

# Lithium Thionyl Chloride Metal Batteries with Aluminum Electrolyte

## Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations And According To The Hazardous Products Regulation (February 11, 2015).  
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### SECTION 1: IDENTIFICATION

#### 1.1. Product Identifier

**Product Form:** Mixture

**Product Name:** Lithium Thionyl Chloride Metal Batteries with Aluminum Electrolyte

**Product Code:** No other identifiers

**Additional Information:** This product is a sealed battery. The battery contains hazardous substances, which under normal conditions of use are not in contact with the user unless the battery is altered or there is a spill, leak, or other emergency. This Safety Data Sheet applies to the hazards of the internal contents of the battery, specifically the hazardous substances encased within it.

#### 1.2. Intended Use of the Product

Lithium-based battery product

#### 1.3. Name, Address, and Telephone of the Responsible Party

##### Company

Engineered Power

20, 3103 - 14th Avenue N.E. Calgary

Alberta, Canada T2A 7N6

Telephone: (403) 235-2584

#### 1.4. Emergency Telephone Number

**Emergency Number** : ChemTel LLC  
(800)255-3924 (North America)  
+1 (813)248-0585 (International)

### SECTION 2: HAZARDS IDENTIFICATION

Note: Leaking cells pose health hazards: see Sections 4 and 11. Intentional abuse of cells or batteries increases the risk of harm or damage to the product, to the user, and to surrounding materials and personnel. Do not attempt to open sealed cells or batteries. Do not intentionally short-circuit cells or batteries. Do not expose these products to temperatures exceeding the maximum manufacturers rating. Do not dispose of cells/batteries in landfills. Please follow all manufacturer guidelines in the use, storage, and disposal of these products. Consult manufacturer in cases of questions involving specific product usage.

#### 2.1. Classification of the Substance or Mixture

##### GHS-US/CA Classification

PHNOC 1

Water-react. 1 H260

Met. Corr. 1 H290

Acute Tox. 4 (Oral) H302

Acute Tox. 4 H332

(Inhalation:dust,mist)

Skin Corr. 1A H314

Eye Dam. 1 H318

Repr. 2 H361

STOT SE 2 H371

STOT SE 3 H335

STOT RE 2 H373

Aquatic Acute 3 H402

Aquatic Chronic 3 H412

Full text of hazard classes and H-statements : see section 16

#### 2.2. Label Elements

##### GHS-US/CA Labeling

##### Hazard Pictograms (GHS-US/CA)



##### Signal Word (GHS-US/CA)

: Danger

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**Hazard Statements (GHS-US/CA)** : H260 - In contact with water releases flammable gases which may ignite spontaneously.  
H290 - May be corrosive to metals.  
H302+H332 - Harmful if swallowed or if inhaled.  
H314 - Causes severe skin burns and eye damage.  
H318 - Causes serious eye damage.  
H335 - May cause respiratory irritation.  
H361 - Suspected of damaging fertility or the unborn child.  
H371 - May cause damage to organs.  
H373 - May cause damage to organs through prolonged or repeated exposure.  
H402 - Harmful to aquatic life.  
H412 - Harmful to aquatic life with long lasting effects.  
Reacts violently with water.

**Precautionary Statements (GHS-US/CA)** : P201 - Obtain special instructions before use.  
P202 - Do not handle until all safety precautions have been read and understood.  
P223 - Do not allow contact with water.  
P234 - Keep only in original container.  
P260 - Do not breathe vapors, mist, or spray.  
P264 - Wash hands, forearms, and other exposed areas thoroughly after handling.  
P270 - Do not eat, drink or smoke when using this product.  
P273 - Avoid release to the environment.  
P280 - Wear protective gloves, protective clothing, and eye protection.  
P301+P312 - IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell.  
P301+P330+P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.  
P302+P335+P334 - IF ON SKIN: Brush off loose particles from skin. Immerse in cool water or wrap in wet bandages.  
P303+P361+P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water .  
P304+P340 - IF INHALED: Remove person to fresh air and keep 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.  
P308+P311 - IF exposed or concerned: Call a POISON CENTER or doctor.  
P308+P313 - If exposed or concerned: Get medical advice/attention.  
P310 - Immediately call a POISON CENTER or doctor.  
P314 - Get medical advice/attention if you feel unwell.  
P321 - Specific treatment (see section 4 on this SDS).  
P330 - Rinse mouth.  
P363 - Wash contaminated clothing before reuse.  
P370+P378 - In case of fire: Use appropriate media (see section 5) to extinguish.  
P390 - Absorb spillage to prevent material-damage.  
P403+P233 - Store in a well-ventilated place. Keep container tightly closed.  
P406 - Store in corrosive resistant container with a resistant inner liner.  
P501 - Dispose of contents/container in accordance with local, regional, national, and international regulations.

