SAFETY DATA SHEET
SODIUM TETRABORATE DECAHYDRATE

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

1.1. Product identifier

Product name	SODIUM TETRABORATE DECAHYDRATE
Product number	20187
Synonyms; trade names	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
REACH registration number	01-2119490790-32-XXXX
CAS number	1303-96-4
EU index number	005-011-01-1
EC number	215-540-4

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

Identified uses	Binding Agent Chemicals used in the synthesis and / or formulation of industrial products Complexing Agent Corrosion inhibitor. Anti Scaling agent Fertilizer Flame retardant Chemical Intermediate Laboratory reagent. Lubricant. Process Additive Oxidising agents. pH control plating agents and metal surface treating agents Surface active agents Flux agents for casting Photosenstive agents and other photo chemicals Process regulator Viscosity modifiers For further information, see attached Exposure Scenario.
Uses advised against	Consumer

1.3. Details of the supplier of the safety data sheet

SODIUM TETRABORATE DECAHYDRATE

Supplier Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
BD3 7AY
+44 1274 267300
+44 1274 267306
SDS.EMEA@univarsolutions.com

1.4. Emergency telephone number

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

Sds No. 20187

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (EC 1272/2008)

Physical hazards Not Classified

Health hazards Eye Irrit. 2 - H319 Repr. 1B - H360FD

Environmental hazards Not Classified

2.2. Label elements

EC number 215-540-4

Hazard pictograms

Signal word Danger

Hazard statements H319 Causes serious eye irritation.
H360FD May damage fertility. May damage the unborn child.

Precautionary statements 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.
P405 Store locked up.
P501 Dispose of contents/ container in accordance with national regulations.

Supplemental label information RCH002a Restricted to professional users.

2.3. Other hazards

Pregnant or breastfeeding women should not work with this product if there is any risk of exposure.

SECTION 3: Composition/information on ingredients

3.1. Substances

Product name SODIUM TETRABORATE DECAHYDRATE

REACH registration number 01-2119490790-32-XXXX

EU index number 005-011-01-1

SODIUM TETRABORATE DECAHYDRATE

CAS number	1303-96-4
EC number	215-540-4
Composition comments	The data shown are in accordance with the latest EC Directives.

SECTION 4: First aid measures

4.1. Description of first aid measures

General information	First aid personnel should wear appropriate protective equipment during any rescue. Wear protective clothing as described in Section 8 of this safety data sheet. No action shall be taken without appropriate training or involving any personal risk.
Inhalation	Move affected person to fresh air at once. Rinse nose and mouth with water. Get medical attention if any discomfort continues.
Ingestion	Rinse mouth thoroughly with water. Give plenty of water to drink. Do not induce vomiting. Get medical attention if any discomfort continues. Get medical attention if a large quantity has been ingested.
Skin contact	Remove affected person from source of contamination. Remove contaminated clothing. Wash skin thoroughly with soap and water. Get medical attention if any discomfort continues.
Eye contact	Remove any contact lenses and open eyelids wide apart. Continue to rinse for at least 15 minutes. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

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

General information	May damage fertility. May damage the unborn child.
Inhalation	Dust in high concentrations may irritate the respiratory system.
Ingestion	Symptoms following overexposure may include the following: Nausea, vomiting. Diarrhoea. Effects may be delayed. Skin irritation. Redness. Dryness and/or cracking.
Skin contact	Symptoms following overexposure may include the following: Nausea, vomiting. Diarrhoea. Effects may be delayed. Skin irritation. Redness. Dryness and/or cracking.
Eye contact	Causes serious eye irritation.

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

Notes for the doctor	Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	The product is not flammable. Use fire-extinguishing media suitable for the surrounding fire.
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.

5.2. Special hazards arising from the substance or mixture

Hazardous combustion products	No known hazardous decomposition products.

5.3. Advice for firefighters

Special protective equipment for firefighters	Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing.

SECTION 6: Accidental release measures

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6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions Wear protective clothing as described in Section 8 of this safety data sheet. Avoid contact with skin and eyes. Provide adequate ventilation.

6.2. Environmental precautions

Environmental precautions Avoid the spillage or runoff entering drains, sewers or watercourses. Spillages or uncontrolled discharges into watercourses must be reported immediately to the Environmental Agency or other appropriate regulatory body.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up Avoid generation and spreading of dust. Collect and place in suitable waste disposal containers and seal securely. Label the containers containing waste and contaminated materials and remove from the area as soon as possible.

6.4. Reference to other sections

Reference to other sections Wear protective clothing as described in Section 8 of this safety data sheet. For waste disposal, see section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Usage precautions Handle all packages and containers carefully to minimise spills. Avoid contact with skin and eyes. Avoid handling which leads to dust formation. Provide adequate ventilation.

Advice on general occupational hygiene Pregnant or breastfeeding women should not work with this product if there is any risk of exposure. Do not eat, drink or smoke when using this product. Remove contaminated clothing and protective equipment before entering eating areas. Wash after use and before eating, smoking and using the toilet.

7.2. Conditions for safe storage, including any incompatibilities

Storage precautions Store in tightly-closed, original container in a well-ventilated place. Store at temperatures between -40°C and 40°C. Avoid contact with strong reducing agents.

7.3. Specific end use(s)

Specific end use(s) The identified uses for this product are detailed in Section 1.2.

SECTION 8: Exposure controls/Personal protection

8.1. Control parameters

Occupational exposure limits

8hr TWA: WEL 1 mg B/m3
WEL = Workplace Exposure Limits

Ingredient comments SUP = Supplier's recommendation.

DNEL

Consumer - Oral; Short term systemic effects: 1.51 mg/kg/day
Consumer - Oral; Long term systemic effects: 1.51 mg/kg/day
Professional - Inhalation; Short term local effects: 22.3 mg/m³
Professional - Inhalation; Long term local effects: 22.3 mg/m³
Professional - Inhalation; Long term systemic effects: 12.76 mg/m³
Consumer - Inhalation; local effects: 22.3 mg/m³
Consumer - Inhalation; Long term systemic effects: 6.50 mg/m³
Industry - Dermal; Long term systemic effects: 599.6 mg/kg/day
Consumer - Dermal; Long term systemic effects: 303.5 mg/kg/day

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PNEC

- Fresh water; 2.02 mg/l
- marine water; 2.02 mg/l
- water; Intermittent release 13.7 mg/l
- Soil; 5.4 mg/kg
- STP; 10 mg/l

8.2. Exposure controls

Protective equipment

Appropriate engineering controls

Provide adequate general and local exhaust ventilation. Observe any occupational exposure limits for the product or ingredients. Pregnant or breastfeeding women should not work with this product if there is any risk of exposure.

Eye/face protection

Eyewear complying with an approved standard should be worn if a risk assessment indicates eye contact is possible. Personal protective equipment for eye and face protection should comply with European Standard EN166. Unless the assessment indicates a higher degree of protection is required, the following protection should be worn: Chemical splash goggles.

Hand protection

Chemical-resistant, impervious gloves complying with an approved standard should be worn if a risk assessment indicates skin contact is possible. The most suitable glove should be chosen in consultation with the glove supplier/manufacturer, who can provide information about the breakthrough time of the glove material. To protect hands from chemicals, gloves should comply with European Standard EN374. Frequent changes are recommended.

Other skin and body protection

Wear appropriate clothing to prevent repeated or prolonged skin contact.

Hygiene measures

When using do not eat, drink or smoke. Wash after use and before eating, smoking and using the toilet. Remove contaminated clothing and protective equipment before entering eating areas. Take off immediately all contaminated clothing and wash it before reuse.

Respiratory protection

If ventilation is inadequate, suitable respiratory protection must be worn. Protection against nuisance dust must be used when the airborne concentration exceeds 10 mg/m3. Respiratory protection complying with an approved standard should be worn if a risk assessment indicates inhalation of contaminants is possible. Ensure all respiratory protective equipment is suitable for its intended use and is 'CE'-marked. Particulate filter, type P3. EN 136/140/141/145/143/149

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance Crystalline solid.

Colour White.

Odour Odourless.

Odour threshold Not applicable.

pH

pH (diluted solution): 9.3 (0.1% aq)
pH (diluted solution): 9.2 (1.0% aq)
pH (diluted solution): 9.3 (4.7% aq)

Melting point > 1000°C

Initial boiling point and range Not available.

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Flash point	Not applicable.
Evaporation rate	Not applicable.
Evaporation factor	Not available.
Flammability (solid, gas)	No information available.
Upper/lower flammability or explosive limits	Not applicable.
Other flammability	No information available.
Vapour pressure	Not applicable.
Vapour density	Not applicable.
Relative density	1.72 @ 23°C
Bulk density	No information available.
Solubility(ies)	49.74 g/l water @ 20°C Soluble in water.
Partition coefficient	log Pow: -0.757
Auto-ignition temperature	Not applicable.
Decomposition Temperature	Not available.
Viscosity	Not applicable.
Explosive properties	Not considered to be explosive.
Explosive under the influence of a flame	No information available.
Oxidising properties	Does not meet the criteria for classification as oxidising.

9.2. Other information

Other information	No information available.

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity	No test data specifically related to reactivity available for this product or its ingredients.

10.2. Chemical stability

Stability	Stable at normal ambient temperatures and when used as recommended. Heating may generate the following products: Water

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions	The following materials may react with the product: Inorganic hydrides. Alkali metals. Some hydrogen gas may be released. Hydrogen is flammable and can form explosive mixtures with air.

10.4. Conditions to avoid

Conditions to avoid	Avoid excessive heat for prolonged periods of time. Protect from moisture.

10.5. Incompatible materials

Materials to avoid	Avoid contact with the following materials: Strong reducing agents. Inorganic hydrides. Alkali metals.

10.6. Hazardous decomposition products

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Hazardous decomposition products	Does not decompose when used and stored as recommended. No known hazardous decomposition products.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity - oral

Acute toxicity oral (LD_{50} mg/kg)	5,560.0
Species	Rat
Notes (oral LD_{50})	LD_{50} 5150 - 6000 mg/kg, Oral, Rat

Acute toxicity - dermal

Acute toxicity dermal (LD_{50} mg/kg)	2,000.0
Species	Rabbit
Notes (dermal LD_{50})	LD_{50} > 2000 mg/kg, Dermal, Rabbit

Acute toxicity - inhalation

Acute toxicity inhalation (LC_{50} dust/mist mg/l)	2.03
Species	Rat
Notes (inhalation LC_{50})	LC_{50} (4h) >2 mg/l, Inhalation, Vapour, Rat
ATE inhalation (dusts/mists mg/l)	2.03

Skin corrosion/irritation

Skin corrosion/irritation	Not irritating. Rabbit

Serious eye damage/irritation

Serious eye damage/irritation	Causes serious eye irritation. Fully reversible within 14 days. Rabbit

Respiratory sensitisation

Respiratory sensitisation	Based on available data the classification criteria are not met.

Skin sensitisation

Skin sensitisation	Guinea pig maximization test (GPMT) - Guinea pig: Not sensitising.

Germ cell mutagenicity

Genotoxicity - in vitro	Bacterial reverse mutation test: Negative. Read-across data.
Genotoxicity - in vivo	Based on available data the classification criteria are not met.

Carcinogenicity

Carcinogenicity	Based on available data the classification criteria are not met. Negative., Dose level: 446 - 1150 mg/kg/day, Oral, Mouse

Reproductive toxicity

Reproductive toxicity - fertility	May damage fertility. Fertility, Multi-generation study - NOAEL 17.5 mg B/kg , Oral, Rat, Male
Reproductive toxicity - development	May damage the unborn child. Developmental toxicity: - NOAEL: 9.6 mg B/kg , Oral, Rat

Specific target organ toxicity - single exposure

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

Specific target organ toxicity - repeated exposure

STOT - repeated exposure Based on available data the classification criteria are not met. Chronic, NOAEL (2yr) 17.5 mg B/kg/day , Oral, Rat, Male reproductive organs

Aspiration hazard

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

Inhalation No significant hazard at normal ambient temperatures. Dust in high concentrations may irritate the respiratory system.

Ingestion No harmful effects expected from quantities likely to be ingested by accident. May cause discomfort if swallowed. Symptoms following overexposure may include the following: Nausea, vomiting. Diarrhoea. Effects may be delayed. Skin irritation. Redness. Dryness and/or cracking.

Skin contact Symptoms following overexposure may include the following: Nausea, vomiting. Diarrhoea. Effects may be delayed. Skin irritation. Redness. Dryness and/or cracking.

Eye contact Causes serious eye irritation.

Acute and chronic health hazards May damage fertility. May damage the unborn child.

SECTION 12: Ecological information

Ecotoxicity Not regarded as dangerous for the environment. However, large or frequent spills may have hazardous effects on the environment.

12.1. Toxicity

Acute aquatic toxicity

Acute toxicity - fish Acute, LC_{50}, : 79.7 mg/l, Pimephales promelas (Fat-head Minnow)
Read-across data.
Boron.
Chronic, NOEC, : 6.4 mg/l, Brachydanio rerio (Zebra Fish)
Read-across data.
Boron.

Acute toxicity - aquatic invertebrates NOEC, : 14.2 mg/l, Daphnia magna
Read-across data.
Boron.
LC_{50}, : 91 mg/l,
Ceriodaphnia dubia
Read-across data.
Boron.

Acute toxicity - aquatic plants Acute, EC_{50}, : 52.4 mg/l, Pseudokirchneriella subcapitata
Read-across data.
Boron.
Chronic, NOEC, : 17.5 mg/l, Pseudokirchneriella subcapitata
Read-across data.
Boron.

12.2. Persistence and degradability

Persistence and degradability Not applicable. Substance is inorganic.

12.3. Bioaccumulative potential

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Bioaccumulative potential Bioaccumulation is unlikely.

Partition coefficient log Pow: -0.757

12.4. Mobility in soil

Mobility The product is soluble in water.

12.5. Results of PBT and vPvB assessment

Results of PBT and vPvB assessment Not applicable. Substance is inorganic.

12.6. Other adverse effects

Other adverse effects None known.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

General information Waste is classified as hazardous waste. Do not puncture or incinerate, even when empty. Waste codes should be assigned by the user, preferably in discussion with the waste disposal authorities.

Disposal methods Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority.

SECTION 14: Transport information

General The product is not covered by international regulations on the transport of dangerous goods (IMDG, IATA, ADR/RID).

14.1. UN number

Not applicable.

14.2. UN proper shipping name

Not applicable.

14.3. Transport hazard class(es)

No transport warning sign required.

14.4. Packing group

Not applicable.

14.5. Environmental hazards

Environmentally hazardous substance/marine pollutant
No.

14.6. Special precautions for user

Not applicable.

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

SECTION 15: Regulatory information

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

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EU legislation	Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (as amended). Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures (as amended). Commission Regulation (EU) No 2015/830 of 28 May 2015.
Restrictions (Annex XVII Regulation 1907/2006)	This product is/contains a substance that is included in REGULATION (EC) No 1907/2006 (REACH) ANNEX XVII - RESTRICTIONS ON THE MANUFACTURE, PLACING ON THE MARKET AND USE OF CERTAIN DANGEROUS SUBSTANCES, MIXTURES AND ARTICLES. Entry number: 30

15.2. Chemical safety assessment

A chemical safety assessment has been carried out.

Inventories

EU - EINECS/ELINCS

All the ingredients are listed or exempt.

Canada - DSL/NDSL

All the ingredients are listed or exempt.
DSL

US - TSCA

All the ingredients are listed or exempt.

Australia - AICS

All the ingredients are listed or exempt.

Japan - ENCS

All the ingredients are listed or exempt.
ENCS

Korea - KECI

All the ingredients are listed or exempt.

China - IECSC

All the ingredients are listed or exempt.

Philippines – PICCS

All the ingredients are listed or exempt.

New Zealand - NZIOC

All the ingredients are listed or exempt.

SECTION 16: Other information

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Abbreviations and acronyms used in the safety data sheet

ATE: Acute Toxicity Estimate.
ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.
ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways.
CAS: Chemical Abstracts Service.
DNEL: Derived No Effect Level.
IATA: International Air Transport Association.
IMDG: International Maritime Dangerous Goods.
Kow: Octanol-water partition coefficient.
LC_{50}: Lethal Concentration to 50 % of a test population.
LD_{50}: Lethal Dose to 50% of a test population (Median Lethal Dose).
PBT: Persistent, Bioaccumulative and Toxic substance.
PNEC: Predicted No Effect Concentration.
REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006.
RID: European Agreement concerning the International Carriage of Dangerous Goods by Rail.
vPvB: Very Persistent and Very Bioaccumulative.
IARC: International Agency for Research on Cancer.
MARPOL 73/78: International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978.
cATpE: Converted Acute Toxicity Point Estimate.
BCF: Bioconcentration Factor.
BOD: Biochemical Oxygen Demand.
EC_{50}: 50% of maximal Effective Concentration.
LOAEC: Lowest Observed Adverse Effect Concentration.
LOAEL: Lowest Observed Adverse Effect Level.
NOAEC: No Observed Adverse Effect Concentration.
NOAEL: No Observed Adverse Effect Level.
NOEC: No Observed Effect Concentration.
LOEC: Lowest Observed Effect Concentration.
DMEL: Derived Minimal Effect Level.
EL50: Exposure Limit 50
hPa: Hectopascal
LL50: Lethal Loading fifty
OECD: Organisation for Economic Co-operation and Development
POW: Octanol-water partition coefficient
SCBA: self-contained breathing apparatus
STP: Sewage Treatment Plant
VOC: Volatile Organic Compounds

Classification abbreviations and acronyms

Acute Tox. = Acute toxicity
Aquatic Acute = Hazardous to the aquatic environment (acute)
Aquatic Chronic = Hazardous to the aquatic environment (chronic)

Key literature references and sources for data

Supplier's information. ECHA Disseminated REACH Dossier

Revision comments

NOTE: Lines within the margin indicate significant changes from the previous revision.

