

### 1. IDENTIFICATION

<b>Product Name</b>	<b>Disodium Octaborate, Tetrahydrate</b>
<b>Other Names</b>	Boron Sodium Oxide, Tetrahydrate; Listed under the CAS No. representing the Anhydrous form of this organic salt: 12008-41-2: BORIC ACID, (H <sub>2</sub> B <sub>8</sub> O <sub>13</sub> ), DISODIUM SALT
<b>Uses</b>	Micronutrient in agriculture
<b>Chemical Family</b>	Inorganic borates
<b>Chemical Formula</b>	Na <sub>2</sub> B <sub>8</sub> O <sub>13</sub> .4H <sub>2</sub> O
<b>Chemical Name</b>	Disodium Octaborate, Tetrahydrate
<b>Product Description</b>	EMERGENCY OVERVIEW: This product is a white, odourless, powdered substance that is not flammable, combustible, or explosive and has low acute oral and dermal toxicity.

### 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)** Not scheduled

### Globally Harmonised System

<b>Hazard Classification</b>	Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)
<b>Hazard Categories</b>	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

6.4A

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
Disodium Octaborate, Tetrahydrate	No Data Available	12280-03-4	>98.0 %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed

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.

Eye

Immediately flush eyes with plenty of water for 15 minutes, holding eyelids open. If irritation persists for more than 30 minutes, seek medical attention.

Skin

Remove contaminated clothing. Wash affected area with soap and plenty of water. If irritation persists, seek medical attention.

Inhaled

Remove victim from exposure to fresh air. If not breathing, apply artificial respiration. If breathing is difficult, give oxygen. If symptoms persist, seek medical attention.

Advice to Doctor

Treat symptomatically based on judgement of doctor and individual reactions of patient.

Medical Conditions Aggravated by Exposure

No information available on medical conditions aggravated by exposure to this product.  
 CANCER: This product is not a known carcinogen.  
 SIGNS AND SYMPTOMS OF EXPOSURE: Symptoms of accidental over-exposure to this product might include nausea, vomiting, and diarrhoea, with delayed effects of skin redness, and peeling.



**5. FIRE FIGHTING MEASURES**

<b>General Measures</b>	Clear fire area of all non-emergency personnel. Stay upwind. Keep out of low areas. Eliminate ignition sources. Move fire exposed containers from fire area if it can be done without risk.
<b>Flammability Conditions</b>	Product is non-flammable, combustible or explosive. The product is itself a flame retardant.
<b>Extinguishing Media</b>	In case of fire, use appropriate extinguishing media most suitable for surrounding fire conditions.
<b>Fire and Explosion Hazard</b>	None, because Actibor 20 is not flammable combustible or explosive. The product is itself a flame retardant.
<b>Hazardous Products of Combustion</b>	No information available on hazardous decomposition products.
<b>Special Fire Fighting Instructions</b>	Do NOT allow fire fighting water to reach waterways, drains or sewers. Store fire fighting water for treatment.
<b>Personal Protective Equipment</b>	Fire fighters should wear a positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots and gloves).
<b>Flash Point</b>	Non flammable
<b>Lower Explosion Limit</b>	Not explosive
<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>	Avoid accidents, clean up immediately. Slippery when spilled. Eliminate all sources of ignition. Increase ventilation. Avoid generating dust. Stop leak if safe to do so. Isolate the danger area. Use clean, non-sparking tools and equipment.
<b>Clean Up Procedures</b>	Contain and sweep/shovel up spills with dust binding material or use an industrial vacuum cleaner. Transfer to a suitable, labelled container and dispose of promptly as hazardous waste. Land spell: Vacuum, Shovel or sweep up and place in containers for disposal in accordance with applicable local regulations. Avoid contamination of water bodies during clean up and disposal. Spillage into water: Where possible, remove any intact containers from the water. 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.
<b>Containment</b>	Stop leak if safe to do so. Isolate the danger area.
<b>Environmental Precautionary Measures</b>	This product is a water-soluble white powder that may, at high concentrations cause damage to trees or vegetation by root absorption. Do NOT let product reach drains or waterways. If product does enter a waterway, advise the Environmental Protection Authority or your local Waste Management. This product is a non-hazardous waste when spilled or disposed of, as defined in the Resouse Conservation and Recovery Act (RCRA) regulations (40 CFR 261).
<b>Evacuation Criteria</b>	Evacuate all unnecessary personnel.
<b>Personal Precautionary Measures</b>	Personnel involved in the clean up should wear full protective clothing as listed in section 8.

