direct skin contact is avoided
the worker	Enoure that under only contact is avoluted
	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	Section   Treat suitable protective clothing, gloves and eye/lace protection
health evaluation	
	Clean equipment and the work area every day
/limit releases, dispersion and	and the montaine day
exposure	
	Indoor
Process category(ies)	PROC20 - Heat and pressure transfer fluids in dispersive, professional use but closed
	systems
Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Ensure operatives are trained to minimise exposures
	Ensure that direct skin contact is avoided
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
	Clean equipment and the work area every day
/limit releases, dispersion and	

## ES00415 - Borates - Widespread use by professional workers; Various products (PC 16, PC 17, PC 24); Various sectors (SU 15, SU 17

exposure	
Indoor/Outdoor use	Outdoor
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Use in closed process
control dispersion from source towards	
the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure Indoor/Outdoor use	Indoor
indoor/Outdoor use	jiridoor
Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	5%
Covers concentrations up to Physical form of product	5% Liquid
Covers concentrations up to Physical form of product Exposure duration	5% Liquid Avoid carrying out activities involving exposure for more than 4 hours
Covers concentrations up to Physical form of product Exposure duration Use frequency	5% Liquid Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently).
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to	5% Liquid Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Use in closed process
Covers concentrations up to Physical form of product Exposure duration Use frequency	5% Liquid Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Use in closed process
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards	5% Liquid Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Use in closed process
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker	5% Liquid Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Use in closed process Automated task
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation	5% Liquid Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Use in closed process Automated task  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent	5% Liquid Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Use in closed process Automated task
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation	5% Liquid Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Use in closed process Automated task  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Covers concentrations up to Physical form of product Exposure duration Use frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent	5% Liquid Avoid carrying out activities involving exposure for more than 4 hours Covers daily exposures up to 8 hours (unless stated differently). Use in closed process Automated task  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection

#### Section 3 - Exposure estimation

<u>Environmental release category(ies)</u> - <u>ERC9a</u> - <u>Wide dispersive indoor use of substances in closed systems</u> - <u>ERC9b</u> - <u>Wide dispersive outdoor use of substances in closed systems</u>

### Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.052 mg/l	0.018
Marine water	0.00511 mg/l	< 0.01
STP: Sewage Treatment Plant	0.00275 mg/l	< 0.01
Soil	0.141 mg/kg dw	0.025

#### **Derived No Effect Level (DNEL):**

Calculation method	MEASE		
Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio

		I	(DCD)
			(RCR)
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non	Worker - inhalative, long-term - systemic	0.379 mg/m³	0.261
dedicated facilities			
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	systemic	1.064 mg/kg bw/day	0.016
PROC8a - Transfer of substance or	Worker - combined, long-term		0.277
preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	- systemic		
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	0.328 mg/m <sup>3</sup>	0.226
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	systemic	1.064 mg/kg bw/day	0.016
	<u> </u>		10.010
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - combined, long-term - systemic		0.242
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	0.015 mg/m <sup>3</sup>	0.01
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - dermal, long-term - systemic	0.083 mg/kg bw/day	< 0.01
PROC8b - Transfer of substance or	Marker combined long term		0.012
preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - combined, long-term - systemic		0.012
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	0.013 mg/m³	< 0.01
PROC8b - Transfer of substance or	Worker - dermal, long-term - systemic	0.083 mg/kg bw/day	< 0.01
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - combined, long-term - systemic		0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.003 mg/m <sup>3</sup>	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.007 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.002 mg/m <sup>3</sup>	< 0.01

PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.007 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		< 0.01
fluids in dispersive, professional use but closed systems	Worker - inhalative, long-term - systemic	0.265 mg/m <sup>3</sup>	0.183
fluids in dispersive, professional use but closed systems	systemic	0.0004 mg/kg bw/day	< 0.01
PROC20 - Heat and pressure transfer fluids in dispersive, professional use but closed systems	Worker - combined, long-term - systemic		0.183
PROC20 - Heat and pressure transfer fluids in dispersive, professional use but closed systems	Worker - inhalative, long-term - systemic	0.265 mg/m <sup>3</sup>	0.183
PROC20 - Heat and pressure transfer fluids in dispersive, professional use but closed systems	Worker - dermal, long-term - systemic	0.0004 mg/kg bw/day	< 0.01
PROC20 - Heat and pressure transfer fluids in dispersive, professional use but closed systems	Worker - combined, long-term - systemic		0.183
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic	0.001 mg/m <sup>3</sup>	< 0.01
PROC1 - Use in closed process, no likelihood of exposure	systemic	0.001 mg/kg bw/day	< 0.01
PROC1 - Use in closed process, no likelihood of exposure	Worker - combined, long-term - systemic		< 0.01
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic		< 0.01
PROC1 - Use in closed process, no likelihood of exposure	systemic	0.001 mg/kg bw/day	< 0.01
PROC1 - Use in closed process, no likelihood of exposure	Worker - combined, long-term - systemic		< 0.01

#### Section 4 - Guidance to check compliance with the exposure scenario

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#### Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

#### Section 1 - Title

Title Lubricants, greases, release products (open systems)

**Type** Worker

Main user group Professional uses: Public domain (administration, education, entertainment, services,

craftsmen)

Environmental release category(ies) ERC8a - Wide dispersive indoor use of processing aids in open systems ERC8d - Wide

dispersive outdoor use of processing aids in open systems

Process category(ies) PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non dedicated facilities PROC10 - Roller application or brushing PROC11 - Non industrial spraying

PROC13 - Treatment of articles by dipping and pouring

Product category(ies) PC24 - Lubricants, greases, release products

Sector(s) of use SU15 - Manufacture of fabricated metal products, except machinery and equipment SU17 -

General manufacturing SU22 - Professional uses

#### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems

- ERC8d - Wide dispersive outdoor use of processing aids in open systems

Conditions and measures related to municipal sewage treatment plant

Type Municipal STP

Environmental factors not influenced by risk management

Receiving water dilution (fresh or >= 18000 m3/d marine)

Risk management measures

Technical onsite conditions and	Negligible wastewater emissions as process operates without water contact	
measures to reduce or limit discharges.	,	l
air emissions		ı

Conditions and measures related to external treatment of waste for disposal

	Disposal	Dispose of waste product or used containers according to local regulations
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Control of worker exposure	
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour

## ES00416 - Borates - Widespread use by professional workers; Lubricants, Greases, Release Products (PC 24); Various sectors (SU 15, SU 17)

Llea fraguesa.	Covere delly averaging to 0 hours (violage stated differently)
	Covers daily exposures up to 8 hours (unless stated differently).
	Undertake operation under enclosed conditions Use in semi-automated and predominantly enclosed filling lines
	Mechanical ventilation giving at least 1 ACH
	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Conditions and measures related to	536/37/39 - vvear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and health evaluation	
	Clean equipment and the work area every day
/limit releases, dispersion and	Clean equipment and the work area every day
1	
exposure Indoor/Outdoor use	Covers indoor and outdoor use
indoor/Oddoor use	Covers indoor and odddoor use
Process category(ies)	PROC10 - Roller application or brushing
	5%
Physical form of product	Liquid
	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Undertake operation under enclosed conditions
	Use in semi-automated and predominantly enclosed filling lines
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	000/01/00 - vveai suitable protective clotiling, gloves and eye/lace protection
health evaluation	
	Clean equipment and the work area every day
/limit releases, dispersion and	Ordan oquipmont and the work area every day
exposure	
	Indoor
indoon/Outdoon dae	IIIuuu
Process category(ies)	PROC10 - Roller application or brushing
	5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
	Covers daily exposures up to 8 hours (unless stated differently).
	Undertake operation under enclosed conditions
	Use in semi-automated and predominantly enclosed filling lines
the worker	200 III 001111 datomatoa ana prodominanty onologoa miing iinoo
	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	200,007,000 Troal callable protective clothing, gloves and cycriace protection
health evaluation	
	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Outdoor
	PROC11 - Non industrial spraying
Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Undertake operation under enclosed conditions
	Mechanical ventilation giving at least 1 ACH
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
	Wear a respirator providing a minimum efficiency of 90%
health evaluation	See Section 8 for information on appropriate personal protective equipment
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
·	Indoor

D	DDOOM. No in the strict on south a
Process category(ies)	PROC11 - Non industrial spraying
Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Undertake operation under enclosed conditions
control dispersion from source towards	
the worker	000/07/00 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and health evaluation	Wear a respirator providing a minimum efficiency of 90%
	See Section 8 for information on appropriate personal protective equipment
Organisational measures to prevent /limit releases, dispersion and	Clean equipment and the work area every day
exposure	
Indoor/Outdoor use	Outdoor
indoon/Oddaoon use	Outdool
Process category(ies)	PROC13 - Treatment of articles by dipping and pouring
Covers concentrations up to	5%
Physical form of product	
,	Liquid  Avoid corruing out activities involving exposure for more than 4 hours
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards the worker	
	COC/OZ/OO Maga avitable mastestive elething alevae and evertoes mastestica
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Clean equipment and the work area every day
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
	40 C
Assumes process temperature up to	HU U
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to
1 rocess category(les)	vessels/large containers at non dedicated facilities
Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	
	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	Sold of 1930   Wear Suitable protective distining, gloves and eyerface protection
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Source of the first and the first area of soly day
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
	Automate activity where possible
t	, ,

	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and	Clean equipment and the work area every day
exposure	
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 C

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
control dispersion from source towards	a month (containment is not breached)
the worker	Automate activity where possible
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	40 C

#### Section 3 - Exposure estimation

<u>Environmental release category(ies)</u> - ERC8a - Wide dispersive indoor use of processing aids in open systems - ERC8d - Wide dispersive outdoor use of processing aids in open systems

### Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Caicalation motion	0000 20020000.	
Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.051 mg/l	0.018
Marine water	0.00508 mg/l	< 0.01
STP: Sewage Treatment Plant	0.0000275 mg/l	< 0.01
Soil	0.141 mg/kg dw	0.025

#### **Derived No Effect Level (DNEL):**

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
	Worker - inhalative, long-term - systemic	0.127 mg/m <sup>3</sup>	0.088
	systemic	0.035 mg/kg bw/day	< 0.01
PROC8a - Transfer of substance or	Worker - combined, long-term		0.088

preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities  PROC10 - Roller application or bushing - systemic  PROC11 - Roller application or bushing - systemic  PROC11 - Non industrial spraying bushing - systemic  PROC13 - Treatment of articles by bushing - systemic  PROC13 - Treatment of articles by bushing - systemic  PROC13 - Treatment of articles by bushing - systemic  PROC13 - Treatment of articles by bushing - systemic  PROC13 - Treatment of articles by bushing - systemic  PROC14 - Treatment of articles by bushing - systemic  PROC15 - Treatment of articles by bushing - systemic  PROC16 - Treatment of articles by bushing - systemic  PROC17 - Treatment of articles by bushing - systemic - system
dedicated facilities   PROC10 - Roller application or Worker - inhalative, long-term   - systemic   0.253 mg/m³   0.174   0.
PROC10 - Roller application or brushing - systemic  PROC11 - Non industrial spraying worker - inhalative, long-term - systemic  PROC11 - Non industrial spraying worker - dermal, long-term - systemic  PROC11 - Non industrial spraying worker - dermal, long-term - systemic  PROC11 - Non industrial spraying worker - dermal, long-term - systemic  PROC11 - Non industrial spraying worker - dermal, long-term - systemic  PROC11 - Non industrial spraying worker - combined, long-term - systemic  PROC11 - Non industrial spraying worker - inhalative, long-term - systemic  PROC11 - Non industrial spraying worker - inhalative, long-term - systemic  PROC11 - Non industrial spraying worker - dermal, long-term - systemic  PROC11 - Non industrial spraying worker - dermal, long-term - systemic  PROC11 - Non industrial spraying worker - dermal, long-term - systemic  PROC11 - Non industrial spraying worker - combined, long-term - systemic  PROC13 - Treatment of articles by dipping and pouring worker - inhalative, long-term on the systemic worker - inhalative, long-term on the systemic worker - inhalative, long-term on the systemic
brushing PROC10 - Roller application or worker - dermal, long-term - systemic PROC10 - Roller application or worker - combined, long-term - systemic PROC10 - Roller application or worker - inhalative, long-term - systemic PROC10 - Roller application or worker - dermal, long-term - systemic PROC10 - Roller application or worker - dermal, long-term - systemic PROC10 - Roller application or worker - dermal, long-term - systemic PROC10 - Roller application or worker - combined, long-term - systemic PROC11 - Non industrial spraying worker - inhalative, long-term - systemic PROC11 - Non industrial spraying worker - dermal, long-term - systemic PROC11 - Non industrial spraying worker - dermal, long-term - systemic PROC11 - Non industrial spraying worker - combined, long-term - systemic PROC11 - Non industrial spraying worker - combined, long-term - systemic PROC11 - Non industrial spraying worker - combined, long-term - systemic PROC11 - Non industrial spraying worker - combined, long-term - systemic PROC11 - Non industrial spraying worker - dermal, long-term - systemic PROC11 - Non industrial spraying worker - dermal, long-term - systemic PROC11 - Non industrial spraying worker - dermal, long-term - systemic PROC11 - Non industrial spraying worker - combined, long-term - systemic PROC13 - Treatment of articles by dipping and pouring worker - inhalative, long-term o.253 mg/m³ 0.174
PROC10 - Roller application or brushing PROC11 - Non industrial spraying PROC11 - Non industria
brushing PROC10 - Roller application or brushing PROC11 - Non industrial spraying PROC12 - Systemic PROC13 - Treatment of articles by PROC13 - Treatm
PROC10 - Roller application or brushing - systemic - systemic   0.179    PROC10 - Roller application or brushing - systemic   Worker - inhalative, long-term   0.218 mg/m³   0.15    PROC10 - Roller application or brushing   Worker - dermal, long-term   0.3 mg/kg bw/day   < 0.01    PROC10 - Roller application or brushing   Worker - dermal, long-term   0.3 mg/kg bw/day   < 0.01    PROC10 - Roller application or brushing   Worker - combined, long-term   0.759 mg/m³   0.155    PROC11 - Non industrial spraying   Worker - inhalative, long-term   0.759 mg/m³   0.523    PROC11 - Non industrial spraying   Worker - dermal, long-term   1.638 mg/kg bw/day   0.024    PROC11 - Non industrial spraying   Worker - combined, long-term   0.547    PROC11 - Non industrial spraying   Worker - inhalative, long-term   0.656 mg/m³   0.452    PROC11 - Non industrial spraying   Worker - dermal, long-term   1.638 mg/kg bw/day   0.024    PROC11 - Non industrial spraying   Worker - dermal, long-term   1.638 mg/kg bw/day   0.024    PROC11 - Non industrial spraying   Worker - dermal, long-term   1.638 mg/kg bw/day   0.024    PROC11 - Non industrial spraying   Worker - dermal, long-term   0.476    PROC13 - Treatment of articles by   Worker - inhalative, long-term   - systemic   0.253 mg/m³   0.174    PROC13 - Treatment of articles by   Worker - inhalative, long-term   - systemic   0.253 mg/m³   0.174
brushing - systemic  PROC10 - Roller application or brushing - systemic  PROC11 - Non industrial spraying - systemic  PROC13 - Treatment of articles by dipping and pouring - systemic  Worker - inhalative, long-term - systemic  O.253 mg/m³ - 0.174
PROC10 - Roller application or brushing - systemic - systemic   0.3 mg/kg bw/day   0.15
brushing - systemic   O.3 mg/kg bw/day   C.0.01
PROC10 - Roller application or brushing Systemic
brushing systemic  PROC10 - Roller application or brushing - systemic  PROC11 - Non industrial spraying Worker - inhalative, long-term - systemic  PROC11 - Non industrial spraying Worker - dermal, long-term - systemic  PROC11 - Non industrial spraying Worker - combined, long-term - systemic  PROC11 - Non industrial spraying Worker - combined, long-term - systemic  PROC11 - Non industrial spraying Worker - inhalative, long-term 0.656 mg/m³ 0.452 - systemic  PROC11 - Non industrial spraying Worker - dermal, long-term - systemic  PROC11 - Non industrial spraying Worker - dermal, long-term - systemic  PROC11 - Non industrial spraying Worker - combined, long-term - systemic  PROC13 - Treatment of articles by dipping and pouring Worker - inhalative, long-term 0.253 mg/m³ 0.174
PROC10 - Roller application or brushing
brushing - systemic  PROC11 - Non industrial spraying Worker - inhalative, long-term 0.759 mg/m³ 0.523 - systemic  PROC11 - Non industrial spraying Worker - dermal, long-term - systemic  PROC11 - Non industrial spraying Worker - combined, long-term - systemic  PROC11 - Non industrial spraying Worker - inhalative, long-term 0.656 mg/m³ 0.452 - systemic  PROC11 - Non industrial spraying Worker - dermal, long-term - systemic  PROC11 - Non industrial spraying Worker - dermal, long-term - systemic  PROC11 - Non industrial spraying Worker - combined, long-term - systemic  PROC13 - Treatment of articles by dipping and pouring Worker - inhalative, long-term - systemic  O.253 mg/m³ 0.523  0.024  0.024  0.0253 mg/m³ 0.476  0.476  0.476  0.476  0.476  0.476
PROC11 - Non industrial spraying Worker - inhalative, long-term 0.759 mg/m³ 0.523  - systemic
- systemic  PROC11 - Non industrial spraying Worker - dermal, long-term - systemic  PROC11 - Non industrial spraying Worker - combined, long-term - systemic  PROC11 - Non industrial spraying Worker - inhalative, long-term 0.656 mg/m³ 0.452 - systemic  PROC11 - Non industrial spraying Worker - dermal, long-term - 1.638 mg/kg bw/day systemic  PROC11 - Non industrial spraying Worker - combined, long-term - systemic  PROC13 - Treatment of articles by dipping and pouring Worker - inhalative, long-term 0.253 mg/m³ 0.174
PROC11 - Non industrial spraying Worker - dermal, long-term - 1.638 mg/kg bw/day systemic 0.024  PROC11 - Non industrial spraying Worker - combined, long-term - systemic 0.547  - systemic 0.547  - systemic 0.656 mg/m³ 0.452  - systemic 0.658 mg/kg bw/day 0.024  PROC11 - Non industrial spraying Worker - dermal, long-term - 1.638 mg/kg bw/day systemic 0.024  PROC11 - Non industrial spraying Worker - combined, long-term - systemic 0.476  PROC13 - Treatment of articles by dipping and pouring Worker - inhalative, long-term 0.253 mg/m³ 0.174
systemic  PROC11 - Non industrial spraying Worker - combined, long-term - systemic  PROC11 - Non industrial spraying Worker - inhalative, long-term 0.656 mg/m³ 0.452 - systemic  PROC11 - Non industrial spraying Worker - dermal, long-term - 1.638 mg/kg bw/day systemic  PROC11 - Non industrial spraying Worker - combined, long-term - systemic  PROC13 - Treatment of articles by dipping and pouring Worker - inhalative, long-term 0.253 mg/m³ 0.174
systemic  PROC11 - Non industrial spraying Worker - combined, long-term - systemic  PROC11 - Non industrial spraying Worker - inhalative, long-term 0.656 mg/m³ 0.452 - systemic  PROC11 - Non industrial spraying Worker - dermal, long-term - 1.638 mg/kg bw/day systemic  PROC11 - Non industrial spraying Worker - combined, long-term - systemic  PROC13 - Treatment of articles by dipping and pouring Worker - inhalative, long-term 0.253 mg/m³ 0.174
PROC11 - Non industrial spraying Worker - combined, long-term - systemic 0.547  PROC11 - Non industrial spraying Worker - inhalative, long-term 0.656 mg/m³ 0.452 - systemic - systemic 0.024  PROC11 - Non industrial spraying Worker - dermal, long-term - 1.638 mg/kg bw/day systemic 0.476  PROC11 - Non industrial spraying Worker - combined, long-term - systemic 0.476 - systemic 0.476 - systemic 0.253 mg/m³ 0.174
- systemic  PROC11 - Non industrial spraying
PROC11 - Non industrial spraying Worker - inhalative, long-term 0.656 mg/m³ 0.452  - systemic Vorker - dermal, long-term - 1.638 mg/kg bw/day 0.024  systemic Vorker - combined, long-term - systemic 0.476  - systemic PROC13 - Treatment of articles by dipping and pouring Vorker - inhalative, long-term - systemic 0.253 mg/m³ 0.174
- systemic  PROC11 - Non industrial spraying Worker - dermal, long-term - systemic  PROC11 - Non industrial spraying Worker - combined, long-term - systemic  PROC13 - Treatment of articles by dipping and pouring Worker - inhalative, long-term - systemic  - systemic 0.476  - worker - inhalative, long-term 0.253 mg/m³ 0.174
PROC11 - Non industrial spraying Worker - dermal, long-term - 1.638 mg/kg bw/day systemic 0.024  PROC11 - Non industrial spraying Worker - combined, long-term - systemic 0.476  - systemic 0.174  PROC13 - Treatment of articles by dipping and pouring - systemic 0.253 mg/m³ 0.174
systemic  PROC11 - Non industrial spraying Worker - combined, long-term - systemic  PROC13 - Treatment of articles by dipping and pouring Worker - inhalative, long-term 0.253 mg/m³ 0.174
PROC11 - Non industrial spraying  Worker - combined, long-term - systemic  PROC13 - Treatment of articles by dipping and pouring  Worker - inhalative, long-term 0.253 mg/m³ - systemic  0.476 - 0.174
- systemic  PROC13 - Treatment of articles by dipping and pouring  - systemic  Worker - inhalative, long-term   0.253 mg/m³   0.174   0.174
PROC13 - Treatment of articles by dipping and pouring  Worker - inhalative, long-term 0.253 mg/m³  - systemic  0.174
dipping and pouring - systemic
dipping and pouring - systemic
PROC13 - Treatment of articles by Worker - dermal, long-term - 0.177 mg/kg bw/day < 0.01
dipping and pouring systemic
PROC13 - Treatment of articles by Worker - combined, long-term 0.177
dipping and pouring - systemic
PROC8a - Transfer of substance or Worker - inhalative, long-term   0.379 mg/m³   0.261
preparation (charging/discharging) - systemic
from/to vessels/large containers at non
dedicated facilities
PROC8a - Transfer of substance or Worker - dermal, long-term - 1.064 mg/kg bw/day 0.016
preparation (charging/discharging) systemic
from/to vessels/large containers at non
dedicated facilities
PROC8a - Transfer of substance or Worker - combined, long-term 0.277
preparation (charging/discharging) - systemic
from/to vessels/large containers at non
dedicated facilities
PROC2 - Use in closed, continuous Worker - inhalative, long-term 0.003 mg/m³ < 0.01
process with occasional controlled - systemic - systemic
exposure
PROC2 - Use in closed, continuous Worker - dermal, long-term - 0.007 mg/kg bw/day < 0.01
process with occasional controlled systemic
exposure Control of the control of t
PROC2 - Use in closed, continuous Worker - combined, long-term < 0.01
process with occasional controlled - systemic
exposure
PROC2 - Use in closed, continuous   Worker - inhalative, long-term   0.002 mg/m³   < 0.01
process with occasional controlled - systemic
exposure
IDD 0.00 II ' I I I I' I I I I I I I I I I I I
PROC2 - Use in closed, continuous   Worker - dermal, long-term -   0.007 mg/kg bw/day   < 0.01
PROC2 - Use in closed, continuous   Worker - dermal, long-term -   0.007 mg/kg bw/day   < 0.01

ES00416 - Borates - Widespread use by professional workers; Lubricants, Greases, Release Products (PC 24); Various sectors (SU 15, SU 17)

Revision date 09-Feb-2025

PROC2 - Use in closed, continuous	Worker - combined, long-term	< 0.01
process with occasional controlled	- systemic	
exposure		

#### Section 4 - Guidance to check compliance with the exposure scenario

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#### Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

#### Section 1 - Title

Title Greasing at high energy conditions (open systems)

**Type** Worke

Main user group Professional uses: Public domain (administration, education, entertainment, services,

craftsmen)

Environmental release category(ies) ERC8a - Wide dispersive indoor use of processing aids in open systems

PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non dedicated facilities

PROC17 - Lubrication at high energy conditions and in partly open process

PROC18 - Greasing at high energy conditions

Product category(ies) PC24 - Lubricants, greases, release products PC25 - Metal working fluids

Sector(s) of use SU15 - Manufacture of fabricated metal products, except machinery and equipment SU17 -

General manufacturing SU22 - Professional uses

#### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems

Conditions and measures related to municipal sewage treatment plant

Гуре	IMUNICIPAL STP

#### **Further information**

Operational conditions Indoor use

Environmental factors not influenced by risk management

Receiving water dilution (fresh or	>= 18000 m3/d
marine)	

Conditions and measures related to external treatment of waste for disposal

Disposal Dispose of waste product or used containers according to local regulations
---

Control of worker exposure		
	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	
Covers concentrations up to	5%	
Physical form of product	Liquid	
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour	
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).	
Technical conditions and measures to control dispersion from source towards the worker	Mechanical ventilation giving at least 1 ACH	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection	

## ES00417 - Borates - Widespread use by professional workers; Various products (PC 24, PC 25); Various sectors (SU 15, SU 17

navanal mustastian busines and	
personal protection, hygiene and	
health evaluation	Clean aguinment and the work area every day
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure Indoor/Outdoor use	Covers indoor and outdoor use
indoon/Outdoor use	Covers indoor and odddoor use
Dragge estador (igo)	DDOC47 Lubrication at high anargy conditions and in northy onen process
Process category(ies)	PROC17 - Lubrication at high energy conditions and in partly open process 5%
Covers concentrations up to	
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Ensure operatives are trained to minimise exposures
control dispersion from source towards	
the worker	Manager and the second of the
Conditions and measures related to	Wear a respirator providing a minimum efficiency of 90%
personal protection, hygiene and	See Section 8 for information on appropriate personal protective equipment
health evaluation	
Droppes estagery/iss\	DBOC17 Lubrication at high anargy conditions and in north, onen process
Process category(ies)  Covers concentrations up to	PROC17 - Lubrication at high energy conditions and in partly open process 5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Ensure operatives are trained to minimise exposures
control dispersion from source towards	
the worker	hu
Conditions and measures related to	Wear a respirator providing a minimum efficiency of 90%
personal protection, hygiene and	See Section 8 for information on appropriate personal protective equipment
health evaluation	la de en
Indoor/Outdoor use	Indoor
Process category(ies)	DBOC17 Lubrication at high anargy conditions and in northy open process
Covers concentrations up to	PROC17 - Lubrication at high energy conditions and in partly open process 5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour  Covers daily exposures up to 8 hours (unless stated differently).
Use frequency Technical conditions and measures to	
control dispersion from source towards	Ensure operatives are trained to minimise exposures
the worker	
	Moor a respirator providing a minimum officional of 000/
Conditions and measures related to personal protection, hygiene and	Wear a respirator providing a minimum efficiency of 90% See Section 8 for information on appropriate personal protective equipment
health evaluation	
Indoor/Outdoor use	Outdoor
indon/Odidool use	μουιωου
Process category(ies)	PROC18 - Greasing at high energy conditions
Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration Use frequency	Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Undertake operation under enclosed conditions
	Use in semi-automated and predominantly enclosed filling lines
the worker	
Conditions and measures related to	Mechanical ventilation giving at least 1 ACH
	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	1
health evaluation	Clean equipment and the work area every day
Organisational measures to prevent	Clean equipment and the work area every day
	Clean equipment and the work area every day

# ES00417 - Borates - Widespread use by professional workers; Various products (PC 24, PC 25); Various sectors (SU 15, SU 17

Indoor/Outdoor use	Indoor
	40 C
Assumes process temperature up to	HU C
Process category(ies)	PROC18 - Greasing at high energy conditions
Covers concentrations up to	5%
Physical form of product	Liquid
<u> </u>	<u>'</u>
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Undertake operation under enclosed conditions
	Use in semi-automated and predominantly enclosed filling lines
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	40 C
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to
	vessels/large containers at non dedicated facilities
Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	Sold of the state of the stat
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Circuit equipment and the work area every day
exposure	
	Indoor
macon Catacor asc	indoor
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to
1 100033 category(los)	vessels/large containers at non dedicated facilities
Covers concentrations up to	5%
Physical form of product	Liquid
	Avoid carrying out activities involving exposure for more than 4 hours
Exposure duration	···
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Outdoor
D	DDCCC Has in about and investment with the first transfer of the f
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
control dispersion from source towards	a month (containment is not breached)
the worker	Automate activity where possible

	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and	Clean equipment and the work area every day
exposure	
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 C

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
control dispersion from source towards	a month (containment is not breached)
the worker	Automate activity where possible
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
1 5	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	40 C

#### Section 3 - Exposure estimation

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems

### Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.051 mg/l	0.018
Marine water	0.00508 mg/l	< 0.01
STP: Sewage Treatment Plant	0.000055 mg/l	< 0.01
Soil	0.141 mg/kg dw	0.025

#### **Derived No Effect Level (DNEL):**

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
	Worker - inhalative, long-term - systemic	0.127 mg/m <sup>3</sup>	0.088
dedicated facilities			
	systemic	0.355 mg/kg bw/day	< 0.01
	Worker - combined, long-term - systemic		0.093

# ES00417 - Borates - Widespread use by professional workers; Various products (PC 24, PC 25); Various sectors (SU 15, SU 17

from/to vessels/large containers at non			
dedicated facilities			
PROC17 - Lubrication at high energy	Worker - inhalative, long-term	0.265 mg/m <sup>3</sup>	0.183
conditions and in partly open process	- systemic		
PROC17 - Lubrication at high energy	Worker - dermal, long-term -	0.004 mg/kg bw/day	< 0.01
conditions and in partly open process	systemic		
PROC17 - Lubrication at high energy	Worker - combined, long-term		0.183
conditions and in partly open process	- systemic		
PROC17 - Lubrication at high energy	Worker - inhalative, long-term	0.265 mg/m <sup>3</sup>	0.183
conditions and in partly open process	- systemic	10.200 mg/m	0.100
PROC17 - Lubrication at high energy		0.004 mg/kg bw/day	< 0.01
conditions and in partly open process		l	0.01
	systemic		0.402
PROC17 - Lubrication at high energy	Worker - combined, long-term		0.183
conditions and in partly open process	- systemic	0.005	0.400
PROC17 - Lubrication at high energy	Worker - inhalative, long-term	0.265 mg/m <sup>3</sup>	0.183
conditions and in partly open process	- systemic		
PROC17 - Lubrication at high energy		0.004 mg/kg bw/day	< 0.01
conditions and in partly open process	systemic		
PROC17 - Lubrication at high energy	Worker - combined, long-term		0.183
conditions and in partly open process	- systemic		
PROC18 - Greasing at high energy	Worker - inhalative, long-term	0.253 mg/m <sup>3</sup>	0.174
conditions	- systemic	-	
PROC18 - Greasing at high energy		0.273 mg/kg bw/day	< 0.01
conditions	systemic		
PROC18 - Greasing at high energy	Worker - combined, long-term		0.178
conditions	- systemic		
PROC18 - Greasing at high energy	Worker - inhalative, long-term	0.218 mg/m <sup>3</sup>	0.15
conditions	- systemic	0.210 mg/m	0.10
PROC18 - Greasing at high energy		0.273 mg/kg bw/day	< 0.01
conditions	systemic	l	0.01
PROC18 - Greasing at high energy	Worker - combined, long-term		0.154
conditions			0.154
	- systemic Worker - inhalative, long-term	0.070/2	0.004
PROC8a - Transfer of substance or		0.379 mg/m <sup>3</sup>	0.261
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at non			
dedicated facilities		1 004 "   1	
PROC8a - Transfer of substance or		1.064 mg/kg bw/day	0.016
preparation (charging/discharging)	systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC8a - Transfer of substance or	Worker - combined, long-term		0.277
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC8a - Transfer of substance or	Worker - inhalative, long-term	0 328 mg/m <sup>3</sup>	0.226
		0.0 <u>-</u> 0g/	· · · · · · · · · · · · · · · · · · ·
preparation (charging/discharging)	- systemic	10.020 mg/m	
	- systemic	o.o.z.og/	
preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	- systemic	0.0 <u>_</u> 0g	
from/to vessels/large containers at non	- systemic	1.064 mg/kg bw/day	0.016
from/to vessels/large containers at non dedicated facilities PROC8a - Transfer of substance or	- systemic  Worker - dermal, long-term -		
from/to vessels/large containers at non dedicated facilities PROC8a - Transfer of substance or preparation (charging/discharging)	- systemic  Worker - dermal, long-term - systemic		
from/to vessels/large containers at non dedicated facilities PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non	- systemic  Worker - dermal, long-term - systemic		
from/to vessels/large containers at non dedicated facilities  PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	- systemic Worker - dermal, long-term - systemic		0.016
from/to vessels/large containers at non dedicated facilities  PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities  PROC8a - Transfer of substance or	- systemic  Worker - dermal, long-term - systemic  Worker - combined, long-term		
from/to vessels/large containers at non dedicated facilities  PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities  PROC8a - Transfer of substance or preparation (charging/discharging)	- systemic  Worker - dermal, long-term - systemic  Worker - combined, long-term - systemic		0.016
from/to vessels/large containers at non dedicated facilities  PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities  PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non	- systemic  Worker - dermal, long-term - systemic  Worker - combined, long-term - systemic		0.016
from/to vessels/large containers at non dedicated facilities  PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities  PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	- systemic  Worker - dermal, long-term - systemic  Worker - combined, long-term - systemic	1.064 mg/kg bw/day	0.016
from/to vessels/large containers at non dedicated facilities  PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities  PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities  PROC2 - Use in closed, continuous	- systemic  Worker - dermal, long-term - systemic  Worker - combined, long-term - systemic  Worker - inhalative, long-term	1.064 mg/kg bw/day	0.016
from/to vessels/large containers at non dedicated facilities  PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities  PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities  PROC2 - Use in closed, continuous process with occasional controlled	- systemic  Worker - dermal, long-term - systemic  Worker - combined, long-term - systemic	1.064 mg/kg bw/day	0.016
from/to vessels/large containers at non dedicated facilities  PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities  PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities  PROC2 - Use in closed, continuous	- systemic  Worker - dermal, long-term - systemic  Worker - combined, long-term - systemic  Worker - inhalative, long-term - systemic	1.064 mg/kg bw/day	0.016

process with occasional controlled exposure	systemic		
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.002 mg/m <sup>3</sup>	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.007 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		< 0.01