Revision date 11/03/2020

Version number 5.000

Supersedes date 12/08/2019

SDS number 20187

SODIUM TETRABORATE DECAHYDRATE

SDS status	Approved.
Hazard statements in full	H319 Causes serious eye irritation. H360FD May damage fertility. May damage the unborn child.
Signature	Lisa Bland

Exposure scenario
Environmental exposure scenario for importing, manufacturing, refining and packaging of borates

Identification

Product name	Boric acid, boric oxide and sodium borates (exposures based on boron content)
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Environmental exposure scenario for importing, manufacturing, refining and packaging of borates
Main sector	SU3 Industrial uses
Sector of use	SU8 Manufacture of bulk, large-scale chemicals (including petroleum products) SU9 Manufacture of fine chemicals

Environment

Environmental release category	ERC1 Manufacture of the substance ERC6a Use of intermediate

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state	Solid

Amounts used

Annual amount used in the EU: 100000 tonnes

Frequency and duration of use

Emission days: 220 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (after typical onsite RMMs): 0.00000053
Emission factor - water	Not applicable as there is no release to wastewater.

Environmental factors not influenced by risk management measures

Dilution	No discharge of substance into waste water.

Risk management measures

Good practice	Clear up spills immediately and dispose of waste safely.

Environmental exposure scenario for importing, manufacturing, refining and packaging of borates

STP type No STP.

Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Water No discharge of substance into waste water.

Conditions and measures related to external treatment of waste for disposal

Disposal method This material and its container must be disposed of as hazardous waste.

2. Conditions of use affecting exposure (Industrial - Environment 2)

Product characteristics

Physical state Solid

Amounts used

Annual amount used in the EU: 55000 tonnes

Frequency and duration of use

Emission days: 220 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Release fraction to air from process (after typical onsite RMMs): 0.00000053

Emission factor - water Release fraction to wastewater from process (initial release prior to RMM): 0.000554

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 37

Risk management measures

Good practice Clear up spills immediately and dispose of waste safely.

STP type No STP.

Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Water No wastewater treatment required.

Conditions and measures related to external treatment of waste for disposal

Disposal method This material and its container must be disposed of as hazardous waste.

3. Exposure estimation (Environment 1)

Environmental exposure Fresh water: Exposure 0 µg/l, PNEC 2020 µg/l, RCR 0
Soil: Exposure 0.01 mg/kg, PNEC 5.4 mg/kg, RCR 0.002

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

3. Exposure estimation (Environment 2)

Environmental exposure Fresh water: Exposure 1872 µg/l, PNEC 2020 µg/l, RCR 0.954
Soil: Exposure 0.01 mg/kg, PNEC 5.4 mg/kg, RCR 0.002

4. Guidance to check compliance with the exposure scenario (Environment 2)

Environmental exposure scenario for importing, manufacturing, refining and packaging of borates

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Exposure scenario

Environmental exposure scenario for generic industrial use of borates resulting in the manufacture of another substance

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
BD3 7AY
+44 1274 267300
+44 1274 267306
SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title Environmental exposure scenario for generic industrial use of borates resulting in the manufacture of another substance

Product category
PC7 Base metals and alloys.
PC19 Intermediate.
PC20 Processing aids such as pH-regulators, flocculants, precipitants, neutralization agents
PC24 Lubricants, greases and release products.
PC25 Metal working fluids.

Main sector SU3 Industrial uses

Sector of use
SU8 Manufacture of bulk, large-scale chemicals (including petroleum products)
SU9 Manufacture of fine chemicals

Environment

Environmental release category
ERC1 Manufacture of the substance
ERC6a Use of intermediate
ERC6b Use of reactive processing aid at industrial site (no inclusion into or onto article)

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state Solid , or: Solid in solution

Amounts used

Annual amount used in the EU: 190 tonnes

Frequency and duration of use

Emission days: 300 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Release fraction to air from process (after typical onsite RMMs): 0.036562

Emission factor - water Release fraction to wastewater from process (initial release prior to RMM): 0.06000

Environmental exposure scenario for generic industrial use of borates resulting in the manufacture of another substance

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 10

Risk management measures

Good practice Clear up spills immediately and dispose of waste safely.

STP type Municipal STP.

Conditions and measures related to external treatment of waste for disposal

Disposal method This material and its container must be disposed of as hazardous waste.

2. Conditions of use affecting exposure (Industrial - Environment 2)

Product characteristics

Physical state Solid , or: Solid in solution

Amounts used

Annual amount used in the EU: 1150 tonnes

Frequency and duration of use

Emission days: 300 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Release fraction to air from process (after typical onsite RMMs): 0.036562

Emission factor - water Release fraction to wastewater from process (initial release prior to RMM): 0.06000

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 100

Risk management measures

Good practice Clear up spills immediately and dispose of waste safely.

STP type Municipal STP.

Conditions and measures related to external treatment of waste for disposal

Disposal method This material and its container must be disposed of as hazardous waste.

3. Exposure estimation (Environment 1)

Environmental exposure Fresh water: Exposure 1956 µg/l, PNEC 2020 µg/l, RCR 0.969
Soil: Exposure 0.86 mg/kg, PNEC 5.4 mg/kg, RCR 0.158

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

3. Exposure estimation (Environment 2)

Environmental exposure Fresh water: Exposure 1206 µg/l, PNEC 2020 µg/l, RCR 0.597
Soil: Exposure 5.15 mg/kg, PNEC 5.4 mg/kg, RCR 0.954

4. Guidance to check compliance with the exposure scenario (Environment 2)

Environmental exposure scenario for generic industrial use of borates resulting in the manufacture of another substance

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Exposure scenario

Environmental exposure scenario for industrial use of borates in the production in the production of diboron trioxide containing catalysts

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
BD3 7AY
+44 1274 267300
+44 1274 267306
SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title Environmental exposure scenario for industrial use of borates in the production in the production of diboron trioxide containing catalysts

Product category

PC1 Adhesives, sealants.
PC7 Base metals and alloys.
PC8 Biocidal products
PC9a Coatings and paints, thinners, paint removers.
PC9b Fillers, putties, plasters, modelling clay.
PC12 Lawn and garden preparations (- fertilizers).
PC14 Metal surface treatment products
PC15 Non-metal-surface treatment products.
PC17 Hydraulic fluids.
PC18 Ink and toners.
PC19 Intermediate.
PC20 Processing aids such as pH-regulators, flocculants, precipitants, neutralization agents
PC21 Laboratory chemicals.
PC23 Leather treatment products
PC24 Lubricants, greases and release products.
PC25 Metal working fluids.
PC26 Paper and board treatment products
PC29 Pharmaceuticals
PC30 Photochemicals.
PC32 Polymer preparations and compounds.
PC37 Water treatment chemicals.
PC38 Welding and soldering products, flux products
PC39 Cosmetics, personal care.

Main sector SU3 Industrial uses

Sector of use

SU8 Manufacture of bulk, large-scale chemicals (including petroleum products)
SU9 Manufacture of fine chemicals

Environment

Environmental exposure scenario for industrial use of borates in the production in the production of diboron trioxide containing catalysts

Environmental release category	ERC1 Manufacture of the substance ERC6a Use of intermediate ERC6b Use of reactive processing aid at industrial site (no inclusion into or onto article) ERC3 Formulation into solid matrix

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state Solid , or: Solid in solution

Amounts used

Annual amount used in the EU: 200 tonnes

Frequency and duration of use

Emission days: 330 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Release fraction to air from process (after typical onsite RMMs): 0.0000027

Emission factor - water Not applicable.

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 10

Risk management measures

Good practice Clear up spills immediately and dispose of waste safely. Ensure operatives are trained to minimise exposures.

STP type Not applicable as there is no release to wastewater.

Conditions and measures related to external treatment of waste for disposal

Disposal method Incineration, disposal or recycling at specific offsite provider.

3. Exposure estimation (Environment 1)

Environmental exposure Fresh water: Exposure 0 µg/l, PNEC 2020 µg/l, RCR 0
Soil: Exposure 0.01 mg/kg, PNEC 5.4 mg/kg, RCR 0.001

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Exposure scenario
Environmental exposure scenario for generic formulation of borate into mixtures

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
BD3 7AY
+44 1274 267300
+44 1274 267306
SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title Environmental exposure scenario for generic formulation of borate into mixtures

Main sector SU3 Industrial uses

Environment

Environmental release category ERC2 Formulation into mixture

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state Solid , or: Solid in solution

Amounts used

Annual amount used in the EU: 950 tonnes

Frequency and duration of use

Emission days: 200 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Release fraction to air from process (after typical onsite RMMs): 0.0004

Emission factor - water Release fraction to wastewater from process (initial release prior to RMM): 0.008

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 10

Risk management measures

Good practice Clear up spills immediately and dispose of waste safely.

Technical measures Formulation activity is assumed to be a predominantly enclosed process.

STP type Municipal STP.

Conditions and measures related to external treatment of waste for disposal

Environmental exposure scenario for generic formulation of borate into mixtures

Disposal method This material and its container must be disposed of as hazardous waste.

2. Conditions of use affecting exposure (Industrial - Environment 2)

Product characteristics

Physical state Solid , or: Solid in solution

Amounts used

Annual amount used in the EU: 9500 tonnes

Frequency and duration of use

Emission days: 200 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Release fraction to air from process (after typical onsite RMMs): 0.0004

Emission factor - water Release fraction to wastewater from process (initial release prior to RMM): 0.008

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 100

Risk management measures

Good practice Clear up spills immediately and dispose of waste safely.

Technical measures Formulation activity is assumed to be a predominantly enclosed process.

STP type Municipal STP.

Conditions and measures related to external treatment of waste for disposal

Disposal method This material and its container must be disposed of as hazardous waste.

2. Conditions of use affecting exposure (Industrial - Environment 3)

Product characteristics

Physical state Solid , or: Solid in solution

Amounts used

Annual amount used in the EU: 15000 tonnes

Frequency and duration of use

Emission days: 200 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Release fraction to air from process (after typical onsite RMMs): 0.0004

Emission factor - water Not applicable as there is no release to wastewater.

Environmental factors not influenced by risk management measures

Dilution No discharge of substance into waste water.

Risk management measures

Good practice Clear up spills immediately and dispose of waste safely.

Technical measures Formulation activity is assumed to be a predominantly enclosed process.

STP type Municipal STP.

Conditions and measures related to external treatment of waste for disposal

Environmental exposure scenario for generic formulation of borate into mixtures

Disposal method This material and its container must be disposed of as hazardous waste.

3. Exposure estimation (Environment 1)

Environmental exposure Fresh water: Exposure 1956 µg/l, PNEC 2020 µg/l, RCR 0.969
Soil: Exposure 0.05 mg/kg, PNEC 5.4 mg/kg, RCR 0.010

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

3. Exposure estimation (Environment 2)

Environmental exposure Fresh water: Exposure 1956 µg/l, PNEC 2020 µg/l, RCR 0.969
Soil: Exposure 0.47 mg/kg, PNEC 5.4 mg/kg, RCR 0.087

4. Guidance to check compliance with the exposure scenario (Environment 2)

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

3. Exposure estimation (Environment 3)

Environmental exposure Fresh water: Exposure 0 µg/l, PNEC 2020 µg/l, RCR 0
Soil: Exposure 0.74 mg/kg, PNEC 5.4 mg/kg, RCR 0.137

4. Guidance to check compliance with the exposure scenario (Environment 3)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Exposure scenario
Environmental exposure scenario for formulation of borate into detergents

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
BD3 7AY
+44 1274 267300
+44 1274 267306
SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title Environmental exposure scenario for formulation of borate into detergents

Main sector SU3 Industrial uses

Environment

Environmental release category ERC2 Formulation into mixture

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state Solid , or: Solid in solution

Amounts used

Annual amount used in the EU: 2400 tonnes

Frequency and duration of use

Emission days: 255 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Release fraction to air from process (after typical onsite RMMs): 0.0002

Emission factor - water Release fraction to wastewater from process (initial release prior to RMM): 0.004

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 10

Risk management measures

Good practice Clear up spills immediately and dispose of waste safely.

Technical measures Formulation activity is assumed to be a predominantly enclosed process.

STP type Municipal STP.

Conditions and measures related to external treatment of waste for disposal

Environmental exposure scenario for formulation of borate into detergents

Disposal method This material and its container must be disposed of as hazardous waste.

2. Conditions of use affecting exposure (Industrial - Environment 2)

Product characteristics

Physical state Solid , or: Solid in solution

Amounts used

Annual amount used in the EU: 15000 tonnes

Frequency and duration of use

Emission days: 255 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Release fraction to air from process (after typical onsite RMMs): 0.0002

Emission factor - water Release fraction to wastewater from process (initial release prior to RMM): 0.004

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 100

Risk management measures

Good practice Clear up spills immediately and dispose of waste safely.

Technical measures Formulation activity is assumed to be a predominantly enclosed process.

STP type Municipal STP.

Conditions and measures related to external treatment of waste for disposal

Disposal method This material and its container must be disposed of as hazardous waste.

2. Conditions of use affecting exposure (Industrial - Environment 3)

Product characteristics

Physical state Solid , or: Solid in solution

Amounts used

Annual amount used in the EU: 15000 tonnes

Frequency and duration of use

Emission days: 255 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Release fraction to air from process (after typical onsite RMMs): 0.0002

Emission factor - water Not applicable as there is no release to wastewater.

Environmental factors not influenced by risk management measures

Dilution No discharge of substance into waste water.

Risk management measures

Good practice Clear up spills immediately and dispose of waste safely.

Technical measures Formulation activity is assumed to be a predominantly enclosed process.

STP type Municipal STP.

Conditions and measures related to external treatment of waste for disposal

Environmental exposure scenario for formulation of borate into detergents

Disposal method This material and its container must be disposed of as hazardous waste.

3. Exposure estimation (Environment 1)

Environmental exposure Fresh water: Exposure 1939 µg/l, PNEC 2020 µg/l, RCR 0.960
Soil: Exposure 0.06 mg/kg, PNEC 5.4 mg/kg, RCR 0.012

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

3. Exposure estimation (Environment 2)

Environmental exposure Fresh water: Exposure 1233 µg/l, PNEC 2020 µg/l, RCR 0.610
Soil: Exposure 0.37 mg/kg, PNEC 5.4 mg/kg, RCR 0.069

4. Guidance to check compliance with the exposure scenario (Environment 2)

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

3. Exposure estimation (Environment 3)

Environmental exposure Fresh water: Exposure 0 µg/l, PNEC 2020 µg/l, RCR 0
Soil: Exposure 0.37 mg/kg, PNEC 5.4 mg/kg, RCR 0.069

4. Guidance to check compliance with the exposure scenario (Environment 3)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Exposure scenario
Environmental exposure scenario for formulation of borates into paints and coatings

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
BD3 7AY
+44 1274 267300
+44 1274 267306
SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title Environmental exposure scenario for formulation of borates into paints and coatings

Main sector SU3 Industrial uses

Environment

Environmental release category ERC2 Formulation into mixture

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state Solid , or: Solid in solution

Amounts used

Annual amount used in the EU: 1000 tonnes

Frequency and duration of use

Emission days: 225 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Release fraction to air from process (after typical onsite RMMs): 0.000097

Emission factor - water Release fraction to wastewater from process (initial release prior to RMM): 0.005

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 10

Risk management measures

Good practice Clear up spills immediately and dispose of waste safely.

Technical measures Formulation activity is assumed to be a predominantly enclosed process.

STP type Municipal STP.

Conditions and measures related to external treatment of waste for disposal

Environmental exposure scenario for formulation of borates into paints and coatings

Disposal method This material and its container must be disposed of as hazardous waste.

3. Exposure estimation (Environment 1)

Environmental exposure Fresh water: Exposure 1168 µg/l, PNEC 2020 µg/l, RCR 0.578
Soil: Exposure 0.02 mg/kg, PNEC 5.4 mg/kg, RCR 0.003

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Exposure scenario
Environmental exposure scenario for formulation of borates into adhesives

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
BD3 7AY
+44 1274 267300
+44 1274 267306
SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title Environmental exposure scenario for formulation of borates into adhesives

Main sector SU3 Industrial uses

Environment

Environmental release category ERC2 Formulation into mixture

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state Solid , or: Solid in solution

Amounts used

Annual amount used in the EU: 1000 tonnes

Frequency and duration of use

Emission days: 240 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Release fraction to air from process (after typical onsite RMMs): 0.00005

Emission factor - water Not applicable as there is no release to wastewater.

Environmental factors not influenced by risk management measures

Dilution No discharge of substance into waste water.

Risk management measures

Good practice Clear up spills immediately and dispose of waste safely.

Technical measures Formulation activity is assumed to be a predominantly enclosed process.

STP type Municipal STP.

Conditions and measures related to external treatment of waste for disposal

Environmental exposure scenario for formulation of borates into adhesives

Disposal method This material and its container must be disposed of as hazardous waste.

3. Exposure estimation (Environment 1)

Environmental exposure Fresh water: Exposure 0 µg/l, PNEC 2020 µg/l, RCR 0
Soil: Exposure 0.01 mg/kg, PNEC 5.4 mg/kg, RCR 0.002

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Exposure scenario
Environmental exposure scenario for generic formulation of borates into materials

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
BD3 7AY
+44 1274 267300
+44 1274 267306
SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title Environmental exposure scenario for generic formulation of borates into materials

Main sector SU3 Industrial uses

Environment

Environmental release category ERC3 Formulation into solid matrix

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state Solid , or: Solid in solution

Amounts used

Annual amount used in the EU: 1150 tonnes

Frequency and duration of use

Emission days: 100 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Release fraction to air from process (after typical onsite RMMs): 0.036562

Emission factor - water Release fraction to wastewater from process (initial release prior to RMM): 0.002

Environmental factors not influenced by risk management measures

Dilution No discharge of substance into waste water.

Risk management measures

Good practice Clear up spills immediately and dispose of waste safely.

Technical measures Formulation activity is assumed to be a predominantly enclosed process.

STP type Municipal STP.

Conditions and measures related to external treatment of waste for disposal

Environmental exposure scenario for generic formulation of borates into materials

Disposal method This material and its container must be disposed of as hazardous waste.

3. Exposure estimation (Environment 1)

Environmental exposure Fresh water: Exposure 1206 µg/l, PNEC 2020 µg/l, RCR 0.597
Soil: Exposure 5.15 mg/kg, PNEC 5.4 mg/kg, RCR 0.954

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Exposure scenario

Environmental exposure scenario for generic industrial use of borates as processing aids in processes and products

Identification

Product name	Boric acid, boric oxide and sodium borates (exposures based on boron content)
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Environmental exposure scenario for generic industrial use of borates as processing aids in processes and products
Main sector	SU3 Industrial uses

Environment

Environmental release category	ERC2 Formulation into mixture

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state	Solid , or: Solid in solution

Amounts used

Annual amount used in the EU: 14 tonnes

Frequency and duration of use

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (after typical onsite RMMs): 0.036562
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 1

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10

Risk management measures

Good practice	Clear up spills immediately and dispose of waste safely.
Technical measures	Formulation activity is assumed to be a predominantly enclosed process.
STP type	Municipal STP.