**Supplemental Information** : Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

### 2.3. Other Hazards

Exposure may aggravate pre-existing eye, skin, or respiratory conditions.

### 2.4. Unknown Acute Toxicity (GHS-US/CA)

No data available

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1. Substance

Not applicable

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### 3.2. Mixture

Name	Synonyms	Product Identifier	% *	GHS Ingredient Classification
Thionyl chloride	Thionyl dichloride / Sulphurous oxychloride / Sulfurous oxychloride / Sulphinyl dichloride / thionyl chloride	(CAS-No.) 7719-09-7	25 – 50	Acute Tox. 3 (Oral), H301 Acute Tox. 2 (Inhalation), H330 Acute Tox. 4 (Inhalation:dust,mist), H332 Skin Corr. 1A, H314 Eye Dam. 1, H318 STOT SE 3, H335
Aluminum chloride	Aluminium chloride / Aluminium chloride (AlCl <sub>3</sub> ) / Aluminium chloride, anhydrous / Aluminum chloride (AlCl <sub>3</sub> ) / Aluminum trichloride / Aluminum chloride, anhydrous / Aluminium chloride anhydrous / Aluminium trichloride / ALUMINUM CHLORIDE / Aluminium chloride solution / Aluminium trichloride, solution / Aluminium(III) chloride / aluminum chloride anhydrous	(CAS-No.) 7446-70-0	10 – 25	Met. Corr. 1, H290 Acute Tox. 4 (Oral), H302 Skin Corr. 1B, H314 Eye Dam. 1, H318 Aquatic Acute 2, H401 Aquatic Chronic 2, H411
Lithium	Metallic lithium / Lithium metal / Lithium, metal / lithium	(CAS-No.) 7439-93-2	5 – 10	PHNOC 1 Water-react. 1, H260 Skin Corr. 1B, H314 Eye Dam. 1, H318 Comb. Dust
Lithium chloride	Lithium chloride (LiCl) / LITHIUM CHLORIDE / lithium chloride	(CAS-No.) 7447-41-8	2.5 – 10	Acute Tox. 4 (Oral), H302 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Repr. 2, H361 STOT SE 2, H371 STOT RE 2, H373

Full text of H- statements: see section 16

\*Percentages are listed in weight by weight percentage (w/w%) for liquid and solid ingredients. Gas ingredients are listed in volume by volume percentage (v/v%).

## SECTION 4: FIRST AID MEASURES

\*\*\*Hazards only apply to leaking or damaged cells.\*\*\*

### 4.1. Description of First-aid Measures

**General:** The following first aid measures apply in case of exposure to the interior battery components, if the battery is damaged and exposure occurs. Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

**Inhalation:** For exposure to battery contents: Using proper respiratory protection, move the exposed person to fresh air at once. Immediately call a poison center, physician, or emergency medical service.

**Skin Contact:** For exposure to battery contents: Immediately remove contaminated clothing. Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages. Immediately flush skin with plenty of water for at least 30 minutes. Get immediate medical advice/attention.

**Eye Contact:** For exposure to battery contents: Immediately rinse with water for at least 30 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical advice/attention.

**Ingestion:** For exposure to battery contents: Rinse mouth. Do NOT induce vomiting. Obtain emergency medical attention.

### 4.2. Most Important Symptoms and Effects Both Acute and Delayed

**General:** Exposure to battery contents may result in the following: May cause respiratory irritation. Suspected of damaging fertility or the unborn child. May cause damage to organs. May cause damage to organs through prolonged or repeated exposure. Harmful if swallowed. Harmful if inhaled. Causes severe skin burns and eye damage.

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**Inhalation:** Exposure to the internal contents of the battery may result in: Irritation of the respiratory tract and the other mucous membranes. Inhalation is likely to cause adverse health effects including but not limited to: irritation, difficulty breathing, and unconsciousness. May be corrosive to the respiratory tract.

