

Revision: 000

Date: 1st August 2003

1. IDENTIFICATION OF THE SUBSTANCE AND COMPANY UNDERTAKING

General Chemical Name Boric acid

Intended or recommended uses of substance: Research & general chemical production.

Supplier (Distributor) New Metals & Chemicals Ltd
Newmet House, Rue de St. Lawrence
Waltham Abbey, Essex, EN9 1PF
Telephone: +44(0) 1992 711111

2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient name	Concentration /range	*Classification	CAS No	EINECS No
Boric acid	100%	Xn, R62, 63, 36/37/38	10043-35-3	233-139-2

*see 16. OTHER INFORMATION for full text of R-phrases

3. HAZARD IDENTIFICATION

This product is irritant to the eyes, mucous membranes and skin.
There is possible risk of impaired fertility and harm to the unborn child.

4. FIRST AID MEASURES

Inhalation Move the patient to fresh air and administer 100 percent humidified supplemental oxygen with assisted ventilation as required. If breathing has ceased DO NOT use mouth-to-mouth

respiration apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask. Seek immediate medical attention.

Skin Contact Flush skin with copious quantities of water. Remove and destroy all contaminated clothing and shoes. Seek immediate medical attention.

Eye Contact DO NOT allow patient to rub or keep eyes closed. Irrigate with copious quantities of water for at least 15 minutes. Flush under eyelids by lifting lid. DO NOT use a static eye bath. Seek immediate medical attention.

Ingestion DO NOT induce vomiting. If patient is conscious and alert, wash out mouth with water. Give nothing by mouth if patient is unconscious. Seek immediate medical attention.

Note: Ensure that medical personnel are aware of the material involved, and take precautions to protect themselves.

5. FIRE FIGHTING MEASURES

Precautions against fire and explosion

Not flammable

Suitable extinguishing media

Use fire fighting measures that suit the environment i.e. water.

Extinguishing media which must not be used for safety reasons

N/A

Special exposure hazards arising from the substance itself and its combustion products - including any gaseous by-products

Avoid exposure to material in dust , vapour or mist form.

Special protective equipment for fire fighters

Wear self-contained breathing apparatus and full chemical protective clothing. Decontamination must follow before removal of gear. Show documents to the emergency services.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions

Evacuate all but essential authorised control personnel. Wear self-contained breathing apparatus and gloves to avoid inhalation, skin and eye contact. Provide sufficient ventilation.

Structural firefighters` protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations.

Environmental Precautions

Prevent entry into drains, surface and ground water, soil and confined areas.

Methods for Cleaning Up

Only trained, authorised personnel should be involved. Fully encapsulating protective clothing and self contained breathing apparatus should be worn for spills and leaks . Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Cover spills with dry sand, dry diatomaceous earth or dry salt followed with plastic sheet to minimise spreading. To avoid dust formation do not dry sweep. Do not vacuum. Collect material and place it into a covered plastic container. Place residues in a closed plastic container, suitably marked, and dispose of through a licensed waste disposal contractor.

7. HANDLING AND STORAGE

Precautions for safe handling

Handle in a fume cupboard or dedicated LEV room.

Avoid breathing dusts or contact with skin and eyes.

Do not get in eyes, on skin or on clothing. Do not ingest or inhale.

Wash or decontaminate after handling. Wash hands before eating. Discard contaminated shoes.

Keep container tightly closed.

See section 8 for personal protective equipment.

Precautions for safe storage

Store in a tightly closed container. Store in a cool, dry, well-ventilated area

away from incompatible substances (see section 10). Store away from water and alkalis. Protect from humidity.