Environmental exposure scenario for generic industrial use of borates as processing aids in processes and products

Conditions and measures related to external treatment of waste for disposal

Disposal method This material and its container must be disposed of as hazardous waste.

2. Conditions of use affecting exposure (Industrial - Environment 2)

Product characteristics

Physical state Solid , or: Solid in solution

Amounts used

Annual amount used in the EU: 140 tonnes

Frequency and duration of use

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Release fraction to air from process (after typical onsite RMMs): 0.036562

Emission factor - water Release fraction to wastewater from process (initial release prior to RMM): 1

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 100

Risk management measures

Good practice Clear up spills immediately and dispose of waste safely.

Technical measures Formulation activity is assumed to be a predominantly enclosed process.

STP type Municipal STP.

Conditions and measures related to external treatment of waste for disposal

Disposal method This material and its container must be disposed of as hazardous waste.

2. Conditions of use affecting exposure (Industrial - Environment 3)

Product characteristics

Physical state Solid , or: Solid in solution

Amounts used

Annual amount used in the EU: 1150 tonnes

Frequency and duration of use

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Release fraction to air from process (after typical onsite RMMs): 0.036562

Emission factor - water Release fraction to wastewater from process (initial release prior to RMM): 1

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 1000

Risk management measures

Good practice Clear up spills immediately and dispose of waste safely.

Technical measures Formulation activity is assumed to be a predominantly enclosed process.

STP type Municipal STP.

Environmental exposure scenario for generic industrial use of borates as processing aids in processes and products

Conditions and measures related to external treatment of waste for disposal

Disposal method This material and its container must be disposed of as hazardous waste.

2. Conditions of use affecting exposure (Industrial - Environment 4)

Product characteristics

Physical state Solid , or: Solid in solution

Amounts used

Annual amount used in the EU: 50 tonnes

Frequency and duration of use

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Release fraction to air from process (after typical onsite RMMs): 0.036562

Emission factor - water Release fraction to wastewater from process (initial release prior to RMM): 1

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 35

Risk management measures

Good practice Clear up spills immediately and dispose of waste safely.

Technical measures Formulation activity is assumed to be a predominantly enclosed process.

STP type Municipal STP.

Conditions and measures related to external treatment of waste for disposal

Disposal method This material and its container must be disposed of as hazardous waste.

3. Exposure estimation (Environment 1)

Environmental exposure Fresh water: Exposure 1974 µg/l, PNEC 2020 µg/l, RCR 0.977
Soil: Exposure 0.07 mg/kg, PNEC 5.4 mg/kg, RCR 0.013

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

3. Exposure estimation (Environment 2)

Environmental exposure Fresh water: Exposure 1974 µg/l, PNEC 2020 µg/l, RCR 0.977
Soil: Exposure 0.63 mg/kg, PNEC 5.4 mg/kg, RCR 0.117

4. Guidance to check compliance with the exposure scenario (Environment 2)

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

3. Exposure estimation (Environment 3)

Environmental exposure scenario for generic industrial use of borates as processing aids in processes and products

Environmental exposure

Fresh water: Exposure 1575 µg/l, PNEC 2020 µg/l, RCR 0.808
Soil: Exposure 5.15 mg/kg, PNEC 5.4 mg/kg, RCR 0.954

4. Guidance to check compliance with the exposure scenario (Environment 3)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

3. Exposure estimation (Environment 4)

Environmental exposure

Fresh water: Exposure 1974 µg/l, PNEC 2020 µg/l, RCR 0.977
Soil: Exposure 0.23 mg/kg, PNEC 5.4 mg/kg, RCR 0.043

4. Guidance to check compliance with the exposure scenario (Environment 4)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Exposure scenario
Environmental exposure scenario for industrial use of borates for autocausticizing

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
BD3 7AY
+44 1274 267300
+44 1274 267306
SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title Environmental exposure scenario for industrial use of borates for autocausticizing

Main sector SU3 Industrial uses

Environment

Environmental release category ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state Solid , or: Solid in solution

Amounts used

Annual amount used in the EU: 0.3 tonnes

Frequency and duration of use

Continuous release.

Other given operational conditions affecting environmental exposure

Emission factor - air Release fraction to air from process (after typical onsite RMMs): 0.036562

Emission factor - water Release fraction to wastewater from process (initial release prior to RMM): 0.5

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 10

Risk management measures

Good practice Clear up spills immediately and dispose of waste safely.

STP type No STP.

Conditions and measures related to external treatment of waste for disposal

Disposal method This material and its container must be disposed of as hazardous waste.

Environmental exposure scenario for industrial use of borates for autocausticizing

3. Exposure estimation (Environment 1)

Environmental exposure

Fresh water: Exposure 457 µg/l, PNEC 2020 µg/l, RCR 0.226
Soil
Qualitative approach used to conclude safe use.

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Exposure scenario

Environmental exposure scenario for generic industrial use of borates resulting in inclusion into or onto a matrix

Identification

Product name	Boric acid, boric oxide and sodium borates (exposures based on boron content)
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Environmental exposure scenario for generic industrial use of borates resulting in inclusion into or onto a matrix
Main sector	SU3 Industrial uses

Environment

Environmental release category	ERC5 Use at industrial site leading to inclusion into/onto article

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state	Solid , or: Solid in solution

Amounts used

Annual amount used in the EU: 7.5 tonnes

Frequency and duration of use

Emission days: 100 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (after typical onsite RMMs): 0.036562
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 0.5

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10

Risk management measures

Good practice	Clear up spills immediately and dispose of waste safely.
Technical measures	Formulation activity is assumed to be a predominantly enclosed process.
STP type	Municipal STP.

Environmental exposure scenario for generic industrial use of borates resulting in inclusion into or onto a matrix

Conditions and measures related to external treatment of waste for disposal

Disposal method This material and its container must be disposed of as hazardous waste.

2. Conditions of use affecting exposure (Industrial - Environment 2)

Product characteristics

Physical state Solid , or: Solid in solution

Amounts used

Annual amount used in the EU: 75 tonnes

Frequency and duration of use

Emission days: 100 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Release fraction to air from process (after typical onsite RMMs): 0.036562

Emission factor - water Release fraction to wastewater from process (initial release prior to RMM): 0.5

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 100

Risk management measures

Good practice Clear up spills immediately and dispose of waste safely.

Technical measures Formulation activity is assumed to be a predominantly enclosed process.

STP type Municipal STP.

Conditions and measures related to external treatment of waste for disposal

Disposal method This material and its container must be disposed of as hazardous waste.

2. Conditions of use affecting exposure (Industrial - Environment 3)

Product characteristics

Physical state Solid , or: Solid in solution

Amounts used

Annual amount used in the EU: 750 tonnes

Frequency and duration of use

Emission days: 100 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Release fraction to air from process (after typical onsite RMMs): 0.036562

Emission factor - water Release fraction to wastewater from process (initial release prior to RMM): 0.5

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 1000

Risk management measures

Good practice Clear up spills immediately and dispose of waste safely.

Technical measures Formulation activity is assumed to be a predominantly enclosed process.

STP type Municipal STP.

Environmental exposure scenario for generic industrial use of borates resulting in inclusion into or onto a matrix

Conditions and measures related to external treatment of waste for disposal

Disposal method This material and its container must be disposed of as hazardous waste.

2. Conditions of use affecting exposure (Industrial - Environment 4)

Product characteristics

Physical state Solid , or: Solid in solution

Amounts used

Annual amount used in the EU: 1150 tonnes

Frequency and duration of use

Emission days: 100 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Release fraction to air from process (after typical onsite RMMs): 0.036562

Emission factor - water Not applicable as there is no release to wastewater.

Environmental factors not influenced by risk management measures

Dilution No discharge of substance into waste water.

Risk management measures

Good practice Clear up spills immediately and dispose of waste safely.

Technical measures Formulation activity is assumed to be a predominantly enclosed process.

STP type Municipal STP.

Conditions and measures related to external treatment of waste for disposal

Disposal method This material and its container must be disposed of as hazardous waste.

3. Exposure estimation (Environment 1)

Environmental exposure Fresh water: Exposure 1931 µg/l, PNEC 2020 µg/l, RCR 0.956
Soil: Exposure 0.04 mg/kg, PNEC 5.4 mg/kg, RCR 0.007

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

3. Exposure estimation (Environment 2)

Environmental exposure Fresh water: Exposure 1931 µg/l, PNEC 2020 µg/l, RCR 0.9956
Soil: Exposure 0.34 mg/kg, PNEC 5.4 mg/kg, RCR 0.063

4. Guidance to check compliance with the exposure scenario (Environment 2)

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

3. Exposure estimation (Environment 3)

Environmental exposure scenario for generic industrial use of borates resulting in inclusion into or onto a matrix

Environmental exposure

Fresh water: Exposure 1931 µg/l, PNEC 2020 µg/l, RCR 0.956
Soil: Exposure 3.36 mg/kg, PNEC 5.4 mg/kg, RCR 0.622

4. Guidance to check compliance with the exposure scenario (Environment 3)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

3. Exposure estimation (Environment 4)

Environmental exposure

Fresh water: Exposure 0 µg/l, PNEC 2020 µg/l, RCR 0
Soil: Exposure 5.15 mg/kg, PNEC 5.4 mg/kg, RCR 0.954

4. Guidance to check compliance with the exposure scenario (Environment 4)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Exposure scenario
Environmental exposure scenario for industrial use of paints and coatings containing borate compounds

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
BD3 7AY
+44 1274 267300
+44 1274 267306
SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title Environmental exposure scenario for industrial use of paints and coatings containing borate compounds

Main sector SU3 Industrial uses

Environment

Environmental release category ERC5 Use at industrial site leading to inclusion into/onto article

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state Solid , or: Solid in solution

Amounts used

Annual amount used in the EU: 1000 tonnes

Frequency and duration of use

Emission days: 225 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Release fraction to air from process (after typical onsite RMMs): 0.02

Emission factor - water Not applicable as there is no release to wastewater.

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 10

Risk management measures

Good practice Clear up spills immediately and dispose of waste safely.

STP type Not applicable as there is no release to wastewater.

Conditions and measures related to external treatment of waste for disposal

Environmental exposure scenario for industrial use of paints and coatings containing borate compounds

Disposal method This material and its container must be disposed of as hazardous waste.

3. Exposure estimation (Environment 1)

Environmental exposure Fresh water: Exposure 0 µg/l, PNEC 2020 µg/l, RCR 0
Soil: Exposure 2.45 mg/kg, PNEC 5.4 mg/kg, RCR 0.454

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Exposure scenario
Environmental exposure scenario for industrial use of borates during the manufacture of glass wool

Identification

Product name	Boric acid, boric oxide and sodium borates (exposures based on boron content)
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Environmental exposure scenario for industrial use of borates during the manufacture of glass wool
Main sector	SU3 Industrial uses
Sector of use	SU13 Manufacture of other non-metallic mineral products

Environment

Environmental release category	ERC2 Formulation into mixture ERC5 Use at industrial site leading to inclusion into/onto article ERC6a Use of intermediate

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state	Solid

Amounts used

Annual amount used in the EU: 15000 tonnes

Frequency and duration of use

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (after typical onsite RMMs): 0.002827
Emission factor - water	Not applicable as there is no release to wastewater.

Environmental factors not influenced by risk management measures

Dilution	No discharge of substance into waste water.

Risk management measures

Good practice	Clear up spills immediately and dispose of waste safely.

Environmental exposure scenario for industrial use of borates during the manufacture of glass wool

Technical measures	Formulation activity is assumed to be a predominantly enclosed process.
STP type	Not applicable as there is no release to wastewater.

Conditions and measures related to external treatment of waste for disposal

Disposal method	This material and its container must be disposed of as hazardous waste.

3. Exposure estimation (Environment 1)

Environmental exposure	Fresh water: Exposure 0 µg/l, PNEC 2020 µg/l, RCR 0 Soil: Exposure 5.20 mg/kg, PNEC 5.4 mg/kg, RCR 0.962

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Exposure scenario
Environmental exposure scenario for industrial use of borates during the manufacture of high alkali glass

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
BD3 7AY
+44 1274 267300
+44 1274 267306
SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title Environmental exposure scenario for industrial use of borates during the manufacture of high alkali glass

Main sector SU3 Industrial uses

Sector of use SU13 Manufacture of other non-metallic mineral products

Environment

Environmental release category
ERC2 Formulation into mixture
ERC5 Use at industrial site leading to inclusion into/onto article
ERC6a Use of intermediate

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state Solid

Amounts used

Annual amount used in the EU: 6200 tonnes

Frequency and duration of use

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Release fraction to air from process (after typical onsite RMMs): 0.006959

Emission factor - water Release fraction to wastewater from process (initial release prior to RMM): 0.001

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 181

Risk management measures

Good practice Clear up spills immediately and dispose of waste safely.

Environmental exposure scenario for industrial use of borates during the manufacture of high alkali glass

Technical measures Formulation activity is assumed to be a predominantly enclosed process.

STP type Municipal STP.

Conditions and measures related to external treatment of waste for disposal

Disposal method This material and its container must be disposed of as hazardous waste.

3. Exposure estimation (Environment 1)

Environmental exposure Fresh water: Exposure 995 µg/l, PNEC 2020 µg/l, RCR 0.493
Soil: Exposure 5.29 mg/kg, PNEC 5.4 mg/kg, RCR 0.979

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Exposure scenario

Environmental exposure scenario for industrial use of borates during the manufacture of low alkali glass

Identification

Product name	Boric acid, boric oxide and sodium borates (exposures based on boron content)
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Environmental exposure scenario for industrial use of borates during the manufacture of low alkali glass
Main sector	SU3 Industrial uses
Sector of use	SU13 Manufacture of other non-metallic mineral products

Environment

Environmental release category	ERC2 Formulation into mixture ERC5 Use at industrial site leading to inclusion into/onto article ERC6a Use of intermediate

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state	Solid

Amounts used

Annual amount used in the EU: 1150 tonnes

Frequency and duration of use

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (after typical onsite RMMs): 0.036562
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 0.001

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 181

Risk management measures

Good practice	Clear up spills immediately and dispose of waste safely.

Environmental exposure scenario for industrial use of borates during the manufacture of low alkali glass

Technical measures Formulation activity is assumed to be a predominantly enclosed process.

STP type Municipal STP.

Conditions and measures related to external treatment of waste for disposal

Disposal method This material and its container must be disposed of as hazardous waste.

3. Exposure estimation (Environment 1)

Environmental exposure Fresh water: Exposure 231 µg/l, PNEC 2020 µg/l, RCR 0.114
Soil: Exposure 5.15 mg/kg, PNEC 5.4 mg/kg, RCR 0.954

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Exposure scenario
Environmental exposure scenario for industrial use of borates during the manufacture of frits

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
BD3 7AY
+44 1274 267300
+44 1274 267306
SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title Environmental exposure scenario for industrial use of borates during the manufacture of frits

Main sector SU3 Industrial uses

Sector of use SU13 Manufacture of other non-metallic mineral products

Environment

Environmental release category
ERC2 Formulation into mixture
ERC5 Use at industrial site leading to inclusion into/onto article
ERC6a Use of intermediate

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state Solid

Amounts used

Annual amount used in the EU: 6200 tonnes

Frequency and duration of use

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Release fraction to air from process (after typical onsite RMMs): 0.005

Emission factor - water Not applicable as there is no release to wastewater.

Environmental factors not influenced by risk management measures

Dilution No discharge of substance into waste water.

Risk management measures

Good practice Clear up spills immediately and dispose of waste safely.

Technical measures Formulation activity is assumed to be a predominantly enclosed process.

Environmental exposure scenario for industrial use of borates during the manufacture of frits

STP type Municipal STP.

Conditions and measures related to external treatment of waste for disposal

Disposal method This material and its container must be disposed of as hazardous waste.

2. Conditions of use affecting exposure (Industrial - Environment 2)

Product characteristics

Physical state Solid

Amounts used

Annual amount used in the EU: 2750

Frequency and duration of use

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Release fraction to air from process (after typical onsite RMMs): 0.006959

Emission factor - water Release fraction to wastewater from process (initial release prior to RMM): 0.006959

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 10

Risk management measures

Good practice Clear up spills immediately and dispose of waste safely.

Technical measures Formulation activity is assumed to be a predominantly enclosed process.

STP type Municipal STP.

Conditions and measures related to external treatment of waste for disposal

Disposal method This material and its container must be disposed of as hazardous waste.

3. Exposure estimation (Environment 1)

Environmental exposure Fresh water: Exposure 0 µg/l, PNEC 2020 µg/l, RCR 0
Soil: Exposure 5.29 mg/kg, PNEC 5.4 mg/kg, RCR 0.979

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

3. Exposure estimation (Environment 2)

Environmental exposure Fresh water: Exposure 1940 µg/l, PNEC 2020 µg/l, RCR 0.960
Soil: Exposure 2.35 mg/kg, PNEC 5.4 mg/kg, RCR 0.435

4. Guidance to check compliance with the exposure scenario (Environment 2)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Exposure scenario
Environmental exposure scenario for industrial use of borates in closed systems

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
BD3 7AY
+44 1274 267300
+44 1274 267306
SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title Environmental exposure scenario for industrial use of borates in closed systems

Main sector SU3 Industrial uses

Sector of use SU15 Manufacture of fabricated metal products, except machinery and equipment
SU17 General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment

Environment

Environmental release category ERC7 Use of functional fluid at industrial site

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state Solid , or: Solid in solution

Amounts used

Annual amount used in the EU: 275 tonnes

Frequency and duration of use

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Release fraction to air from process (after typical onsite RMMs): 0.05

Emission factor - water Release fraction to wastewater from process (initial release prior to RMM): 0.05

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 10

Risk management measures

Good practice Clear up spills immediately and dispose of waste safely.

Technical measures Handle substance within a closed system.

Environmental exposure scenario for industrial use of borates in closed systems

STP type Municipal STP.

Conditions and measures related to external treatment of waste for disposal

Disposal method This material and its container must be disposed of as hazardous waste.

