1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product Name	**DISODIUM OCTABORATE, TETRAHYDRATE**
Other Names	Boron Sodium Oxide, Tetrahydrate
Uses	Micronutrient in agriculture
Chemical Family	Inorganic borates
Chemical Formula	$Na_2B_8O_{13}.4H_2O$
Chemical Name	Disodium Octaborate, Tetrahydrate
Product Description	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 Information

Australia	Location	Telephone	Ask For
Rural Liquid Fertilisers Pty Ltd	61 Dowd Street Welshpool WA 6106	+61 1800 753 000	Technical Officer

2. HAZARDS IDENTIFICATION

ADG Code	Non-Dangerous Goods according to the criteria of the Australian Dangerous Goods Code (ADG Code).
ASCC Hazardous Classification	Hazardous according to the criteria of ASCC [NOHSC:1008(2004)]
Categories	T Toxic Repr. Toxic for Reproduction Substance Category 2
Risk Phrases	R60 May impair fertility. R61 May cause harm to the unborn child.
Safety Phrases	
HSNO Hazard Classification	6.1E; 6.4A; 6.8B; 9.1D
Poisons Schedule (Aust)	No Data Available

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	Rinse mouth with water. Give water to drink. Do NOT induce vomiting. If vomtiting occurs, give further water. Seek medical advice.
Eyes	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

General Measures	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.
Flammability Conditions	Product is non-flammable, combustible or explosive. The product is itself a flame retardant.
Extinguishing Media	In case of fire, use appropriate extinguishing media most suitable for surrounding fire conditions.
Fire and Explosion Hazard	Non-flammable.
Hazardous Products of Combustion	No information available on hazardous decomposition products.
Special Fire Fighting Instruction	Do NOT allow fire fighting water to reach waterways, drains or sewers. Store fire fighting water for treatment.
Personal Protective Equipment	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).
Flash Point	No Data Available
Lower Explosion Limit	No Data Available
Upper Explosion Limit	No Data Available
Auto Ignition Temperature	No Data Available
Hazchem Code	No Data Available

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure	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.
Clean Up Procedures	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.

Containment	Stop leak if safe to do so. Isolate the danger area.
Environmental Precautionary Measures	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).
Evacuation Criteria	Evacuate all unnecessary personnel.
Personal Precautionary Measure	Personnel involved in the clean up should wear full protective clothing as listed in section 8.

7. HANDLING AND STORAGE

Handling	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.
Storage	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.
Container	Store in original packaging as approved by manufacturer.

8. EXPOSURE CONTROLS / PROTECTION

General	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/m3 (for inspirable dust) and 3mg/m3 (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.
Exposure Limits	No Data Available
Biological Limits	No information available on biological limit values for this product.
Engineering Measures	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. 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).
Personal Protection Equipment	No Data Available

9. PHYSICAL AND CHEMICAL PROPERTIES

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

10. STABILITY AND REACTIVITY

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

11. TOXICOLOGICAL INFORMATION

General Information

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.

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.

CANCER: This product is not a known carcinogen.

Acute toxicity:

Inhalation: Low acute inhalation toxicity; LC50 in rats is greater than 2.0 mg/L (or g/m3).

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.

Sensitisation: this product is not a skin sensitiser

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 epidemological studies under the conditions of normal occupational exposure to borate dust indicated no effect on fertility.

Eye Irritant	Non-irritating to eyes in normal use.
Ingestion	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.
Inhalation	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^3.
Skin Irritant	This product does not cause irritation. Dermal exposure is not usually a concern because this product is poorly absorbed through intact skin.
Carcinogen Category	0

12. ECOLOGICAL INFORMATION

Ecotoxicity

Large amounts of this product can be hamful to plants and other species. Therefore, releases to the environment should be minimised.

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.

Phytotoxicity: Boron is an essential micronutrient for healthy growth of plants; however, it can be harmful to boron sensitive plants in high quantities.

