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

1.1 Product identifiers

Product name	:	Boric acid
EC Index-No.	:	233-139-2
CAS-No.	:	10043-35-3
Product code	:	SP30130

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

Identified uses : Chemical production, Reagent for analysis

1.3 Details of the supplier of the safety data sheet

Company	:	PROCHIMA SIGMA Zone industrielle Khemisti, D N° 06, N° 02 Hennaya - Tlemcen - Algérie
Telephone	:	+213 44 96 35 35
Fax	:	+213 44 96 36 36
E-mail address	:	contact@prochima-sigma.com

1.4 Emergency telephone

Emergency Phone #	:	Centre national de toxicologie Route petit Staoueli NIPA Dely Brahim - Alger (Algeria) +213 23 36 77 77

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Reproductive toxicity, Category 1B	H360FD: May damage fertility. May damage the unborn child.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :

Signal word	:	Danger	
Hazard statements	:	H360FD	May damage fertility. May damage the unborn child.
Precautionary statements	:	**Prevention:**	
		P201	Obtain special instructions before use.
		P202	Do not handle until all safety precautions have been read and understood.
		P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
		Response:	
		P308 + P313	IF exposed or concerned: Get medical advice/ attention.
		Storage:	
		P405	Store locked up.
		Disposal:	
		P501	Dispose of contents/ container to an approved waste disposal plant.

Additional Labelling

Restricted to professional users.

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Ecological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Toxicological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.1 Substances

Index-No. : 005-007-00-2

EC-No. : 233-139-2

Components

Chemical name	CAS-No. EC-No.	Concentration (% w/w)	M-Factor, SCL, ATE
boric acid	10043-35-3 233-139-2	>= 90 - <= 100	

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice : Show this safety data sheet to the doctor in attendance.

If inhaled : After inhalation: fresh air. Call in physician.

In case of skin contact : In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Consult a physician.

In case of eye contact : After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.

If swallowed : After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed

No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media : For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture

Specific hazards during fire fighting : Not combustible.

Ambient fire may liberate hazardous vapours.

Hazardous combustion products	:	Borane/boron oxides

5.3 Advice for firefighters

Special protective equipment for fire-fighters	:	Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.
Further information	:	Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions	:	Advice for non-emergency personnel: Avoid inhalation of dusts. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

For personal protection see section 8.

6.2 Environmental precautions

Environmental precautions	:	Do not let product enter drains.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up	:	Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully. Dispose of properly. Clean up affected area. Avoid generation of dusts.

6.4 Reference to other sections

For disposal considerations see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling	:	Work under hood. Do not inhale substance/mixture.
Hygiene measures	:	Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Further information on storage conditions	:	Tightly closed. Dry. Keep in a well-ventilated place. Keep locked up or in an area accessible only to

qualified or authorised persons.

Storage class (TRGS 510) : 6.1C, Combustible, acute toxic Cat.3 / toxic compounds or compounds which causing chronic effects

Further information on storage stability : Moisture sensitive.

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006

Substance name	End Use	Exposure routes	Potential health effects	Value
	Worker DNEL, longterm	inhalation	Systemic effects	8,3 mg/m3
	Worker DNEL, longterm	dermal	Systemic effects	392 mg/kg
	Consumer DNEL, longterm	inhalation	Systemic effects	4,15 mg/m3
	Consumer DNEL, longterm	dermal	Systemic effects	196 mg/kg
	Consumer DNEL, longterm	oral	Systemic effects	0,98 mg/kg
	Consumer DNEL, acute	oral	Systemic effects	0,98 mg/kg

Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006

Substance name	Environmental Compartment	Value
	Fresh water	2,02 mg/l
	Marine water	2,02 mg/l
	Aquatic intermittent release	13,7 mg/l
	Sewage treatment plant	10 mg/l
	Soil	5,4 mg/kg

8.2 Exposure controls

Personal protective equipment

Eye/face protection : Use equipment for eye protection tested and approved under appropriate government standards

such as NIOSH (US) or EN 166(EU).
Safety glasses

Hand protection

Material	:	Nitrile rubber
Break through time	:	480 min
Glove thickness	:	0,11 mm
Protective index	:	Full contact
Manufacturer	:	KCL 741 Dermatril® L

Material	:	Nitrile rubber
Break through time	:	480 min
Glove thickness	:	0,11 mm
Protective index	:	Splash contact
Manufacturer	:	KCL 741 Dermatril® L

Remarks : This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN 16523-1 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Skin and body protection : protective clothing

Respiratory protection : required when dusts are generated.

Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Recommended Filter type: : Filter type P3

The entrepeneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

Environmental exposure controls

Advice : Do not let product enter drains.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state : solid

Form : powder

Color : white

Odor	:	odourless
Odor Threshold	:	Not applicable
Melting point/ range	:	160 °C
Boiling point	:	No data available
Flammability	:	Method: Flammability (solids) GLP: yes Remarks: The product is not flammable.
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Flash point	:	Not applicable
Autoignition temperature	:	not combustible
Decomposition temperature	:	No data available
pH	:	5,1 (25 °C) Concentration: 1,8 g/l
Viscosity, dynamic	:	No data available
Viscosity, kinematic	:	No data available
Flow time	:	No data available
Solubility(ies)		
Water solubility	:	49,2 g/l (20 °C) pH: 3,7 Method: Regulation (EC) No. 440/2008, Annex, A.6 GLP: yes completely soluble
Partition coefficient: n-octanol/water	:	log Pow: -1,09 (22 °C) pH: 7,5 Method: Regulation (EC) No. 440/2008, Annex, A.8 GLP: yes

Bioaccumulation is not expected.

Vapor pressure	:	< 0,1 hPa (25 °C) Method: Regulation (EC) No. 440/2008, Annex, A.4 GLP: yes
Relative density	:	1,49 (23 °C) Method: Regulation (EC) No. 440/2008, Annex, A.3 GLP: yes
Density	:	1,48 g/cm3 (23 °C) Method: OECD Test Guideline 109 GLP: yes
Relative vapour density	:	No data available

9.2 Other information

Explosives	:	Not classified as explosive.
Oxidizing properties	:	none
Burning rate	:	No data available
Evaporation rate	:	No data available
Molecular weight	:	61,83 g/mol

SECTION 10: Stability and reactivity

10.1 Reactivity

No data available

10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

10.3 Possibility of hazardous reactions

Hazardous reactions : Risk of explosion with:

Acetic anhydride

Violent reactions possible with:

strong oxidising agents
Bases

10.4 Conditions to avoid

Conditions to avoid : Exposure to moisture

no information available

10.5 Incompatible materials

No data available

10.6 Hazardous decomposition products

In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Rat - male and female - 3.450 mg/kg
Remarks: (ECHA)
LC50 Inhalation - Rat - male and female - 4 h - > 2,12 mg/l - dust/mist

(OECD Test Guideline 403)
LD50 Dermal - Rabbit - male and female - > 2.000 mg/kg
Remarks: (ECHA)

Skin corrosion/irritation
Skin - Rabbit
Result: No skin irritation - 24 h
Remarks: (ECHA)

Serious eye damage/eye irritation
Eyes - Rabbit
Result: No eye irritation - 24 h
(OECD Test Guideline 405)

Respiratory or skin sensitization
Buehler Test - Guinea pig
Result: negative
(OECD Test Guideline 406)

Germ cell mutagenicity
Test Type: sister chromatid exchange assay
Test system: Chinese hamster ovary cells
Metabolic activation: with and without metabolic activation
Result: negative
Remarks: (ECHA)
Test Type: Ames test
Test system: S. typhimurium
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative
Test Type: In vitro mammalian cell gene mutation test
Test system: mouse lymphoma cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative
Test Type: Mutagenicity (mammal cell test):
Test system: Chinese hamster ovary cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 482

Result: negative

Test Type: Micronucleus test
Species: Mouse

Application Route: Oral
Method: OECD Test Guideline 474
Result: negative

Carcinogenicity
No data available

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

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

11.2 Additional Information

Endocrine disrupting properties

Product:

Assessment	The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Repeated dose toxicity - Rat - male and female - Oral - 2 yr - No observed adverse effect level - 17,5 mg/kg - Lowest observed adverse effect level - 58,5 mg/kg
Remarks: (ECHA)

RTECS: ED4550000
Toxicity reported for borates in humans: ingestion or absorption may cause nausea, vomiting, diarrhea, abdominal cramps, anderythematous lesions on the skin and mucous membranes. Other symptoms include: circulatory collapse, tachycardia, cyanosis, delirium convulsions, and coma. Death has been reported to occur in infants from less than 5 grams and in adults from 5 to 20 grams.
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

After absorption of large quantities:

Vomiting
Nausea
Diarrhoea
agitation, spasms
Tiredness
ataxia (impaired locomotor coordination)

drop in temperature

This substance should be handled with particular care.