2. Conditions of use affecting exposure (Industrial - Environment 2)

Product characteristics

Physical state Solid , or: Solid in solution

Amounts used

Annual amount used in the EU: 1150 tonnes

Frequency and duration of use

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Release fraction to air from process (after typical onsite RMMs): 0.0036562

Emission factor - water Release fraction to wastewater from process (initial release prior to RMM): 0.0036562

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 100

Risk management measures

Good practice Clear up spills immediately and dispose of waste safely.

Technical measures Handle substance within a closed system.

STP type Municipal STP.

Conditions and measures related to external treatment of waste for disposal

Disposal method This material and its container must be disposed of as hazardous waste.

3. Exposure estimation (Environment 1)

Environmental exposure Fresh water: Exposure 1940 µg/l, PNEC 2020 µg/l, RCR 0.960
Soil: Exposure 1.24 mg/kg, PNEC 5.4 mg/kg, RCR 0.229

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

3. Exposure estimation (Environment 2)

Environmental exposure Fresh water: Exposure 844 µg/l, PNEC 2020 µg/l, RCR 0.418
Soil: Exposure 5.15 mg/kg, PNEC 5.4 mg/kg, RCR 0.954

4. Guidance to check compliance with the exposure scenario (Environment 2)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Exposure scenario
Environmental exposure scenario for industrial use of borates in nuclear power plants with release to water

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
BD3 7AY
+44 1274 267300
+44 1274 267306
SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title Environmental exposure scenario for industrial use of borates in nuclear power plants with release to water

Main sector SU3 Industrial uses

Sector of use SU23 Electricity, steam, gas, water supply and sewage treatment

Environment

Environmental release category ERC2 Formulation into mixture
ERC7 Use of functional fluid at industrial site

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state Solid , or: Solid in solution

Amounts used

Annual amount used in the EU: 13000 tonnes

Frequency and duration of use

Emission days: 32 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Negligible air emissions as process operates in a contained system.

Emission factor - water Release fraction to wastewater from process (initial release prior to RMM): 0.013

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 200

Risk management measures

Good practice Clear up spills immediately and dispose of waste safely.

Technical measures Handle substance within a closed system.

Environmental exposure scenario for industrial use of borates in nuclear power plants with release to water

STP type No STP.

Conditions and measures related to external treatment of waste for disposal

Disposal method This material and its container must be disposed of as hazardous waste.

3. Exposure estimation (Environment 1)

Environmental exposure Fresh water: Exposure 1072 µg/l, PNEC 2020 µg/l, RCR 0.531
Soil: Exposure 0 mg/kg, PNEC 5.4 mg/kg, RCR 0

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Exposure scenario
Environmental exposure scenario for industrial use of borates in nuclear power plants without release to water

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
BD3 7AY
+44 1274 267300
+44 1274 267306
SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title Environmental exposure scenario for industrial use of borates in nuclear power plants without release to water

Main sector SU3 Industrial uses

Sector of use SU23 Electricity, steam, gas, water supply and sewage treatment

Environment

Environmental release category ERC2 Formulation into mixture
ERC7 Use of functional fluid at industrial site

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state Solid , or: Solid in solution

Amounts used

Annual amount used in the EU: 15000 tonnes

Frequency and duration of use

Emission days: 75 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Release fraction to air from process (after typical onsite RMMs): 0.0004

Emission factor - water Not applicable as there is no release to wastewater.

Environmental factors not influenced by risk management measures

Dilution Not applicable as there is no release to wastewater.

Risk management measures

Good practice Clear up spills immediately and dispose of waste safely.

Technical measures Handle substance within a closed system.

Environmental exposure scenario for industrial use of borates in nuclear power plants without release to water

STP type Not applicable as there is no release to wastewater.

Conditions and measures related to external treatment of waste for disposal

Disposal method This material and its container must be disposed of as hazardous waste.

3. Exposure estimation (Environment 1)

Environmental exposure Fresh water: Exposure 0 µg/l, PNEC 2020 µg/l, RCR 0
Soil: Exposure 0.74 mg/kg, PNEC 5.4 mg/kg, RCR 0.137

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Exposure scenario
Environmental exposure scenario for generic industrial processing of articles with low abrasive techniques

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
BD3 7AY
+44 1274 267300
+44 1274 267306
SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title Environmental exposure scenario for generic industrial processing of articles with low abrasive techniques

Article category AC4 Stone, plaster, cement, glass and ceramic articles

Main sector SU3 Industrial uses
SU22 Professional uses

Sector of use SU19 Building and construction work

Environment

Environmental release category ERC12a Processing of articles at industrial sites with low release

2. Conditions of use affecting exposure (Industrial - Environment 1)

Amounts used

Annual amount used in the EU: 30 tonnes

Frequency and duration of use

Emission days: 20 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Release fraction to air from process (after typical onsite RMMs): 0.025

Emission factor - water Release fraction to wastewater from process (initial release prior to RMM): 0.025

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 10

Risk management measures

Good practice Clear up spills immediately and dispose of waste safely.

STP type Municipal STP.

Environmental exposure scenario for generic industrial processing of articles with low abrasive techniques

Conditions and measures related to external treatment of waste for disposal

Disposal method This material and its container must be disposed of as hazardous waste.

2. Conditions of use affecting exposure (Industrial - Environment 2)

Amounts used

Annual amount used in the EU: 300 tonnes

Frequency and duration of use

Emission days: 20 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Release fraction to air from process (after typical onsite RMMs): 0.025

Emission factor - water Release fraction to wastewater from process (initial release prior to RMM): 0.025

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 100

Risk management measures

Good practice Clear up spills immediately and dispose of waste safely.

STP type Municipal STP.

Conditions and measures related to external treatment of waste for disposal

Disposal method This material and its container must be disposed of as hazardous waste.

2. Conditions of use affecting exposure (Industrial - Environment 3)

Amounts used

Annual amount used in the EU: 1700 tonnes

Frequency and duration of use

Emission days: 20 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Release fraction to air from process (after typical onsite RMMs): 0.025

Emission factor - water Not applicable as there is no release to wastewater.

Environmental factors not influenced by risk management measures

Dilution No discharge of substance into waste water.

Risk management measures

Good practice Clear up spills immediately and dispose of waste safely.

STP type Municipal STP.

Conditions and measures related to external treatment of waste for disposal

Disposal method This material and its container must be disposed of as hazardous waste.

3. Exposure estimation (Environment 1)

Environmental exposure Fresh water: Exposure 1932 µg/l, PNEC 2020 µg/l, RCR 0.956
Soil: Exposure 0.10 mg/kg, PNEC 5.4 mg/kg, RCR 0.018

Environmental exposure scenario for generic industrial processing of articles with low abrasive techniques

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

3. Exposure estimation (Environment 2)

Environmental exposure

Fresh water: Exposure 1932 µg/l, PNEC 2020 µg/l, RCR 0.956
Soil: Exposure 0.92 mg/kg, PNEC 5.4 mg/kg, RCR 0.171

4. Guidance to check compliance with the exposure scenario (Environment 2)

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

3. Exposure estimation (Environment 3)

Environmental exposure

Fresh water: Exposure 0 µg/l, PNEC 2020 µg/l, RCR 0
Soil: Exposure 5.21 mg/kg, PNEC 5.4 mg/kg, RCR 0.964

4. Guidance to check compliance with the exposure scenario (Environment 3)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Exposure scenario
Environmnental exposure scenario for generic use of borates in laboratories as analytical reagent

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
BD3 7AY
+44 1274 267300
+44 1274 267306
SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title Environmnental exposure scenario for generic use of borates in laboratories as analytical reagent

Main sector SU3 Industrial uses
SU22 Professional uses

Environment

Environmental release category
ERC6b Use of reactive processing aid at industrial site (no inclusion into or onto article)
ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
ERC8b Widespread use of reactive processing aid (no inclusion into or onto article, indoor)
ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)
ERC8e Widespread use of reactive processing aid (no inclusion into or onto article, outdoor)

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state Solid , or: Solid in solution

Amounts used

Small scale

Frequency and duration of use

Emission days: 365 days/year

Risk management measures

Good practice Clear up spills immediately and dispose of waste safely. Ensure operatives are trained to minimise exposures.

Technical measures Prevent discharge of undissolved substance to or recover from onsite waste water.

STP type Municipal STP.

Environmnental exposure scenario for generic use of borates in laboratories as analytical reagent

Conditions and measures related to external treatment of waste for disposal

Disposal method This material and its container must be disposed of as hazardous waste.

3. Exposure estimation (Environment 1)

Environmental exposure Qualitative approach used to conclude safe use.

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Exposure scenario
Environmental exposure scenario for generic wide dispersive use of borates with 100% release to water

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
BD3 7AY
+44 1274 267300
+44 1274 267306
SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title Environmental exposure scenario for generic wide dispersive use of borates with 100% release to water

Main sector
SU21 Consumer uses
SU22 Professional uses

Environment

Environmental release category
ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state Solid , or: Solid in solution

Amounts used

Annual amount used in the EU: 35000 tonnes

Frequency and duration of use

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Not applicable for wide dispersive uses.

Emission factor - water Release fraction to wastewater from wide dispersive use: 1

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 10

Risk management measures

STP type Municipal STP.

Environmental exposure scenario for generic wide dispersive use of borates with 100% release to water

STP details Assumed domestic sewage treatment plant flow: 2000 m³/day

Conditions and measures related to external treatment of waste for disposal

Disposal method Not applicable for wide dispersive uses.

3. Exposure estimation (Environment 1)

Environmental exposure STP: Exposure 9589 µg/l, PNEC 10000 µg/l, RCR 0.959
Fresh water: Exposure 1015 µg/l, PNEC 2020 µg/l, RCR 0.503

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Exposure scenario
Environmental exposure scenario for wide dispersive use of fertilizers containing borates

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
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+44 1274 267300
+44 1274 267306
SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title Environmental exposure scenario for wide dispersive use of fertilizers containing borates

Main sector
SU21 Consumer uses
SU22 Professional uses

Sector of use SU1 Agriculture, forestry, fishery

Environment

Environmental release category
ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)
ERC8c Widespread use leading to inclusion into/onto article (indoor)
ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)
ERC8f Widespread use leading to inclusion into/onto article (outdoor)

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state Solid , or: Solid in solution

Concentration details Covers concentrations up to 7.7 %.

Amounts used

Annual amount used in the EU: 35000 tonnes

Other given operational conditions affecting environmental exposure

Emission factor - air Not applicable for wide dispersive uses.

Emission factor - water Release fraction to wastewater from wide dispersive use: 1

Environmental factors not influenced by risk management measures

Dilution Not applicable.

Risk management measures

STP type Not relevant.

Environmental exposure scenario for wide dispersive use of fertilizers containing borates

Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Soil Controlled application to agricultural soil.

Conditions and measures related to external treatment of waste for disposal

Disposal method Not applicable for wide dispersive uses.

3. Exposure estimation (Environment 1)

Environmental exposure The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Exposure scenario
Environmental exposure scenario for generic wide dispersive use of paints and coatings containing borates

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier
Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
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BD3 7AY
+44 1274 267300
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1. Title of exposure scenario

Main title Environmental exposure scenario for generic wide dispersive use of paints and coatings containing borates

Main sector SU22 Professional uses

Environment

Environmental release category ERC8c Widespread use leading to inclusion into/onto article (indoor)
ERC8f Widespread use leading to inclusion into/onto article (outdoor)

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state Solid

Amounts used

Annual amount used in the EU: 1750000 tonnes

Frequency and duration of use

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Not applicable for wide dispersive uses.

Emission factor - water Release fraction to wastewater from wide dispersive use: 0.02

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 10

Risk management measures

STP type Municipal STP.

STP details Assumed domestic sewage treatment plant flow: 2000 m³/day

Conditions and measures related to external treatment of waste for disposal

Environmental exposure scenario for generic wide dispersive use of paints and coatings containing borates

Disposal method	Not applicable for wide dispersive uses.

3. Exposure estimation (Environment 1)

Environmental exposure	STP: Exposure 9589 µg/l, PNEC 10000 µg/l, RCR 0.959 Fresh water: Exposure 1015 µg/l, PNEC 2020 µg/l, RCR 0.503

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Exposure scenario
Environmental exposure scenario for generic wide dispersive use of cellulose insulation

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
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Bradford
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1. Title of exposure scenario

Main title Environmental exposure scenario for generic wide dispersive use of cellulose insulation

Main sector SU22 Professional uses

Environment

Environmental release category ERC8c Widespread use leading to inclusion into/onto article (indoor)
ERC8f Widespread use leading to inclusion into/onto article (outdoor)

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state Product applied to a substate to form a solid matrix.

Amounts used

Annual amount used in the EU: 3500000 tonnes

Frequency and duration of use

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Not applicable for wide dispersive uses.

Emission factor - water Release fraction to wastewater from wide dispersive use: 0.01

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 10

Risk management measures

STP type Municipal STP.

STP details Assumed domestic sewage treatment plant flow: 2000 m³/day

Conditions and measures related to external treatment of waste for disposal

Disposal method Not applicable for wide dispersive uses.

Environmental exposure scenario for generic wide dispersive use of cellulose insulation

3. Exposure estimation (Environment 1)

Environmental exposure

STP: Exposure 9589 µg/l, PNEC 10000 µg/l, RCR 0.959
Fresh water: Exposure 1015 µg/l, PNEC 2020 µg/l, RCR 0.503

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Exposure scenario

Environmental exposure scenario for generic wide dispersive use of articles containing borates with low release

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
BD3 7AY
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1. Title of exposure scenario

Main title Environmental exposure scenario for generic wide dispersive use of articles containing borates with low release

Main sector SU22 Professional uses

Environment

Environmental release category ERC10a Widespread use of articles with low release (outdoor)
ERC11a Widespread use of articles with low release (indoor)

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state Product applied to a substate to form a solid matrix.

Amounts used

Annual amount used in the EU: 1100000 tonnes

Frequency and duration of use

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Not applicable for wide dispersive uses.

Emission factor - water Release fraction to wastewater from wide dispersive use: 0.032

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 10

Risk management measures

STP type Municipal STP.

STP details Assumed domestic sewage treatment plant flow: 2000 m³/day

Conditions and measures related to external treatment of waste for disposal

Environmental exposure scenario for generic wide dispersive use of articles containing borates with low release

Disposal method Not applicable for wide dispersive uses.

3. Exposure estimation (Environment 1)

Environmental exposure STP: Exposure 9644 µg/l, PNEC 10000 µg/l, RCR 0.964
Fresh water: Exposure 1021 µg/l, PNEC 2020 µg/l, RCR 0.505

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Exposure scenario

Environmental exposure scenario for generic wide dispersive use of articles containing borates with high release

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
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1. Title of exposure scenario

Main title Environmental exposure scenario for generic wide dispersive use of articles containing borates with high release

Main sector SU22 Professional uses

Environment

Environmental release category ERC10b Widespread use of articles with high or intended release (outdoor)
ERC11b Widespread use of articles with high or intended release (indoor)

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state Product applied to a substate to form a solid matrix.

Amounts used

Annual amount used in the EU: 35000 tonnes

Frequency and duration of use

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Not applicable for wide dispersive uses.

Emission factor - water Release fraction to wastewater from wide dispersive use: 1

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 10

Risk management measures

STP type Municipal STP.

STP details Assumed domestic sewage treatment plant flow: 2000 m³/day

Conditions and measures related to external treatment of waste for disposal

Environmental exposure scenario for generic wide dispersive use of articles containing borates with high release

Disposal method Not applicable for wide dispersive uses.

3. Exposure estimation (Environment 1)

Environmental exposure STP: Exposure 9589 µg/l, PNEC 10000 µg/l, RCR 0.959
Fresh water: Exposure 1015 µg/l, PNEC 2020 µg/l, RCR 0.503

4. Guidance to check compliance with the exposure scenario (Environment 1)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Exposure scenario
Occupational exposure scenario for professional use of swimming pool tablets

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
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1. Title of exposure scenario

Main title Occupational exposure scenario for professional use of swimming pool tablets

Main sector SU22 Professional uses

Worker

Process category PROC0 Other process or activity.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Solid, low dustiness

Concentration details Concentration of substance in product: 5%

Amounts used

Amount per use: 200 g

Frequency and duration of use

Application duration: 5 minutes

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure operatives are trained to minimise exposures.

Risk management measures

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Health 1)

Assessment method MEASE

Exposure The use is assessed to be safe.

4. Guidance to check compliance with the exposure scenario (Health 1)

Occupational exposure scenario for professional use of swimming pool tablets

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. For scaling see http://www.ebrc.de/ebrc/ebrc-mease.php

Exposure scenario

Occupational exposure scenario for general production activities - closed processes and largely closed processes at high temperature

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
BD3 7AY
+44 1274 267300
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1. Title of exposure scenario

Main title Occupational exposure scenario for general production activities - closed processes and largely closed processes at high temperature

Main sector SU3 Industrial uses

Sector of use
SU8 Manufacture of bulk, large-scale chemicals (including petroleum products)
SU9 Manufacture of fine chemicals
SU10 Formulation [mixing] of preparations and/or re-packaging
SU13 Manufacture of other non-metallic mineral products
SU14 Manufacture of basic metals, including alloys
SU15 Manufacture of fabricated metal products, except machinery and equipment
SU17 General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment

Worker

Process category
PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC22 Manufacturing and processing of minerals and/or metals at substantially elevated temperature
PROC23 Open processing and transfer operations at substantially elevated temperature

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Solid

Frequency and duration of use

Continuous.

Other given operational conditions affecting workers exposure

Occupational exposure scenario for general production activities - closed processes and largely closed processes at high temperature

Setting Indoor.

Temperature Assumes activities reflect a hot process.

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Handle substance within a closed system. Provide extract ventilation to material transfer points and other openings.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure operatives are trained to minimise exposures. Regular inspection and maintenance of equipment and machines.

Risk management measures

Wear suitable coveralls to prevent exposure to the skin.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Health 1)

Assessment method MEASE

Exposure Worker - inhalation: Exposure 0.01 mg/m³, DNEL 1.45 mg/m³, RCR 0.0069
Worker - dermal: Exposure 0.048 mg/kg/day, DNEL 4800 mg/kg/day, RCR 0.001

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. For scaling see http://www.ebrc.de/ebrc/ebrc-mease.php

Exposure scenario
Occupational exposure scenario for refining and processing borates

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
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1. Title of exposure scenario

Main title Occupational exposure scenario for refining and processing borates

Main sector SU3 Industrial uses

Sector of use SU8 Manufacture of bulk, large-scale chemicals (including petroleum products)
SU9 Manufacture of fine chemicals

Worker

Process category PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC4 Chemical production where opportunity for exposure arises
PROC14 Tabletting, compression, extrusion, pelletisation, granulation

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Solid

Frequency and duration of use

Continuous.

