Safety data sheet
according to Regulation (EC) No 1907/2006, Article 31

Printing date 25.03.2026 Version number 26 (replaces version 25) Revision: 25.03.2026

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

· **1.1 Product identifier**
· **Trade name: boric acid**
· **SDS number:** CH0100
· **CAS Number:**
10043-35-3

· **EC number:**
233-139-2
· **Index number:**
005-007-00-2
· **Registration number** 01-2119486683-25
· **1.2 Relevant identified uses of the substance or mixture and uses advised against**
For professional users only
No further relevant information available.
· **Life cycle stages**
IS Use at industrial Sites
F Formulation or re-packing
· **Sector of Use**
SU9 Manufacture of fine chemicals
SU24 Scientific research and development
· **Product category**
PC20 Processing aids such as pH-regulators, flocculants, precipitants, neutralization agents
PC21 Laboratory chemicals
PC29 Pharmaceuticals
PC40 Extraction agents
· **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
PROC5 Mixing or blending in batch processes
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)
PROC15 Use as laboratory reagent
· **Environmental release category**
ERC2 Formulation into mixture
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)
· **Application of the substance / the mixture** Chemicals products for laboratory

· **1.3 Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
CARLO ERBA REAGENTS
Chaussée du Vexin
Parc d'Affaires des Portes - BP616
27106 VAL DE REUIL Cedex
Téléphone: +33 (0)2 32 09 20 00
Télécopie: +33 (0)2 32 09 20 20
· **Further information obtainable from:**
Q.A / Normative

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email: MSDS_CER-SDS@cer.dgroup.it

· ***1.4 Emergency telephone number:***
Ireland - Tel : 00 353 1 8092568 - 00 353 1 8379964 (24h/24)
EU Tel : 112

SECTION 2: Hazards identification

· ***2.1 Classification of the substance or mixture***

· ***Classification according to Regulation (EC) No 1272/2008***



GHS08 health hazard

Repr. 1B H360FD May damage fertility. May damage the unborn child.

· ***2.2 Label elements***

· ***Labelling according to Regulation (EC) No 1272/2008***
The substance is classified and labelled according to the CLP regulation.

· ***Hazard pictograms***



GHS08

· ***Signal word*** *Danger*

· ***Hazard statements***
H360FD May damage fertility. May damage the unborn child.

· ***Precautionary statements***
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P280 Wear protective gloves / eye protection / face protection.
P308+P313 IF exposed or concerned: Get medical advice/attention.
P405 Store locked up.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

· ***Additional information:***
Restricted to professional users.

· ***2.3 Other hazards***

· ***Results of PBT and vPvB assessment***

· ***PBT:*** *Not applicable*

· ***vPvB:*** *Not applicable*

· ***Determination of endocrine-disrupting properties*** *Not applicable*

SECTION 3: Composition/information on ingredients

· ***3.1 Substances***

· ***CAS No. Description***
CAS: 10043-35-3 boric acid

· ***Identification number(s)***

· ***EC number:*** *233-139-2*

· ***Index number:*** *005-007-00-2*

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· ***Specific concentration limits*** *Repr. 1B; H360FD: C ≥ 0.3 %*

· ***SVHC***	
CAS: 10043-35-3	*boric acid*

SECTION 4: First aid measures

· ***4.1 Description of first aid measures***
· ***After inhalation:*** *Supply fresh air; consult a doctor in case of complaints.*
· ***After skin contact:***
Immediately wash with water and soap and rinse thoroughly. Wash contaminated clothing before reuse.
Generally the product does not irritate the skin.
If skin irritation continues, consult a doctor.
· ***After eye contact:*** *Rinse opened eye for several minutes under running water.*
· ***After swallowing:*** *If some symptoms persist seek for medical advice.*
· ***Information for doctor:*** *Show the doctor this Material Safety Data Sheet.*
· ***4.2 Most important symptoms and effects, both acute and delayed*** *No further relevant information available.*
· ***4.3 Indication of any immediate medical attention and special treatment needed***
No further relevant information available.

SECTION 5: Firefighting measures

· ***5.1 Extinguishing media***
· ***Suitable extinguishing agents:***
CO2, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
Use fire extinguishing methods suitable to surrounding conditions.
· ***5.2 Special hazards arising from the substance or mixture*** *No further relevant information available.*
· ***5.3 Advice for firefighters***
· ***Protective equipment:*** *Do not inhale gases in case or fire or combustion.*
· ***Additional information*** *Keep receptacles cool with water spray.*

SECTION 6: Accidental release measures

· ***6.1 Personal precautions, protective equipment and emergency procedures***
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.
Ensure adequate ventilation
· ***6.2 Environmental precautions:***
Do not allow to penetrate the ground/soil.
Do not allow to enter sewers/ surface or ground water.
· ***6.3 Methods and material for containment and cleaning up:***
Pick up mechanically.
Ensure adequate ventilation.
Dispose contaminated material as waste according to section 13.
Provide suction extractors if dust is formed.
· ***6.4 Reference to other sections***
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

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SECTION 7: Handling and storage

· ***7.1 Precautions for safe handling***
Thorough dedusting.
Prevent formation of dust.
Provide suction extractors if dust is formed.
Wear suitable respiratory protective device when decanting larger quantities without extractor facilities.
Keep unused containers tightly sealed.
· ***Information about fire - and explosion protection:***
The product is not flammable.
Keep respiratory protective device available.

