

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

**Supersedes 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

<b>Product Code(s)</b>	20187
<b>Safety data sheet number</b>	20187
<b>Product Name</b>	DISODIUM TETRABORATE, ANHYDROUS
<b>Index No</b>	005-011-00-4
<b>EC Number</b>	215-540-4
<b>CAS No</b>	1303-96-4
<b>Synonyms</b>	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
<b>Pure substance/mixture</b>	Substance
<b>Contains</b>	SODIUM TETRABORATE DECAHYDRATE
<b>Formula</b>	Na <sub>2</sub> B <sub>4</sub> O <sub>7</sub> ·10H <sub>2</sub> O
<b>Molecular weight</b>	381.37 g/mol

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

<b>Recommended use</b>	<ul style="list-style-type: none"> <li>Industrial use</li> <li>Borosilicate glass</li> <li>Ceramics</li> <li>Detergent</li> <li>Fiberglass</li> <li>Starch glue</li> <li>Binding agent</li> <li>Chemical production</li> <li>Complexing agent</li> <li>Corrosion inhibitor</li> <li>Anti Scaling agent</li> <li>Fertiliser</li> <li>Flame retardant</li> <li>Flux agents for casting</li> <li>Chemical intermediate</li> <li>Laboratory chemicals</li> <li>Lubricants and lubricant additives</li> <li>Oxidising agents</li> <li>Photosensitive agents and other photo chemicals</li> <li>pH control</li> </ul>
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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

<b>Serious eye damage/eye irritation</b>	Category 2 - (H319)
<b>Reproductive toxicity</b>	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 amended)	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)	-	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 DECAHYDRATE	1303-96-4	X

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

<b>Inhalation</b>	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.
<b>Eye contact</b>	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.
<b>Skin contact</b>	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Get medical attention if symptoms occur.
<b>Ingestion</b>	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

<b>Symptoms</b>	May damage fertility. May damage the unborn child.
<b>Inhalation</b>	Overexposure may cause the following adverse effects. Dust may irritate respiratory tracts. Coughing and/ or wheezing.
<b>Eyes</b>	Causes serious eye irritation. Overexposure may cause the following adverse effects. May cause redness and tearing of the eyes. Pain. Irritation.
<b>Dermal</b>	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****Suitable Extinguishing Media**

Water spray. Dry chemical. powder. Foam. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

**Large Fire**

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

**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.

**For emergency responders**

Use personal protection recommended in Section 8.

**6.2. Environmental precautions****Environmental precautions**

See Section 12 for additional Ecological Information.

**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 1303-96-4	TWA: 5 mg/m <sup>3</sup> 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 DECAHYDRATE 1303-96-4		599.6 mg/kg/day [4] [6]	12.76 mg/m <sup>3</sup> [4] [6] 22.3 mg/m <sup>3</sup> [5] [6] 22.3 mg/m <sup>3</sup> [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 TETRABORATE DECAHYDRATE 1303-96-4	1.51 mg/kg/day [4] [6] 1.51 mg/kg/day [4] [7]	303.5 mg/kg/day [4] [6]	6.5 mg/m <sup>3</sup> [4] [6] 22.3 mg/m <sup>3</sup> [5] [6] 22.3 mg/m <sup>3</sup> [5] [7]

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

**Predicted No Effect Concentration (PNEC)**

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

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

**8.2. Exposure controls**

<b>Engineering controls</b>	No information available.
<b>Personal protective equipment</b>	
<b>Eye/face protection</b>	Wear safety glasses with side shields (or goggles). Use eye protection according to EN 166.
<b>Hand protection</b>	Wear suitable gloves. Gloves must conform to standard EN 374.
<b>Skin and body protection</b>	Wear appropriate clothing to prevent reasonably probable skin contact.
<b>Respiratory protection</b> Use effective dust masks.	Use appropriate respiratory protection.
<b>General hygiene considerations</b>	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**

<b>Physical state</b>	Solid
<b>Appearance</b>	solid Crystalline solid granules Powder
<b>Colour</b>	white
<b>Odour</b>	Odourless.
<b>Odour threshold</b>	No information available

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
Melting point / freezing point	> 741 °C	
Initial boiling point and boiling range	1575 °C	
Flammability		The product is not flammable.
Flammability Limit in Air		Not applicable.
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	No information available.
pH (as aqueous solution)		No information available.
Kinematic viscosity		Not applicable.
Dynamic viscosity		Not applicable.
Water solubility	Soluble in water 4.7% @ 20°C 65.6% @ 100°C	Water.
Solubility(ies)		No information available.
Partition coefficient	-0.757	
Vapour pressure		negligible.
Relative density	1.71 - 1.72	20 °C.
Bulk density		No information available
Liquid Density	No information available	No information available
Relative vapour density		Not applicable.
Particle characteristics		No information available.
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	
<b>9.2. Other information</b>		
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

<b>Inhalation</b>	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.
<b>Eye contact</b>	Causes serious eye irritation. Overexposure may cause the following adverse effects. May cause redness and tearing of the eyes. Pain. Irritation.
<b>Skin contact</b>	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.
<b>Ingestion</b>	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

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

#### 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.

Method	Species	Exposure route	Effective dose	Exposure time	Results
	Rabbit	Dermal	0.5 g moistened with saline		non-irritant

**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
	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 <i>Limanda limanda</i>	LC50	74 mg/L		
	Fish <i>Pimephales promelas</i>	LC50	79.7 mg/L		
	Algae <i>Phaeodactylum tricorutum</i>	EC50	66 mg/L	72 hours	
	Algae <i>Phaeodactylum tricorutum</i>	EC50	54 mg/L	72 hours	
Chronic toxicity	<i>Brachydanio rerio</i>	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**

### IATA

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

14.7 Maritime transport in bulk according to IMO instruments No information available

### 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

14.5 Environmental hazards No

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

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

## **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	Restricted substance per REACH Annex XVII	Substance subject to authorisation per REACH Annex XIV
SODIUM TETRABORATE DECAHYDRATE - 1303-96-4	Use restricted. See item 30. 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**

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

**Legend:**

<b>TSCA</b>	- United States Toxic Substances Control Act Section 8(b) Inventory
<b>DSL/NDSL</b>	- Canadian Domestic Substances List/Non-Domestic Substances List
<b>EINECS/ELINCS</b>	- European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
<b>ENCS</b>	- Japan Existing and New Chemical Substances
<b>IECSC</b>	- China Inventory of Existing Chemical Substances
<b>KECL</b>	- Korean Existing and Evaluated Chemical Substances
<b>PICCS</b>	- Philippines Inventory of Chemicals and Chemical Substances
<b>AIIC</b>	- Australian Inventory of Industrial Chemicals
<b>NZIoC</b>	- 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		

Revision Note [SDS sections updated 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16](#)**Classification procedure**

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**Supersedes date** 11-Mar-2020**Revision date** 09-Feb-2025

**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**

## 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

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

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

##### Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP
Assumed domestic sewage treatment plant flow	>= 2000 m <sup>3</sup> /day

##### 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
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Covers concentrations up to	> 25%
Physical form of product	Solid, medium dustiness
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 Automate activity where possible Partial personal enclosure with ventilation Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20 Ensure containment of the emission source
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 Demonstrable and effective housekeeping practices are in place
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	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 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
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 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 the worker	Handle substance within a closed system Automated task 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)	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 control dispersion from source towards the worker	Undertake operation under enclosed conditions Automate activity where possible Partial personal enclosure with ventilation Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20 Ensure containment of the emission source
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 Demonstrable and effective housekeeping practices are in place
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 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	> 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	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)	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 control dispersion from source towards the worker	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
Conditions and measures related to personal protection, hygiene and health evaluation	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 Demonstrable and effective housekeeping practices are in place
Indoor/Outdoor use	Indoor

Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line,
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	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 control dispersion from source towards the worker	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
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to 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	1000 C

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).
Technical conditions and measures to 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	1000 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
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	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
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 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
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 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	Wet cleaning of the workplace Clean equipment and the work area every day
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	Wet cleaning of the workplace Clean equipment and the work area every day
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	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)	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		
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	0.8 mg/m <sup>3</sup>	0.552
PROC8a - Transfer of substance or	Worker - dermal, long-term -	6.825 mg/kg bw/day	0.099

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 - combined, long-term - systemic		0.651
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
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	0.82 mg/m <sup>3</sup>	0.566
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - dermal, long-term - systemic	6.825 mg/kg bw/day	0.099
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - combined, long-term - systemic		0.665
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 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)	Worker - dermal, long-term - systemic	20.37 mg/kg bw/day	0.297

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	Worker - combined, long-term - systemic		0.759
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative, long-term - systemic	0.316 mg/m <sup>3</sup>	0.218
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - dermal, long-term - systemic	0.518 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		0.225
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
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
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative, long-term - systemic	0.008 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	0.031 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
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative, long-term - systemic	0.008 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	0.031 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
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	2.492 mg/kg bw/day	0.036

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	Worker - dermal, long-term - 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/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.

## 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)** 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

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

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

#### Conditions and measures related to municipal sewage treatment plant

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

**Environmental factors not influenced by risk management**

Receiving water dilution (fresh or marine)	>= 18000 m3/day
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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)	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 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
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 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 the worker	Handle substance within a closed system Automated task 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).
Technical conditions and measures to 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
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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 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
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)	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 control dispersion from source towards the worker	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
Conditions and measures related to personal protection, hygiene and health evaluation	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 Demonstrable and effective housekeeping practices are in place
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 control dispersion from source towards the worker	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
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to 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	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	1000 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 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	500 C

Process category(ies)	PROC7 - Industrial spraying
Covers concentrations up to	1%
Physical form of product	Liquid
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 Open windows during application to ensure natural ventilation 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
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 Demonstrable and effective housekeeping practices are in place
Indoor/Outdoor use	Indoor

Process category(ies)	PROC23 - Open processing and transfer operations with minerals/metals at elevated temperature
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	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 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	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).
Technical conditions and measures to control dispersion from source towards the worker	Handle substance within a closed system Automated task 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)	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 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

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 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

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).
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 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 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	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 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
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 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

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) - 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 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

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 - dermal, long-term - 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
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative, long-term - systemic	0.316 mg/m <sup>3</sup>	0.218
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - dermal, long-term - systemic	0.518 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		0.225
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	0.379 mg/m <sup>3</sup>	0.261
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		0.262
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/m <sup>3</sup>	0.131
PROC23 - Open processing and transfer operations with minerals/metals at elevated temperature	Worker - dermal, long-term - systemic	0.102 mg/kg bw/day	< 0.01
PROC23 - Open processing and transfer operations with minerals/metals at elevated temperature	Worker - combined, long-term - systemic		0.133
PROC24 - High (mechanical) energy work-up of substances bound in	Worker - inhalative, long-term - systemic	0.127 mg/m <sup>3</sup>	0.088

materials and/or articles			
PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles	Worker - dermal, long-term - systemic	0.014 mg/kg bw/day	<0.01
PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles	Worker - combined, long-term - systemic		0.088
PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising	Worker - inhalative, long-term - systemic	0.127 mg/m <sup>3</sup>	0.088
PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising	Worker - dermal, long-term - systemic	0.069 mg/kg bw/day	<0.01
PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising	Worker - combined, long-term - systemic		0.089
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative, long-term - systemic	0.19 mg/m <sup>3</sup>	0.131
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - dermal, long-term - systemic	0.031 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		0.131
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative, long-term - systemic	0.038 mg/m <sup>3</sup>	0.026
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - dermal, long-term - systemic	0.031 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		0.027
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
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	0.104 mg/kg bw/day	< 0.01

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	systemic		
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.



