

### 1. IDENTIFICATION

<b>Product Name</b>	<b>Boric Acid</b>
<b>Other Names</b>	ACTIBOR 17; Orthoboric acid
<b>Uses</b>	Industrial use; Antiseptic/antibacterial agent; Insecticide; Preservative; Lubricant; Pyrotechnics; Agriculture.
<b>Chemical Family</b>	No Data Available
<b>Chemical Formula</b>	H <sub>3</sub> BO <sub>3</sub>
<b>Chemical Name</b>	Boric acid (H <sub>3</sub> BO <sub>3</sub> )
<b>Product Description</b>	No Data Available

### Contact Details of the Supplier of this Safety Data Sheet

Organisation	Location	Telephone
Redox Pty Ltd	2 Swettenham Road Minto NSW 2566 Australia	+61-2-97333000
Redox Pty Ltd	11 Mayo Road Wiri Auckland 2104 New Zealand	+64-9-2506222
Redox Inc.	3960 Paramount Boulevard Suite 107 Lakewood CA 90712 USA	+1-424-675-3200
Redox Chemicals Sdn Bhd	Level 2, No. 8, Jalan Sapir 33/7 Seksyen 33, Shah Alam Premier Industrial Park 40400 Shah Alam Sengalor, Malaysia	+60-3-5614-2111

### Emergency Contact Details

*For emergencies only; DO NOT contact these companies for general product advice.*

Organisation	Location	Telephone
Chemcall	New Zealand	0800-243622 +64-4-9179888
National Poisons Centre	New Zealand	0800-764766

### 2. HAZARD IDENTIFICATION

**Poisons Schedule (Aust)** Schedule 5

### Globally Harmonised System

**Hazard Classification** Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)

**Hazard Categories** Toxic To Reproduction - Category 1B



## Pictograms



## Signal Word

Danger

## Hazard Statements

**H360FD**

May damage fertility. May damage the unborn child.

## Precautionary Statements

Prevention

**P201**

Obtain special instructions before use.

**P281**

Use personal protective equipment as required.

Response

**P308 + P313**

IF exposed or concerned: Get medical advice/ attention.

Storage

**P405**

Store locked up.

Disposal

**P501**

Dispose of contents/container in accordance with local / regional / national / international regulations.

## Environmental Protection Authority (New Zealand)

Hazardous Substances and New Organisms Amendment Act 2015

## HSNO Classifications

Health Hazards

**6.1E**

Substances that are acutely toxic –May be harmful, Aspiration hazard

**6.3B**

Substances that are mildly irritating to the skin

**6.4A**

Substances that are irritating to the eye

**6.8B**

Substances that are suspected human reproductive or developmental toxicants

Environmental Hazards

**9.1D**

Substances that are slightly harmful to the aquatic environment or are otherwise designed for biocidal action

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

## Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Boric acid	H3BO3	10043-35-3	<=100 %

## 4. FIRST AID MEASURES

## Description of necessary measures according to routes of exposure

## Swallowed

IF SWALLOWED: Rinse mouth, then drink plenty of water. Get medical advice/attention if large amounts (i.e. more than one teaspoon) are swallowed or if you feel unwell. Never give anything by mouth to an unconscious person.

## Eye

IF IN EYES: Immediately flush eyes with running water for several minutes, holding eyelids open and occasionally lifting the upper and lower lids. Remove contact lenses if present and easy to do. Continue rinsing for at least 15 minutes. If eye irritation persists, get medical advice/attention.

## Skin

IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash before reuse. If skin irritation occurs, get medical advice/attention.

## Inhaled

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If respiratory symptoms persist, get medical advice/attention.

## Advice to Doctor

If exposed or concerned, get medical advice/attention. Observation only is required for adult ingestion of less than 6 grams of boric acid. For ingestion in excess of 6 grams, maintain adequate kidney function and force fluids. Gastric lavage is recommended for symptomatic patients only. Haemodialysis should be reserved for massive acute ingestion or patients with renal failure. Boron analyses of urine or blood are only useful for documenting exposure and should not be used to evaluate severity of poisoning or to guide treatment.

