

# SAFETY DATA SHEET

Safety data sheet according to GOST 30333-2007



## Section 1. Chemical product and company identification

**Product name** : *Firebrake*® ZB  
**Chemical name** : Hexaboron dizinc undecaoxide, hydrate  
**Other means of identification** : Zinc Borate 2335  
**Product type** : Solid.

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

**Material uses** : Refer to the table "Identified uses" below.

#### Identified uses

Anticorrosive adhesion promoter  
Anti-tracking (prevention of electrical breakdown over the surface of polymer insulators)  
Corrosion inhibitors and anti-scaling agents  
Flame retardants

**Supplier's details** : **Borax Europe Limited**  
6 St. James's Square  
London, SW1Y 4AD  
United Kingdom  
  
+44 (0)20 7781 2000

**e-mail address of person responsible for this SDS** : [rtb.sds@riotinto.com](mailto:rtb.sds@riotinto.com)

**Emergency telephone number** : Rio Tinto Borates  
  
Americas: +1 215 207 0061  
Asia Pacific: +65 3158 1074  
China: +86 512 8090 3042  
General: +44 (0) 1235 239 670  
For advice on chemical emergencies, spillages, fires or first aid.

## Section 2. Hazards identification

**Classification of the substance or mixture according to GOST 32419-2013 and GOST 32423/24/25-2013**

**Classification of the substance or mixture** : TOXIC TO REPRODUCTION (Unborn child) - Category 2  
AQUATIC HAZARD (ACUTE) - Category 1  
AQUATIC HAZARD (LONG-TERM) - Category 2

### GHS label elements

**Hazard pictograms** :



**Signal word** : Warning  
**Hazard statements** : Suspected of damaging the unborn child.  
Very toxic to aquatic life.  
Toxic to aquatic life with long lasting effects.

## Section 2. Hazards identification

### Precautionary statements

- General** : Do not handle until all safety precautions have been read and understood.  
**Prevention** : Avoid release to the environment.  
**Response** : IF exposed or concerned: Get medical attention.  
**Storage** : Not applicable.  
**Disposal** : Dispose of contents and container in accordance with all local, regional, national and international regulations.

**Other hazards which do not result in classification** : None known.

## Section 3. Composition/information on ingredients

- Substance/mixture** : Substance  
**Chemical name** : Hexaboron dizinc undecaoxide, hydrate

### CAS number/other identifiers

- CAS number** : 138265-88-0  
**EC number** : 235-804-2

Ingredient name	%	CAS number	Classification	Type
Hexaboron dizinc undecaoxide, hydrate	>98.8	138265-88-0	Not classified.	[A]

**There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.**

[A] Constituent

[B] Impurity

[C] Stabilizing additive

**Occupational exposure limits, if available, are listed in Section 8.**

## Section 4. First aid measures

### Description of necessary first aid measures

- Eye contact** : Use eye wash fountain or fresh water to cleanse the eye. If irritation persists for more than 30 minutes, seek medical attention.  
**Inhalation** : If symptoms such as nose or throat irritation are observed, remove to fresh air.  
**Skin contact** : No treatment necessary.  
**Ingestion** : Swallowing small quantities (one teaspoon) will cause no harm to healthy adults. If larger amounts are swallowed, give two glasses of water to drink and seek medical attention.

### Most important symptoms/effects, acute and delayed

#### Potential acute health effects

- Eye contact** : No known significant effects or critical hazards.  
**Inhalation** : No known significant effects or critical hazards.  
**Skin contact** : Symptoms of accidental over-exposure to high doses of inorganic borate salts have been associated with ingestion or absorption through large areas of severely damaged skin. These may include nausea, vomiting, and diarrhoea, with delayed effects of skin redness and peeling.

## Section 4. First aid measures

**Ingestion** : This product is not intended for ingestion. Small amounts (e.g., a teaspoon) swallowed accidentally are not likely to cause effects; swallowing amounts larger than that may cause gastrointestinal symptoms. Symptoms of accidental over-exposure to high doses of inorganic borate salts have been associated with ingestion or absorption through large areas of severely damaged skin. These may include nausea, vomiting, and diarrhoea, with delayed effects of skin redness and peeling.