**Skin Contact:** Exposure to the internal contents of the battery may result in: Causes severe irritation which will progress to chemical burns.

**Eye Contact:** Exposure to the internal contents of the battery may result in: Causes permanent damage to the cornea, iris, or conjunctiva.

**Ingestion:** Exposure to the internal contents of the battery may result in: This material is harmful orally and can cause adverse health effects or death in significant amounts. May cause burns or irritation of the linings of the mouth, throat, and gastrointestinal tract.

**Chronic Symptoms:** Exposure to the internal contents of the battery may result in: Suspected of damaging fertility or the unborn child. May cause damage to organs through prolonged or repeated exposure.

### 4.3. Indication of Any Immediate Medical Attention and Special Treatment Needed

If exposed or concerned, get medical advice and attention. If medical advice is needed, have product container or label at hand.

## SECTION 5: FIRE-FIGHTING MEASURES

### 5.1. Extinguishing Media

**Suitable Extinguishing Media:** Class D extinguishers should be used on Lithium Metal battery fires, if possible, as most other media will not work. Dry chemical powder, alcohol-resistant foam, carbon dioxide (CO<sub>2</sub>). Use extinguishing media appropriate for surrounding fire.

**Unsuitable Extinguishing Media:** Do not use extinguishing media containing water.

### 5.2. Special Hazards Arising From the Substance or Mixture

**Fire Hazard:** For exposure to the internal contents of a lithium metal battery: Vigorously reacts with water to produce flammable gases which may ignite spontaneously and cause a fire or explosion. Vapors from a damaged battery may be flammable.

**Explosion Hazard:** Contact with metallic substances may release flammable hydrogen gas. Reacts vigorously with water to emit flammable gases at a high rate of evolution, which could ignite spontaneously and cause an explosion.

**Reactivity:** May be corrosive to metals. Contact with metals may evolve flammable hydrogen gas. Reacts violently with water liberating highly flammable gases. May react exothermically with water releasing heat. Batteries are non-reactive under normal conditions of storage and use. If the internal contents are exposed, lithium metal batteries may react with incompatible materials such as adding an acid to a base or base to an acid may cause a violent reaction.

### 5.3. Advice for Firefighters

**Precautionary Measures Fire:** Exercise caution when fighting any chemical fire.

**Firefighting Instructions:** In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion.

**Protection During Firefighting:** Do not enter fire area without proper protective equipment, including respiratory protection.

**Hazardous Combustion Products:** Lithium oxides. Chlorine oxides. Corrosive vapors. HCl and Sulfur oxides.

**Other Information:** Do not allow run-off from fire fighting to enter drains or water courses.

### 5.4. Reference to Other Sections

Refer to Section 9 for flammability properties.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

\*\*\*Hazards only apply to leaking or damaged cells.\*\*\*

### 6.1. Personal Precautions, Protective Equipment and Emergency Procedures

**General Measures:** Do not get in eyes, on skin, or on clothing. Keep away from heat, sparks, open flames, hot surfaces. – No smoking. Remove ignition sources. Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources. No smoking.

#### 6.1.1. For Non-Emergency Personnel

**Protective Equipment:** Use appropriate personal protective equipment (PPE).

**Emergency Procedures:** Evacuate unnecessary personnel.

#### 6.1.2. For Emergency Personnel

**Protective Equipment:** Equip cleanup crew with proper protection.

**Emergency Procedures:** Upon arrival at the scene, a first responder is expected to recognize the presence of dangerous goods, protect oneself and the public, secure the area, and call for the assistance of trained personnel as soon as conditions permit. Ventilate area.

### 6.2. Environmental Precautions

Prevent entry to sewers and public waters. Avoid release to the environment.

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### 6.3. Methods and Materials for Containment and Cleaning Up

**For Containment:** Contain solid spills with appropriate barriers and prevent migration and entry into sewers or streams. Use only non-sparking tools. As an immediate precautionary measure, isolate spill or leak area in all directions. Ventilate area.

**Methods for Cleaning Up:** Clean up spills immediately and dispose of waste safely. Contact competent authorities after a spill. Absorb spillage to prevent material damage. Use only non-sparking tools. Cautiously neutralize spilled solid with sodium bicarbonate. Use explosion proof vacuum during cleanup, with appropriate filter. Do not mix with other materials. Vacuum clean-up is preferred.

