SAFETY DATA SHEET
BORAX DECAHYDRATE
REVISION 4, DATE 10 OCT 21

1. IDENTIFICATION

Product Name	**Borax Decahydrate**
Other Names	Borax; Disodium tetraborate, decahydrate
Uses	Industrial manufacturing; Ceramics; Detergent; Borosilicate glass; Insulation fiberglass.
Chemical Family	No Data Available
Chemical Formula	Na2B4O7.10H2O
Chemical Name	Sodium tetraborate, decahydrate
Product Description	No Data Available

Contact Details of the Supplier of this Safety Data Sheet

Organisation	Location	Telephone
Redox Ltd	2 Swettenham Road Minto NSW 2566 Australia	+61-2-97333000
Redox 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
Poisons Information Centre	Westmead NSW	1800-251525 131126
Chemcall	Australia	1800-127406 +64-4-9179888
Chemcall	Malaysia	+64-4-9179888
Chemcall	New Zealand	0800-243622 +64-4-9179888
National Poisons Centre	New Zealand	0800-764766
CHEMTREC	USA & Canada	1-800-424-9300 CN723420 +1-703-527-3887

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			Acute Toxicity (Oral) - Category 5 Serious Eye Damage/Irritation - Category 2A Toxic To Reproduction - Category 1B
Pictograms			
Signal Word			Danger
Hazard Statements		**H303**	May be harmful if swallowed.
		H319	Causes serious eye irritation.
		H360FD	May damage fertility. May damage the unborn child.
		NZ9.1	Designed for biocidal action
Precautionary Statements	Prevention	**P201**	Obtain special instructions before use.
		P280	Wear protective gloves/protective clothing/eye protection/face protection.
	Response	**P308 + P313**	IF exposed or concerned: Get medical attention.
		P312	Call a POISON CENTER or doctor if you feel unwell.
		P337 + P313	If eye irritation persists: Get medical 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.
	Storage	**P405**	Store locked up.
	Disposal	**P501**	Dispose of contents/container in accordance with local / regional / national / international regulations.

National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification	NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Safe Work Australia

National Guide for Classifying Hazardous Chemicals under the Model WHS Regulations

Hazard Classification	Hazardous according to the criteria of Safe Work Australia under Model WHS Regulations

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Borax decahydrate	Na2B4O7.10H2O	1303-96-4	<=100 %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed	IF SWALLOWED: Rinse mouth, then drink plenty of water. Call a Poison Centre or doctor/physician for advice if large amounts are swallowed (i.e. more than one teaspoon) or if you feel unwell.
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 it 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. Treat symptomatically. *Observation only is required for adult ingestion of less than 9 grams. For ingestion in excess of 9 grams, maintain adequate kidney function and force fluids. Gastric lavage is recommended for symptomatic patients only. Hemodialysis 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

General Measures	Do not attempt to take action without suitable protective equipment. If safe to do so, move undamaged containers from fire area. Cool containers with water spray until well after fire is out.
Flammability Conditions	Not combustible. *The product is itself a flame retardant.
Extinguishing Media	If material is involved in a fire, use water spray, dry powder, foam. *Any fire extinguishing media may be used on nearby fires.
Fire and Explosion Hazard	Not flammable or explosive.
Hazardous Products of Combustion	In case of fire, toxic fumes may be released.
Special Fire Fighting Instructions	Contain runoff from fire control or dilution water - Runoff may cause pollution.
Personal Protective Equipment	Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection.
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	Ensure adequate ventilation. Do not touch or walk through spilled material. Avoid generating dust. Avoid breathing dust and contact with eyes, skin and clothing.
Clean Up Procedures	Mechanically recover the product. Vacuum, shovel or sweep up and place in containers for disposal (see SECTION 13).
Containment	Stop leak if you can do it without risk. Prevent dust cloud. Prevent entry into waterways, sewers, basements or confined areas.

Decontamination	Ventilate spillage area.
Environmental Precautionary Measures	Avoid contamination of water bodies during clean up and disposal. Notify authorities if product enters sewers or public waters.
Evacuation Criteria	Spill or leak area should be isolated immediately. Keep unauthorised personnel away.
Personal Precautionary Measures	Do not attempt to take action without suitable protective equipment (see SECTION 8). *In case of exposure to high level of airborne dust, wear a personal respirator in compliance with national legislation.

