



## 4. First-aid measures

<b>Inhalation</b>	Move to fresh air. Call a physician if symptoms develop or persist.
<b>Skin contact</b>	Wash off with soap and water. Get medical attention if irritation develops and persists.
<b>Eye contact</b>	Rinse with water. Get medical attention if irritation develops and persists.
<b>Ingestion</b>	Rinse mouth. Get medical attention if symptoms occur.
<b>Most important symptoms/effects, acute and delayed</b>	Direct contact with eyes may cause temporary irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Prolonged or repeated skin contact may cause irritation. May damage fertility or the unborn child.
<b>Indication of immediate medical attention and special treatment needed</b>	Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.
<b>General information</b>	IF exposed or concerned: Get medical advice/attention. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

## 5. Fire-fighting measures

<b>Suitable extinguishing media</b>	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO <sub>2</sub> ).
<b>Unsuitable extinguishing media</b>	No restrictions known.
<b>Specific hazards arising from the chemical</b>	During fire, gases hazardous to health may be formed.
<b>Special protective equipment and precautions for firefighters</b>	Firefighters should wear full protective clothing including self contained breathing apparatus. Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
<b>Fire fighting equipment/instructions</b>	Use standard firefighting procedures and consider the hazards of other involved materials.
<b>Specific methods</b>	Cool containers exposed to flames with water until well after the fire is out.
<b>General fire hazards</b>	No unusual fire or explosion hazards noted.

## 6. Accidental release measures

<b>Personal precautions, protective equipment and emergency procedures</b>	Keep unnecessary personnel away. Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8.
<b>Methods and materials for containment and cleaning up</b>	Stop the flow of material, if this is without risk. Prevent entry into waterways, sewer, basements or confined areas. Following product recovery, flush area with water. For waste disposal, see section 13 of the SDS.
<b>Environmental precautions</b>	Contact local authorities in case of spillage to drain/aquatic environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground.

## 7. Handling and storage

<b>Precautions for safe handling</b>	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Provide adequate ventilation. Should be handled in closed systems, if possible. Pregnant or breastfeeding women must not handle this product. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.
<b>Conditions for safe storage, including any incompatibilities</b>	Store locked up. Store in original tightly closed container. Store in plastic containers in cool area away from heat. Do not store in glass or porcelain containers. Store away from incompatible materials (see section 10 of the SDS).

## 8. Exposure controls/personal protection

### Occupational exposure limits

#### ACGIH

Components	Type	Value	Form
Potassium fluorohydroborate (CAS 12228-71-6)	TWA	2 mg/m <sup>3</sup>	Inhalable fraction.

**US. ACGIH Threshold Limit Values**

Components	Type	Value	Form
Boric acid (CAS 10043-35-3)	STEL	6 mg/m <sup>3</sup>	Inhalable fraction.
	TWA	2 mg/m <sup>3</sup>	Inhalable fraction.
Potassium fluorohydroborate (CAS 12228-71-6)	STEL	6 mg/m <sup>3</sup>	Inhalable fraction.

**Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)**

Components	Type	Value
Potassium fluorohydroborate (CAS 12228-71-6)	TWA	2.5 mg/m <sup>3</sup>

**Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)**

Components	Type	Value	Form
Boric acid (CAS 10043-35-3)	STEL	6 mg/m <sup>3</sup>	Inhalable
	TWA	2 mg/m <sup>3</sup>	Inhalable
Potassium fluorohydroborate (CAS 12228-71-6)	TWA	2.5 mg/m <sup>3</sup>	

**Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act)**

Components	Type	Value	Form
Boric acid (CAS 10043-35-3)	STEL	6 mg/m <sup>3</sup>	Inhalable fraction.
	TWA	2 mg/m <sup>3</sup>	Inhalable fraction.

**Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)**

Components	Type	Value	Form
Boric acid (CAS 10043-35-3)	STEL	6 mg/m <sup>3</sup>	Inhalable fraction.
	TWA	2 mg/m <sup>3</sup>	Inhalable fraction.
Potassium fluorohydroborate (CAS 12228-71-6)	STEL	6 mg/m <sup>3</sup>	Inhalable fraction.
Potassium tetraborate (CAS 1332-77-0)	STEL	6 mg/m <sup>3</sup>	Inhalable fraction.
	TWA	2 mg/m <sup>3</sup>	Inhalable fraction.