## 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  
**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** 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

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

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

#### Conditions and measures related to municipal sewage treatment plant

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

#### Environmental factors not influenced by risk management

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

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).
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

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

### Section 3 - Exposure estimation

**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	0.801 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/m <sup>3</sup>	< 0.01
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - dermal, long-term - 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
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
PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles	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 materials and/or articles	- systemic		
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - inhalative, long-term - systemic	0.231 mg/m <sup>3</sup>	0.159
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		0.167

#### **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.

## 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** Adhesives, sealants  
**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  
**Specific Environmental Release Category** FEICA SPERC 5.1a.v3  
**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

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

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

#### Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP
Assumed domestic sewage treatment plant flow	>= 2000 m <sup>3</sup> /day

#### Further information

Operational conditions	Indoor use
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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)	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 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%
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	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).
Technical conditions and measures to 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
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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 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
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)	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	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)	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	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

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 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 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)	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 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
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)	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 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)	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).
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 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	Covers indoor and outdoor use



Assumes process temperature up to	40 C
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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).
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 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 personal protection, hygiene and health evaluation	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 Demonstrable and effective housekeeping practices are in place
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
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 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 Wear chemically resistant gloves (tested to EN 374) in combination with 'basic' employee training Wear a respirator providing a minimum efficiency of 95% 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

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).
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 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)	PROC10 - Roller application or brushing
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 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 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	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	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

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 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

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

<b>Calculation method</b>	<b>MEASE</b>		
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	0.003 mg/m <sup>3</sup>	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.006 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	0.006 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	0.006 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	0.006 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		< 0.01
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 dedicated facilities	Worker - combined, long-term - systemic		0.01
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	0.013 mg/m <sup>3</sup>	< 0.01

dedicated facilities			
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 dedicated facilities	Worker - combined, long-term - systemic		< 0.01
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 dedicated facilities	Worker - combined, long-term - systemic		0.01
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	0.013 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 dedicated facilities	Worker - combined, long-term - systemic		< 0.01
PROC13 - Treatment of articles by dipping and pouring	Worker - inhalative, long-term - systemic	0.127 mg/m <sup>3</sup>	0.088
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		0.09
PROC13 - Treatment of articles by dipping and pouring	Worker - inhalative, long-term - systemic	0.127 mg/m <sup>3</sup>	0.088
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		0.09
PROC7 - Industrial spraying	Worker - inhalative, long-term - systemic	0.72 mg/m <sup>3</sup>	0.497
PROC7 - Industrial spraying	Worker - dermal, long-term - systemic	11.55 mg/kg bw/day	0.168
PROC7 - Industrial spraying	Worker - combined, long-term - systemic		0.665
PROC11 - Non industrial spraying	Worker - inhalative, long-term - systemic	1.047 mg/m <sup>3</sup>	0.722
PROC11 - Non industrial spraying	Worker - dermal, long-term - systemic	4.468 mg/kg bw/day	0.065
PROC11 - Non industrial spraying	Worker - combined, long-term - systemic		0.787
PROC10 - Roller application or brushing	Worker - inhalative, long-term - systemic	0.253 mg/m <sup>3</sup>	0.174
PROC10 - Roller application or	Worker - dermal, long-term -	0.3 mg/kg bw/day	< 0.01

brushing	systemic		
PROC10 - Roller application or brushing	Worker - combined, long-term - systemic		0.179
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
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
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**

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.

## 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

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

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

#### Conditions and measures related to municipal sewage treatment plant

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

#### Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	>= 18000 m3/day
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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)	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 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).
Technical conditions and measures to 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

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	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	Wet cleaning of the workplace Clean equipment and the work area every day
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	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

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 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 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	Wet cleaning of the workplace Clean equipment and the work area every day

### 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	
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



(dedicated filling line, including weighing)			
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/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
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	1.863 mg/kg bw/day	0.027
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - combined, long-term - systemic		0.76

#### **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.

## 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

Type	Daily amount per site
Value	<= 1250
Units	kg/d

Type	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 plant flow	>= 2000 m3/day

#### Environmental factors not influenced by risk management

Receiving water dilution (fresh or	>= 18000 m3/day
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marine)	
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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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<b>Control of worker exposure</b>	
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 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
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 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 the worker	Use in closed process Automated task 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).
Technical conditions and measures to 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

**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

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 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
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)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to 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).
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 Local exhaust ventilation - efficiency of at least 90% General ventilation Efficiency of 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 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 Demonstrable and effective housekeeping practices are in place
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 control dispersion from source towards the worker	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)	PROC3 - Use in closed batch process (synthesis or formulation)
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	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	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 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)	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

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 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 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	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	
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

**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

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 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	Worker - dermal, long-term - 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
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative, long-term - systemic	0.316 mg/m <sup>3</sup>	0.218
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - dermal, long-term - systemic	0.518 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		0.225
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	0.127 mg/m <sup>3</sup>	0.088
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - dermal, long-term - systemic	0.035 mg/kg bw/day	< 0.01
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - combined, long-term - systemic		0.088
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
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	1.863 mg/kg bw/day	0.027
PROC28 - Manual maintenance	Worker - combined, long-term		0.76

**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)**

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**Revision date** 09-Feb-2025

(cleaning and repair) of machinery	- systemic		
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**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.



## 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

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

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

#### Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP
Assumed domestic sewage treatment plant flow	>= 2000 m <sup>3</sup> /day

#### Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	>= 18000 m <sup>3</sup> /day
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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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<b>Control of worker exposure</b>	
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 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
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 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 the worker	Use in closed process Automated task 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).
Technical conditions and measures to 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	> 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	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)	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 control dispersion from source towards the worker	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
Conditions and measures related to personal protection, hygiene and health evaluation	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 Demonstrable and effective housekeeping practices are in place
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 control dispersion from source towards the worker	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)	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 control dispersion from source towards the worker	Automate activity where possible Local exhaust ventilation - efficiency of at least 90% General ventilation 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	Clean equipment and the work area every day

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

### 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	0.158 mg/kg dw	0.028

**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	Worker - inhalative, long-term	0.011 mg/m <sup>3</sup>	< 0.01

process with occasional controlled exposure	- systemic		
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 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	Worker - dermal, long-term - 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
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative, long-term - systemic	0.316 mg/m <sup>3</sup>	0.218
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - dermal, long-term - systemic	0.518 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		0.225
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - inhalative, long-term - systemic	0.48 mg/m <sup>3</sup>	0.331
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - dermal, long-term - systemic	4.435 mg/kg bw/day	0.065
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - combined, long-term - systemic		0.396

#### **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.

## 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

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

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

##### Conditions and measures related to municipal sewage treatment plant

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

##### Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	>= 18000 m3/day
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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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<b>Control of worker exposure</b>	
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 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
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 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 the worker	Use in closed process Automated task 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).
Technical conditions and measures to 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	> 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	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)	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 control dispersion from source towards the worker	Undertake operation under enclosed conditions Use in semi-automated and predominantly enclosed filling lines Local exhaust ventilation - efficiency of at least 90% General ventilation Efficiency of 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 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 Demonstrable and effective housekeeping practices are in place
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 control dispersion from source towards the worker	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)	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 control dispersion from source towards the worker	Automate activity where possible Handling of very large amounts of product Local exhaust ventilation - efficiency of at least 90% General ventilation 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	Clean equipment and the work area every day Demonstrable and effective housekeeping practices are in place



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		
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 exposure	systemic		
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	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	Worker - dermal, long-term - 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
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative, long-term - systemic	0.316 mg/m <sup>3</sup>	0.218
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - dermal, long-term - systemic	0.252 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		0.222
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - inhalative, long-term - systemic	0.48 mg/m <sup>3</sup>	0.331
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - dermal, long-term - systemic	4.435 mg/kg bw/day	0.065
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - combined, long-term - systemic		0.396

#### **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.

## 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  
 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

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

Type	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 plant flow	>= 2000 m <sup>3</sup> /day

##### Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	>= 18000 m <sup>3</sup> /day
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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)	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 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

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 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

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).
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 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
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	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 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 Wet cleaning of the workplace
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**

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.

## 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

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

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

##### Conditions and measures related to municipal sewage treatment plant

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

##### Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	>= 18000 m3/day
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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)	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 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
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 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 the worker	Use in closed process Automated task 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	100%
Physical form of product	Solid, high dustiness
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to 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 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
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	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).
Technical conditions and measures to 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	1000 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 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

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 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 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)	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).
Technical conditions and measures to 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

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 control dispersion from source towards the worker	Use in closed process Automated task 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	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 control dispersion from source towards the worker	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
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)	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 control dispersion from source towards 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 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)	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	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)	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 (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	1 mg/m <sup>3</sup>	0.69
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	1.37 mg/kg bw/day	0.02
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		0.71
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
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	0.013 mg/m <sup>3</sup>	< 0.01
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - dermal, long-term - systemic	0.035 mg/kg bw/day	< 0.01
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - combined, long-term - systemic		< 0.01
PROC13 - Treatment of articles by dipping and pouring	Worker - inhalative, long-term - systemic	0.127 mg/m <sup>3</sup>	0.088
PROC13 - Treatment of articles by	Worker - dermal, long-term -	0.887 mg/kg bw/day	0.013

dipping and pouring	systemic		
PROC13 - Treatment of articles by dipping and pouring	Worker - combined, long-term - systemic		0.101
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 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
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
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.