## Medical Conditions Aggravated by Exposure

No information available.



**5. FIRE FIGHTING MEASURES**

<b>General Measures</b>	If safe to do so, move undamaged containers from fire area. Cool container with water spray until well after fire is out.
<b>Flammability Conditions</b>	Non-combustible; Material does not burn.
<b>Extinguishing Media</b>	If material is involved in a fire, use extinguishing media appropriate to surrounding fire conditions.
<b>Fire and Explosion Hazard</b>	Boric acid is not flammable, combustible or explosive. The product is itself a flame retardant.
<b>Hazardous Products of Combustion</b>	Fire or heat may produce irritating and/or toxic fumes, including Boron oxides.
<b>Special Fire Fighting Instructions</b>	Contain runoff from fire control or dilution water - Runoff may pollute waterways.
<b>Personal Protective Equipment</b>	Wear self-contained breathing apparatus (SCBA) in combination with normal firefighting clothing (full fire kit).
<b>Flash Point</b>	No Data Available
<b>Lower Explosion Limit</b>	No Data Available
<b>Upper Explosion Limit</b>	No Data Available
<b>Auto Ignition Temperature</b>	No Data Available
<b>Hazchem Code</b>	No Data Available

**6. ACCIDENTAL RELEASE MEASURES**

<b>General Response Procedure</b>	Ensure adequate ventilation. Do not touch or walk through spilled materials. Avoid dust formation Avoid breathing dust and contact with eyes, skin and clothing.
<b>Clean Up Procedures</b>	Collect material (vacuum, shovel or sweep up) and place it in suitable containers for later disposal (see SECTION 13).
<b>Containment</b>	Stop leak if safe to do so - Prevent entry into waterways, drains or confined areas.
<b>Decontamination</b>	No information available.
<b>Environmental Precautionary Measures</b>	Prevent entry into drains and waterways.
<b>Evacuation Criteria</b>	Spill or leak area should be isolated immediately. Keep unauthorised personnel away.
<b>Personal Precautionary Measures</b>	Use personal protective equipment as required (see SECTION 8).

**7. HANDLING AND STORAGE**

<b>Handling</b>	Safety showers and eyewash facilities should be provided within the immediate work area for emergency use. Ensure adequate ventilation. Obtain special instructions before use - Do not handle until all safety precautions have been read and understood. Avoid dust formation and accumulation. Avoid breathing dust and contact with eyes, skin and clothing. Do not ingest. Use personal protective equipment as required (see SECTION 8). Avoid exposure to heat/overheating.
<b>Storage</b>	Store in a cool, dry and well-ventilated place. Keep containers tightly closed when not in use. Protect from moisture. Avoid exposure to heat. Keep away from foodstuffs and incompatible materials (see SECTION 10). Store locked up.
<b>Container</b>	Keep in the original container.