#### Section 4 - Guidance to check compliance with the exposure scenario

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#### Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

#### Section 1 - Title

Title Leather treatment products Manufacture of textiles, leather, fur

**Type** Worker

Main user group Professional uses: Public domain (administration, education, entertainment, services,

craftsmen)

Environmental release category(ies) ERC8b - Wide dispersive indoor use of reactive substances in open systems

Process category(ies) PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non dedicated facilities

PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,

including weighing)

PROC10 - Roller application or brushing

PROC13 - Treatment of articles by dipping and pouring

PROC28 - Manual maintenance (cleaning and repair) of machinery
Product category(ies)
PC23 - Leather tanning, dye, finishing, impregnation and care products
Sector(s) of use
SU5 - Manufacture of textiles, leather, fur SU22 - Professional uses

#### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC8b - Wide dispersive indoor use of reactive substances in open systems

Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP

Conditions and measures related to external treatment of waste for disposal

I-			
ш	Disposal	Dispose of waste product or used containers according to local regulations	
IL	Jishusai	DISPOSE OF Waste Product of used containers according to local regulations	

Control of worker exposure		
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure	
Covers concentrations up to	> 25%	
Physical form of product	Solid, medium dustiness	
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours	
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).	
control dispersion from source towards the worker	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH	
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection	
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day	

Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 C
	DDCCC Transfer of substance or presenting into areall containers (dedicated filling line
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,
	including weighing)
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 15 minutes
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Undertake operation under enclosed conditions
control dispersion from source towards	Use in semi-automated and predominantly enclosed filling lines
the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC13 - Treatment of articles by dipping and pouring
Covers concentrations up to	5%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards the worker	
	C2C/07/20 Mean aritable mastesting plathing along and are from materials
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	Ole and a surface and the considerance and the cons
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	40 C
Process category(ies)	PROC13 - Treatment of articles by dipping and pouring
Covers concentrations up to	5%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	
Conditions and measures related to	\$36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	. 3,3
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	55 C
, issumed process temperature up to	Pro 0
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,
i 100000 category(100)	including weighing)
Covers concentrations up to	
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Mechanical ventilation giving at least 1 ACH

control dispersion from source towards	
the worker	000/07/00 M
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Drosos sataram (isa)	DDCCCo. Transfer of a shotones or preparation (shouring still ashouring) from the
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to
Cayora concentrations up to	vessels/large containers at non dedicated facilities 5%
Covers concentrations up to	
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Use in semi-automated and predominantly enclosed filling lines
	Mechanical ventilation giving at least 1 ACH
the worker	COC/OZ/OO Maan avitable protesting dethics where and """
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	Class and in resent and the county area areas, deci-
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	Occupation de contra de cutale de cu
Indoor/Outdoor use	Covers indoor and outdoor use
Drosos sataram (isa)	DDCC42. Treatment of outlines by disminer and negation
Process category(ies)	PROC13 - Treatment of articles by dipping and pouring
Covers concentrations up to	5%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	40 C
Process category(ies)	PROC10 - Roller application or brushing
Covers concentrations up to	5%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Undertake operation under enclosed conditions
	Use in semi-automated and predominantly enclosed filling lines
the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	Occupation de contra de cutale de cu
Indoor/Outdoor use	Covers indoor and outdoor use
	DDOCCO. Manual maintanance (alegains and service) of severities as
Process category(ies) Covers concentrations up to	PROC28 - Manual maintenance (cleaning and repair) of machinery 5%

Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
I	General ventilation Efficiency of at least 3 ACH
control dispersion from source towards the worker	
	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection Wear suitable gloves tested to EN 374 See Section 8 for information on appropriate personal protective equipment
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Indoor
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	5%
Physical form of product	Liquid
· ·	

Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
	Clean equipment and the work area every day Wet cleaning of the workplace
Indoor/Outdoor use	Covers indoor and outdoor use

#### Section 3 - Exposure estimation

Environmental release category(ies) - ERC8b - Wide dispersive indoor use of reactive substances in open systems

### Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.052 mg/l	0.018
Marine water	0.00509 mg/l	< 0.01
STP: Sewage Treatment Plant	0.0011 mg/l	< 0.01
Soil	0.141 mg/kg dw	0.025

#### **Derived No Effect Level (DNEL):**

Calculation method	MEASE
--------------------	-------

Process category(ies)	Exposure route		Risk characterisation ratio (RCR)
· · · · · · · · · · · · · · · · · · ·	Worker - inhalative, long-term - systemic	0.013 mg/m <sup>3</sup>	< 0.01
	Worker - dermal, long-term - systemic	0.035 mg/m <sup>3</sup>	< 0.01

			_
	Worker - combined, long-term		< 0.01
process with occasional controlled	- systemic		
exposure			
PROC9 - Transfer of substance or	Worker - inhalative, long-term	0.001 mg/m <sup>3</sup>	< 0.01
preparation into small containers	- systemic		
(dedicated filling line, including			
weighing)			
PROC9 - Transfer of substance or	Worker - dermal, long-term -	0.005 mg/m <sup>3</sup>	< 0.01
preparation into small containers	systemic		
(dedicated filling line, including	*		
weighing)			
PROC9 - Transfer of substance or	Worker - combined, long-term		< 0.01
preparation into small containers	- systemic		3.01
(dedicated filling line, including	Systemio		
weighing)			
PROC13 - Treatment of articles by	Worker - inhalative, long-term	0.252 mg/m <sup>3</sup>	0.174
		0.233 mg/m²	0.174
dipping and pouring	- systemic	0.477/2	0.04
PROC13 - Treatment of articles by	, ,	0.177 mg/m <sup>3</sup>	< 0.01
dipping and pouring	systemic		0.477
PROC13 - Treatment of articles by	Worker - combined, long-term		0.177
dipping and pouring	- systemic		
PROC13 - Treatment of articles by	Worker - inhalative, long-term	0.253 mg/m <sup>3</sup>	0.174
dipping and pouring	- systemic		
PROC13 - Treatment of articles by	Worker - dermal, long-term -	0.177 mg/m <sup>3</sup>	< 0.01
dipping and pouring	systemic		
PROC13 - Treatment of articles by	Worker - combined, long-term		0.177
dipping and pouring	- systemic		
PROC9 - Transfer of substance or	Worker - inhalative, long-term	0.063 mg/m <sup>3</sup>	0.043
preparation into small containers	- systemic	January 111.	0.0.0
(dedicated filling line, including	Systemis		
weighing)			
PROC9 - Transfer of substance or	Worker - dermal, long-term -	0.104 mg/m <sup>3</sup>	< 0.01
preparation into small containers	systemic		< 0.01
(dedicated filling line, including	Systemic		
weighing) PROC9 - Transfer of substance or	Mantan assabisas di la sarta ma		0.045
	Worker - combined, long-term		0.045
preparation into small containers	- systemic		
(dedicated filling line, including			
weighing)			
PROC8a - Transfer of substance or	Worker - inhalative, long-term	0.127 mg/m <sup>3</sup>	0.088
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC8a - Transfer of substance or	Worker - dermal, long-term -	0.035 mg/m <sup>3</sup>	< 0.01
preparation (charging/discharging)	systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC8a - Transfer of substance or	Worker - combined, long-term		0.088
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC13 - Treatment of articles by	Worker - inhalative, long-term	0.253 mg/m <sup>3</sup>	0.174
dipping and pouring	- systemic		ļ
PROC13 - Treatment of articles by		0.177 mg/m <sup>3</sup>	< 0.01
dipping and pouring	systemic		0.01
	-		0.177
PROC13 - Treatment of articles by	Worker - combined, long-term		0.177
dipping and pouring	- systemic	0.050/2	0.474
PROC10 - Roller application or	Worker - inhalative, long-term	U.253 mg/m³	0.174
No			
brushing PROC10 - Roller application or	- systemic Worker - dermal, long-term -	0.3 mg/m <sup>3</sup>	< 0.01

brushing	systemic		
PROC10 - Roller application or	Worker - combined, long-term		0.179
brushing	- systemic		
PROC28 - Manual maintenance	Worker - inhalative, long-term	1.063 mg/m <sup>3</sup>	0.733
(cleaning and repair) of machinery	- systemic	-	
PROC28 - Manual maintenance	Worker - dermal, long-term -	1.863 mg/m <sup>3</sup>	0.027
(cleaning and repair) of machinery	systemic	-	
PROC28 - Manual maintenance	Worker - combined, long-term		0.76
(cleaning and repair) of machinery	- systemic		
PROC28 - Manual maintenance	Worker - inhalative, long-term	0.069 mg/m <sup>3</sup>	0.048
(cleaning and repair) of machinery	- systemic		
PROC28 - Manual maintenance	Worker - dermal, long-term -	1.496 mg/m <sup>3</sup>	0.022
(cleaning and repair) of machinery	systemic	-	
PROC28 - Manual maintenance	Worker - combined, long-term		0.069
(cleaning and repair) of machinery	- systemic		

#### Section 4 - Guidance to check compliance with the exposure scenario

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#### Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

#### Section 1 - Title

**Title** Agriculture, forestry, fishery Offshore industries

**Type** Worker

Main user group Professional uses: Public domain (administration, education, entertainment, services,

craftsmen)

Environmental release category(ies) ERC8c - Wide dispersive indoor use resulting in inclusion into or onto a matrix ERC8f -

Wide dispersive outdoor use resulting in inclusion into or onto a matrix

Process category(ies) PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non dedicated facilities PROC11 - Non industrial spraying

PROC13 - Treatment of articles by dipping and pouring

PROC28 - Manual maintenance (cleaning and repair) of machinery

Product category(ies) PC0 - Other Products

Sector(s) of use SU1 - Agriculture, forestry, fishery SU2b - Offshore industries SU22 - Professional uses

#### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC8c - Wide dispersive indoor use resulting in inclusion into or onto a matrix - ERC8f - Wide dispersive outdoor use resulting in inclusion into or onto a matrix

Conditions and measures related to municipal sewage treatment plant

Type Municipal STP

Conditions and measures related to external treatment of waste for disposal

Disposal Dispose of waste product or used containers according to local regulations

Control of worker exposure	
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to
	vessels/large containers at non dedicated facilities
Covers concentrations up to	25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Undertake operation under enclosed conditions
	Use in semi-automated and predominantly enclosed filling lines
the worker	Mechanical ventilation giving at least 1 ACH
	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and health evaluation	
	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	

Indoor/Outdoor use	Indoor
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Covers concentrations up to	25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Undertake operation under enclosed conditions
control dispersion from source towards	Use in semi-automated and predominantly enclosed filling lines
the worker  Conditions and measures related to	000/07/00 We are stitled a marketive all this made and a sufficient still a
	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Outdoor
<b>6</b>	Innoce Hart Hart Hart Hart Hart Hart Hart Hart
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
control dispersion from source towards	a month (containment is not breached)
the worker	Automate activity where possible
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	3,3
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 C
recommed proceed temperature up to	
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
Conditions and measures related to	
	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and health evaluation	
	Clean equipment and the work area event day
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	Outdoor
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	40 C
Process category(ies)	PROC11 - Non industrial spraying
Covers concentrations up to	25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency Technical conditions and measures to	Covers daily exposures up to 8 hours (unless stated differently).  Undertake operation under enclosed conditions

control dispersion from source toward	s Ensure containment of the emission source
the worker	Low application rate (0.03 - 0.3 l/minute)
	Ensure that spray direction is only horizontal or downward
	Surface spraying with no or low compressed air use
	General ventilation Efficiency of at least 3 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	Wear suitable gloves tested to EN 374
health evaluation	See Section 8 for information on appropriate personal protective equipment
Organisational measures to prevent	Clean equipment and the work area every day
limit releases, dispersion and	Demonstrable and effective housekeeping practices are in place
exposure	
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 C
Process category(ies)	PROC13 - Treatment of articles by dipping and pouring
Covers concentrations up to	25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
T 1 1 1 100 1 1	

Process category(ies)	PROC13 - Treatment of articles by dipping and pouring
Covers concentrations up to	25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Undertake operation under enclosed conditions
control dispersion from source towards	Use in semi-automated and predominantly enclosed filling lines
the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
health evaluation	
Organisational measures to prevent /limit releases, dispersion and	Clean equipment and the work area every day
minit releases, dispersion and	
exposure	
	Covers indoor and outdoor use

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure		
Covers concentrations up to	5%		
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours		
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).		
control dispersion from source towards the worker	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH		
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection		
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day		
Indoor/Outdoor use	Indoor		
Assumes process temperature up to	40 C		

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	5%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
control dispersion from source towards	a month (containment is not breached)
the worker	Automate activity where possible
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	

	<u>,                                      </u>
exposure	
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	40 C
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	
1	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
	Clean equipment and the work area every day
/limit releases, dispersion and	Wet cleaning of the workplace
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use

#### Section 3 - Exposure estimation

Environmental release category(ies) - ERC8c - Wide dispersive indoor use resulting in inclusion into or onto a matrix - ERC8f - Wide dispersive outdoor use resulting in inclusion into or onto a matrix

### Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.052 mg/l	0.018
Marine water	0.0051 mg/l	< 0.01
STP: Sewage Treatment Plant	0.00165 mg/l	< 0.01
Soil	0.141 mg/kg dw	0.025

#### Derived No Effect Level (DNEL):

Calculation method Used ART model MEASE

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	0.038 mg/m <sup>3</sup>	0.026
	systemic	0.106 mg/kg bw/day	< 0.01
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - combined, long-term - systemic		0.028
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non	Worker - inhalative, long-term - systemic	0.033 mg/m <sup>3</sup>	0.023

d - 40 - 4 - 4 f - 406	T	1	T
dedicated facilities	 	0.400 // //	1 2 24
PROC8a - Transfer of substance or		0.106 mg/kg bw/day	< 0.01
	systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC8a - Transfer of substance or	Worker - combined, long-term		0.024
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC2 - Use in closed, continuous	Worker - inhalative, long-term	0.008 mg/m <sup>3</sup>	< 0.01
process with occasional controlled	- systemic		
exposure			
PROC2 - Use in closed, continuous	Worker - dermal, long-term -	0.021 mg/kg bw/day	< 0.01
process with occasional controlled	systemic	3 3	
exposure	ľ		
PROC2 - Use in closed, continuous	Worker - combined, long-term		< 0.01
process with occasional controlled	- systemic		
exposure	3,5155		
PROC2 - Use in closed, continuous	Worker - inhalative, long-term	0.007 mg/m <sup>3</sup>	< 0.01
process with occasional controlled	- systemic	0.007 mg/m	0.01
exposure	Systemio		
PROC2 - Use in closed, continuous	Worker - dermal, long-term -	0.021 mg/kg bw/day	< 0.01
process with occasional controlled	systemic	0.021 mg/kg bw/day	0.01
exposure	Systemic		
PROC2 - Use in closed, continuous	Worker combined long term		< 0.01
process with occasional controlled	Worker - combined, long-term - systemic		< 0.01
•	- systemic		
exposure	Markon inholotive lengtone	0.00/3	0.570
PROC11 - Non industrial spraying	Worker - inhalative, long-term	0.83 mg/m <sup>3</sup>	0.572
DD0044 N : I :: I	- systemic	10.00 // //	0.470
PROC11 - Non industrial spraying		12.22 mg/kg bw/day	0.178
DD0044 N : 1 : 1 : 1	systemic		0.754
PROC11 - Non industrial spraying	Worker - combined, long-term		0.751
550010 T ( ::	- systemic	0.070	0.050
PROC13 - Treatment of articles by	Worker - inhalative, long-term	0.076 mg/m <sup>3</sup>	0.052
dipping and pouring	- systemic		
PROC13 - Treatment of articles by		0.532mg/kg bw/day	< 0.01
dipping and pouring	systemic		
PROC13 - Treatment of articles by	Worker - combined, long-term		0.06
dipping and pouring	- systemic		
PROC2 - Use in closed, continuous	Worker - inhalative, long-term	0.001 mg/m <sup>3</sup>	< 0.01
process with occasional controlled	- systemic		
exposure			
PROC2 - Use in closed, continuous	Worker - dermal, long-term -	0.007 mg/kg bw/day	< 0.01
process with occasional controlled	systemic		
exposure			
PROC2 - Use in closed, continuous	Worker - combined, long-term		< 0.01
process with occasional controlled	- systemic		
exposure			
PROC2 - Use in closed, continuous	Worker - inhalative, long-term	0.001 mg/m <sup>3</sup>	< 0.01
process with occasional controlled	- systemic		
exposure	-		
PROC2 - Use in closed, continuous	Worker - dermal, long-term -	0.007 mg/kg bw/day	< 0.01
process with occasional controlled	systemic	]	
exposure			
PROC2 - Use in closed, continuous	Worker - combined, long-term		< 0.01
process with occasional controlled	- systemic		
exposure	2,2.0		
PROC28 - Manual maintenance	Worker - inhalative, long-term	0.069 mg/m <sup>3</sup>	0.048
(cleaning and repair) of machinery	- systemic	0.000 mg/m	0.070
PROC28 - Manual maintenance		1.496 mg/kg bw/day	0.022
(cleaning and repair) of machinery	systemic	11.430 mg/kg bw/day	0.022
Note and Tepair J of Hideliniery	oyotonno	I	I

