

1. IDENTIFICATION

Product Name	Borax Decahydrate
Other Names	Borax; BORAX (Na ₂ (B ₄ O ₇).10H ₂ O); Disodium Tetraborate; Sodium Tetraborate, Decahydrate
Uses	The product is used in industrial manufacturing, in particular in Ceramics, Detergent, Borosilicate glass, Insulation fiberglass.
Chemical Family	No Data Available
Chemical Formula	Na ₂ B ₄ O ₇ .10H ₂ O
Chemical Name	Borax Decahydrate
Product Description	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.	2132A E. Dominguez Street Carson CA 90810 USA	+1-424-675-3200
Redox Chemicals Sdn Bhd	No. 8, Block G, Ground Floor, Taipan 2 Jalan PJU 1A/3 Ara Damansara 47301, Petaling Jaya, Selangor, Malaysia	+60-3-7843-6833

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) 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.
	P202	Do not handle until all safety precautions have been read and understood.
	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.

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)

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
Borax Decahydrate	No Data Available	1303-96-4	>99.9 %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed If large amounts are swallowed (i.e. more than one teaspoon), give two glasses of water and seek medical attention.

Eye Use eye wash fountain or fresh water to cleanse eye. If irritation persists for more than 30 minutes, seek medical attention.

Skin Remove contaminated clothing. Wash affected area with soap and plenty of water. Seek medical attention if irritation occurs.
Wash clothing before reuse.

Inhaled	Remove victim from exposure to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Seek medical attention immediately.
Advice to Doctor	Observation only is required for adult ingestion of less than 9 grams of borax decahydrate. For ingestion in excess of 9 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	Potential health effects: Inhalation is the most significant route of exposure in occupational and other settings. Dermal exposure is not usually a concern because borax decahydrate is poorly absorbed through intact skin. Signs and symptoms of exposure: 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. Refer to section 11 for details on Toxicological data.

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 a non-flammable solid.
Extinguishing Media	Any fire extinguishing media may be used on nearby fires.
Fire and Explosion Hazard	Non-combustible solid. Material does not burn nor will it support combustion.
Hazardous Products of Combustion	Non-combustible solid. Borax decahydrate is not flammable, combustible or explosive. The product is itself a flame retardant. Incompatible with strong reducing agents such as metal hydrides, acetic anhydride, alkali metals, and sources of ignition. Hazardous decomposition products have not been reported. Reaction with strong reducing agents such as metal hydrides, acetic anhydride or alkali metals will generate hydrogen gas which could create an explosive hazard.
Special Fire Fighting Instructions	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) or chemical splash suit. 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. Do NOT allow fire fighting water to reach waterways, drains or sewers. Store fire fighting water for treatment.
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. May be slippery when spilt. 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 chemical-waste container and dispose of promptly as hazardous waste. 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	Do NOT let product reach drains or waterways. If product does enter a waterway, advise the Environmental Protection Authority or your local Waste Management
Evacuation Criteria	Evacuate all unnecessary personnel.
Personal Precautionary Measures	Personnel involved in the clean up should wear full protective clothing as listed in section 8.

7. HANDLING AND STORAGE

Handling	<p>Ensure an eye bath and safety shower are available and ready for use.</p> <p>Observe good personal hygiene practices and recommended procedures.</p> <p>To maintain package integrity and to minimise caking of the product, bags should be handled on a first in-first out basis. Good housekeeping and dust prevention procedures should be followed to minimise dust generation and accumulation. Wash thoroughly after handling. Take precautionary measures against static discharges by bonding and grounding equipment. Avoid contact with eyes, skin and clothing. Do not inhale product dust/fumes.</p> <p>Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained. The product should be kept away from strong reducing agents. Apply above handling advice when mixing with other substances.</p>
Storage	<p>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.</p> <p>Protect against physical damage. Store away from incompatible materials as listed in section 10. Provide appropriate ventilation and store bags such as to prevent any accidental damage. This product is not classified dangerous for transport according to The Australian Code for the Transport of Dangerous Goods by Road and Rail.</p>
Container	<p>Container type/packaging must comply with all applicable local legislation.</p> <p>Store in original packaging as approved by manufacturer.</p>