## 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  
 PC21 - Laboratory chemicals

**Product category(ies)** SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites  
 SU8 - Manufacture of bulk, large scale chemicals (including petroleum products)

**Sector(s) of use**

### 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

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

Type	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 plant flow	>= 2000 m3/day

#### Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	>= 18000 m3/day
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#### Conditions and measures related to external treatment of waste for disposal

**ES00380 - Borates - Use at industrial sites;  
Laboratory Chemicals (PC 21); Manufacture of bulk,  
large scale chemicals (including petroleum products)  
(SU 8)**

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Disposal	Dispose of waste product or used containers according to local regulations
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<b>Control of worker exposure</b>	
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 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
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 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 the worker	Use in closed process Automated task 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).
Technical conditions and measures to 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	> 25%
Physical form of product	Solid, medium dustiness

**ES00380 - Borates - Use at industrial sites;  
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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	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)	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 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 Local exhaust ventilation - efficiency of at least 90% General ventilation Efficiency of 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 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 Demonstrable and effective housekeeping practices are in place
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 control dispersion from source towards the worker	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%
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	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



**ES00380 - Borates - Use at industrial sites;  
Laboratory Chemicals (PC 21); Manufacture of bulk,  
large scale chemicals (including petroleum products)  
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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 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	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 control dispersion from source towards the worker	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
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day

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	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)	PROC15 - Use as laboratory reagent
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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 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		
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

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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 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	Worker - dermal, long-term - 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
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative, long-term - systemic	0.316 mg/m <sup>3</sup>	0.218
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - dermal, long-term - systemic	0.518 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		0.225
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	0.379 mg/m <sup>3</sup>	0.261
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		0.262

exposure			
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
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.

## 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** 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 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

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

Type	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 plant flow	>= 2000 m3/day

#### Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	>= 18000 m3/day
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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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<b>Control of worker exposure</b>	
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 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
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 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 the worker	Use in closed process Automated task 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).
Technical conditions and measures to 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	> 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	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)	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 control dispersion from source towards the worker	Undertake operation under enclosed conditions Use in semi-automated and predominantly enclosed filling lines Local exhaust ventilation - efficiency of at least 90% General ventilation Efficiency of 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 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 Demonstrable and effective housekeeping practices are in place
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 control dispersion from source towards the worker	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%
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	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	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).
Technical conditions and measures to 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	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 control dispersion from source towards the worker	Use in semi-automated and predominantly enclosed filling lines Mechanical ventilation giving at least 3 ACH
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day

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	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)	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) - 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 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 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	Worker - dermal, long-term - 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
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative, long-term - systemic	0.316 mg/m <sup>3</sup>	0.218
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - dermal, long-term - systemic	0.518 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		0.225
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	0.379 mg/m <sup>3</sup>	0.261
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		0.262
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
PROC9 - Transfer of substance or preparation into small containers	Worker - inhalative, long-term - systemic	0.013 mg/m <sup>3</sup>	< 0.01

(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.

## 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  
**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  
 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

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

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

#### Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP
Assumed domestic sewage treatment plant flow	>= 2000 m <sup>3</sup> /day

#### 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
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 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%
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	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)	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).
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 Fill containers/cans at dedicated fill points supplied with local extract ventilation 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 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 exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Covers indoor and outdoor use

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).
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 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	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 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 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	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

**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	0.127 mg/m <sup>3</sup>	0.088
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - dermal, long-term - 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
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	Worker - dermal, long-term - 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	Worker - dermal, long-term - systemic	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.

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

**Chemical name** BORATES  
**Supplier** Univar Solutions UK Ltd  
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 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

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

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

##### Conditions and measures related to municipal sewage treatment plant

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

##### Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	>= 18000 m3/day
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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)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
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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

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 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

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	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).
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	Clean equipment and the work area every day

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/m <sup>3</sup>	< 0.01
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - dermal, long-term - 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	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	0.003 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
PROC21 - Low energy manipulation of substances bound in materials and/or articles	Worker - dermal, long-term - systemic	0.069 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
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	Worker - dermal, long-term -	0.249 mg/kg bw/day	< 0.01

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

#### **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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**Chemical name** BORATES  
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**Non-Emergency Telephone Number** +44 1274 267300 / +44 1274 267306

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### 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

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

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

##### Conditions and measures related to municipal sewage treatment plant

Type	Onsite STP
Assumed domestic sewage treatment plant flow	>= 2000 me/day
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

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to
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	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 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
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 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 the worker	Use in closed process Automated task 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).
Technical conditions and measures to 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	> 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	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	> 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	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	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 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
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 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)	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 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)	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	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)	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)**

<b>Calculation method</b>	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**

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 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



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
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - inhalative, long-term - systemic	0.998 mg/m <sup>3</sup>	0.688
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
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.

## 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** 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  
 ERC7 - Industrial 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  
 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

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

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

#### Conditions and measures related to municipal sewage treatment plant

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

#### Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	>= 18000 m3/day
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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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<b>Control of worker exposure</b>	
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 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 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)	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 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 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	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	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)	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 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 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)	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).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed process Automated task 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)	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).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed process Automated task
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)	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 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	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	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	> 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 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
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

**Section 3 - Exposure estimation**

**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	
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

			(RCR)
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative, long-term - systemic	0.008 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	0.031 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
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
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - combined, long-term - systemic		0.035
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
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative, long-term - systemic	0.008 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	0.031 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
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	0.002 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	0.001 mg/m <sup>3</sup>	< 0.01
PROC1 - Use in closed process, no likelihood of exposure	Worker - dermal, long-term - systemic	0.002 mg/kg bw/day	< 0.01
PROC1 - Use in closed process, no likelihood of exposure	Worker - combined, long-term - systemic		< 0.01
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - inhalative, long-term - systemic	0.208 mg/m <sup>3</sup>	0.143
PROC28 - Manual maintenance	Worker - dermal, long-term - systemic	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

**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.

## 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  
**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  
 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

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

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

#### Conditions and measures related to municipal sewage treatment plant

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

#### Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	>= 18000 m3/day
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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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<b>Control of worker exposure</b>	
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 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	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 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)	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 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	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

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).
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 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)	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).
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 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)	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 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)	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).
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
Conditions and measures related to personal protection, hygiene and health evaluation	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
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	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 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 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

exposure	
Indoor/Outdoor use	Covers indoor and outdoor use
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 control dispersion from source towards the worker	Undertake operation under enclosed conditions 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

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 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	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	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	> 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 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
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

### Section 3 - Exposure estimation

**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 dedicated facilities	Worker - combined, long-term - systemic		0.01

dedicated facilities			
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative, long-term - systemic	0.002 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	0.006 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
PROC10 - Roller application or brushing	Worker - inhalative, long-term - systemic	0.759 mg/m <sup>3</sup>	0.523
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		0.537
PROC7 - Industrial spraying	Worker - inhalative, long-term - systemic	0.076 mg/m <sup>3</sup>	0.052
PROC7 - Industrial spraying	Worker - dermal, long-term - systemic	0.09 mg/kg bw/day	< 0.01
PROC7 - Industrial spraying	Worker - combined, long-term - systemic		0.054
PROC7 - Industrial spraying	Worker - inhalative, long-term - systemic	0.655 mg/m <sup>3</sup>	0.452
PROC7 - Industrial spraying	Worker - dermal, long-term - systemic	9.002 mg/kg bw/day	0.131
PROC7 - Industrial spraying	Worker - combined, long-term - systemic		0.583
PROC13 - Treatment of articles by dipping and pouring	Worker - inhalative, long-term - systemic	0.076 mg/m <sup>3</sup>	0.052
PROC13 - Treatment of articles by dipping and pouring	Worker - dermal, long-term - systemic	0.532 mg/kg bw/day	< 0.01
PROC13 - Treatment of articles by dipping and pouring	Worker - combined, long-term - systemic		0.06
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
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - combined, long-term - systemic		0.035
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - inhalative, long-term - systemic	0.208 mg/m <sup>3</sup>	0.143
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - dermal, long-term - systemic	4.487 mg/kg bw/day	0.065
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - combined, long-term - systemic		0.309
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	Worker - dermal, long-term - systemic	0.035 mg/kg bw/day	< 0.01

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

#### **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.

## 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  
**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

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

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

#### Conditions and measures related to municipal sewage treatment plant

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

#### Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	>= 18000 m3/day
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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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<b>Control of worker exposure</b>	
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 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 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)	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 control dispersion from source towards the worker	Supervision in place to check that the RMMs in place are being used correctly and OCs followed Local exhaust ventilation - efficiency of at least 78%

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 control dispersion from source towards the worker	Supervision in place to check that the RMMs in place are being used correctly and OCs followed Local exhaust ventilation - efficiency of at least 78%

Process category(ies)	PROC18 - Greasing at high energy conditions
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 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 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)	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 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 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	200 C

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 control dispersion from source towards the worker	Supervision in place to check that the RMMs in place are being used correctly and OCs followed 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 control dispersion from source towards the worker	Undertake operation under enclosed conditions 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

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 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	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	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).
Technical conditions and measures to 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
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

### Section 3 - Exposure estimation

**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):**

**Calculation method** 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

PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - combined, long-term - systemic		0.035
PROC17 - Lubrication at high energy conditions and in partly open process	Worker - inhalative, long-term - systemic	0.7 mg/m <sup>3</sup>	0.483
PROC17 - Lubrication at high energy conditions and in partly open process	Worker - dermal, long-term - systemic	0.012 mg/kg bw/day	< 0.01
PROC17 - Lubrication at high energy conditions and in partly open process	Worker - combined, long-term - systemic		0.483
PROC17 - Lubrication at high energy conditions and in partly open process	Worker - inhalative, long-term - systemic	0.7 mg/m <sup>3</sup>	0.483
PROC17 - Lubrication at high energy conditions and in partly open process	Worker - dermal, long-term - systemic	0.012 mg/kg bw/day	< 0.01
PROC17 - Lubrication at high energy conditions and in partly open process	Worker - combined, long-term - systemic		0.483
PROC18 - Greasing at high energy conditions	Worker - inhalative, long-term - systemic	0.759 mg/m <sup>3</sup>	0.523
PROC18 - Greasing at high energy conditions	Worker - dermal, long-term - systemic	0.819 mg/kg bw/day	0.012
PROC18 - Greasing at high energy conditions	Worker - combined, long-term - systemic		0.535
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.228 mg/m <sup>3</sup>	0.157
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		0.158
PROC17 - Lubrication at high energy conditions and in partly open process	Worker - inhalative, long-term - systemic	0.7 mg/m <sup>3</sup>	0.483
PROC17 - Lubrication at high energy conditions and in partly open process	Worker - dermal, long-term - systemic	0.01 mg/kg bw/day	< 0.01
PROC17 - Lubrication at high energy conditions and in partly open process	Worker - combined, long-term - systemic		0.483
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
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - combined, long-term - systemic		0.035
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - inhalative, long-term - systemic	0.208 mg/m <sup>3</sup>	0.143
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - dermal, long-term - systemic	4.487 mg/kg bw/day	0.065
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

**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.

## 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** 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  
 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** 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

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

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

#### Conditions and measures related to municipal sewage treatment plant

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

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 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)	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 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 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	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 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
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 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
Assumes process temperature up to	55 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 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)	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	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

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 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 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	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 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 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	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	General ventilation Efficiency of 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

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
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

