Safety Data Sheet LITHIUM TETRABORATE

SDS no. D5VM90M6 • Version 1.0 • Date of issue: 2023-03-14

SECTION 1: Identification

GHS Product identifier

Product name	LITHIUM TETRABORATE

Recommended use of the chemical and restrictions on use

Ceramics; vacuum spectroscopy; metal refining and degassing; X-ray flux and laboratory reagent.

Supplier's details

Name	ChemSupply Australia Pty Ltd
Address	38-50 Bedford Street 5013 Gillman South Australia Australia
Telephone	08 8440 2000
email	www.chemsupply.com

Emergency phone number

CHEMCALL 1800 127 406 (Australia) / +64-4-917-9888 (International)

SECTION 2: Hazard identification

General hazard statement

Not classified as dangerous goods according to the Australian Dangerous Goods Code (ADG).

Classified as Hazardous according to the Globally Harmonised System of classification and labelling of Chemicals (GHS) including Work, Health and Safety regulations, Australia.

Classification of the substance or mixture

GHS classification in accordance with: UN GHS revision 7

- Serious eye damage/eye irritation, Cat. 1
- Toxic to reproduction, Cat. 2

GHS label elements, including precautionary statements

Pictograms

Signal word	**Danger**

Hazard statement(s)

H318	Causes serious eye damage
H361	Suspected of damaging fertility or the unborn child

Precautionary statement(s)

P202	Do not handle until all safety precautions have been read and understood.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313	IF exposed or concerned: Get medical advice/attention.
P310	Immediately call a POISON CENTER/doctor/physcian
P501	Dispose of contents/container to an approved waste disposal facility

SECTION 3: Composition/information on ingredients

Mixtures

Molecular weight: 169.12

Components

Component	Concentration
Boron lithium oxide (B4Li2O7) (CAS no.: 12007-60-2; EC no.: 234-514-3)	**100 - 100 % (weight)**
CLASSIFICATIONS: Acute toxicity, oral, Cat. 4; Serious eye damage/eye irritation, Cat. 1; Toxic to reproduction, Cat. 2. HAZARDS: H302 - Harmful if swallowed; H318 - Causes serious eye damage; H361 - Suspected of damaging fertility or the unborn child [effect, route].	

SECTION 4: First-aid measures

Description of necessary first-aid measures

General advice	First Aid Facilities: Maintain eyewash fountain and normal washroom facilities in work area.
If inhaled	Remove to fresh air. If not breathing, give artificial respiration. Get medical attention if symptoms occur.
In case of skin contact	Wash off immediately with plenty of water for at least 15 minutes. If skin irritation persists, call a physician
In case of eye contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.
If swallowed	Clean mouth with water and drink afterwards plenty of water. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

Indication of immediate medical attention and special treatment needed, if necessary
Treat symptomatically based on judgement of doctor and individual reactions of the patient.

SECTION 5: Fire-fighting measures

Suitable extinguishing media
Use extinguishing media appropriate for surrounding fire.

Specific hazards arising from the chemical
Irritating and highly toxic fumes and gases, including oxides of lithium and boron.

Material does not burn. Runoff may pollute waterways. Fire or heat may produce irritating, poisonous and/or corrosive fumes. Containers may explode when heated.

Special protective actions for fire-fighters
Fire fighters should wear full protective clothing and self-contained breathing apparatus (SCBA) operated in positive pressure mode. Fight fire from safe location.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures
Ensure adequate ventilation. Use personal protective equipment. Avoid dust formation. For personal protection see section 8.

Methods and materials for containment and cleaning up
Pick up and arrange disposal without creating dust. Sweep up and shovel. Do not flush with water. Keep in suitable, closed containers for disposal.

SECTION 7: Handling and storage

Precautions for safe handling
Avoid ingestion and inhalation of dust. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure. Prevent the creation of dust in the work atmosphere. Keep containers closed and tightly sealed when not in use. Use with adequate ventilation. Wear appropriate protective equipment to prevent inhalation and eye exposure. Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Practice good personal hygiene, that is, always wash hands after handling, and before eating, drinking, smoking or using the toilet facilities. Keep from contact with moist air and steam.