PROC28 - Manual maintenance	Worker - combined, long-term	0.069
(cleaning and repair) of machinery	- systemic	

#### Section 4 - Guidance to check compliance with the exposure scenario

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#### Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

#### Section 1 - Title

Title Welding and soldering products, flux products

**Type** Worker

Main user group Professional uses: Public domain (administration, education, entertainment, services,

craftsmen)

Environmental release category(ies) ERC8a - Wide dispersive indoor use of processing aids in open systems ERC8d - Wide

dispersive outdoor use of processing aids in open systems

Process category(ies) PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non dedicated facilities

PROC25 - Other hot work operations with metals

PROC28 - Manual maintenance (cleaning and repair) of machinery

Product category(ies) PC38 - Welding and soldering products, flux products

Sector(s) of use SU14 - Manufacture of basic metals, including alloys SU15 - Manufacture of fabricated

metal products, except machinery and equipment SU17 - General manufacturing SU19 -

Building and construction work SU22 - Professional uses

#### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems

- ERC8d - Wide dispersive outdoor use of processing aids in open systems

Conditions and measures related to municipal sewage treatment plant

Type Municipal STP

Conditions and measures related to external treatment of waste for disposal

Disposal Dispose of waste product or used containers according to local regulations

Control of worker exposure	
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Covers concentrations up to	5%
Physical form of product	Paste
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Undertake operation under enclosed conditions Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and	Clean equipment and the work area every day

exposure			
Indoor/Outdoor use	Covers indoor and outdoor use		
madely databol add	Soroto integer and outdoor ago		
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure		
Covers concentrations up to	5%		
Physical form of product	Paste		
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours		
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).		
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once		
	a month (containment is not breached)		
the worker	Automate activity where possible		
life worker	Mechanical ventilation giving at least 1 ACH		
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection		
	350/57/59 - Wear suitable protective clothing, gloves and eye/face protection		
personal protection, hygiene and health evaluation			
Organisational measures to prevent	Cloop aguipment and the work area every day		
/limit releases, dispersion and	Clean equipment and the work area every day		
exposure Indoor/Outdoor use	Covers indeer and outdoor use		
	Covers indoor and outdoor use 40 C		
Assumes process temperature up to	<del> </del>		
Dr	DDOCOF Other het work on a vitte me til-		
Process category(ies)	PROC25 - Other hot work operations with metals		
Covers concentrations up to	5%		
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours		
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).		
	Undertake operation under enclosed conditions		
control dispersion from source towards	Use in semi-automated and predominantly enclosed filling lines		
the worker	Mechanical ventilation giving at least 1 ACH		
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection		
personal protection, hygiene and			
health evaluation			
Organisational measures to prevent	Clean equipment and the work area every day		
/limit releases, dispersion and			
exposure			
Indoor/Outdoor use	Covers indoor and outdoor use		
Assumes process temperature up to	40 C		
Process category(ies)	PROC25 - Other hot work operations with metals		
Covers concentrations up to	5%		
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours		
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).		
	Undertake operation under enclosed conditions		
	Use in semi-automated and predominantly enclosed filling lines		
	Mechanical ventilation giving at least 1 ACH		
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection		
personal protection, hygiene and	3, 3		
health evaluation			
Organisational measures to prevent	Clean equipment and the work area every day		
/limit releases, dispersion and	, ,		
exposure			
Indoor/Outdoor use	Covers indoor and outdoor use		
Assumes process temperature up to	900 C		
the state of the s			
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery		
Covers concentrations up to	5%		
Physical form of product	Liquid		
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour		
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).		
Use frequency	povers uany exposures up to o nours (uniess stated uniterently).		

ES00420 - Borates - Widespread use by professional workers; Welding and soldering products, flux products (PC 38); Various sectors (SU 14, SU 15, SU 17, SU 19)

Technical conditions and measures to	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Wet cleaning of the workplace
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use

#### Section 3 - Exposure estimation

<u>Environmental release category(ies)</u> - <u>ERC8a</u> - <u>Wide dispersive indoor use of processing aids in open systems</u> - <u>ERC8d</u> - <u>Wide dispersive outdoor use of processing aids in open systems</u>

### Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.053 mg/l	0.018
Marine water	0.00522 mg/l	< 0.01
STP: Sewage Treatment Plant	0.014 mg/l	< 0.01
Soil	0.141 mg/kg dw	0.025

#### Derived No Effect Level (DNEL):

Calculation method MEASE

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	0.127 mg/m <sup>3</sup>	0.088
	systemic	0.035 mg/kg bw/day	< 0.01
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - combined, long-term - systemic		0.088
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.003 mg/m <sup>3</sup>	< 0.01
	Worker - dermal, long-term - systemic	0.007 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		< 0.01
PROC25 - Other hot work operations with metals	Worker - inhalative, long-term - systemic	0.304 mg/m <sup>3</sup>	0.21

ES00420 - Borates - Widespread use by professional workers; Welding and soldering products, flux products (PC 38); Various sectors (SU 14, SU 15, SU 17, SU 19)

PROC25 - Other hot work operations with metals	Worker - dermal, long-term - systemic	0.164 mg/kg bw/day	< 0.01
PROC25 - Other hot work operations	Worker - combined, long-term		0.212
with metals	- systemic		
PROC25 - Other hot work operations	Worker - inhalative, long-term	0.061 mg/m <sup>3</sup>	0.042
with metals	- systemic		
PROC25 - Other hot work operations	Worker - dermal, long-term -	0.164 mg/kg bw/day	< 0.01
with metals	systemic		
PROC25 - Other hot work operations	Worker - combined, long-term		0.044
with metals	- systemic		
PROC28 - Manual maintenance	Worker - inhalative, long-term	0.023 mg/m <sup>3</sup>	0.016
(cleaning and repair) of machinery	- systemic		
PROC28 - Manual maintenance	Worker - dermal, long-term -	0.499 mg/kg bw/day	< 0.01
(cleaning and repair) of machinery	systemic		
PROC28 - Manual maintenance	Worker - combined, long-term		0.023
(cleaning and repair) of machinery	- systemic		

#### Section 4 - Guidance to check compliance with the exposure scenario

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#### Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

#### Section 1 - Title

Title Base metals and alloys Manufacture of basic metals, including alloys

**Type** Worker

Main user group Professional uses: Public domain (administration, education, entertainment, services,

craftsmen)

Environmental release category(ies) ERC8b - Wide dispersive indoor use of reactive substances in open systems

Process category(ies)

PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non dedicated facilities

PROC28 - Manual maintenance (cleaning and repair) of machinery

**Product category(ies)** PC7 - Base metals and alloys

Sector(s) of use SU14 - Manufacture of basic metals, including alloys SU22 - Professional uses

#### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC8b - Wide dispersive indoor use of reactive substances in open systems

Conditions and measures related to municipal sewage treatment plant

Type Municipal STP

Conditions and measures related to external treatment of waste for disposal

Disposal Dispose of waste product or used containers according to local regulations

Control of worker exposure				
	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities			
Covers concentrations up to	> 25%			
Physical form of product	Solid, medium dustiness			
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour			
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).			
	Undertake operation under enclosed conditions			
	Use in semi-automated and predominantly enclosed filling lines Mechanical ventilation giving at least 3 ACH			
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection			
/limit releases, dispersion and	Clean equipment and the work area every day			
exposure Indoor/Outdoor use	Indoor			
indoor, Oddaoor doc	indoi			

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to

# ES00421 - Borates - Widespread use by professional workers; Base metals and alloys (PC 7); Manufacture of basic metals, including alloys (SU 14)

	vessels/large containers at non dedicated facilities
	vessels/large containers at non dedicated facilities
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Undertake operation under enclosed conditions
	Use in semi-automated and predominantly enclosed filling lines
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Outdoor
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 C
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	good of the arrange procedure distantly, gloves and by or also procedure
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Cloud equipment and the work area every day
exposure	
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	40 C
Assumes process temperature up to	<del>4</del> 0 C
Dragge estador (inc.)	DDOC4. Hop in botch and other process (aunthoris) where annother for aunthorise
Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Covers concentrations up to	5%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Use in semi-automated and predominantly enclosed filling lines
control dispersion from source towards	
portion dispersion from searce tewards	Mechanical ventilation giving at least 3 ACH
the worker	Mechanical ventilation giving at least 3 ACH

Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Indoor
Assumes process temperature up to	40 C
Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises

Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Covers concentrations up to	5%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Use in semi-automated and predominantly enclosed filling lines
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	40 C

Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Mechanical ventilation giving at least 3 ACH
control dispersion from source towards	
the worker	
	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and health evaluation	
	Clean aguinment and the work area every day
	Clean equipment and the work area every day
· ·	Wet cleaning of the workplace
exposure	

Environmental release category(ies) - ERC8b - Wide dispersive indoor use of reactive substances in open systems

# Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.051 mg/l	0.018
Marine water	0.00508 mg/l	< 0.01
STP: Sewage Treatment Plant	0.000137 mg/l	< 0.01
Soil	0.141 mg/kg dw	0.025

## **Derived No Effect Level (DNEL):**

Calculation method	MEASE

Calculation method	MEASE		
Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	1.063 mg/m <sup>3</sup>	0.733
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	systemic	0.249 mg/kg bw/day	< 0.01
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - combined, long-term - systemic		0.737
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities		, and the second	0.754
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	systemic	0.273 mg/kg bw/day	< 0.01
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - combined, long-term - systemic		0.758
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.013 mg/m <sup>3</sup>	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.035 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.013 mg/m <sup>3</sup>	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.035 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		< 0.01
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - inhalative, long-term - systemic	1.063 mg/m <sup>3</sup>	0.733
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - dermal, long-term - systemic	0.324 mg/kg bw/day	< 0.01
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - combined, long-term - systemic		0.738
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - inhalative, long-term - systemic	1.093 mg/m <sup>3</sup>	0.754
PROC4 - Use in batch and other	Worker - dermal, long-term -	0.355 mg/kg bw/day	< 0.01

ES00421 - Borates - Widespread use by professional workers; Base metals and alloys (PC 7); Manufacture of basic metals, including alloys (SU 14)

process (synthesis) where opportunity	systemic		
for exposure arises			
PROC4 - Use in batch and other	Worker - combined, long-term		0.759
process (synthesis) where opportunity	- systemic		
for exposure arises	-		
PROC28 - Manual maintenance	Worker - inhalative, long-term	1.063 mg/m <sup>3</sup>	0.733
(cleaning and repair) of machinery	- systemic	-	
PROC28 - Manual maintenance	Worker - dermal, long-term -	2.493 mg/kg bw/day	0.036
(cleaning and repair) of machinery	systemic		
PROC28 - Manual maintenance	Worker - combined, long-term		0.769
(cleaning and repair) of machinery	- systemic		

## Section 4 - Guidance to check compliance with the exposure scenario

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## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

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Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

## Section 1 - Title

Title Photo-chemicals Printing and reproduction of recorded media

**Type** Worke

Main user group Professional uses: Public domain (administration, education, entertainment, services,

craftsmen)

Environmental release category(ies) ERC8a - Wide dispersive indoor use of processing aids in open systems

Process category(ies) PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non dedicated facilities

PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,

including weighing)

PROC13 - Treatment of articles by dipping and pouring

PROC28 - Manual maintenance (cleaning and repair) of machinery

Product category(ies) PC30 - Photo-chemicals

Sector(s) of use SU7 - Printing and reproduction of recorded media SU22 - Professional uses

## Section 2 - Operational conditions and risk management measures

## Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems

Conditions and measures related to municipal sewage treatment plant

Type Municipal STP

Conditions and measures related to external treatment of waste for disposal

Disposal Dispose of waste product or used containers according to local regulations

Control of worker exposure	
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to
	vessels/large containers at non dedicated facilities
Covers concentrations up to	5%
Physical form of product	Solid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Undertake operation under enclosed conditions
control dispersion from source towards	Mechanical ventilation giving at least 3 ACH
the worker	
	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to
	vessels/large containers at non dedicated facilities
Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Undertake operation under enclosed conditions
	Mechanical ventilation giving at least 1 ACH
the worker	000/07/00 M/ ''
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	Class and in manufactured the supply area as any day.
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	5%
Physical form of product	Solid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
Worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	good of the analysis protestive destining, gives and of chase protestion
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	40 C
Draces estador (ico)	DDCC2. Has in closed continuous process with accordingly controlled expenses
	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
control dispersion from source towards	
the worker	Automate activity where possible
Conditions and managers related to	Mechanical ventilation giving at least 1 ACH S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Conditions and measures related to personal protection, hygiene and	556/57/59 - vvear suitable protective clothing, gloves and eyerface protection
health evaluation	
Organisational measures to prevent	Class aguing and and the work area grown day
	Clean equipment and the work area every day
/limit releases, dispersion and	Clean equipment and the work area every day
exposure	
exposure Indoor/Outdoor use	Covers indoor and outdoor use
exposure	
exposure Indoor/Outdoor use Assumes process temperature up to	Covers indoor and outdoor use
exposure Indoor/Outdoor use Assumes process temperature up to Process category(ies)	Covers indoor and outdoor use 40 C
exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to	Covers indoor and outdoor use 40 C  PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises 5%
exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Exposure duration	Covers indoor and outdoor use  40 C  PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises 5%  Avoid carrying out activities involving exposure for more than 15 minutes
exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Exposure duration Use frequency	Covers indoor and outdoor use 40 C  PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises 5%

# ES00422 - Borates - Widespread use by professional workers; Photo-chemicals (PC 30); Printing and reproduction of recorded media (SU 7)

control dispersion from source towards	Mechanical ventilation giving at least 1 ACH
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	3,3
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	and the state of t
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
	40 C
Assumes process temperature up to	<del></del>
Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
	5%
Covers concentrations up to	
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 15 minutes
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Use in semi-automated and predominantly enclosed filling lines
	Mechanical ventilation giving at least 1 ACH
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
	Wet cleaning of the workplace
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	40 C
recommon processor temporations up to	
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,
1 100000 00109017(1007)	including weighing)
Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration	
	Avoid carrying out activities involving exposure for more than 15 minutes
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Process category(ies)	PROC13 - Treatment of articles by dipping and pouring
Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	
	C2C/27/20 We are quitable protective elething relevant and averline protection
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	

Indoor/Outdoor use	Covers indoor and outdoor use
	40 C
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	5%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent	Clean equipment and the work area every day
· •	Wet cleaning of the workplace
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Dragon ostogory/ico	DDCC20 Manual maintanance (classing and rangir) of machinery
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery 5%
Covers concentrations up to Physical form of product	Solid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency Technical conditions and measures to	Covers daily exposures up to 8 hours (unless stated differently).
	Mechanical ventilation giving at least 3 ACH
control dispersion from source towards the worker	
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day Wet cleaning of the workplace