### 6.4. Reference to Other Sections

See Section 8 for exposure controls and personal protection and Section 13 for disposal considerations.

## SECTION 7: HANDLING AND STORAGE

### 7.1. Precautions for Safe Handling

**Additional Hazards When Processed:** Never disassemble a battery or bypass any safety device. Do not crush, pierce, short (+) and (-) battery terminals with conductive (i.e. metal) goods. Do not directly heat or solder. Do not throw into fire. Do not mix batteries of different types and brands. Do not open or damage enclosure, or battery cell as this could cause a potential exposure and release of hazardous materials.

**Precautions for Safe Handling:** Since this product is a sealed battery, normal handling hazards are minimal unless the battery is damaged or the internal contents are exposed. If the battery is damaged: Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. For exposure of internal contents: Do not get in eyes, on skin, or on clothing. Do NOT breathe (vapor, mist, gas). Protect from moisture. Keep away from heat, sparks, open flames, hot surfaces. No smoking. Handle empty containers with care because they may still present a hazard if cell was damaged or leaking.

**Hygiene Measures:** Handle in accordance with good industrial hygiene and safety procedures.

### 7.2. Conditions for Safe Storage, Including Any Incompatibilities

**Technical Measures:** Comply with applicable regulations.

**Storage Conditions:** Store in a cool, dry place. Keep away from moisture, extremely high temperatures, ignition sources, and incompatible materials. Keep container tightly closed.

**Incompatible Materials:** Strong acids, strong bases, strong oxidizers. Metals. May be corrosive to metals. Water, humidity.

### 7.3. Specific End Use(s)

Lithium-based battery product

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1. Control Parameters

For substances listed in section 3 that are not listed here, there are no established exposure limits from the manufacturer, supplier, importer, or the appropriate advisory agency including: ACGIH (TLV), AIHA (WEEL), NIOSH (REL), OSHA (PEL), or Canadian provincial governments.

Thionyl chloride (7719-09-7)		
USA ACGIH	ACGIH OEL Ceiling [ppm]	0.2 ppm
USA NIOSH	NIOSH REL (Ceiling)	5 mg/m <sup>3</sup>
USA NIOSH	NIOSH REL C [ppm]	1 ppm
Alberta	OEL C	4.9 mg/m <sup>3</sup>
Alberta	OEL Ceiling [ppm]	1 ppm
British Columbia	OEL Ceiling [ppm]	1 ppm
Manitoba	OEL Ceiling [ppm]	0.2 ppm
New Brunswick	OEL C	4.9 mg/m <sup>3</sup>
New Brunswick	OEL Ceiling [ppm]	1 ppm
Newfoundland & Labrador	OEL Ceiling [ppm]	0.2 ppm
Nova Scotia	OEL Ceiling [ppm]	0.2 ppm
Nunavut	OEL Ceiling [ppm]	1 ppm
Northwest Territories	OEL Ceiling [ppm]	1 ppm
Ontario	OEL Ceiling [ppm]	0.2 ppm
Prince Edward Island	OEL Ceiling [ppm]	0.2 ppm
Québec	Plafond (OEL Ceiling)	4.9 mg/m <sup>3</sup>

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Québec	Plafond (OEL Ceiling) [ppm]	1 ppm
Saskatchewan	OEL Ceiling [ppm]	1 ppm

### 8.2. Exposure Controls

**Appropriate Engineering Controls:** Ensure adequate ventilation, especially in confined areas. Ensure all national/local regulations are observed. Gas detectors should be used when toxic gases may be released. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure to internal contents.

**Personal Protective Equipment:** Gloves. Protective clothing. Protective goggles. Insufficient ventilation: wear respiratory protection. Face shield.



**Materials for Protective Clothing:** Chemically resistant materials and fabrics. Wear fire/flammable resistant/retardant clothing. Corrosion-proof clothing.

**Hand Protection:** Wear protective gloves.

**Eye and Face Protection:** Chemical safety goggles and face shield.

**Skin and Body Protection:** Wear suitable protective clothing.

**Respiratory Protection:** If exposure limits are exceeded or irritation is experienced, approved respiratory protection should be worn. In case of inadequate ventilation, oxygen deficient atmosphere, or where exposure levels are not known wear approved respiratory protection.