Liver - Irregularities - Based on Human Evidence

SECTION 12: Ecological information

12.1 Toxicity

Components:

boric acid:

Toxicity to fish	:	LC50 (Pimephales promelas (fathead minnow)): 79,7 mg/l Exposure time: 96 h Test Type: static test Analytical monitoring: yes Method: US-EPA
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 133 mg/l Exposure time: 48 h Test Type: static test Remarks: (ECOTOX Database)
Toxicity to algae/aquatic plants	:	EC50 (Pseudokirchneriella subcapitata (green algae)): 52,4 mg/l Exposure time: 74,5 h Test Type: static test Analytical monitoring: yes Method: OECD Test Guideline 201 GLP: yes

Ecotoxicology Assessment

Chronic aquatic toxicity	:	This product has no known ecotoxicological effects.

12.2 Persistence and degradability

Components:

boric acid:

Biodegradability	:	Remarks: The methods for determining biodegradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential

Components:

boric acid:

Partition coefficient: n-octanol/water	:	log Pow: -1,09 (22 °C) pH: 7,5

Method: Regulation (EC) No. 440/2008, Annex, A.8
GLP: yes
Remarks: Bioaccumulation is not expected.

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

Product:

Assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Endocrine disrupting properties

Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

No data available

12.7 Other adverse effects

Components:

boric acid:

Additional ecological information : Discharge into the environment must be avoided.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product : Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

SECTION 14: Transport information

14.1 UN number or ID number

ADR : Not regulated as a dangerous good

IMDG : Not regulated as a dangerous good

IATA_P : Not regulated as a dangerous good

14.2 UN proper shipping name

ADR	:	Not regulated as a dangerous good
IMDG	:	Not regulated as a dangerous good
IATA_P	:	Not regulated as a dangerous good

14.3 Transport hazard class(es)

ADR	:	Not regulated as a dangerous good
IMDG	:	Not regulated as a dangerous good
IATA_P	:	Not regulated as a dangerous good

14.4 Packing group

ADR	:	Not regulated as a dangerous good
IMDG	:	Not regulated as a dangerous good
IATA (Cargo)	:	Not regulated as a dangerous good
IATA_P (Passenger)	:	Not regulated as a dangerous good

14.5 Environmental hazards

Not regulated as a dangerous good

14.6 Special precautions for user

Remarks	:	Not classified as dangerous in the meaning of transport regulations.

14.7 Maritime transport in bulk according to IMO instruments

Not applicable for product as supplied.

SECTION 15: Regulatory information

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

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles (Annex XVII)	:	Conditions of restriction for the following entries should be considered: Number on list 30: boric acid Number on list 75: If you intend to use this product as tattoo ink, please contact your vendor.
REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59).	:	boric acid
Regulation (EU) No 2024/590 on substances that deplete the ozone layer	:	Not applicable
Regulation (EU) 2019/1021 on persistent organic pollutants (recast)	:	Not applicable

REACH - List of substances subject to authorisation (Annex XIV)	:	Not applicable
Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.		Not applicable

15.2 Chemical safety assessment

A Chemical Safety Assessment has been carried out for this substance.

SECTION 16: Other information

Full text of other abbreviations

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonised System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organisation; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardisation; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organisation for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of Very High Concern; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

Further information

Other information	:	The information is believed to be correct but is not exhaustive and will be used solely as a guideline, which is based on current knowledge of the chemical substance or mixture and is applicable to appropriate safety precautions for the product.

