SECTION 01: PRODUCT AND COMPANY IDENTIFICATION

Product name: Lithium Bromide 25% (% w/v in water)
Formula: LiBr
Chemical family: Bromide
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

Emergency overview
Target organs: Central nervous system and kidney.

WHMIS classification
Not regulated.

HMIS classification
Health hazard: 2
Chronic health hazard: *
Flammability: 0
Physical hazards: 0

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: Harmful if swallowed.

GHS and (EC) No 1272/2008 classification
Acute Toxicity (Category 4)
Skin irritation (Category 2)
Eye irritation (Category 2)
Skin sensitisation (Category 1)

Hazard statements:
H302 Harmful if swallowed.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
Precautionary statements:
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P264 Wash thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves / protective clothing / eye protection / face protection.
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.

Label elements:

Pictograms:

Signal word: Warning (GHS07)

Other hazards

Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

SECTION 03: COMPONENT INFORMATION

<table>
<thead>
<tr>
<th>Compounds</th>
<th>Molecular formula</th>
<th>Molecular Weight (g/mol)</th>
<th>CAS-No.</th>
<th>EC-No.</th>
<th>Index-No.</th>
<th>Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>H₂O</td>
<td>12.02</td>
<td>7732-18-5</td>
<td>231-791-2</td>
<td>-</td>
<td>75</td>
</tr>
<tr>
<td>Lithium Bromide</td>
<td>LiBr</td>
<td>86.85</td>
<td>7550-35-8</td>
<td>231-439-8</td>
<td>-</td>
<td>25</td>
</tr>
</tbody>
</table>

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 for several minutes under running water. If symptoms persist, consult a physician.

After swallowing
Rinse out mouth and then drink plenty of water. If symptoms persist, consult a physician.

Most important symptoms and effects, both acute and delayed
No data available.

Indication of any immediate medical attention and special treatment needed
No data available.

SECTION 05: FIREFIGHTING MEASURES

Conditions of flammability
Not flammable or combustible.

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

Special protective equipment for firefighters
Wear self-contained breathing apparatus for firefighting if necessary. Wear full protective clothing and self-contained breathing apparatus (SCBA) approved for firefighting. This is necessary to protect against the hazards of heat, products of combustion and oxygen deficiency. Do not breathe smoke, gases or vapors generated.

Hazardous combustion products
Hazardous decomposition products formed under fire conditions: none.

Explosion data – sensitivity to mechanical impact
Not applicable.

Explosion data – sensitivity to static discharge
Not applicable.

SECTION 06: ACCIDENTAL RELEASE MEASURES

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

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, skin or clothing.
- 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 and away from any incompatible materials (see section 10).

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.

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).

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.
Hygiene measures
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of work shifts.

Specific engineering controls
Use mechanical exhaust or laboratory fume hood to avoid exposure.

SECTION 09: PHYSICAL AND CHEMICAL PROPERTIES

Appearance
Form: Powder
Colour: White

Safety data
pH: No data available
Melting point: No data available
Boiling point: No data available
Flash point: No data available
Ignition point: No data available
Autoignition point: No data available
Lower explosion limit: No data available
Upper explosion limit: No data available
Vapour pressure: No data available
Relative density: No data available
Water solubility: No data available
Partition coefficient n-octanol/water: No data available
Relative vapour density: No data available
Odour: No data available
Odour threshold: Not applicable
Evaporation rate: No data available

SECTION 10: STABILITY AND REACTIVITY

Reactivity
No data available.

Chemical stability
Stable under recommended storage conditions.

Possibility of hazardous reactions
Strong oxidizing agent and strong acid (HBr emanation).

Conditions to avoid
Moisture (hygroscopic).
Incompatible materials
Strong oxidizing agent and strong acid.

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions: none.

