Lithium Thionyl Chloride Battery

Safety Data Sheet

Date of issue: 3 May 2022

SECTION 1: Identification

1.1. Identification

Product form : Article

Trade name : Lithium Thionyl Chloride Battery

1.2. Recommended use and restrictions on use

Use of the substance/mixture : Energy source

1.3. Supplier

1.4. Emergency telephone number

Emergency number

SECTION 2: Hazard(s) identification

The batteries are exempt articles and not subject to the OSHA Hazard Communication Standard. This Safety Data Sheet is supplied for its users. Under normal use, the battery integrity is maintained and the active components it contains are isolated from the outside.

2.1. Classification of the substance or mixture

GHS-US classification

This is a high energy density sealed battery containing (Lithium) and (Thionyl Chloride) materials. For this reason, improper handling of the battery could lead to distortion, leakage, overheating, explosion, fire, or generation of irritating/corrosive gases and cause human injury or equipment trouble. Please strictly observe safety instructions.

2.2. GHS Label elements, including precautionary statements

GHS-US labelling

No labelling applicable

2.3. Other hazards which do not result in classification

No additional information available

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	GHS-US classification
Lithium	(CAS-No.) 7439-9[1]-2	0 - 100	Water-react. 1, H260 Skin Corr. 1B, H314
Thionyl chloride	(CAS-No.) 7719-09-7	0 - 100	Acute Tox. 4 (Oral), H302 Acute Tox. 3 (Inhalation), H331 Skin Corr. 1A, H314 STOT SE 3, H335
Aluminum chloride	(CAS-No.) 7446-70-0	0 - 100	Skin Corr. 1B, H314
Lithium chloride	(CAS-No.) 7447-41-8	0 - 100	Acute Tox. 4 (Oral), H302 Skin Irrit. 2, H315 Eye Irrit. 2A, H319

[1] May 2017

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SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures general : Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

First-aid measures after inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical advice/attention if you feel unwell.

First-aid measures after skin contact : Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Immediately call a POISON CENTER or doctor/physician.

First-aid measures after eye contact : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician.

First-aid measures after ingestion : Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor/physician.

4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects after inhalation : Not expected to present a significant inhalation hazard under anticipated conditions of normal use. If a battery ruptures, may be harmful or fatal if inhaled in a confined area.

Symptoms/effects after skin contact : Not expected to present a significant skin hazard under anticipated conditions of normal use. If a battery ruptures, causes severe skin burns.

Symptoms/effects after eye contact : Not expected to present a significant skin hazard under anticipated conditions of normal use. If a battery ruptures, direct contact with the liquid or exposure to vapors or mists may cause tearing, redness, swelling, corneal damage and irreversible eye damage.

Symptoms/effects after ingestion : Not expected to present a significant ingestion hazard under anticipated conditions of normal use. If battery ruptures, swallowing is harmful. Contents of an open battery can cause serious chemical burns of mouth, esophagus, and gastrointestinal tract. Swallowing a small quantity of this material will result in serious health hazard.

4.3. Immediate medical attention and special treatment, if necessary

Treat symptomatically.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : In case of fire where lithium batteries are present, apply a smothering agent such as Lith-X, sand, dry ground dolomite, or soda ash. A smothering agent will extinguish burning lithium batteries.

Unsuitable extinguishing media : Do not use water. Do not short circuit, recharge, over discharge (discharge below 0.0 Volts), puncture, crush or expose to temperatures above 150ºC. Cell may leak, vent, or explode.

5.2. Specific hazards arising from the chemical

Fire hazard : Battery may rupture due to pressure buildup when exposed to excessive heat and may be result in the release of corrosive materials. Hazardous combustion products: Sulfur oxides. Hydrogen chloride. Corrosive vapors.

Explosion hazard : Battery may burst and release hazardous decomposition products when exposed to fire situation.

Reactivity : Stable under normal conditions of use.

5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions : Exercise caution when fighting any chemical fire. Prevent firefighting water from entering the environment.

Protective equipment for firefighters : Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures : Evacuate unnecessary personnel.

6.1.2. For emergency responders

Protective equipment : Equip cleanup crew with proper protection. Emergency procedures : Ventilate area.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up : On land, sweep or shovel into suitable containers. Minimize generation of dust. Store away from other materials.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection. For disposal of residues refer to section 13 : Disposal considerations.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed : Keep away from any possible contact with water, because of violent reaction and possible flash fire.