· ***7.2 Conditions for safe storage, including any incompatibilities***
· ***Storage:***
· ***Requirements to be met by storerooms and receptacles:***
Store in a well-ventilated place. Keep container tightly closed.
· ***Information about storage in one common storage facility:*** *Not required*
· ***Further information about storage conditions:*** *None.*
· ***7.3 Specific end use(s)*** *No further relevant information available.*

SECTION 8: Exposure controls/personal protection

· ***8.1 Control parameters***
· ***Ingredients with limit values that require monitoring at the workplace:*** *TLV not established.*

· **DNELs**		
Dermal	*DNEL (workers-systemic chronic effects)*	*392 mg/kg*
Inhalative	*DNEL (workers-systemic chronic effects)*	*8.3 mg/m3*

· **PNECs**	
PNEC (Fresh water)	*2.9 mg/l*
PNEC (Intermittent rejection)	*13.7 mg/l*
PNEC (STP)	*10 mg/l*
PNEC (Soil)	*5.7 mg/kg*

· ***Additional information:*** *The lists valid during the making were used as basis.*

· ***8.2 Exposure controls***
· ***Appropriate engineering controls***
Safety shower and eye bath. Mechanical exhaust required.
No further data; see section 7.
· ***Individual protection measures, such as personal protective equipment***
· ***General protective and hygienic measures:***
The usual precautionary measures are to be adhered to when handling chemicals.
Keep away from foodstuffs, beverages and feed.
Store protective clothing separately.
Vacuum clean contaminated clothing. Do not blow or brush off contamination.
Avoid contact with the eyes and skin.
Pregnant women should strictly avoid inhalation or skin contact.
· ***Respiratory protection:***



In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.

Filter P2

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The selected respiratory protection must comply with standard EN 136/140/143/145/149.

· ***Recommended filter device for short term use:***
Filter P2
Filter P3

· ***Hand protection***
The selected protective gloves have to satisfy the specifications of REGULATION (EU) 2016/425 and the standard EN 374 derived from it.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation



Protective gloves

Rubber gloves

· ***Material of gloves***
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
Thin, disposable gloves in PVC or PE
/

· ***Penetration time of glove material***
The exact break trough time has to be found out by the manufacturer of the protective gloves and has to be observed.
/

· ***For the permanent contact gloves made of the following materials are suitable:***
The penetration time has to be at least 480 minutes
Butyl rubber, BR
Recommended thickness of the material: ≥ 0.5 mm
Fluorocarbon rubber (Viton)
Recommended thickness of the material: ≥ 0.4 mm
Nitrile rubber, NBR
Recommended thickness of the material: ≥ 0.35 mm
PVC gloves
Recommended thickness of the material: ≥ 0.5 mm

· ***Eye/face protection***



Safety glasses

· ***Environmental exposure controls***
In case of unintended release of the product: See section 6 of the Safety Data Sheet.

· ***Risk management measures*** *Keep good industrial hygiene.*

SECTION 9: Physical and chemical properties

· ***9.1 Information on basic physical and chemical properties***

· ***Molecular weight***	
· ***Physical state***	*Solid*
· ***Colour:***	*White*
· ***Odour:***	*Odourless*
· ***Odour threshold:***	*Not determined*
· ***Melting point/freezing point:***	*170 °C*

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· ***Boiling point or initial boiling point and boiling range***	*300 °C*
· ***Flammability***	*Product is not flammable.*
· ***Lower and upper explosion limit***	
· ***Lower:***	*Not determined*
· ***Upper:***	*Not determined*
· ***Flash point:***	*Not applicable*
· ***Decomposition temperature:***	*Not determined*
· ***pH***	*4.3 (3.3%)*
· ***Viscosity:***	
· ***Kinematic viscosity***	*Not applicable*
· ***Dynamic:***	*Not applicable*
· ***Solubility***	
· ***water at 20 °C:***	*49.2 g/l*
· ***alcohols:***	*Readily soluble.*
· ***organic solvents:***	*Soluble in many organic solvents.*
· ***Partition coefficient n-octanol/water (log value)***	*Not determined*
· ***Vapour pressure:***	*Not applicable*
· ***Density and/or relative density***	
· ***Density at 20 °C:***	*1.48 g/cm³*
· ***Relative density***	*Not determined*
· ***Vapour density***	*Not applicable*
· ***Particle characteristics***	*See section 3.*