### **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	0.061 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		
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/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		< 0.01
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
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	Worker - dermal, long-term - systemic	0.035 mg/m <sup>3</sup>	< 0.01

dedicated facilities			
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - combined, long-term - systemic		0.088
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	0.108 mg/m <sup>3</sup>	< 0.01
PROC13 - Treatment of articles by dipping and pouring	Worker - combined, long-term - systemic		0.176
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/m <sup>3</sup>	< 0.01
PROC10 - Roller application or brushing	Worker - combined, long-term - systemic		0.179
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/m <sup>3</sup>	0.036
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	0.069 mg/m <sup>3</sup>	0.048
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - dermal, long-term - systemic	1.496 mg/m <sup>3</sup>	0.022
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - combined, long-term - systemic		0.069

#### **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.

## 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** 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  
 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

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

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

##### Conditions and measures related to municipal sewage treatment plant

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

##### Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	>= 18000 m3/day
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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)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to
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	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	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 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)	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	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	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 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	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 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
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	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 control dispersion from source towards the worker	Undertake operation under enclosed conditions Automate activity where possible 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
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day

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 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 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)	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).
Technical conditions and measures to 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).
Technical conditions and measures to 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	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

### 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	0.551 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		
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
PROC8a - Transfer of substance or preparation (charging/discharging)	Worker - dermal, long-term - systemic	0.106 mg/kg bw/day	< 0.01

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	Worker - combined, long-term - systemic		0.028
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	0.03 mg/m <sup>3</sup>	0.021
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - dermal, long-term - 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		0.022
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
PROC7 - Industrial spraying	Worker - inhalative, long-term - systemic	1.089 mg/m <sup>3</sup>	0.751
PROC7 - Industrial spraying	Worker - dermal, long-term - systemic	0.54 mg/kg bw/day	< 0.01
PROC7 - Industrial spraying	Worker - combined, long-term - systemic		0.759
PROC13 - Treatment of articles by dipping and pouring	Worker - inhalative, long-term - systemic	0.076 mg/m <sup>3</sup>	0.052
PROC13 - Treatment of articles by dipping and pouring	Worker - dermal, long-term - systemic	0.532mg/kg bw/day	< 0.01
PROC13 - Treatment of articles by dipping and pouring	Worker - combined, long-term - systemic		0.06
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
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

process with occasional controlled exposure	systemic		
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	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

#### **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.



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

**Chemical name** BORATES  
**Supplier** Univar Solutions UK Ltd  
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 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)** 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

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

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

##### Conditions and measures related to municipal sewage treatment plant

Type	Onsite STP
Assumed domestic sewage treatment plant flow	>= 2000 m <sup>3</sup> /day
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

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 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
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 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 the worker	Use in closed process Automated task 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).
Technical conditions and measures to 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	> 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	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)	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 control dispersion from source towards the worker	Undertake operation under enclosed conditions Use in semi-automated and predominantly enclosed filling lines Local exhaust ventilation - efficiency of at least 90% General ventilation Efficiency of 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 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 Demonstrable and effective housekeeping practices are in place
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 control dispersion from source towards the worker	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
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to 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	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).
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 Wet cleaning of the workplace
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
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	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
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
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**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	0.279 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 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

process with occasional controlled exposure	systemic		
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	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	Worker - dermal, long-term - 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
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative, long-term - systemic	0.316 mg/m <sup>3</sup>	0.218
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - dermal, long-term - systemic	0.518 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		0.225
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
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - dermal, long-term - systemic	2.492 mg/kg bw/day	0.036
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - combined, long-term - systemic		0.769
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	Worker - combined, long-term - systemic		0.01

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(dedicated filling line, including weighing)			
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.

## 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

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

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

#### Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP
Assumed domestic sewage treatment plant flow	>= 2000 m <sup>3</sup> /day

#### Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	>= 18000 m <sup>3</sup> /day
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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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<b>Control of worker exposure</b>	
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 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
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 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 the worker	Use in closed process Automated task 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).
Technical conditions and measures to 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	> 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	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)	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).
Technical conditions and measures to control dispersion from source towards the worker	Undertake operation under enclosed conditions 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

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 control dispersion from source towards the worker	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
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to 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	Clean equipment and the work area every day

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
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 Wet cleaning of the workplace

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)	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	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)	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

### 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	0.551 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	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 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 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	Worker - dermal, long-term - 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
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	1.092 mg/m <sup>3</sup>	0.753
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - dermal, long-term - 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		0.757
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative, long-term - systemic	0.316 mg/m <sup>3</sup>	0.218
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - dermal, long-term - systemic	0.518 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		0.225
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
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - dermal, long-term - systemic	2.492 mg/kg bw/day	0.036
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.

## 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

**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  
 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

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

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

#### Conditions and measures related to municipal sewage treatment plant

Type	Onsite STP
Assumed domestic sewage treatment plant flow	2000 m <sup>3</sup> /day
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

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

**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) .**

Revision date 09-Feb-2025

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 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 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%
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 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

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 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

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 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	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection



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

### 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	0.279 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	Worker - dermal, long-term - 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 exposure	Worker - combined, long-term - systemic		< 0.01

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exposure			
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**

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.

## 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** 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

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

Type	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 plant flow	>= 2000 m <sup>3</sup> /day

#### Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	>= 18000 m <sup>3</sup> /day
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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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<b>Control of worker exposure</b>	
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	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	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)	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).
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 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	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 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

### 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	
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)
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
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - dermal, long-term - 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
PROC25 - Other hot work operations with metals	Worker - dermal, long-term - systemic	0.273 mg/kg bw/day	< 0.01
PROC25 - Other hot work operations	Worker - combined, long-term		0.353

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

#### **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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**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** 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

Type	Annual amount per site
Value	<= 909
Units	kg/d

Type	Daily amount per site
Value	<= 200
Units	t(ons)/year

##### Conditions and measures related to municipal sewage treatment plant

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

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
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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 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 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
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	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)	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 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 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)	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 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 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).
Technical conditions and measures to control dispersion from source towards the worker	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
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).
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 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 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 exposure	Clean equipment and the work area every day

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 control dispersion from source towards the worker	Use in semi-automated and predominantly enclosed filling lines 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 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 exposure	Clean equipment and the work area every day

Process category(ies)	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).
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 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

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).
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 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

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	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

### **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	0.279 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):**

<b>Calculation method</b>	<b>MEASE</b>		
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	0.759 mg/m <sup>3</sup>	0.523
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - dermal, long-term - 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
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		0.053
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
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	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
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	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
PROC13 - Treatment of articles by dipping and pouring	Worker - inhalative, long-term - systemic	0.127 mg/m <sup>3</sup>	0.088
PROC13 - Treatment of articles by dipping and pouring	Worker - dermal, long-term - systemic	0.089 mg/kg bw/day	< 0.01
PROC13 - Treatment of articles by dipping and pouring	Worker - combined, long-term - systemic		0.089
PROC7 - Industrial spraying	Worker - inhalative, long-term - systemic	0.251 mg/m <sup>3</sup>	0.173
PROC7 - Industrial spraying	Worker - dermal, long-term - systemic	5.401 mg/kg bw/day	0.079
PROC7 - Industrial spraying	Worker - combined, long-term		0.252

	- 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**

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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**Supplier** Univar Solutions UK Ltd  
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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** 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

Type	Daily amount per site
Value	<= 5000
Units	kg/d

Type	Annual amount per site
Value	<= 100
Units	t(ons)/year

##### Conditions and measures related to municipal sewage treatment plant

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

##### Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	>= 18000 m3/day
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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)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
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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	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
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
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	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	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	> 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	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	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	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	
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)	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 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
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 control dispersion from source towards the worker	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
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day

### 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	0.18 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)
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	Worker - dermal, long-term - 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/m <sup>3</sup>	0.688
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - dermal, long-term - 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
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



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**

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.

## 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 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  
 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 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  
 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

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

Type	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 plant flow	>= 2000 m3/day

#### Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	>= 18000 m3/day
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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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<b>Control of worker exposure</b>	
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 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
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 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 the worker	Use in closed process Automated task 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).
Technical conditions and measures to 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

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
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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	Undertake operation under enclosed conditions Use in semi-automated and predominantly enclosed filling lines Local exhaust ventilation - efficiency of at least 90% General ventilation Efficiency of 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 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)	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 control dispersion from source towards the worker	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
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to 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	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).
Technical conditions and measures to control dispersion from source towards the worker	Use in closed process Automated task 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

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, 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	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

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	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)	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

Process category(ies)	PROC0 - Other Process
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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%
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 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 Wet cleaning of the workplace

### 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):**

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	0.35 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		<0.014
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	Worker - dermal, long-term - 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
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative, long-term - systemic	0.316 mg/m <sup>3</sup>	0.218
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - dermal, long-term - systemic	0.518 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		0.225
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
PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles	Worker - inhalative, long-term - systemic	0.127 mg/m <sup>3</sup>	0.088
PROC24 - High (mechanical) energy	Worker - dermal, long-term -	0.014 mg/kg bw/day	< 0.01

work-up of substances bound in materials and/or articles	systemic		
PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles	Worker - combined, long-term - systemic		0.088
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	0.632 mg/m <sup>3</sup>	0.436
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - dermal, long-term - systemic	1.365 mg/kg bw/day	0.02
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - combined, long-term - systemic		0.456
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
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
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	2.492 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**

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.



## 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

Type	Daily amount per site
Value	<= 15000
Units	kg/d

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

#### Conditions and measures related to municipal sewage treatment plant

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

#### Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	>= 18000 m3/day
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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)	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 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
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 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 the worker	Use in closed process Automated task 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).
Technical conditions and measures to 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

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 control dispersion from source towards the worker	Undertake operation under enclosed conditions Use in semi-automated and predominantly enclosed filling lines Local exhaust ventilation - efficiency of at least 90% General ventilation Efficiency of 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 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)	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 control dispersion from source towards the worker	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)	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 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 personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection 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 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%
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	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)	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 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	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 control dispersion from source towards the worker	Mechanical ventilation giving at least 3 ACH 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 Wet cleaning of the workplace

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	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)	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) - 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

PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - dermal, long-term - systemic	0.35 mg/kg bw/day	< 0.01
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		<0.014
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	Worker - dermal, long-term - 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
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative, long-term - systemic	0.316 mg/m <sup>3</sup>	0.218
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - dermal, long-term - systemic	0.518 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		0.225
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	0.633 mg/m <sup>3</sup>	0.437
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - dermal, long-term - systemic	8.19 mg/kg bw/day	0.119
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - combined, long-term - systemic		0.556
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	0.379 mg/m <sup>3</sup>	0.261
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		0.262
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 (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
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.