**7. HANDLING AND STORAGE**

<b>Handling</b>	No special handling precautions are required, but dry, indoor storage is recommended. To maintain package integrity and to minimize caking of the product, bags should be handled on a first-in, first-out basis. Good housekeeping procedures should be followed to minimize dust generation and accumulation. Ensure an eye bath and safety shower are available and ready for use. Observe good personal hygiene practices and recommended procedures. Wash thoroughly after handling. Avoid contact with eyes, skin and clothing. Do not inhale product dust/fumes.
<b>Storage</b>	Store in a cool, dry, well-ventilated area. Keep containers tightly closed when not in use. Inspect regularly for deficiencies such as damage or leaks. Protect against physical damage. Store away from incompatible materials as listed in section 10. Storage temperature: ambient. Storage Pressure: atmospheric. Special sensitivity: Moisture (caking) . This product is not classified dangerous for transport according to The Australian Code for the Transport of Dangerous Goods By Road and Rail.
<b>Container</b>	Store in original packaging as approved by manufacturer.



**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

<b>General</b>	No exposure standard has been established for this product by the Australian Safety and Compensation Council (ASCC). However, the exposure standard for dust not otherwise specified is 10mg/m <sup>3</sup> (for inspirable dust) and 3mg/m <sup>3</sup> (for respirable dust). NOTE: The exposure value at the TWA is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week. These exposure standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.
<b>Exposure Limits</b>	No Data Available
<b>Biological Limits</b>	No information available on biological limit values for this product.
<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, preventing dispersion of it into the general work area.
<b>Personal Protection Equipment</b>	RESPIRATOR: Wear an P1 or P2 particulate respirator when handling this product (AS1715/1716). EYES: Safety glasses with side shields (AS1336/1337). HANDS: protective gloves (AS2161). CLOTHING: Long-sleeved protective coveralls and safety footwear (AS3765/2210).
<b>Work Hygienic Practices</b>	No Data Available

**9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>Physical State</b>	Solid
<b>Appearance</b>	Powder
<b>Odour</b>	Odourless
<b>Colour</b>	White
<b>pH</b>	7.75 10% solution
<b>Vapour Pressure</b>	Negligible (@ 20 °C)
<b>Relative Vapour Density</b>	No Data Available
<b>Boiling Point</b>	No Data Available
<b>Melting Point</b>	815 °C
<b>Freezing Point</b>	No Data Available
<b>Solubility</b>	9.74% 20°C
<b>Specific Gravity</b>	No Data Available
<b>Flash Point</b>	Non flammable
<b>Auto Ignition Temp</b>	No Data Available
<b>Evaporation Rate</b>	No Data Available
<b>Bulk Density</b>	0.410 - 0.570 g/cm <sup>3</sup>
<b>Corrosion Rate</b>	No Data Available
<b>Decomposition Temperature</b>	No Data Available
<b>Density</b>	No Data Available
<b>Specific Heat</b>	No Data Available
<b>Molecular Weight</b>	412.52 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 Data Available
<b>Potential for Dust Explosion</b>	No Data Available
<b>Fast or Intensely Burning Characteristics</b>	No Data Available
<b>Flame Propagation or Burning Rate of Solid Materials</b>	No Data Available
<b>Non-Flammables That Could Contribute Unusual Hazards to a Fire</b>	No Data Available
<b>Properties That May Initiate or Contribute to Fire Intensity</b>	No Data Available
<b>Reactions That Release Gases or Vapours</b>	Reaction with incompatible products (as detailed in section 10) will generate hydrogen gas which could create an explosion hazard.
<b>Release of Invisible Flammable Vapours and Gases</b>	No Data Available

## 10. STABILITY AND REACTIVITY

<b>Chemical Stability</b>	Product is stable under normal conditions of use, storage and temperature.
<b>Conditions to Avoid</b>	Reaction with strong reducing agents, such as metal hydrides or alkali metals, will generate hydrogen gas, which could create an explosive hazard.
<b>Materials to Avoid</b>	Incompatible with strong reducing agents such as metal anhydrides, or alkali metals.
<b>Hazardous Decomposition Products</b>	No information available on hazardous decomposition products. Reaction with incompatible products will generate hydrogen gas which could create an explosion hazard.
<b>Hazardous Polymerisation</b>	No Data Available