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems

# Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.052 mg/l	0.018
Marine water	0.00513 mg/l	< 0.01
STP: Sewage Treatment Plant	0.0055 mg/l	< 0.01
Soil	0.141 mg/kg dw	0.025

## Derived No Effect Level (DNEL):

Calculation method	MEASE
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Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio
			(RCR)
PROC8a - Transfer of substance or	Worker - inhalative, long-term	1.063 mg/m <sup>3</sup>	0.733

# ES00422 - Borates - Widespread use by professional workers; Photo-chemicals (PC 30); Printing and reproduction of recorded media (SU 7)

preparation (charging/discharging)	- systemic		
from/to vessels/large containers at non			
dedicated facilities			
	\\\\-\\\\-\\\\\\\\\\\\\\\\\\\\\\\\\\\\	0.400//  /-	0.04
PROC8a - Transfer of substance or		0.499 mg/kg bw/day	< 0.01
preparation (charging/discharging)	systemic		
from/to vessels/large containers at non			
dedicated facilities			
	Mantana a sastain a di lan artana		0.74
PROC8a - Transfer of substance or	Worker - combined, long-term		0.74
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at non	_		
dedicated facilities			
	107 1 1 1 1 1 1	0.40= / 0	0.000
PROC8a - Transfer of substance or	Worker - inhalative, long-term	0.127 mg/m <sup>3</sup>	0.088
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at non			
dedicated facilities			
	NA	0.005 # 1 / 1	0.04
PROC8a - Transfer of substance or		0.035 mg/kg bw/day	< 0.01
preparation (charging/discharging)	systemic		
from/to vessels/large containers at non			
dedicated facilities			
	NA 1 1 1 1 1 1		0.000
PROC8a - Transfer of substance or	Worker - combined, long-term		0.088
preparation (charging/discharging)	- systemic		
from/to vessels/large containers at non			
dedicated facilities			
PROC2 - Use in closed, continuous	Worker - inhalative, long-term	0.025 mg/m <sup>3</sup>	0.017
process with occasional controlled	- systemic		
exposure			
	Markey demand level town	0.007	. 0.04
PROC2 - Use in closed, continuous		0.007 mg/kg bw/day	< 0.01
process with occasional controlled	systemic		
exposure			
PROC2 - Use in closed, continuous	Worker - combined, long-term		0.017
· · · · · · · · · · · · · · · · · · ·			0.017
process with occasional controlled	- systemic		
exposure			
PROC2 - Use in closed, continuous	Worker - inhalative, long-term	0.003 mg/m <sup>3</sup>	< 0.01
process with occasional controlled	- systemic	J	
P.	Systemio		
exposure			
PROC2 - Use in closed, continuous	Worker - dermal, long-term -	0.007 mg/kg bw/day	< 0.01
process with occasional controlled	systemic		
exposure			
	\\/		0.04
PROC2 - Use in closed, continuous	Worker - combined, long-term		< 0.01
process with occasional controlled	- systemic		
exposure			
PROC4 - Use in batch and other	Worker - inhalative, long-term	0.632 mg/m <sup>3</sup>	0.437
		0.033 1119/111*	0.437
process (synthesis) where opportunity	- systemic		
for exposure arises			
PROC4 - Use in batch and other	Worker - dermal, long-term -	0.177 mg/kg bw/day	< 0.01
	systemic		
	Systemic		
for exposure arises			
PROC4 - Use in batch and other	Worker - combined, long-term		0.439
process (synthesis) where opportunity	- systemic		
for exposure arises	,		
	Manten interted	0.000 / 3	0.407
PROC4 - Use in batch and other	Worker - inhalative, long-term	ს. <b></b> ხაპ mg/m³	0.437
process (synthesis) where opportunity	- systemic		
for exposure arises			
PROC4 - Use in batch and other	Worker - dermal long term	0.177 mg/kg bw/day	< 0.01
		o. 177 mg/kg bw/day	0.01
	systemic		
process (synthesis) where opportunity	- 3		1
for exposure arises			
for exposure arises	,		0.439
for exposure arises PROC4 - Use in batch and other	Worker - combined, long-term		0.439
for exposure arises PROC4 - Use in batch and other process (synthesis) where opportunity	,		0.439
for exposure arises PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - combined, long-term - systemic		
for exposure arises PROC4 - Use in batch and other process (synthesis) where opportunity	Worker - combined, long-term	0.001 mg/m <sup>3</sup>	0.439

# ES00422 - Borates - Widespread use by professional workers; Photo-chemicals (PC 30); Printing and reproduction of recorded media (SU 7)

preparation into small containers (dedicated filling line, including weighing)	- systemic		
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - dermal, long-term - systemic	0.001 mg/kg bw/day	< 0.01
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - combined, long-term - systemic		< 0.01
PROC13 - Treatment of articles by dipping and pouring	Worker - inhalative, long-term - systemic	0.152 mg/m <sup>3</sup>	0.105
PROC13 - Treatment of articles by dipping and pouring	Worker - dermal, long-term - systemic	0.106 mg/kg bw/day	< 0.01
PROC13 - Treatment of articles by dipping and pouring	Worker - combined, long-term - systemic		0.106
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - inhalative, long-term - systemic	0.023 mg/m <sup>3</sup>	0.016
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - dermal, long-term - systemic	0.499 mg/kg bw/day	< 0.01
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - combined, long-term - systemic		0.024
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - inhalative, long-term - systemic	1.063 mg/m <sup>3</sup>	0.733
PROC28 - Manual maintenance (cleaning and repair) of machinery	·	0.499 mg/kg bw/day	< 0.01
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - combined, long-term - systemic		0.74

## Section 4 - Guidance to check compliance with the exposure scenario

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## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

**BORATES Chemical name** 

Univar Solutions UK Ltd Supplier Aquarius House

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Bradford **GBR** 

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## Section 1 - Title

**Title** Paper and board treatment products Printing and reproduction of recorded media

**Type** 

Main user group Professional uses: Public domain (administration, education, entertainment, services,

craftsmen)

Process category(ies)

Environmental release category(ies) ERC8c - Wide dispersive indoor use resulting in inclusion into or onto a matrix PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC3 - Use in closed batch process (synthesis or formulation)

PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non dedicated facilities

PROC28 - Manual maintenance (cleaning and repair) of machinery

Product category(ies) PC26 - Paper and board dye, finishing and impregnation products; including bleaches and

other processing aids

Sector(s) of use SU7 - Printing and reproduction of recorded media SU22 - Professional uses

## Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC8c - Wide dispersive indoor use resulting in inclusion into or onto a matrix

Conditions and measures related to municipal sewage treatment plant

Type Municipal STP

Conditions and measures related to external treatment of waste for disposal

Dispose of waste product or used containers according to local regulations Disposal

Control of worker exposure	
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Covers concentrations up to	> 25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Mechanical ventilation giving at least 3 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day

D	DDOOO Haring day of continuous continuous with a sectional controlled controlled
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to Physical form of product	> 25%
	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible  Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	350/57/59 - Wear Suitable protective clothing, gloves and eye/face protection
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Clean equipment and the work area every day
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
	40 C
Assumes process temperature up to	HO O
Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Covers concentrations up to	> 25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Use in semi-automated and predominantly enclosed filling lines
	Mechanical ventilation giving at least 3 ACH
the worker	International vertical grang at 16461 6 71611
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
	Wear a respirator providing a minimum efficiency of 90%
health evaluation	See Section 8 for information on appropriate personal protective equipment
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Assumes process temperature up to	40 C
Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Covers concentrations up to	> 25%
Physical form of product	Liquid
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
	a month (containment is not breached)
the worker	Automate activity where possible
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
Assumes process temperature up to	40 C
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	> 25%
Physical form of product	> 25% Liquid
-	
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	l I

the worker	
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
	Clean equipment and the work area every day Wet cleaning of the workplace
Indoor/Outdoor use	Indoor

Environmental release category(ies) - ERC8c - Wide dispersive indoor use resulting in inclusion into or onto a matrix

# Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)	
Freshwater	0.051 mg/l	0.018	
Marine water	0.00508 mg/l	< 0.01	
STP: Sewage Treatment Plant	0.000055 mg/l	< 0.01	
Soil	0.141 mg/kg dw	0.025	

## **Derived No Effect Level (DNEL):**

Onlandation models ad	NATAOT
Calculation method	MEASE

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	0.582 mg/m³	0.401
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	systemic	1.774 mg/kg bw/day	0.026
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - combined, long-term - systemic		0.427
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.013 mg/m <sup>3</sup>	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.035 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		< 0.01
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - inhalative, long-term - systemic	0.582 mg/m <sup>3</sup>	0.401
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - dermal, long-term - systemic	5.322 mg/kg bw/day	0.078

PROC4 - Use in batch and other	Worker - combined, long-term		0.479
process (synthesis) where opportunity	- systemic		
for exposure arises			
PROC3 - Use in closed batch process	Worker - inhalative, long-term	0.013 mg/m <sup>3</sup>	< 0.01
(synthesis or formulation)	- systemic	-	
PROC3 - Use in closed batch process	Worker - dermal, long-term -	0.035 mg/kg bw/day	< 0.01
(synthesis or formulation)	systemic		
PROC3 - Use in closed batch process	Worker - combined, long-term		< 0.01
(synthesis or formulation)	- systemic		
PROC28 - Manual maintenance	Worker - inhalative, long-term	0.116 mg/m <sup>3</sup>	0.08
(cleaning and repair) of machinery	- systemic	-	
PROC28 - Manual maintenance	Worker - dermal, long-term -	2.493 mg/kg bw/day	0.036
(cleaning and repair) of machinery	systemic		
PROC28 - Manual maintenance	Worker - combined, long-term		0.116
(cleaning and repair) of machinery	- systemic		

## Section 4 - Guidance to check compliance with the exposure scenario

EGHS / EN Page 303/345

## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

## Section 1 - Title

Title Water treatment chemicals

**Type** Worker

Main user group Professional uses: Public domain (administration, education, entertainment, services,

craftsmen)

Environmental release category(ies) ERC8a - Wide dispersive indoor use of processing aids in open systems ERC8d - Wide

dispersive outdoor use of processing aids in open systems

Process category(ies) PROC2 - Use in closed, continuous process with occasional controlled exposure

PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large

containers at non dedicated facilities

PROC26 - Handling of solid inorganic substances at ambient temperature PROC28 - Manual maintenance (cleaning and repair) of machinery

Product category(ies)PC37 - Water treatment chemicalsSector(s) of useSU0 - Other SU22 - Professional uses

## Section 2 - Operational conditions and risk management measures

## Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems

- ERC8d - Wide dispersive outdoor use of processing aids in open systems

Conditions and measures related to municipal sewage treatment plant

Type Municipal STP

Conditions and measures related to external treatment of waste for disposal

Disposal Dispose of waste product or used containers according to local regulations

Control of worker exposure	
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Covers concentrations up to	< 1%
Physical form of product	Solid, low dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
	Undertake operation under enclosed conditions Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Indoor

Process category(es) PROC8a - Transfer of substance or preparation (charging/discharging) from/to vassels/large containers at non dedicated facilities  Exposure duration Avoid carrying out activities involving exposure for more than 1 hour  Des frequency Technical conditions and measures to control dispersion from source towards the worker Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent Covers daily exposures up to 8 hours (unless stated differently).  Clean equipment and the work area every day  Indoor/Outdoor use  Outdoor  Process category(ies) PROC2 - Use in closed, continuous process with occasional controlled exposure Exposure duration Avoid carrying out activities involving exposure for more than 4 hours  Covers daily exposures up to 8 hours (unless stated differently).  Process category(ies) PROC2 - Use in closed, continuous process with occasional controlled exposure  Covers daily exposures up to 8 hours (unless stated differently).  Technical conditions and measures to process tully enclosed (air tight) and the integrity of the enclosure is monitored at least once control dispersion from source towards and work (nortainment is not breached)  Conditions and measures related to personal protection, hygiene and health evaluation  Corpanisational measures to provent  Ilmit releases, dispersion and exposure  Clean equipment and the work area every day  Indoor/Outdoor use  Clean equipment and the work area every day  Clean equipment and the work area every day  Indoor/Outdoor use  Clean equipment and the work area every day  Indoor/Outdoor use  Clean equipment and the work area every day  Indoor/Outdoor use  Clean equipment and the work area every day  Indoor/Outdoor use  Process category(ies)  Clean equipment and the work area every day  Indoor/Outdoor use  Covers daily exposures up to 8 hours (unless stated differently).  Technical conditions and measures to prevent  Indoor/Outdoor use  Outdoor  Covers daily exposures up to 8 hours (u		
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Use frequency  Covers concentrations and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent (limit releases, dispersion and exposure disposure		
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Mechanical ventilation giving at least 1 ACH		
Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent //imit releases, dispersion and exposure //imit releases, dispersion and //im	tne worker	
personal protection, hygiene and health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Indoor Assumes process temperature up to 40 C  Process category(ies) PROC2 - Use in closed, continuous process with occasional controlled exposure Covers concentrations up to < 1% Physical form of product Solid, low dustiness Exposure duration Avoid carrying out activities involving exposure for more than 4 hours Use frequency Covers daily exposures up to 8 hours (unless stated differently). Technical conditions and measures to control dispersion from source towards at month (containment is not breached) Automate activity where possible Conditions and measures related to personal protection, hygiene and health evaluation Organisational measures to prevent //imit releases, dispersion and exposure Indoor/Outdoor use Outdoor Assumes process temperature up to  Process category(ies) PROC26 - Handling of solid inorganic substances at ambient temperature Covers concentrations up to < 1% Physical form of product Solid, low dustiness Exposure duration Avoid carrying out activities involving exposure for more than 15 minutes Use frequency Covers daily exposures up to 8 hours (unless stated differently).	Conditions and measures related to	
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Process category(ies)  PROC2 - Use in closed, continuous process with occasional controlled exposure  Covers concentrations up to < 1%  Solid, low dustiness  Exposure duration  Avoid carrying out activities involving exposure for more than 4 hours  Use frequency  Covers daily exposures up to 8 hours (unless stated differently).  Technical conditions and measures to control dispersion from source towards a month (containment is not breached)  the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent / limit releases, dispersion and exposure  Indoor/Outdoor use  Assumes process temperature up to  Process category(ies)  PROC26 - Handling of solid inorganic substances at ambient temperature  Covers daily exposures on the work area every day  Process category(ies)  PROC26 - Handling of solid inorganic substances at ambient temperature  Solid, low dustiness  Exposure duration  Avoid carrying out activities involving exposure for more than 15 minutes  Light form of product  Solid, low dustiness  Exposure duration  Avoid carrying out activities involving exposure for more than 15 minutes  Covers daily exposures up to 8 hours (unless stated differently).	Indoor/Outdoor use	
Covers concentrations up to	Assumes process temperature up to	40 C
Covers concentrations up to		
Physical form of product  Exposure duration  Avoid carrying out activities involving exposure for more than 4 hours  Use frequency  Covers daily exposures up to 8 hours (unless stated differently).  Technical conditions and measures to control dispersion from source towards the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent / limit releases, dispersion and exposure  Indoor/Outdoor use  Automate activity where possible  Clean equipment and the work area every day  Clean equipment and the work area every day  Process category(ies)  PROC26 - Handling of solid inorganic substances at ambient temperature  Covers concentrations up to  Physical form of product  Solid, low dustiness  Exposure duration  Avoid carrying out activities involving exposure for more than 15 minutes  Lise frequency  Covers daily exposures up to 8 hours (unless stated differently).		
Exposure duration Avoid carrying out activities involving exposure for more than 4 hours  Use frequency Covers daily exposures up to 8 hours (unless stated differently).  Technical conditions and measures to control dispersion from source towards a month (containment is not breached)  the worker Automate activity where possible  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure  Indoor/Outdoor use Outdoor  Assumes process temperature up to  Process category(ies) PROC26 - Handling of solid inorganic substances at ambient temperature  Covers concentrations up to < 1%  Physical form of product Solid, low dustiness  Exposure duration Avoid carrying out activities involving exposure for more than 15 minutes  Use frequency Covers daily exposures up to 8 hours (unless stated differently).		
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the worker  Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure  Indoor/Outdoor use  Assumes process temperature up to  Process category(ies)  Process category(ies)  Process concentrations up to  Physical form of product  Exposure duration  Automate activity where possible  S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection  Clean equipment and the work area every day  Clean equipment and the work area every day  Process category(ies)  PROC26 - Handling of solid inorganic substances at ambient temperature  < 1%  Physical form of product  Solid, low dustiness  Exposure duration  Avoid carrying out activities involving exposure for more than 15 minutes  Use frequency  Covers daily exposures up to 8 hours (unless stated differently).		
Conditions and measures related to personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure  Indoor/Outdoor use  Assumes process temperature up to  Process category(ies)  Process category(ies)  Process category(ies)  Process concentrations up to  Physical form of product  Exposure duration  Avoid carrying out activities involving exposure up to 8 hours (unless stated differently).	·	
personal protection, hygiene and health evaluation  Organisational measures to prevent /limit releases, dispersion and exposure  Indoor/Outdoor use  Outdoor  Assumes process temperature up to  Process category(ies)  Process category(ies)  PROC26 - Handling of solid inorganic substances at ambient temperature  Covers concentrations up to  Physical form of product  Solid, low dustiness  Exposure duration  Avoid carrying out activities involving exposure for more than 15 minutes  Use frequency  Covers daily exposures up to 8 hours (unless stated differently).		
health evaluation Organisational measures to prevent /limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies) Covers concentrations up to Physical form of product Exposure duration Use frequency  Covers daily exposures up to 8 hours (unless stated differently).  Clean equipment and the work area every day		330/37/39 • Wear suitable protective clothing, gloves and eyerface protection
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/limit releases, dispersion and exposure Indoor/Outdoor use Assumes process temperature up to  Process category(ies) PROC26 - Handling of solid inorganic substances at ambient temperature Covers concentrations up to Physical form of product Solid, low dustiness Exposure duration Avoid carrying out activities involving exposure for more than 15 minutes Use frequency Covers daily exposures up to 8 hours (unless stated differently).		Clean equipment and the work area every day
exposure Indoor/Outdoor use Outdoor Assumes process temperature up to  Process category(ies) PROC26 - Handling of solid inorganic substances at ambient temperature Covers concentrations up to Physical form of product Solid, low dustiness Exposure duration Avoid carrying out activities involving exposure for more than 15 minutes Use frequency Covers daily exposures up to 8 hours (unless stated differently).		South equipment and the nematical energy day
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Process category(ies)  PROC26 - Handling of solid inorganic substances at ambient temperature  Covers concentrations up to  < 1%  Physical form of product  Exposure duration  Avoid carrying out activities involving exposure for more than 15 minutes  Use frequency  Covers daily exposures up to 8 hours (unless stated differently).	Indoor/Outdoor use	Outdoor
Process category(ies)  PROC26 - Handling of solid inorganic substances at ambient temperature  Covers concentrations up to  < 1%  Physical form of product  Exposure duration  Avoid carrying out activities involving exposure for more than 15 minutes  Use frequency  Covers daily exposures up to 8 hours (unless stated differently).		40 C
Covers concentrations up to < 1%  Physical form of product Solid, low dustiness  Exposure duration Avoid carrying out activities involving exposure for more than 15 minutes  Use frequency Covers daily exposures up to 8 hours (unless stated differently).		
Physical form of product  Solid, low dustiness  Exposure duration  Avoid carrying out activities involving exposure for more than 15 minutes  Use frequency  Covers daily exposures up to 8 hours (unless stated differently).	Process category(ies)	PROC26 - Handling of solid inorganic substances at ambient temperature
Exposure duration Avoid carrying out activities involving exposure for more than 15 minutes Use frequency Covers daily exposures up to 8 hours (unless stated differently).		< 1%
Use frequency Covers daily exposures up to 8 hours (unless stated differently).	Physical form of product	
Technical conditions and measures to Mechanical ventilation giving at least 1 ACH		
	<b>-</b>	

