



Material Safety Data Sheet

Section 1 - Chemical Product and Company Identification

Product Name: Lithium Metal Cell / Lithium and Manganese Dioxide (Li-MnO₂ cells 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

Ingredient	Content (percent of total weight)	CAS Index No.	Molecular formula
Manganese Dioxide	33%	1313-13-9	MnO ₂
Lithium	2.4%	7439-93-2	Li
Propylene carbonate	6.25%	108-32-7	PC
Dimethyl ether	6.25%	115-10-6	DME
Lithium Per chlorate	1.4%	7791-03-9	LiClO ₄
Polypropylene	2.1%	9003-07-0	PP
Steel	47.2%	7439-89-6	Fe
Aluminum	1.4%	7429-90-5	Al

Remark: The weight of metallic lithium per cell is <1.0 g.

Section 3 - Hazards Identification

Routes of Entry:

Inhalation – Yes; Skin – Yes; Ingestion – Yes

Health Hazards (Acute and Chronic):

These chemicals are contained in a sealed can. Risk of exposure occurs only if the battery is mechanically or electrically abused. The most likely risk is an acute exposure when the gas release vent works. Organic solvent has slight toxicity and can irritate skin and eyes. Lithium salt is irritating to skin, eyes and mucous membranes and should be avoided.

Carcinogenicity:

NTP: None IARC Monograph: None OSHA Regulated: None

Medical Conditions Generally Aggravated by Exposure:

An acute exposure will not generally aggravate any medical condition.

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: CO₂ or dry chemicals

Flammable Limits: Not available

Section 6 - Accidental Release Measures

The preferred response is to leave the area and allow the batteries to cool and the vapors to dissipate. Avoid skin and eye contact or inhalation of vapors. Remove spilled liquid with absorbent and incinerate.

Section 7 - Handling and Storage

Avoid mechanical or electrical abuse. Batteries may explode or cause burns, if disassembled, crushed or exposed to fire or high temperatures. Do not short or install with incorrect polarity.

Section 8 - Exposure Controls, Personal Protection

Respiratory Protection

In case of battery venting, provide as much ventilation as possible. Avoid confined areas with venting batteries. Respiratory Protection is not necessary under conditions of normal use.

Ventilation

Not necessary under conditions of normal use.

Protective Gloves

Not necessary under conditions of normal use.

Eye protection:

Not necessary under conditions of normal use.

Other Protective Clothing or Equipment

Not necessary under conditions of normal use.

Personal Protection is recommended for venting batteries

Not necessary under conditions of normal use.

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

Stability: Stable

Conditions to Avoid: Do not heat, disassemble or charge.

Hazardous Decomposition or By-products: N/A

Hazardous polymerization will not occur.

Section 11 - Toxicological Information

Acute toxicity: Organic solvent

Further toxicological information: Lithium

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-FeS₂ batteries are recyclable the same way as the Rechargeable Battery. Li-MnO₂ batteries must be handled in accordance with all applicable state and federal laws and regulations.

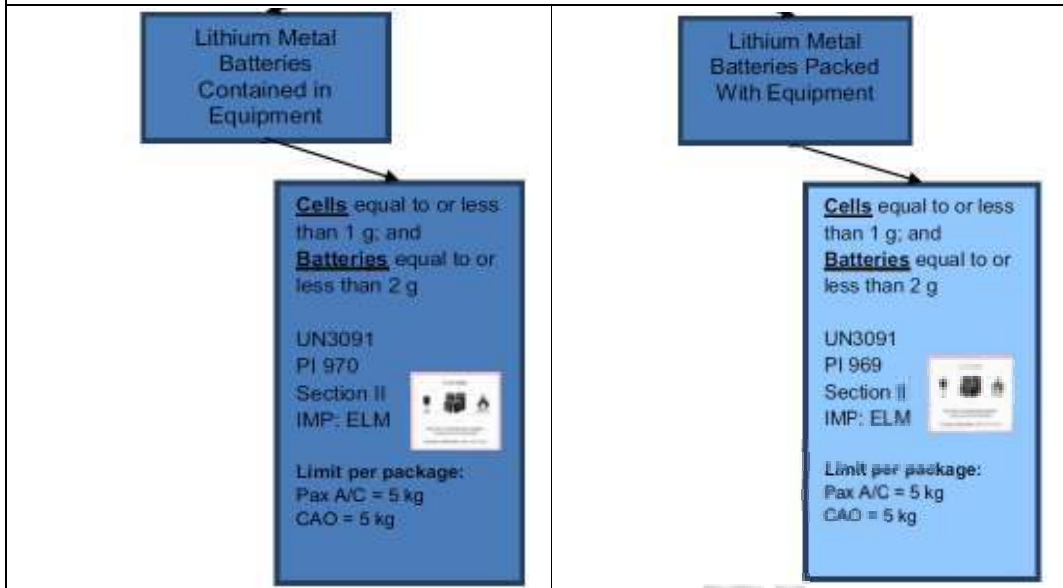
DO NOT RECHARGE, disassemble, short, or subject battery cells to temperatures in excess of 212 F. Do not use in combination with fresh and used lithium batteries neither with other type of battery.