Annex: Exposure scenario

Identified uses:

Use: Industrial use

SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
SU 3, SU 10: Industrial uses: Uses of substances as such or in preparations at industrial sites, Formulation [mixing] of preparations and/ or re-packaging (excluding alloys)
PC19: Intermediate **PC39:** Cosmetics, personal care products
PROC1: Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC3:** Use in closed batch process (synthesis or formulation) **PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises **PROC5:** Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) **PROC9:** Transfer of substance or preparation into small containers (dedicated filling line, including weighing) **PROC14:** Production of preparations or articles by tabletting, compression, extrusion, pelletisation **PROC15:** Use as laboratory reagent **PROC26:** Handling of solid inorganic substances at ambient temperature
ERC1, ERC2, ERC4, ERC6a, ERC6b: Manufacture of substances, Formulation of preparations, Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use resulting in manufacture of another substance (use of intermediates), Industrial use of reactive processing aids

Use: Professional use

SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
PC39: Cosmetics, personal care products
PROC15: Use as laboratory reagent
ERC8a: Wide dispersive indoor use of processing aids in open systems

Use: Consumer use

SU 21: Consumer uses: Private households (= general public = consumers)
SU 21: Consumer uses: Private households (= general public = consumers)
PC39: Cosmetics, personal care products
ERC8a: Wide dispersive indoor use of processing aids in open systems

1. Short title of Exposure Scenario: Industrial use

Main User Groups	:	**SU 3**
Sectors of end-use	:	**SU 3, SU 10**
Chemical product category	:	**PC19, PC39**
Process categories	:	**PROC1, PROC2, PROC3, PROC4, PROC5, PROC9, PROC14, PROC15, PROC26**
Environmental Release Categories	:	**ERC1, ERC2, ERC4, ERC6a, ERC6b:**

2. Exposure scenario

2.1 Contributing scenario controlling environmental exposure for: ERC1

Amount used

Annual amount per site	:	55000 t
Remarks	:	Expressed as, Boron

Environment factors not influenced by risk management

Dilution Factor (River)	:	37

Other given operational conditions affecting environmental exposure

Number of emission days per year	:	220
Emission or Release Factor: Air	:	0,53 g/t
Emission or Release Factor: Water	:	554 g/t

Technical conditions and measures / Organizational measures

Air	:	exhaust air scrubber
Air	:	Fabric filter
Air	:	Air cyclones for dust collection
Air	:	Electrostatic precipitation for dust collection.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	not required
Type of Sewage Treatment Plant	:	Municipal sewage treatment plant

The concentration in the sewage treatment plant should be below the respective PNEC STP

Conditions and measures related to external treatment of waste for disposal

Disposal methods	:	Dispose of as hazardous waste in compliance with local and national regulations.

Additional good practice advice beyond the REACH Chemical Safety Assessment

Sweep up or vacuum up spillage and collect in suitable container for disposal.

2.1 Contributing scenario controlling environmental exposure for: ERC2

Amount used

Annual amount per site	:	950 kg
Remarks	:	Expressed as, Boron

Environment factors not influenced by risk management
Dilution Factor (River) : 10

Other given operational conditions affecting environmental exposure
Number of emission days per year : 200
Emission or Release Factor: Air : 400 g/t
Emission or Release Factor: Water : 8000 g/t

Technical conditions and measures / Organizational measures
Air : exhaust air scrubber
Air : Fabric filter
Air : Air cyclones for dust collection
Air : Electrostatic precipitation for dust collection.

Conditions and measures related to municipal sewage treatment plant
Type of Sewage Treatment Plant : not required
Type of Sewage Treatment Plant : Municipal sewage treatment plant
The concentration in the sewage treatment plant should be below the respective PNEC STP

Conditions and measures related to external treatment of waste for disposal
Disposal methods : Dispose of as hazardous waste in compliance with local and national regulations.

Additional good practice advice beyond the REACH Chemical Safety Assessment
Sweep up or vacuum up spillage and collect in suitable container for disposal.

2.1 Contributing scenario controlling environmental exposure for: ERC4

Amount used
Annual amount per site : 14 t
Remarks : Expressed as, Boron

Environment factors not influenced by risk management
Dilution Factor (River) : 10

Other given operational conditions affecting environmental exposure
Number of emission days per year : 365
Emission or Release Factor: Air : 36562 g/t
Emission or Release Factor: Water : 1

Conditions and measures related to municipal sewage treatment plant
Type of Sewage Treatment Plant : not required
Type of Sewage Treatment Plant : Municipal sewage treatment plant
The concentration in the sewage treatment plant should be below the respective PNEC STP

Conditions and measures related to external treatment of waste for disposal
Disposal methods : Dispose of as hazardous waste in compliance with local and national regulations.