Conditions for safe storage, including any incompatibilities
Store in tightly closed containers, in a cool, dry, well-ventilated area away from incompatible substances. Store away from oxidising agents and strong acids. Moisture sensitive.

SECTION 8: Exposure controls/personal protection

Appropriate engineering controls
Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapor, gas, etc.) below recommended exposure limits.f the engineering controls are not sufficient to maintain concentrations of vapours/mists below the exposure standards, suitable respiratory protection must be worn.

Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

The use of a face shield, chemical goggles or safety glasses with side shield protection as appropriate. Must comply with Australian Standards AS 1337 and be selected and used in accordance with AS 1336.

Skin protection
Clean impervious clothing should be worn. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals.

Hand Protection: Normally not required but if in doubt ensure hand protection should complies with AS 2161, Occupational protective gloves - Selection, use and maintenance.

Body protection
Suitable protective workwear, e.g. cotton overalls buttoned at neck and wrist is recommended. Chemical resistant apron is recommended where large quantities are handled.

Respiratory protection
If engineering controls are not effective in controlling airborne exposure then an approved respirator with a replaceable vapor/ mist filter should be used. Refer to relevant regulations for further information concerning respiratory protective requirements. Reference should be made to Australian Standards AS/ NZS 1715, Selection, Use and Maintenance of Respiratory Protective Devices; and AS/NZS 1716, Respiratory Protective Devices, in order to make any necessary changes for individual circumstances.

SECTION 9: Physical and chemical properties

Basic physical and chemical properties

Physical state	Solid
Appearance	White crystalline powder.
Color	White
Odor	Odourless.
Odor threshold	No data available.
Melting point/freezing point	760-880 °C; 917 °C; 930 °C.
Boiling point or initial boiling point and boiling range	No data available.
Flammability	No data available.
Lower and upper explosion limit/flammability limit	No data available.
Flash point	No data available.
Explosive properties	No data available.
Auto-ignition temperature	No data available.
Decomposition temperature	No data available.
Oxidizing properties	No data available.
pH	~ 9.1 (100 g/l, H2O, 20 °C, slurry).
Kinematic viscosity	No data available.
Solubility	Solubility in Water: Slightly soluble (28.1 g/l H2O @ 20 °C). Solubility in Organic Solvents: Insoluble in alcohol.
Partition coefficient n-octanol/water (log value)	No data available.
Vapor pressure	No data available.
Evaporation rate	No data available.
Density and/or relative density	Specific Gravity: 2.4.
Relative vapor density	No data available.

Particle characteristics
No data available.

Supplemental information regarding physical hazard classes

No data available.

Further safety characteristics (supplemental)
No data available.

SECTION 10: Stability and reactivity

Reactivity
Stable under normal conditions of storage and handling.

Chemical stability
Stable under normal temperatures, pressures and conditions of handling and storage. Hygroscopic.

Possibility of hazardous reactions
May be reactive with acids.

Conditions to avoid
Strong heating, exposure to moist air, moisture or water and incompatible materials.

Incompatible materials
Alkali metals (e.g., potassium), acid anhydrides, strong acids, and strong oxidizing agents.

Hazardous decomposition products
Irritating and highly toxic fumes and gases, including oxides of lithium and boron.

SECTION 11: Toxicological information

Information on toxicological effects

Acute toxicity
Ingestion: May be harmful if swallowed. May cause irritation to the gastrointestinal tract, with nausea, vomiting and diarrhoea. In severe cases, lithium compounds can cause central nervous system effects with symptoms that include lethargy, apathy, weakness, dizziness, slurred speech, blurred vision, irregular eye movements, ringing in the ears, sensory loss, agitation, prostration, ataxia (impaired locomotor coordination) due to disturbed electrolyte balance, spasms, convulsions, possible kidney damage if sodium intake is limited, pulmonary oedema, and coma. Dehydration, weight loss, dermatological effects, and thyroid disturbances have also been reported. Boron compounds, if ingested or absorbed, may cause nausea and vomiting, diarrhoea, abdominal cramps, erythematous lesions on the skin and mucous membranes, CNS disorders, cardiovascular disorders, circulatory collapse, tachycardia, cyanosis, delirium, agitation, spasms, convulsions, and coma. Death has been reported to occur in infants from less than 5 grams and in adults from 5 to 20 grams. The toxicological properties of this substance have not been fully investigated.