**Canada. Quebec OELs. (Ministry of Labour - Regulation Respecting the Quality of the Work Environment)**

Components	Type	Value
Potassium fluorohydroborate (CAS 12228-71-6)	TWA	2.5 mg/m <sup>3</sup>

**Biological limit values****ACGIH Biological Exposure Indices**

Components	Value	Determinant	Specimen	Sampling time
Potassium fluorohydroborate (CAS 12228-71-6)	3 mg/l	Fluoride	Urine	*
	2 mg/l	Fluoride	Urine	*

\* - For sampling details, please see the source document.

**Exposure guidelines** Occupational Exposure Limits are not relevant to the current physical form of the product.

<b>Appropriate engineering controls</b>	Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.
<b>Individual protection measures, such as personal protective equipment</b>	
<b>Eye/face protection</b>	Wear safety glasses with side shields (or goggles).
<b>Skin protection</b>	
<b>Hand protection</b>	Chemical resistant gloves are recommended.
<b>Other</b>	Use of an impervious apron is recommended.
<b>Respiratory protection</b>	In case of insufficient ventilation, wear suitable respiratory equipment.
<b>Thermal hazards</b>	Not applicable.
<b>General hygiene considerations</b>	When using, do not eat, drink or smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

## 9. Physical and chemical properties

### Appearance

<b>Physical state</b>	Solid.
<b>Form</b>	Paste.
<b>Colour</b>	White.
<b>Odour</b>	Odourless.
<b>Odour threshold</b>	Not applicable
<b>pH</b>	Not applicable
<b>Melting point/freezing point</b>	500 °C (932 °F)
<b>Initial boiling point and boiling range</b>	Not applicable
<b>Flash point</b>	Not applicable
<b>Evaporation rate</b>	0.3
<b>Flammability (solid, gas)</b>	Non flammable.
<b>Upper/lower flammability or explosive limits</b>	
<b>Flammability limit - lower (%)</b>	Not applicable
<b>Flammability limit - upper (%)</b>	Not applicable
<b>Vapour pressure</b>	Not applicable
<b>Vapour density</b>	Not applicable
<b>Relative density</b>	1.6
<b>Solubility(ies)</b>	
<b>Solubility (water)</b>	Moderate
<b>Partition coefficient (n-octanol/water)</b>	Not available.
<b>Auto-ignition temperature</b>	Not applicable
<b>Decomposition temperature</b>	Not available.
<b>Viscosity</b>	Not available.
<b>Other information</b>	
<b>Percent volatile</b>	30 % v/v

## 10. Stability and reactivity

<b>Reactivity</b>	The product is stable and non-reactive under normal conditions of use, storage and transport.
<b>Chemical stability</b>	Material is stable under normal conditions.
<b>Possibility of hazardous reactions</b>	No dangerous reaction known under conditions of normal use.
<b>Conditions to avoid</b>	Contact with incompatible materials. Excessive heat.

<b>Incompatible materials</b>	Glass. Porcelain.
<b>Hazardous decomposition products</b>	No hazardous decomposition products are known.

## 11. Toxicological information

### Information on likely routes of exposure

<b>Inhalation</b>	May cause irritation to the respiratory system.
<b>Skin contact</b>	Prolonged or repeated skin contact may cause irritation.
<b>Eye contact</b>	Direct contact with eyes may cause temporary irritation.
<b>Ingestion</b>	May cause discomfort if swallowed. May damage fertility or the unborn child by ingestion.

<b>Symptoms related to the physical, chemical and toxicological characteristics</b>	Direct contact with eyes may cause temporary irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Prolonged or repeated skin contact may cause irritation. Exposure may cause temporary irritation, redness, or discomfort.
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### Information on toxicological effects

#### Acute toxicity

Components	Species	Test results
Boric acid (CAS 10043-35-3)		
<b>Acute</b>		
<i>Dermal</i>		
LD50	Rabbit	> 2000 mg/kg
<i>Oral</i>		
LD50	Rat	2660 mg/kg

**Skin corrosion/irritation** Prolonged skin contact may cause temporary irritation.

**Serious eye damage/eye irritation** Direct contact with eyes may cause temporary irritation.

#### Respiratory or skin sensitisation

<b>Respiratory sensitisation</b>	Not classified.
<b>Skin sensitisation</b>	Prolonged or repeated skin contact may cause irritation.