Other given operational conditions affecting workers exposure

Setting Indoor.

Temperature Assumes activities reflect a hot process.

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Handle substance within a closed system. Provide extract ventilation to material transfer points and other openings.

Organisational measures to prevent/limit releases, dispersion and exposure

Occupational exposure scenario for refining and processing borates

Organisational measures Ensure operatives are trained to minimise exposures. Regular inspection and maintenance of equipment and machines.

Risk management measures

Wear suitable coveralls to prevent exposure to the skin.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Health 1)

Assessment method MEASE

Exposure Worker - inhalation: Exposure 0.01 mg/m³, DNEL 1.45 mg/m³, RCR 0.0069
Worker - dermal: Exposure 0.048 mg/kg/day, DNEL 4800 mg/kg/day, RCR 0.001

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. For scaling see http://www.ebrc.de/ebrc/ebrc-mease.php

Exposure scenario
Occupational exposure scenario for use of fabric detergents in industrial or professional settings

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier
Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
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1. Title of exposure scenario

Main title Occupational exposure scenario for use of fabric detergents in industrial or professional settings

Product category PC35 Washing and cleaning products

Main sector SU22 Professional uses

Worker

Process category
PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC10 Roller application or brushing
PROC11 Non industrial spraying
PROC13 Treatment of articles by dipping and pouring.
PROC19 Manual activities involving hand contact

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Liquid , or: Gel

Concentration details Concentration of substance in product: 1%

Amounts used

Small scale

Frequency and duration of use

Occupational exposure scenario for use of fabric detergents in industrial or professional settings

Machine
Covers daily exposure up to 5minutes
Hand
Application duration: <60 minutes

Other given operational conditions affecting workers exposure

Setting Indoor.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure operatives are trained to minimise exposures. Regular inspection and maintenance of equipment and machines.

Risk management measures

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Health 1)

Assessment method MEASE

Exposure Worker - dermal: Exposure 0.048 mg/kg/day, DNEL 4800 mg/kg/day, RCR 0.001
Worker - inhalation
Not relevant.

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. For scaling see http://www.ebrc.de/ebrc/ebrc-mease.php

Exposure scenario
Occupational exposure scenario for fertigation using boron containing liquid fertilizer

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

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1. Title of exposure scenario

Main title Occupational exposure scenario for fertigation using boron containing liquid fertilizer

Product category PC12 Lawn and garden preparations (- fertilizers).

Main sector SU22 Professional uses

Sector of use SU1 Agriculture, forestry, fishery

Worker

Process category PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Liquid

Concentration details Concentration of substance in product: 7%

Frequency and duration of use

Loading of application equipment
Covers frequency up to 2 day/week, , .
Application duration: 15 minutes

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Handle substance within a closed system.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure operatives are trained to minimise exposures. Regular inspection and maintenance of equipment and machines.

Risk management measures

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Health 1)

Occupational exposure scenario for fertigation using boron containing liquid fertilizer

Assessment method	MEASE
Exposure	Worker - dermal: Exposure 0.014 mg/kg/day, DNEL 4800 mg/kg/day, RCR 0.001 Worker - inhalation Not relevant.

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. For scaling see http://www.ebrc.de/ebrc/ebrc-mease.php

Exposure scenario
Occupational exposure scenario for industrial application of adhesive

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
BD3 7AY
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1. Title of exposure scenario

Main title Occupational exposure scenario for industrial application of adhesive

Product category PC1 Adhesives, sealants.

Main sector SU3 Industrial uses

Sector of use
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, e.g. machinery, equipment, vehicles, other transport equipment
SU18 Manufacture of furniture
SU19 Building and construction work

Worker

Process category
PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC4 Chemical production where opportunity for exposure arises
PROC5 Mixing or blending in batch processes
PROC7 Industrial spraying
PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
PROC10 Roller application or brushing
PROC13 Treatment of articles by dipping and pouring.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Liquid

Concentration details Concentration of substance in product: 1.5%

Amounts used

Occupational exposure scenario for industrial application of adhesive

Daily amount per site: 300 kg

Frequency and duration of use

Continuous process
Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting Indoor.

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Automate activity where possible. Provide extract ventilation to points where emissions occur.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure operatives are trained to minimise exposures. Regular inspection and maintenance of equipment and machines.

Risk management measures

Wear suitable working clothes.
Use suitable eye protection.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Health 1)

Assessment method Inhalation Used ART model. Dermal MEASE

Exposure Worker - inhalation: Exposure 0.11 mg/m³, DNEL 1.45 mg/m³, RCR 0.076
Worker - dermal: Exposure 0.048 mg/kg/day, DNEL 4800 mg/kg/day, RCR 0.001

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. For scaling see http://www.ebrc.de/ebrc/ebrc-mease.php

Exposure scenario
Occupational exposure scenario for discharging bags (25-50kg) into mixing vessels

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
BD3 7AY
+44 1274 267300
+44 1274 267306
SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title Occupational exposure scenario for discharging bags (25-50kg) into mixing vessels

Product category

PC1 Adhesives, sealants.
PC7 Base metals and alloys.
PC8 Biocidal products
PC9a Coatings and paints, thinners, paint removers.
PC12 Lawn and garden preparations (- fertilizers).
PC18 Ink and toners.
PC19 Intermediate.
PC20 Processing aids such as pH-regulators, flocculants, precipitants, neutralization agents
PC21 Laboratory chemicals.
PC24 Lubricants, greases and release products.
PC25 Metal working fluids.
PC30 Photochemicals.
PC32 Polymer preparations and compounds.
PC35 Washing and cleaning products
PC37 Water treatment chemicals.
PC38 Welding and soldering products, flux products

Main sector SU3 Industrial uses

Occupational exposure scenario for discharging bags (25-50kg) into mixing vessels

Sector of use

SU1 Agriculture, forestry, fishery
SU5 Manufacture of textiles, leather, fur
SU6a Manufacture of wood and wood products
SU6b Manufacture of pulp, paper and paper products
SU7 Printing and reproduction of recorded media
SU8 Manufacture of bulk, large-scale chemicals (including petroleum products)
SU9 Manufacture of fine chemicals
SU10 Formulation [mixing] of preparations and/or re-packaging
SU11 Manufacture of rubber products
SU13 Manufacture of other non-metallic mineral products
SU14 Manufacture of basic metals, including alloys
SU15 Manufacture of fabricated metal products, except machinery and equipment
SU17 General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment
SU23 Electricity, steam, gas, water supply and sewage treatment
SU9 Manufacture of fine chemicals

Worker

Process category

PROC4 Chemical production where opportunity for exposure arises
PROC5 Mixing or blending in batch processes

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state

Solid

Concentration details

Covers concentrations up to 100 %.

Frequency and duration of use

Application duration: 1 hour

Other given operational conditions affecting workers exposure

Setting

Indoor.

Temperature

Assumes activities are at ambient temperature (unless stated differently).

Technical conditions and measures at process level (source) to prevent release

Technical protective measures

Automate activity where possible. Provide extract ventilation to points where emissions occur. Dispose of empty containers and wastes safely.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures

Ensure operatives are trained to minimise exposures. Regular inspection and maintenance of equipment and machines.

Risk management measures

Wear suitable working clothes.
Use suitable eye protection.
If above technical/organisational control measures are not feasible, then adopt following PPE:
Wear a respirator conforming to EN140 with Type A/P2 filter or better.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Health 1)

Assessment method

MEASE

Exposure

Worker - inhalation: Exposure 0.78 mg/m³, DNEL 1.45 mg/m³, RCR 0.54
Worker - dermal: Exposure 0.48 mg/kg/day, DNEL 4800 mg/kg/day, RCR 0.001

Occupational exposure scenario for discharging bags (25-50kg) into mixing vessels

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. For scaling see http://www.ebrc.de/ebrc/ebrc-mease.php

Exposure scenario
Occupational exposure scenario for discharging big bags (750-1500kg) into mixing vessels

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
BD3 7AY
+44 1274 267300
+44 1274 267306
SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title Occupational exposure scenario for discharging big bags (750-1500kg) into mixing vessels

Product category

PC1 Adhesives, sealants.
PC4 Anti-freeze and de-icing products.
PC7 Base metals and alloys.
PC8 Biocidal products
PC9a Coatings and paints, thinners, paint removers.
PC12 Lawn and garden preparations (- fertilizers).
PC16 Heat transfer fluids.
PC18 Ink and toners.
PC19 Intermediate.
PC20 Processing aids such as pH-regulators, flocculants, precipitants, neutralization agents
PC21 Laboratory chemicals.
PC24 Lubricants, greases and release products.
PC25 Metal working fluids.
PC30 Photochemicals.
PC32 Polymer preparations and compounds.
PC35 Washing and cleaning products
PC37 Water treatment chemicals.
PC38 Welding and soldering products, flux products

Main sector SU3 Industrial uses

Occupational exposure scenario for discharging big bags (750-1500kg) into mixing vessels

Sector of use

SU1 Agriculture, forestry, fishery
SU5 Manufacture of textiles, leather, fur
SU6a Manufacture of wood and wood products
SU6b Manufacture of pulp, paper and paper products
SU7 Printing and reproduction of recorded media
SU8 Manufacture of bulk, large-scale chemicals (including petroleum products)
SU9 Manufacture of fine chemicals
SU10 Formulation [mixing] of preparations and/or re-packaging
SU11 Manufacture of rubber products
SU13 Manufacture of other non-metallic mineral products
SU14 Manufacture of basic metals, including alloys
SU15 Manufacture of fabricated metal products, except machinery and equipment
SU17 General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment
SU23 Electricity, steam, gas, water supply and sewage treatment
SU9 Manufacture of fine chemicals

Worker

Process category

PROC4 Chemical production where opportunity for exposure arises
PROC5 Mixing or blending in batch processes
PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Solid

Concentration details Covers concentrations up to 100 %.

Frequency and duration of use

Application duration: 1 hour

Other given operational conditions affecting workers exposure

Setting Indoor.

Temperature Assumes activities are at ambient temperature (unless stated differently).

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Automate activity where possible. Provide extract ventilation to points where emissions occur. Dispose of empty containers and wastes safely.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure operatives are trained to minimise exposures. Regular inspection and maintenance of equipment and machines.

Risk management measures

Wear suitable working clothes.
Use suitable eye protection.
Wear a respirator conforming to EN140 with Type A/P2 filter or better.
Wear a respirator providing a minimum efficiency of (%): 90

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Health 1)

Assessment method MEASE

Occupational exposure scenario for discharging big bags (750-1500kg) into mixing vessels

Exposure	Worker - inhalation: Exposure 0.2 mg/m³, DNEL 1.45 mg/m³, RCR 0.14 Worker - dermal: Exposure 4.8 mg/kg/day, DNEL 4800 mg/kg/day, RCR 0.001

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. For scaling see http://www.ebrc.de/ebrc/ebrc-mease.php

Exposure scenario
Occupational exposure scenario for diluting Metal Working Fluid concentrate with water

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
BD3 7AY
+44 1274 267300
+44 1274 267306
SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title Occupational exposure scenario for diluting Metal Working Fluid concentrate with water

Product category PC25 Metal working fluids.

Main sector SU3 Industrial uses

Sector of use SU15 Manufacture of fabricated metal products, except machinery and equipment
SU17 General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment

Worker

Process category PROC5 Mixing or blending in batch processes

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Liquid

Concentration details Covers concentrations up to 5.5 %.

Frequency and duration of use

Application duration: 1 hour

Other given operational conditions affecting workers exposure

Setting Indoor.

Temperature Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure operatives are trained to minimise exposures. Regular inspection and maintenance of equipment and machines.

Risk management measures

Wear suitable working clothes.
Use suitable eye protection.

Assumes a good basic standard of occupational hygiene is implemented.

Occupational exposure scenario for diluting Metal Working Fluid concentrate with water

3. Exposure estimation (Health 1)

Assessment method	MEASE
Exposure	Worker - dermal: Exposure 0.005 mg/kg/day, DNEL 4800 mg/kg/day, RCR 0.001 Worker - inhalation Not applicable.

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. For scaling see http://www.ebrc.de/ebrc/ebrc-mease.php

Exposure scenario
Occupational exposure scenario for transfer of boron-containing granular fertiliser

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
BD3 7AY
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1. Title of exposure scenario

Main title Occupational exposure scenario for transfer of boron-containing granular fertiliser

Product category PC12 Lawn and garden preparations (- fertilizers).

Main sector SU22 Professional uses

Sector of use SU1 Agriculture, forestry, fishery

Worker

Process category PROC5 Mixing or blending in batch processes
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Solid

Concentration details Covers concentrations up to 4.5 %.

Frequency and duration of use

Loading of application equipment
Application duration: 1 hour
Covers frequency up to 2 days/year, , .

Other given operational conditions affecting workers exposure

Setting Indoor/outdoor use.

Temperature Assumes activities are at ambient temperature (unless stated differently).

Ventilation rate 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.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure operatives are trained to minimise exposures. Regular inspection and maintenance of equipment and machines.

Occupational exposure scenario for transfer of boron-containing granular fertiliser

Risk management measures

Wear suitable working clothes.
Use suitable eye protection.
If above technical/organisational control measures are not feasible, then adopt following PPE:
Wear a respirator conforming to EN140 with Type A/P2 filter or better.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Health 1)

Assessment method Inhalation Used ART model. Dermal MEASE

Exposure Worker - inhalation: Exposure 1.22 mg/m³, DNEL 1.45 mg/m³, RCR 0.84
Worker - dermal: Exposure 0.019 mg/kg/day, DNEL 4800 mg/kg/day, RCR 0.001

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. For scaling see http://www.ebrc.de/ebrc/ebrc-mease.php

Exposure scenario
Occupational exposure scenario for industrial use of paints and coatings

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
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1. Title of exposure scenario

Main title Occupational exposure scenario for industrial use of paints and coatings

Product category PC9a Coatings and paints, thinners, paint removers.
PC18 Ink and toners.

Main sector SU3 Industrial uses

Sector of use SU7 Printing and reproduction of recorded media

Worker

Process category PROC7 Industrial spraying
PROC10 Roller application or brushing

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Liquid

Concentration details Covers concentrations up to 3.6 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting Indoor.

Temperature Assumes activities are at ambient temperature (unless stated differently).

Ventilation rate 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.

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Provide extract ventilation to points where emissions occur.

Organisational measures to prevent/limit releases, dispersion and exposure

Occupational exposure scenario for industrial use of paints and coatings

Organisational measures Ensure operatives are trained to minimise exposures. Regular inspection and maintenance of equipment and machines.

Risk management measures

Wear suitable working clothes.
Use suitable eye protection.
PROC7 Industrial spraying
If above technical/organisational control measures are not feasible, then adopt following PPE:
Wear a full-face respirator conforming to EN136 with Type A/P2 filter or better.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Health 1)

Assessment method Inhalation Used ART model. Dermal MEASE

Exposure Worker - inhalation: Exposure 0.67 mg/m³, DNEL 1.45 mg/m³, RCR 0.46
Worker - dermal: Exposure 0.048 mg/kg/day, DNEL 4800 mg/kg/day, RCR 0.001

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. For scaling see http://www.ebrc.de/ebrc/ebrc-mease.php

Exposure scenario
Occupational exposure scenario for use of cleaning solutions in industrial or professional settings

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier
Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
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1. Title of exposure scenario

Main title Occupational exposure scenario for use of cleaning solutions in industrial or professional settings

Product category PC20 Processing aids such as pH-regulators, flocculants, precipitants, neutralization agents
PC35 Washing and cleaning products

Main sector SU3 Industrial uses

Sector of use SU15 Manufacture of fabricated metal products, except machinery and equipment
SU17 General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment

Worker

Process category PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC4 Chemical production where opportunity for exposure arises
PROC7 Industrial spraying
PROC10 Roller application or brushing
PROC11 Non industrial spraying
PROC19 Manual activities involving hand contact

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Liquid

Concentration details Covers concentrations up to 25 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting Indoor.

Temperature Assumes activities are at ambient temperature (unless stated differently).

Occupational exposure scenario for use of cleaning solutions in industrial or professional settings

Ventilation rate	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.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures	Ensure operatives are trained to minimise exposures. Regular inspection and maintenance of equipment and machines.

Risk management measures

Wear suitable working clothes.
Use suitable eye protection.

Additional advice	Avoid splashing.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Health 1)

Assessment method	Inhalation Used ART model. Dermal MEASE
Exposure	Spraying Worker - inhalation: Exposure 1.2 mg/m³, DNEL 1.45 mg/m³, RCR 0.83 Worker - dermal: Exposure 0.14 mg/kg/day, DNEL 4800 mg/kg/day, RCR 0.001 Roller, spreader, flow application Worker - inhalation: Exposure 0.11 mg/m³, DNEL 1.45 mg/m³, RCR 0.076 Worker - dermal: Exposure 14.4 mg/kg/day, DNEL 4800 mg/kg/day, RCR 0.003

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. For scaling see http://www.ebrc.de/ebrc/ebrc-mease.php

Exposure scenario
Occupational exposure scenario for preparing and applying refractory mixes

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
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1. Title of exposure scenario

Main title Occupational exposure scenario for preparing and applying refractory mixes

Product category
PC0 Other products.
PC15 Non-metal-surface treatment products.

Main sector SU3 Industrial uses

Sector of use
SU10 Formulation [mixing] of preparations and/or re-packaging
SU14 Manufacture of basic metals, including alloys
SU15 Manufacture of fabricated metal products, except machinery and equipment

Worker

Process category
PROC7 Industrial spraying
PROC19 Manual activities involving hand contact

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Solid , or: Solid in solution

Concentration details Covers concentrations up to 5 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting Indoor.

Temperature Assumes activities reflect a hot process.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure operatives are trained to minimise exposures. Regular inspection and maintenance of equipment and machines.

