GRANUBOR®

Safety Data Sheet

Revision Date: October 2019
Supersedes: September 2017

Section 1 Identification of the chemical and of the supplier

1.1 Product Identifier — *Granubor*

1.2 Other means of identification

Chemical name: Disodium tetraborate pentahydrate

Synonyms: Sodium tetraborate pentahydrate, Borax 5 Mol, Borax pentahydrate

Grades: Technical

1.3 Recommended use of the chemical and restrictions on use — Micronutrient fertilizer

1.4 Supplier's details

Company name: **U.S. Borax Inc.**

Address: 14486 Borax Road
Boron, CA 93516-2000, USA

Telephone number: +1 (760) 762-7000

Email: rtb.sds@riotinto.com

1.5 Emergency phone number — (1) 866 928 0789 (24-Hr toll-free number)
(1) 215 207 0061 (24-Hr Non toll-free number)

Section 2 Hazards identification

2.1 Classification of the substance or mixture

Reproductive Toxicity Category 2
Serious Eye Damage / Eye Irritation Category 2A
Acute Toxicity (Oral) Category 5

2.2 GHS label elements, including pictogram or symbol, signal word, hazard and precautionary statements

Hazard pictograms



Signal word: Warning

Hazard statements:
H361: Suspected of damaging fertility or the unborn child.
H319: Causes serious eye irritation.
H303: May be harmful if swallowed.

Precautionary statements:
P202: Do not handle until all safety precautions have been read and understood.
P281: Use personal protective equipment as required.
P308+P313: IF exposed or concerned: Get medical advice/attention.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P501: Dispose of contents/container in accordance with local regulation.

Other hazards which do not result in classification (e.g. dust explosion hazard): None

Section 3 Composition/information on ingredients

3.1 Substances

Chemical name	CAS No.	% content	See Section 8 for Occupational Exposure Limits
Disodium tetraborate pentahydrate	12179-04-3	>99.0	

Section 4 First aid measures

4.1 Description of necessary first aid measures
Protection of first-aiders: No special protective clothing is required.

Inhalation: If symptoms such as nose or throat irritation are observed, remove to fresh air.

Eye contact: Use eye wash fountain or fresh water to cleanse eye. If irritation persists for more than 30 minutes, seek medical attention.

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.

4.2 Most important symptoms and effects both acute and delayed: 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 (see Section 11).

4.3 Indication of any immediate medical attention and special treatment needed: Note to physicians: 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[1].

Section 5 Fire-fighting measures

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

Unsuitable extinguishing media: None

5.2 Special hazards arising from the chemical
None. The product is not flammable, combustible or explosive.

5.3 Special protective equipment and precautions for fire fighters:
Not applicable. The product is itself a flame retardant.

Section 6 Accidental release measures

6.1 Personal precaution, protective equipment and emergency procedures

For non-emergency personnel:
Eye protection according to ANSI Z.87.1 or other national standards.

For emergency responders:
Eye protection according to ANSI Z.87.1 or other national standards.

6.2 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.

6.3 Methods and material for containment and cleaning up

Appropriate containment: Avoid spillage into water and cover drains.

Land spill: Vacuum, shovel or sweep up and place in containers for disposal in accordance with applicable local regulations.

Spillage into water: Where possible, remove any intact containers from the water.

6.4 Reference to other sections
Refer to sections 8, 12 and 13.

Section 7 Handling and storage

7.1 Precautions for safe handling
Good housekeeping procedures should be followed to minimise dust generation and accumulation. Avoid spills. Do not eat, drink and smoke in work areas. Wash hands after use. Remove contaminated clothing and protective equipment before entering eating areas.

7.2 Conditions for safe storage, including any incompatibilities
No special handling precautions are required, but dry, indoor storage is recommended. To maintain package integrity and to minimise caking of the product, bags should be handled on a first-in first-out basis.

Storage temperature: Ambient
Storage pressure: Atmospheric
Special sensitivity: Moisture (Caking)

Section 8 Exposure controls/personal protection

8.1 Control parameters
Occupational exposure limit values: In the absence of a national OEL, Rio Tinto Borax recommends and applies internally an Occupational Exposure Limit (OEL) of 1 mg B/m^3. To convert product into equivalent boron (B) content, multiply by 0.1484.