Algal toxicity:

Green algae, Scenedesmus subspicatus

96-hr EC10 = 24 mg B/L

Invertebrate toxicity:

Daphnids, Daphnia magna Straus

24-hr EC50 = 242 mg B/L

Test substance: sodium tetraborate

Fish toxicity:

Seawater:

Dab, Limanda limanda

96-hr LC50 = 74 mg B/L

Freshwater:

Rainbow trout, S. gairdneri (embryo-larval stage)

24-day LC50 = 88 mg B/L

32-day LC50 = 54 mg B/L

Goldfish, Carassius auratus (embryo-larval stage)

7-day LC50 = 65 mg B/L

3-day LC50 = 71 mg B/L

Persistence/Degradability

Persistence/degradation: Boron is naturally occurring and ubiquitous in the environment. This product decomposes in the environment to natural borate.

Mobility

This product is soluble in water and is leachable through normal soil.

Environmental Fate

No Data Available

Bioaccumulation Potential

Octanol/water partition coefficient: No value. In aqueous solution disodium octaborate tetrahydrate is converted substantially into undissociated boric acid.

Environmental Impact

No Data Available

13. DISPOSAL CONSIDERATIONS

General Information

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.

Special Precautions for Land Fill

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.

14. TRANSPORT INFORMATION

ADG Code	Non-Dangerous Goods according to the criteria of the Australian Dangerous Goods Code (ADG Code).
Air	
IATA	
Proper Shipping Name	DISODIUM OCTABORATE, TETRAHYDRATE
Class	No Data Available
Subsidiary Risk(s)	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Land	
Australia: ADG Code	
Proper Shipping Name	DISODIUM OCTABORATE, TETRAHYDRATE
Class	No Data Available
Subsidiary Risk(s)	No Data Available
EPG	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
New Zealand: NZS5433	
Proper Shipping Name	DISODIUM OCTABORATE, TETRAHYDRATE
Class	No Data Available
Subsidiary Risk(s)	No Data Available
EPG	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Sea	
IMDG	
Proper Shipping Name	DISODIUM OCTABORATE, TETRAHYDRATE
Class	No Data Available
Subsidiary Risk(s)	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
EMS	No Data Available
Marine Pollutant	No

15. REGULATORY INFORMATION

General Information	No Data Available
EPA (New Zealand)	**Hazardous Substances and New Organisms Act (HSNO)**
	Approval Code: HSR003137
Poisons Schedule (Aust)	No Data Available
AICS Name	Listed under the CAS No. representing the Anhydrous form of this organic salt: 12008-41-2: BORIC ACID, (H2B8013), DISODIUM SALT

16. OTHER INFORMATION

Key/Legend		
	<	Less Than
	>	Greater Than
	AICS	Australian Inventory of Chemical Substances
	atm	Atmosphere
	CAS	Chemical Abstracts Service (Registry Number)
	cm^2	Square Centimetres
	CO_2	Carbon Dioxide
	COD	Chemical Oxygen Demand
	deg C (°C)	Degrees Celcius
	EPA (New Zealand)	Environmental Protection Authority of New Zealand
	deg F (°F)	Degrees Farenheit
	g	Grams
	g/cm^3	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 insoluable in each other
	inHg	Inch of Mercury
	inH_2O	Inch of Water
	K	Kelvin
	kg	Kilogram
	kg/m^3	Kilograms per Cubic Metre
	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^3	Cubic Metre
	mbar	Millibar
	mg	Milligram
	mg/24H	Milligrams per 24 Hours
	mg/kg	Milligrams per Kilogram
	mg/m^3	Milligrams per Cubic Metre
	Misc or Miscible	Liquids form one homogeneous liquid phase regardless of the amount of either component present.
	mm	Millimetre
	mmH_2O	Millimetres of Water
	mPa.s	Millipascals per Second

N/A	Not Applicable
NIOSH	National Institute for Occupational Safety and Health
NOHSC	National Occupational Heath 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
torr	Millimetre of Mercury
TWA	Time Weighted Average
ug/24H	Micrograms per 24 Hours
UN	United Nations
wt	Weight

Disclaimer

This document has been prepared by Rural Liquid Fertilisers (RLF), and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue.

While RLF has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RLF accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

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Revision: 1
SDS Date: 05 October 2017
End of SDS