Additional good practice advice beyond the REACH Chemical Safety Assessment
Sweep up or vacuum up spillage and collect in suitable container for disposal.

2.1 Contributing scenario controlling environmental exposure for: ERC6a, ERC6b

Amount used
Annual amount per site : 190 t
Remarks : Expressed as, Boron

Environment factors not influenced by risk management
Dilution Factor (River) : 10

Other given operational conditions affecting environmental exposure
Number of emission days per year : 300
Emission or Release Factor: Air : 36562 g/t
Emission or Release Factor: Water : 60000 g/t

Conditions and measures related to municipal sewage treatment plant
Type of Sewage Treatment Plant : not required
Type of Sewage Treatment Plant : Municipal sewage treatment plant
The concentration in the sewage treatment plant should be below the respective PNEC STP

Conditions and measures related to external treatment of waste for disposal
Disposal methods : Dispose of as hazardous waste in compliance with local and national regulations.

Additional good practice advice beyond the REACH Chemical Safety Assessment
Sweep up or vacuum up spillage and collect in suitable container for disposal.

2.5 Contributing scenario controlling worker exposure for: PROC1, PROC3

Product characteristics
Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Solid, high dustiness, powder

Frequency and duration of use
Frequency of use : 8 hours/day

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Industrial use, Direct handling, Non-dispersive use, Intermittent contact

Organisational measures to prevent /limit releases, dispersion and exposure
Covers daily exposures up to 8 hours.

2.6 Contributing scenario controlling worker exposure for: PROC2

Product characteristics
Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Solid, high dustiness, powder

Frequency and duration of use
Frequency of use : 60 minutes/day

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor with local exhaust ventilation (LEV)
Non-dispersive use, Direct handling, Intermittent contact, Integrated local exhaust ventilation

Technical conditions and measures
Use only in area provided with appropriate exhaust ventilation., Provide extraction ventilation at points where emissions occur., Provide extract ventilation to material transfer points and other openings.

Organisational measures to prevent /limit releases, dispersion and exposure

Avoid carrying out operation for more than 1 hour., Regular testing and maintenance of plant and equipment

Conditions and measures related to personal protection, hygiene and health evaluation
In case of insufficient local exhaust ventilation, respiratory protection must be worn
Wear suitable gloves (tested to EN374), coverall and eye protection.

2.7 Contributing scenario controlling worker exposure for: PROC4, PROC5

Product characteristics

Concentration of the Substance in Mixture/Article	: Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use)	: Solid, high dustiness, powder

Frequency and duration of use

Frequency of use	: 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	: Indoor with local exhaust ventilation (LEV)

Industrial use, Direct handling, Non-dispersive use, Intermittent contact, Integrated local exhaust ventilation

Organisational measures to prevent /limit releases, dispersion and exposure
Covers daily exposures up to 8 hours.

Conditions and measures related to personal protection, hygiene and health evaluation
Wear respiratory protection. (Effectiveness (of a measure): 90 %)

2.8 Contributing scenario controlling worker exposure for: PROC9

Product characteristics

Concentration of the Substance in Mixture/Article	: Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use)	: Solid, high dustiness
Physical Form (at time of use)	: Liquid mixture, paste

Frequency and duration of use

Frequency of use	: 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	: Indoor with local exhaust ventilation (LEV)

Industrial use, Non-dispersive use, Direct handling, Intermittent contact, Integrated local exhaust ventilation

Technical conditions and measures
Use only in area provided with appropriate exhaust ventilation., Provide extraction ventilation at points where emissions occur., Provide extract ventilation to material transfer points and other openings.

Organisational measures to prevent /limit releases, dispersion and exposure
Covers daily exposures up to 8 hours., Regular testing and maintenance of plant and equipment

Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves (tested to EN374), coverall and eye protection.
Safety shoes
Suitable mask with particle filter P3 (European Norm 143)

2.9 Contributing scenario controlling worker exposure for: PROC14

Product characteristics

Concentration of the Substance in Mixture/Article	: Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use)	: Solid, high dustiness
Physical Form (at time of use)	: Powdered mixture

Frequency and duration of use

Frequency of use	: 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor	: Indoor with local exhaust ventilation (LEV)

Industrial use, Non-dispersive use, Any size workroom, Direct handling, Intermittent contact, Open process, Integrated local exhaust ventilation

Amount used	: < 100 kg/min

Organisational measures to prevent /limit releases, dispersion and exposure
Covers daily exposures up to 8 hours., Regular testing and maintenance of plant and equipment

Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves (tested to EN374) and eye protection., Respirator with a particle filter (EN 143)

2.10 Contributing scenario controlling worker exposure for: PROC15

Product characteristics

Concentration of the Substance in Mixture/Article	: Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use)	: Solid, high dustiness, powder

Frequency and duration of use

Frequency of use	: 60 minutes/day

Other operational conditions affecting workers exposure
Non-dispersive use, Non-direct handling, Incidental contact

Technical conditions and measures
Handle in a fume cupboard or under extract ventilation.