### Over-exposure signs/symptoms

**Eye contact** : No specific data.

**Inhalation** : Adverse symptoms may include the following:  
reduced fetal weight  
increase in fetal deaths  
skeletal malformations

**Skin contact** : Symptoms of accidental over-exposure to high doses of inorganic borate salts have been associated with ingestion or absorption through large areas of severely damaged skin. These may include nausea, vomiting, and diarrhoea, with delayed effects of skin redness and peeling.

**Ingestion** : Symptoms of accidental over-exposure to high doses of inorganic borate salts have been associated with ingestion or absorption through large areas of severely damaged skin. These may include nausea, vomiting, and diarrhoea, with delayed effects of skin redness and peeling.

### Indication of immediate medical attention and special treatment needed, if necessary

**Notes to physician** : Supportive care only is required for adult ingestion of less than a few grams of the product. For ingestion of larger amounts, maintain fluid and electrolyte balance and maintain adequate kidney function. Gastric lavage is only recommended for heavily exposed, symptomatic patients in whom emesis has not emptied the stomach. Hemodialysis should be reserved for patients with massive acute absorption, especially for patients with compromised renal function. Boron analyses of urine or blood are only useful for verifying exposure and are not useful for evaluating severity of poisoning or as a guide in treatment.

**Specific treatments** : No specific treatment.

**Protection of first-aiders** : No special protective clothing is required

See toxicological information (Section 11)

## Section 5. Fire-fighting measures

### Extinguishing media

**Suitable extinguishing media** : Use an extinguishing agent suitable for the surrounding fire.

**Unsuitable extinguishing media** : None known.

**Specific hazards arising from the chemical** : None. The product is not flammable, combustible or explosive.

**Hazardous thermal decomposition products** : None.

**Special protective actions for fire-fighters** : None.

**Special protective equipment for fire-fighters** : Not applicable.

**Remark** : Not explosive.

## Section 6. Accidental release measures

### Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- For emergency responders** : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

- Environmental precautions** : The product is a water-soluble white powder that may cause damage to trees or vegetation by root absorption. Avoid contamination of water bodies during clean up and disposal. Advise local water authority that none of the affected water should be used for irrigation or for the abstraction of potable water until natural dilution returns the boron value to its normal environmental background level or meets local water quality standards.

### Methods and materials for containment and cleaning up

- Small spill** : Move containers from spill area. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Dispose of via a licensed waste disposal contractor.
- Large spill** : Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

## Section 7. Handling and storage

### Precautions for safe handling

- Protective measures** : Good housekeeping procedures should be followed to minimise dust generation and accumulation. Avoid spills.
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

- Conditions for safe storage, including any incompatibilities** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

## Section 8. Exposure controls/personal protection

### Control parameters

#### Occupational exposure limits

None.

- Recommended monitoring procedures** : In the absence of a national OEL, Rio Tinto Borates recommends and applies internally an Occupational Exposure Limit (OEL) of 1 mg B/m<sup>3</sup>. To convert this product to equivalent zinc (Zn), multiply by 0.301. To convert to equivalent boron (B), multiply by 0.149.

## Section 8. Exposure controls/personal protection

**Appropriate engineering controls** : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

**Environmental exposure controls** : Limiting releases from site: Where appropriate, material should be recovered and recycled through the process. Spillages of powder or granulated borates should be swept or vacuumed up immediately and placed in containers for disposal in order to prevent unintentional release to the environment. Waste containing borates should be handled as a hazardous waste and removed by licensed operator to an offsite location where it can be incinerated or disposed to a hazardous landfill.

Water Emissions: Storage should be sheltered from precipitation. Avoid spillage into water and cover drains. Removal from water can only be accomplished by very specific treatment technologies including ion exchange resins, reverse osmosis etc. Removal efficiency is dependent upon a number of factors and will vary from 40 to 90%. Much of the technology is currently not appropriate to high volume or mixed waste streams. Boron is not removed in considerable amounts in conventional STP. If sites discharge to a municipal STP the concentration of boron should not exceed the PNEC in the municipal STP

Air Emissions: Emissions to air can be removed by one or more of the following dust-control measures: electrostatic precipitators, cyclones, fabric or bag filters, membrane filters, ceramic and metal mesh filters, and wet scrubbers