· ***9.2 Other information***	
· ***Appearance:***	
· ***Form:***	*Crystalline powder*
· ***Important information on protection of health and environment, and on safety.***	
· ***Ignition temperature:***	*Not determined*
· ***Explosive properties:***	*Product does not present an explosion hazard.*
· ***Change in condition***	
· ***Evaporation rate***	*Not applicable.*

· ***Information with regard to physical hazard classes***	
· ***Explosives***	*Void*
· ***Flammable gases***	*Void*
· ***Aerosols***	*Void*
· ***Oxidising gases***	*Void*
· ***Gases under pressure***	*Void*
· ***Flammable liquids***	*Void*
· ***Flammable solids***	*Void*
· ***Self-reactive substances and mixtures***	*Void*
· ***Pyrophoric liquids***	*Void*
· ***Pyrophoric solids***	*Void*
· ***Self-heating substances and mixtures***	*Void*
· ***Substances and mixtures, which emit flammable gases in contact with water***	*Void*
· ***Oxidising liquids***	*Void*
· ***Oxidising solids***	*Void*
· ***Organic peroxides***	*Void*
· ***Corrosive to metals***	*Void*

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· **Desensitised explosives**	Void

SECTION 10: Stability and reactivity

· **10.1 Reactivity** See 10.3
· **10.2 Chemical stability**
· **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
· **10.3 Possibility of hazardous reactions** Reacts with various metals.
· **10.4 Conditions to avoid** No further relevant information available.
· **10.5 Incompatible materials:** Metals
· **10.6 Hazardous decomposition products:**
No decomposition products known, more dangerous than the product as such.

SECTION 11: Toxicological information

· **11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008**
· **Acute toxicity** Based on available data, the classification criteria are not met.

· **LD/LC50 values relevant for classification:**		
Oral	LD50	>2,600 mg/kg (rat)
Dermal	LD50	>2,000 mg/kg (rabbit)
Inhalative	LCLo	>2.03 mg/L (rat)

· **Primary irritant effect:**
· **Skin corrosion/irritation** Based on available data, the classification criteria are not met.
· **Serious eye damage/irritation** Based on available data, the classification criteria are not met.
· **Ingestion:** It can be harmfull if swallowed.
· **Inhalation:** May be harmful if inhaled.
· **Respiratory or skin sensitisation** Based on available data, the classification criteria are not met.
· **Germ cell mutagenicity** Based on available data, the classification criteria are not met.
· **Carcinogenicity** Based on available data, the classification criteria are not met.
· **Reproductive toxicity** May damage fertility. May damage the unborn child.
· **STOT-single exposure** Based on available data, the classification criteria are not met.
· **STOT-repeated exposure** Based on available data, the classification criteria are not met.
· **Aspiration hazard** Based on available data, the classification criteria are not met.
· **Other information (about experimental toxicology):** No further relevant information available.
· **11.2 Information on other hazards**
· **Endocrine disrupting properties** Substance is not listed.

SECTION 12: Ecological information

· **12.1 Toxicity**

· **Aquatic toxicity:**	
EC50/48h	133 mg/l (Daphnia)
LC50/96h	79.7 mg/l (fishes)
LC50/72h	40 mg/l (algae)

· **12.2 Persistence and degradability** No further relevant information available.
· **Method**
· **Ecological information** Not available
· **12.3 Bioaccumulative potential** No further relevant information available.

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· ***12.4 Mobility in soil*** *No further relevant information available.*
· ***12.5 Results of PBT and vPvB assessment***
· ***PBT:*** *Not applicable*
· ***vPvB:*** *Not applicable*
· ***12.6 Endocrine disrupting properties***
The product does not contain substances with endocrine disrupting properties.
· ***12.7 Other adverse effects***
· ***Remark:*** *No available data.*
· ***Additional ecological information:***
· ***General notes:***
Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

*
SECTION 13: Disposal considerations

· ***13.1 Waste treatment methods***
· ***Recommendation***
Must not be disposed together with household garbage. Do not allow product to reach sewage system.
Reutilise if possible or contact a waste processors for recycling or safe disposal.
· ***Waste disposal key:***
The European Union does not establish uniform rules for the disposal of chemical waste, which are special waste. Their treatment and elimination of the domestic legislation of each country. So, in each case, you should contact the relevant authorities, or those companies legally authorized for elimination of waste.
2014/955/UE: Council Decision of 18 December 2014 amending the list of wastes contained in Decision 2000/532/EC.
Directive 2008/98/EC of the european parliament and of the council of 18 November 2008, in ist latest valid version.