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

<b>General</b>	No specific exposure standards are available for this product. For dusts from solid substances without specific occupational exposure standards: - Safe Work Australia Exposure Standard (Nuisance dusts): 8 hr TWA = 10 mg/m <sup>3</sup> (measured as inhalable dust). - New Zealand WES (Particulates not otherwise classified): TWA = 10 mg/m <sup>3</sup> ; TWA = 3 mg/m <sup>3</sup> (respirable dust).
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<b>Exposure Limits</b>	No Data Available
<b>Biological Limits</b>	No information available.
<b>Engineering Measures</b>	A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, prevent dispersion of it into the general work area.
<b>Personal Protection Equipment</b>	<ul style="list-style-type: none"> <li>- Respiratory protection: Wear respiratory protection in case of inadequate ventilation or if an inhalation risk exists. Recommended: Dust mask/particulate respirator (refer to AS/NZS 1715 &amp; 1716).</li> <li>- Eye/face protection: Wear appropriate eye protection to avoid eye contact. Recommended: Safety glasses with side-shields or goggles.</li> <li>- Hand protection: Handle with gloves. Recommended: Impervious gloves, e.g. Nitrile rubber.</li> <li>- Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact. Recommended: Impervious clothing; overalls, safety shoes.</li> </ul>
<b>Special Hazards Precautions</b>	No information available.
<b>Work Hygienic Practices</b>	Do not eat, drink or smoke when using this product. Wash hands before breaks and at the end of the workday. Take off contaminated clothing and wash before storage or reuse.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Physical State</b>	Solid
<b>Appearance</b>	Crystalline, granular
<b>Odour</b>	Odourless
<b>Colour</b>	White
<b>pH</b>	6.1 (0.1% soln); 5.1 (1.0% soln); 3.7 (4.7% soln)
<b>Vapour Pressure</b>	Negligible (@ 20 °C)
<b>Relative Vapour Density</b>	No Data Available
<b>Boiling Point</b>	300 °C (dehydration temperature)
<b>Melting Point</b>	168 - 171 °C
<b>Freezing Point</b>	No Data Available
<b>Solubility</b>	Soluble in water (4.7% @ 20 °C)
<b>Specific Gravity</b>	1.49 - 1.51
<b>Flash Point</b>	No Data Available
<b>Auto Ignition Temp</b>	No Data Available
<b>Evaporation Rate</b>	No Data Available
<b>Bulk Density</b>	780 - 815 kg/m <sup>3</sup>
<b>Corrosion Rate</b>	No Data Available
<b>Decomposition Temperature</b>	No Data Available
<b>Density</b>	1.49 - 1.51 g/cm <sup>3</sup>
<b>Specific Heat</b>	No Data Available
<b>Molecular Weight</b>	61.83 g/mol
<b>Net Propellant Weight</b>	No Data Available
<b>Octanol Water Coefficient</b>	No Data Available
<b>Particle Size</b>	No Data Available
<b>Partition Coefficient</b>	No Data Available
<b>Saturated Vapour Concentration</b>	No Data Available
<b>Vapour Temperature</b>	No Data Available
<b>Viscosity</b>	No Data Available
<b>Volatile Percent</b>	No Data Available
<b>VOC Volume</b>	No Data Available
<b>Additional Characteristics</b>	No information available.
<b>Potential for Dust Explosion</b>	Boric acid is not flammable, combustible or explosive.



<b>Fast or Intensely Burning Characteristics</b>	No information available.
<b>Flame Propagation or Burning Rate of Solid Materials</b>	No information available.
<b>Non-Flammables That Could Contribute Unusual Hazards to a Fire</b>	No information available.
<b>Properties That May Initiate or Contribute to Fire Intensity</b>	Non-combustible; Material does not burn.
<b>Reactions That Release Gases or Vapours</b>	Fire or heat may produce irritating and/or toxic fumes, including Boron oxides.
<b>Release of Invisible Flammable Vapours and Gases</b>	Reaction with strong reducing agents, such as metal hydrides or alkali metals, will generate hydrogen gas which could create an explosive hazard.

## 10. STABILITY AND REACTIVITY

<b>General Information</b>	Boric acid reacts as a weak acid which may cause corrosion of base metals. Reaction with strong reducing agents, such as metal hydrides or alkali metals, will generate hydrogen gas which could create an explosive hazard.
<b>Chemical Stability</b>	Boric acid is a stable product, but when heated it loses water, first forming metaboric acid (HBO <sub>2</sub> ), and on further heating it is converted into boric oxide (B <sub>2</sub> O <sub>3</sub> ).
<b>Conditions to Avoid</b>	Avoid dust formation. Avoid exposure to moisture. Avoid exposure to heat/overheating.
<b>Materials to Avoid</b>	Incompatible/reactive with strong reducing agents, base metals.
<b>Hazardous Decomposition Products</b>	Fire or heat may produce irritating and/or toxic fumes, including Boron oxides.
<b>Hazardous Polymerisation</b>	No information available.

