

Lithium Battery

Revision: 2018-12

Safety Data Sheet**SECTION 1: Identification of Substance and Company**

1.1 Product identification – Primary Lithium Thionyl Chloride Battery (Li-SOCl₂, non-rechargeable, 3.6V), single cells and multi-cell battery packs.

Lithium contents <1g: 1/2AA, 2/3AA, AA, 2/3A, A size

ER14250, ER14250M, ER14335, ER14505, ER17335, ER14335M, ER14505M, ER17335M, ER17505M

Lithium contents >1g: A, C, D, CC, C+C, DD size

ER17505, ER18505, ER26500, ER34615, ER261020, ER341245, ER18505M, ER26500M, ER34615M, 2ER26500SC

1.2 Relevant uses – instruments, meters, sensors

1.3 Details of supplier – Titus Batteries

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SECTION 2: Hazards Identification

2.1 Classification of the substance - The Lithium Thionyl chloride batteries described in this Safety Data Sheet are sealed units, which are not hazardous when used according to the recommendations of the manufacturer.

Under normal conditions of use, the electrode materials and liquid electrolyte are not exposed to the outside environment, provided the battery integrity is maintained and seals remain intact.

Risk of exposure only in case of abuse (mechanical, thermal, electrical), which leads to the breakage of the glass seal and / or the rupture of the battery containers.

SECTION 3: Composition and Information on Ingredients

3.1 Substances - Each unit cell consists of a hermetically sealed metallic can containing a number of chemicals and materials of construction of which the following are potentially hazardous upon release to air.

<u>Ingredient</u>	<u>CAS No.</u>	<u>Content</u>
Lithium (Li)	7439-93-2	3%-5%
Thionyl chloride (SOCl ₂)	7719-09-7	30%-45%
Lithium aluminum tetrachloride (LiAlCl ₄)	14024-11-4	2%-5%
Acetylene Black (Carbon C)	1333-86-4	3%-5%

SECTION 4: First Aid Measures

4.1 Description of first aid measures – In case of battery rupture, major leakage, or explosion, evacuate and quarantine the contaminated area. Provide good ventilation to clear out any corrosive fumes, gases, or pungent odors. Seek immediate medical attention.

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

SECTION 5: Firefighting Measures

5.1 Extinguishing media - 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, CO₂, Halon and 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.

5.2 Special hazards arising from the substance or mixture – Battery may burst and release hazardous decomposition products when exposed to a fire situation, produce flammable gases on contact with water, and may ignite on contact with water or moist air. Some react violently or explosively on contact with water, may be ignited by heat, sparks, or flame, and may re-ignite after fire is extinguished. Runoff may create fire or explosion hazard.

5.3 Advice for firefighters - Firefighters should wear fire-fighting suits with positive pressure self-contained breathing apparatus.

SECTION 6: Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures - No action should be taken involving personal risk without suitable training. Review Sections 5 and 7 before proceeding with spill clean-up. Use proper PPE as indicated in Section 8. Ventilate area adequately. If electrolyte leaks or spills, do not touch or walk through the spill material.

6.2. Environmental precautions - In the event of battery rupture, capture all released material in a plastic lined container. Chalk, lime powder, or Vermiculite may be added. Dispose of the container in accordance with local laws and regulations. Do not allow leached substances to seep into the earth or waterways.

6.3. Methods and material for containment and cleaning up - Pack the battery, including all battery materials, as described above. Clean the affected area with water (diluted acetic acid may also be helpful).

SECTION 7: Handling and Storage

7.1. Precautions for safe handling - 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 mix new and used batteries. Keep batteries in non-conductive (i.e. plastic) trays.

7.2. Conditions for safe storage - Store in cool (preferably below 30°C), ventilated area, away from moisture, sources of heat, open flames, food and drink. Keep adequate clearance between walls and batteries. Temperature above 100°C may result in battery leakage and rupture. Since short circuit can cause burn, leakage, and rupture hazard, keep batteries in original packing unit and do not mix or jumble.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters – Respiratory protection: In all fire situations, use self-contained breathing apparatus