7. HANDLING AND STORAGE

Handling	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. Minimise dust generation and accumulation. Avoid breathing dust and contact with eyes, skin and clothing. Do not ingest. Use personal protective equipment as required (see SECTION 8).
Storage	Store in a cool, dry and well-ventilated place, out of direct sunlight. Keep container tightly closed. Prevent any accidental damage to bags. Keep away from food/feedstuffs and incompatible materials (see SECTION 10). Store locked up.
Container	Keep in the original container.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General	For Borates, tetra, sodium salts (Decahydrate): - Safe Work Australia Exposure Standard: TWA = 5 mg/m3. - New Zealand Workplace Exposure Standard: TWA = 5 mg/m3.
Exposure Limits	No Data Available
Biological Limits	No information available.
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. Maintain air concentrations below occupational exposure standards.
Personal Protection Equipment	- Respiratory protection: Wear respiratory protection, in case of inadequate ventilation or prolonged exposure to dust. Recommended: Wear a dust mask/particulate respirator (refer to AS/NZS 1715 & 1716). - Eye/face protection: Wear appropriate eye protection to avoid eye contact. Recommended: Safety glasses. Goggles may be warranted if environment is excessively dusty. - Hand protection: Wear protective gloves. - Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact.
Special Hazards Precaustions	To maintain package integrity and to minimise caking of the product, bags should be handled on a first-in, first-out basis.
Work Hygienic Practices	Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Always wash hands after handling the product. Take off contaminated clothing and wash it before reuse. Separate working clothes from town clothes; Launder separately. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Solid
Appearance	Granular/powder
Odour	Odourless
Colour	White
pH	9.2 (1% soln.)
Vapour Pressure	Negligible (@ 20 °C)

Relative Vapour Density	No Data Available
Boiling Point	1,575 °C
Melting Point	741 °C
Freezing Point	No Data Available
Solubility	4.7% in water @ 20°C - 65.6% in water @ 100°C
Specific Gravity	1.71
Flash Point	No Data Available
Auto Ignition Temp	No Data Available
Evaporation Rate	No Data Available
Bulk Density	No Data Available
Corrosion Rate	No Data Available
Decomposition Temperature	60 °C (8H2O) - 320 °C (10H2O)
Density	No Data Available
Specific Heat	No Data Available
Molecular Weight	381.37 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 information available.
Potential for Dust Explosion	No information available.
Fast or Intensely Burning Characteristics	No information available.
Flame Propagation or Burning Rate of Solid Materials	No information available.
Non-Flammables That Could Contribute Unusual Hazards to a Fire	No information available.
Properties That May Initiate or Contribute to Fire Intensity	Not combustible. *The product is itself a flame retardant.
Reactions That Release Gases or Vapours	In case of fire, toxic fumes may be released.
Release of Invisible Flammable Vapours and Gases	Reaction with strong reducing agents, such as metal hydrides, acetic anhydride or alkali metals, will generate hydrogen gas which could create an explosive hazard.

10. STABILITY AND REACTIVITY

General Information	Borax decahydrate is a stable product, but when heated it loses water, eventually forming anhydrous borax (Na2B4O7). Reaction with strong reducing agents, such as metal hydrides, acetic anhydride or alkali metals, will generate hydrogen gas which could create an explosive hazard.
Chemical Stability	Stable under normal conditions.
Conditions to Avoid	Avoid generating dust. Avoid contact with incompatible materials.
Materials to Avoid	Incompatible/reactive with strong reducing agents, such as metal hydrides, acetic anhydride or alkali metals.

Hazardous Decomposition Products	Under normal conditions of storage and use, hazardous decomposition products should not be produced. In case of fire, toxic fumes may be released.
Hazardous Polymerisation	No information available.