Occupational Exposure Limits:

Country	8-hr TWA OEL (mg/m^3)	15 min STEL (mg/m^3)	Legal Basis
Argentina	1	-	Decree 351 of 1979, amended by Resolution 295/2003 - Annex IV, 21 November 2003
Brazil	2	6	Ordinance No. 3214, 6/8/78, NR-15, Annex 11, as amended through 3/10/1994 & NR-09, as amended through 12/29/1994
Colombia	2	6	Resolución Número 02400 Mayo 22 de 1979. Normas sobre vivienda, higiene y seguridad en los establecimientos de trabajo) [as updated through ACGIH publication from March 20, 2013

Country	8-hr TWA OEL (mg/m^3)	15 min STEL (mg/m^3)	Legal Basis
Costa Rica	2	6	Regulation for the Registration of Hazardous Products, Executive Decree No. 28113S, as amended by Executive Decree No. 30718, Oct 2, 2002) updated with March 20, 2013 ACGIH data
Dominican Republic	2	6	Regulation of Safety and Health in the Workplace - Decree No. 522-06 and Resolution No. 04-2007 of January 30, 2007) updated with ACGIH data published on March 20, 2013
Ecuador	2	6	INEN 2266:2013, 2013-01 2nd rev.: Transport, storage and handling of hazardous materials. Requirements. 1st ed., 1/29, 2013)[as updated through ACGIH publication from, March 20, 2013
Nicaragua	2	6	General Law of Workplace Hygiene and Safety. Law No. 618, published in Official Gazette No. 133, July 13, 2007) as updated with ACGIH version published on March 20, 2013
Paraguay	2	6	Decree No. 14.390/92 that approves the General Technical Regulation of Safety, Hygiene and Medicine in the Workplace (July 28, 1992)
Peru	1	-	Decreto Supremo 015-2005-SA (Reglamento sobre Valores Límites Permisibles para Agentes Químicos en el Ambiente de Trabajo, July 2005
Uruguay	2	6	Decree No. 307/009, as modified by Decree 346/011, published October 13, 2011) [as updated through ACGIH publication from March 20, 2013
Venezuela	1	-	Permissible environmental concentrations (Concentraciones ambientales permisibles (CAPs), Table 1, COVENIN 2253:2001

8.2 **Appropriate engineering controls:** Use local exhaust ventilation to keep airborne concentrations of dust below permissible exposure limits.

8.3 **Personal protection equipment:**
Eye and face protection: Eye protection according to ANSI Z.87.1 or other national standards are required.
Skin protection: Standard work gloves (cotton, canvas or leather) may be warranted if environment is excessively dusty.
Respiratory protection: Where airborne concentrations are expected to exceed exposure limits, respirators should be used.

Section 9 Physical and chemical properties

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

Appearance:	White, crystalline solid
Odour	Odourless
Odour threshold:	Not applicable: odourless
pH @ 20°C:	9.23 (3.5% solution)
Melting point/ Freezing point:	<200°C (Heated in closed space)
Initial boiling point and boiling range:	No boiling point can be defined because of decomposition of the active substance
Flash point:	Not applicable: inorganic substance
Evaporation rate:	Not applicable: non-volatile
Flammability:	Negligible @ 20°C
Upper/lower flammability or explosive limits:	Not applicable: non-flammable
Vapour pressure:	Not applicable: melting point >300°C
Vapour density:	Not applicable: melting point >300°C
Relative density:	Specific density: 1.81
Solubility(ies):	Water**:** 40.06 g/L @ 20°C
Partition coefficient; n-octanol/water:	No data
Auto-ignition temperature:	Not applicable: not self-heating
Decomposition temperature:	No data
Viscosity:	Not applicable: solid substance
Explosive properties:	Not explosive: does not contain chemical groups associated with explosive properties
Oxidising properties:	Not oxidising: does not contain chemical groups associated with oxidising properties

9.2 Other information

Molecular weight:	291.35
Formula:	$Na_2B_4O_7.5H_2O$

Section 10 Stability and reactivity

10.1 Reactivity: None known.

10.2 Chemical stability: Under normal ambient temperatures (-40°C to +40°C), the product is stable. When heated it loses water, eventually forming anhydrous borax ($Na_2B_4O_7$).