# ES00424 - Borates - Widespread use by professional workers; Water treatment chemicals (PC 37); Other (SU 0)

control dispersion from source towards	
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Indoor
Process category(ies)	PROC26 - Handling of solid inorganic substances at ambient temperature
Covers concentrations up to	< 1%
Physical form of product	Solid, low dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 15 minutes
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	3.3
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	
exposure	
Indoor/Outdoor use	Outdoor
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	< 1%
Physical form of product	Solid, low dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Mechanical ventilation giving at least 1 ACH
control dispersion from source towards	
the worker	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	bookorros vvedi saliable protective distring, gloves and cycriade protection
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Wet cleaning of the workplace
exposure	Twee oldaring of the workplace
Indoor/Outdoor use	Indoor
indoor, ediador dec	indoor
Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
Covers concentrations up to	< 1%
Physical form of product	Solid, low dustiness
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
personal protection, hygiene and	1000/01/00 Treal Sullable protective clothing, gloves and eye/lace protection
health evaluation	
Organisational measures to prevent	Clean equipment and the work area every day
/limit releases, dispersion and	Wet cleaning of the workplace
exposure	ever oleaning of the workplace
Indoor/Outdoor use	Outdoor
indoor/Oddaoor use	Outdoor

## Section 3 - Exposure estimation

Environmental release category(ies) - ERC8a - Wide dispersive indoor use of processing aids in open systems - ERC8d - Wide dispersive outdoor use of processing aids in open systems

# Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.052 mg/l	0.018
Marine water	0.00516 mg/l	< 0.01
STP: Sewage Treatment Plant	0.00825 mg/l	< 0.01
Soil	0.141 mg/kg dw	0.025

## Derived No Effect Level (DNEL):

Calculation method	MEASE
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Calculation method	MEASE		
Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	0.127 mg/m <sup>3</sup>	0.088
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	systemic	0.273 mg/kg bw/day	< 0.01
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - combined, long-term - systemic		0.092
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities		Č	0.075
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	systemic	0.273 mg/kg bw/day	< 0.01
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - combined, long-term - systemic		0.079
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.001 mg/m <sup>3</sup>	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.003 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	· ·	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.003 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		< 0.01

# ES00424 - Borates - Widespread use by professional workers; Water treatment chemicals (PC 37); Other (SU 0)

PROC26 - Handling of solid inorganic	Worker - inhalative, long-term	0.006 mg/m <sup>3</sup>	< 0.01
substances at ambient temperature	- systemic		
PROC26 - Handling of solid inorganic	Worker - dermal, long-term -	0.137 mg/kg bw/day	< 0.01
substances at ambient temperature	systemic		
PROC26 - Handling of solid inorganic	Worker - combined, long-term		< 0.01
substances at ambient temperature	- systemic		
PROC26 - Handling of solid inorganic	Worker - inhalative, long-term	0.005 mg/m <sup>3</sup>	< 0.01
substances at ambient temperature	- systemic		
PROC26 - Handling of solid inorganic	Worker - dermal, long-term -	0.137 mg/kg bw/day	< 0.01
substances at ambient temperature	systemic		
PROC26 - Handling of solid inorganic	Worker - combined, long-term		< 0.01
substances at ambient temperature	- systemic		
PROC28 - Manual maintenance	Worker - inhalative, long-term	0.116 mg/m <sup>3</sup>	0.08
(cleaning and repair) of machinery	- systemic		
PROC28 - Manual maintenance	Worker - dermal, long-term -	0.249 mg/kg bw/day	< 0.01
(cleaning and repair) of machinery	systemic		
PROC28 - Manual maintenance	Worker - combined, long-term		0.084
(cleaning and repair) of machinery	- systemic		
PROC28 - Manual maintenance	Worker - inhalative, long-term	0.11 mg/m <sup>3</sup>	0.069
(cleaning and repair) of machinery	- systemic		
PROC28 - Manual maintenance	Worker - dermal, long-term -	0.249 mg/kg bw/day	< 0.01
(cleaning and repair) of machinery	systemic		
PROC28 - Manual maintenance	Worker - combined, long-term		0.073
(cleaning and repair) of machinery	- systemic		

## Section 4 - Guidance to check compliance with the exposure scenario

EGHS / EN Page 308/345

## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

## Section 1 - Title

Title Building and construction work

**Type** article

Main user group Professional uses: Public domain (administration, education, entertainment, services,

craftsmen)

Environmental release category(ies) ERC10a - Wide dispersive outdoor use of long-life articles and materials with low release

ERC11a - Wide dispersive indoor use of long-life articles and materials with low release

**Process category(ies)** PROC21 - Low energy manipulation of substances bound in materials and/or articles

Article categories AC4 - Stone, plaster, cement, glass and ceramic articles

Sector(s) of use SU22 - Professional uses

## Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC10a - Wide dispersive outdoor use of long-life articles and materials with low release - ERC11a - Wide dispersive indoor use of long-life articles and materials with low release

Conditions and measures related to municipal sewage treatment plant

Type Municipal STP	
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Conditions and measures related to external treatment of waste for disposal

Disposal Dispose of waste product or used containers according to local regulations	
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Control of worker exposure	
Process category(ies)	PROC21 - Low energy manipulation of substances bound in materials and/or articles
Covers concentrations up to	5%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
control dispersion from source towards the worker	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Indoor

ES00425 - Borates - Service life (professional worker); Stone, plaster, cement, glass and ceramic articles: Large surface area articles (AC 4a)

## Section 3 - Exposure estimation

Environmental release category(ies) - ERC10a - Wide dispersive outdoor use of long-life articles and materials with low release

- ERC11a - Wide dispersive indoor use of long-life articles and materials with low release

## Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.052 mg/l	0.018
Marine water	0.00512 mg/l	< 0.01
STP: Sewage Treatment Plant	0.00352 mg/l	< 0.01
Soil	0.141 mg/kg dw	0.025

#### **Derived No Effect Level (DNEL):**

Calculation method MEASE

Process category(ies)	Exposure route		Risk characterisation ratio (RCR)
PROC21 - Low energy manipulation of substances bound in materials and/or articles		0.003 mg/m³	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles		0.014 mg/kg bw/day	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles			< 0.01

## Section 4 - Guidance to check compliance with the exposure scenario

EGHS / EN Page 310/345

## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

## Section 1 - Title

Process category(ies)

Title paint and Coatings

**Type** article

Main user group Professional uses: Public domain (administration, education, entertainment, services,

craftsmen)

Environmental release category(ies) ERC10a - Wide dispersive outdoor use of long-life articles and materials with low release

ERC11a - Wide dispersive indoor use of long-life articles and materials with low release PROC21 - Low energy manipulation of substances bound in materials and/or articles

PROC24 - High (mechanical) energy work-up of substances bound in materials and/or

articles

Article categories AC7a - Metal products: cutlery, cooking utensils, pots, pans AC8 - Paper articles

Sector(s) of use SU22 - Professional uses

## Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC10a - Wide dispersive outdoor use of long-life articles and materials with low release - ERC11a - Wide dispersive indoor use of long-life articles and materials with low release

Conditions and measures related to municipal sewage treatment plant

Type Municipal STP

Conditions and measures related to external treatment of waste for disposal

Disposal Dispose of waste product or used containers according to local regulations

Control of worker exposure	
Process category(ies)	PROC21 - Low energy manipulation of substances bound in materials and/or articles
Covers concentrations up to	5%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
control dispersion from source towards the worker	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached) Automate activity where possible Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Indoor

Process category(ies)	PROC21 - Low energy manipulation of substances bound in materials and/or articles
Covers concentrations up to	5%

Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours	
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).	
	s a month (containment is not breached)	
	Automate activity where possible	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection	
personal protection, hygiene and		
health evaluation		
Organisational measures to prevent	Clean equipment and the work area every day	
/limit releases, dispersion and		
exposure		
Indoor/Outdoor use	Outdoor	
Process category(ies)	PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles	
Covers concentrations up to	5%	
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours	
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).	
	Undertake operation under enclosed conditions	
control dispersion from source towards	Use in semi-automated and predominantly enclosed filling lines	
	Mechanical ventilation giving at least 3 ACH	
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection	
personal protection, hygiene and	Wear a respirator providing a minimum efficiency of 90%	
health evaluation	See Section 8 for information on appropriate personal protective equipment	
Organisational measures to prevent	Clean equipment and the work area every day	
/limit releases, dispersion and		
exposure		
Indoor/Outdoor use	Indoor	
Process category(ies)	PROC24 - High (mechanical) energy work-up of substances bound in materials and/or	
	articles	
Covers concentrations up to	5%	
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours	
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).	
Technical conditions and measures to	Undertake operation under enclosed conditions	
	Use in semi-automated and predominantly enclosed filling lines	
the worker		
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection	
personal protection, hygiene and	Wear a respirator providing a minimum efficiency of 90%	
health evaluation	See Section 8 for information on appropriate personal protective equipment	
	la.	

<u>Environmental release category(ies)</u> - <u>ERC10a</u> - <u>Wide dispersive outdoor use of long-life articles and materials with low release</u>

Clean equipment and the work area every day

- ERC11a - Wide dispersive indoor use of long-life articles and materials with low release

Outdoor

## Predicted No Effect Concentration (PNEC)

Organisational measures to prevent

/limit releases, dispersion and

exposure

Indoor/Outdoor use

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.052 mg/l	0.018
Marine water	0.0051 mg/l	< 0.01

STP: Sewage Treatment Plant	0.0022 mg/l	< 0.01
Soil	0.141 mg/kg dw	0.025

#### **Derived No Effect Level (DNEL):**

Calculation method MEASE

Calculation method	MEASE		
Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC21 - Low energy manipulation of substances bound in materials and/or articles	Worker - inhalative, long-term - systemic	0.003 mg/m <sup>3</sup>	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles	Worker - dermal, long-term - systemic	0.014 mg/kg bw/day	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles	Worker - combined, long-term - systemic		< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles	Worker - inhalative, long-term - systemic	0.002 mg/m <sup>3</sup>	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles	Worker - dermal, long-term - systemic	0.014 mg/kg bw/day	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles	Worker - combined, long-term - systemic		< 0.01
PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles	Worker - inhalative, long-term - systemic	0.191 mg/m <sup>3</sup>	0.132
PROC24 - High (mechanical) energy	Worker - dermal, long-term - systemic	1.496 mg/kg bw/day	0.022
	Worker - combined, long-term - systemic		0.154
work-up of substances bound in materials and/or articles	Worker - inhalative, long-term - systemic		0.136
work-up of substances bound in materials and/or articles	Worker - dermal, long-term - systemic	1.638 mg/kg bw/day	0.024
PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles	Worker - combined, long-term - systemic		0.16

## Section 4 - Guidance to check compliance with the exposure scenario

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## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

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## Section 1 - Title

Title Building and construction work

**Type** article

Main user group Professional uses: Public domain (administration, education, entertainment, services,

craftsmen)

Environmental release category(ies) ERC10a - Wide dispersive outdoor use of long-life articles and materials with low release

ERC11a - Wide dispersive indoor use of long-life articles and materials with low release PROC21 - Low energy manipulation of substances bound in materials and/or articles

Process category(ies)

Article categories

PROC21 - Low energy manipulation of substances bound in materials and/or articles

AC4 - Stone, plaster, cement, glass and ceramic articles AC11a - Wood and wood furniture:

furniture

Sector(s) of use SU22 - Professional uses

## Section 2 - Operational conditions and risk management measures

## Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC10a - Wide dispersive outdoor use of long-life articles and materials with low release - ERC11a - Wide dispersive indoor use of long-life articles and materials with low release

Conditions and measures related to municipal sewage treatment plant

Туре	Municipal STP	

Conditions and measures related to external treatment of waste for disposal

Disposal Dispose of waste product or used containers according to local regulations

Control of worker exposure			
Process category(ies)	PROC21 - Low energy manipulation of substances bound in materials and/or articles		
Covers concentrations up to	5%		
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours		
	Covers daily exposures up to 8 hours (unless stated differently).		
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once		
1	a month (containment is not breached)		
	Automate activity where possible		
	Mechanical ventilation giving at least 1 ACH		
Conditions and measures related to	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection		
personal protection, hygiene and			
health evaluation			
	Clean equipment and the work area every day		
/limit releases, dispersion and			
exposure			
Indoor/Outdoor use	Indoor		

Process category(ies)	PROC21 - Low energy manipulation of substances bound in materials and/or articles
Covers concentrations up to	5%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours

Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
control dispersion from source towards	a month (containment is not breached)
the worker	Automate activity where possible
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
/limit releases, dispersion and	Clean equipment and the work area every day
exposure	
Indoor/Outdoor use	Outdoor

Environmental release category(ies) - ERC10a - Wide dispersive outdoor use of long-life articles and materials with low release

- ERC11a - Wide dispersive indoor use of long-life articles and materials with low release

## Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.052 mg/l	0.018
Marine water	0.00511 mg/l	< 0.01
STP: Sewage Treatment Plant	0.00264 mg/l	< 0.01
Soil	0.141 mg/kg dw	0.025

#### **Derived No Effect Level (DNEL):**

Calculation method MEASE

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC21 - Low energy manipulation of substances bound in materials and/or articles		0.003 mg/m <sup>3</sup>	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles		0.014 mg/kg bw/day	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles			< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles		0.002 mg/m <sup>3</sup>	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles		0.014 mg/kg bw/day	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles			< 0.01

## Section 4 - Guidance to check compliance with the exposure scenario

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to

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define appropriate site-specific risk management measures.