· ***European waste catalogue***	
06 00 00	*WASTES FROM INORGANIC CHEMICAL PROCESSES*
06 01 00	*wastes from the manufacture, formulation, supply and use (MFSU) of acids*
06 01 99	*wastes not otherwise specified*
HP10	*Toxic for reproduction*

· ***Uncleaned packaging:***
The containers and packaging materials contaminated with dangerous substances or preparations, have the same treatment of products.
Directive 94/62/EC of the European Parliament and the Council of 20 December 1994 on packaging and packaging waste.
· ***Recommendation:***
Disposal must be made according to official regulations.
Packagings that may not be cleansed are to be disposed of in the same manner as the product.

SECTION 14: Transport information

· ***14.1 UN number or ID number***	
· ***ADR/RID, ADN, IMDG, IATA***	*Void*
· ***14.2 UN proper shipping name***	
· ***ADR/RID, ADN, IMDG, IATA***	*Void*

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· ***14.3 Transport hazard class(es)***	
· ***ADR/RID, ADN, IMDG, IATA***	
· ***Class***	*Void*
· ***14.4 Packing group***	
· ***ADR/RID, IMDG, IATA***	*Void*
· ***14.5 Environmental hazards:***	
· ***Marine pollutant:***	*No*
· ***14.6 Special precautions for user***	*Not applicable*
· ***14.7 Maritime transport in bulk according to IMO instruments***	*Not applicable*
· ***UN "Model Regulation":***	*Void*

SECTION 15: Regulatory information

· ***15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture***
· ***SARA Section 355 (extremely hazardous substances)*** *Substance is not listed.*
· ***SARA Section 313 (specific toxic chemical listings)*** *Substance is not listed.*
· ***Prop 65 - Chemicals known to cause cancer*** *Substance is not listed.*

· ***Directive 2012/18/EU***
· ***Named dangerous substances - ANNEX I*** *Substance is not listed.*
· ***REGULATION (EU) 2019/1021 on persistent organic pollutants (POP)*** *Substance is not listed.*
· ***LIST OF SUBSTANCES SUBJECT TO AUTHORISATION (ANNEX XIV)*** *Substance is not listed.*
· ***DIRECTIVE 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment – Annex II***
Substance is not listed.
· ***REGULATION (EU) 2024/590 on substances that deplete the ozone layer*** *Substance is not listed.*
· ***National regulations:***
· ***Waterhazard class:*** *Water hazard class 1 (Self-assessment): slightly hazardous for water.*

· ***Other regulations, limitations and prohibitive regulations***
· ***Substances of very high concern (SVHC) according to REACH, Article 57*** *Substance is listed.*
· ***15.2 Chemical safety assessment:*** *A Chemical Safety Assessment has been carried out.*

SECTION 16: Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· ***Training hints*** *Deploy only trained chemical workers.*
· ***Department issuing SDS:*** *Q.A./Normative*
· ***Date of previous version:*** *22.03.2021*
· ***Version number of previous version:*** *25*
· ***Abbreviations and acronyms:***
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
ICAO: International Civil Aviation Organisation
RCR : Risk Characterisation Ratio
ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation

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IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
DNEL: Derived No-Effect Level (REACH)
PNEC: Predicted No-Effect Concentration (REACH)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
SVHC: Substances of Very High Concern
vPvB: very Persistent and very Bioaccumulative
ATE: Acute toxicity estimate values
Repr. 1B: Reproductive toxicity – Category 1B

· ***Sources***
Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006, REACH, in the latest valid version.
Regulation (EC) N° 1272/2008 of the European Parliament and of the Council of 16 December 2008, CLP, in the latest valid version.
Globally Harmonized System, GHS
ADR/RID, IMDG, IATA
PubChem : an open chemistry database at the National Institutes of Health (NIH)
ECHA : European CHemicals Agency
GESTIS : Information system on hazardous substances of the German Social Accident Insurance
· **** Data compared to the previous version altered.*** .