## 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

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

Type	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 plant flow	>= 2000 m3/day

#### Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	>= 18000 m3/day
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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)	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 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
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 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 the worker	Use in closed process Automated task 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).
Technical conditions and measures to 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	> 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	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)	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 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	500 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 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)	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

Process category(ies)	PROC28 - Manual maintenance (cleaning and repair) of machinery
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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 control dispersion from source towards the worker	Mechanical ventilation giving at least 3 ACH 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 Wet cleaning of the workplace

### 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	0.051 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

process with occasional controlled exposure	systemic		
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - combined, long-term - systemic		<0.014
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	0.379 mg/m <sup>3</sup>	0.261
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		0.262
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
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**

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.

## 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

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

Type	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 plant flow	>= 2000 m <sup>3</sup> /day

#### Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	>= 18000 m <sup>3</sup> /day
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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)	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 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 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

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).
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 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%
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 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

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 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

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).
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 Wet cleaning of the workplace
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
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).
Technical conditions and measures to control dispersion from source towards the worker	Mechanical ventilation giving at least 1 ACH 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 Wet cleaning of the workplace
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 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

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).
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 Wet cleaning of the workplace

### **Section 3 - Exposure estimation**

**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	Worker - dermal, long-term - systemic	0.499 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		0.74
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	Worker - dermal, long-term - 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

for exposure arises			
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - dermal, long-term - systemic	0.177 mg/kg bw/day	< 0.01
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - combined, long-term - systemic		0.439
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - inhalative, long-term - systemic	0.633 mg/m <sup>3</sup>	0.437
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - dermal, long-term - systemic	0.177 mg/kg bw/day	< 0.01
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - combined, long-term - systemic		0.439
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	Worker - dermal, long-term - 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
PROC13 - Treatment of articles by dipping and pouring	Worker - inhalative, long-term - systemic	0.063 mg/m <sup>3</sup>	0.043
PROC13 - Treatment of articles by dipping and pouring	Worker - dermal, long-term - systemic	0.089 mg/kg bw/day	< 0.01
PROC13 - Treatment of articles by dipping and pouring	Worker - combined, long-term - systemic		0.045
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	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**

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.

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

**Chemical name** BORATES  
**Supplier** Univar Solutions UK Ltd  
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 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** 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  
**Specific Environmental Release Category** CEPE SPERC 5.1a.v1  
**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  
**Product category(ies)** PC26 - Paper and board dye, finishing and impregnation products; including bleaches and other processing aids  
**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)** - ERC5 - Industrial use resulting in inclusion into or onto a matrix  
**Specific Environmental Release Category** - CEPE SPERC 5.1a.v1

#### Amounts used

Type	Daily amount per site
Value	<= 100
Units	kg/d

Type	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 plant flow	>= 2000 m <sup>3</sup> /day

#### 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
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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 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 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	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	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)	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).
Technical conditions and measures to control dispersion from source towards the worker	Automate activity where possible Use with local exhaust ventilation 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)	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 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

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	Indoor

**Section 3 - Exposure estimation**

**Environmental release category(ies) - ERC5 - Industrial use resulting in inclusion into or onto a matrix**  
**Specific Environmental Release Category - CEPE SPERC 5.1a.v1**

**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	0.144 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	0.316 mg/m <sup>3</sup>	0.218
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - dermal, long-term - systemic	0.887 mg/kg bw/day	0.013
PROC8a - Transfer of substance or preparation (charging/discharging)	Worker - combined, long-term - systemic		0.231

from/to vessels/large containers at non dedicated facilities			
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	0.835 mg/m <sup>3</sup>	0.576
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - dermal, long-term - systemic	0.887 mg/kg bw/day	0.013
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - combined, long-term - systemic		0.589
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	0.013 mg/m <sup>3</sup>	< 0.01
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - dermal, long-term - systemic	0.035 mg/kg bw/day	< 0.01
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - combined, long-term - systemic		< 0.01
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	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		0.116

**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.

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

**Chemical name** BORATES  
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 6 Mid Point Business Park  
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 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** 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  
 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

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

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

##### Conditions and measures related to municipal sewage treatment plant

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

##### Environmental factors not influenced by risk management

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

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).
Technical conditions and measures to 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	1000 C

Process category(ies)	PROC7 - Industrial spraying
Covers concentrations up to	1%
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 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
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 Demonstrable and effective housekeeping practices are in place
Indoor/Outdoor use	Indoor

Process category(ies)	PROC23 - Open processing and transfer operations with minerals/metals at elevated temperature
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	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	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	Covers indoor and outdoor use
Assumes process temperature up to	1000 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	0.551 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)
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/m <sup>3</sup>	0.131
PROC23 - Open processing and transfer operations with	Worker - dermal, long-term - systemic	0.102 mg/kg bw/day	< 0.01

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minerals/metals at elevated temperature			
PROC23 - Open processing and transfer operations with minerals/metals at elevated temperature	Worker - combined, long-term - systemic		0.133

**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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### 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

Type	Daily amount per site
Value	<= 500
Units	kg/d

Type	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 plant flow	>= 2000 m3/day

##### Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	>= 18000 m3/day
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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).
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 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 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
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	0.676 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	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

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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

**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.

## 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

Type	Daily amount per site
Value	<= 400
Units	kg/d

Type	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 plant flow	>= 2000 m <sup>3</sup> /day

##### Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	>= 18000 m <sup>3</sup> /day
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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).
Technical conditions and measures to 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

### 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	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

### 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.

## 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

Type	Daily amount per site
Value	<= 500
Units	kg/d

Type	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 plant flow	>= 2000 m <sup>3</sup> /day

##### Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	>= 18000 m <sup>3</sup> /day
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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).
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	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).
Technical conditions and measures to 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
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)	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 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 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 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 exposure	Clean equipment and the work area every day
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 control dispersion from source towards the worker	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 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 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	0.676 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	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 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

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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### 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

Type	Daily amount per site
Value	<= 500
Units	kg/d

Type	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 plant flow	>= 2000 m3/day

##### Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	>= 18000 m3/day
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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).
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 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 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
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	0.676 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	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

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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

**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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### 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

Type	Daily amount per site
Value	<= 500
Units	kg/d

Type	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 plant flow	>= 2000 m3/day

#### Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	>= 18000 m3/day
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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).
Technical conditions and measures to 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).
Technical conditions and measures to 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
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	0.676 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	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



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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

**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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### 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

Type	Daily amount per site
Value	<= 1852
Units	kg/d

Type	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 plant flow	>= 2000 m3/day

##### Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	>= 18000 m3/day
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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	< 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	Worker - inhalative, long-term - systemic	0.001 mg/m <sup>3</sup>	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles	Worker - dermal, long-term - systemic	0.069 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	0.001 mg/m <sup>3</sup>	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles	Worker - dermal, long-term - systemic	0.069 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

articles			
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**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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<b>E-mail address</b>	SDS.EMEA@univarsolutions.com

### Section 1 - Title

<b>Title</b>	Manufacture of fabricated metal products, except machinery and equipment
<b>Type</b>	Worker
<b>Main user group</b>	Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
<b>Environmental release category(ies)</b>	ERC8a - Wide dispersive indoor use of processing aids in open systems ERC8d - Wide dispersive outdoor use of processing aids in open systems
<b>Process category(ies)</b>	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
<b>Product category(ies)</b>	PC0 - Other Products
<b>Sector(s) of use</b>	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
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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)	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	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	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)	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 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 personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection 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 exposure	Clean equipment and the work area every day
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 control dispersion from source towards the worker	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 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 exposure	Clean equipment and the work area every day
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).
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	Wet cleaning of the workplace 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	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 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	Wet cleaning of the workplace Clean equipment and the work area every day
Indoor/Outdoor 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	0.00511 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/m <sup>3</sup>	< 0.01
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - dermal, long-term - 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

exposure			
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
PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles	Worker - inhalative, long-term - systemic	0.228 mg/m <sup>3</sup>	0.157
PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles	Worker - dermal, long-term - systemic	4.914 mg/kg bw/day	0.072
PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles	Worker - combined, long-term - systemic		0.229
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
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - inhalative, long-term - systemic	0.231 mg/m <sup>3</sup>	0.159
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		0.167
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - inhalative, long-term - systemic	0.997 mg/m <sup>3</sup>	0.688
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		0.695

#### **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.



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

<b>Chemical name</b>	BORATES
<b>Supplier</b>	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford GBR
<b>Non-Emergency Telephone Number</b>	+44 1274 267300 / +44 1274 267306
<b>E-mail address</b>	SDS.EMEA@univarsolutions.com

### Section 1 - Title

<b>Title</b>	Fertilisers Agriculture, forestry, fishery
<b>Type</b>	Worker
<b>Main user group</b>	Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
<b>Environmental release category(ies)</b>	ERC8a - Wide dispersive indoor use of processing aids in open systems ERC8d - Wide dispersive outdoor use of processing aids in open systems
<b>Process category(ies)</b>	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
<b>Product category(ies)</b>	PC12 - Fertilisers
<b>Sector(s) of use</b>	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
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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)	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 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	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 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
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	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 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	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 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
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
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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 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%
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	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)	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 control dispersion from source towards the worker	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
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day
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	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	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 /limit releases, dispersion and exposure	Clean equipment and the work area every day
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 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 Wear a respirator providing a minimum efficiency of 95% 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	Covers indoor and outdoor use

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 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 Wear suitable gloves tested to EN 374
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)	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 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
Conditions and measures related to personal protection, hygiene and health evaluation	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 Demonstrable and effective housekeeping practices are in place
Indoor/Outdoor use	Outdoor
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
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 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)	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	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)	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).
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)	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	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 /limit releases, dispersion and exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Indoor

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 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 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 Wear suitable gloves tested to EN 374 Wear a respirator providing a minimum efficiency of 95% 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	Covers indoor and outdoor use

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 control dispersion from source towards the worker	Automated task 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

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 control dispersion from source towards the worker	Automated task
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)	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 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 Wet cleaning of the workplace
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 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	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 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 Wet cleaning of the workplace
Indoor/Outdoor use	Indoor

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 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	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	0.134 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/m <sup>3</sup>	0.733



PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - dermal, long-term - systemic	0.499 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		0.74
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	1.093 mg/m <sup>3</sup>	0.754
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - dermal, long-term - systemic	0.546 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		0.762
PROC11 - Non industrial spraying	Worker - inhalative, long-term - systemic	0.983 mg/m <sup>3</sup>	0.678
PROC11 - Non industrial spraying	Worker - dermal, long-term - systemic	8.19 mg/kg bw/day	0.119
PROC11 - Non industrial spraying	Worker - combined, long-term - systemic		0.797
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	0.001 mg/m <sup>3</sup>	< 0.01
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - dermal, long-term - systemic	0.001 mg/kg bw/day	< 0.01
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - combined, long-term - systemic		< 0.01
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	0.001 mg/m <sup>3</sup>	< 0.01
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - dermal, long-term - systemic	0.001 mg/kg bw/day	< 0.01
PROC3 - Use in closed batch process (synthesis or formulation)	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	0.007 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	0.062 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
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	Worker - dermal, long-term - systemic	0.106 mg/kg bw/day	< 0.01
PROC8a - Transfer of substance or preparation (charging/discharging)	Worker - combined, long-term - systemic		0.228

from/to vessels/large containers at non dedicated facilities			
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative, long-term - systemic	0.008 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	0.062 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
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	0.379 mg/m <sup>3</sup>	0.261
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - dermal, long-term - 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		0.263
PROC11 - Non industrial spraying	Worker - inhalative, long-term - systemic	0.983 mg/m <sup>3</sup>	0.678
PROC11 - Non industrial spraying	Worker - dermal, long-term - systemic	6.12 mg/kg bw/day	0.089
PROC11 - Non industrial spraying	Worker - combined, long-term - systemic		0.767
PROC7 - Industrial spraying	Worker - inhalative, long-term - systemic	0.419 mg/m <sup>3</sup>	0.289
PROC7 - Industrial spraying	Worker - dermal, long-term - systemic	0.54 mg/kg bw/day	< 0.01
PROC7 - Industrial spraying	Worker - combined, long-term - systemic		0.297
PROC7 - Industrial spraying	Worker - inhalative, long-term - systemic	0.655 mg/m <sup>3</sup>	0.452
PROC7 - Industrial spraying	Worker - dermal, long-term - systemic	0.9 mg/kg bw/day	0.013
PROC7 - Industrial spraying	Worker - combined, long-term - systemic		0.465
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - inhalative, long-term - systemic	0.638 mg/m <sup>3</sup>	0.44
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - dermal, long-term - systemic	1.196 mg/kg bw/day	0.017
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - combined, long-term - systemic		0.457
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - inhalative, long-term - systemic	0.599 mg/m <sup>3</sup>	0.413
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - dermal, long-term - systemic	1.196 mg/kg bw/day	0.017
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - combined, long-term - systemic		0.431
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - inhalative, long-term - systemic	0.064 mg/m <sup>3</sup>	0.044
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - dermal, long-term - systemic	1.196 mg/kg bw/day	0.017

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PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - combined, long-term - systemic		0.062
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - inhalative, long-term - systemic	0.06 mg/m <sup>3</sup>	0.041
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - dermal, long-term - systemic	1.196 mg/kg bw/day	0.017
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - combined, long-term - systemic		0.059

#### **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.

## 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
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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)	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 control dispersion from source towards the worker	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
Use frequency	Covers daily exposures up to 8 hours (unless stated differently).
Technical conditions and measures to 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

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	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	Wet cleaning of the workplace Clean equipment and the work area every day
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

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).
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	Wet cleaning of the workplace Clean equipment and the work area every day
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 - 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	0.053 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/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 (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/m <sup>3</sup>	< 0.01
PROC9 - Transfer of substance or	Worker - dermal, long-term -	0.104 mg/kg bw/day	< 0.01

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**

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.

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

<b>Chemical name</b>	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

<b>Title</b>	Building and construction work
<b>Type</b>	Worker
<b>Main user group</b>	Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
<b>Environmental release category(ies)</b>	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
<b>Process category(ies)</b>	PROC2 - Use in closed, continuous process with occasional controlled exposure PROC11 - Non industrial spraying PROC28 - Manual maintenance (cleaning and repair) of machinery
<b>Product category(ies)</b>	PC0 - Other Products
<b>Sector(s) of use</b>	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
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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)	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 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



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 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

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).
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 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
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	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 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 Wet cleaning of the workplace

**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)**

<b>Calculation method</b>	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):**

<b>Calculation method</b>	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	0.007 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	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**

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.

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

<b>Chemical name</b>	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

<b>Title</b>	paint and Coatings
<b>Type</b>	Worker
<b>Main user group</b>	Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
<b>Environmental release category(ies)</b>	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
<b>Process category(ies)</b>	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
<b>Product category(ies)</b>	PC9a - Coatings and paints, thinners, paint removers PC18 - Ink and toners
<b>Sector(s) of use</b>	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
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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)	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

/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).
Technical conditions and measures to 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
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 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 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 Wear a respirator providing a minimum efficiency of 95% 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
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).
Technical conditions and measures to control dispersion from source towards the worker	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 Wear a respirator providing a minimum efficiency of 90%
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	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 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
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
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

**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):**

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	0.397 mg/m <sup>3</sup>	0.274
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - dermal, long-term - systemic	1.064 mg/kg bw/day	0.016

PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - combined, long-term - systemic		0.289
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
PROC11 - Non industrial spraying	Worker - inhalative, long-term - systemic	0.956 mg/m <sup>3</sup>	0.659
PROC11 - Non industrial spraying	Worker - dermal, long-term - systemic	7.478 mg/kg bw/day	0.109
PROC11 - Non industrial spraying	Worker - combined, long-term - systemic		0.768
PROC10 - Roller application or brushing	Worker - inhalative, long-term - systemic	0.152 mg/m <sup>3</sup>	0.105
PROC10 - Roller application or brushing	Worker - dermal, long-term - systemic	1.8 mg/kg bw/day	0.026
PROC10 - Roller application or brushing	Worker - combined, long-term - systemic		0.131
PROC13 - Treatment of articles by dipping and pouring	Worker - inhalative, long-term - systemic	0.127 mg/m <sup>3</sup>	0.088
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		0.09
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	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		0.116

#### **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.

## 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  
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 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  
 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
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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)	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

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 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

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	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 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

### **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	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/m <sup>3</sup>	< 0.01
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - dermal, long-term - 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	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	0.003 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
PROC21 - Low energy manipulation of substances bound in materials and/or articles	Worker - dermal, long-term - systemic	0.069 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
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - inhalative, long-term - systemic	0.058 mg/m <sup>3</sup>	0.04
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - dermal, long-term - systemic	0.125 mg/kg bw/day	< 0.01
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - combined, long-term - systemic		0.042

**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.

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

<b>Chemical name</b>	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

<b>Title</b>	Washing and cleaning products
<b>Type</b>	Worker
<b>Main user group</b>	Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
<b>Environmental release category(ies)</b>	ERC8a - Wide dispersive indoor use of processing aids in open systems
<b>Process category(ies)</b>	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
<b>Product category(ies)</b>	PC35 - Washing and cleaning products (including solvent based products)
<b>Sector(s) of use</b>	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

Type	Municipal STP
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#### Further information

Operational conditions	Indoor/Outdoor use
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#### Risk management measures

Technical onsite conditions and measures to reduce or limit discharges, air emissions	Product applied in aqueous process solution with negligible volatilisation Spent process fluid discharged to wastewater
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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)	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

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

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 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

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 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	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).
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)	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
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

### 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**

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	0.063 mg/m <sup>3</sup>	0.043
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - dermal, long-term - 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

exposure			
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	0.038 mg/m <sup>3</sup>	0.026
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		0.026
PROC19 - Hand-mixing with intimate contact and only PPE available	Worker - inhalative, long-term - systemic	0.003 mg/m <sup>3</sup>	< 0.01
PROC19 - Hand-mixing with intimate contact and only PPE available	Worker - dermal, long-term - systemic	0.027 mg/kg bw/day	< 0.01
PROC19 - Hand-mixing with intimate contact and only PPE available	Worker - combined, long-term - systemic		< 0.01
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - inhalative, long-term - systemic	0.012 mg/m <sup>3</sup>	< 0.01
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - dermal, long-term - systemic	0.249 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.

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

<b>Chemical name</b>	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

<b>Title</b>	Lubricants, greases, release products
<b>Type</b>	Worker
<b>Main user group</b>	Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
<b>Environmental release category(ies)</b>	ERC9a - Wide dispersive indoor use of substances in closed systems ERC9b - Wide dispersive outdoor use of substances in closed systems
<b>Process category(ies)</b>	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
<b>Product category(ies)</b>	PC16 - Heat transfer fluids PC17 - Hydraulic fluids PC24 - Lubricants, greases, release products
<b>Sector(s) of use</b>	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
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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 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

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	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 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)	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
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).
Technical conditions and measures to 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%
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	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)	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).
Technical conditions and measures to control dispersion from source towards the worker	Ensure operatives are trained to minimise exposures Ensure that direct skin contact is avoided
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)	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).
Technical conditions and measures to control dispersion from source towards the worker	Ensure operatives are trained to minimise exposures Ensure that direct skin contact is avoided
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

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 control dispersion from source towards the worker	Use in closed process Automated task 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)	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 control dispersion from source towards the worker	Use in closed process Automated task
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) - ERC9a - Wide dispersive indoor use of substances in closed systems - ERC9b - Wide dispersive outdoor use of substances in closed 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	0.00511 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	0.379 mg/m <sup>3</sup>	0.261
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - dermal, long-term - systemic	1.064 mg/kg bw/day	0.016
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - combined, long-term - systemic		0.277
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	Worker - dermal, long-term - systemic	1.064 mg/kg bw/day	0.016
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 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/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		0.01
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
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
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	Worker - dermal, long-term - 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	0.001 mg/m <sup>3</sup>	< 0.01
PROC1 - Use in closed process, no likelihood of exposure	Worker - dermal, long-term - 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**

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.

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

<b>Chemical name</b>	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

<b>Title</b>	Lubricants, greases, release products (open systems)
<b>Type</b>	Worker
<b>Main user group</b>	Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
<b>Environmental release category(ies)</b>	ERC8a - Wide dispersive indoor use of processing aids in open systems ERC8d - Wide dispersive outdoor use of processing aids in open systems
<b>Process category(ies)</b>	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
<b>Product category(ies)</b>	PC24 - Lubricants, greases, release products
<b>Sector(s) of use</b>	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
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#### Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	>= 18000 m3/d
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#### Risk management measures

Technical onsite conditions and measures to reduce or limit discharges, air emissions	Negligible wastewater emissions as process operates without water contact
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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)	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	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 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)	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).
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 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)	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).
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
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)	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).
Technical conditions and measures to control dispersion from source towards the worker	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 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 exposure	Clean equipment and the work area every day
Indoor/Outdoor use	Indoor

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).
Technical conditions and measures to control dispersion from source towards the worker	Undertake operation under enclosed conditions
Conditions and measures related to personal protection, hygiene and health evaluation	S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection 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 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).
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
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 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%
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	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%
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	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

### 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	0.051 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)
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	Worker - dermal, long-term - 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	- systemic		
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
PROC10 - Roller application or brushing	Worker - inhalative, long-term - systemic	0.218 mg/m <sup>3</sup>	0.15
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		0.155
PROC11 - Non industrial spraying	Worker - inhalative, long-term - systemic	0.759 mg/m <sup>3</sup>	0.523
PROC11 - Non industrial spraying	Worker - dermal, long-term - systemic	1.638 mg/kg bw/day	0.024
PROC11 - Non industrial spraying	Worker - combined, long-term - systemic		0.547
PROC11 - Non industrial spraying	Worker - inhalative, long-term - systemic	0.656 mg/m <sup>3</sup>	0.452
PROC11 - Non industrial spraying	Worker - dermal, long-term - systemic	1.638 mg/kg bw/day	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 - 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/kg bw/day	< 0.01
PROC13 - Treatment of articles by dipping and pouring	Worker - combined, long-term - systemic		0.177
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	0.379 mg/m <sup>3</sup>	0.261
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - dermal, long-term - systemic	1.064 mg/kg bw/day	0.016
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - combined, long-term - systemic		0.277
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
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**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.