### Individual protection measures

**Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

**Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

### Skin protection

**Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

**Body protection** : No special protective clothing is required.

**Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

**Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

## Section 9. Physical and chemical properties

### Appearance

**Physical state** : Solid. [Crystalline solid.]

**Color** : White.

**Odor** : Odorless.

**Odor threshold** : Not available.

**pH** : 6.8 to 7.5 (Aqueous solution)

## Section 9. Physical and chemical properties

<b>Melting point</b>	: >300°C (>572°F)
<b>Boiling point</b>	: Not applicable.
<b>Flash point</b>	: Not applicable.
<b>Burning time</b>	: Not applicable.
<b>Burning rate</b>	: Not applicable.
<b>Evaporation rate</b>	: Not applicable.
<b>Flammability (solid, gas)</b>	: The product is not flammable, combustible or explosive.
<b>Lower and upper explosive (flammable) limits</b>	: Not available.
<b>Vapor pressure</b>	: Not applicable.
<b>Vapor density</b>	: Not available.
<b>Bulk density</b>	: Not available.
<b>Granulometry</b>	: Not available.
<b>Relative density</b>	: 2.6
<b>Solubility</b>	: Not available.
<b>Solubility in water</b>	: <0.28% at 25°C
<b>Partition coefficient: n-octanol/water</b>	: Not available.
<b>Auto-ignition temperature</b>	: Not applicable.
<b>Decomposition temperature</b>	: Not applicable.
<b>SADT</b>	: Not available.
<b>Viscosity</b>	: Dynamic (room temperature): Not applicable. Kinematic (room temperature): Not applicable.
<b>Flow time (ISO 2431)</b>	: Not available.

## Section 10. Stability and reactivity

<b>Reactivity</b>	: No specific test data related to reactivity available for this product or its ingredients.
<b>Chemical stability</b>	: Under normal ambient temperatures (-40°C to +40°C), the product is stable.
<b>Possibility of hazardous reactions</b>	: Reaction with strong reducing agents such as metal hydrides or alkali metals will generate hydrogen gas which could create an explosive hazard .
<b>Conditions to avoid</b>	: Avoid contact with strong reducing agents by storing according to good industrial practice.
<b>Incompatible materials</b>	: Strong reducing agents
<b>Hazardous decomposition products</b>	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

## Section 11. Toxicological information

### Information on toxicological effects

#### Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Hexaboron dizinc undecaoxide, hydrate	LC50 Inhalation Vapor	Rat	>5 mg/l	4 hours
	LD50 Dermal	Rabbit	>10000 mg/kg Body weight:	-
	LD50 Oral	Rat	>10000 mg/kg Body weight:	-

## Section 11. Toxicological information

**Conclusion/Summary** : Based on the available data, the classification criteria are not met.

### Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Hexaboron dizinc undecaoxide, hydrate	Skin - No irritation.	Rabbit	-	500 mg	-
	Eyes - No irritation.	Rabbit	<1	100 mg	-

### Conclusion/Summary

**Skin** : Non-irritant to skin. Based on the available data, the classification criteria are not met.

**Eyes** : Based on mean scores less than 1, the effects were fully reversible within 7 days. Based on the available data, the classification criteria are not met.

### Sensitization

Product/ingredient name	Route of exposure	Species	Result
Hexaboron dizinc undecaoxide, hydrate	skin	Guinea pig	Not sensitizing

### Conclusion/Summary

**Skin** : Not a skin sensitizer. Based on the available data, the classification criteria are not met.

**Respiratory** : No respiratory sensitization studies have been conducted. There are no data to suggest that borates are respiratory sensitizers. Based on the available data, the classification criteria are not met.

### Mutagenicity

Product/ingredient name	Test	Experiment	Result
Hexaboron dizinc undecaoxide, hydrate	OECD 476	Experiment: In vitro Subject: Mammalian-Animal Cell: Germ	Negative

**Conclusion/Summary** : Not mutagenic. Based on the available data, the classification criteria are not met.

### Carcinogenicity

Not available.