Risk management measures

Occupational exposure scenario for preparing and applying refractory mixes

Wear suitable working clothes.
Use suitable eye protection.
If above technical/organisational control measures are not feasible, then adopt following PPE:
Wear a full-face respirator conforming to EN136 with Type A/P2 filter or better.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Health 1)

Assessment method

Inhalation Used ART model. Dermal MEASE

Exposure

PROC7 Industrial spraying
Worker - inhalation: Exposure 0.012 mg/m³, DNEL 1.45 mg/m³, RCR 0.008
PROC7 Industrial spraying
Worker - dermal: Exposure 0.42 mg/kg/day, DNEL 4800 mg/kg/day, RCR 0.001
PROC19 Manual activities involving hand contact
Worker - dermal: Exposure 2.4 mg/kg/day, DNEL 4800 mg/kg/day, RCR 0.001

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. For scaling see http://www.ebrc.de/ebrc/ebrc-mease.php

Exposure scenario
Occupational exposure scenario for loading road tankers

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
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BD3 7AY
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1. Title of exposure scenario

Main title Occupational exposure scenario for loading road tankers

Product category

PC1 Adhesives, sealants.
PC7 Base metals and alloys.
PC8 Biocidal products
PC9a Coatings and paints, thinners, paint removers.
PC9b Fillers, putties, plasters, modelling clay.
PC12 Lawn and garden preparations (- fertilizers).
PC14 Metal surface treatment products
PC15 Non-metal-surface treatment products.
PC17 Hydraulic fluids.
PC18 Ink and toners.
PC19 Intermediate.
PC20 Processing aids such as pH-regulators, flocculants, precipitants, neutralization agents
PC21 Laboratory chemicals.
PC23 Leather treatment products
PC24 Lubricants, greases and release products.
PC25 Metal working fluids.
PC26 Paper and board treatment products
PC29 Pharmaceuticals
PC30 Photochemicals.
PC32 Polymer preparations and compounds.
PC37 Water treatment chemicals.
PC38 Welding and soldering products, flux products
PC39 Cosmetics, personal care.

Main sector SU3 Industrial uses

Sector of use

SU8 Manufacture of bulk, large-scale chemicals (including petroleum products)
SU9 Manufacture of fine chemicals

Worker

Occupational exposure scenario for loading road tankers

Process category PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Solid

Concentration details Covers concentrations up to 100 %.

Amounts used

Amount per use: 25 tonnes

Frequency and duration of use

Application duration: 30 minutes

Other given operational conditions affecting workers exposure

Setting Outdoor.

Temperature Assumes activities are at ambient temperature (unless stated differently).

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Automated process with (semi) closed systems Provide extract ventilation to points where emissions occur.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure operatives are trained to minimise exposures. Regular inspection and maintenance of equipment and machines.

Risk management measures

Wear suitable working clothes.
Use suitable eye protection.
If above technical/organisational control measures are not feasible, then adopt following PPE:
Wear a respirator conforming to EN140 with Type A/P2 filter or better.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Health 1)

Assessment method MEASE

Exposure Worker - inhalation: Exposure 0.37 mg/m³, DNEL 1.45 mg/m³, RCR 0.26
Worker - dermal: Exposure 0.029 mg/kg/day, DNEL 4800 mg/kg/day, RCR 0.001

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. For scaling see http://www.ebrc.de/ebrc/ebrc-mease.php

Exposure scenario
Occupational exposure scenario for closed production at ambient temperatures

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
BD3 7AY
+44 1274 267300
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1. Title of exposure scenario

Main title Occupational exposure scenario for closed production at ambient temperatures

Product category

PC0 Other products.
PC1 Adhesives, sealants.
PC8 Biocidal products
PC9a Coatings and paints, thinners, paint removers.
PC12 Lawn and garden preparations (- fertilizers).
PC18 Ink and toners.
PC19 Intermediate.
PC21 Laboratory chemicals.
PC20 Processing aids such as pH-regulators, flocculants, precipitants, neutralization agents
PC24 Lubricants, greases and release products.
PC25 Metal working fluids.
PC35 Washing and cleaning products
PC37 Water treatment chemicals.
PC38 Welding and soldering products, flux products

Main sector SU3 Industrial uses

Sector of use

SU1 Agriculture, forestry, fishery
SU2b Offshore industries
SU5 Manufacture of textiles, leather, fur
SU6a Manufacture of wood and wood products
SU6b Manufacture of pulp, paper and paper products
SU8 Manufacture of bulk, large-scale chemicals (including petroleum products)
SU9 Manufacture of fine chemicals
SU10 Formulation [mixing] of preparations and/or re-packaging
SU11 Manufacture of rubber products
SU13 Manufacture of other non-metallic mineral products
SU15 Manufacture of fabricated metal products, except machinery and equipment
SU17 General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment
SU19 Building and construction work
SU23 Electricity, steam, gas, water supply and sewage treatment

Worker

Occupational exposure scenario for closed production at ambient temperatures

Process category PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Solid

Concentration details Covers concentrations up to 100 %.

Amounts used

Amount per use: 1 tonne

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting Indoor.

Temperature Assumes activities are at ambient temperature (unless stated differently).

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Handle substance within a closed system. Provide extract ventilation to material transfer points and other openings.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure operatives are trained to minimise exposures. Regular inspection and maintenance of equipment and machines.

Risk management measures

Wear suitable working clothes.
Use suitable eye protection.
If above technical/organisational control measures are not feasible, then adopt following PPE:
Wear a respirator conforming to EN140 with Type A/P2 filter or better.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Health 1)

Assessment method MEASE

Exposure Worker - inhalation: Exposure 0.08 mg/m³, DNEL 1.45 mg/m³, RCR 0.06
Worker - dermal: Exposure 0.048 mg/kg/day, DNEL 4800 mg/kg/day, RCR 0.001

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. For scaling see http://www.ebrc.de/ebrc/ebrc-mease.php

Exposure scenario

Occupational exposure scenario for make up of treatment bath for galvanising, plating and other surface treatments

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
BD3 7AY
+44 1274 267300
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1. Title of exposure scenario

Main title Occupational exposure scenario for make up of treatment bath for galvanising, plating and other surface treatments

Product category PC14 Metal surface treatment products

Main sector SU3 Industrial uses

Sector of use SU15 Manufacture of fabricated metal products, except machinery and equipment
SU17 General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment

Worker

Process category PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Solid

Concentration details Covers concentrations up to 100 %.

Amounts used

Amount per use: 200 kg

Frequency and duration of use

Covers frequency up to 2 days/week, , .
Application duration: 30 minutes

Other given operational conditions affecting workers exposure

Setting Indoor.

Temperature Assumes activities are at ambient temperature (unless stated differently).

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Use canopy hood (over hot process).

Occupational exposure scenario for make up of treatment bath for galvanising, plating and other surface treatments

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure operatives are trained to minimise exposures. Regular inspection and maintenance of equipment and machines.

Risk management measures

Wear suitable working clothes.
Use suitable eye protection.
If above technical/organisational control measures are not feasible, then adopt following PPE:
Wear a respirator conforming to EN140 with Type A/P2 filter or better.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Health 1)

Assessment method MEASE

Exposure Worker - inhalation: Exposure 0.78 mg/m³, DNEL 1.45 mg/m³, RCR 0.54
Worker - dermal: Exposure 0.288 mg/kg/day, DNEL 4800 mg/kg/day, RCR 0.001

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. For scaling see http://www.ebrc.de/ebrc/ebrc-mease.php

Exposure scenario

Occupational exposure scenario for transfer of substance or preparation from/to large vessels/containers at dedicated facilities

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
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Bradford
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1. Title of exposure scenario

Main title Occupational exposure scenario for transfer of substance or preparation from/to large vessels/containers at dedicated facilities

Product category

PC0 Other products.
PC1 Adhesives, sealants.
PC7 Base metals and alloys.
PC8 Biocidal products
PC9a Coatings and paints, thinners, paint removers.
PC12 Lawn and garden preparations (- fertilizers).
PC18 Ink and toners.
PC19 Intermediate.
PC20 Processing aids such as pH-regulators, flocculants, precipitants, neutralization agents
PC24 Lubricants, greases and release products.
PC25 Metal working fluids.
PC32 Polymer preparations and compounds.
PC35 Washing and cleaning products
PC37 Water treatment chemicals.
PC38 Welding and soldering products, flux products

Main sector SU3 Industrial uses

Occupational exposure scenario for transfer of substance or preparation from/to large vessels/containers at dedicated facilities

Sector of use

SU1 Agriculture, forestry, fishery
SU2b Offshore industries
SU6a Manufacture of wood and wood products
SU6b Manufacture of pulp, paper and paper products
SU7 Printing and reproduction of recorded media
SU8 Manufacture of bulk, large-scale chemicals (including petroleum products)
SU9 Manufacture of fine chemicals
SU10 Formulation [mixing] of preparations and/or re-packaging
SU11 Manufacture of rubber products
SU13 Manufacture of other non-metallic mineral products
SU14 Manufacture of basic metals, including alloys
SU15 Manufacture of fabricated metal products, except machinery and equipment
SU16 Manufacture of computer, electronic and optical products, electrical equipment
SU17 General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment
SU18 Manufacture of furniture
SU19 Building and construction work

Worker

Process category PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Solid

Concentration details Covers concentrations up to 100 %.

Amounts used

Amount per use: 25-40 tonnes

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).
Application duration: 2 hours

Other given operational conditions affecting workers exposure

Setting Indoor.

Temperature Assumes activities are at ambient temperature (unless stated differently).

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Handle substance within a predominantly closed system provided with extract ventilation.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure operatives are trained to minimise exposures. Regular inspection and maintenance of equipment and machines.

Risk management measures

Wear suitable working clothes.
Use suitable eye protection.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Health 1)

Assessment method Inhalation Used ART model. Dermal MEASE

Occupational exposure scenario for transfer of substance or preparation from/to large vessels/containers at dedicated facilities

Exposure

Worker - inhalation: Exposure 0.03 mg/m³, DNEL 1.45 mg/m³, RCR 0.21
Worker - dermal: Exposure 0.024 mg/kg/day, DNEL 4800 mg/kg/day, RCR 0.001

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. For scaling see http://www.ebrc.de/ebrc/ebrc-mease.php

Exposure scenario
Occupational exposure scenario for packaging into bags (25-50kg)

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
BD3 7AY
+44 1274 267300
+44 1274 267306
SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title Occupational exposure scenario for packaging into bags (25-50kg)

Product category

PC1 Adhesives, sealants.
PC7 Base metals and alloys.
PC8 Biocidal products
PC9a Coatings and paints, thinners, paint removers.
PC9b Fillers, putties, plasters, modelling clay.
PC12 Lawn and garden preparations (- fertilizers).
PC14 Metal surface treatment products
PC15 Non-metal-surface treatment products.
PC17 Hydraulic fluids.
PC18 Ink and toners.
PC19 Intermediate.
PC20 Processing aids such as pH-regulators, flocculants, precipitants, neutralization agents
PC21 Laboratory chemicals.
PC23 Leather treatment products
PC24 Lubricants, greases and release products.
PC25 Metal working fluids.
PC26 Paper and board treatment products
PC29 Pharmaceuticals
PC30 Photochemicals.
PC32 Polymer preparations and compounds.
PC37 Water treatment chemicals.
PC37 Water treatment chemicals.
PC38 Welding and soldering products, flux products
PC39 Cosmetics, personal care.

Main sector SU3 Industrial uses

Sector of use

SU8 Manufacture of bulk, large-scale chemicals (including petroleum products)
SU9 Manufacture of fine chemicals

Worker

Occupational exposure scenario for packaging into bags (25-50kg)

Process category PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Solid

Concentration details Covers concentrations up to 100 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting Indoor.

Temperature Assumes activities are at ambient temperature (unless stated differently).

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Automate activity where possible. Provide extract ventilation to points where emissions occur. Dispose of empty containers and wastes safely.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure operatives are trained to minimise exposures. Regular inspection and maintenance of equipment and machines.

Risk management measures

Wear suitable working clothes.
Use suitable eye protection.
If above technical/organisational control measures are not feasible, then adopt following PPE: Wear a respirator conforming to EN140 with Type A/P2 filter or better.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Health 1)

Assessment method MEASE

Exposure Worker - inhalation: Exposure 1 mg/m³, DNEL 1.45 mg/m³, RCR 0.69
Worker - dermal: Exposure 0.144 mg/kg/day, DNEL 4800 mg/kg/day, RCR 0.001

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. For scaling see http://www.ebrc.de/ebrc/ebrc-mease.php

Exposure scenario
Occupational exposure scenario for packaging into big bags

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
BD3 7AY
+44 1274 267300
+44 1274 267306
SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title Occupational exposure scenario for packaging into big bags

Product category

PC1 Adhesives, sealants.
PC7 Base metals and alloys.
PC8 Biocidal products
PC9a Coatings and paints, thinners, paint removers.
PC9b Fillers, putties, plasters, modelling clay.
PC12 Lawn and garden preparations (- fertilizers).
PC14 Metal surface treatment products
PC15 Non-metal-surface treatment products.
PC17 Hydraulic fluids.
PC18 Ink and toners.
PC19 Intermediate.
PC20 Processing aids such as pH-regulators, flocculants, precipitants, neutralization agents
PC21 Laboratory chemicals.
PC23 Leather treatment products
PC24 Lubricants, greases and release products.
PC25 Metal working fluids.
PC26 Paper and board treatment products
PC29 Pharmaceuticals
PC30 Photochemicals.
PC32 Polymer preparations and compounds.
PC37 Water treatment chemicals.
PC38 Welding and soldering products, flux products
PC39 Cosmetics, personal care.

Main sector SU3 Industrial uses

Sector of use

SU8 Manufacture of bulk, large-scale chemicals (including petroleum products)
SU9 Manufacture of fine chemicals

Worker

Occupational exposure scenario for packaging into big bags

Process category PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Solid

Concentration details Covers concentrations up to 100 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting Indoor.

Temperature Assumes activities are at ambient temperature (unless stated differently).

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Automate activity where possible. Provide extract ventilation to points where emissions occur. Dispose of empty containers and wastes safely.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure operatives are trained to minimise exposures. Regular inspection and maintenance of equipment and machines.

Risk management measures

Wear suitable working clothes.
Use suitable eye protection.
If above technical/organisational control measures are not feasible, then adopt following PPE: Wear a respirator conforming to EN140 with Type A/P2 filter or better.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Health 1)

Assessment method MEASE

Exposure Worker - inhalation: Exposure 0.58 mg/m³, DNEL 1.45 mg/m³, RCR 0.4
Worker - dermal: Exposure 0.144 mg/kg/day, DNEL 4800 mg/kg/day, RCR 0.001

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. For scaling see http://www.ebrc.de/ebrc/ebrc-mease.php

Exposure scenario
Occupational exposure scenario for general maintenance activities

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
BD3 7AY
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+44 1274 267306
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1. Title of exposure scenario

Main title Occupational exposure scenario for general maintenance activities

Product category

PC0 Other products.
PC1 Adhesives, sealants.
PC7 Base metals and alloys.
PC8 Biocidal products
PC9a Coatings and paints, thinners, paint removers.
PC9b Fillers, putties, plasters, modelling clay.
PC12 Lawn and garden preparations (- fertilizers).
PC14 Metal surface treatment products
PC15 Non-metal-surface treatment products.
PC17 Hydraulic fluids.
PC18 Ink and toners.
PC19 Intermediate.
PC20 Processing aids such as pH-regulators, flocculants, precipitants, neutralization agents
PC21 Laboratory chemicals.
PC23 Leather treatment products
PC24 Lubricants, greases and release products.
PC25 Metal working fluids.
PC26 Paper and board treatment products
PC29 Pharmaceuticals
PC30 Photochemicals.
PC32 Polymer preparations and compounds.
PC35 Washing and cleaning products
PC37 Water treatment chemicals.
PC38 Welding and soldering products, flux products
PC39 Cosmetics, personal care.

Main sector SU3 Industrial uses

Occupational exposure scenario for general maintenance activities

Sector of use

SU1 Agriculture, forestry, fishery
SU2b Offshore industries
SU5 Manufacture of textiles, leather, fur
SU6a Manufacture of wood and wood products
SU6b Manufacture of pulp, paper and paper products
SU7 Printing and reproduction of recorded media
SU8 Manufacture of bulk, large-scale chemicals (including petroleum products)
SU9 Manufacture of fine chemicals
SU10 Formulation [mixing] of preparations and/or re-packaging
SU11 Manufacture of rubber products
SU13 Manufacture of other non-metallic mineral products
SU14 Manufacture of basic metals, including alloys
SU15 Manufacture of fabricated metal products, except machinery and equipment
SU17 General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment
SU19 Building and construction work

Worker

Process category

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state

Solid

Concentration details

Covers concentrations up to 100 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting

Indoor/outdoor use.

Temperature

Assumes activities are at ambient temperature (unless stated differently).

Technical conditions and measures at process level (source) to prevent release

Technical protective measures

Automate activity where possible. Provide extract ventilation to points where emissions occur.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures

Ensure operatives are trained to minimise exposures. Regular inspection and maintenance of equipment and machines.

Risk management measures

Wear suitable working clothes.
Use suitable eye protection.
If above technical/organisational control measures are not feasible, then adopt following PPE:
Wear a respirator conforming to EN140 with Type A/P2 filter or better.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Health 1)

Assessment method

MEASE

Exposure

Worker - inhalation: Exposure 1.33 mg/m³, DNEL 1.45 mg/m³, RCR 0.92
Worker - dermal: Exposure 0.173 mg/kg/day, DNEL 4800 mg/kg/day, RCR 0.001

Occupational exposure scenario for general maintenance activities

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. For scaling see http://www.ebrc.de/ebrc/ebrc-mease.php

Exposure scenario
Occupational exposure scenario for transfer of substances into small containers

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
BD3 7AY
+44 1274 267300
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1. Title of exposure scenario

Main title Occupational exposure scenario for transfer of substances into small containers

Product category

PC0 Other products.
PC1 Adhesives, sealants.
PC8 Biocidal products
PC9a Coatings and paints, thinners, paint removers.
PC12 Lawn and garden preparations (- fertilizers).
PC18 Ink and toners.
PC19 Intermediate.
PC20 Processing aids such as pH-regulators, flocculants, precipitants, neutralization agents
PC21 Laboratory chemicals.
PC24 Lubricants, greases and release products.
PC25 Metal working fluids.
PC30 Photochemicals.
PC35 Washing and cleaning products
PC37 Water treatment chemicals.
PC38 Welding and soldering products, flux products

Main sector SU3 Industrial uses

Sector of use

SU1 Agriculture, forestry, fishery
SU6a Manufacture of wood and wood products
SU6b Manufacture of pulp, paper and paper products
SU7 Printing and reproduction of recorded media
SU8 Manufacture of bulk, large-scale chemicals (including petroleum products)
SU9 Manufacture of fine chemicals
SU10 Formulation [mixing] of preparations and/or re-packaging
SU11 Manufacture of rubber products
SU13 Manufacture of other non-metallic mineral products
SU15 Manufacture of fabricated metal products, except machinery and equipment
SU17 General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment

Worker

Occupational exposure scenario for transfer of substances into small containers

Process category PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Solid , or: Liquid

Concentration details Covers concentrations up to 8.6 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting Indoor.