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Annex: Exposure scenario 1

· ***Short title of the exposure scenario*** *Chemicals products for laboratory*
· ***Sector of Use*** *Industrial use.*
· ***Product category*** *PC21 Laboratory chemicals*
· ***Process category*** *PROC15 Use as laboratory reagent*
· ***Environmental release category***
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)
· ***Description of the activities / processes covered in the Exposure Scenario***
See section 1 of the annex to the Safety Data Sheet.
· ***Conditions of use*** *Customary application according to section 1.*
· ***Duration and frequency*** *5 workdays/week.*
· ***Worker*** *4 hrs (half working shift).*
· ***Environment*** *The product may not be released into the environment without control.*
· ***Physical parameters***
The data on the physical - chemical properties in the Exposure Scenario is based on the properties of the preparation.
· ***Physical state***
Crystalline powder
Not applicable
· ***Concentration of the substance in the mixture*** *Raw material.*
· ***Other operational conditions*** *Observe the general safety regulations when handling chemicals.*
· ***Other operational conditions affecting environmental exposure***
Observe section 6 of the Safety Data Sheet (Accidental release measures).
Use only on hard ground.
· ***Other operational conditions affecting worker exposure***
Indoor application.
Outdoor application.
· ***Risk management measures***
· ***Worker protection***
· ***Organisational protective measures***
Keep good industrial hygiene.
Deploy only trained chemical workers.
Ensure that activities are executed by specialists or authorised personnel only.
Provide sufficient washing facilities.
Ensure good ventilation. This can be achieved by using a local exhaustion or general exhaust system. If these measures are insufficient to keep the solvent vapour concentration below the workplace limit, wear an adequate respiratory protective device.
· ***Technical protective measures***
Ensure good ventilation/exhaustion at the workplace.
Any unavoidabledeposit of dust must be regularly removed.
· ***Personal protective measures***
Do not inhale dust / smoke / mist.
Pregnant women should strictly avoid inhalation or skin contact.
The selected protective gloves have to satisfy the specifications of REGULATION (EU) 2016/425 and the standard EN 374 derived from it.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
Protective gloves
Rubber gloves
Safety glasses

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The usual precautionary measures are to be adhered to when handling chemicals.
Detailed measures on hand protection according to Safety Data Sheet, section 8.
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.
Filter P2
The selected respiratory protection must comply with standard EN 136/140/143/145/149.

· ***Environmental protection measures***
Avoid release to the environment. Obtain special instructions / refer to Safety Data Sheet.
· ***Water*** *Do not allow to reach sewage system.*
· ***Soil*** *Prevent contamination of soil.*
· ***Notes*** *In case of unintended release of the product: See section 6 of the Safety Data Sheet.*
· ***Disposal measures***
Ensure that waste is collected and contained.
Liquid product must not be disposed of with household waste. Do not allow to reach sewers / water or soil.
· ***Disposal procedures***
Must not be disposed together with household garbage. Do not allow product to reach sewage system.
· ***Waste type*** *Partially emptied and uncleaned packaging*
· ***Exposure estimation***
· ***Worker (dermal)***
The highest dermal exposure to be expected is 0.014 mg / kg / day.
RCR <0.001
· ***Worker (inhalation)***
The highest inhalative exposure to be expected is 0.16 ppm.
RCR 0.11
· ***Environment*** *The highest environmental exposure to be expected in purification plants is 10 mg / L.*
· ***Guidance for downstream users***
Whether the downstream user acts within the scope of the Exposure Scenario can be verified based on the information in sections 1 to 8.
Whether the downstream user uses the substance / the mixture within the scope of the Exposure Scenario can be determined by means of a technical assessment.

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Annex: Exposure scenario 2

· **Short title of the exposure scenario** Formulation or re-packing
· **Sector of Use** Industrial use.
· **Process category**
PROC4 Chemical production where opportunity for exposure arises
PROC5 Mixing or blending in batch processes
· **Environmental release category** ERC2 Formulation into mixture
· **Description of the activities / processes covered in the Exposure Scenario**
See section 1 of the annex to the Safety Data Sheet.
· **Conditions of use** Customary application according to section 1.
· **Duration and frequency** 5 workdays/week.
· **Worker** Regular use with exposure up to 1 hr. per workday.
· **Environment** 200 d/y
· **Physical parameters**
The data on the physical - chemical properties in the Exposure Scenario is based on the properties of the preparation.
· **Physical state**
Solid
Not applicable
· **Concentration of the substance in the mixture** The substance is main component.
· **Other operational conditions** Observe the general safety regulations when handling chemicals.
· **Other operational conditions affecting environmental exposure**
No special measures required.
Use only on hard ground.
· **Risk management measures**
· **Worker protection**
· **Organisational protective measures**
Keep good industrial hygiene.
Deploy only trained chemical workers.
Ensure that activities are executed by specialists or authorised personnel only.
Provide sufficient washing facilities.
Ensure good ventilation. This can be achieved by using a local exhaustion or general exhaust system. If these measures are insufficient to keep the solvent vapour concentration below the workplace limit, wear an adequate respiratory protective device.
· **Technical protective measures**
Ensure good ventilation/exhaustion at the workplace.
Any unavoidabledeposit of dust must be regularly removed.
· **Personal protective measures**
Do not inhale dust / smoke / mist.
Pregnant women should strictly avoid inhalation or skin contact.
The selected protective gloves have to satisfy the specifications of REGULATION (EU) 2016/425 and the standard EN 374 derived from it.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
Protective gloves
Rubber gloves
Avoid direct contact with the chemical/ the product/ the preparation by organisational measures.
Face protection
The usual precautionary measures are to be adhered to when handling chemicals.
Detailed measures on hand protection according to Safety Data Sheet, section 8.
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.
Filter P2
The selected respiratory protection must comply with standard EN 136/140/143/145/149.