Precautions for safe handling : Do not open the battery system. Do not crush or pierce the cells. Do not submit to excessive mechanical stress. Do not mix batteries of different types or mix new and old ones together. Do not expose the unit to water or condensation. Do not directly heat, solder or throw into fire. Such unsuitable use can cause leakage or spout vaporized electrolyte fumes and may cause fire or explosion.

Hygiene measures : Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Wash contaminated clothing before reuse.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures : Comply with applicable regulations.

Storage conditions : Keep only in the original container in a cool, well ventilated place away from : Heat sources. Keep container closed when not in use. Store in a dry place. Protect from moisture. Cells should be stored at room temperature, approx. 21ºC (70ºF)

Incompatible materials : None known.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Lithium (7439-93-2)

Not applicable

Thionyl chloride (7719-09-7)

ACGIH	ACGIH Ceiling (ppm)	0.2 ppm
NIOSH	NIOSH REL (ceiling) (mg/m³)	5 mg/m³
NIOSH	NIOSH REL (ceiling) (ppm)	1 ppm

Aluminum chloride (7446-70-0)

Not applicable

Lithium chloride (7447-41-8)

Not applicable

8.2. Appropriate engineering controls

Appropriate engineering controls : Provide adequate ventilation. Keep the container hermetically sealed.

8.3. Individual protection measures/Personal protective equipment

:

Hand protection:

Not required for normal conditions of use. If a battery ruptures, impervious acid resistant gloves.

Eye protection:

Not required for normal conditions of use. If a battery ruptures, chemical goggles or face shield.

Skin and body protection:

Not required for normal conditions of use. If a battery ruptures, chemical resistant apron.

Respiratory protection:

Not required for normal conditions of use. If a battery ruptures, NIOSH/MSHA approved air purifying respirator should be used if operating conditions produce airborne concentrations that exceed exposure limits for any individual components. If conditions immediately dangerous to life or health exist, use NIOSH/MSHA self-contained breathing apparatus (SCBA).

Other information:

Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Solid
Appearance	: Hermetically sealed battery.
Color	No data available
Odor	: Not applicable
Odor threshold	: No data available
	pH : No data available
Melting point	: No data available
Freezing point	: No data available
Boiling point	: No data available
Flash point	: No data available
Relative evaporation rate (butylacetate=1)	: No data available
Flammability (solid, gas)	: In contact with water releases flammable gases which may ignite spontaneously.
Vapor pressure	: Thionyl Chloride: 92mm 20ºC
Relative vapor density at 20 °C	: Thionyl Chloride: 4.1
Relative density	: No data available
Density	: Thionyl Chloride: 1.63
Solubility	: Water: Thionyl Chloride: Decomposes violently on contact with water

Log Pow	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive limits	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available

9.2. Other information
No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity
Stable under normal conditions of use.

10.2. Chemical stability
Stable under normal conditions.

10.3. Possibility of hazardous reactions
Hazardous polymerization will not occur. In contact with water releases flammable gases which may ignite spontaneously.

10.4. Conditions to avoid
Heat sources. Extremely high or low temperatures. Protect from humidity.

10.5. Incompatible materials
None known under normal conditions of use.

10.6. Hazardous decomposition products
If battery ruptures or leaks: Sulfur oxides. Hydrogen chloride. Corrosive vapours.

SECTION 11: Toxicological information

11.1. Information on toxicological effects
Likely routes of exposure : Ingestion; Inhalation; Skin and Eye contact

Acute toxicity : Not classified

Skin corrosion/irritation : Not classified Serious eye damage/irritation : Not classified Respiratory or skin sensitisation : Not classified Germ cell mutagenicity : Not classified Carcinogenicity : Not classified Reproductive toxicity : Not classified

Specific target organ toxicity (single exposure) : Not classified Specific target organ toxicity (repeated : Not classified exposure)

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Aspiration hazard	Not classified
Symptoms/effects after inhalation	: Not expected to present a significant inhalation hazard under anticipated conditions of normal use. If a battery ruptures, may be harmful or fatal if inhaled in a confined area.
Symptoms/effects after skin contact	: Not expected to present a significant skin hazard under anticipated conditions of normal use. If a battery ruptures, causes severe skin burns.
Symptoms/effects after eye contact	: Not expected to present a significant skin hazard under anticipated conditions of normal use. If a battery ruptures, direct contact with the liquid or exposure to vapors or mists may cause tearing, redness, swelling, corneal damage and irreversible eye damage. Causes serious eye damage.
Symptoms/effects after ingestion	: Not expected to present a significant ingestion hazard under anticipated conditions of normal use. If battery ruptures, swallowing can be harmful. Contents of an open battery can cause serious chemical burns of mouth, esophagus, and gastrointestinal tract. Swallowing a small quantity of this material will result in serious health hazard.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

12.2. Persistence and degradability

Lithium Thionyl Chloride Battery	
Persistence and degradability	Not established.