**Germ cell mutagenicity** No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

**Carcinogenicity** This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

#### ACGIH Carcinogens

Boric acid (CAS 10043-35-3) A4 Not classifiable as a human carcinogen.

#### Canada - Manitoba OELs: carcinogenicity

BORATE COMPOUNDS, INORGANIC, INHALABLE FRACTION (CAS 10043-35-3) Not classifiable as a human carcinogen.

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

**Specific target organ toxicity - single exposure** Not classified.

**Specific target organ toxicity - repeated exposure** Not classified.

**Aspiration hazard** Not classified.

**Chronic effects** May damage fertility or the unborn child.

**Further information** Reproductive toxicity. Symptoms may be delayed.

## 12. Ecological information

**Ecotoxicity** The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Components	Species	Test results
Boric acid (CAS 10043-35-3)		
<b>Aquatic</b>		
Fish	LC50 Razorback sucker ( <i>Xyrauchen texanus</i> )	> 100 mg/l, 96 hours

**Persistence and degradability** No data is available on the degradability of this product.

<b>Bioaccumulative potential</b>	No data available.
<b>Mobility in soil</b>	No data available.
<b>Other adverse effects</b>	None known.

### 13. Disposal considerations

<b>Disposal instructions</b>	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.
<b>Local disposal regulations</b>	Dispose in accordance with all applicable regulations.
<b>Hazardous waste code</b>	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
<b>Waste from residues / unused products</b>	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions). Avoid discharge into water courses or onto the ground. Not applicable.
<b>Contaminated packaging</b>	Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

### 14. Transport information

#### TDG

Not regulated as dangerous goods.

#### IATA

Not regulated as dangerous goods.

#### IMDG

Not regulated as dangerous goods.

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

### 15. Regulatory information

**Canadian regulations** This product has been classified in accordance with the hazard criteria of the HPR and the SDS contains all the information required by the HPR.

#### Controlled Drugs and Substances Act

Not regulated.

#### Export Control List (CEPA 1999, Schedule 3)

Not listed.

#### Greenhouse Gases

Not listed.

#### Precursor Control Regulations

Not regulated.

#### International regulations

##### Stockholm Convention

Not applicable.

##### Rotterdam Convention

Not applicable.

##### Kyoto protocol

Not applicable.

##### Montreal Protocol

Not applicable.

##### Basel Convention

Not applicable.

#### International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	No
Canada	Domestic Substances List (DSL)	No
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	No

Country(s) or region	Inventory name	On inventory (yes/no)*
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	No
New Zealand	New Zealand Inventory	No
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	No

\*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

## 16. Other information

<b>Issue date</b>	10-November-2015
<b>Revision date</b>	-
<b>Version No.</b>	01
<b>References</b>	ACGIH EPA: AQUIRE database NLM: Hazardous Substances Data Base US. IARC Monographs on Occupational Exposures to Chemical Agents HSDB® - Hazardous Substances Data Bank IARC Monographs. Overall Evaluation of Carcinogenicity National Toxicology Program (NTP) Report on Carcinogens ACGIH Documentation of the Threshold Limit Values and Biological Exposure Indices Japan Society for Occupational Health, Recommendation of Occupational Exposure Limits GOST 30333-2007 - Chemical production safety passport. General requirements JIS Z 7252:2009 Classification of chemicals based on "Globally Harmonized System of Classification and Labelling of Chemicals (GHS)" JIS Z 7253:2012 Hazard communication of chemicals based on GHS – Labelling and Safety Data Sheet (SDS) Japan Chemical Industry Association (JCIA) GHS Guideline, June 2012
<b>Disclaimer</b>	All information in this Material Safety Data Sheet is believed to be accurate and reliable. However, no guarantee or warranty of any kind is made with regard to the accuracy of information or the suitability of the recommendations contained herein. It is the user's responsibility to assess the safety and toxicity of this product under their own conditions of use and to comply with all applicable laws and regulations.