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Protective work clothing

· ***Environmental protection measures***

· ***Notes*** *In case of unintended release of the product: See section 6 of the Safety Data Sheet.*

· ***Disposal measures*** *Ensure that waste is collected and contained.*

· ***Disposal procedures***

Must not be disposed together with household garbage. Do not allow product to reach sewage system.

· ***Waste type*** *Partially emptied and uncleaned packaging*

· ***Exposure estimation***

· ***Worker (dermal)***

The highest dermal exposure to be expected is 0.48 mg / kg / day.

RCR <0.001

· ***Worker (inhalation)***

The highest inhalative exposure to be expected is 0.78 ppm.

RCR 0.54

· ***Environment***

The highest environmental exposure to be expected for surface waters is 2.020 mg / L.

RCR 0.969

The highest environmental exposure to be expected for soil is 5.4 mg / kg wet weight.

· ***Guidance for downstream users***

Whether the downstream user acts within the scope of the Exposure Scenario can be verified based on the information in sections 1 to 8.

Whether the downstream user uses the substance / the mixture within the scope of the Exposure Scenario can be determined by means of a technical assessment.

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Annex: Exposure scenario 3

· ***Short title of the exposure scenario*** *Formulation or re-packing*
· ***Sector of Use*** *Industrial use.*
· ***Product category*** *PC21 Laboratory chemicals*
· ***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
· ***Environmental release category*** *ERC2 Formulation into mixture*
· ***Description of the activities / processes covered in the Exposure Scenario***
See section 1 of the annex to the Safety Data Sheet.
· ***Conditions of use*** *Customary application according to section 1.*
· ***Duration and frequency*** *5 workdays/week.*
· ***Physical parameters***
The data on the physical - chemical properties in the Exposure Scenario is based on the properties of the preparation.
· ***Physical state*** *Solid*
· ***Concentration of the substance in the mixture*** *The substance is main component.*
· ***Used amount per time or activity*** *950 tons per year*
· ***Other operational conditions*** *Observe the general safety regulations when handling chemicals.*
· ***Other operational conditions affecting environmental exposure***
Observe section 6 of the Safety Data Sheet (Accidental release measures).
Use only on hard ground.
· ***Risk management measures***
· ***Worker protection***
· ***Organisational protective measures***
Keep good industrial hygiene.
Deploy only trained chemical workers.
Ensure that activities are executed by specialists or authorised personnel only.
Provide sufficient washing facilities.
Ensure good ventilation. This can be achieved by using a local exhaustion or general exhaust system. If these measures are insufficient to keep the solvent vapour concentration below the workplace limit, wear an adequate respiratory protective device.
· ***Technical protective measures***
Ensure good ventilation/exhaustion at the workplace.
Any unavoidabledeposit of dust must be regularly removed.
· ***Personal protective measures***
The usual precautionary measures are to be adhered to when handling chemicals.
Do not inhale dust / smoke / mist.
Pregnant women should strictly avoid inhalation or skin contact.
Detailed measures on hand protection according to Safety Data Sheet, section 8.
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.
Filter P2
The selected respiratory protection must comply with standard EN 136/140/143/145/149.
The selected protective gloves have to satisfy the specifications of REGULATION (EU) 2016/425 and the standard EN 374 derived from it.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
Protective gloves
Rubber gloves

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Only use chemical-protective gloves with CE-labelling of category III.
Avoid direct contact with the chemical/ the product/ the preparation by organisational measures.
Protective work clothing
Safety glasses
· ***Environmental protection measures***
· ***Water*** *Do not allow to reach sewage system.*
· ***Soil*** *Prevent contamination of soil.*
· ***Notes*** *In case of unintended release of the product: See section 6 of the Safety Data Sheet.*
· ***Disposal measures*** *Ensure that waste is collected and contained.*
· ***Disposal procedures***
Must not be disposed together with household garbage. Do not allow product to reach sewage system.
· ***Waste type*** *Partially emptied and uncleaned packaging*
· ***Exposure estimation***
· ***Worker (dermal)***
The highest dermal exposure to be expected is 0.048 mg / kg / day.
RCR <0.001
· ***Worker (inhalation)***
The highest inhalative exposure to be expected is 0.08 ppm.
RCR 0.06
· ***Environment***
The highest environmental exposure to be expected for soil is 5.4 mg / kg wet weight.
The highest environmental exposure to be expected for surface waters is 2.02 mg / L.
· ***Guidance for downstream users***
Whether the downstream user uses the substance / the mixture within the scope of the Exposure Scenario can be determined by means of a technical assessment.
Whether the downstream user acts within the scope of the Exposure Scenario can be verified based on the information in sections 1 to 8.