11. TOXICOLOGICAL INFORMATION

General Information

- Acute toxicity: May be harmful if swallowed. Products containing Borax decahydrate are not intended for ingestion. Small amounts (e.g. a teaspoonful) swallowed accidentally are not likely to cause effects; swallowing amounts larger than that may cause gastrointestinal symptoms. Dermal exposure is not usually a concern because Borax decahydrate is poorly absorbed through intact skin. Symptoms of accidental over-exposure to Borax decahydrate have been associated with ingestion or absorption through large areas of damaged skin. These may include nausea, vomiting and diarrhoea, with delayed effects of skin redness and peeling.
- Skin corrosion/irritation: Non-irritant. Borax decahydrate does not cause irritation to intact skin.
- Eye damage/irritation: Causes serious eye irritation.
- Respiratory/skin sensitisation: Disodium tetraborate, decahydrate has no respiratory or skin sensitisation.
- Germ cell mutagenicity: Disodium tetraborate, decahydrate is not mutagenic.
- Carcinogenicity: Disodium tetraborate, decahydrate is not carcinogenic.
- Reproductive toxicity: Suspected of damaging the unborn child.
- STOT (single exposure): Occasional mild irritation effects to nose and throat may occur from inhalation of Borax decahydrate dusts at levels higher than 10 mg/m3.
- STOT (repeated exposure): No information available.
- Aspiration toxicity: Disodium tetraborate, decahydrate has no aspiration hazard.

Acute

Ingestion

Acute toxicity (Oral):
- LD50, Rats: >2,500 mg/kg bw. (Disodium tetraborate, anhydrous).

Other

Acute toxicity (Dermal):
- LD50, Rabbits: >2,000 mg/kg bw.

Chronic

Reproduction

Animal feeding studies in rat, mouse and dog, at high doses, have demonstrated effects on fertility and testes. Studies in rat, mouse and rabbit, at high doses, demonstrate developmental effects on the foetus including foetal weight loss and minor skeletal variations. The doses administered were many times in excess of those which humans would normally be exposed to. While boron has been shown to adversely affect male reproduction in laboratory animals, there is no clear evidence of male reproductive effects attributable to boron in studies of highly exposed workers. An epidemiology study under the conditions of normal occupational exposure to borate dusts indicated no effect on fertility. Human epidemiological studies show no increase in pulmonary disease in occupational populations with chronic exposures to borate dusts. A study conducted in Turkey with boron exposed mine workers showed that mean blood concentrations of the high exposure group is ~6 times and ~9 times lower than those of the highest no effect level of boron in blood with regard to developmental and reprotoxic effects (respectively) in rats. With those findings, no unfavourable effects of boron exposure on reproductive indicators are observed in humans.

Carcinogen Category

None

12. ECOLOGICAL INFORMATION

Ecotoxicity

Aquatic toxicity:
- LC50, Fish (Pimephales promelas (Fathead minnow)): 79.7 mg B/L or 703 mg Disodium tetraborate, decahydrate/L (96 h).
- LC50, Invertebrate (Daphnia/Daphnids (Daphnia magna)): 133 mg B/L or 1,173 mg Disodium tetraborate, decahydrate/L (48 h).
- EC50, Algae (Pseudokirchneriella subcapitata (Green algae)), Biomass: 40 mg B/L or 353 mg Disodium tetraborate, decahydrate/L (72 h).

Persistence/Degradability

Boron is naturally occurring and ubiquitous in the environment. Boron occurs naturally in sea water at an average concentration of 5 mg B/L and fresh water at 1 mg B/L or less. Disodium tetraborate, decahydrate decomposes in the environment to natural borate. In dilute aqueous solutions, the predominant boron species present is undissociated boric acid.

Mobility	The product is soluble in water and is leachable through normal soil.
Environmental Fate	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 minimize the amount of borate product released to the environment.
Bioaccumulation Potential	Not bioaccumulative.
Environmental Impact	No Data Available

13. DISPOSAL CONSIDERATIONS

General Information	Dispose of contents/container in accordance with local/regional/national regulations.
Special Precautions for Land Fill	Small quantities can usually be disposed of at landfill sites. No special disposal treatment is required, but local authorities should be consulted with regards to any specific local requirements. Tonnage quantities of product are not recommended to be sent to landfills. Such product should, if possible, be used for an appropriate application.