## 11. TOXICOLOGICAL INFORMATION

<b>General Information</b>	<p>POTENTIAL HEALTH EFFECTS:                  Routes of exposure: Inhalation is the most significant route of exposure in occupational and other settings. Dermal exposure is not usually a concern because this product is poorly absorbed through intact skin.</p> <p>SIGNS AND SYMPTOMS OF EXPOSURE:                  Symptoms of accidental over-exposure to this product might include nausea, vomiting, and diarrhoea, with delayed effects of skin redness and peeling.</p> <p>CANCER: This product is not a known carcinogen.</p> <p>Acute toxicity:                  Inhalation: Low acute inhalation toxicity; LC50 in rats is greater than 2.0 mg/L (or g/m<sup>3</sup>).                  Ingestion: Low acute oral toxicity; LD50 in rats is 2,550 mg/kg of body weight.                  Skin/dermal: Low acute dermal toxicity; LD50 in rabbits is greater than 2,000 mg/kg of body weight. This product is poorly absorbed through intact skin.                  Skin irritation: Non-irritant                  Eye irritation: Draize test in rabbits produced mild eye irritation effects. Years of occupational exposure to this product indicates no adverse effects on human eye. Therefore, this product is not considered to be a human eye irritant in normal industrial use.                  Sensitization: this product is not a skin sensitizer</p> <p>Human Data:                  Human epidemiological studies show no increase in pulmonary disease in occupational populations with chronic exposures to boric acid dust and sodium borate dust. Recent epidemiological studies under the conditions of normal occupational exposure to borate dust indicated no effect on fertility.</p>
<b>Eyelirritant</b>	Non-irritating to eyes in normal use.
<b>Ingestion</b>	This product is not intended for ingestion. This product has a low acute toxicity. Small amounts (i.e a teaspoon full) swallowed accidentally are not likely to cause effects; swallowing larger amounts than that may cause gastrointestinal symptoms.



<b>Inhalation</b>	Inhalation is the most significant route of exposure in occupational and other settings. Occasional mild irritation effects to nose and throat may occur from inhalation of dust at levels greater than 10mg/m <sup>3</sup> .
<b>SkinIrritant</b>	This product does not cause irritation. Dermal exposure is not usually a concern because this product is poorly absorbed through intact skin.
<b>Carcinogen Category</b>	No Data Available

## 12. ECOLOGICAL INFORMATION

<b>Ecotoxicity</b>	<p>Large amounts of this product can be harmful to plants and other species. Therefore, releases to the environment should be minimized.</p> <p>General: Boron (B) is the element in disodium octaborate tetrahydrate which is used by convention to report borate product ecological effects. It occurs naturally in seawater at an average concentration of 5 mg B/L and generally occurs in freshwater at concentrations up to 1 mg B/L. In dilute aqueous solutions the predominant boron species present is undissociated boric acid. To convert disodium octaborate tetrahydrate into the equivalent boron (B) content, multiply by 0.2096.</p> <p>Phytotoxicity: Boron is an essential micronutrient for healthy growth of plants; however, it can be harmful to boron sensitive plants in high quantities.</p> <p>Algal toxicity: Green algae, <i>Scenedesmus subspicatus</i> 96-hr EC10 = 24 mg B/L</p> <p>Invertebrate toxicity: Daphnids, <i>Daphnia magna</i> Straus 24-hr EC50 = 242 mg B/L Test substance: sodium tetraborate</p> <p>Fish toxicity: Seawater: Dab, <i>Limanda limanda</i> 96-hr LC50 = 74 mg B/L</p> <p>Freshwater: Rainbow trout, <i>S. gairdneri</i> (embryo-larval stage) 24-day LC50 = 88 mg B/L 32-day LC50 = 54 mg B/L Goldfish, <i>Carassius auratus</i> (embryo-larval stage) 7-day LC50 = 65 mg B/L 3-day LC50 = 71 mg B/L</p>
<b>Persistence/Degradability</b>	Persistence/degradation: Boron is naturally occurring and ubiquitous in the environment. This product decomposes in the environment to natural borate.
<b>Mobility</b>	This product is soluble in water and is leachable through normal soil.
<b>Environmental Fate</b>	No Data Available
<b>Bioaccumulation Potential</b>	Octanol/water partition coefficient: No value. In aqueous solution disodium octaborate tetrahydrate is converted substantially into undissociated boric acid.
<b>Environmental Impact</b>	No Data Available

## 13. DISPOSAL CONSIDERATIONS

<b>General Information</b>	Dispose of in accordance with all local, state and federal regulations. All empty packaging should be disposed of in accordance with Local, State, and Federal Regulations or recycled/reconditioned at an approved facility.
<b>Special Precautions for Land Fill</b>	Contact a specialist disposal company or the local waste regulator for advice. Small quantities of this material can usually be disposed of at landfill sites. Tonnage quantities of product should, if possible, be used for an appropriate application.