## 11. TOXICOLOGICAL INFORMATION

<b>General Information</b>	<ul style="list-style-type: none"> <li>- Acute toxicity: May be harmful if swallowed. Ingestion (or absorption) may cause nausea, vomiting, diarrhea, abdominal cramps; central nervous system (CNS) depression, ataxia and convulsions.</li> <li>- Skin corrosion/irritation: Non-irritant.</li> <li>- Eye damage/irritation: May cause eye irritation due to physical exposure to dust.</li> <li>- Respiratory/skin sensitisation: Not a skin sensitiser.</li> <li>- Germ cell mutagenicity: Not considered to have mutagenic or genotoxic potential.</li> <li>- Carcinogenicity: Not likely to be carcinogenic.</li> <li>- Reproductive toxicity: May damage fertility. May damage the unborn child. Animal studies have demonstrated effects on testes, foetal weight loss and minor skeletal variations. However, (limited) epidemiological studies of workers and general populations exposed to boron show no reproductive or developmental effects [NICNAS].</li> <li>- STOT (single exposure): Respiratory effects following inhalation of Boric acid dusts include nasal and eye irritation, throat irritation, coughing and breathlessness; these effects are most likely due to the physical exposure to dust; not considered a 'serious irritation to the respiratory tract' [NICNAS].</li> <li>- STOT (repeated exposure): The main target organ for boron toxicity are the testes, leading to reproductive and developmental adverse effects. Adverse haematological effects have also been noted.</li> <li>- Aspiration toxicity: No information available.</li> </ul>
<b>Acute</b>	
<b>Ingestion</b>	Acute toxicity (Oral): - LD50, Rats: 3,500 - 4,100 mg/kg bw.
<b>Other</b>	Acute toxicity (Dermal): - LD50, Rabbits: >2,000 mg/kg bw.
<b>Inhalation</b>	Acute toxicity (Inhalation): - LC50, Rats: >2 mg/L
<b>Carcinogen Category</b>	None

## 12. ECOLOGICAL INFORMATION



<b>Ecotoxicity</b>	Aquatic toxicity: - LC50, Fish (Pimephales promelas (Fathered minnow)): 79.7 mg B/L or 456 mg Boric acid/L (96 h). - EC50, Invertebrates (Daphnia magna): 133 mg B/L or 760 mg Boric acid/L (48 h). - EC50, Algae (Pseudokirchneriella subcapitata) biomass: 40 mg B/L or 229 mg Boric acid/L (72 h).
<b>Persistence/Degradability</b>	Boron is naturally occurring and ubiquitous in the environment. Boric acid decomposes in the environment to natural borate.
<b>Mobility</b>	The product is soluble in water and is leachable through normal soil.
<b>Environmental Fate</b>	Boron is an essential micronutrient for healthy growth of plants, however, 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. Prevent entry into drains and waterways.
<b>Bioaccumulation Potential</b>	Not significantly bioaccumulative.
<b>Environmental Impact</b>	No Data Available

**13. DISPOSAL CONSIDERATIONS**

<b>General Information</b>	Dispose of contents/container via a licensed disposal company and in accordance with local/regional/national regulations.
<b>Special Precautions for Land Fill</b>	Small quantities of boric acid can usually be disposed of at landfill sites. Tonnage quantities of product are not recommended to be sent to landfills.

**14. TRANSPORT INFORMATION**

**Land Transport (New Zealand)**

NZS5433

<b>Proper Shipping Name</b>	Boric Acid
<b>Class</b>	No Data Available
<b>Subsidiary Risk(s)</b>	No Data Available
<b>UN Number</b>	No Data Available
<b>Hazchem</b>	No Data Available
<b>Pack Group</b>	No Data Available
<b>Special Provision</b>	No Data Available
<b>Comments</b>	NON-DANGEROUS GOODS: Not regulated for LAND transport.