Specific use

Research and general chemical production.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limit values

Ingredient name	OES LTEL (8hr TWA)	OES STEL (15min)	MEL (LT)	MEL (ST)
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There are no occupational limits for this material

Occupational exposure controls

Eye protection	Wear appropriate protective eyeglasses, chemical safety goggles or full-face shield to European Standard EN 166.
Hand protection	Wear appropriate gloves. Gloves of nitrile or PVC may be used as single splash disposable gloves and must be discarded immediately after use. Gloves should comply with European Standard EN 374-3 class 3.
Skin protection	Use one or more of the following personal protection equipment as necessary. Full chemical protective suit to EN 465 standard, PVC apron, helmet and boots.
Respiratory protection	If product is not used in a fume cupboard or there is insufficient ventilation wear full face or hood compressed airline breathing apparatus to EN 139 or EN 270/271 alternatively use self contained breathing apparatus to EN 137. This equipment should always be available on standby.
Ingestion	Do not eat, drink or smoke when using this product. Do not ingest. Exhibit the strictest hygiene control.

Environmental exposure controls

No specific environmental legislation applies in the EU at present; however in accordance with best practice only use in a fume cupboard or with local exhaust

ventilation. In case of fire, spillage or leakage, prevent material from entering water courses, sewers or soil.

9. PHYSICAL AND CHEMICAL PROPERTIES

General information

Appearance White powder

Odour Odourless

Important health, safety and environmental information

Melting point/melting range	170 ⁰ C
Flash point	N/A
Flammability (solid, gas)	Not flammable
Autoignition temperature	N/A
Explosive properties	Product is not explosive
Oxidising properties	Not determined
Vapour pressure	N/A
Relative density	1.435g.cm ³ at 15 ⁰ C
Solubility	
-water solubility	63.5g/l at 30 ⁰ C

10. STABILITY AND REACTIVITY

Conditions to avoid Stable under normal temperatures and pressures.

Materials to avoid Bases, water/moisture
Alkali metals, acid anhydrides

Hazardous decomposition products none known

11. TOXICOLOGICAL INFORMATION

Boric acid poisoning begins with nausea, vomiting, diarrhea and epigastric pain regardless of route of administration. The body temperature falls and erythematous rash develops. This is followed by desquamation, headache, restlessness and weakness, cyanosis, convulsions and CNS depression. Renal injury follows and death from circulatory collapse and shock usually follows within 5 days. Boric acid is well absorbed through the gastrointestinal tract, open wounds and serous cavities.

Effects from skin contact May cause irritation of the skin and mucous membranes.
No allergic reaction have been reported.

Effects from inhalation Irritating to respiratory system. Repeated exposure may cause lung damage and disorders such as bronchitis. Symptoms include difficulty in breathing, tightness in chest, cough, and dyspnea.

Effects from ingestion Ingestion may cause nausea, congestive failure, abdominal pain & vomiting,

- (a) Acute toxicity (oral, inhalation, dermal)
LD₅₀ 2660mg/kg rat, LD_{Lo} 429mg/kg man, LD_{Lo} 200mg/kg wmn
- (b) Corrosivity/irritation (eye, skin, respiratory tract)
Irritant for skin and mucous membranes
- (c) Sensitisation (skin, respiratory)
No sensitising effects known
- (d) Repeated-dose toxicity not tested/no data
- (e) Mutagenicity see below
- (f) Carcinogenicity
No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.
- (g) Reproductive toxicity (fertility, developmental) see below

Additional toxicological information

There is insufficient information concerning the reproductive effects of borates in humans. Adverse testicular effects and infertility have been reported in animals. There have been limited animal studies which suggest decreased ovulation, fetotoxicity and developmental defects may occur with very high

exposure levels. Maternal toxicity was present in some studies.