**Other Information:** When using, do not eat, drink or smoke. Do not breathe fume, gas, mist, vapors, or spray. Do not eat, drink or smoke when using this product

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

### 9.1. Information on Basic Physical and Chemical Properties

Physical State	: Solid
Appearance	: Metal container containing liquid and solid contents
Odor	: Normally odorless, leaking devices may emit acrid, sulfurous or ethereal odors.
Odor Threshold	: Not available
pH	: Not available
Evaporation Rate	: Not available
Melting Point	: Not available
Freezing Point	: Not available
Boiling Point	: Not available
Flash Point	: Not available
Auto-ignition Temperature	: Not available
Decomposition Temperature	: Not available
Flammability (solid, gas)	: Not available
Lower Flammable Limit	: Not available
Upper Flammable Limit	: Not available
Vapor Pressure	: Not available
Relative Vapor Density at 20°C	: Not available
Relative Density	: Not available
Specific Gravity	: Not available
Solubility	: Not available
Partition Coefficient: N-Octanol/Water	: Not available
Viscosity	: Not available

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### SECTION 10: STABILITY AND REACTIVITY

- 10.1. Reactivity:** For exposure of internal contents: May be corrosive to metals. Contact with metals may evolve flammable hydrogen gas. Reacts violently with water liberating highly flammable gases. May react exothermically with water releasing heat. Batteries are non-reactive under normal conditions of storage and use.
- 10.2. Chemical Stability:** Stable under recommended handling and storage conditions (see section 7).
- 10.3. Possibility of Hazardous Reactions:** For exposure of internal contents: In contact with water releases flammable gases which may ignite spontaneously.
- 10.4. Conditions to Avoid:** Keep away from moisture, water, ignition sources, direct sunlight, extremely high temperatures, incompatible materials. Sparks, heat, open flame and other sources of ignition. Do not heat, expose to fire, disassemble, short circuit, immerse in water, or abuse batteries.
- 10.5. Incompatible Materials:** Strong acids, strong bases, strong oxidizers. Metals. May be corrosive to metals. Water, humidity.
- 10.6. Hazardous Decomposition Products:** For undamaged cell: None expected under normal conditions of use. For damaged or leaking cell: Lithium oxides. Chlorine oxides. Corrosive vapors. HCl and Sulfur oxides.

### SECTION 11: TOXICOLOGICAL INFORMATION

\*\*\*Hazards only apply to leaking or damaged cells.\*\*\*

#### 11.1. Information on Toxicological Effects - Product

**Acute Toxicity (Oral):** Harmful if swallowed.

**Acute Toxicity (Dermal):** Not classified

**Acute Toxicity (Inhalation):** Harmful if inhaled.

**LD50 and LC50 Data:**

Lithium Thionyl Chloride Metal Batteries with Aluminum Electrolyte	
ATE US/CA (oral)	463.15 mg/kg body weight
ATE US/CA (dust, mist)	1.50 mg/l/4h

**Skin Corrosion/Irritation:** Causes severe skin burns.

**Eye Damage/Irritation:** Causes serious eye damage.

**Respiratory or Skin Sensitization:** Not classified

**Germ Cell Mutagenicity:** Not classified

**Carcinogenicity:** Not classified

**Specific Target Organ Toxicity (Repeated Exposure):** May cause damage to organs through prolonged or repeated exposure.

**Reproductive Toxicity:** Suspected of damaging fertility or the unborn child.

**Specific Target Organ Toxicity (Single Exposure):** May cause damage to organs. May cause respiratory irritation.

**Aspiration Hazard:** Not classified

**Symptoms/Injuries After Inhalation:** Exposure to the internal contents of the battery may result in: Irritation of the respiratory tract and the other mucous membranes. Inhalation is likely to cause adverse health effects including but not limited to: irritation, difficulty breathing, and unconsciousness. May be corrosive to the respiratory tract.

**Symptoms/Injuries After Skin Contact:** Exposure to the internal contents of the battery may result in: Causes severe irritation which will progress to chemical burns.

**Symptoms/Injuries After Eye Contact:** Exposure to the internal contents of the battery may result in: Causes permanent damage to the cornea, iris, or conjunctiva.