Temperature Assumes activities are at ambient temperature (unless stated differently).

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Automate activity where possible. Provide extract ventilation to points where emissions occur.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure operatives are trained to minimise exposures. Regular inspection and maintenance of equipment and machines.

Risk management measures

Wear suitable working clothes.
Use suitable eye protection.
If above technical/organisational control measures are not feasible, then adopt following PPE:
Wear a respirator conforming to EN140 with Type A/P2 filter or better.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Health 1)

Assessment method MEASE

Exposure Worker - inhalation: Exposure 0.4 mg/m³, DNEL 1.45 mg/m³, RCR 0.28
Powder products
Worker - dermal: Exposure 1.44 mg/kg/day, DNEL 4800 mg/kg/day, RCR 0.001
Liquid products
Worker - dermal: Exposure 0.144 mg/kg/day, DNEL 4800 mg/kg/day, RCR 0.001

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. For scaling see http://www.ebrc.de/ebrc/ebrc-mease.php

Exposure scenario
Occupational exposure scenario for transfer of boron-containing liquid foliar fertilizer

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
BD3 7AY
+44 1274 267300
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1. Title of exposure scenario

Main title Occupational exposure scenario for transfer of boron-containing liquid foliar fertilizer

Product category PC12 Lawn and garden preparations (- fertilizers).

Main sector SU22 Professional uses

Sector of use SU1 Agriculture, forestry, fishery

Worker

Process category PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Liquid

Concentration details Covers concentrations up to 7 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting Outdoor.

Temperature Assumes activities are at ambient temperature (unless stated differently).

Technical conditions and measures at process level (source) to prevent release

Technical protective measures No specific risk management measure identified beyond those operational conditions stated.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure operatives are trained to minimise exposures. Regular inspection and maintenance of equipment and machines.

Risk management measures

Occupational exposure scenario for transfer of boron-containing liquid foliar fertilizer

Wear suitable working clothes.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Health 1)

Assessment method	MEASE
Exposure	Solid in solution. For non-spraying processes (no aerosol generation), an inhalation exposure is considered to be not relevant. Worker - dermal: Exposure 0.29 mg/kg/day, DNEL 4800 mg/kg/day, RCR 0.001

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. For scaling see http://www.ebrc.de/ebrc/ebrc-mease.php

Exposure scenario
Occupational exposure scenario for industrial use of flux pastes to coat welding/brazing rods

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
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1. Title of exposure scenario

Main title Occupational exposure scenario for industrial use of flux pastes to coat welding/brazing rods

Product category PC38 Welding and soldering products, flux products

Article category AC7 Metal articles

Main sector SU3 Industrial uses

Sector of use SU10 Formulation [mixing] of preparations and/or re-packaging

Worker

Process category PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
PROC14 Tabletting, compression, extrusion, pelletisation, granulation

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Solid

Concentration details Covers concentrations up to 1.48 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting Indoor.

Temperature Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure operatives are trained to minimise exposures.

Risk management measures

Occupational exposure scenario for industrial use of flux pastes to coat welding/brazing rods

Wear suitable working clothes.
Use suitable eye protection.
In case of any doubt, wear a half-mask respirator to EN 529.
with filter for particulates: P3.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Health 1)

Assessment method Inhalation Used ART model. Dermal MEASE

Exposure Worker - inhalation: Exposure 0.043 mg/m³, DNEL 1.45 mg/m³, RCR 0.03
Worker - dermal: Exposure 0.29 mg/kg/day, DNEL 4800 mg/kg/day, RCR 0.001

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. For scaling see http://www.ebrc.de/ebrc/ebrc-mease.php

Exposure scenario
Occupational exposure scenario for professional use of paints and coatings

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
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+44 1274 267306
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1. Title of exposure scenario

Main title Occupational exposure scenario for professional use of paints and coatings

Product category PC9a Coatings and paints, thinners, paint removers.
PC18 Ink and toners.

Main sector SU22 Professional uses

Worker

Process category PROC10 Roller application or brushing
PROC11 Non industrial spraying

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Liquid

Concentration details Covers concentrations up to 3.6 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting Indoor.

Temperature Assumes activities are at ambient temperature (unless stated differently).

Ventilation rate 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.

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Provide extract ventilation to points where emissions occur.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure operatives are trained to minimise exposures. Regular inspection and maintenance of equipment and machines.

Occupational exposure scenario for professional use of paints and coatings

Risk management measures

Wear suitable working clothes.
Use suitable eye protection.
If above technical/organisational control measures are not feasible, then adopt following PPE:
Wear a full-face respirator conforming to EN136 with Type A/P2 filter or better.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Health 1)

Assessment method Inhalation Used ART model. Dermal MEASE

Exposure Worker - inhalation: Exposure 0.67 mg/m³, DNEL 1.45 mg/m³, RCR 0.46
Worker - dermal: Exposure 0.048 mg/kg/day, DNEL 4800 mg/kg/day, RCR 0.001

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. For scaling see http://www.ebrc.de/ebrc/ebrc-mease.php

Exposure scenario
Occupational exposure scenario for professional application of adhesive

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
BD3 7AY
+44 1274 267300
+44 1274 267306
SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title Occupational exposure scenario for professional application of adhesive

Product category PC1 Adhesives, sealants.

Main sector SU22 Professional uses

Sector of use
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, e.g. machinery, equipment, vehicles, other transport equipment
SU18 Manufacture of furniture
SU19 Building and construction work

Worker

Process category
PROC10 Roller application or brushing
PROC11 Non industrial spraying
PROC13 Treatment of articles by dipping and pouring.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Liquid , or: Pasty

Concentration details Concentration of substance in product: 1.5%

Amounts used

Daily amount per site: 300 kg

Frequency and duration of use

Covers daily exposure up to 2hours

Other given operational conditions affecting workers exposure

Setting Indoor.

Technical conditions and measures at process level (source) to prevent release

Occupational exposure scenario for professional application of adhesive

Technical protective measures Automate activity where possible. Provide extract ventilation to points where emissions occur.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure operatives are trained to minimise exposures. Regular inspection and maintenance of equipment and machines.

Risk management measures

Wear suitable working clothes.
Use suitable eye protection.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Health 1)

Assessment method Inhalation Used ART model. Dermal MEASE

Exposure Worker - inhalation: Exposure 0.041 mg/m³, DNEL 1.45 mg/m³, RCR 0.028
Worker - dermal: Exposure 0.288 mg/kg/day, DNEL 4800 mg/kg/day, RCR 0.001

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. For scaling see http://www.ebrc.de/ebrc/ebrc-mease.php

Exposure scenario
Occupational exposure scenario for spreading of boron containing granular fertiliser

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
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6 Mid Point Business Park
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1. Title of exposure scenario

Main title Occupational exposure scenario for spreading of boron containing granular fertiliser

Product category PC12 Lawn and garden preparations (- fertilizers).

Main sector SU22 Professional uses

Sector of use SU1 Agriculture, forestry, fishery

Worker

Process category PROC11 Non industrial spraying

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Solid

Concentration details Covers concentrations up to 21 %.

Frequency and duration of use

Covers frequency up to 4 days/year, , .

Other given operational conditions affecting workers exposure

Setting Outdoor.

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Ensure that spray direction is only horizontal or downward. Ensure that the worker is situated in an open or closed cabin. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m).

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure operatives are trained to minimise exposures. Regular inspection and maintenance of equipment and machines.

Risk management measures

Assumes a good basic standard of occupational hygiene is implemented.

Occupational exposure scenario for spreading of boron containing granular fertiliser

3. Exposure estimation (Health 1)

Assessment method	Used ART model.
Exposure	Dermal exposure is considered to be not relevant. Complete personal enclosure with ventilation. Worker - inhalation: Exposure 0.0004 mg/m³, DNEL 1.45 mg/m³, RCR 0.001 Complete personal enclosure without ventilation. Worker - inhalation: Exposure 0.003 mg/m³, DNEL 1.45 mg/m³, RCR 0.0021

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. For scaling see http://www.ebrc.de/ebrc/ebrc-mease.php

Exposure scenario
Occupational exposure scenario for application of boron-containing liquid fertiliser

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
BD3 7AY
+44 1274 267300
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1. Title of exposure scenario

Main title Occupational exposure scenario for application of boron-containing liquid fertiliser

Product category PC12 Lawn and garden preparations (- fertilizers).

Main sector SU22 Professional uses

Sector of use SU1 Agriculture, forestry, fishery

Worker

Process category PROC11 Non industrial spraying
PROC13 Treatment of articles by dipping and pouring.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Liquid

Concentration details Covers concentrations up to 7.7 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting Outdoor.

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Ensure that spray direction is only horizontal or downward. Ensure that the worker is situated in an open or closed cabin.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure operatives are trained to minimise exposures. Regular inspection and maintenance of equipment and machines.

Risk management measures

Assumes a good basic standard of occupational hygiene is implemented.

Occupational exposure scenario for application of boron-containing liquid fertiliser

3. Exposure estimation (Health 1)

Assessment method	Inhalation Used ART model. Dermal MEASE
Exposure	Worker - dermal: Exposure 0.048 mg/kg/day, DNEL 4800 mg/kg/day, RCR 0.001 Manual spraying Worker - inhalation: Exposure 0.17 mg/m³, DNEL 1.45 mg/m³, RCR 0.12 Spraying/fogging by machine application Worker - inhalation: Exposure 0.0014 mg/m³, DNEL 1.45 mg/m³, RCR 0.001

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. For scaling see http://www.ebrc.de/ebrc/ebrc-mease.php

Exposure scenario

Occupational exposure scenario for galvanising, plating and other surface treatment of metal articles

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
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6 Mid Point Business Park
Bradford
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1. Title of exposure scenario

Main title Occupational exposure scenario for galvanising, plating and other surface treatment of metal articles

Product category PC14 Metal surface treatment products

Main sector SU3 Industrial uses

Sector of use SU15 Manufacture of fabricated metal products, except machinery and equipment
SU17 General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment

Worker

Process category PROC13 Treatment of articles by dipping and pouring.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Liquid

Concentration details Concentration of substance in product: 1%

Amounts used

Amount per use: 25-200 kg

Frequency and duration of use

Covers daily exposure up to 1hour

Continuous process

Other given operational conditions affecting workers exposure

Setting Indoor.

Temperature Assumes activities and processes are carried out at a temperature of 60°C.

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Use canopy hood (over hot process).

Occupational exposure scenario for galvanising, plating and other surface treatment of metal articles

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure operatives are trained to minimise exposures. Regular inspection and maintenance of equipment and machines.

Risk management measures

Wear suitable coveralls to prevent exposure to the skin.
Use suitable eye protection.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Health 1)

Assessment method MEASE

Exposure Solid in solution. For non-spraying processes (no aerosol generation), an inhalation exposure is considered to be not relevant.
Worker - dermal: Exposure 0.048 mg/kg/day, DNEL 4800 mg/kg/day, RCR 0.001

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. For scaling see http://www.ebrc.de/ebrc/ebrc-mease.php

Exposure scenario

Occupational exposure scenario for use of developer and fixer solutions in photographic applications

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
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1. Title of exposure scenario

Main title Occupational exposure scenario for use of developer and fixer solutions in photographic applications

Product category PC30 Photochemicals.

Main sector SU22 Professional uses

Worker

Process category PROC13 Treatment of articles by dipping and pouring.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Liquid

Concentration details Covers concentrations up to 1 %.

Amounts used

Amount per use: 50 litre

Frequency and duration of use

Loading of application equipment
Application duration: 12 minutes

Other given operational conditions affecting workers exposure

Setting Indoor.

Temperature Assumes activities are at ambient temperature (unless stated differently).

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Automated process with (semi) closed systems

Organisational measures to prevent/limit releases, dispersion and exposure

Occupational exposure scenario for use of developer and fixer solutions in photographic applications

Organisational measures Ensure operatives are trained to minimise exposures. Regular inspection and maintenance of equipment and machines.

Risk management measures

Wear suitable coveralls to prevent exposure to the skin.
Use suitable eye protection.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Health 1)

Assessment method MEASE

Exposure Solid in solution. For non-spraying processes (no aerosol generation), an inhalation exposure is considered to be not relevant.
Worker - dermal: Exposure 0.024 mg/kg/day, DNEL 4800 mg/kg/day, RCR 0.001

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. For scaling see http://www.ebrc.de/ebrc/ebrc-mease.php

Exposure scenario
Occupational exposure scenario for compaction and tableting of borate-containing powders

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
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1. Title of exposure scenario

Main title Occupational exposure scenario for compaction and tableting of borate-containing powders

Product category
PC0 Other products.
PC1 Adhesives, sealants.
PC8 Biocidal products
PC9a Coatings and paints, thinners, paint removers.
PC12 Lawn and garden preparations (- fertilizers).
PC18 Ink and toners.
PC19 Intermediate.
PC35 Washing and cleaning products
PC37 Water treatment chemicals.

Main sector SU3 Industrial uses

Sector of use
SU1 Agriculture, forestry, fishery
SU6a Manufacture of wood and wood products
SU6b Manufacture of pulp, paper and paper products
SU7 Printing and reproduction of recorded media
SU8 Manufacture of bulk, large-scale chemicals (including petroleum products)
SU9 Manufacture of fine chemicals
SU10 Formulation [mixing] of preparations and/or re-packaging
SU11 Manufacture of rubber products
SU13 Manufacture of other non-metallic mineral products
SU15 Manufacture of fabricated metal products, except machinery and equipment

Worker

Process category PROC14 Tabletting, compression, extrusion, pelletisation, granulation

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Solid, high dustiness

Concentration details Covers concentrations up to 100 %.

Occupational exposure scenario for compaction and tableting of borate-containing powders

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting Indoor.

Temperature Assumes activities are at ambient temperature (unless stated differently).

Ventilation rate Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure operatives are trained to minimise exposures. Regular inspection and maintenance of equipment and machines.

Risk management measures

Wear suitable working clothes.
Use suitable eye protection.

Additional advice If above technical/organisational control measures are not feasible, then adopt following PPE: Wear a respirator conforming to EN140 with Type A/P2 filter or better.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Health 1)

Assessment method Dermal MEASE Inhalation Workplace measurements

Exposure Worker - inhalation: Exposure 1.3 mg/m³, DNEL 1.45 mg/m³, RCR 0.90
Worker - dermal: Exposure 2.4 mg/kg/day, DNEL 4800 mg/kg/day, RCR 0.001

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. For scaling see http://www.ebrc.de/ebrc/ebrc-mease.php

Exposure scenario
Occupational exposure scenario for working in a laboratory

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
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+44 1274 267300
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1. Title of exposure scenario

Main title Occupational exposure scenario for working in a laboratory

Product category

PC0 Other products.
PC1 Adhesives, sealants.
PC7 Base metals and alloys.
PC8 Biocidal products
PC9a Coatings and paints, thinners, paint removers.
PC9b Fillers, putties, plasters, modelling clay.
PC12 Lawn and garden preparations (- fertilizers).
PC14 Metal surface treatment products
PC15 Non-metal-surface treatment products.
PC17 Hydraulic fluids.
PC18 Ink and toners.
PC19 Intermediate.
PC20 Processing aids such as pH-regulators, flocculants, precipitants, neutralization agents
PC21 Laboratory chemicals.
PC23 Leather treatment products
PC24 Lubricants, greases and release products.
PC25 Metal working fluids.
PC26 Paper and board treatment products
PC29 Pharmaceuticals
PC30 Photochemicals.
PC32 Polymer preparations and compounds.
PC35 Washing and cleaning products
PC37 Water treatment chemicals.
PC38 Welding and soldering products, flux products
PC39 Cosmetics, personal care.

Main sector

SU3 Industrial uses
SU22 Professional uses

Occupational exposure scenario for working in a laboratory

Sector of use

SU1 Agriculture, forestry, fishery
SU2b Offshore industries
SU6a Manufacture of wood and wood products
SU6b Manufacture of pulp, paper and paper products
SU7 Printing and reproduction of recorded media
SU8 Manufacture of bulk, large-scale chemicals (including petroleum products)
SU9 Manufacture of fine chemicals
SU10 Formulation [mixing] of preparations and/or re-packaging
SU11 Manufacture of rubber products
SU13 Manufacture of other non-metallic mineral products
SU14 Manufacture of basic metals, including alloys
SU15 Manufacture of fabricated metal products, except machinery and equipment
SU17 General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment

Worker

Process category PROC15 Use as laboratory reagent.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Solid, high dustiness

Concentration details Covers concentrations up to 25 %.

Amounts used

Use of small quantities within laboratory settings, including material transfers and equipment cleaning.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting Indoor.

Temperature Assumes activities are at ambient temperature (unless stated differently).

Ventilation rate Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Handle within a fume cupboard or implement suitable equivalent methods to minimise exposure.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure operatives are trained to minimise exposures. Regular inspection and maintenance of equipment and machines.

Risk management measures

Wear suitable working clothes.
Use suitable eye protection.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Health 1)

Assessment method Dermal MEASE Inhalation Workplace measurements

Exposure Worker - inhalation: Exposure 0.16 mg/m³, DNEL 1.45 mg/m³, RCR 0.11
Worker - dermal: Exposure 0.014 mg/kg/day, DNEL 4800 mg/kg/day, RCR 0.001

Occupational exposure scenario for working in a laboratory

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. For scaling see http://www.ebrc.de/ebrc/ebrc-mease.php

Exposure scenario
Occupational exposure scenario for use of MWFs in machining

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

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1. Title of exposure scenario

Main title Occupational exposure scenario for use of MWFs in machining

Product category PC25 Metal working fluids.

