

SECTION 01: PRODUCT AND COMPANY IDENTIFICATION

Product name: Lithium Tetraborate/Lithium Metaborate/Lithium Bromide
Formula: $\text{Li}_2\text{B}_4\text{O}_7/\text{LiBO}_2/\text{LiBr}$
Chemical family: Borate flux
Product use: For laboratory use only

Manufacturer: CLAISSE
Address: 350, FRANQUET, QUEBEC, QUEBEC
G1P 4P3, CANADA

Phone: 1 418 656-6453
Fax: 1 418 656-1169

Emergency telephone number:
CANUTEC: +1 613 996-6666

SECTION 02: HAZARDS IDENTIFICATION

GHS and (EC) No 1272/2008 classification

Acute toxicity, oral (Category 4)
Skin corrosion/irritation (Category 2)
Serious eye damage/irritation (Category 2A)
Skin sensitisation (Category 1)

Label elements:

Pictograms:



Signal word: Warning
(GHS07)

Hazard statements:

H315 Causes skin irritation.
H317 May cause allergic skin reaction.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.

Precautionary statements:

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P264 Wash hands thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P301+P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P302+P352 IF ON SKIN: Wash with plenty of soap and water.
P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.

Other hazards

No data available.

SECTION 03: COMPONENT INFORMATION

| Compounds | Molecular formula | Synonyms | Molecular Weight (g/mol) | CAS-No. | EC-No. | Concentration (%) |
|---------------------|---|-------------------------|--------------------------|------------|-----------|-------------------|
| Lithium Tetraborate | Li ₂ B ₄ O ₇ | Boron Lithium Oxide | 169.12 | 12007-60-2 | 234-514-3 | 0-99.9 |
| Lithium Metaborate | LiBO ₂ | Boric Acid Lithium Salt | 49.70 | 13453-69-5 | 236-631-5 | 0-99.9 |
| Lithium Bromide | LiBr | - | 86.85 | 7550-35-8 | 231-439-8 | 0.1-2 |

SECTION 04: FIRST AID MEASURES

Description of first aid measures

General information

Seek immediate medical advice.
Take affected persons out of danger area and lay down.

After inhalation

In case of unconsciousness, place patient stably in side position for transportation.
Supply fresh air. If required, provide artificial respiration. Keep patient warm. If symptoms persist, consult a physician.

After skin contact

Immediately wash with water and soap and rinse thoroughly. If skin irritation persists, consult a physician.

After eye contact

Rinse opened eye thoroughly with plenty of water for at least 15 minutes and consult a physician.

After swallowing

Rinse out mouth and then drink plenty of water. Do not induce vomiting. If symptoms persist, consult a physician.

Most important symptoms and effects, both acute and delayed

Symptoms: Headache, nausea, lowered blood pressure, gastrointestinal disturbance.
Risks: Irritant effects and components of the product cause formation of methaemoglobin.

Indication of any immediate medical attention and special treatment needed

Treatment: Treat symptomatically and specialist advice physicians should contact the Poisons Information Service.

SECTION 05: FIRE FIGHTING MEASURES

Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Unsuitable extinguishing media

No data available.

Special protective equipment for fire fighters

Wear self-contained breathing apparatus for fire fighting if necessary.

Hazardous combustion products

Hazardous decomposition products formed under fire conditions – borate/boron oxides and lithium oxides.

SECTION 06: ACCIDENTAL RELEASE MEASURES

Personal precautions

Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, fumes or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

Environmental precautions

Avoid dispersal of spilled material, runoff and contact with soil waterways, drains and sewers.

Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed and non-leaking containers for local chemical disposal.

Reference to other sections

See Section 7 for information on safe handling.

See Section 8 for information on personal protective equipment.

See Section 13 for disposal information.

SECTION 07: HANDLING AND STORAGE

Precautions for safe handling

Provide suction extractors if dust is formed.

Do not inhale dust, smoke or mist.

Avoid contact with the eyes and skin.

Prevent formation of dust.

Prevent formation of aerosols.

Conditions for safe storage, including any incompatibilities

Requirements to be met by storerooms and receptacles: no special measures required.

Information about storage in one common storage facility: not required.

Further information about storage conditions: keep container tightly sealed; store receptacle in a well-ventilated area; store in dry conditions.

Specific end use(s)

No data available.

SECTION 08: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

These substances do not have occupational exposure limit values.

Personal protective equipment

General protective and hygienic measures

Keep away from foodstuffs, beverages and feed. Immediately remove all soiled and contaminated clothing. Wash hands before breaks and at the end of work shifts. Avoid contact with the eyes and skin.

Respiratory protection

For nuisance exposure, use type N95 (US) or type P1 (EU EN 143) particle respirator. For higher level protection, use type OV/AG/P99 (US) or type ABEK-P2 (EU EN 143) respirator cartridges. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection

Handle with gloves. The glove material has to be impermeable and resistant to the product, the substance or preparation. Selection of the glove material must be made considering the penetration times, rates of diffusion and degradation. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.



Protective gloves.

Eye protection

Wear safety glasses with side shields conforming to EN 166. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU).