10.3 Possibility of hazardous reactions: Reaction with strong reducing agents such as metal hydrides or alkali metals will generate hydrogen gas which could create an explosive hazard.

10.4 Conditions to avoid: Avoid contact with strong reducing agents by storing according to good industrial practice.

10.5 Incompatible materials: Strong reducing agents.

10.6 Hazardous decomposition products: None.

Section 11 Toxicological Information

11.1 Information on the likely routes of exposure (inhalation, ingestion, skin and eye contact)
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.

(a) Acute toxicity
Method: Acute Oral Toxicity Study – U.S. EPA FIFRA Guidelines
Species: Rat
Dose: 3,200 - 3,400 mg/kg of body weight
Routes of Exposure: Oral
Results: Low acute oral toxicity. LD_{50} in rats is 3,305 mg/kg of body weight.
Classification: Acute Toxicity (Oral) Category 5 (Hazard statement: H303: May be harmful if swallowed)

Method: Acute Dermal Toxicity Study – U.S. EPA FIFRA Guidelines
Species: Rabbit
Dose: 2,000 mg/kg bw
Routes of Exposure: Dermal
Results: Low acute dermal toxicity; LD_{50} in rabbits is > 2,000 mg/kg of body weight. Poorly absorbed through intact skin. Based on the available data, the classification criteria are not met.

Method: Acute Inhalation Toxicity Study – OECD Guideline 403
Species: Rat
Dose: 2.12 mg/L
Routes of Exposure: Inhalation
Results: Low acute inhalation toxicity; LC_{50} in rats is > 2.0 mg/l (or g/m^3). Based on the available data, the classification criteria are not met.

(b) Skin corrosion / irritation:
Method: Primary Dermal Irritation Study – U.S. EPA FIFRA Guidelines
Species: New Zealand White Rabbit
Dose: 0.5 g moistened with saline
Routes of Exposure: Dermal
Results: No skin irritation. Mean Primary Irritation Score: 0. Based on the available data, the classification criteria are not met.

(c) Serious eye damage / irritation:
Method: Eye Irritation Study – similar to OECD Guideline 405
Species: New Zealand White Rabbit
Dose: 0.08 ml equivalent
Routes of Exposure: Eye
Results: Irritating, fully reversible in 14 days.
Classification: Eye Irritation Category 2A (Hazard statement: H319: Causes serious eye irritation.)

Many years of occupational exposure indicate no adverse effects on human eye.

(d) Respiratory or skin sensitisation:
Method: Buehler Test – OECD Guideline 406
Species: Guinea Pig
Dose: 0.4 g
Routes of Exposure: Dermal
Results: Not a skin sensitiser. No respiratory sensitisation studies have been conducted. There are no data to suggest that disodium tetraborates are respiratory sensitisers. Based on the available data, the classification criteria are not met.

(e) Germ cell mutagenicity:
Method: Several in vitro mutagenicity studies have been carried out on boric acid including gene mutation in mammalian cells, unscheduled DNA synthesis, chromosomal aberration and sister chromatid exchange in mammalian cells.
Species: L5178Y mouse lymphoma, V79 Chinese hamster cells, C3H/10T1/2 cells, hepatocytes, Chinese hamster ovary (CHO cells).
Dose: 1.0 - 10.0 mg/ml (1000 -10000 ppm) boric acid
Routes of Exposure: *in vitro*
Results: Not mutagenic (based on boric acid). Based on the available data, the classification criteria are not met.

(f) Carcinogenicity:
Method: OECD 451 equivalent.
Species: B6C3F1 mice
Dose: 446 ; 1150 mg boric acid/kg bw/day
Routes of Exposure: Oral feeding study
Results: No evidence of carcinogenicity (based on boric acid). Based on the available data, the classification criteria are not met.