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

<b>Chemical name</b>	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

<b>Title</b>	Greasing at high energy conditions (open systems)
<b>Type</b>	Worker
<b>Main user group</b>	Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
<b>Environmental release category(ies)</b>	ERC8a - Wide dispersive indoor use of processing aids in open systems
<b>Process category(ies)</b>	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
<b>Product category(ies)</b>	PC24 - Lubricants, greases, release products PC25 - Metal working fluids
<b>Sector(s) of use</b>	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

Type	Municipal STP
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#### Further information

Operational conditions	Indoor use
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#### Environmental factors not influenced by risk management

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

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

Process category(ies)	PROC17 - Lubrication at high energy conditions and in partly open process
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	Ensure operatives are trained to minimise exposures
Conditions and measures related to 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

Process category(ies)	PROC17 - Lubrication at high energy conditions and in partly open process
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	Ensure operatives are trained to minimise exposures
Conditions and measures related to 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
Indoor/Outdoor use	Indoor

Process category(ies)	PROC17 - Lubrication at high energy conditions and in partly open process
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	Ensure operatives are trained to minimise exposures
Conditions and measures related to 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
Indoor/Outdoor use	Outdoor

Process category(ies)	PROC18 - Greasing at high energy conditions
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 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)	PROC18 - Greasing at high energy conditions
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
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)	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 exposure	Clean equipment and the work area every day
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	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)	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 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%
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	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

### 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)
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	Worker - dermal, long-term - systemic	0.355 mg/kg bw/day	< 0.01
PROC8a - Transfer of substance or preparation (charging/discharging)	Worker - combined, long-term - systemic		0.093

from/to vessels/large containers at non dedicated facilities			
PROC17 - Lubrication at high energy conditions and in partly open process	Worker - inhalative, long-term - systemic	0.265 mg/m <sup>3</sup>	0.183
PROC17 - Lubrication at high energy conditions and in partly open process	Worker - dermal, long-term - systemic	0.004 mg/kg bw/day	< 0.01
PROC17 - Lubrication at high energy conditions and in partly open process	Worker - combined, long-term - systemic		0.183
PROC17 - Lubrication at high energy conditions and in partly open process	Worker - inhalative, long-term - systemic	0.265 mg/m <sup>3</sup>	0.183
PROC17 - Lubrication at high energy conditions and in partly open process	Worker - dermal, long-term - systemic	0.004 mg/kg bw/day	< 0.01
PROC17 - Lubrication at high energy conditions and in partly open process	Worker - combined, long-term - systemic		0.183
PROC17 - Lubrication at high energy conditions and in partly open process	Worker - inhalative, long-term - systemic	0.265 mg/m <sup>3</sup>	0.183
PROC17 - Lubrication at high energy conditions and in partly open process	Worker - dermal, long-term - systemic	0.004 mg/kg bw/day	< 0.01
PROC17 - Lubrication at high energy conditions and in partly open process	Worker - combined, long-term - systemic		0.183
PROC18 - Greasing at high energy conditions	Worker - inhalative, long-term - systemic	0.253 mg/m <sup>3</sup>	0.174
PROC18 - Greasing at high energy conditions	Worker - dermal, long-term - systemic	0.273 mg/kg bw/day	< 0.01
PROC18 - Greasing at high energy conditions	Worker - combined, long-term - systemic		0.178
PROC18 - Greasing at high energy conditions	Worker - inhalative, long-term - systemic	0.218 mg/m <sup>3</sup>	0.15
PROC18 - Greasing at high energy conditions	Worker - dermal, long-term - systemic	0.273 mg/kg bw/day	< 0.01
PROC18 - Greasing at high energy conditions	Worker - combined, long-term - systemic		0.154
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	0.379 mg/m <sup>3</sup>	0.261
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - dermal, long-term - systemic	1.064 mg/kg bw/day	0.016
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - combined, long-term - systemic		0.277
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	Worker - dermal, long-term - systemic	1.064 mg/kg bw/day	0.016
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - combined, long-term - systemic		0.242
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	Worker - dermal, long-term - systemic	0.007 mg/kg bw/day	< 0.01

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**

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.

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

<b>Chemical name</b>	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

<b>Title</b>	Leather treatment products Manufacture of textiles, leather, fur
<b>Type</b>	Worker
<b>Main user group</b>	Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
<b>Environmental release category(ies)</b>	ERC8b - Wide dispersive indoor use of reactive substances in open systems
<b>Process category(ies)</b>	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
<b>Product category(ies)</b>	PC23 - Leather tanning, dye, finishing, impregnation and care products
<b>Sector(s) of use</b>	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
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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)	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 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)	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 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 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	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 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
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 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
Assumes process temperature up to	55 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 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)	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	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

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 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
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 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 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	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	General ventilation Efficiency of 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 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
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 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	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/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		< 0.01
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
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 dedicated facilities	Worker - dermal, long-term - systemic	0.035 mg/m <sup>3</sup>	< 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
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
PROC10 - Roller application or brushing	Worker - inhalative, long-term - systemic	0.253 mg/m <sup>3</sup>	0.174
PROC10 - Roller application or	Worker - dermal, long-term -	0.3 mg/m <sup>3</sup>	< 0.01

brushing	systemic		
PROC10 - Roller application or brushing	Worker - combined, long-term - systemic		0.179
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	1.863 mg/m <sup>3</sup>	0.027
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - combined, long-term - systemic		0.76
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/m <sup>3</sup>	0.022
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - combined, long-term - systemic		0.069

#### **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.

## 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
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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)	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	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 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)	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	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	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 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	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 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
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)	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	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	Ensure containment of the emission source 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 personal protection, hygiene and health evaluation	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 Demonstrable and effective housekeeping practices are in place
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).
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 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)	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).
Technical conditions and measures to 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).
Technical conditions and measures to 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
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
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

### 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
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - dermal, long-term - 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

dedicated facilities			
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - dermal, long-term - 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		0.024
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
PROC11 - Non industrial spraying	Worker - inhalative, long-term - systemic	0.83 mg/m <sup>3</sup>	0.572
PROC11 - Non industrial spraying	Worker - dermal, long-term - systemic	12.22 mg/kg bw/day	0.178
PROC11 - Non industrial spraying	Worker - combined, long-term - systemic		0.751
PROC13 - Treatment of articles by dipping and pouring	Worker - inhalative, long-term - systemic	0.076 mg/m <sup>3</sup>	0.052
PROC13 - Treatment of articles by dipping and pouring	Worker - dermal, long-term - systemic	0.532mg/kg bw/day	< 0.01
PROC13 - Treatment of articles by dipping and pouring	Worker - combined, long-term - systemic		0.06
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
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
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

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PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - combined, long-term - systemic		0.069
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**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.

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

<b>Chemical name</b>	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

<b>Title</b>	Welding and soldering products, flux products
<b>Type</b>	Worker
<b>Main user group</b>	Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
<b>Environmental release category(ies)</b>	ERC8a - Wide dispersive indoor use of processing aids in open systems ERC8d - Wide dispersive outdoor use of processing aids in open systems
<b>Process category(ies)</b>	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
<b>Product category(ies)</b>	PC38 - Welding and soldering products, flux products
<b>Sector(s) of use</b>	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
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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)	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).
Technical conditions and measures to control dispersion from source towards the worker	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

**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)**

Revision date 09-Feb-2025

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 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
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).
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 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)	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).
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 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	900 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 /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

### 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	0.053 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
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - dermal, long-term - 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
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	0.304 mg/m <sup>3</sup>	0.21

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 with metals	Worker - combined, long-term - systemic		0.212
PROC25 - Other hot work operations with metals	Worker - inhalative, long-term - systemic	0.061 mg/m <sup>3</sup>	0.042
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 with metals	Worker - combined, long-term - systemic		0.044
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		0.023

**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.

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

<b>Chemical name</b>	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

<b>Title</b>	Base metals and alloys Manufacture of basic metals, including alloys
<b>Type</b>	Worker
<b>Main user group</b>	Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
<b>Environmental release category(ies)</b>	ERC8b - Wide dispersive indoor use of reactive substances in open systems
<b>Process category(ies)</b>	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
<b>Product category(ies)</b>	PC7 - Base metals and alloys
<b>Sector(s) of use</b>	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
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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)	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 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 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

Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to
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	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 control dispersion from source towards the worker	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	> 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	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	> 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	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)	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 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
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 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 Wet cleaning of the workplace

### **Section 3 - Exposure estimation**

**Environmental release category(ies) - ERC8b - Wide dispersive indoor use of reactive substances in open systems**

**Predicted No Effect Concentration (PNEC)**

<b>Calculation method</b>	<b>Used EUSES model</b>	
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		
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	Worker - dermal, long-term - 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	Worker - inhalative, long-term - systemic	1.093 mg/m <sup>3</sup>	0.754
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - dermal, long-term - 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

process (synthesis) where opportunity for exposure arises	systemic		
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - combined, long-term - systemic		0.759
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**

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.

## 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** 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
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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)	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 control dispersion from source towards the worker	Undertake operation under enclosed conditions 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

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).
Technical conditions and measures to control dispersion from source towards the worker	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	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 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

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 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

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	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 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).
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 Wet cleaning of the workplace
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	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).
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	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 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 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

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).
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 Wet cleaning of the workplace

**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	0.052 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		
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



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 - dermal, long-term - systemic	0.499 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		0.74
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	Worker - dermal, long-term - 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 for exposure arises	Worker - inhalative, long-term - systemic	0.633 mg/m <sup>3</sup>	0.437
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - dermal, long-term - systemic	0.177 mg/kg bw/day	< 0.01
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - combined, long-term - systemic		0.439
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - inhalative, long-term - systemic	0.633 mg/m <sup>3</sup>	0.437
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - dermal, long-term - systemic	0.177 mg/kg bw/day	< 0.01
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - combined, long-term - systemic		0.439
PROC9 - Transfer of substance or	Worker - inhalative, long-term	0.001 mg/m <sup>3</sup>	< 0.01

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	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**

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.