Safety glasses with side shields (EN 166).

Skin and body protection

Wear impervious clothing. The type of protective equipment must be selected according to the concentration and amount of dangerous substance at the specific workplace. Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Specific engineering controls

Use mechanical exhaust or laboratory fume hood to avoid exposure.

Environmental exposure controls

No data available.

SECTION 09: PHYSICAL AND CHEMICAL PROPERTIES

Appearance

| | |
|---------|--------|
| Form: | Powder |
| Colour: | White |

Safety data

| | |
|--|-------------------|
| pH: | No data available |
| Melting point/freezing point: | No data available |
| Initial boiling point/boiling range: | No data available |
| Flash point: | No data available |
| Flammability: | No data available |
| Ignition point: | No data available |
| Autoignition point: | No data available |
| Lower flammable/explosive limit: | No data available |
| Upper flammable/explosive limit: | No data available |
| Vapour pressure: | No data available |
| Relative density: | No data available |
| Solubility: | No data available |
| Partition coefficient n-octanol/water: | No data available |
| Decomposition temperature: | No data available |
| Viscosity: | No data available |
| Relative vapour density: | No data available |
| Odour: | No data available |
| Odour threshold: | No data available |
| Evaporation rate: | No data available |
| Explosive properties: | No data available |
| Oxidizing properties: | No data available |

SECTION 10: STABILITY AND REACTIVITY

Reactivity

No data available.

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

No dangerous reactions known.

Conditions to avoid

Avoid contact with reducing agents (HBr emanation). Avoid exposure to moisture.

Incompatible materials

Strong reducing agents.

Hazardous decomposition products

Hazardous decomposition products formed under fire conditions: borate/boron oxides and lithium oxides.

SECTION 11: TOXICOLOGICAL INFORMATION

Acute toxicity

| Compounds | Oral LD ₅₀ | Inhalation LC ₅₀ | Dermal LD ₅₀ | Other |
|---------------------|-----------------------|-----------------------------|-------------------------|---------|
| Lithium Tetraborate | No data | No data | No data | No data |
| Lithium Metaborate | No data | No data | No data | No data |
| Lithium Bromide | >500 mg/kg b.w. | 15.57 mg/L | >2000 mg/kg b.w. | No data |

Repeated exposure toxicity

| Compounds | Oral DNEL | Inhalation DNEL | Dermal DNEL | Other |
|---------------------|---------------------|-----------------------|---------------------|---------|
| Lithium Tetraborate | No data | No data | No data | No data |
| Lithium Metaborate | No data | No data | No data | No data |
| Lithium Bromide | 1.09 mg/kg b.w./day | 3.8 mg/m ³ | 10.9 mg/kg b.w./day | No data |

Skin corrosion/irritation

Based on OECD Guideline 404 (Acute Dermal Irritation / Corrosion) study, the lithium bromide was regarded to be irritant to the skin. No data available for lithium borates.

Serious eye damage/eye irritation

Based on OECD Guideline 405 (Acute Eye Irritation / Corrosion) study, lithium bromide solution showed severely irritating effects. No data available for lithium borates.

Respiratory or skin sensitization

Based on OECD Guideline 406 (Skin Sensitisation) study, the test substance lithium bromide was regarded to be sensitising to the skin. No data available for lithium borates

Germ cell mutagenicity (in vitro) – gene mutation

No data available.

Germ cell mutagenicity (in vivo) – DNA damage and/or repair

No data available.

Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

Reproductive toxicity

No data available.

STOT-SE (GHS)

No data available.

STOT-RE (GHS)

No data available.

Aspiration hazard

No data available.

Potential health effects

Inhalation: May be harmful if inhaled. Causes respiratory tract irritation.
 Skin: May be harmful if absorbed through skin. Causes skin irritation.
 Eyes: Causes serious eye irritation.
 Ingestion: May be harmful if swallowed.

Signs and symptoms of exposure

Toxicity reported for borates in humans: ingestion or absorption may cause nausea, vomiting, diarrhea, abdominal cramps, and erythematous lesions on the skin and mucous membranes. Other symptoms include circulatory collapse, tachycardia, cyanosis, delirium, convulsions and coma. Death has been reported to occur in infants from less than 5 grams and in adults from 5 to 20 grams.

Large doses of lithium ion have caused dizziness and prostration and can cause kidney damage if sodium intake is limited. Dehydration, weight loss, dermatological effects and thyroid disturbances have been reported. Central nervous system effects that include slurred speech, blurred vision, sensory loss, ataxia and convulsions may occur. Diarrhea, vomiting and neuromuscular affects such as tremor, clonus and hyperactive reflexes may occur as a result of repeated exposure to lithium ion.

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Synergistic effects

No data available.

Additional information

| Compounds | RTECS |
|---------------------|-----------|
| Lithium Tetraborate | - |
| Lithium Metaborate | - |
| Lithium Bromide | OJ5755000 |

SECTION 12: ECOLOGICAL INFORMATION

Toxicity

Aquatic toxicity

| Compounds | NOEC | LOEC |
|---------------------|------------|------------|
| Lithium Tetraborate | No data | No data |
| Lithium Metaborate | No data | No data |
| Lithium Bromide | 35.81 mg/L | 50.40 mg/L |

Persistence and degradability

No data available.