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General	<p>The following exposure standard has been established by The Australian Safety and Compensation Council (ASCC); Disodium tetraborate decahydrate (Borax Decahydrate) CAS 1303-96-4: TWA = 5mg/m³ 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.</p> <p>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.</p>
Exposure Limits	No Data Available
Biological Limits	No information available on biological limit values for this product.
Engineering Measures	<p>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.</p> <p>Maintain air concentrations below occupational exposure standards.</p> <p>Wash hands before breaks and at the end of the workday. Remove and wash soiled clothing.</p>
Personal Protection Equipment	<p>RESPIRATOR: Wear an effective dust mask where dusts/vapours are generated and engineering controls are inadequate (AS1715/1716).</p> <p>EYES: Safety glasses with side shields or goggles (AS1336/1337).</p> <p>HANDS: Wear rubber or PVC gloves (AS2161).</p> <p>CLOTHING: Long-sleeved protective clothing and safety footwear (AS3765/2210).</p> <p>NOTE: Goggles and gloves are not required for normal industrial exposures, but may be warranted if environment is excessively dusty.</p>
Work Hygienic Practices	No Data Available

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Solid
Appearance	Crystalline Solid
Odour	Odourless
Colour	White
pH	9.2
Vapour Pressure	Negligible (20°C) torr (@ 20 °C)
Relative Vapour Density	No Data Available
Boiling Point	No Data Available
Melting Point	62 °C
Freezing Point	No Data Available

Solubility	Completely soluble 25°C
Specific Gravity	1.71-1.73 (20°C)
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	No Data Available
Density	1.73 g/cm ³ Relative
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 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 reducing agents will generate hydrogen gas.
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. Borax decahydrate is a stable product, but when heated it loses water, eventually forming anhydrous borax (Na ₂ B ₄ O ₇).
Conditions to Avoid	Avoid excessive heat, direct sunlight, static discharges, generating dust, moisture and high temperatures.
Materials to Avoid	Incompatible with strong reducing agents such as metal hydrides, acetic anhydride, alkali metals, and sources of ignition, strong oxidising agents.
Hazardous Decomposition Products	Hazardous decomposition products have not been reported. Reaction with strong reducing agents such as metal hydrides, acetic anhydride or alkali metals will generate hydrogen gas which could create an explosive hazard.
Hazardous Polymerisation	Hazardous polymerization has not been reported. Reaction with strong reducing agents such as metal hydrides, acetic anhydride or alkali metals will generate hydrogen gas which could create an explosive hazard.

11. TOXICOLOGICAL INFORMATION

General Information	LD50 Oral - Rat - 4,500 - 5,000 mg/kg LD50 Dermal - Rabbit - 10,000 mg/kg Animal feeding studies in rat, mouse and dog, at high doses, have demonstrated effects on fertility and testes. Studies with the chemically related boric acid in the rat, mouse and rabbit, at high doses, demonstrate developmental effects on the fetus, including fetal weight loss and minor skeletal variations. The doses administered were many times in excess of those to which humans would normally be exposed. Human epidemiological studies show no increase in pulmonary disease in occupational populations with chronic exposures to boric acid dust and sodium borate dust. A recent epidemiological study under the conditions of normal occupational exposure to borate dusts indicated no effect on fertility
Eyelrritant	Borax decahydrate is a serious eye irritant.
Ingestion	Products containing borax decahydrate are not intended for ingestion. Borax decahydrate has low acute toxicity. Small amounts (e.g. a teaspoonful) swallowed accidentally are not likely to cause effects; swallowing amounts larger than that may cause gastrointestinal symptoms.
Inhalation	Occasional mild irritation effects to nose and throat may occur from inhalation of borax decahydrate dusts at levels higher than 10 mg/m ³ . Inhalation is the most significant route of exposure in occupational and other settings.
SkinIrritant	Borax decahydrate does not cause irritation to intact skin. Dermal exposure is not usually a concern because borax decahydrate is poorly absorbed through intact skin. Non-irritant. Borax decahydrate is not a skin sensitizer.
Reproduction	Fetotoxicity : Presumed human reproductive toxicant. May damage fertility or the unborn child.
Carcinogen Category	No Data Available