Hand protection: In the event of leakage wear gloves

Eye protection: Safety glasses are recommended during handling

Other: In the event of leakage, wear chemical apron

SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties –

Appearance	Cylindrical shape
Odor	If leaking, emits a pungent and corrosive odor
Ph	Not applicable
Flash point	Not applicable unless individual component exposed
Flammability	Not applicable unless individual component exposed
Relative density	Not applicable unless individual component exposed
Solubility (water)	Not applicable unless individual component exposed
Solubility (other)	Not applicable unless individual component exposed

SECTION 10: Stability and Reactivity

10.1. Reactivity – N/A

10.2. Chemical stability - Product is stable under conditions described in section 7.

10.3. Possibility of hazardous reactions – N/A

10.4. Conditions to avoid - Heating above 100°C or incineration. Deformation. Mutilation. Crushing. Piercing. Disassembly. Charging. Short circuit. Exposure over a long period to humid conditions.

10.5. Incompatible materials - Oxidizing agents, alkalis, and water. Avoid electrolyte contact with aluminum or zinc.

10.6. Hazardous decomposition products - Hydrogen (H₂) as well as Lithium oxide (Li₂O) and Lithium hydroxide (LiOH) dust is produced in case of reaction of lithium metal with water. Chlorine (Cl₂), Sulfur dioxide (SO₂) and Disulfur dichloride (S₂Cl₂) are produced in case of thermal decomposition of Thionyl chloride above 140°C, hydrochloric acid (HCl) and Sulfur dioxide (SO₂) are produced in case of reaction of Thionyl chloride with water at room temperature, Hydrochloric acid (HCl) fumes, Lithium oxide (Li₂O), Lithium hydroxide (LiOH) and aluminum hydroxide (Al(OH)₃) dust are produced in case of reaction of Lithium tetrachloride aluminum (LiAlCl₄) with water.

SECTION 11: Toxicological Information

11.1. Information on toxicological effects –

Signs & Symptoms None, unless battery ruptures, in the event of exposure to internal contents, corrosive fumes will be very irritating to skin, eyes, and mucous membranes. Overexposure can cause symptoms of non-fibrotic lung injury and membrane irritation.

Inhalation Lung irritant

Skin contact Skin irritant

Eye contact Eye irritant

Ingestion Tissue damage to throat and gastro-respiratory tract if swallowed.

Medical conditions generally aggravated by exposure: In the event of exposure to internal contents, eczema, skin allergies, lung injuries, asthma and other respiratory disorders may occur.

SECTION 12: Ecological information

12.1. Toxicity - Lithium Thionyl Chloride batteries do not have environmental hazard under normal usage and proper disposal. Lithium Thionyl Chloride batteries do not contain mercury, cadmium, lead, or other heavy metals.

12.2. Persistence and degradability – N/A

12.3. Bio accumulative potential – N/A

12.4. Mobility in soil – N/A

12.5. Results of PBT and vPvB assessment – N/A

12.6. Other adverse effects – N/A

SECTION 13: Disposal considerations

13.1. Waste treatment methods - To prevent short circuit, prior to disposal, terminals should be taped and/or capped with a protective insulating material. Disposal of large quantities of Lithium batteries or cells may be subject to Local, State or Federal regulations. Consult your Local, State and Federal regulations regarding disposal of these batteries. Do not incinerate.

SECTION 14: Transport information

14.1. UN number – UN3090

14.2. UN proper shipping name – Lithium Metal cells or batteries

14.3. Transport hazard class – Miscellaneous Class 9

Depending on their lithium metal content, some single cells and small multi-cell battery packs may be non-assigned to Class 9. Refer to Transport Certificate.

14.4. Packing group – Group II

14.5. Environmental hazards - Lithium Thionyl Chloride batteries do not have environmental hazard under normal usage and proper disposal.

14.6. Special precautions for user – N/A

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture –

ACGIH and OSHA: see exposure limits of the internal components of the battery in section 3.

IATA/ICAO (air transportation): UN 3090 or UN 3091.

IMDG (sea transportation): UN 3090 or UN 3091.

Transportation within the US-DOT, 49 Code of Federal Regulations

SECTION 16: Other information

This information has been compiled from sources considered to be dependable and is, to the best of our knowledge and belief, accurate and reliable as of the date compiled. However, no representation, warranty (either expressed or implied) or guarantee is made to the accuracy, reliability and completeness of the information contained herein. This information relates to the special materials designated and may not be valid for such material used in combination with any other materials or in any process. It is the user's responsibility to satisfy himself as to the suitability and completeness of this information for his particular use.