Organisational measures to prevent /limit releases, dispersion and exposure
Avoid carrying out operation for more than 1 hour., Regular testing and maintenance of plant and equipment

Conditions and measures related to personal protection, hygiene and health evaluation
Safety glasses
Lab coat

Safety shoes

Additional good practice advice beyond the REACH Chemical Safety Assessment
Wear suitable gloves tested to EN374.

2.11 Contributing scenario controlling worker exposure for: PROC26

Product characteristics
Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Solid, high dustiness, powder

Frequency and duration of use
Frequency of use : < 4 hours/day

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor with local exhaust ventilation (LEV)
Industrial use, Direct handling, Non-dispersive use, Intermittent contact, Integrated local exhaust ventilation

Organisational measures to prevent /limit releases, dispersion and exposure
Avoid carrying out operation for more than 4 hours.

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR*
ERC1	EUSES		Fresh water			0,954
ERC1	EUSES		Soil			0,002
ERC2	EUSES		Fresh water			0,969
ERC2	EUSES		Soil			0,01
ERC4	EUSES		Fresh water			0,977
ERC4	EUSES		Soil			0,013
ERC6a	EUSES		Fresh water			0,969
ERC6a	EUSES		Soil			0,158
ERC6b	EUSES		Fresh water			0,969
ERC6b	EUSES		Soil			0,158

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR*
PROC1	MEASE	longterm, inhalative, systemic			0,007
PROC1	MEASE	longterm, combined, systemic			< 0,001
PROC1		longterm, dermal,			0,007

		systemic			
PROC3	MEASE	longterm, inhalative, systemic			0,690
PROC3	MEASE	longterm, dermal, systemic			< 0,001
PROC3		longterm, combined, systemic			0,690

*Risk characterisation ratio

PROC2	MEASE	longterm, inhalative, systemic			0,33
PROC2	MEASE	longterm, dermal, systemic			< 0,001
PROC2		longterm, combined, systemic			0,33

*Risk characterisation ratio

PROC4	MEASE	longterm, inhalative, systemic			0,276
PROC4	MEASE	longterm, combined, systemic			< 0,001
PROC4		longterm, dermal, systemic			0,276
PROC5	MEASE	longterm, inhalative, systemic			0,276
PROC5	MEASE	longterm, dermal, systemic			< 0,001
PROC5		longterm, combined, systemic			0,276

*Risk characterisation ratio

PROC9	Measured data	longterm, inhalative, systemic			0,276
PROC9	MEASE	longterm, dermal, systemic			< 0,001
PROC9		longterm, combined, systemic			0,276

*Risk characterisation ratio

PROC14	ART	longterm, inhalative, systemic			0,259

PROC14	MEASE	longterm, dermal, systemic			< 0,001
PROC14		longterm, combined, systemic			0,259

*Risk characterisation ratio

PROC15	Measured data	longterm, inhalative, systemic			0,110
PROC15	MEASE	longterm, dermal, systemic			< 0,001
PROC15		longterm, combined, systemic			0,110

*Risk characterisation ratio

PROC26	MEASE	longterm, inhalative, systemic			0,662
PROC26	MEASE	longterm, combined, systemic			< 0,001
PROC26		longterm, dermal, systemic			0,662

*Risk characterisation ratio

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Please refer to the following documents: ECHA Guidance on information requirements and chemical safety assessment Chapter R.12: Use descriptor system; ECHA Guidance for downstream users; ECHA Guidance on information requirements and chemical safety assessment Part D: Exposure Scenario Building, Part E: Risk Characterisation and Part G: Extending the SDS; VCI/Cefic REACH Practical Guides on Exposure Assessment and Communications in the Supply Chain; CEFIC Guidance Specific Environmental Release Categories (SPERCs).
For scaling of environmental exposure assessments, please refer to the ARCHE tool at www.arche-consulting.be/Metal-CSA-toolbox/du-scaling-tool.