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## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

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## Section 1 - Title

**Title** Agriculture, forestry, fishery Offshore industries

**Type** article

Main user group Professional uses: Public domain (administration, education, entertainment, services,

craftsmen)

Environmental release category(ies) ERC10a - Wide dispersive outdoor use of long-life articles and materials with low release

ERC11a - Wide dispersive indoor use of long-life articles and materials with low release

Process category(ies) PROC21 - Low energy manipulation of substances bound in materials and/or articles

Article categories AC5 - Fabrics, textiles and apparel

Sector(s) of use SU22 - Professional uses

## Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC10a - Wide dispersive outdoor use of long-life articles and materials with low release - ERC11a - Wide dispersive indoor use of long-life articles and materials with low release

Conditions and measures related to municipal sewage treatment plant

Туре Ми	Nunicipal STP
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Conditions and measures related to external treatment of waste for disposal

Disposal	Dispose of waste product or used containers according to local regulations

Control of worker exposure	
Process category(ies)	PROC21 - Low energy manipulation of substances bound in materials and/or articles
Covers concentrations up to	5%
	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
control dispersion from source towards	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once a month (containment is not breached)  Automate activity where possible
	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Indoor

Process category(ies)	PROC21 - Low energy manipulation of substances bound in materials and/or articles
Covers concentrations up to	5%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours

## ES00428 - Borates - Service life (professional worker); Other articles made of fabrics, textiles and apparel (AC 5h)

Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to	Process fully enclosed (air tight) and the integrity of the enclosure is monitored at least once
control dispersion from source towards	a month (containment is not breached)
the worker	Automate activity where possible
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
/limit releases, dispersion and	Clean equipment and the work area every day
exposure	
Indoor/Outdoor use	Outdoor

## Section 3 - Exposure estimation

Environmental release category(ies) - ERC10a - Wide dispersive outdoor use of long-life articles and materials with low release

- ERC11a - Wide dispersive indoor use of long-life articles and materials with low release

# Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.052 mg/l	0.018
Marine water	0.00509 mg/l	< 0.01
STP: Sewage Treatment Plant	0.141 mg/l	0.025
Soil	0.141 mg/kg dw	0.025

#### **Derived No Effect Level (DNEL):**

Calculation method MEASE

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC21 - Low energy manipulation of substances bound in materials and/or articles		0.003 mg/m <sup>3</sup>	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles		0.014 mg/kg bw/day	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles			< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles		0.002 mg/m <sup>3</sup>	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles		0.014 mg/kg bw/day	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles			< 0.01

## Section 4 - Guidance to check compliance with the exposure scenario

Revision date 09-Feb-2025

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## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

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## Section 1 - Title

Title Metal articles
Type article

Main user group Professional uses: Public domain (administration, education, entertainment, services,

craftsmen)

Environmental release category(ies) ERC10a - Wide dispersive outdoor use of long-life articles and materials with low release

ERC11a - Wide dispersive indoor use of long-life articles and materials with low release

Process category(ies) PROC21 - Low energy manipulation of substances bound in materials and/or articles

Article categories AC7 - Metal articles
Sector(s) of use SU22 - Professional uses

## Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC10a - Wide dispersive outdoor use of long-life articles and materials with low release - ERC11a - Wide dispersive indoor use of long-life articles and materials with low release

Conditions and measures related to municipal sewage treatment plant

Гуре	Municipal STP
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Conditions and measures related to external treatment of waste for disposal

Disposal	Dis	pose of waste product or used containers according to local regulations

Control of worker exposure	
Process category(ies)	PROC21 - Low energy manipulation of substances bound in materials and/or articles
Covers concentrations up to	< 1%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Indoor

Process category(ies)	PROC21 - Low energy manipulation of substances bound in materials and/or articles
Covers concentrations up to	< 1%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).

Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and	Clean equipment and the work area every day
exposure	
Indoor/Outdoor use	Outdoor

Environmental release category(ies) - ERC10a - Wide dispersive outdoor use of long-life articles and materials with low release

- ERC11a - Wide dispersive indoor use of long-life articles and materials with low release

# Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.052 mg/l	0.018
Marine water	0.00512 mg/l	< 0.01
STP: Sewage Treatment Plant	0.00352 mg/l	< 0.01
Soil	0.141 mg/kg dw	0.025

#### **Derived No Effect Level (DNEL):**

Calculation method MEASE

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC21 - Low energy manipulation of substances bound in materials and/or articles		0.001 mg/m <sup>3</sup>	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles		0.069 mg/kg bw/day	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles			< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles		0.001 mg/m <sup>3</sup>	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles		0.069 mg/kg bw/day	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles			< 0.01

## Section 4 - Guidance to check compliance with the exposure scenario

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## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

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## Section 1 - Title

Title Paper articles
Type article

Main user group Professional uses: Public domain (administration, education, entertainment, services,

craftsmen)

Environmental release category(ies) ERC10a - Wide dispersive outdoor use of long-life articles and materials with low release

ERC11a - Wide dispersive indoor use of long-life articles and materials with low release

Process category(ies) PROC21 - Low energy manipulation of substances bound in materials and/or articles

Article categories AC8 - Paper articles
Sector(s) of use SU22 - Professional uses

## Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC10a - Wide dispersive outdoor use of long-life articles and materials with low release - ERC11a - Wide dispersive indoor use of long-life articles and materials with low release

Conditions and measures related to municipal sewage treatment plant

Гуре	Municipal STP
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Conditions and measures related to external treatment of waste for disposal

Disposal	Dis	pose of waste product or used containers according to local regulations

Control of worker exposure	
Process category(ies)	PROC21 - Low energy manipulation of substances bound in materials and/or articles
Covers concentrations up to	< 1%
Exposure duration	Avoid carrying out activities involving exposure for more than 4 hours
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to control dispersion from source towards the worker	Mechanical ventilation giving at least 1 ACH
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Indoor

ROC21 - Low energy manipulation of substances bound in materials and/or articles
1%
void carrying out activities involving exposure for more than 4 hours
overs daily exposures up to 8 hours (unless stated differently).
1 V

Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection
/limit releases, dispersion and	Clean equipment and the work area every day
exposure	
Indoor/Outdoor use	Outdoor

Environmental release category(ies) - ERC10a - Wide dispersive outdoor use of long-life articles and materials with low release

- ERC11a - Wide dispersive indoor use of long-life articles and materials with low release

# Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.052 mg/l	0.018
Marine water	0.00508 mg/l	< 0.01
STP: Sewage Treatment Plant	0.000176 mg/l	< 0.01
Soil	0.141 mg/kg dw	0.025

#### **Derived No Effect Level (DNEL):**

Calculation method MEASE

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC21 - Low energy manipulation of substances bound in materials and/or articles		0.001 mg/m <sup>3</sup>	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles		0.069 mg/kg bw/day	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles			< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles		0.001 mg/m <sup>3</sup>	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles		0.069 mg/kg bw/day	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles			< 0.01

## Section 4 - Guidance to check compliance with the exposure scenario

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## Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

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## Section 1 - Title

Title Manufacture of fabricated metal products, except machinery and equipment

**Type** Consumer

Main user group Consumer uses: Private households (= general public = consumers)

Environmental release category(ies) ERC8a - Wide dispersive indoor use of processing aids in open systems ERC8d - Wide

dispersive outdoor use of processing aids in open systems

Product category(ies)PC0 - Other ProductsSector(s) of useSU21 - Consumer uses

## Section 2 - Operational conditions and risk management measures

## Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC8a - Wide dispersive indoor use of processing aids in open systems - ERC8d - Wide dispersive outdoor use of processing aids in open systems

Conditions and measures related to municipal sewage treatment plant

- 11	vpe	Municipal STP
	ype	ividilicipal OTI

Conditions and measures related to external treatment of waste for disposal

Control of consumer exposure	
Product categories [PC]	PC0 - Other Products
Covers concentrations up to	1.8%
Physical form of product	Solid, medium dustiness
Amounts used	1000 g/event
Exposure duration	8 hours
Use frequency	1 events per day

## Section 3 - Exposure estimation

<u>Environmental release category(ies)</u> - <u>ERC8a - Wide dispersive indoor use of processing aids in open systems</u> - <u>ERC8d - Wide dispersive outdoor use of processing aids in open systems</u>

## Predicted No Effect Concentration (PNEC)

Calculation method	Used EUSES model
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Environment		Risk characterisation ratio (RCR)
Freshwater	0.052 mg/l	0.018

Marine water	0.00509 mg/l	< 0.01
STP: Sewage Treatment Plant	0.00137 mg/l	< 0.01
Soil	0.141 mg/kg dw	0.025

## **Derived No Effect Level (DNEL):**

Calculation method Used ECETOC TRA model

Product category(ies)	Exposure route predicted exp	posure level Risk characterisation ratio (RCR)
PC0 - Other Products	Consumer - inhalative, 0.000025 mg long-term - systemic	g/m³ < 0.01
PC0 - Other Products	Consumer - dermal, long-term 26.25 mg/kg - systemic	bw/day 0.765
PC0 - Other Products	Consumer - oral, long-term - 0 mg/kg bw/c	day < 0.01
PC0 - Other Products	Consumer - combined, long-term - systemic	0.765

## Section 4 - Guidance to check compliance with the exposure scenario

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#### Section 1 - Title

Title Adhesives, sealants

**Type** Consumer

Main user group Consumer uses: Private households (= general public = consumers)

Environmental release category(ies) ERC8c - Wide dispersive indoor use resulting in inclusion into or onto a matrix ERC8f -

Wide dispersive outdoor use resulting in inclusion into or onto a matrix

**Product category(ies) PC1** - Adhesives, sealants **Sector(s) of use**PC1 - Adhesives, sealants
SU21 - Consumer uses

# Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC8c - Wide dispersive indoor use resulting in inclusion into or onto a matrix - ERC8f - Wide dispersive outdoor use resulting in inclusion into or onto a matrix

Conditions and measures related to municipal sewage treatment plant

Туре	Municipal STP
•	

Risk management measures

Use frequency

Technical onsite conditions and	Equipment cleaned with water, washing disposed of with wastewater. Worst case
measures to reduce or limit discharges,	assumption for solvent-borne products
air emissions	

Control measures to prevent releases

Conditions and measures related to external treatment of waste for disposal

1 events per day

Disposal Dispose of waste product or used containers according to local regulations	Disposal	Dispose of waste p	oduct or used containers acco	ording to local regu	ulations
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Control of consumer exposure	
Product categories [PC]	PC1 - Adhesives, sealants
Product (sub) category(ies)	Glues DIY-use (carpet glue, tile glue, wood parquet glue)
Covers concentrations up to	5.5%
Amounts used	1.5E4 g/event
Exposure duration	6 hours
Use frequency	1 events per day
Product categories [PC]	PC1 - Adhesives, sealants
Product (sub) category(ies)	Glues, hobby use
Covers concentrations up to	5.5%
Amounts used	9 g/event
Exposure duration	4 hours

Product categories [PC]	PC1 - Adhesives, sealants
Product (sub) category(ies)	Sealant
Covers concentrations up to	5.5%
Amounts used	390 g/event
Exposure duration	4 hours
Use frequency	1 events per day

# Section 3 - Exposure estimation

Environmental release category(ies) - ERC8c - Wide dispersive indoor use resulting in inclusion into or onto a matrix - ERC8f - Wide dispersive outdoor use resulting in inclusion into or onto a matrix

# Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.052 mg/l	0.018
Marine water	0.00508 mg/l	< 0.01
STP: Sewage Treatment Plant	0.000206 mg/l	< 0.01
Soil	0.141 mg/kg dw	0.025

#### **Derived No Effect Level (DNEL):**

Calculation method	Used ECETOC TRA model
Calculation method	USEG ECETOC TRA MOGEL

Product category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PC1 - Adhesives, sealants	Consumer - inhalative, long-term - systemic	0.000025 mg/m <sup>3</sup>	< 0.01
PC1 - Adhesives, sealants	Consumer - dermal, long-term - systemic	3.931 mg/kg bw/day	0.115
PC1 - Adhesives, sealants	Consumer - oral, long-term - systemic	0 mg/kg bw/day	< 0.01
PC1 - Adhesives, sealants	Consumer - combined, long-term - systemic		0.115
PC1 - Adhesives, sealants	Consumer - inhalative, long-term - systemic	0.000025 mg/m <sup>3</sup>	< 0.01
PC1 - Adhesives, sealants	Consumer - dermal, long-term - systemic	0.327 mg/kg bw/day	< 0.01
PC1 - Adhesives, sealants	Consumer - oral, long-term - systemic	0 mg/kg bw/day	< 0.01
PC1 - Adhesives, sealants	Consumer - combined, long-term - systemic		< 0.01
PC1 - Adhesives, sealants	Consumer - inhalative, long-term - systemic	0.000025 mg/m <sup>3</sup>	< 0.01
PC1 - Adhesives, sealants	Consumer - dermal, long-term - systemic	0.327 mg/kg bw/day	< 0.01
PC1 - Adhesives, sealants	Consumer - oral, long-term - systemic	0 mg/kg bw/day	< 0.01
PC1 - Adhesives, sealants	Consumer - combined, long-term - systemic		< 0.01

# Section 4 - Guidance to check compliance with the exposure scenario

EGHS / EN Page 328/345

# Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

Supplier Univar Solutions UK Ltd Aquarius House

6 Mid Point Business Park

Bradford GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

#### Section 1 - Title

Title Fertilisers
Type Consumer

Main user group Consumer uses: Private households (= general public = consumers)

Environmental release category(ies) ERC8a - Wide dispersive indoor use of processing aids in open systems ERC8d - Wide

dispersive outdoor use of processing aids in open systems

Product category(ies) PC12 - Fertilisers
Sector(s) of use SU21 - Consumer uses

# Section 2 - Operational conditions and risk management measures

## Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC8a - Wide dispersive indoor use of processing aids in open systems - ERC8d - Wide dispersive outdoor use of processing aids in open systems

Conditions and measures related to municipal sewage treatment plant

Туре	Municipal STP	

Conditions and measures related to external treatment of waste for disposal

Disposal	Dispose of waste product or used containers according to local regulations	
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Control of consumer exposure	
Product categories [PC]	PC12 - Fertilisers
Covers concentrations up to	0.4%
Exposure duration	8 hours
Use frequency	1 events per day

### Section 3 - Exposure estimation

<u>Environmental release category(ies)</u> - <u>ERC8a</u> - <u>Wide dispersive indoor use of processing aids in open systems</u> - <u>ERC8d</u> - <u>Wide dispersive outdoor use of processing aids in open systems</u>

# Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES mode
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Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.093 mg/l	0.032
Marine water	0.0092 mg/l	< 0.01
STP: Sewage Treatment Plant	0.412 mg/l	0.041

Soil	0.111 ma/ka du	0.005
2011	U.144 mg/kg aw	0.025

#### **Derived No Effect Level (DNEL):**

Calculation method Used ECETOC TRA model

Product category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PC0 - Other Products	Consumer - inhalative, long-term - systemic	0 mg/m <sup>3</sup>	< 0.01
PC0 - Other Products	Consumer - dermal, long-term - systemic	1.018 mg/kg bw/day	0.03
PC0 - Other Products	Consumer - oral, long-term - systemic	0.12 mg/kg bw/day	0.706
PC0 - Other Products	Consumer - combined, long-term - systemic		0.736

# Section 4 - Guidance to check compliance with the exposure scenario

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# Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

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#### Section 1 - Title

Type

Covers concentrations up to

Amounts used
Exposure duration

Title Washing and cleaning products

**Type** Consumer

Main user group Consumer uses: Private households (= general public = consumers)

Environmental release category(ies) ERC8a - Wide dispersive indoor use of processing aids in open systems ERC8d - Wide

dispersive outdoor use of processing aids in open systems

**Product category(ies)** PC35 - Washing and cleaning products (including solvent based products)

Sector(s) of use SU21 - Consumer uses

# Section 2 - Operational conditions and risk management measures

Municipal STP

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC8a - Wide dispersive indoor use of processing aids in open systems - ERC8d - Wide dispersive outdoor use of processing aids in open systems

Conditions and measures related to municipal sewage treatment plant

1.360	inanopai e i	
Further information		
Operational conditions	Indoor/Outdoor use	
Risk management measures		
Tachnical ancita conditions and	Chant process fluid discharged to westewater	

Technical onsite conditions and spent process fluid discharged to wastewater measures to reduce or limit discharges, Product applied in aqueous process solution with negligible volatilisation air emissions

Conditions and measures related to external treatment of waste for disposal

5.5% 250 g/event

0.33 hours

Disposal Dispose of waste product or used containers according to local regulations