**Conclusion/Summary** : Zinc borate dissociates to zinc hydroxide and boric acid in the low pH environment of the stomach. No carcinogenic effects observed in chronic carcinogenicity studies of boric acid conducted in rats and mice, and no evidence of carcinogenic effects in zinc borate breakdown products. Based on the available data, the classification criteria are not met.

### Reproductive toxicity

Product/ingredient name	Maternal toxicity	Fertility effects	Developmental effects	Species	Effects	Exposure
Hexaboron dizinc undecaoxide, hydrate	-	Positive	-	Rat	NOAEL in rats for effects on fertility in males is 100 mg zinc borate (hydrate)/kg/bw.	Oral feeding study
	Positive	-	Positive	Rat	NOAEL in rats for developmental effects on the foetus including foetal weight loss and minor skeletal variations is < 100 mg zinc borate hydrate/kg bw.	Oral feeding study
	Negative	Negative	Negative	Human	No adverse fertility effects in male	Combined oral

## Section 11. Toxicological information

					workers. Epidemiological studies of human developmental effects have shown an absence of effects in exposed borate workers and populations living in areas with high environmental levels of boron. Epidemiological studies of human developmental effects have shown an absence of effects in exposed borate workers and populations living in areas with high environmental levels of boron.	ingestion and inhalation.
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**Conclusion/Summary** : Developmental effects have been observed in laboratory animals, the most sensitive species being the rat (NOAEL 9.6 mg B/kg bw/day). While boron has been shown to adversely affect male reproduction in laboratory animals, there was no clear evidence of male reproductive effects attributable to boron in studies of highly exposed workers. However, the low toxicity of zinc borate (acute oral LD50 is > 10,000 mg/kg) compared to other borates indicates that the bioavailability of boron from zinc borate may be low.

### Teratogenicity

Not available.

**Conclusion/Summary** : See Reproductive toxicity.

### Specific target organ toxicity (single exposure)

Not available.

### Specific target organ toxicity (repeated exposure)

Not available.

### Aspiration hazard

Not available.

**Information on the likely routes of exposure** : Inhalation is the most significant route of exposure in occupational and other settings. Dermal exposure is not usually a concern because product is poorly absorbed through intact skin. **Product is not intended for ingestion.**

### Potential acute health effects

**Eye contact** : No known significant effects or critical hazards.

**Inhalation** : No known significant effects or critical hazards.

**Skin contact** : Symptoms of accidental over-exposure to high doses of inorganic borate salts have been associated with ingestion or absorption through large areas of severely damaged skin. These may include nausea, vomiting, and diarrhoea, with delayed effects of skin redness and peeling.

**Ingestion** : This product is not intended for ingestion. Small amounts (e.g., a teaspoon) swallowed accidentally are not likely to cause effects; swallowing amounts larger than that may cause gastrointestinal symptoms. Symptoms of accidental over-exposure to high doses of inorganic borate salts have been associated with ingestion or absorption through large areas of severely damaged skin. These may include nausea, vomiting, and diarrhoea, with delayed effects of skin redness and peeling.



## Section 11. Toxicological information

### Symptoms related to the physical, chemical and toxicological characteristics

- Eye contact** : No specific data.
- Inhalation** : Adverse symptoms may include the following:  
reduced fetal weight  
increase in fetal deaths  
skeletal malformations
- Skin contact** : Symptoms of accidental over-exposure to high doses of inorganic borate salts have been associated with ingestion or absorption through large areas of severely damaged skin. These may include nausea, vomiting, and diarrhoea, with delayed effects of skin redness and peeling.
- Ingestion** : Symptoms of accidental over-exposure to high doses of inorganic borate salts have been associated with ingestion or absorption through large areas of severely damaged skin. These may include nausea, vomiting, and diarrhoea, with delayed effects of skin redness and peeling.

### Delayed and immediate effects and also chronic effects from short and long term exposure

#### Short term exposure

- Potential immediate effects** : Not available.
- Potential delayed effects** : Not available.

#### Long term exposure

- Potential immediate effects** : Not available.
- Potential delayed effects** : Human epidemiological studies show no increase in pulmonary disease in occupational populations with chronic exposures to boric acid and sodium borate dust. Human epidemiological studies indicate no effect on fertility in occupational populations with chronic exposures to borate dust and indicate no effect to a general population with high exposures to borates in the environment.