14. TRANSPORT INFORMATION

Land Transport (Australia)
ADG Code

Proper Shipping Name	Borax Decahydrate
Class	No Data Available
Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Land Transport (Malaysia)
ADR Code

Proper Shipping Name	Borax Decahydrate
Class	No Data Available
Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Land Transport (New Zealand)
NZS5433

Proper Shipping Name	Borax Decahydrate
Class	No Data Available

Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Land Transport (Papua New Guinea)

Proper Shipping Name	Borax Decahydrate
Class	No Data Available
Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Land Transport (Turkey)

Proper Shipping Name	Borax Decahydrate
Class	No Data Available
Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Land Transport (United States of America)
US DOT

Proper Shipping Name	Borax Decahydrate
Class	No Data Available
Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Sea Transport
IMDG Code

Proper Shipping Name	Borax Decahydrate
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
Comments	NON-DANGEROUS GOODS: Not regulated for SEA transport.

Air Transport
IATA DGR

Proper Shipping Name	Borax Decahydrate
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
Comments	NON-DANGEROUS GOODS: Not regulated for AIR transport.

National Transport Commission (Australia)
Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification	NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

15. REGULATORY INFORMATION

General Information	BORIC ACID (excluding its salts) and BORAX are listed in Schedule 5 of the SUSMP.
Poisons Schedule (Aust)	Schedule 5

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

Approval Code	HSR002914

National/Regional Inventories

Australia (AIIC)	Listed
Canada (DSL)	Listed
Canada (NDSL)	Not Determined
China (IECSC)	Listed
Europe (EINECS)	215-540-4

Europe (REACh)	Not Determined
Japan (ENCS/METI)	Listed
Korea (KECI)	Listed
Malaysia (EHS Register)	Not Determined
New Zealand (NZIoC)	Listed
Philippines (PICCS)	Listed
Switzerland (Giftliste 1)	Not Determined
Switzerland (Inventory of Notified Substances)	Not Determined
Taiwan (NCSR)	Not Determined
USA (TSCA)	Not Determined

16. OTHER INFORMATION

Related Product Codes	BORASA1000, BORASA1001, BORASA1002, BORASA1003, BORASA1004, BORASA1005, BORASA1006, BORASA1100, BORASA1818, BORASA1819, BORASA2000, BORASA2500, BORASA2525, BORASA4000, BORASA4500, BORASA5000, BORASA5001, BORASA5100, BORASA6000, BORASA6100, BORASA6500, BORASA7000, BORASA7001, BORASA7002, BORASA7003, BORASA7200, BORASA7201, BORASA7202, BORASA7300, BORASA7301, BORASA7302, BORASA7303, BORASA7306, BORASA7400, BORASA7401, BORASA7402, BORASA7403, BORASA7404, BORASA7405, BORASA7406, BORASA7407, BORASA7408, BORASA7409, BORASA7410, BORASA7411, BORASA7412, BORASA7413, BORASA7500, BORASA7600, BORASA7601, BORASA7602, BORASA7700, BORASA7800, BORASA7900, BORASA9010, BORASA9500, BORASA9501, BORASA9502, BORASA9700
Revision	4
Revision Date	10 Oct 2021
Data Sources	Safety, health and environmental regulations: It should be noted that borates are safe under conditions of normal handling and use, besides, they are essential nutrients to plants, and research shows that they play a beneficial role in human health. CLP classification has been solely based on animal tests where animals were exposed to high doses of boric acid over long periods of time. These doses were many times higher than humans are exposed to under conditions of normal handling and use. Consequently, a precautionary decision was taken by the European Commission. Although we will comply with the body of legislation triggered by that decision, we are in process of all possible legal actions.
Key/Legend	< Less Than > Greater Than **AICS** Australian Inventory of Chemical Substances **atm** Atmosphere **CAS** Chemical Abstracts Service (Registry Number) **cm^2** Square Centimetres **CO2** 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 **inH2O** 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
mmH2O 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
TWA Time Weighted Average
ug/24H Micrograms per 24 Hours
UN United Nations
wt Weight