**Symptoms/Injuries After Ingestion:** Exposure to the internal contents of the battery may result in: This material is harmful orally and can cause adverse health effects or death in significant amounts. May cause burns or irritation of the linings of the mouth, throat, and gastrointestinal tract.

**Chronic Symptoms:** Exposure to the internal contents of the battery may result in: Suspected of damaging fertility or the unborn child. May cause damage to organs through prolonged or repeated exposure.

#### 11.2. Information on Toxicological Effects - Ingredient(s)

**LD50 and LC50 Data:**

Thionyl chloride (7719-09-7)	
LD50 Oral Rat	270 mg/kg
LC50 Inhalation Rat	2.717 mg/l/4h
LC50 Inhalation Rat	1.21 mg/l/4h

  

Aluminum chloride (7446-70-0)	
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LD50 Oral Rat	370 mg/kg
<b>Lithium chloride (7447-41-8)</b>	
LD50 Oral Rat	526 mg/kg
LD50 Dermal Rat	> 2000 mg/kg (No deaths)
LC50 Inhalation Rat	> 5.57 mg/l/4h

## SECTION 12: ECOLOGICAL INFORMATION

### 12.1. Toxicity

Ecology - General: Harmful to aquatic life with long lasting effects.

<b>Aluminum chloride (7446-70-0)</b>	
LC50 Fish 1	5.31 – 7.2 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [flow-through])
EC50 - Crustacea [1]	3.9 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
LC50 Fish 2	6.2 – 11.9 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss)
<b>Lithium chloride (7447-41-8)</b>	
LC50 Fish 1	158 mg/kg (Exposure time: 96 h - Species: Oncorhynchus mykiss [Static])
EC50 - Crustacea [1]	249 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
ErC50 algae	> 400 mg/l (Exposure time: 72 h - Species: Desmodesmus subspicatus [Static])
NOEC Chronic Fish	59.4 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss)
NOEC Chronic Crustacea	63.4 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
NOEC Chronic Algae	25 mg/l (Exposure time: 72 h - Species: Desmodesmus subspicatus [Static])

### 12.2. Persistence and Degradability

<b>Lithium Thionyl Chloride Metal Batteries with Aluminum Electrolyte</b>	
Persistence and Degradability	May cause long-term adverse effects in the environment.

### 12.3. Bioaccumulative Potential

<b>Lithium Thionyl Chloride Metal Batteries with Aluminum Electrolyte</b>	
Bioaccumulative Potential	Not established.
<b>Aluminum chloride (7446-70-0)</b>	
BCF Fish 1	(no bioaccumulation)
<b>Lithium chloride (7447-41-8)</b>	
BCF Fish 1	(no bioaccumulation)
Partition coefficient n-octanol/water (Log Pow)	-2.66

12.4. Mobility in Soil Not available

### 12.5. Other Adverse Effects

Other Information: Avoid release to the environment.

## SECTION 13: DISPOSAL CONSIDERATIONS

### 13.1. Waste treatment methods

**Waste Disposal Recommendations:** Dispose of contents/container in accordance with local, regional, national, territorial, provincial, and international regulations.

**Ecology - Waste Materials:** Avoid release to the environment. This material is hazardous to the aquatic environment. Keep out of sewers and waterways.

## SECTION 14: TRANSPORT INFORMATION

The shipping description(s) stated herein were prepared in accordance with certain assumptions at the time the SDS was authored, and can vary based on a number of variables that may or may not have been known at the time the SDS was issued.



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### 14.1. In Accordance with DOT

Proper Shipping Name : LITHIUM METAL BATTERIES  
 Hazard Class : 9  
 Identification Number : UN3090  
 Label Codes : 9  
 ERG Number : 138



### 14.2. In Accordance with IMDG

Proper Shipping Name : LITHIUM METAL BATTERIES  
 Hazard Class : 9  
 Identification Number : UN3090  
 Label Codes : 9  
 EmS-No. (Fire) : F-A  
 EmS-No. (Spillage) : S-I



### 14.3. In Accordance with IATA

Proper Shipping Name : LITHIUM METAL BATTERIES  
 Hazard Class : 9A  
 Identification Number : UN3090  
 Label Codes : 9A  
 ERG Code (IATA) : 12FZ



### 14.4. In Accordance with TDG

Proper Shipping Name : LITHIUM METAL BATTERIES  
 Hazard Class : 9  
 Identification Number : UN3090  
 Label Codes : 9



