Revision : 2019-01A

Safety Data Sheet

1. Product Identification

1) Product Name

Lithium Thionyl Chloride Battery (Li-$SOCl_2$, Non-Rechargeable, 3.6V)

Single Cells or Multi Packs of following models

Small Size Battery
XL-050F, XLP-050F, XL-050H

Medium Size Battery
XL-055F, XLP-055F, XL-060F, XLP-060F, XL-060H, XL-100F

Big Size Battery
XL-140F, XL-145F, XL-200F, XL-205F, XL-1459F, XL-2059F, 00G45-3210-0002

2) Manufacturer: XenoEnergy Co., Ltd.
70-7, Mooha-ro, Hwaseong-shi, Kyeonggi-do, Korea, 18279

3) Emergency Contact
International: +82-70-8277-6310
70-7, Mooha-ro, Namyang-eup, Hwaseong-shi, Kyeonggi-do, Korea, 18279
USA or Canada: +1 (860) 945-1177
680, Main Street, Suite #206, Watertown, CT 06795, USA

2. Hazard Identification

The Lithium Thionyl Chloride Batteries have hermetically sealed structure, so they are not hazardous when they are used in the recommendations of the manufacturer.

Do not short circuit, recharge, puncture, incinerate, crush, immerse, force discharge or expose to temperatures above the declared operating temperature range of the product. Risk of fire or explosion.

Under normal usage conditions, the electrode materials and liquid electrolyte cannot be leaked to the outside. Risk of exposure only in case of abuse (mechanical, thermal, electrical) which leads to the rupture of the battery container.

Electrolyte is toxic and corrosive and causes irritation, skin burn, lung injuries, asthma and other respiratory disorders

3. Composition and Information on Ingredients

Substance	CAS No.	Approximate percent of total weight (%)	Hazard Symbol	R-phrases
Lithium Metal	7439-93-2	3-5	F, C	14/15-34
Thionyl Chloride	7719-09-7	33-45	C	14-34-37
Aluminum Chloride	7446-70-0	2-5		
Lithium Chloride	7447-41-8	1-2		
Carbon	1333-86-4	3-5		

Hazard Symbols: C Corrosive / F Highly flammable
R-Phrases: R 14 Reacts violently with water
R 14/15 Reacts violently with water liberating extremely flammable gases
R 34 Causes burns
R 37 Irritating to respiratory system

4. First Aid Measures

Eye Contact - Immediately flush eye with plenty of water for at least 15 minutes. Seek medical attention.

Skin Contact - Immediately flush skin with plenty of running water for at least 15 minutes. Seek medical attention.

Inhalation - Immediately remove to fresh air. If necessary, administer oxygen and seek medical attention.

Ingestion - Immediately wash mouth with plenty of water and drink plenty of water. Seek medical attention

5. Fire Fighting Measures

Lith-X (Class D extinguishing media) and Dried Sand are effective extinguishing media on fires involving a few lithium batteries. If cells are already catching a fire, do not use Water, CO_2, Halon and Dry Powder or Soda Ash Extinguishers.

If the fire is in adjacent area and the fire is not progressed, CO_2 Extinguishers or copious amounts of cold water can be effective extinguishing media to cool down burning Li-$SOCl_2$ cells and batteries.

6. Accidental Release Measures

Under abusive conditions, the battery contained materials may leak.

Put the leaked batteries into small container or plastic bag adding the neutralizing agents of Sodium carbonate (Na_2CO_3), chalk ($CaCO_3$) or lime (CaO) powder.

7. Handling and Storage

Handling – Do not crush, puncture or short circuit. Do not directly heat or solder, over charge the battery or forced discharge. Do not throw into fire.

Storage - Store in a cool (below 30℃) and ventilated area with less temperature and moisture effect. Do not place near heating equipment or direct sunlight for a long time. Keep the batteries in original battery package.

Others - Lithium Thionyl Chloride batteries are not rechargeable batteries and should not be charged. Avoid the deformation of batteries by pressure. Keep the recommended usage conditions and temperatures by the manufacturer.

8. Exposure Controls and Personal Protection

Respiratory Protection - As any fire situation is happened, use self-contained breathing apparatus.

Eye Protection - Safety glasses are recommended.

Protective Gloves - In case of leakage, wear gloves.

Other Protective Clothing: In the event of leakage, wear chemical apron.

9. Physical and Chemical Properties

Melting Point	N/A	**Boiling Point**	N/A
Vapor Pressure	N/A	**Specific Gravity**	N/A
Vapor Density	N/A	**Physical State**	Solid
Solubility in Water	N/A	**PH**	N/A
Appearance	Geometric Solid Object		
Odor	If leaked, giving off pungent corrosive odor		

10. Stability and Reactivity

Stability - Stable (hermetically sealed type, used in recommended conditions)

Condition to Avoid - Give too much force, drop, crush & disassemble, short-circuit, recharge, fire & heat above 100℃ (212℉), incinerate and etc.