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Annex: Exposure scenario 4

· **Short title of the exposure scenario** Formulation or re-packing
· **Sector of Use** Industrial use.
· **Process category**
PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities
· **Environmental release category** ERC2 Formulation into mixture
· **Description of the activities / processes covered in the Exposure Scenario**
See section 1 of the annex to the Safety Data Sheet.
· **Conditions of use** Customary application according to section 1.
· **Duration and frequency** 5 workdays/week.
· **Physical parameters**
The data on the physical - chemical properties in the Exposure Scenario is based on the properties of the preparation.
· **Physical state** Solid
· **Concentration of the substance in the mixture** The substance is main component.
· **Other operational conditions** Observe the general safety regulations when handling chemicals.
· **Other operational conditions affecting environmental exposure**
Observe section 6 of the Safety Data Sheet (Accidental release measures).
Use only on hard ground.
· **Risk management measures**
· **Worker protection**
· **Organisational protective measures**
Keep good industrial hygiene.
Deploy only trained chemical workers.
Ensure that activities are executed by specialists or authorised personnel only.
Provide sufficient washing facilities.
Ensure good ventilation. This can be achieved by using a local exhaustion or general exhaust system. If these measures are insufficient to keep the solvent vapour concentration below the workplace limit, wear an adequate respiratory protective device.
· **Technical protective measures**
Ensure good ventilation/exhaustion at the workplace.
Any unavoidabledeposit of dust must be regularly removed.
· **Personal protective measures**
The usual precautionary measures are to be adhered to when handling chemicals.
Do not inhale dust / smoke / mist.
Pregnant women should strictly avoid inhalation or skin contact.
Detailed measures on hand protection according to Safety Data Sheet, section 8.
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.
Filter P2
The selected respiratory protection must comply with standard EN 136/140/143/145/149.
The selected protective gloves have to satisfy the specifications of REGULATION (EU) 2016/425 and the standard EN 374 derived from it.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
Protective gloves
Rubber gloves
Only use chemical-protective gloves with CE-labelling of category III.
Avoid direct contact with the chemical/ the product/ the preparation by organisational measures.
Protective work clothing
Safety glasses
· **Environmental protection measures**
· **Water** Do not allow to reach sewage system.

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· ***Soil*** *Prevent contamination of soil.*
· ***Notes*** *In case of unintended release of the product: See section 6 of the Safety Data Sheet.*
· ***Disposal measures*** *Ensure that waste is collected and contained.*
· ***Disposal procedures***
Must not be disposed together with household garbage. Do not allow product to reach sewage system.
· ***Waste type*** *Partially emptied and uncleaned packaging*
· ***Exposure estimation***
· ***Worker (dermal)***
The highest dermal exposure to be expected is 4.8 mg / kg / day.
RCR 0.001
· ***Worker (inhalation)***
The highest inhalative exposure to be expected is 2 ppm.
RCR 1.45
· ***Environment***
The highest environmental exposure to be expected for soil is 5.4 mg / kg wet weight.
The highest environmental exposure to be expected for surface waters is 2.02 mg / L.
· ***Guidance for downstream users***
Whether the downstream user acts within the scope of the Exposure Scenario can be verified based on the information in sections 1 to 8.
Whether the downstream user uses the substance / the mixture within the scope of the Exposure Scenario can be determined by means of a technical assessment.

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Annex: Exposure scenario 5

· **Short title of the exposure scenario** Formulation or re-packing
· **Sector of Use** Industrial use.
· **Process category**
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
· **Environmental release category** ERC2 Formulation into mixture
· **Description of the activities / processes covered in the Exposure Scenario**
See section 1 of the annex to the Safety Data Sheet.
· **Conditions of use** Customary application according to section 1.
· **Duration and frequency** 5 workdays/week.
· **Physical parameters**
The data on the physical - chemical properties in the Exposure Scenario is based on the properties of the preparation.
· **Physical state** Solid
· **Concentration of the substance in the mixture** The substance is main component.
· **Other operational conditions** Observe the general safety regulations when handling chemicals.
· **Other operational conditions affecting environmental exposure**
Observe section 6 of the Safety Data Sheet (Accidental release measures).
Use only on hard ground.
· **Risk management measures**
· **Worker protection**
· **Organisational protective measures**
Keep good industrial hygiene.
Deploy only trained chemical workers.
Ensure that activities are executed by specialists or authorised personnel only.
Provide sufficient washing facilities.
Ensure good ventilation. This can be achieved by using a local exhaustion or general exhaust system. If these measures are insufficient to keep the solvent vapour concentration below the workplace limit, wear an adequate respiratory protective device.
· **Technical protective measures**
Ensure good ventilation/exhaustion at the workplace.
Any unavoidabledeposit of dust must be regularly removed.
· **Personal protective measures**
The usual precautionary measures are to be adhered to when handling chemicals.
Do not inhale dust / smoke / mist.
Pregnant women should strictly avoid inhalation or skin contact.
Detailed measures on hand protection according to Safety Data Sheet, section 8.
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.
Filter P2
The selected respiratory protection must comply with standard EN 136/140/143/145/149.
The selected protective gloves have to satisfy the specifications of REGULATION (EU) 2016/425 and the standard EN 374 derived from it.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
Protective gloves
Rubber gloves
Only use chemical-protective gloves with CE-labelling of category III.
Avoid direct contact with the chemical/ the product/ the preparation by organisational measures.
Protective work clothing
Safety glasses
· **Environmental protection measures**
· **Water** Do not allow to reach sewage system.