### Potential chronic health effects

Not available.

- Conclusion/Summary** : Human epidemiological studies show no increase in pulmonary disease in occupational populations with chronic exposures to boric acid and sodium borate dust. Human epidemiological studies indicate no effect on fertility in occupational populations with chronic exposures to borate dust and indicate no effect to a general population with high exposures to borates in the environment.
- General** : No known significant effects or critical hazards.
- Carcinogenicity** : No known significant effects or critical hazards.
- Mutagenicity** : No known significant effects or critical hazards.
- Teratogenicity** : Suspected of damaging the unborn child.
- Developmental effects** : Suspected of damaging the unborn child.
- Fertility effects** : No known significant effects or critical hazards.

### Numerical measures of toxicity

#### Acute toxicity estimates

Not available.

## Section 12. Ecological information

### Toxicity

Product/ingredient name	Test	Result	Species	Exposure
zinc	Invertebrate	EC50 0.147 mg/l (as Zn)	<i>Ceriodaphnia dubia</i>	Fresh water - Acute
	Fish.	LC50 0.169 mg/l (as Zn)	<i>Oncorhynchus mykiss</i>	Fresh water - Acute
	Algae	LC50 0.136 mg/l (as Zn)	<i>Pseudokirchneriella subcapitata</i>	Fresh water - Acute
	Invertebrate	NOEC 0.037 mg/l (as Zn)	<i>Ceriodaphnia dubia</i>	Fresh water - Chronic
	Fish.	NOEC 0.044 mg/l (as Zn)	<i>Jordanella floridae</i>	Fresh water - Chronic
	Algae	NOEC 0.019 mg/l (as Zn)	<i>Pseudokirchneriella subcapitata</i>	Fresh water - Chronic
boron	Algae	EC50 52.4 mg/l (as Boron)	<i>Pseudokirchneriella subcapitata</i>	Fresh water - Acute
	Invertebrate	LC50 91 mg/l (as Boron)	<i>Ceriodaphnia dubia</i>	Fresh water - Acute
	Fish.	LC50 79.7 mg/l (as Boron)	<i>Pimephales promelas</i>	Fresh water - Acute
	Fish.	NOEC 6.4 mg/l (as Boron)	<i>Brachydanio rerio</i>	Fresh water - Chronic
	Invertebrate	NOEC 14.2 mg/l (as Boron)	<i>Daphnia magna</i>	Fresh water - Chronic
	Algae	NOEC 17.5 mg/l (as Boron)	<i>Pseudokirchneriella subcapitata</i>	Fresh water - Chronic

**Conclusion/Summary** : Note that the data values are expressed as zinc ion or boron equivalents. To convert to this product, divide the zinc equivalent by 0.301 and divide the boron equivalent by 0.149. Studies judged to be unreliable or with insufficient information to evaluate are not included.

A study of the transformation/dissolution characteristics of zinc borate was conducted following the OECD 29 protocol. The amount of zinc ion in solution after 24 hr exceeded the acute reference values, so zinc borate is classified as Aquatic Acute 1 (H400: Very toxic to aquatic life). The amount of zinc in solution after 28 days also exceeded the chronic reference values. However, because over 70% of zinc ions were removed from the water column within 28 days (demonstrating "rapid partitioning") and zinc is not considered bioaccumulative, the Chronic 1 category does not apply.

Boron is an essential micronutrient for healthy growth of plants; however, it can be harmful to boron sensitive plants in high quantities. Care should be taken to minimize the amount of this product released to the environment.

### Persistence and degradability

**Conclusion/Summary** : Not applicable. Inorganic substance

### Bioaccumulative potential

Not available.

### Mobility in soil

**Soil/water partition coefficient (K<sub>oc</sub>)** : Not available.

**Mobility** : Zinc borate will hydrolyze under environmental conditions to boric acid and zinc hydroxide. Adsorption of boric acid to soils or sediments is minimal. Adsorption of zinc ions is described by partition coefficients and may vary with site-specific conditions. For boric acid, the solids-water partitioning coefficients are 2.19 L/kg (soil) and 2.8 L/kg (sediment). For zinc, the solids-water partitioning coefficients are 159 L/kg (soil), 73,000 L/kg (freshwater/sediment), and 6010 L/kg (seawater/sediment).