**Sea Transport**

IMDG Code

<b>Proper Shipping Name</b>	Boric Acid
<b>Class</b>	No Data Available
<b>Subsidiary Risk(s)</b>	No Data Available
<b>UN Number</b>	No Data Available
<b>Hazchem</b>	No Data Available
<b>Pack Group</b>	No Data Available
<b>Special Provision</b>	No Data Available
<b>EMS</b>	No Data Available
<b>Marine Pollutant</b>	No
<b>Comments</b>	NON-DANGEROUS GOODS: Not regulated for SEA transport.



**Air Transport**

IATA DGR

<b>Proper Shipping Name</b>	Boric Acid
<b>Class</b>	No Data Available
<b>Subsidiary Risk(s)</b>	No Data Available
<b>UN Number</b>	No Data Available
<b>Hazchem</b>	No Data Available
<b>Pack Group</b>	No Data Available
<b>Special Provision</b>	No Data Available
<b>Comments</b>	NON-DANGEROUS GOODS: Not regulated for AIR transport.

**15. REGULATORY INFORMATION**

<b>General Information</b>	No Data Available
<b>Poisons Schedule (Aust)</b>	Schedule 5

**Environmental Protection Authority (New Zealand)**

Hazardous Substances and New Organisms Amendment Act 2015

<b>Approval Code</b>	HSR002995
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**National/Regional Inventories**

<b>Australia (AICS)</b>	Listed
<b>Canada (DSL)</b>	Not Determined
<b>Canada (NDSL)</b>	Not Determined
<b>China (IECSC)</b>	Listed
<b>Europe (EINECS)</b>	233-139-2
<b>Europe (REACH)</b>	Registered
<b>Japan (ENCS/METI)</b>	Listed
<b>Korea (KECI)</b>	Listed
<b>Malaysia (EHS Register)</b>	Not Determined
<b>New Zealand (NZIoC)</b>	Listed
<b>Philippines (PICCS)</b>	Listed
<b>Switzerland (Giftliste 1)</b>	Not Determined
<b>Switzerland (Inventory of Notified Substances)</b>	Not Determined
<b>Taiwan (NCSR)</b>	Not Determined
<b>USA (TSCA)</b>	Not Determined



## 16. OTHER INFORMATION

## Related Product Codes

BOACID1000, BOACID1001, BOACID1002, BOACID1003, BOACID1004, BOACID1005, BOACID1006, BOACID1007, BOACID1008, BOACID1009, BOACID1100, BOACID1200, BOACID1201, BOACID1202, BOACID1203, BOACID1204, BOACID1205, BOACID1206, BOACID1207, BOACID1300, BOACID1301, BOACID1400, BOACID1500, BOACID1501, BOACID1502, BOACID1503, BOACID1504, BOACID1505, BOACID1506, BOACID1600, BOACID1601, BOACID1602, BOACID1603, BOACID1604, BOACID1700, BOACID1701, BOACID1702, BOACID1800, BOACID1801, BOACID1802, BOACID1803, BOACID1804, BOACID1805, BOACID1806, BOACID1807, BOACID1808, BOACID1809, BOACID1810, BOACID1811, BOACID1812, BOACID1813, BOACID1900, BOACID1901, BOACID2000, BOACID2001, BOACID2002, BOACID2003, BOACID2100, BOACID2200, BOACID2300, BOACID2400, BOACID2401, BOACID2500, BOACID2600, BOACID2700, BOACID2800, BOACID2900, BOACID3000, BOACID3001, BOACID3200, BOACID3300, BOACID3500, BOACID3700, BOACID3701, BOACID3800, BOACID4000, BOACID4001, BOACID4002, BOACID4003, BOACID4100, BOACID4200, BOACID4400, BOACID4500, BOACID4501, BOACID4800, BOACID4900, BOACID5000, BOACID5100, BOACID5500, BOACID6000, BOACID6500, BOACID6900, BOACID7000, BOACID7001, BOACID7100, BOACID7200, BOACID7300, BOACID7301, BOACID7302, BOACID7303, BOACID7304, BOACID7400, BOACID7401, BOACID7500, BOACID7501, BOACID7502, BOACID7503, BOACID7505, BOACID7600, BOACID7601, BOACID7602, BOACID7620, BOACID7622, BOACID7630, BOACID7700, BOACID7701, BOACID7702, BOACID7703, BOACID7704, BOACID7705, BOACID7706, BOACID7707, BOACID7708, BOACID7709, BOACID7710, BOACID7711, BOACID7712, BOACID7713, BOACID7714, BOACID7715, BOACID7716, BOACID7717, BOACID7718, BOACID7719, BOACID7720, BOACID7721, BOACID7722, BOACID7723, BOACID7724, BOACID7800, BOACID8000, BOACID8001, BOACID8002, BOACID8003, BOACID8004, BOACID8500, BOACID8800, BOACID9000, BOACID9001, BOACID9100, BOACID9200, BOACID9201, BOACID9300, BOACID9301, BOACID9400, BOACID9500, BOACID9600, BOACID9610, BOACID9700, BOACID9701, BOACID9800, BOACID9805, BOACID9807, BOACID9820, BOACID9900, BOACID9901