## SECTION 15: REGULATORY INFORMATION

### 15.1. US Federal Regulations

Lithium Thionyl Chloride Metal Batteries with Aluminum Electrolyte	
SARA Section 311/312 Hazard Classes	Physical hazard - Corrosive to metals Health hazard - Specific target organ toxicity (single or repeated exposure) Health hazard - Reproductive toxicity Physical hazard - In contact with water emits flammable gas Health hazard - Acute toxicity (any route of exposure) Health hazard - Serious eye damage or eye irritation Health hazard - Skin corrosion or Irritation
<b>Thionyl chloride (7719-09-7)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
<b>Aluminum chloride (7446-70-0)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
<b>Lithium chloride (7447-41-8)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	
<b>Lithium (7439-93-2)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	

### 15.2. US State Regulations

<b>Thionyl chloride (7719-09-7)</b>
U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - Massachusetts - Right To Know List
<b>Aluminum chloride (7446-70-0)</b>
U.S. - New Jersey - Right to Know Hazardous Substance List

# Lithium Thionyl Chloride Metal Batteries with Aluminum Electrolyte

## Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations And According To The Hazardous Products Regulation (February 11, 2015).

U.S. - Pennsylvania - RTK (Right to Know) List

U.S. - Massachusetts - Right To Know List

### Lithium (7439-93-2)

U.S. - New Jersey - Right to Know Hazardous Substance List

U.S. - Pennsylvania - RTK (Right to Know) List

U.S. - Massachusetts - Right To Know List

## 15.3. Canadian Regulations

### 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)

### Lithium (7439-93-2)

Listed on the Canadian DSL (Domestic Substances List)

## SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

**Date of Preparation or Latest Revision** : 10/01/2021

### Revision

### Other Information

: This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200 and Canada's Hazardous Products Regulations (HPR) SOR/2015-17.

### GHS Full Text Phrases:

Acute Tox. 2 (Inhalation)	Acute toxicity (inhalation) Category 2
Acute Tox. 3 (Oral)	Acute toxicity (oral) Category 3
Acute Tox. 4 (Inhalation:dust,mist)	Acute toxicity (inhalation:dust,mist) Category 4
Acute Tox. 4 (Oral)	Acute toxicity (oral) Category 4
Aquatic Acute 2	Hazardous to the aquatic environment - Acute Hazard Category 2
Aquatic Acute 3	Hazardous to the aquatic environment - Acute Hazard Category 3
Aquatic Chronic 2	Hazardous to the aquatic environment - Chronic Hazard Category 2
Aquatic Chronic 3	Hazardous to the aquatic environment - Chronic Hazard Category 3
Comb. Dust	Combustible Dust
Eye Dam. 1	Serious eye damage/eye irritation Category 1
Eye Irrit. 2	Serious eye damage/eye irritation Category 2
Met. Corr. 1	Corrosive to metals Category 1
PHNOC 1	Physical hazard not otherwise classified, category 1
Repr. 2	Reproductive toxicity Category 2
Skin Corr. 1A	Skin corrosion/irritation Category 1A
Skin Corr. 1B	Skin corrosion/irritation Category 1B
Skin Irrit. 2	Skin corrosion/irritation Category 2
STOT RE 2	Specific target organ toxicity (repeated exposure) Category 2
STOT SE 2	Specific target organ toxicity (single exposure) Category 2
STOT SE 3	Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation
Water-react. 1	Substances and mixtures which in contact with water emit flammable gases Category 1
H260	In contact with water releases flammable gases which may ignite spontaneously
H290	May be corrosive to metals
H301	Toxic if swallowed
H302	Harmful if swallowed

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H314	Causes severe skin burns and eye damage
H315	Causes skin irritation
H318	Causes serious eye damage
H319	Causes serious eye irritation
H330	Fatal if inhaled
H332	Harmful if inhaled
H335	May cause respiratory irritation
H361	Suspected of damaging fertility or the unborn child
H371	May cause damage to organs
H373	May cause damage to organs through prolonged or repeated exposure
H401	Toxic to aquatic life
H402	Harmful to aquatic life
H411	Toxic to aquatic life with long lasting effects
H412	Harmful to aquatic life with long lasting effects

*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.*

NA GHS SDS 2015 (Can, US)