**Other adverse effects** : No known significant effects or critical hazards.

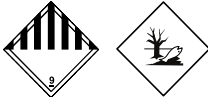
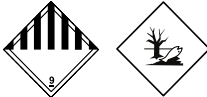
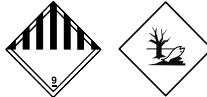

## Section 13. Disposal considerations

**Disposal methods** : Waste packaging should be recycled. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. The generation of waste should be avoided or minimized wherever possible. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of

## Section 13. Disposal considerations

spilled material and runoff and contact with soil, waterways, drains and sewers.

## Section 14. Transport information

	ADR/RID	ADN	IMDG	IATA
<b>UN number</b>	UN3077	UN3077	UN3077	UN3077
<b>UN proper shipping name</b>	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Hexaboron dizinc undecaoxide, hydrate)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Hexaboron dizinc undecaoxide, hydrate)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Hexaboron dizinc undecaoxide, hydrate)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Hexaboron dizinc undecaoxide, hydrate)
<b>Transport hazard class(es)</b>	9 	9 	9 	9 
<b>Packing group</b>	III	III	III	III
<b>Environmental hazards</b>	Yes.	Yes.	Yes.	Yes.

### Additional information

#### ADR/RID

: This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8.

#### ADN

: This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8.

#### IMDG

: This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8.

#### IATA

: This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 5.0.2.4.1, 5.0.2.6.1.1 and 5.0.2.8.

**Special precautions for user** : Not applicable.

**Transport in bulk according to Annex II of MARPOL and the IBC Code** : Not available.

## Section 15. Regulatory information

### International regulations

#### Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

#### Montreal Protocol (Annexes A, B, C, E)

Not listed.

#### Stockholm Convention on Persistent Organic Pollutants

Not listed.

#### Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

## Section 15. Regulatory information

### UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

### Inventory list

<b>Australia</b>	: All components are listed or exempted.
<b>Canada</b>	: All components are listed or exempted.
<b>China</b>	: All components are listed or exempted.
<b>Europe</b>	: All components are listed or exempted.
<b>Japan</b>	: <b>Japan inventory (ENCS)</b> : All components are listed or exempted. <b>Japan inventory (ISHL)</b> : Not determined.
<b>Malaysia</b>	: Not determined.
<b>New Zealand</b>	: All components are listed or exempted.
<b>Philippines</b>	: Not determined.
<b>Republic of Korea</b>	: All components are listed or exempted.
<b>Taiwan</b>	: All components are listed or exempted.
<b>Thailand</b>	: Not determined.
<b>Turkey</b>	: Not determined.
<b>United States</b>	: All components are listed or exempted.
<b>Viet Nam</b>	: Not determined.

## Section 16. Other information

### History

**Date of issue/Date of revision** : 2019/05/14

**Date of previous issue** : No previous validation

**Version** : 1

**Key to abbreviations** : ADN = European Provisions concerning the International Carriage of Dangerous Goods by Inland Waterway  
ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road  
ATE = Acute Toxicity Estimate  
BCF = Bioconcentration Factor  
GHS = Globally Harmonized System of Classification and Labelling of Chemicals  
GOST = Gosudarstvennyy standart  
IATA = International Air Transport Association  
IBC = Intermediate Bulk Container  
IMDG = International Maritime Dangerous Goods  
LogPow = logarithm of the octanol/water partition coefficient  
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)  
RID = The Regulations concerning the International Carriage of Dangerous Goods by Rail  
UN = United Nations

### Procedure used to derive the classification

<b>Classification</b>	<b>Justification</b>
TOXIC TO REPRODUCTION (Unborn child) - Category 2	Expert judgment
AQUATIC HAZARD (ACUTE) - Category 1	Expert judgment
AQUATIC HAZARD (LONG-TERM) - Category 2	Expert judgment

**References** : For general information on the toxicology of borates see Patty's Toxicology, 6th Edition Vol. I, (2012) Chap. 23, 'Boron'.

✔ **Indicates information that has changed from previously issued version.**

Russian Federation / 4.9 / EN-US

### Notice to reader

## Section 16. Other information

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.