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Safety Data Sheet

1. Product Identification

1) Product Name: Lithium Thionyl Chloride Battery (Li-SOCl₂, NonRechargeable, 3.6V)

Models: LTC-3PN, LTC-7PN, LTC-7P, LTC-7PMP, LTC-7PMS, LTC-16M, PT-2150, PT-2175, PT-2100, PT-2200, PT-2300, HP-5134, HP-5135.

2) Distributor/Manufacturer Name:

EaglePicher Commercial Power
3001 S. Davis Blvd.
Joplin, MO 64804
Phone: 800-201-0215 or
417-625-1116

3) Emergency Telephone No: Chemtrec: 800-424-9300
International: 703-527-3887

2. Hazard Identification

The Lithium Thionyl Chloride Batteries have hermetically sealed structure, so they are not hazardous when they are used in accordance with 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 activation of safety valves and/or the rupture of the battery container.

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.

Inhalations- 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

LithX (Class D extinguishing media) and Dried Sand are effective extinguishing media on fires involving a few lithium batteries. If cells are already catching fire, do not use Water, CO₂, Halon, Dry Powder or Soda Ash Extinguishers.

If the fire is in adjacent area and the fire is not progressed, CO₂ Extinguishers or copious amounts of cold water can be effective extinguishing media to cool down burning Li-SOCl₂ cells and batteries.

6. Accidental Release Measures

Under abusive conditions, the battery contains materials which may leak.

Put the leaking batteries into small container or plastic bag adding the neutralizing agents of Sodium carbonate (Na₂CO₃), chalk (CaCO₃) 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°C) 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- use self-contained breathing apparatus.

Eye Protection- safety glasses are recommended.

Protective Gloves- In case of leakage, wear safety gloves.

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

9. Physical Characteristics:

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 leakage occurs, may have strong odor		

10. Stability and Reactivity

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

Conditions to avoid- Too much force, drop, crush and disassemble, short-circuit, recharge, fire & heat above 100°C (212°F), incinerate and etc.

Material to avoid- Alkali, water, mineral acid

Hazardous Decomposition Products-

*Reaction of lithium metal with water: Hydrogen (H₂) / Lithium oxide (Li₂O) and Lithium Hydroxide (LiOH)

*Thermal decomposition over 150°C: Hydrochloric acid (HCl) and Sulfur dioxide (SO₂)

*Electrolyte (Lithium tetrachloroaluminate, LiAlCl₄) with water: Hydrochloric acid (HCl) fumes, Lithium oxide (Li₂O), Lithium hydroxide (LiOH) and Aluminum hydroxide (Al (OH)₃)

11. Toxicological Information

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

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 Considerations

Proper Shipping Name: Waste Lithium Batteries

UN Number: 3090

Hazard Classification: Class 9 (Misc.)

Packing Group: II

Labels Required: MISCELLANEOUS, HAZARDOUS WASTE

Waste Disposal Code: D003

Other: All lithium thionyl chloride batteries should be disposed of by a certified hazardous waste disposal facility.

14. Transportation

Proper shipping name: Lithium Metal Batteries
UN 3090 and (UN3091 for Lithium Metal Batteries contained in or packed with equipment)

Hazard Class: Class 9 (Misc.)
Packing Group II
US Dot (per 49 CFR 172.101) and IATA/ICAO, IMDG

IATA: (**DGR 55th Edition**) Shipping of lithium batteries as required in Special Provisions A48, A88, A99, A154, and A164 and Packing Instructions 968, 969, or 970 Section II.
Cargo Aircraft Only (Forbidden aboard passenger aircraft) Lithium Battery Label (IATA 7.4.8)

DOT: Lithium Metal Batteries and cells are subject to shipping requirement exceptions under 49 CFR 173.185.

IMDG Code: 188, 230, 310, P903.

EXCEPTIONS

Lithium batteries are regarded as dangerous goods based on the above stated regulations when delivered via air, sea, road and train. Lithium cells and batteries offered for transport are not subject to other provisions of these regulations if they meet the following:

- A) For lithium metal or lithium alloy cell, the lithium content is not more than 1g
- B) For a lithium metal or lithium alloy battery, the aggregate lithium content is not more than 2g.
- C) Each cell or battery is of a type proven to meet the requirements of each test in the UN Manual Of Tests and Criteria, Part III, subsection 38-3
- D) Cells and batteries are separated so as to prevent short circuits and are packaged in strong packages, except when installed in equipment.
- E) The package and shipping documents are marked indicating that it contains lithium batteries and proper labels attached.

EaglePicher lithium batteries meet the requirement of each test in the UN Manual Tests and Criteria (8 tests), Part III, subsection 38-3

Through the approval of UL tests (the most reliable US safety requirement) including Altitude, Temperature, Vibration, Shock, Internal Short Circuit and Impact

See Lithium Metal content below, followed by Lithium Metal Flow chart for cells and cells packed in or with equipment for proper shipping requirements.

Lithium Content per Cell (g)

LTC-3PN Series-	0.16	PT-2150 Series-	0.30
LTC-7PN Series-	0.26	PT-2175 Series-	0.40
LTC-7PMP Series-	0.52	PT-2100 Series-	0.60
LTC-7PMS Series-	0.52	PT-2200 Series-	2.40
LTC-16M Series-	0.48	PT-2300 Series-	5.00
HP-5134 Series-	0.27		