12. ECOLOGICAL INFORMATION

(1) Ecotoxicity

(a) Aquatic toxicity

- | | | |
|-------|------------------------------|--------------------|
| (i) | acute and chronic for fish | see below |
| (ii) | “ “ “ “ daphnia | see below |
| (iii) | “ “ “ “ algae | not tested/no data |
| (iv) | “ “ “ “ other aquatic plants | not tested/no data |

(b) Soil toxicity

- | | | |
|-------|-----------------|--------------------|
| (i) | macro organisms | not tested/no data |
| (ii) | micro organisms | not tested/no data |
| (iii) | birds | not tested/no data |
| (iv) | bees | not tested/no data |
| (v) | plants | not tested/no data |
| (vi) | fauna | not tested/no data |

LC₅₀ Trout 100ppm (soft water), LC₅₀ Trout 79ppm (hard water)
LC₅₀ Catfish 155ppm (soft water), LC₅₀ Catfish 22ppm (hard water)
LC₅₀ Goldfish 46ppm (soft water), LC₅₀ Goldfish 75ppm (hard water)
LC₅₀ Daphnia magna 133mg/l/48hr

Care should be taken to prevent this material from release into the environment.

(2) Mobility

No data available

(3) Persistence and degradability

No data available

(4) Bioaccumulation potential

No data available

(5) Other adverse effects

No other effects are known.

13. DISPOSAL CONSIDERATIONS

All waste material to be contained in a plastic sealed bin, duly marked, and disposed of as special waste through a licensed waste contractor in accordance with “The Special Waste Regulations 1996”. See sections 6 and 7.

14. TRANSPORT INFORMATION

<u>Airfreight (IATA)</u>	<u>Seafreight (IMDG)</u>	<u>Road (ADR)</u>	<u>Rail (RID)</u>
(a) UN number		N/A	
(b) Class		N/A	
(c) Proper shipping name		N/A	
(d) Packing group		N/A	
(e) Marine pollutant (if applicable)		N/A	
(f) Other applicable information		N/A	

Boric acid is not restricted for transport

15. REGULATORY INFORMATION

EC Supply - Chip-3 regulations 2002, regulation 9

Xn Harmful

Risk Phrases:

- 62: Possible risk of impaired fertility.
- 63: Possible risk of harm to the unborn child
- 36/37/38: Irritating to eyes, respiratory system and skin.

Safety Phrases:

- 22: Do not breathe dust
- 26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
- 36/37/38: Wear suitable protective clothing, gloves and eye/face protection.
- 45: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

This material is subject to the COSHH regulations 2002. See COSHH Essentials for further information.

16. OTHER INFORMATION

R Phrases Full Text:

- 62: Possible risk of impaired fertility
- 63: Possible risk of harm to the unborn child
- 36/37/38: Irritating to eyes, respiratory system and skin.

This material should only be handled by qualified, trained persons, fully familiar with its dangerous properties. During use or handling, a minimum of two persons should always be available.

Chemicals (Hazard Information and Packaging for Supply) Regulations 2002

Approved classification and labelling guide. Chemicals (Hazard Information and Packaging for Supply) Regulations 2002 Guidance on Regulations L131

Approved Supply List. Information Approved for the Classification and labelling of Substances and Preparations Dangerous for Supply. Chemicals (Hazard Information and Packaging for Supply) Regulations 2002. Approved List L129

Control of Substances Hazardous to Health Regulations 2002

Health and Safety at Work Act 1974

COSHH Essentials: Easy Steps to Control Chemicals. Control of Substances Hazardous to Health Regulations

Occupational Exposure Limits 2001/2002 EH40

European Inventory of Existing Commercial Substances (EINECS) available on the European Chemicals Bureau website at www.ecb.jrc.it/existing-chemicals

First Aid at Work. The Health and Safety (First Aid) Regulations 1981. Approved Code of Practice and Guidance L74

Personal Protective Equipment (EC Directive) Regulations 1992

The Selection, Use and Maintenance of Respiratory Protective Equipment: A Practical Guide HSG53

Cost and Effectiveness of Chemical Protective Gloves for the Workplace.

Guidance for Employers and Health and Safety Specialists. HSG206

Environmental Protection Act 1990 c43

Environmental Act 1995 c25

The Special Waste Regulations 1996

The Dangerous Substances and Explosive Atmospheres Regulations 2002