



Material Safety Data Sheet

Section 1 - Chemical Product and Company Identification

Product Name: ER14250 / ER14505 / ER14335 Lithium, Thionyl Chloride (Li-SOCl₂, non-rechargeable)

Address: 825 S 19th Street, Richmond, CA 94804, **Tel:** 510-525-2328 **Fax:** 510-439-2808

Emergency Tel (Within USA and Canada): CHEMTREC 1-800-424-9300

Emergency Tel (Outside USA and Canada) for Shipment to USA: CHEMTREC +1 703-527-3887

Email: sales@batteryspace.com

Section 2 – Composition/Information on Ingredient

Active Materials

	Appr. Percentage of Total Weight (%)
Lithium (Li)	3.81%, ER14250 (0.36g) / ER14505 (0.50g) / ER14335 (0.72g)
Carbon black (C)	2.77%
Thionyl Chloride (SOCl ₂)	27.23%
Lithium aluminum tetrachloride (LiAlCl ₄)	4.1%

Passive Materials

		Appr. Percentage of Total Weight (%)
Base Metal	Steel	57.63
Others	Plastic	3.73
	Glass Fiber	0.73

Section 3 - Hazards Identification

The lithium-thionyl chloride batteries are not hazardous when used according to the recommendations of the manufacturer. But if the design of the circuit doesn't forecast all the necessary cares to prevent the inversion of polarity in the assembly of the battery or the battery packs, there is risk of danger due to the explosion of the battery.

Define with care the assembling process to assure that the accidental short circuit don't happen.

Do not expose the batteries to temperatures above 100°C.

If the battery lose its integrity and sealing, due to break or damages (mechanical, thermal or electrical), leakage, explosion or fire may follow.

In this case there is the risk of release of chemical materials as defined in the paragraph 2 (active materials) of this safety sheet.

Here below are shown the nature of special risks and the advices of caution.

Nature of special risks

R14/15 (reacts with water and yields flammable gases)

R21 (harmful in contact with skin)

R22 (harmful if swallowed) R35 (causes severe burns)

R41 (risk of serious damage to the eye)

R42/43 (may cause sensitization by inhalation and skin contact)

Safety advices

S2 (keep out of reach from children)



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- S8 (keep away from moisture)
 - S22 (do not breathe dust)
 - S24 (avoid contact with skin)
 - S26 (in case of contact with eyes, rinse immediately with plenty of water and seek medical attention)
 - S36 (wear suitable protective clothing)
 - S37 (wear suitable gloves)
 - S43 (in case of fire use extinguisher type D. DO NOT USE WATER)
 - S45 (in case of incident or indisposition seek medical attention)

Section 4 - First Aid Measures

Eye - Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

Skin - Remove contaminated clothes and rinse skin with plenty of water or shower for 15 minutes. Get medical aid.

Inhalation - Remove from exposure and move to fresh air immediately. Use oxygen if available.

Ingestion - Give at least 2 glasses of milk or water. Induce vomiting unless patient is unconscious. Call a physician

Section 5 - Fire Fighting Measures

Extinguishing Media: Extinguishers type D, Lith-X, DO NOT USE WATER in case of battery leakage

Special hazards: Irritating vapour

Special protective equipment: Wear protective clothing, use self-contained breathing apparatus with filtered cartridge type ABEK

Section 6 - Accidental Release Measures

In case of break of a battery, all people must go away from the place where the incident happened and come back only after the dissolution of the irritating gas.

Broken batteries or battery packs must be covered with sodium carbonate (Na_2CO_3) or dry sand, place them in approved container and dispose in accordance with local regulation. Use gloves to remove.

Section 7 - Handling and Storage

7.1 Handling

- Do not recharge
- Do not use different types and brands of batteries or with different state charge
- Avoid short circuit
- Use desk of work electrically insulated
- Avoid to work over wet surface
- Use plastic caliber to evaluate the dimensions of a Lithium battery or to insulate the metallic surface of the battery
- Do not have rings on the fingers; otherwise wear insulating gloves.
- Do not cut in the same time both the terminals of a battery: it could be a short circuit trough the shears
- Keep the batteries in non-conductive trays (i.e. plastic, wood or carton)
- Do not solder directly on the battery
- Do not disassemble the batteries, do not throw them in the fire, do not hole, do not overheat or plunge into water

7.2 Storage:

- Store the Lithium cells in a cool, dry and ventilated area far from fires and Heating sources.