Inhalation: May be harmful if inhaled. Inhalation of dust may cause respiratory tract irritation. Symptoms may include coughing, shortness of breath. Inhalation may result in symptoms and problems similar to ingestion. The toxicological properties of this substance have not been fully investigated.

Skin corrosion/irritation
May cause skin irritation, with redness, itching, and pain. May be harmful if absorbed through the skin. May be absorbed through damaged or burned skin with symptoms similar to inhalation and ingestion.

Serious eye damage/irritation
May cause eye irritation, with redness, pain, stinging, blurring and tearing.

Respiratory or skin sensitization

No data available.

Germ cell mutagenicity
No data available.

Carcinogenicity
No data available.

Reproductive toxicity
Suspected of damaging fertility or the unborn child

Summary of evaluation of the CMR properties
No data available.

Specific target organ toxicity (STOT) - single exposure
No data available.

Specific target organ toxicity (STOT) - repeated exposure
No data available.

Aspiration hazard
No data available.

Additional information
Chronic Effects: Repeated exposure may cause symptoms similar to those listed for acute effects. Prolonged or repeated exposure to dust by inhalation may lead to respiratory disorders. May cause constipation, which has been reported in the continued administration of medicinal amounts. Repeated skin exposure can produce local skin destruction or dermatitis. Repeated exposure of the eyes to a low level of dust can produce eye irritation. Diarrhoea, vomiting, and neuromuscular effects such as tremor, clonus, and hyperactive reflexes may occur as a result of repeated exposure to lithium ion. Prolonged or repeated exposure to boron compounds can affect the central nervous system, cause depression of the circulation, persistent vomiting and diarrhoea, followed by profound shock and coma. The temperature may become subnormal and a scarletina form rash may cover the entire body.

SECTION 12: Ecological information

Toxicity
No data available.

Persistence and degradability
Soluble in water Persistence is unlikely based on information available.

Bioaccumulative potential
No data available.

Mobility in soil
Will likely be mobile in the environment due to its water solubility.

Results of PBT and vPvB assessment
No data available.

Endocrine disrupting properties
No data available.

Other adverse effects

No data available.

SECTION 13: Disposal considerations

Disposal methods

Product disposal
Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers.

Other disposal recommendations
Do not discharge this material into waterways, drains and sewers.

SECTION 14: Transport information

ADG (Road and Rail)
Not dangerous goods

IMDG
Not dangerous goods

IATA
Not dangerous goods

SECTION 15: Regulatory information

Safety, health and environmental regulations specific for the product in question

Australia SUSMP
Poison Schedule: NS

SECTION 16: Other information

Further information/disclaimer
ChemSupply Australia Pty Ltd does not warrant that this product is suitable for any use or purpose. The user must ascertain the suitability of the product before use or application intended purpose. Preliminary testing of the product before use or application is recommended. Any reliance or purported reliance upon ChemSupply Australia Pty Ltd with respect to any skill or judgement or advice in relation to the suitability of this product of any purpose is disclaimed. Except to the extent prohibited at law, any condition implied by any statute as to the merchantable quality of this product or fitness for any purpose is hereby excluded. This product is not sold by description. Where the provisions of Part V, Division 2 of the Trade Practices Act apply, the liability of ChemSupply Australia Pty Ltd is limited to the replacement of supply of equivalent goods or payment of the cost of replacing the goods or acquiring equivalent goods.

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Standard for the Uniform Scheduling of Medicines and Poisons, Commonwealth of Australia
National Road Transport Commission, 'Australian Code for the Transport of Dangerous Goods by Road and Rail 7th. Ed.'
Safe Work Australia, 'National Code of Practice fot the Preparation of Safety Data Sheets for Hazardous Chemicals', July 2020.

Safe Work Australia, 'National Guide for Classifying Hazardous Chemicals', July 2020.
Safe Work Australia, Workplace Exposure Standards for Airbourne Contaminants, December 2019
Safe Work Australia, Hazardous Chemical Information System (HCIS), hcis.safeworkaustralia.gov.au
IATA, Dangerous Goods Regulations (DGR)
IMO, International Maritime Dangerous Goods Code (IMDG)