(g) Reproductive toxicity:
Method: Three-generation feeding study, similar to OECD 416 Two-Generation Study
Species: Rat
Dose: 0; 34 (5.9); 100 (17.5); and 336 (58.5) mg boric acid (mg B)/kg bw/day; and 0; 50 (5.9); 155 (17.5); and 518 (58.5) mg borax (mg B)/kg bw/day
Routes of Exposure: Oral feeding study
Results: NOAEL in rats for effects on fertility in males is 100 mg boric acid/kg bw and 155 mg sodium tetraborate decahydrate/kg bw; equivalent to 17.5 mg B/kg bw.

Method: Prenatal Developmental Toxicity Study - OECD Guideline 414
Species: Rat
Dose: 0; 19 (3.3); 36 (6.3); 55 (9.6); 76 (13.3) and 143 (25) mg boric acid (mg B)/kg bw.
Routes of Exposure: Oral feeding study
Results: NOAEL in rats for developmental effects on the foetus including foetal weight loss and minor skeletal variations is 55 mg boric acid/kg bw or 9.6 mg B/kg; equivalent to 64.7 mg disodium tetraborate pentahydrate/kg bw.
Classification: Reproductive Toxicity Category 2 (Hazard statement: H361: Suspected of damaging fertility or the unborn child.)

Method: Occupational studies of evaluating sensitive sperm parameters in highly exposed borate workers. Epidemiological studies evaluating high environmental exposures to boron and developmental effects in humans have been conducted.
Species: Human
Dose: A subset of workers was exposed to 125 mg B/day.
Routes of Exposure: Combined oral ingestion and inhalation
Results: No adverse fertility effects in male 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.

(h) STOT-single exposure:
Method: Standard Test Method for Estimating Sensory Irritancy of Airborne Chemicals - ASTM E981-04 (2004)
Species: Mouse
Dose: 186 – 1704 mg/m^3
Routes of Exposure: Inhalation
Results: The maximum exposure of 1704 mg/m^3 resulted in a reduced respiratory rate of 33%, graded as moderate irritation. The lowest exposure tested of 186 mg/m3 sodium tetraborate pentahydrate resulted in a reduced respiration rate of 11%, graded as no irritation. Based on the available data, the classification criteria are not met.

Method: Sensory irritation in human volunteers
Species: Human
Dose: 5 - 40 mg/m^3
Routes of Exposure: Inhalation

Results: A NOAEL for irritation from sodium tetraborate pentahydrate of 10 mg/m^3 among male and female human volunteers under controlled laboratory conditions. At 10 mg/m^3 increased nasal secretion was observed, but occurred in the absence of other irritating effects at a concentration below that considered irritating by volunteers and was not seen in a subsequent study.

(i) STOT-repeated exposure:
Method: Chronic toxicity study of boric acid and disodium tetraborate decahydrate, similar to OECD 452
Species: Rat
Dose: 0; 33 (5.9); 100 (17.5); 334 (58.5) mg boric acid (B)/kg bw per day (nominal in diet); and 0; 52 (5.9); 155 (17.5); 516 (58.5) mg borax (B)/kg/day (nominal in diet)
Routes of Exposure: Oral feeding study
Results: A NOAEL of 17.5 mg B/kg bw/day equivalent to 118 mg sodium tetraborate pentahydrate/kg bw/day was determined in a chronic feeding study (2 years) in rats and is based on testes effects. Other effects (kidney, haemopoietic system) are regarded only at even higher dose levels. Based on the available data, the classification criteria are not met.

(j) Aspiration hazard: Physical form of solid powder indicates no aspiration hazard potential.

11.2 Symptoms related to the physical, and chemical and toxicological characteristics:
At high concentrations irritation of nose, throat and eye may be observed. Products are *not* intended for ingestion. Small amounts (e.g. a teaspoonful) swallowed accidentally are not likely to cause effects. 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.

11.3 Delayed and immediate effects as well as chronic effects from short and long-term exposure:
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.

11.4 Numerical measures of toxicity (such as acute toxicity)
None. This product is a substance.

Section 12 Ecological information

12.1 Ecotoxicity (aquatic and terrestrial, where available)
Note that the data values are expressed as boron equivalents. To convert to this product divide the boron equivalent by 0.148 (e.g. 1 kg Granubor 2 contains 0.1485 kg boron). Studies judged to be unreliable or with insufficient information to evaluate are not included.