Section 14 - Transport Information

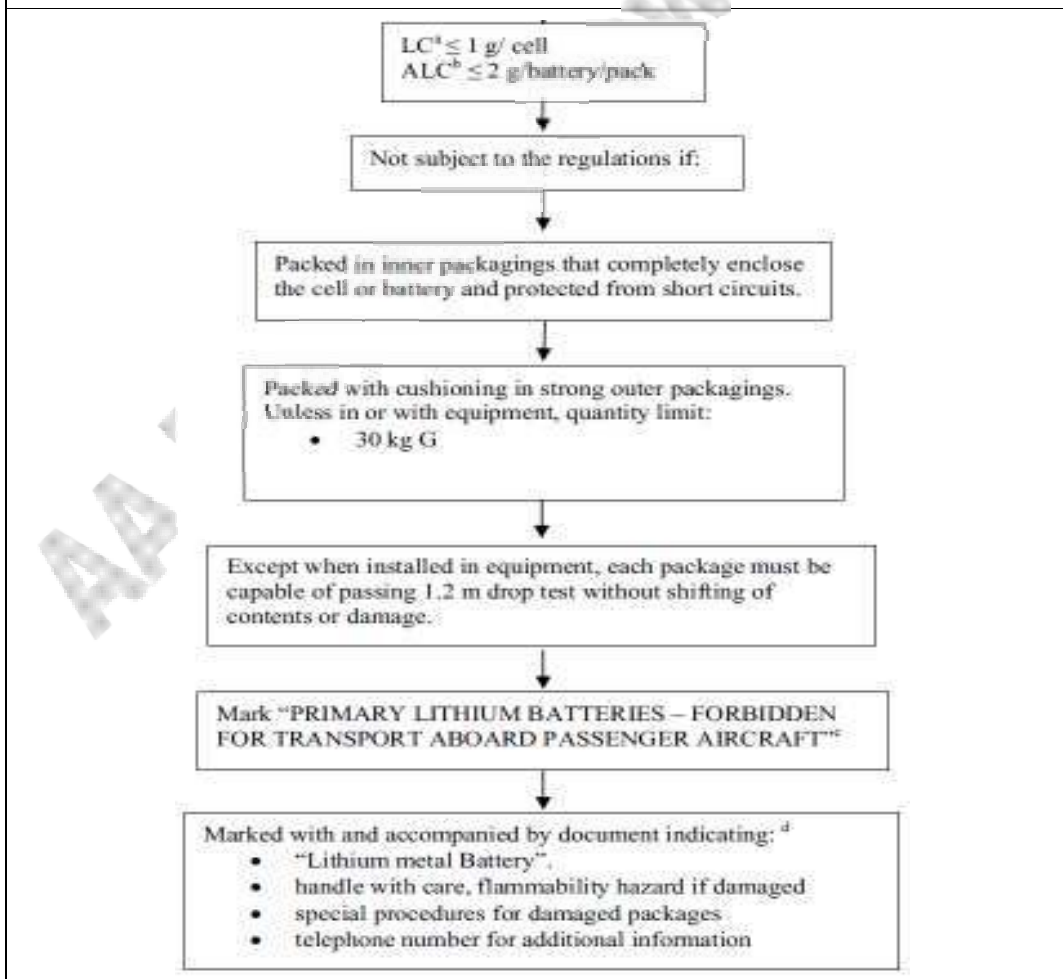
By Ground	By Air (Without Equipment)		
<div style="display: flex; justify-content: space-around;"> <div style="width: 45%;"> <p align="center">Small Lithium Batteries</p> <p>LC^a ≤ 1.0 g/cell ALC^b ≤ 2.0 g/hourly Not subject to the regulations if:</p> <p>Made "PRIMARY LITHIUM BATTERIES - FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT" or "LITHIUM METAL BATTERIES - FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT"</p> <p>Cells and batteries are separated so as to prevent short circuits and are packed in a strong outer packaging or contained in equipment</p> <p>Packages containing >12 batteries or > 24 cells, except when contained in equipment, must:</p> <ul style="list-style-type: none"> • 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 1.2 m drop test. • not exceed 30 kg gross weight. </div> <div style="width: 45%;"> <p align="center">Medium Lithium Batteries</p> <p>LC^a >1.0 and ≤ 5 g/cell ALC^b >2 and ≤ 25 g/hourly Not subject to the regulations, if:</p> <p>Cells and batteries are separated so as to prevent short circuits and are packed in a strong outer packaging or contained in equipment</p> <p>Made "LITHIUM BATTERIES - FORBIDDEN FOR TRANSPORT ABOARD AIRCRAFT AND VESSEL"</p> </div> </div>	<table border="1" style="width: 100%; background-color: #e0f0ff;"> <tr> <td style="width: 50%; padding: 5px;"> <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> </td> <td style="width: 50%; padding: 5px;"> <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 0.3g = 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> </td> </tr> </table> <p>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.</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 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 0.3g = 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>
<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 0.3g = 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>		

- LC = Lithium Content = the product of the rated capacity, in ampere – hours of a lithium-ion cell Times 0.3
- ALC = Aggregate Lithium Content

By Air + Equipment



By Ocean





- a. LC = Lithium Content
- b. ALC = Aggregate Lithium Content
- c. This marking is not required on packages that contain 5kg (11 lbs) 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 pieces of equipment.
- d. There are exceptions for batteries installed in equipment. See the relevant regulation.

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 date 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