- It is recommended the use of a non-combustible structure, keep adequate clearance between walls and batteries.
- The maximum temperature suggested for the storage is +30°C
- Higher temperatures are allowed but cause an increase in the self discharge of the battery and speed up the process of passivation
- In any case, never go over 100°C, as the batteries can break and cause a leakage
- Arrange adequate protections to avoid possible hurts to the batteries
- Keep the batteries in their original packages till when they are used
- Do not expose the batteries directly to the sun light
- Do not put an higher number of cartons one on another (respect what indicated)
- If in the same place are storage batteries with a total capacity > 50,000 Ah, it is suggested to install an alarm for smoke and gas

Section 8 - Exposure Controls, Personal Protection

If the battery is integral, storage and handle with care, there is no danger.

It is suggested to handle the batteries in a ventilated place, to don't smoke, eat or drink during the assembling.

Section 9 - Physical and Chemical Properties

Please refer most updated information by searching the product part# at www.batteryspace.com

Section 10 - Stability and Reactivity

Conditions to avoid:

Do not expose at temperature higher than 100°C. Avoid short circuit, crush, exposition to heat sources.

Do not disassemble the batteries or the battery packs, do not throw them in the fire, do not perforate them, do not overheat or wet them.

Material to avoid:

Water, oxidizing agents, alkalis

Section 11 - Toxicological Information

The rupture of lithium-thionyl chloride batteries can develop the following substances:

- Hydrogen (H₂), lithium Oxide (Li₂O) and lithium Hydroxide (LiOH) in case of reaction of lithium metal with water
- Chlorine (Cl₂), sulfur dioxide (SO₂) and disulfur dichloride (S₂Cl₂) if the thionyl chloride go above 140,5°C
- Hydrochloric acid (HCl) and sulfur dioxide (SO₂) in case of reaction of thionyl chloride with water

Hydrochloric acid (HCl), lithium oxide (Li₂O), lithium hydroxide (LiOH) and aluminum hydroxide (Al(OH)₃) in case of reaction of lithium tetrachloroaluminate with water

Section 12 - Ecological Information

Ecological toxicity:

The chemicals of the battery will cause harm to the environments if it is discarded to the surroundings.

Biodegradability: No information available.

Non- biodegradability: No information available.



Section 13 - Disposal Considerations

BatterySpace.com encourages battery recycling. The Li-SOCI2 batteries are recyclable the same way as the Rechargeable Battery. Li-SOCI2 batteries must be handled in accordance with all applicable state and federal laws and regulations.

DO NOT RECHARGE, disassemble, short, or subject battery cells to temperatures in excess of 212 F. Do not use in combination with fresh and used lithium batteries neither with other type of battery.

Section 14 - Transport Information

By Ground

Small Lithium Metal Batteries

LC^a =< 1.0g/cell

ALC^b =< 2.0g/battery

Not subject to the regulations if:

Mark "PRIMARY LITHIUM BATTERIES - FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT" OR "LITHIUM METAL BATTERIES - FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT"^c

cells and batteries are separated so as to prevent short circuits and are packed in a strong outer packaging or contained in equipment

Packages containing > 12 batteries or >24cells, except when contained in equipment, must:



be marked and accompanied by a document to indicate the package contains lithium batteries and that special procedures should be followed if the package is damaged

be capable of passing 1.2m drop test

not exceed 30kg gross weight

- a. LC = Lithium Content
- b. ALC = Aggregate Lithium Content
- c. This marking is not required on packages that contain 5kg (11lbs) net weight or less of primary lithium batteries or cells that are contained in or packed with equipment and the package contains no more than the number of batteries required to power the piece of equipment