Freshwater
Chronic studies

Taxonomic Group	Number of Taxa Tested	Range of Endpoint Values (geometric NOEC/EC10)	References
Algal	4	10 mg B/L (*Chlorella pyrenoidosa*) to 50 mg B/L (*Anacystis nidulans*)	3, 4
Higher plants	3	4.0 mg B/L (*Phragmites australis*) to 60 mg B/L (*Lemna minor*)	5, 6
Invertebrate and protozoan	7	5.7 mg B/L (*Daphnia magna*) to 32 mg B/L (*Chironomus riparius*)	7, 8
Fish	6	2.9 mg B/L (*Micropterus salmoides*) to 17 mg B/L (*Carassius auratus*)	9
Amphibian	2	29 mg B/L (*Rana pipiens*) to 41 mg B/L (*Bufo fowleri*)	9

Results[2]: Based on the complete data set of 22 species, the HC_5 value of the species sensitivity distribution is 4.05 mg B/L.

Acute studies

Taxonomic Group	Number of Taxa Tested	Range of Endpoint Values (geometric EC/LC50)	References
Algal	2	10 mg B/L (*Chlorella pyrenoidosa*) to 28 mg B/L (*Selenastrum capricornutum*)	3, 10
Invertebrate and protozoan	9	113 mg B/L (*Ceriodaphnia dubia*) to 1376 mg B/L (*Chironomus decorus*)	11, 12
Fish	7	80 mg B/L (*Pimephales promelas*) to 627 mg B/L (*Onchorhynchus tschawytscha*)	11, 13
Amphibian	2	86 mg B/L (*Rana pipiens*) to 104 mg B/L (*Bufo fowleri*)	9

Results[2]: Based on the complete data set from 46 studies with 20 species, the HC_5 value of the species sensitivity distribution is 27.3 mg B/L

Classification: Based on the acute data for freshwater species, this substance is not classified as hazardous to the environment.

Marine and Estuarine Data
Chronic studies

Taxonomic Group	Number of Taxa Tested	Range of Endpoint Values (geometric NOEC/EC10)	References
Algal	19	5 mg B/L (*Emiliana huxleyi*) to >100 mg B/L (*Agmenellum quadruplicatum, Anacystis marina, Thallassiorsira pseudonana*)	4

Results: No data are available for invertebrate or vertebrate species. The results from the freshwater data set are recommended as applicable to marine and estuarine species.

Acute studies

Taxonomic Group	Number of Taxa Tested	Range of Endpoint Values (geometric EC/LC50)	References
Invertebrate	3	45 mg B/L (*Litopenaeus vannamei*) to 83 mg B/L (*Americamysis bahia*)	14, 15
Fish	2	74 mg B/L (*Limanda limanda*) to 600 mg B/L (*Oncorhynchus tschawytscha*)	13, 16

No data are available for algal species.

Sediment

Taxonomic Group	Number of Taxa Tested	Range of Endpoint Values (geometric EC/LC50)	References
Invertebrate	1	82.4 mg B/kg sediment dw (*Chironomus riparius*)	17, 18

Results: Although limited, the data suggest that sediment organisms are within range of toxicity of aquatic organisms. In addition, the substance will not partition to the sediment, so a sediment/water partitioning approach is justified.

Sewage Treatment Plants (STP)

Taxonomic Group	Number of Taxa Tested	Range of Endpoint Values (geometric NOEC/EC10)	References
Activated sludge	NA	>17.5 mg B/L to 100 mg B/L	19
Microbes	3	10 mg B/L (*Opercularia bimarginata*) to 20 mg B/L (*Paramecium caudatum*)	20

Terrestrial Data
Chronic studies

Taxonomic Group	Number of Taxa Tested	Range of Endpoint Values (geometric NOEC/EC10)	References
Plant	28	7.2 mg B/kg dw (*Zea mays*) to 56 mg B/kg dw (*Allium cepa*)	21, 22
Invertebrates	9	15.4 mg B/kg dw (*Folsomia candida*) to 87 mg B/kg dw (*Caenorhabditis elegans*)	23, 24
Soil micro	3	12 mg B/kg dw (nitrogen mineralization and nitrification test) to 420 mg B/kg dw (soil nitrogen transformation test)	25, 26

Results[2]: Based on the complete data set, the HC_5 value of the species sensitivity distribution is 10.8 mg B/kg dw.