Control of consumer exposure	
Product categories [PC]	PC35 - Washing and cleaning products (including solvent based products)
Product (sub) category(ies)	Laundry and dish washing products
Covers concentrations up to	5.5%
Amounts used	50 g/event
Exposure duration	1 hours
Use frequency	1 events per day
Product categories [PC]	PC35 - Washing and cleaning products (including solvent based products)
Product (sub) category(ies)	Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners,
	carpet cleaners, metal cleaners)

	la a la	
Use frequency	I1 events per day	
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# Section 3 - Exposure estimation

<u>Environmental release category(ies)</u> - <u>ERC8a</u> - <u>Wide dispersive indoor use of processing aids in open systems</u> - <u>ERC8d</u> - <u>Wide dispersive outdoor use of processing aids in open systems</u>

# Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.055 mg/l	0.019
Marine water	0.00541 mg/l	< 0.01
STP: Sewage Treatment Plant	0.033 mg/l	< 0.01
Soil	0.141 mg/kg dw	0.025

#### **Derived No Effect Level (DNEL):**

Calculation method Used ECETOC TRA model

Calculation inethiou	USEG LOLTOC TIXA IIIOGEI		
Product category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PC35 - Washing and cleaning products (including solvent based products)	Consumer - inhalative, long-term - systemic	0.000025 mg/m <sup>3</sup>	< 0.01
PC35 - Washing and cleaning products (including solvent based products)	Consumer - dermal, long-term - systemic	7.86 mg/kg bw/day	0.229
PC35 - Washing and cleaning products (including solvent based products)	Consumer - oral, long-term - systemic	0 mg/kg bw/day	< 0.01
PC35 - Washing and cleaning products (including solvent based products)	Consumer - combined, long-term - systemic		0.229
PC35 - Washing and cleaning products (including solvent based products)	Consumer - inhalative, long-term - systemic	0.000025 mg/m <sup>3</sup>	< 0.01
PC35 - Washing and cleaning products (including solvent based products)	Consumer - dermal, long-term - systemic	7.86 mg/kg bw/day	0.229
PC35 - Washing and cleaning products (including solvent based products)	Consumer - oral, long-term - systemic	0 mg/kg bw/day	< 0.01
PC35 - Washing and cleaning products (including solvent based products)	Consumer - combined, long-term - systemic		0.229

# Section 4 - Guidance to check compliance with the exposure scenario

EGHS / EN Page 332/345

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#### Section 1 - Title

Title Lubricants, greases, release products

**Type** Consumer

Main user group Consumer uses: Private households (= general public = consumers)

Environmental release category(ies) ERC9a - Wide dispersive indoor use of substances in closed systems ERC9b - Wide

dispersive outdoor use of substances in closed systems

Product category(ies) PC24 - Lubricants, greases, release products

Sector(s) of use SU21 - Consumer uses

# Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC9a - Wide dispersive indoor use of substances in closed systems - ERC9b - Wide dispersive outdoor use of substances in closed systems

Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP
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Conditions and measures related to external treatment of waste for disposal

L	
Disposal	Dispose of waste product or used containers according to local regulations
II JISDOSAI	idispose of waste product of used containers according to local requiations

Control of consumer exposure	
Product categories [PC]	PC24 - Lubricants, greases, release products
Product (sub) category(ies)	Liquids
Covers concentrations up to	5.5%
Amounts used	5000 g/event
Exposure duration	4 hours
Use frequency	1 events per day
Product categories [PC]	PC24 - Lubricants, greases, release products
Product (sub) category(ies)	Pastes
Covers concentrations up to	5.5%
Exposure duration	8 hours
Use frequency	1 events per day

### Section 3 - Exposure estimation

<u>Environmental release category(ies)</u> - <u>ERC9a - Wide dispersive indoor use of substances in closed systems</u> - <u>ERC9b - Wide dispersive outdoor use of substances in closed systems</u>

# Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.052 mg/l	0.018
Marine water	0.00509 mg/l	< 0.01
STP: Sewage Treatment Plant	0.000687 mg/l	< 0.01
Soil	0.141 mg/kg dw	0.025

#### **Derived No Effect Level (DNEL):**

Calculation method Used ECETOC TRA model

Calculation metriod	OSCU LOLTOO TIVITIOUCI		
Product category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PC24 - Lubricants, greases, release products	Consumer - inhalative, long-term - systemic	0.000025 mg/m <sup>3</sup>	< 0.01
PC24 - Lubricants, greases, release products	Consumer - dermal, long-term - systemic	7.86 mg/kg bw/day	0.229
PC24 - Lubricants, greases, release products	Consumer - oral, long-term - systemic	0 mg/kg bw/day	< 0.01
PC24 - Lubricants, greases, release products	Consumer - combined, long-term - systemic		0.229
PC24 - Lubricants, greases, release products	Consumer - inhalative, long-term - systemic	0 mg/m³	< 0.01
PC24 - Lubricants, greases, release products	Consumer - dermal, long-term - systemic	7.86 mg/kg bw/day	0.229
PC24 - Lubricants, greases, release products	Consumer - oral, long-term - systemic	0 mg/kg bw/day	< 0.01
PC24 - Lubricants, greases, release products	Consumer - combined, long-term - systemic		0.229

# Section 4 - Guidance to check compliance with the exposure scenario

EGHS / EN Page 334/345

# Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

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#### Section 1 - Title

Use frequency

Title Adhesives, sealants

**Type** article

Main user group Consumer uses: Private households (= general public = consumers)

Environmental release category(ies) ERC10a - Wide dispersive outdoor use of long-life articles and materials with low release

ERC11a - Wide dispersive indoor use of long-life articles and materials with low release

Article categories AC2 - Machinery, mechanical appliances, electrical/electronic articles AC8 - Paper articles

AC11 - Wood articles

Sector(s) of use SU21 - Consumer uses

### Section 2 - Operational conditions and risk management measures

1 events per day

## Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC10a - Wide dispersive outdoor use of long-life articles and materials with low release - ERC11a - Wide dispersive indoor use of long-life articles and materials with low release

Conditions and measures related to municipal sewage treatment plant

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Πνηρ	Municipal CTD	
	IIVIONICIOAL STP	
II VDE	IMunicipal STP	

Conditions and measures related to external treatment of waste for disposal

Disposal Dispose of waste product or used containers according to local regulations

Control of consumer exposure	
Article categories	AC2 - Machinery, mechanical appliances, electrical/electronic articles
Covers concentrations up to	5.5%
Physical form of product	Solid, low dustiness
Amounts used	3E3 g/event
Exposure duration	8 hours
Use frequency	1 events per day
Article categories	AC8 - Paper articles
Covers concentrations up to	0.4%
Amounts used	3E3 g/event
Exposure duration	8 hours
Use frequency	1 events per day
Article categories	AC11 - Wood articles
Covers concentrations up to	5.5%
Amounts used	3E3 g/event
Exposure duration	8 hours

Article categories	AC11 - Wood articles
Covers concentrations up to	1.3%
Use frequency	1 events per day
Article categories	AC11 - Wood articles
Covers concentrations up to	5.5%
Amounts used	1.3E3 g/event
Exposure duration	4 hours
Use frequency	1 events per day
Article categories	AC11 - Wood articles
Covers concentrations up to	1.2%
Use frequency	1 events per day

# Section 3 - Exposure estimation

Environmental release category(ies) - ERC10a - Wide dispersive outdoor use of long-life articles and materials with low release

- ERC11a - Wide dispersive indoor use of long-life articles and materials with low release

# Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

	Bood EGGEG Model	
Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.052 mg/l	0.018
Marine water	0.0051 mg/l	< 0.01
STP: Sewage Treatment Plant	0.00176 mg/l	< 0.01
Soil	0.141 mg/kg dw	0.025

#### **Derived No Effect Level (DNEL):**

# Section 4 - Guidance to check compliance with the exposure scenario

EGHS / EN Page 336/345

# Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

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#### Section 1 - Title

Title Building and construction work

**Type** article

Main user group Consumer uses: Private households (= general public = consumers)

Environmental release category(ies) ERC10a - Wide dispersive outdoor use of long-life articles and materials with low release

ERC11a - Wide dispersive indoor use of long-life articles and materials with low release

Article categories AC4 - Stone, plaster, cement, glass and ceramic articles

Sector(s) of use SU21 - Consumer uses

## Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC10a - Wide dispersive outdoor use of long-life articles and materials with low release - ERC11a - Wide dispersive indoor use of long-life articles and materials with low release

Conditions and measures related to municipal sewage treatment plant

llype	Municipal STP
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Conditions and measures related to external treatment of waste for disposal

Disposal Dispose of waste product or used containers according to local regulations	Disposal	Dianaga	f waata aradust ar usaa	l containara accardina ta	local regulations
	Disposal	Dispose o	i wasie product or used	i containers according to	local regulations

Control of consumer exposure		
Article categories	AC4 - Stone, plaster, cement, glass and ceramic articles	
Covers concentrations up to	5.5%	
Physical form of product	Solid, low dustiness	
Amounts used	3000 g/event	
Exposure duration	8 hours	
Use frequency	1 events per day	

# Section 3 - Exposure estimation

Environmental release category(ies) - ERC10a - Wide dispersive outdoor use of long-life articles and materials with low release

- ERC11a - Wide dispersive indoor use of long-life articles and materials with low release

# Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model
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Environment	predicted exposure level	Risk characterisation ratio (RCR)

ES00437 - Borates - Service life (consumers); Stone, plaster, cement, glass and ceramic articles: Large surface area articles (AC 4a)

Freshwater	0.052 mg/l	0.018
Marine water	0.00512 mg/l	< 0.01
STP: Sewage Treatment Plant	0.00352 mg/l	< 0.01
Soil	0.141 mg/kg dw	0.025

#### **Derived No Effect Level (DNEL):**

# Section 4 - Guidance to check compliance with the exposure scenario

EGHS / EN Page 338/345

# Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Chemical name BORATES

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#### Section 1 - Title

Title paint and Coatings

**Type** article

Main user group Consumer uses: Private households (= general public = consumers)

Environmental release category(ies) ERC10a - Wide dispersive outdoor use of long-life articles and materials with low release

ERC11a - Wide dispersive indoor use of long-life articles and materials with low release

Article categories AC7a - Metal products: cutlery, cooking utensils, pots, pans AC8 - Paper articles

Sector(s) of use SU21 - Consumer uses

## Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC10a - Wide dispersive outdoor use of long-life articles and materials with low release - ERC11a - Wide dispersive indoor use of long-life articles and materials with low release

Conditions and measures related to municipal sewage treatment plant

llype	Municipal STP
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Conditions and measures related to external treatment of waste for disposal

Disposal	Dispose c	of waste product or us	ed containers acc	cording to loc	cal regulations	

AC7a - Metal products: cutlery, cooking utensils, pots, pans
5.5%
Solid, low dustiness
3000 g/event
8 hours
1 events per day

Article categories	AC8 - Paper articles
Covers concentrations up to	0.4%
Amounts used	3000 g/event
Exposure duration	8 hours
Use frequency	1 events per day

# Section 3 - Exposure estimation

Environmental release category(ies) - ERC10a - Wide dispersive outdoor use of long-life articles and materials with low release

- ERC11a - Wide dispersive indoor use of long-life articles and materials with low release

# Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.052 mg/l	0.018
Marine water	0.00512 mg/l	< 0.01
STP: Sewage Treatment Plant	0.00352 mg/l	< 0.01
Soil	0.141 mg/kg dw	0.025

#### **Derived No Effect Level (DNEL):**

# Section 4 - Guidance to check compliance with the exposure scenario

EGHS / EN Page 340/345

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#### Section 1 - Title

Title Building and construction work

**Type** article

Main user group Consumer uses: Private households (= general public = consumers)

Environmental release category(ies) ERC10a - Wide dispersive outdoor use of long-life articles and materials with low release

ERC11a - Wide dispersive indoor use of long-life articles and materials with low release

Article categories AC4 - Stone, plaster, cement, glass and ceramic articles AC11a - Wood and wood furniture:

furniture

Sector(s) of use SU21 - Consumer uses

### Section 2 - Operational conditions and risk management measures

## Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC10a - Wide dispersive outdoor use of long-life articles and materials with low release - ERC11a - Wide dispersive indoor use of long-life articles and materials with low release

Conditions and measures related to municipal sewage treatment plant

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IMunicinal STP	

Conditions and measures related to external treatment of waste for disposal

Disposal Dispose of waste product or used containers according to local regulations

Control of consumer exposure		
Article categories	AC4 - Stone, plaster, cement, glass and ceramic articles	
Covers concentrations up to	5.5%	
Physical form of product	Solid, low dustiness	
Amounts used	3000 g/event	
Exposure duration	8 hours	
Use frequency	1 events per day	

Article categories	AC11a - Wood and wood furniture: furniture
Covers concentrations up to	5.5%
Amounts used	3000 g/event
Exposure duration	8 hours
Use frequency	1 events per day

#### Section 3 - Exposure estimation

Environmental release category(ies) - ERC10a - Wide dispersive outdoor use of long-life articles and materials with low release

# - ERC11a - Wide dispersive indoor use of long-life articles and materials with low release

# Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.052 mg/l	0.018
Marine water	0.00511 mg/l	< 0.01
STP: Sewage Treatment Plant	0.00264 mg/l	< 0.01
Soil	0.141 mg/kg dw	0.025

#### **Derived No Effect Level (DNEL):**

# Section 4 - Guidance to check compliance with the exposure scenario

EGHS / EN Page 342/345

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# Section 1 - Title

Title Metal articles
Type article

Main user group Consumer uses: Private households (= general public = consumers)

Environmental release category(ies) ERC10a - Wide dispersive outdoor use of long-life articles and materials with low release

ERC11a - Wide dispersive indoor use of long-life articles and materials with low release

Article categories AC7 - Metal articles
Sector(s) of use SU21 - Consumer uses

### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC10a - Wide dispersive outdoor use of long-life articles and materials with low release - ERC11a - Wide dispersive indoor use of long-life articles and materials with low release

Conditions and measures related to municipal sewage treatment plant

F	Гуре	Municipal	ISTP	

Conditions and measures related to external treatment of waste for disposal

pisposal pispose of waste product of used containers according to local regulations	Disposal	Dispose of waste product or used container	's according to local regulations
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Control of consumer exposure					
Article categories	AC4 - Stone, plaster, cement, glass and ceramic articles				
Covers concentrations up to	5.5%				
Physical form of product	Solid, low dustiness				
Amounts used	3E3 g/event				
Exposure duration	8 hours				
Use frequency	1 events per day				

# Section 3 - Exposure estimation

Environmental release category(ies) - ERC10a - Wide dispersive outdoor use of long-life articles and materials with low release

- ERC11a - Wide dispersive indoor use of long-life articles and materials with low release

# Predicted No Effect Concentration (PNEC)

Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)

Freshwater	0.052 mg/l	0.018
Marine water	0.00512 mg/l	< 0.01
STP: Sewage Treatment Plant	0.00352 mg/l	< 0.01
Soil	0.141 mg/kg dw	0.025

#### **Derived No Effect Level (DNEL):**

# Section 4 - Guidance to check compliance with the exposure scenario

EGHS / EN Page 344/345

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# Section 1 - Title

Title Paper articles
Type article

Main user group Consumer uses: Private households (= general public = consumers)

Environmental release category(ies) ERC10a - Wide dispersive outdoor use of long-life articles and materials with low release

ERC11a - Wide dispersive indoor use of long-life articles and materials with low release

Article categories AC8 - Paper articles Sector(s) of use SU21 - Consumer uses

### Section 2 - Operational conditions and risk management measures

#### Section 2.1 - Control of environmental exposure

**Environmental release category(ies)** - ERC10a - Wide dispersive outdoor use of long-life articles and materials with low release - ERC11a - Wide dispersive indoor use of long-life articles and materials with low release

Conditions and measures related to municipal sewage treatment plant

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Conditions and measures related to external treatment of waste for disposal

Disposal	Dianaga	of waata aradust ar waa	d containers according to	local regulations
Disposal	Dispose o	n waste product or used	i containers according to	local regulations

Control of consumer exposure		
Article categories	AC8 - Paper articles	
Covers concentrations up to	0.4%	
Amounts used	3E3 g/event	
Exposure duration	8 hours	
Use frequency	1 events per day	

#### Section 3 - Exposure estimation

Environmental release category(ies) - ERC10a - Wide dispersive outdoor use of long-life articles and materials with low release

- ERC11a - Wide dispersive indoor use of long-life articles and materials with low release

Predicted No Effect Concentration (PNEC)

# Calculation method Used EUSES model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	0.052 mg/l	0.018
Marine water	0.00508 mg/l	< 0.01
STP: Sewage Treatment Plant	0.000176 mg/l	< 0.01
Soil	0.141 mg/kg dw	0.025

### **Derived No Effect Level (DNEL):**

# Section 4 - Guidance to check compliance with the exposure scenario