12.3. Bioaccumulative potential

Lithium Thionyl Chloride Battery	
Bioaccumulative potential	Not established.

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Effect on global warming	: No known effects from this product.
GWPmix comment	: No known effects from this product.
Other information	: Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Disposal methods

Product/Packaging disposal recommendations	: Dispose of contents/container to comply with applicable local, national and international regulation.
Ecology - waste materials	: Avoid release to the environment.

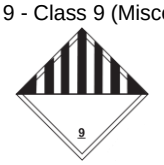
SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Transport document description	: UN3090 Lithium battery, 9, II
UN-No.(DOT)	: UN3090

Proper Shipping Name (DOT)	: Lithium battery
Class (DOT)	: 9 - Class 9 - Miscellaneous hazardous material 49 CFR 173.140
Packing group (DOT)	: II - Medium Danger
Hazard labels (DOT)	: 9 - Class 9 (Miscellaneous dangerous materials)



DOT Packaging Non Bulk (49 CFR 173.xxx)	: 185
DOT Packaging Bulk (49 CFR 173.xxx)	: None
DOT Packaging Exceptions (49 CFR 173.xxx)	: 185
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27)	See A100
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75)	: 35 kg

DOT Vessel Stowage Location : A - The material may be stowed ‘‘on deck’’ or ‘‘under deck’’ on a cargo vessel and on a passenger vessel.
Emergency Response Guide (ERG) Number : 138

Other information : No supplementary information available.

Transportation of Dangerous Goods

Transport document description	: UN3090 LITHIUM BATTERIES, 9
UN-No. (TDG)	: UN3090
Proper Shipping Name (Transportation of Dangerous Goods)	: LITHIUM BATTERIES
TDG Primary Hazard Classes	: 9 - Class 9 - Miscellaneous Products, Substances or Organisms

Explosive Limit and Limited Quantity Index : 0 Passenger Carrying Road Vehicle or Passenger : 5 kg Carrying Railway Vehicle Index

Transport by sea

Transport document description (IMDG)	: UN 3090 LITHIUM METAL BATTERIES, 9
UN-No. (IMDG)	: 3090
Proper Shipping Name (IMDG)	: LITHIUM METAL BATTERIES

Class (IMDG) : 9 - Miscellaneous dangerous substances and articles Limited quantities (IMDG) : 0

Air transport

Transport document description (IATA)	: UN 3090 Lithium metal batteries, 9
UN-No. (IATA)	: 3090
Proper Shipping Name (IATA)	: Lithium metal batteries
Class (IATA)	: 9 - Miscellaneous Dangerous Goods

SECTION 15: Regulatory information

15.1. US Federal regulations

All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

:

This product or mixture is not known to contain a toxic chemical or chemicals in excess of the applicable de minimis concentration as specified in 40 CFR §372.38(a) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

15.2. International regulations

CANADA

Lithium (7439-93-2)
Listed on the Canadian DSL (Domestic Substances List)
Thionyl chloride (7719-09-7)
Listed on the Canadian DSL (Domestic Substances List)
Aluminum chloride (7446-70-0)
Listed on the Canadian DSL (Domestic Substances List)
Lithium chloride (7447-41-8)
Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

Lithium (7439-93-2)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Thionyl chloride (7719-09-7)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

Aluminum chloride (7446-70-0)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Lithium chloride (7447-41-8)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

National regulations

Lithium (7439-93-2)
Listed on the AICS (Australian Inventory of Chemical Substances) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on the Korean ECL (Existing Chemicals List) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances) Listed on INSQ (Mexican National Inventory of Chemical Substances) Taiwan Chemical Substance Inventory

Thionyl chloride (7719-09-7)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Japanese Poisonous and Deleterious Substances Control Law
Listed on the Canadian IDL (Ingredient Disclosure List)
Listed on INSQ (Mexican National Inventory of Chemical Substances) Taiwan Chemical Substance Inventory

Aluminum chloride (7446-70-0)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on the Canadian IDL (Ingredient Disclosure List)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on Turkish inventory of chemical
Taiwan Chemical Substance Inventory

Lithium chloride (7447-41-8)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on Turkish inventory of chemical
Taiwan Chemical Substance Inventory

15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

SECTION 16: Other information

Revision date : 3 May 2017 Other information : None.

SDS US (GHS HazCom 2012)

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product