## Revision

4

## Revision Date

14 Jun 2018

## Reason for Issue

Updated SDS

## Key/Legend

&lt; Less Than

&gt; Greater Than

**AICS** Australian Inventory of Chemical Substances**atm** Atmosphere**CAS** Chemical Abstracts Service (Registry Number)**cm<sup>2</sup>** Square Centimetres**CO<sub>2</sub>** Carbon Dioxide**COD** Chemical Oxygen Demand**deg C (°C)** Degrees Celcius**EPA (New Zealand)** Environmental Protection Authority of New Zealand**deg F (°F)** Degrees Fahrenheit**g** Grams**g/cm<sup>3</sup>** Grams per Cubic Centimetre**g/l** Grams per Litre**HSNO** Hazardous Substance and New Organism**IDLH** Immediately Dangerous to Life and Health**immiscible** Liquids are insoluble in each other.**inHg** Inch of Mercury**inH<sub>2</sub>O** Inch of Water**K** Kelvin**kg** Kilogram**kg/m<sup>3</sup>** Kilograms per Cubic Metre**lb** Pound**LC<sub>50</sub>** LC stands for lethal concentration. LC<sub>50</sub> is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours.**LD<sub>50</sub>** LD stands for Lethal Dose. LD<sub>50</sub> is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals.**ltr** or **L** Litre**m<sup>3</sup>** Cubic Metre**mbar** Millibar**mg** Milligram**mg/24H** Milligrams per 24 Hours**mg/kg** Milligrams per Kilogram**mg/m<sup>3</sup>** Milligrams per Cubic Metre**Misc** or **Miscible** Liquids form one homogeneous liquid phase regardless of the amount of either component present.**mm** Millimetre**mmH<sub>2</sub>O** Millimetres of Water**mPa.s** Millipascals per Second**N/A** Not Applicable**NIOSH** National Institute for Occupational Safety and Health



**NOHSC** National Occupational Health and Safety Commission  
**OECD** Organisation for Economic Co-operation and Development  
**Oz** Ounce  
**PEL** Permissible Exposure Limit  
**Pa** Pascal  
**ppb** Parts per Billion  
**ppm** Parts per Million  
**ppm/2h** Parts per Million per 2 Hours  
**ppm/6h** Parts per Million per 6 Hours  
**psi** Pounds per Square Inch  
**R** Rankine  
**RCP** Reciprocal Calculation Procedure  
**STEL** Short Term Exposure Limit  
**TLV** Threshold Limit Value  
**tne** Tonne  
**TWA** Time Weighted Average  
**ug/24H** Micrograms per 24 Hours  
**UN** United Nations  
**wt** Weight