Bioaccumulative potential

No data available.

Mobility in soil

Water hazard class 1 (German regulation, self-assessment): slightly hazardous for water. Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

Other adverse effects

Will affect drinking water supplies. The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have harmful or damaging effects on the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

Product disposal

The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material, runoff and contact with soil, waterways, drains and sewers. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional and local authority requirements. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated Packaging Disposal

Dispose as an unused product.

Waste treatment-relevant information

Disposal of this product, solutions and any by-products should at all times comply with the requirements of the environmental protection and waste disposal legislation and any regional and local authority requirements.

Sewage disposal-relevant information

Avoid dispersal of spilled material, runoff and contact with soil, waterways, drains and sewers.

Other disposal recommendations

Contact a licensed professional waste disposal service to dispose of this material.

SECTION 14: TRANSPORT INFORMATION

UN number

ADR, ADN, IMDG, IATA, TDG, DOT Not applicable

UN Proper shipping name

Not applicable.

Transport hazard class(es)

ADR, ADN, IMDG, IATA, TDG, DOT Not applicable

Packing group

ADR, ADN, IMDG, IATA, TDG, DOT Not applicable

Environmental hazards

Environmentally hazardous substance/marine pollutant: No

Special precaution for user

Not applicable

Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Not applicable.

SECTION 15: REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

This safety data sheet complies with the requirements of regulation GHS and (EC) No 1272/2008 classification.

Chemical safety assessment

A chemical safety assessment has not been carried out.

DSL status

All components of this product are on the Canadian DSL list.

Emergency overview

Target organs: Central nervous system, kidney, blood, testes, thyroid, eyes and skin.

WHMIS classification

Not regulated.

HMIS classification

| | |
|------------------------|---|
| Health hazard: | 2 |
| Chronic health hazard: | * |
| Flammability: | 0 |
| Physical hazards: | 0 |

SECTION 16: OTHER INFORMATION

Date of issue

2017-05-05

Notice to the reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the only responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only.

| | |
|---------|--|
| ACGIH: | American Conference of Governmental Industrial Hygienists |
| ADR: | European Agreement concerning the International Carriage of Dangerous Goods by Road |
| ADN: | European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterway |
| b.w.: | Body weight |
| CAA: | Clean Air Act |
| CAS: | Chemical Abstracts Service (division of the American Chemical Society) |
| CEN: | European Committee for Standardization |
| CERCLA: | Comprehensive Environmental Response, Compensation and Liability Act |
| CFR: | Code of Federal Regulations |
| CLP: | Classification, Labelling and Packaging |
| CPR: | Controlled Products Regulations |
| DNEL: | Derived No-Effect Level |
| DOT: | Department of Transportation |
| DSL: | Domestic Substance List |
| EINECS: | European Inventory of Existing Commercial Chemical Substances |
| GHS: | Globally Harmonized System of Classification and Labelling of Chemicals |
| HDPE: | High Density PolyEthylene |
| HEPA: | High Efficiency Particulate Air |
| HMIS: | Hazardous Material Information System |

| | |
|------------|---|
| IARC: | International Agency for Research on Cancer |
| IATA: | International Air Transport Association |
| IBC: | Intermediate Bulk Container |
| IDLH: | Immediately Dangerous to Life or Health Concentrations |
| IMDG: | International Maritime Dangerous Goods Code |
| LC50: | Median Lethal Concentration |
| LD50: | Median Lethal Dose |
| LOAEL: | Lowest Observed Adverse Effect Level |
| LOEC: | Lowest Observable Effect Concentration |
| MARPOL: | MARine POLLution |
| NIOSH: | The National Institute for Occupational Safety and Health |
| NOAEL: | No Observed Adverse Effect Level |
| NOEC: | No Observable Effect Concentration |
| OECD: | Organisation for Economic Co-operation and Development |
| OEL: | Occupational Exposure Level |
| OSHA: | Occupational Safety and Health Administration |
| PBT: | Persistent Bioaccumulative and Toxic |
| PEL: | Permissible Exposure Limits |
| PNEC: | Predicted No-Effect Concentration |
| RCF: | Refractory Ceramic Fibers |
| REL: | Recommended Exposure Limit |
| RTECS: | Registry of Toxic Effects of Chemical Substances |
| SARA: | Superfund Amendments and Reauthorization Act |
| SCP: | Standards Completion Program (NIOSH/OSHA) |
| STEL: | Short Term Exposure Limit |
| STOT – RE: | Specific Target Organ Toxicity – Repeated exposure |
| STOT – SE: | Specific Target Organ Toxicity – Single exposure |
| TDG: | Transport of Dangerous Goods |
| TLV: | Threshold Limit Value |
| TSCA: | Toxic Substances Control Act |
| TWA: | Time-Weighted Average exposure value |
| UN: | United Nations |
| vPvB: | very Persistent and very Bioaccumulative |
| WHMIS: | Workplace Hazardous Materials Information System |
| WEEL: | Workplace Environmental Exposure Levels |