Material to Avoid - Alkali, water, mineral acid

Hazardous Decomposition Products -

* Reaction of lithium metal with water: Hydrogen (H_2) / Lithium oxide (Li_2O) and Lithium hydroxide (LiOH)

* Thermal decomposition over 150'C: Hydrochloric acid (HCl) and Sulfur dioxide (SO_2)

* Electrolyte (Lithium tetrachloroaluminate, $LiAlCl_4$) with water: Hydrochloric acid (HCl) fumes, Lithium oxide (Li_2O), Lithium hydroxide (LiOH) and Aluminum hydroxide ($Al(OH)_3$)

11. Toxicological Information

Not Applicable

In the event of rupture or leakage, corrosive fumes from the battery can cause

Inhalation - Burn or irritation of the respiratory system

Eye Contact - Redness, tearing, burns

Skin - Skin irritation and burns

Ingestion - Tissue damage to throat and gastro-respiratory track

Medical conditions generally aggravated by exposure - eczema, skin allergies, lung injuries, asthma and other respiratory disorders may occur.

12. Ecological Information

1) Lithium Thionyl Chloride batteries do not have environmental hazard under normal usage and proper disposal.

2) Lithium Thionyl Chloride batteries do not contain mercury, cadmium or other heavy metals.

13. Disposal

1) Dispose under the regulation in each country.

2) Dispose by incineration or burial at permitted waste treatment and disposal sites

14. Transportation

1) Product Category: Lithium Metal Batteries (with All UN Test Approval)

2) UN ID No. UN3090 or UN3091
UN 3090: LITHIUM METAL BATTERIES
UN 3091: LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT, or
LITHIUM METAL BATTERIES PACKED WITH EQUIPMENT

- Lithium metal cells and batteries are considered as Dangerous Goods with UN3090 and UN3091.

- Depending on their lithium metal contents, some cells or batteries may be regarded as non-dangerous goods without Class 9 nomination.

3) Regulation

A. Air Transportation: IATA 60th Edition 2019, Dangerous Goods Regulations

- All cells and batteries must be tested in accordance with the UN Manual of Tests and Criteria Part III Subsection 38.3 (DGR 3.9.2.6).

Small Size Battery: Lithium Contents Cells ≤1g / Batteries ≤2g
➔ Packing Instruction 968 Section II
- No Passenger Cargo, Cargo Aircraft Only, No Overpack and Pallet Packing
- Package cells ≤1g = Net 2.5kg // cells >0.3≤1g = 8cells // batteries >0.3≤2g = 2cells
- Label: Lithium Battery Mark (or existing Lithium Battery Handling Label until Dec. 2018), Cargo Aircraft Only label
- Not more than one package prepared in accordance with this section may be placed into an over pack
- Pallet packing do not allow, only pack
- Use IB if Package exceeds Section II limits and more than 1 package

Medium Size Battery: Lithium Contents Cells >1g / Batteries ≤2g
➔ Packing Instruction 968 Section IB
- No Passenger Cargo, Cargo Aircraft Only
- Package ≤ Net 2.5kg
- Label: Lithium Battery Mark (or existing Lithium Battery Handling Label until Dec. 2018), Lithium battery Class 9 label (or existing Class 9 label until Dec. 2018), Cargo Aircraft Only label
- DG Declaration

Big Size Battery: Lithium Contents Cells >1g / Batteries >2g
➔ Package instruction 968 Section IA
- No Passenger Cargo, Cargo Aircraft Only
- Package ≤ 35kg
- Label – Lithium battery Class 9 Label (or existing Class 9 label until Dec. 2018), Cargo Aircraft Only label
- DG Declaration & Certification

B. Sea Transportation: IMDG – Code 2015

Small & Medium Size Battery: Lithium Contents Cells ≤1g
➔ Special Provision 188 (Exception)
- Lithium Metal cells <1g, batteries <2g – Not subject to Class 9 (Non-DG)
- Packing Group I
- Each cell or battery is of the type proved to meet the requirements of each test of the Manual Tests and Criteria Part III, sub section 38.3.Cells and batteries manufactured.

Big Size Battery: Lithium Contents Cells >1g
➔ Class 9 / Packing Group II

C. Road or Rail Transportation: ADR / RID 2015

Small & Medium Size Battery: Lithium Contents Cells ≤1g
➔ Special Provision 188 (Exception)
- Lithium Metal cells <1g, batteries <2g – Not subject to Class 9 (Non-DG)
- Packing Group I
- Each cell or battery is of the type proved to meet the requirements of each test of the Manual Tests and Criteria Part III, sub section 38.3.Cells and batteries manufactured.

Big Size Battery: Lithium Contents Cells >1g
➔ Class 9 / Packing Group II

15. Regulatory Information

N/A

16. Other Information

For further information, please contact to XenoEnergy Co., Ltd.