Main sector SU3 Industrial uses

Sector of use SU15 Manufacture of fabricated metal products, except machinery and equipment
SU17 General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment

Worker

Process category PROC17 Lubrication at high energy conditions in metal working operations
PROC24 High (mechanical) energy work-up of substances bound in/on materials and/or articles

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Liquid

Concentration details Covers concentrations up to 5.5 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting Indoor.

Temperature Assumes activities reflect a hot process.

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Minimise exposure by extracted full enclosure for the operation or equipment.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure operatives are trained to minimise exposures. Regular inspection and maintenance of equipment and machines.

Occupational exposure scenario for use of MWFs in machining

Risk management measures

Wear suitable working clothes.
Use suitable eye protection.

Additional advice

If above technical/organisational control measures are not feasible, then adopt following PPE:
Wear a respirator conforming to EN140 with Type A/P2 filter or better.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Health 1)

Assessment method

Dermal MEASE Inhalation Workplace measurements

Exposure

Worker - inhalation: Exposure 0.07 mg/m³, DNEL 1.45 mg/m³, RCR 0.048
Worker - dermal: Exposure 2.4 mg/kg/day, DNEL 4800 mg/kg/day, RCR 0.001

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. For scaling see http://www.ebrc.de/ebrc/ebrc-mease.php

Exposure scenario
Occupational exposure scenario for greasing at high energy conditions

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

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1. Title of exposure scenario

Main title Occupational exposure scenario for greasing at high energy conditions

Product category PC24 Lubricants, greases and release products.

Main sector SU3 Industrial uses

Sector of use SU15 Manufacture of fabricated metal products, except machinery and equipment
SU17 General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment

Worker

Process category PROC18 General greasing/lubrication at high kinetic energy conditions

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Liquid

Concentration details Concentration of substance in product: 0.01%

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting Indoor.

Temperature Assumes activities reflect a hot process.

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Minimise exposure by extracted full enclosure for the operation or equipment.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure operatives are trained to minimise exposures. Regular inspection and maintenance of equipment and machines.

Risk management measures

Occupational exposure scenario for greasing at high energy conditions

Wear suitable working clothes.
Use suitable eye protection.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Health 1)

Assessment method	Dermal MEASE Inhalation Used ART model.
Exposure	Worker - inhalation: Exposure 0.0017 mg/m³, DNEL 1.45 mg/m³, RCR 0.0012 Worker - dermal: Exposure 0.048 mg/kg/day, DNEL 4800 mg/kg/day, RCR 0.001

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. For scaling see http://www.ebrc.de/ebrc/ebrc-mease.php

Exposure scenario
Occupational exposure scenario for make up of stock solution - photographic applications

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier
Univar Solutions UK Ltd
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1. Title of exposure scenario

Main title Occupational exposure scenario for make up of stock solution - photographic applications

Product category PC30 Photochemicals.

Main sector SU3 Industrial uses

Worker

Process category PROC19 Manual activities involving hand contact

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Solid , or: Solid in solution

Concentration details Powders Concentration of substance in product: 5% Solid in solution Concentration of substance in product: 1%

Amounts used

Amount per use: 50 litre

Frequency and duration of use

Covers weekly exposure up to 15minutes

Other given operational conditions affecting workers exposure

Setting Indoor.

Temperature Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure operatives are trained to minimise exposures.

Risk management measures

Wear suitable working clothes.
Use suitable eye protection.

Occupational exposure scenario for make up of stock solution - photographic applications

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Health 1)

Assessment method

Dermal MEASE Inhalation Used ART model.

Exposure

Worker - inhalation: Exposure 0.001 mg/m³, DNEL 1.45 mg/m³, RCR 0.001
Worker - dermal: Exposure 0.198 mg/kg/day, DNEL 4800 mg/kg/day, RCR 0.001

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. For scaling see http://www.ebrc.de/ebrc/ebrc-mease.php

Exposure scenario
Occupational exposure scenario for professional installation of cellulose insulation

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

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1. Title of exposure scenario

Main title Occupational exposure scenario for professional installation of cellulose insulation

Product category PC0 Other products.

Article category AC4 Stone, plaster, cement, glass and ceramic articles

Main sector SU22 Professional uses

Sector of use SU19 Building and construction work

Worker

Process category PROC21 Low energy manipulation and handling of substances bound in/on materials or articles

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Solid, high dustiness

Concentration details Concentration of substance in product: 1.5-3.6%

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting Indoor.

Temperature Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure operatives are trained to minimise exposures.

Risk management measures

Wear suitable working clothes.
Use suitable eye protection.
Wear a respirator conforming to EN140 with Type A/P2 filter or better.

Occupational exposure scenario for professional installation of cellulose insulation

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Health 1)

Assessment method	Dermal MEASE Inhalation Workplace measurements
Exposure	Worker - inhalation: Exposure 0.3 mg/m³, DNEL 1.45 mg/m³, RCR 0.21 Worker - dermal: Exposure 0.15 mg/kg/day, DNEL 4800 mg/kg/day, RCR 0.001

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. For scaling see http://www.ebrc.de/ebrc/ebrc-mease.php

Exposure scenario

Occupational exposure scenario for professional installation of plasterboard, board and other products

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

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1. Title of exposure scenario

Main title Occupational exposure scenario for professional installation of plasterboard, board and other products

Product category PC8 Biocidal products

Article category AC4 Stone, plaster, cement, glass and ceramic articles

Main sector SU22 Professional uses

Sector of use SU19 Building and construction work

Worker

Process category PROC21 Low energy manipulation and handling of substances bound in/on materials or articles

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Solid

Concentration details Covers concentrations up to 1 %.

Frequency and duration of use

Covers daily exposure up to 4hours

Other given operational conditions affecting workers exposure

Setting Indoor.

Temperature Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure operatives are trained to minimise exposures.

Risk management measures

Occupational exposure scenario for professional installation of plasterboard, board and other products

Wear suitable working clothes.
Use suitable eye protection.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Health 1)

Assessment method	MEASE
Exposure	Worker - inhalation: Exposure 0.005 mg/m³, DNEL 1.45 mg/m³, RCR 0.0034 Worker - dermal: Exposure 0.99 mg/kg/day, DNEL 4800 mg/kg/day, RCR 0.001

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. For scaling see http://www.ebrc.de/ebrc/ebrc-mease.php

Exposure scenario
Occupational exposure scenario for industrial crushing grinding processes

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

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1. Title of exposure scenario

Main title Occupational exposure scenario for industrial crushing grinding processes

Product category PC19 Intermediate.

Main sector SU3 Industrial uses

Sector of use SU8 Manufacture of bulk, large-scale chemicals (including petroleum products)
SU9 Manufacture of fine chemicals
SU13 Manufacture of other non-metallic mineral products

Worker

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

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Solid

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting Indoor.

Temperature Assumes activities are at ambient temperature (unless stated differently).

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Minimise exposure by extracted full enclosure for the operation or equipment.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure operatives are trained to minimise exposures.

Risk management measures

Occupational exposure scenario for industrial crushing grinding processes

Wear suitable working clothes.
Use suitable eye protection.
Material transfers
Wear a respirator conforming to EN140 with Type A/P2 filter or better.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Health 1)

Exposure

Not applicable.
(closed systems)

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. For scaling see http://www.ebrc.de/ebrc/ebrc-mease.php

Exposure scenario
Occupational exposure scenario for industrial use of abrasives

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

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1. Title of exposure scenario

Main title Occupational exposure scenario for industrial use of abrasives

Article category AC4 Stone, plaster, cement, glass and ceramic articles

Main sector SU3 Industrial uses
SU22 Professional uses

Sector of use SU15 Manufacture of fabricated metal products, except machinery and equipment
SU17 General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment

Worker

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

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Solid

Concentration details Covers concentrations up to 5 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting Indoor.

Temperature Assumes activities are at ambient temperature (unless stated differently).

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Provide extract ventilation to points where emissions occur.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure operatives are trained to minimise exposures.

Risk management measures

Occupational exposure scenario for industrial use of abrasives

Wear suitable working clothes.
Use suitable eye protection.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Health 1)

Assessment method	MEASE
Exposure	Worker - inhalation: Exposure 0.166 mg/m³, DNEL 1.45 mg/m³, RCR 0.11 SU3 Industrial uses Worker - dermal: Exposure 0.198 mg/kg/day, DNEL 4800 mg/kg/day, RCR 0.001 SU22 Professional uses Worker - dermal: Exposure 0.119 mg/kg/day, DNEL 4800 mg/kg/day, RCR 0.001

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. For scaling see http://www.ebrc.de/ebrc/ebrc-mease.php

Exposure scenario
Occupational exposure scenario for industrial/professional use of fluxes in welding/brazing

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

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1. Title of exposure scenario

Main title Occupational exposure scenario for industrial/professional use of fluxes in welding/brazing

Product category PC38 Welding and soldering products, flux products

Main sector SU3 Industrial uses
SU22 Professional uses

Sector of use SU14 Manufacture of basic metals, including alloys
SU15 Manufacture of fabricated metal products, except machinery and equipment
SU17 General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment
SU19 Building and construction work

Worker

Process category PROC25 Other hot work operations with metals

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Pasty

Concentration details Covers concentrations up to 1.48 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting Indoor.

Temperature Assumes activities are at ambient temperature (unless stated differently).

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Provide extract ventilation to points where emissions occur.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure operatives are trained to minimise exposures.

Occupational exposure scenario for industrial/professional use of fluxes in welding/brazing

Risk management measures

Wear suitable working clothes.
Use suitable eye protection.
Wear a respirator providing a minimum efficiency of (%): 95
with filter for particulates: P3.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Health 1)

Assessment method MEASE

Exposure Worker - inhalation: Exposure 0.005 mg/m³, DNEL 1.45 mg/m³, RCR 0.001
Worker - dermal: Exposure 0.2 mg/kg/day, DNEL 4800 mg/kg/day, RCR 0.001

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. For scaling see http://www.ebrc.de/ebrc/ebrc-mease.php

Exposure scenario
Occupational exposure scenario for working in a warehouse

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

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1. Title of exposure scenario

Main title Occupational exposure scenario for working in a warehouse

Product category

PC1 Adhesives, sealants.
PC7 Base metals and alloys.
PC8 Biocidal products
PC9a Coatings and paints, thinners, paint removers.
PC9b Fillers, putties, plasters, modelling clay.
PC12 Lawn and garden preparations (- fertilizers).
PC14 Metal surface treatment products
PC15 Non-metal-surface treatment products.
PC17 Hydraulic fluids.
PC18 Ink and toners.
PC19 Intermediate.
PC20 Processing aids such as pH-regulators, flocculants, precipitants, neutralization agents
PC21 Laboratory chemicals.
PC23 Leather treatment products
PC24 Lubricants, greases and release products.
PC25 Metal working fluids.
PC26 Paper and board treatment products
PC29 Pharmaceuticals
PC30 Photochemicals.
PC32 Polymer preparations and compounds.
PC37 Water treatment chemicals.
PC38 Welding and soldering products, flux products
PC39 Cosmetics, personal care.

Main sector SU3 Industrial uses

Sector of use

SU8 Manufacture of bulk, large-scale chemicals (including petroleum products)
SU9 Manufacture of fine chemicals

Worker

Process category PROC0 Other process or activity.

Occupational exposure scenario for working in a warehouse

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Solid

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Temperature Assumes activities are at ambient temperature (unless stated differently).

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Handling of product in tightly-closed containers

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Ensure operatives are trained to minimise exposures.

Risk management measures

Wear suitable working clothes.
Use suitable eye protection.

Assumes a good basic standard of occupational hygiene is implemented.

3. Exposure estimation (Health 1)

Assessment method Workplace measurements

Exposure Worker - inhalation: Exposure 0.3 mg/m³, DNEL 1.45 mg/m³, RCR 0.21
Dermal exposure is considered to be not relevant.

4. Guidance to check compliance with the exposure scenario (Health 1)

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted. For scaling see http://www.ebrc.de/ebrc/ebrc-mease.php

Exposure scenario
Consumer mouthing of cardboard and oral contact with boron-containing adhesives

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
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1. Title of exposure scenario

Main title Consumer mouthing of cardboard and oral contact with boron-containing adhesives

Product category PC1 Adhesives, sealants.

Article category AC8 Paper articles

Main sector SU21 Consumer uses

2. Conditions of use affecting exposure (Non-industrial - Health 1)

Product characteristics

Physical state Solid in solution

Concentration details Concentration of substance in product: 1.5%

Amounts used

Small scale

Other given operational conditions affecting Non-industrial exposure

Setting Indoor.

Temperature Assumes activities are at ambient temperature (unless stated differently).

Other given operational conditions affecting Non-industrial exposure

Application area For each use event, avoid swallowing amounts more than 2 g.

Exposure route Oral

3. Exposure estimation (Health 1)

Exposure Consumer - oral, long-term - systemic: Exposure 0.018 mg/kg/day, DNEL 0.17 mg/kg/day, RCR 0.106
Worst case assumption

Exposure scenario
Consumer use of boron-containing fertiliser

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

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1. Title of exposure scenario

Main title Consumer use of boron-containing fertiliser

Product category PC12 Lawn and garden preparations (- fertilizers).

Main sector SU21 Consumer uses

2. Conditions of use affecting exposure (Non-industrial - Health 1)

Product characteristics

Physical state Solid , or: Solid in solution

Concentration details Concentration of substance in product: 0.02% Maximum concentration after dilution for use: 0.2 ppm

Amounts used

Small scale

Human factors not influenced by risk management

Potentially exposed body parts Covers skin contact area up to 428 cm².

Other given operational conditions affecting Non-industrial exposure

Setting Indoor.

Temperature Assumes activities are at ambient temperature (unless stated differently).

Other given operational conditions affecting Non-industrial exposure

Exposure route Dermal

Consumer information Avoid using without gloves.

3. Exposure estimation (Health 1)

Exposure Consumer - dermal: Exposure 0.000052 mg/kg/day, DNEL 34.3 mg/kg/day, RCR 0.001
Worst case assumption

Exposure scenario
Consumer use of boron-containing construction materials (other than insulation)

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
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1. Title of exposure scenario

Main title Consumer use of boron-containing construction materials (other than insulation)

Product category PC0 Other products.

Article category AC4 Stone, plaster, cement, glass and ceramic articles

Main sector SU21 Consumer uses

2. Conditions of use affecting exposure (Non-industrial - Health 1)

Product characteristics

Physical state Solid

Concentration details Concentration of substance in product: 0.15%

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).
Avoid using product more than 5 consecutive days per year.

Other given operational conditions affecting Non-industrial exposure

Setting Indoor.

Temperature Assumes activities are at ambient temperature (unless stated differently).

Other given operational conditions affecting Non-industrial exposure

Exposure route Inhalation

Consumer information Avoid using without gloves.

3. Exposure estimation (Health 1)

Exposure Consumer - inhalation, long-term - systemic: Exposure 0.00051 mg/kg/day, DNEL 0.73 mg/kg/day, RCR 0.001
Worst case assumption

Exposure scenario
Consumer use of modelling clays

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
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1. Title of exposure scenario

Main title Consumer use of modelling clays

Product category PC0 Other products.

Article category AC10 Rubber articles

Main sector SU21 Consumer uses

2. Conditions of use affecting exposure (Non-industrial - Health 1)

Product characteristics

Physical state Solid

Concentration details Concentration of substance in product: 5.5%

Amounts used

Amount per use: 17 g
For each use event, avoid swallowing amounts more than 1 g.

Frequency and duration of use

Intermittent.

Other given operational conditions affecting Non-industrial exposure

Setting Indoor.

Temperature Assumes activities are at ambient temperature (unless stated differently).

Other given operational conditions affecting Non-industrial exposure

Exposure route Oral Dermal

3. Exposure estimation (Health 1)

Exposure Consumer - oral, long-term - systemic: Exposure 0.16 mg/kg/day, DNEL 0.171 mg/kg/day, RCR 0.935
Consumer - dermal: Exposure 0.00438 mg/kg/day, DNEL 34 mg/kg/day, RCR 0.001
Worst case assumption

Consumer use of modelling clays

Exposure scenario
Consumer exposure scenario for the use of automotive fluids

Identification

Product name Boric acid, boric oxide and sodium borates (exposures based on boron content)

Supplier

Univar Solutions UK Ltd
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1. Title of exposure scenario

Main title Consumer exposure scenario for the use of automotive fluids

Product category
PC0 Other products.
PC4 Anti-freeze and de-icing products.
PC16 Heat transfer fluids.
PC24 Lubricants, greases and release products.

Main sector SU21 Consumer uses

2. Conditions of use affecting exposure (Non-industrial - Health 1)

Product characteristics

Physical state Liquid

Concentration details PC24 Lubricants, greases and release products. Concentration of substance in product: 1% PC16 Heat transfer fluids. Concentration of substance in product: 4% PC4 Anti-freeze and de-icing products. Concentration of substance in product: 2%

Amounts used

PC24 Lubricants, greases and release products.
Amount per use: 4 kg
PC16 Heat transfer fluids.
Amount per use: 1 kg
PC4 Anti-freeze and de-icing products.
Amount per use: 5.5 kg

Frequency and duration of use

PC24 Lubricants, greases and release products.
Covers frequency up to 2 hours/day, 2 days/year, .
PC16 Heat transfer fluids.
Covers frequency up to 2 hours/day, 1 days/year, .
PC4 Anti-freeze and de-icing products.
Covers frequency up to 1 hour/day, 1 days/year, .

Human factors not influenced by risk management

Consumer exposure scenario for the use of automotive fluids

Potentially exposed body parts	Both hands. Covers skin contact area up to 840 cm².

Other given operational conditions affecting Non-industrial exposure

Temperature	Assumes activities are at ambient temperature (unless stated differently).

Other given operational conditions affecting Non-industrial exposure

Exposure route	Dermal
Consumer information	Avoid direct eye contact with product, also via contamination on hands.

3. Exposure estimation (Health 1)

Exposure	PC24 Lubricants, greases and release products. Consumer - dermal: Exposure 0.000000098 mg/kg/day, DNEL 34 mg/kg/day, RCR 0.001 PC16 Heat transfer fluids. Consumer - dermal: Exposure 0.000000392 mg/kg/day, DNEL 34 mg/kg/day, RCR 0.001 PC4 Anti-freeze and de-icing products. Consumer - dermal: Exposure 0.000000098 mg/kg/day, DNEL 34 mg/kg/day, RCR 0.001 Worst case assumption