### SECTION 11: TOXICOLOGICAL INFORMATION

#### Acute toxicity

<table>
<thead>
<tr>
<th>Compounds</th>
<th>Oral LD$_{50}$</th>
<th>Inhalation LC$_{50}$</th>
<th>Dermal LD$_{50}$</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>90 mL/kg</td>
<td>No data</td>
<td>No data</td>
<td>No data</td>
</tr>
<tr>
<td>Lithium Bromide</td>
<td>&gt;500 mg/kg b.w.</td>
<td>15.57 mg/L</td>
<td>&gt;2000 mg/kg b.w.</td>
<td>No data</td>
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</tbody>
</table>

#### Repeated exposure toxicity

<table>
<thead>
<tr>
<th>Compounds</th>
<th>Oral DNEL</th>
<th>Inhalation DNEL</th>
<th>Dermal DNEL</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>No data</td>
<td>No data</td>
<td>No data</td>
<td>No data</td>
</tr>
<tr>
<td>Lithium Bromide</td>
<td>1.09 mg/kg b.w./day</td>
<td>3.8 mg/m$^3$</td>
<td>10.9 mg/kg b.w./day</td>
<td>No data</td>
</tr>
</tbody>
</table>

#### Skin corrosion/irritation
Based on OECD Guideline 404 (Acute Dermal Irritation / Corrosion) study, the test substance lithium bromide was regarded to be irritant to the skin.

#### Serious eye damage/eye irritation
Based on OECD Guideline 405 (Acute Eye Irritation / Corrosion) study, lithium bromide solution showed severely irritating effects.

#### 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.

#### 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.

#### Teratogenicity
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.
Ingestion: May be harmful if swallowed.
Skin: May be harmful if absorbed through skin. Causes skin irritation.
Eyes: Causes eye irritation.

Signs and symptoms of exposure
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 effects such as tremor, clonus and hyperactive reflexes may occur as a result of repeated exposure to lithium ion.

Synergistic effects
No data available.

Additional information

<table>
<thead>
<tr>
<th>Compounds</th>
<th>RTECS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>ZC0110000</td>
</tr>
<tr>
<td>Lithium Bromide</td>
<td>OJ5755000</td>
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</table>

### SECION 12: ECOLOGICAL INFORMATION

**Toxicity**
Aquatic toxicity

<table>
<thead>
<tr>
<th>Compounds</th>
<th>NOEC</th>
<th>LOEC</th>
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<tbody>
<tr>
<td>Water</td>
<td>No data</td>
<td>No data</td>
</tr>
<tr>
<td>Lithium Bromide</td>
<td>35.81 mg/L</td>
<td>50.40 mg/L</td>
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</tbody>
</table>

**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**
No data available.

**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.

SECTION 14: TRANSPORT INFORMATION

UN number
ADR, ADN, IMDG, IATA
Not applicable

UN Proper shipping name
Not applicable

Transport hazard class(es)
ADR, ADN, IMDG, IATA
Not applicable

Packing group
ADR/IMDG/IATA
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 (EC) No. 1272/2008.

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.

WHMIS
Not regulated.
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulation.
SECTION 16: OTHER INFORMATION

Date of issue
2015/11/05

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.

Abbreviations and acronyms
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
CAS: Chemical Abstracts Service (division of the American Chemical Society)
CEN: European Committee for Standardization
DNEL: Derived No-Effect Level
DSL: Domestic Substance List
EINECS: European Inventory of Existing Commercial Chemical Substances
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
HMIS: Hazardous Material Information System
IARC: International Agency for Research on Cancer
IATA: International Air Transport Association
IBC: Intermediate Bulk Container
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
PBT: Persistent Bioaccumulative and Toxic
PNEC: Predicted No-Effect Concentration
RTECS: Registry of Toxic Effects of Chemical Substances
STOT – RE: Specific Target Organ Toxicity – Repeated exposure
STOT – SE: Specific Target Organ Toxicity – Single exposure
TWA: Time-Weighted Average exposure value
UN: United Nations
vPvB: very Persistent and very Bioaccumulative
WHMIS: Workplace Hazardous Materials Information System