## 14. TRANSPORT INFORMATION



**Land Transport (New Zealand)**

NZS5433

<b>Proper Shipping Name</b>	DISODIUM OCTABORATE, TETRAHYDRATE
<b>Class</b>	No Data Available
<b>Subsidiary Risk(s)</b>	No Data Available
	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

**Sea Transport**

IMDG Code

<b>Proper Shipping Name</b>	DISODIUM OCTABORATE, TETRAHYDRATE
<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

**Air Transport**

IATA DGR

<b>Proper Shipping Name</b>	DISODIUM OCTABORATE, TETRAHYDRATE
<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

**15. REGULATORY INFORMATION**

<b>General Information</b>	No Data Available
<b>Poisons Schedule (Aust)</b>	Not scheduled

**Environmental Protection Authority (New Zealand)**  
 Hazardous Substances and New Organisms Amendment Act 2015

<b>Approval Code</b>	HSR003137
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**National/Regional Inventories**



<b>Australia (AICS)</b>	Listed
<b>Canada (DSL)</b>	Listed
<b>Canada (NDSL)</b>	Not Determined
<b>China (IECSC)</b>	Not Determined
<b>Europe (EINECS)</b>	234-541-0
<b>Europe (REACH)</b>	Not Determined
<b>Japan (ENCS/METI)</b>	Not Determined
<b>Korea (KECI)</b>	9312-3213
<b>Malaysia (EHS Register)</b>	Not Determined
<b>New Zealand (NZIoC)</b>	Listed
<b>Philippines (PICCS)</b>	Not Determined
<b>Switzerland (Giftliste 1)</b>	Not Determined
<b>Switzerland (Inventory of Notified Substances)</b>	Not Determined
<b>Taiwan (NCSF)</b>	Not Determined
<b>USA (TSCA)</b>	Listed

## 16. OTHER INFORMATION

<b>Related Product Codes</b>	MULTIB1000, MULTIB1001, MULTIB1002, MULTIB1003, MULTIB1004, MULTIB1005, MULTIB1006, MULTIB1007, MULTIB1008, MULTIB2000, MULTIB2100, MULTIB2200, MULTIB2500, MULTIB2501, MULTIB2600, MULTIB2601, MULTIB2700, MULTIB2701, MULTIB2800, MULTIB3300, MULTIB3400, MULTIB4000, MULTIB4001, MULTIB4500, MULTIB5000, MULTIB5500, MULTIB5501, MULTIB6000, MULTIB6001, MULTIB6500, MULTIB6501, MULTIB7000, MULTIB7100, MULTIB2801, MULTIB1800, MULTIB1801, MULTIB1802, MULTIB1803, MULTIB1804, MULTIB1805, MULTIB1806, MULTIB1807, MULTIB2750, MULTIB5510, MULTIB8000, MULTIB8010, MULTIB2751, MULTIB6510, MULTIB6505
<b>Revision</b>	3
<b>Revision Date</b>	01 Jan 2015
<b>Reason for Issue</b>	update sds
<b>Key/Legend</b>	<p>&lt; Less Than &gt; Greater Than  <b>AICS</b> Australian Inventory of Chemical Substances  <b>atm</b> Atmosphere  <b>CAS</b> Chemical Abstracts Service (Registry Number)  <b>cm<sup>2</sup></b> Square Centimetres  <b>CO<sub>2</sub></b> Carbon Dioxide  <b>COD</b> Chemical Oxygen Demand  <b>deg C (°C)</b> Degrees Celcius  <b>EPA (New Zealand)</b> Environmental Protection Authority of New Zealand  <b>deg F (°F)</b> Degrees Farenheit  <b>g</b> Grams  <b>g/cm<sup>3</sup></b> Grams per Cubic Centimetre  <b>g/l</b> Grams per Litre  <b>HSNO</b> Hazardous Substance and New Organism  <b>IDLH</b> Immediately Dangerous to Life and Health  <b>immiscible</b> Liquids are insoluable in each other.  <b>inHg</b> Inch of Mercury  <b>inH<sub>2</sub>O</b> Inch of Water  <b>K</b> Kelvin  <b>kg</b> Kilogram  <b>kg/m<sup>3</sup></b> Kilograms per Cubic Metre</p>





**lb** Pound

**LC50** LC stands for lethal concentration. LC50 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.

**LD50** LD stands for Lethal Dose. LD50 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