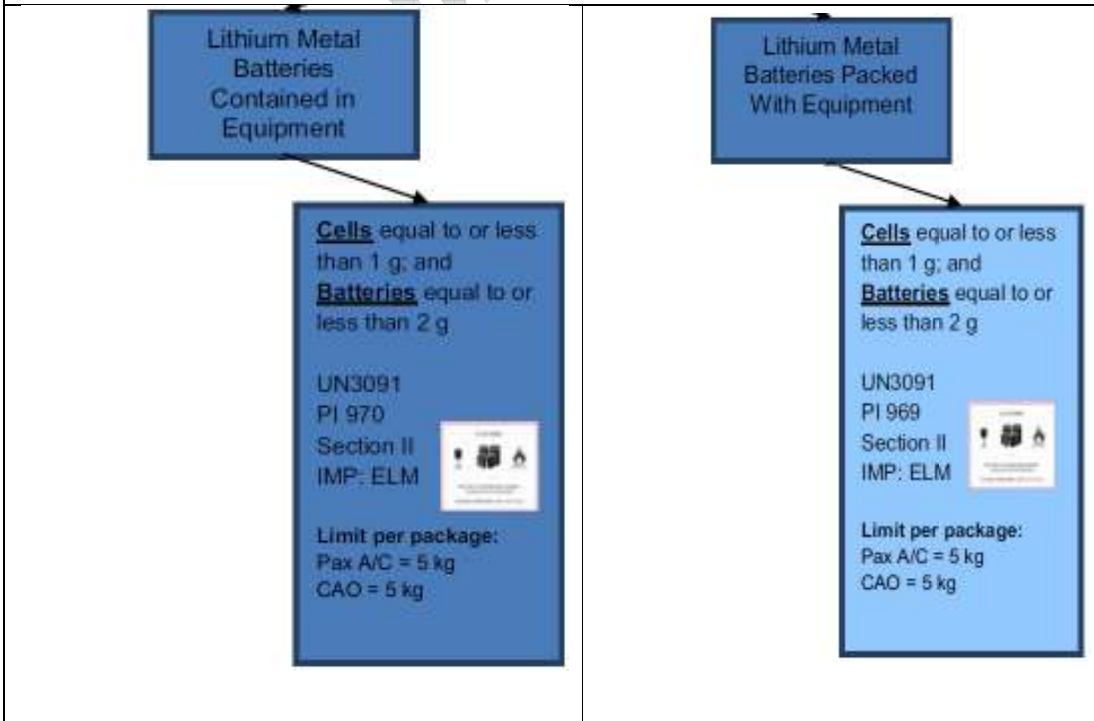
By Air (Without Equipment)