1. Short title of Exposure Scenario: Professional use

Main User Groups	: **SU 22**
Sectors of end-use	: **SU 22**
Chemical product category	: **PC39**
Process categories	: **PROC15**
Environmental Release Categories	: **ERC8a:**

2. Exposure scenario

2.1 Contributing scenario controlling environmental exposure for: ERC8a

Amount used

Annual amount for wide disperse uses	: 35000 t
Remarks	: European Union

Environment factors not influenced by risk management

Dilution Factor (River)	: 10

Other given operational conditions affecting environmental exposure

Number of emission days per year	: 365
Emission or Release Factor: Water	: 1

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant : Municipal sewage treatment plant
The concentration in the sewage treatment plant should be below the respective PNEC STP

2.2 Contributing scenario controlling worker exposure for: PROC15

Product characteristics

Concentration of the Substance in Mixture/Article	: Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use)	: Solid, high dustiness, powder

Frequency and duration of use

Frequency of use	: 60 minutes/day

Other operational conditions affecting workers exposure

Non-dispersive use, Non-direct handling, Incidental contact

Technical conditions and measures

Handle in a fume cupboard or under extract ventilation.

Organisational measures to prevent /limit releases, dispersion and exposure

Avoid carrying out operation for more than 1 hour., Regular testing and maintenance of plant and equipment

Conditions and measures related to personal protection, hygiene and health evaluation
Safety glasses
Lab coat
Safety shoes

Additional good practice advice beyond the REACH Chemical Safety Assessment
Wear suitable gloves tested to EN374.

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR*
ERC8a	EUSES		Fresh water			0,503
ERC8a	EUSES		Sewage treatment plant			0,959

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR*
PROC15	Measured data	longterm, inhalative, systemic			0,110
PROC15	MEASE	longterm, dermal, systemic			< 0,001
PROC15		longterm, combined, systemic			0,110

*Risk characterisation ratio

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Please refer to the following documents: ECHA Guidance on information requirements and chemical safety assessment Chapter R.12: Use descriptor system; ECHA Guidance for downstream users; ECHA Guidance on information requirements and chemical safety assessment Part D: Exposure Scenario Building, Part E: Risk Characterisation and Part G: Extending the SDS; VCI/Cefic REACH Practical Guides on Exposure Assessment and Communications in the Supply Chain; CEFIC Guidance Specific Environmental Release Categories (SPERCs).
For scaling of environmental exposure assessments, please refer to the ARCHE tool at www.arche-consulting.be/Metal-CSA-toolbox/du-scaling-tool.

1. Short title of Exposure Scenario: Consumer use

Main User Groups : **SU 21**
Sectors of end-use : **SU 21**
Chemical product category : **PC39**
Environmental Release Categories : **ERC8a:**

2. Exposure scenario

2.1 Contributing scenario controlling environmental exposure for: ERC8a

Amount used
Annual amount for wide disperse uses : 35000 t
Remarks : European Union

Environment factors not influenced by risk management
Dilution Factor (River) : 10

Other given operational conditions affecting environmental exposure
Number of emission days per year : 365
Emission or Release Factor: Water : 1

Conditions and measures related to municipal sewage treatment plant
Type of Sewage Treatment Plant : Municipal sewage treatment plant
The concentration in the sewage treatment plant should be below the respective PNEC STP

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR*
ERC8a	EUSES		Fresh water			0,503
ERC8a	EUSES		Sewage treatment plant			0,959

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Please refer to the following documents: ECHA Guidance on information requirements and chemical safety assessment Chapter R.12: Use descriptor system; ECHA Guidance for downstream users; ECHA Guidance on information requirements and chemical safety assessment Part D: Exposure Scenario Building, Part E: Risk Characterisation and Part G: Extending the SDS; VCI/Cefic REACH Practical Guides on Exposure Assessment and Communications in the Supply Chain; CEFIC Guidance Specific Environmental Release Categories (SPERCs).

For scaling of environmental exposure assessments, please refer to the ARCHE tool at www.arche-consulting.be/Metal-CSA-toolbox/du-scaling-tool.