Phytotoxicity: Boron is an essential micronutrient for healthy growth of plants. It can be harmful to boron sensitive plants in higher quantities. Care should be taken to minimise the amount of borate product released to the environment.

12.2 Persistence and Degradability
Biodegradation is not an applicable endpoint since the product is an inorganic substance.

12.3 Bioaccummulative potential
This product will undergo hydrolysis in water to form undissociated boric acid. Boric acid will not biomagnify through the foodchain. Octanol/Water partition coefficient: Log P_{ow} = -0.7570 @ 25°C (based on boric acid)[27].

12.4 Mobility in soil
The product is soluble in water and is leachable through normal soil. Adsorption to soils or sediments is insignificant.

12.5 Other adverse effects
None

Section 13 Disposal considerations

13.1 Disposal methods
Product packaging should be recycled where possible.
Local authorities should be consulted about any specific local requirements

Such product should, if possible, be used for an appropriate application.

Section 14 Transport information

Transport Classification for Road (ADR/DOT/TDG) / Rail (RID); Inland waterways (ADN); Sea (IMDG); Air (ICAO/IATA)

14.1	**UN Number:**	Not Regulated
14.2	**UN Proper Shipping Name:**	Not Regulated
14.3	**Transport hazard class(es):**	Not Regulated
14.4	**Packing Group:**	Not Regulated
14.5	**Environmental Hazards (e.g. marine pollutant)**	Not Regulated
14.6	**Special precautions for user:**	Not Regulated
14.7	**Transport in bulk according to Annex II of Marpol 73/78 and the IBC code:**	Not Regulated

Section 15 Regulatory information

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

Clean Air Act (Montreal Protocol) - Substances that deplete the ozone layer: Not manufactured with and does not contain any Class I or Class II ozone depleting substances.

Regulation (EC) No 689/2008 - Export and Import of Dangerous Chemicals: Not listed.

National Regulations: Ensure all national/local regulations are observed.

Chemical inventory listing: The listing is sometimes under the Inventory number of the anhydrous form of this inorganic salt.

U.S. EPA TSCA Active Inventory:	1330-43-4
Canada DSL:	1330-43-4
EINECS:	215-540-4
Australia AICS:	11130-12-4
China IECSC:	12179-04-3
Japanese METI & ISHL:	(1)-69
New Zealand NZIoC:	12179-04-3
Philippines PICCS:	12179-04-3
South Korea KECI:	KE-12384

Section 16 Other information

16.1 Revision date: October 2019

16.2 Revision details: New logo; Section 15 added 'Active' to TSCA inventory

16.3 References:

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26. Förster and Becker (2009) Unpublished report to REACH Consortium for Borates.
27. Cordia et al. (2003) Unpublished report no: PML 2002-C42r to Borax Europe, Ltd.

For general information on the toxicology of borates see ECETOC Technical Report No. 63 (1995); Patty's Toxicology, 6th Edition Vol. I, (2012) Chap. 23, 'Boron'. Culver, BD & Hubbard SA (1995) Inorganic Boron Health Effects in Humans: An Aid to Risk Assessment and Clinical Judgment. Trace Elements in Experimental Medicine 9(4):175-184.

16.4 Abbreviations and acronyms:

EC: Effect concentration
GHS: Global Harmonised System for classification and labelling of chemicals
LC: Lethal Concentration
LD: Lethal Dose
STOT: Specific Target Organ Toxicity
LOEC: Lowest Observed Effect Concentration
NA: Not applicable.
NOAEL: No observed adverse effect level

NOEC: No Observed Effect Concentration
STP: Sewage Treatment Plant

Precautionary Phrases:
KEEP OUT OF REACH OF CHILDREN.
Do not ingest.
Not for use in drugs, pesticides or for food preservation.
Refer to safety data sheet.
Use only as directed.

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