## 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** Paper and board treatment products Printing and reproduction of recorded media  
**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  
**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  
**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
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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)	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

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 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

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).
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 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 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 exposure	Clean equipment and the work area every day
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 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

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	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 Wet cleaning of the workplace
Indoor/Outdoor use	Indoor

### Section 3 - Exposure estimation

**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):**

**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/m <sup>3</sup>	0.401
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - dermal, long-term - 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 process (synthesis) where opportunity for exposure arises	Worker - combined, long-term - systemic		0.479
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	0.013 mg/m <sup>3</sup>	< 0.01
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - dermal, long-term - systemic	0.035 mg/kg bw/day	< 0.01
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - combined, long-term - systemic		< 0.01
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	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		0.116

#### **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.

## 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 chemicals  
**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  
 - ERC8d - Wide dispersive outdoor use of processing aids in open 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

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	< 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 control dispersion from source towards the worker	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(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).
Technical conditions and measures to control dispersion from source towards the worker	Undertake operation under enclosed conditions
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	< 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 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	< 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 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
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)	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).
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 exposure	Clean equipment and the work area every day
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 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)	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 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	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 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	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		
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	Worker - dermal, long-term - 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	Worker - inhalative, long-term - systemic	0.109 mg/m <sup>3</sup>	0.075
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - dermal, long-term - 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	0.001 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

PROC26 - Handling of solid inorganic substances at ambient temperature	Worker - inhalative, long-term - systemic	0.006 mg/m <sup>3</sup>	< 0.01
PROC26 - Handling of solid inorganic substances at ambient temperature	Worker - dermal, long-term - systemic	0.137 mg/kg bw/day	< 0.01
PROC26 - Handling of solid inorganic substances at ambient temperature	Worker - combined, long-term - systemic		< 0.01
PROC26 - Handling of solid inorganic substances at ambient temperature	Worker - inhalative, long-term - systemic	0.005 mg/m <sup>3</sup>	< 0.01
PROC26 - Handling of solid inorganic substances at ambient temperature	Worker - dermal, long-term - systemic	0.137 mg/kg bw/day	< 0.01
PROC26 - Handling of solid inorganic substances at ambient temperature	Worker - combined, long-term - systemic		< 0.01
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	Worker - dermal, long-term - systemic	0.249 mg/kg bw/day	< 0.01
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - combined, long-term - systemic		0.084
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - inhalative, long-term - systemic	0.11 mg/m <sup>3</sup>	0.069
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - dermal, long-term - systemic	0.249 mg/kg bw/day	< 0.01
PROC28 - Manual maintenance (cleaning and repair) of machinery	Worker - combined, long-term - systemic		0.073

**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.

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

<b>Chemical name</b>	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

<b>Title</b>	Building and construction work
<b>Type</b>	article
<b>Main user group</b>	Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
<b>Environmental release category(ies)</b>	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
<b>Process category(ies)</b>	PROC21 - Low energy manipulation of substances bound in materials and/or articles
<b>Article categories</b>	AC4 - Stone, plaster, cement, glass and ceramic articles
<b>Sector(s) of use</b>	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).
Technical conditions and measures to 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

**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	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

**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.

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

<b>Chemical name</b>	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

<b>Title</b>	paint and Coatings
<b>Type</b>	article
<b>Main user group</b>	Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
<b>Environmental release category(ies)</b>	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
<b>Process category(ies)</b>	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
<b>Article categories</b>	AC7a - Metal products: cutlery, cooking utensils, pots, pans AC8 - Paper articles
<b>Sector(s) of use</b>	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).
Technical conditions and measures to 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).
Technical conditions and measures to 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
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)	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 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 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 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 exposure	Clean equipment and the work area every day
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 control dispersion from source towards the worker	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 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 exposure	Clean equipment and the work area every day
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	0.0051 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		
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 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**

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.



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

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### Section 1 - Title

<b>Title</b>	Building and construction work
<b>Type</b>	article
<b>Main user group</b>	Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
<b>Environmental release category(ies)</b>	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
<b>Process category(ies)</b>	PROC21 - Low energy manipulation of substances bound in materials and/or articles
<b>Article categories</b>	AC4 - Stone, plaster, cement, glass and ceramic articles AC11a - Wood and wood furniture: furniture
<b>Sector(s) of use</b>	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).
Technical conditions and measures to 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).
Technical conditions and measures to 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
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) - 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	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

### 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.

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

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### Section 1 - Title

<b>Title</b>	Agriculture, forestry, fishery Offshore industries
<b>Type</b>	article
<b>Main user group</b>	Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
<b>Environmental release category(ies)</b>	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
<b>Process category(ies)</b>	PROC21 - Low energy manipulation of substances bound in materials and/or articles
<b>Article categories</b>	AC5 - Fabrics, textiles and apparel
<b>Sector(s) of use</b>	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).
Technical conditions and measures to 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).
Technical conditions and measures to 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
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) - 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	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

### 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.

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

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### Section 1 - Title

<b>Title</b>	Metal articles
<b>Type</b>	article
<b>Main user group</b>	Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
<b>Environmental release category(ies)</b>	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
<b>Process category(ies)</b>	PROC21 - Low energy manipulation of substances bound in materials and/or articles
<b>Article categories</b>	AC7 - Metal articles
<b>Sector(s) of use</b>	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	< 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) - 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	Worker - inhalative, long-term - systemic	0.001 mg/m <sup>3</sup>	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles	Worker - dermal, long-term - systemic	0.069 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	0.001 mg/m <sup>3</sup>	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles	Worker - dermal, long-term - systemic	0.069 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

### 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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### Section 1 - Title

<b>Title</b>	Paper articles
<b>Type</b>	article
<b>Main user group</b>	Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
<b>Environmental release category(ies)</b>	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
<b>Process category(ies)</b>	PROC21 - Low energy manipulation of substances bound in materials and/or articles
<b>Article categories</b>	AC8 - Paper articles
<b>Sector(s) of use</b>	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	< 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) - 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	Worker - inhalative, long-term - systemic	0.001 mg/m <sup>3</sup>	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles	Worker - dermal, long-term - systemic	0.069 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	0.001 mg/m <sup>3</sup>	< 0.01
PROC21 - Low energy manipulation of substances bound in materials and/or articles	Worker - dermal, long-term - systemic	0.069 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

### 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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### Section 1 - Title

<b>Title</b>	Manufacture of fabricated metal products, except machinery and equipment
<b>Type</b>	Consumer
<b>Main user group</b>	Consumer uses: Private households (= general public = consumers)
<b>Environmental release category(ies)</b>	ERC8a - Wide dispersive indoor use of processing aids in open systems ERC8d - Wide dispersive outdoor use of processing aids in open systems
<b>Product category(ies)</b>	PC0 - Other Products
<b>Sector(s) of use</b>	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

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 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

**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)

<b>Calculation method</b>	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	0.00137 mg/l	< 0.01
Soil	0.141 mg/kg dw	0.025

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

<b>Calculation method</b>	Used ECETOC TRA model		
Product category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PC0 - Other Products	Consumer - inhalative, long-term - systemic	0.000025 mg/m <sup>3</sup>	< 0.01
PC0 - Other Products	Consumer - dermal, long-term - systemic	26.25 mg/kg bw/day	0.765
PC0 - Other Products	Consumer - oral, long-term - systemic	0 mg/kg bw/day	< 0.01
PC0 - Other Products	Consumer - combined, long-term - systemic		0.765

**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.

## 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** 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** 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

Type	Municipal STP
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#### Risk management measures

Technical onsite conditions and measures to reduce or limit discharges, air emissions	Equipment cleaned with water, washing disposed of with wastewater. Worst case assumption for solvent-borne products
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#### Control measures to prevent releases

Remarks	Professional and consumer product use with limited or no technical control of emission
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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 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
Use frequency	1 events per day

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		
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**

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.

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

**Chemical name** BORATES  
**Supplier** Univar Solutions UK Ltd  
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 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

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 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

**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	0.093 mg/l	0.032
Marine water	0.0092 mg/l	< 0.01
STP: Sewage Treatment Plant	0.412 mg/l	0.041



Soil	0.144 mg/kg dw	0.025
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**Derived No Effect Level (DNEL):**

<b>Calculation method</b>	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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### Section 1 - Title

**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

#### 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
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#### Further information

Operational conditions	Indoor/Outdoor use
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#### Risk management measures

Technical onsite conditions and measures to reduce or limit discharges, air emissions	Spent process fluid discharged to wastewater Product applied in aqueous process solution with negligible volatilisation
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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 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)
Covers concentrations up to	5.5%
Amounts used	250 g/event
Exposure duration	0.33 hours

Use frequency	1 events per day
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**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	0.055 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		
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**

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.

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

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### Section 1 - Title

<b>Title</b>	Lubricants, greases, release products
<b>Type</b>	Consumer
<b>Main user group</b>	Consumer uses: Private households (= general public = consumers)
<b>Environmental release category(ies)</b>	ERC9a - Wide dispersive indoor use of substances in closed systems ERC9b - Wide dispersive outdoor use of substances in closed systems
<b>Product category(ies)</b>	PC24 - Lubricants, greases, release products
<b>Sector(s) of use</b>	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

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

**Environmental release category(ies)** - ERC9a - Wide dispersive indoor use of substances in closed systems  
- ERC9b - Wide dispersive outdoor use of substances in closed 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	0.000687 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 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/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

**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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### Section 1 - Title

<b>Title</b>	Adhesives, sealants
<b>Type</b>	article
<b>Main user group</b>	Consumer uses: Private households (= general public = consumers)
<b>Environmental release category(ies)</b>	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
<b>Article categories</b>	AC2 - Machinery, mechanical appliances, electrical/electronic articles AC8 - Paper articles AC11 - Wood articles
<b>Sector(s) of use</b>	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

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 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
Use frequency	1 events per day

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	
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

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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### Section 1 - Title

<b>Title</b>	Building and construction work
<b>Type</b>	article
<b>Main user group</b>	Consumer uses: Private households (= general public = consumers)
<b>Environmental release category(ies)</b>	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
<b>Article categories</b>	AC4 - Stone, plaster, cement, glass and ceramic articles
<b>Sector(s) of use</b>	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

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 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)

<b>Calculation method</b>	Used EUSES model		
Environment	predicted exposure level	Risk characterisation ratio (RCR)	



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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**

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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### Section 1 - Title

<b>Title</b>	paint and Coatings
<b>Type</b>	article
<b>Main user group</b>	Consumer uses: Private households (= general public = consumers)
<b>Environmental release category(ies)</b>	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
<b>Article categories</b>	AC7a - Metal products: cutlery, cooking utensils, pots, pans AC8 - Paper articles
<b>Sector(s) of use</b>	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

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
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#### Control of consumer exposure

Article categories	AC7a - Metal products: cutlery, cooking utensils, pots, pans
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	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**

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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**E-mail address** SDS.EMEA@univarsolutions.com

### 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

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 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**

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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### 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

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 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)

<b>Calculation method</b>	Used EUSES model		
Environment	predicted exposure level	Risk characterisation ratio (RCR)	

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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**

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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### 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

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
----------	--

#### 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)**



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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

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.