<p>Cells equal to or less than 1 g; and Batteries equal to or less than 2 g</p> <p>UN3090 PI 968 Section IB IMP: RLM</p>  <p>NOTE: Use "IB" if Package exceeds Section II Limits</p> <p>Limit per package: Pax A/C = 2.5 kg Gross CAO = 2.5 kg Gross</p>	<p>Cells equal to or less than 1 g; and Batteries equal to or less than 2 g</p> <p>UN3090 PI 968 Section II IMP: ELM</p>  <p>Limit per package: Equal to or less than 0.3 g = 2.5 kg; or Greater than 0.3 g but equal to or less than 1 g = 8 cells; or Greater than 0.3 g but equal to or less than 2 g = 2 batteries</p>
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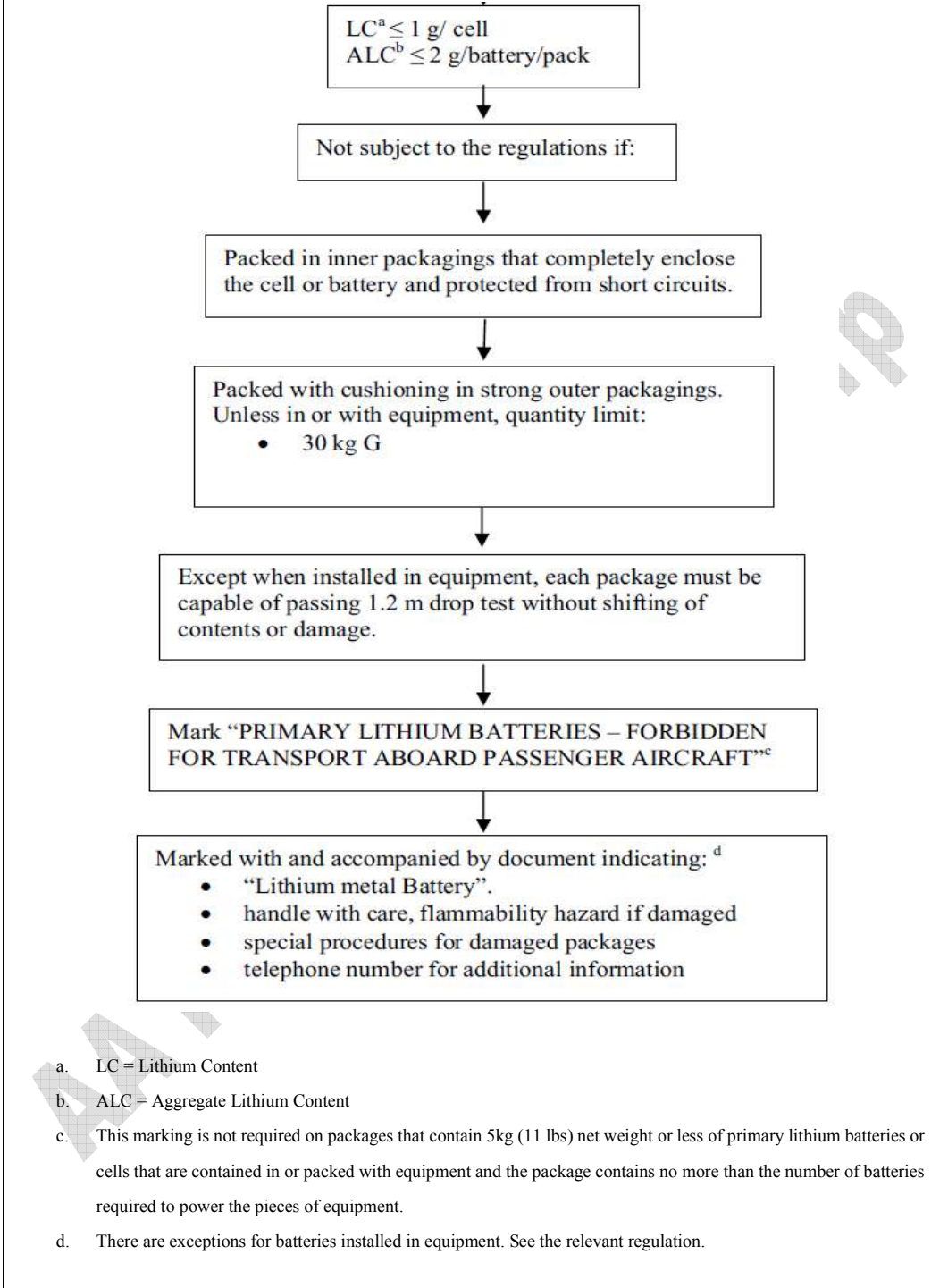
Primary (non-rechargeable) lithium metal batteries and cells, (UN 3090), are forbidden for transportation aboard passenger-carrying aircraft. Such batteries transported in accordance with **Section IA and IB of Packing Instruction 968** must be labelled with the **CARGO AIRCRAFT ONLY** label.



By Air (+ Equipment)



If by Ocean





Section 15 - Regulatory Information

Law Information

《Dangerous Goods Regulation》

《Recommendations on the Transport of Dangerous Goods Model Regulations》

《International Maritime Dangerous Goods》

《Classification and code of dangerous goods》

IATA 2014 DGR 55th Edition

OSHA Hazard Communication Standard Status

Toxic Substances Control Act (TSCA) Status

SARA Title III

RCRA

In accordance with all Federal, State and Local laws.

Section 16 - Additional Information

The above information is based on the data of which we are aware and is believed to be correct as of the data hereof. Since this information may be applied under conditions beyond our control and with which may be unfamiliar and since data made available subsequent to the data hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

MSDS Creation Date: January 22, 2010

MSDS Revision Date: August 15, 2014