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· ***Soil*** *Prevent contamination of soil.*
· ***Notes*** *In case of unintended release of the product: See section 6 of the Safety Data Sheet.*
· ***Disposal measures*** *Ensure that waste is collected and contained.*
· ***Disposal procedures***
Must not be disposed together with household garbage. Do not allow product to reach sewage system.
· ***Waste type*** *Partially emptied and uncleaned packaging*
· ***Exposure estimation***
· ***Worker (dermal)***
The highest dermal exposure to be expected is 0.173 mg / kg / day.
RCR <0.001
· ***Worker (inhalation)***
The highest inhalative exposure to be expected is 1.33 ppm.
RCR 0.92
· ***Environment***
The highest environmental exposure to be expected for soil is 5.4 mg / kg wet weight.
The highest environmental exposure to be expected for surface waters is 2.02 mg / L.
· ***Guidance for downstream users***
Whether the downstream user acts within the scope of the Exposure Scenario can be verified based on the information in sections 1 to 8.
Whether the downstream user uses the substance / the mixture within the scope of the Exposure Scenario can be determined by means of a technical assessment.

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Annex: Exposure scenario 6

· **Short title of the exposure scenario** Formulation or re-packing
· **Sector of Use** Industrial use.
· **Process category**
PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
· **Environmental release category** ERC2 Formulation into mixture
· **Description of the activities / processes covered in the Exposure Scenario**
See section 1 of the annex to the Safety Data Sheet.
· **Conditions of use** Customary application according to section 1.
· **Duration and frequency** 5 workdays/week.
· **Physical parameters**
The data on the physical - chemical properties in the Exposure Scenario is based on the properties of the preparation.
· **Physical state** Solid
· **Concentration of the substance in the mixture** The substance is main component.
· **Other operational conditions** Observe the general safety regulations when handling chemicals.
· **Other operational conditions affecting environmental exposure**
Observe section 6 of the Safety Data Sheet (Accidental release measures).
Use only on hard ground.
· **Risk management measures**
· **Worker protection**
· **Organisational protective measures**
Keep good industrial hygiene.
Deploy only trained chemical workers.
Ensure that activities are executed by specialists or authorised personnel only.
Provide sufficient washing facilities.
Ensure good ventilation. This can be achieved by using a local exhaustion or general exhaust system. If these measures are insufficient to keep the solvent vapour concentration below the workplace limit, wear an adequate respiratory protective device.
· **Technical protective measures**
Ensure good ventilation/exhaustion at the workplace.
Any unavoidabledeposit of dust must be regularly removed.
· **Personal protective measures**
The usual precautionary measures are to be adhered to when handling chemicals.
Do not inhale dust / smoke / mist.
Pregnant women should strictly avoid inhalation or skin contact.
Detailed measures on hand protection according to Safety Data Sheet, section 8.
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.
Filter P2
The selected respiratory protection must comply with standard EN 136/140/143/145/149.
The selected protective gloves have to satisfy the specifications of REGULATION (EU) 2016/425 and the standard EN 374 derived from it.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
Protective gloves
Rubber gloves
Only use chemical-protective gloves with CE-labelling of category III.
Safety glasses
· **Environmental protection measures**
· **Water** Do not allow to reach sewage system.
· **Soil** Prevent contamination of soil.
· **Notes** In case of unintended release of the product: See section 6 of the Safety Data Sheet.

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· ***Disposal measures*** *Ensure that waste is collected and contained.*
· ***Disposal procedures***
Must not be disposed together with household garbage. Do not allow product to reach sewage system.
· ***Waste type*** *Partially emptied and uncleaned packaging*
· ***Exposure estimation***
· ***Worker (dermal)***
The highest dermal exposure to be expected is 0.4 mg / kg / day.
RCR 0.28
· ***Worker (inhalation)***
The highest inhalative exposure to be expected is 1.44 ppm.
RCR <0.001
· ***Environment***
The highest environmental exposure to be expected for soil is 5.4 mg / kg wet weight.
The highest environmental exposure to be expected for surface waters is 2.02 mg / L.
· ***Guidance for downstream users***
Whether the downstream user acts within the scope of the Exposure Scenario can be verified based on the information in sections 1 to 8.
Whether the downstream user uses the substance / the mixture within the scope of the Exposure Scenario can be determined by means of a technical assessment.