12. ECOLOGICAL INFORMATION

Ecotoxicity	Toxicity to fish LC50 - Carassius auratus (goldfish) - 178 mg/l - 72 h Toxicity to daphnia and other aquatic invertebrates : EC50 - Daphnia magna (Water flea) - 1,085 - 1,402 mg/l - 48 h Toxicity to algae IC50 - Desmodesmus subspicatus (green algae) - 158 mg/l - 96 h.
Persistence/Degradability	Boron is naturally occurring and ubiquitous in the environment. Borax decahydrate decomposes in the environment to natural borate. Phytotoxicity: 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 released to the environment . Boron occurs naturally in sea water at an average concentration of 5mg/B/1 or less. In dilute aqueous solutions the predominant boron species present is undissociated boric acid. Phytotoxicity: 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 released to the environment.
Mobility	The product is soluble in water and is leachable through normal soil. Partition coefficient :n-octanol/water: Log Kow (Pow): 1.53+-0.05 (at 22+-1'C) pH 7.5
Environmental Fate	Large amounts of borax decahydrate can be harmful to plants and other species. Therefore releases to the environment should be minimised. ENVIRONMENTAL PRECAUTIONS: Borax decahydrate is a water-soluble white powder that may, at high concentrations cause damage to trees or vegetation by root absorption.
Bioaccumulation Potential	Not significantly bioaccumulative.
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 Borax decahydrate can usually be disposed of at landfill sites. No special disposal treatment is required, but local authorities should be consulted about 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

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

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

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

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

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

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

Sea Transport

IMDG

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

Air Transport

IATA

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

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)
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15. REGULATORY INFORMATION

General Information	No Data Available
Poisons Schedule (Aust)	5

Environmental Protection Authority (New Zealand)

Hazardous Substances and New Organisms Amendment Act 2015

Approval Code	HSR002914
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National/Regional Inventories

Australia (AICS)	Listed
Canada (DSL)	Listed
Canada (NDSL)	Not Determined
China (IECSC)	Listed
Europe (EINECS)	215-540-4
Europe (REACH)	Registered
Japan (ENCS/METI)	Listed
Korea (KECI)	Listed
Malaysia (EHS Register)	Not Determined
New Zealand (NZIoC)	Listed
Philippines (PICCS)	Listed
Switzerland (Giffliste 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, BORASA2000, BORASA2500, BORASA4000, BORASA4500, BORASA5000, BORASA5001, BORASA5100, BORASA6000, BORASA6500, BORASA7000, BORASA7001, BORASA7002, BORASA7003, BORASA7200, BORASA7300, BORASA7400, BORASA7401, BORASA7402, BORASA7403, BORASA7404, BORASA7405, BORASA7406, BORASA7407, BORASA7408, BORASA7409, BORASA7410, BORASA7411, BORASA7412, BORASA7413, BORASA7500, BORASA7600, BORASA7601, BORASA7602, BORASA7700, BORASA7800, BORASA9500, BORASA9501, BORASA9502, BORASA9700, BORASA7201, BORASA1818, BORASA7302, BORASA7301, BORASA7900, BORASA7303
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Revision	2
Revision Date	22 Oct 2014

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
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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)
cm² 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/cm³ 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/m³ 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
m³ Cubic Metre
mbar Millibar
mg Milligram
mg/24H Milligrams per 24 Hours
mg/kg Milligrams per Kilogram
mg/m³ 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