Material Safety Data Sheet

Section 1 - Chemical Product and Company Identification

Product Name: Lithium Iron Manganese Phosphate Battery **(LFP-G60)**

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

Chemical Name	Chemical Formula or Abbreviation	CAS No.	In % By Weight
Lithium Iron Manganese Phosphate	LiFeMnPO4	---	38.1
Graphite	C	7782-42-5	18.1
Aluminum	Al	7429-90-5	7.6
Copper	Cu	7440-50-8	11.4
Diaphragm paper (PP)	(C3H6)n	9003-07-0	4.5
Electrolyte (Lithium hexafluorophosphate)	LiPF6	21324-40-3	20.3

Section 3 - Hazards Identification

Routes of Entry

Inhalation, Skin, Ingestion.

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 acute exposure when a battery vents.

Sign/Symptoms of Exposure

May be a reproductive hazard. Lithium can cause thermal and chemical burns upon contact with the skin.

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

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Section 5 - Fire Fighting Measures

Flash Point: N/A.

Auto-Ignition Temperature: N/A.

Extinguishing Media

Dry chemical, CO2.

Firefighting

In case of fire in an adjacent area, use CO2 or dry chemical extinguisher if batteries in their original containers since the fuel of the fire is basically paper products. For bulk quantities of unpackaged batteries use appropriate method. In this case, do not use water.

Section 6 - Accidental Release Measures

Steps to be Taken in case Material is Released or Spilled

If the battery is accidentally broken and organic electrolyte leaks out, wipe it up with a cloth, and dispose of it in a plastic bag and put into a steel can. The preferred response is to leave the area and allow the batteries to cool and vapors to dissipate. Provide maximum ventilation. Avoid skin and eye contact or inhalation of vapors. Remove spilled liquid with absorbent and incinerate.

Waste Disposal Method

It is recommended to discharge the battery to the end, to use up the metal lithium inside the battery, and to bury the discharged battery in soil.

Section 7 - Handling and Storage

The batteries should not be opened, destroyed or incinerate, since they may leak or rupture and release to the environment the ingredients that they contain in the hermetically sealed container. Do not short circuit terminals, or over charge the battery, forced over-discharge, throw to fire. Do not crush or puncture the battery, or immerse in liquids.

Precautions to be taken in handling and storing

Avoid mechanical or electrical abuse. Storage preferably in cool, dry and ventilated area, which is subject to little temperature change. Storage at high temperatures should be avoided. Do not place the battery near heating equipment, nor expose to direct sunlight for long periods.

Other Precautions

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.

Other Protective Clothing or Equipment

Not necessary under conditions of normal use.

Personal Protection is recommended for venting batteries

Respiratory Protection, Protective Gloves, Protective Clothing and safety glass with side shields.

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Section 9 - Physical and Chemical Properties

Nominal Voltage: 3.2V

Rated Capacity: 60Ah.

Appearance Characters: Cyan, odorless, quadrate battery.

Section 10 - Stability and Reactivity

Stability

Stable

Conditions to Avoid

Heating, mechanical abuse and electrical abuse.

Hazardous Decomposition Products

N/A.

Hazardous Polymerization

N/A.

If leaked, forbidden to contact with strong oxidizers, mineral acids, strong alkalies, halogenated hydrocarbons.

Section 11 - Toxicological Information

Inhalation, skin contact and eye contact are possible when the battery is opened. Exposure to internal contents, the corrosive fumes will be very irritating to skin, eyes and mucous membranes. Overexposure can cause symptoms of non-fibrotic lung injury and membrane irritation.

Section 12 - Ecological Information

When promptly used or disposed the battery does not present environmental hazard. When disposed, keep away from water, rain and snow.

Section 13 - Disposal Considerations

APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION

If batteries are still fully charged or only partially discharged, they can be considered a reactive hazardous waste because of significant amount of unreacted, or unconsumed lithium remaining in the spent battery. The batteries must be neutralized through an approved secondary treatment facility prior to disposal as a hazardous waste. Recycling of battery can be done in authorized facility, through licensed waste carrier.

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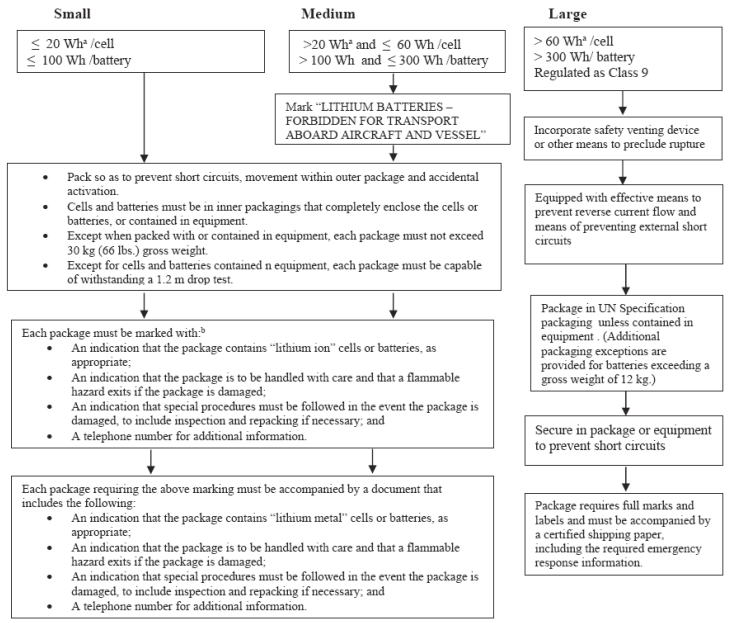
Section 14 - Transport Information

By Ground:



a. Wh = Watt-hours rating

b. Does not apply to a package containing button cells installed in equipment or no more than four cells or two batteries installed in equipment

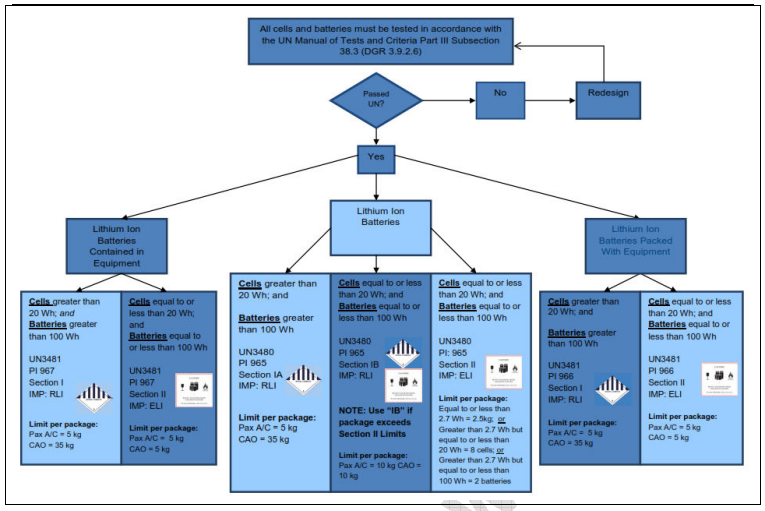
By Air:

IATA Proper Shipping Name: Lithium ion batteries+(including lithium polymer batteries)

Hazard Class: 9

Identification Number: UN3480

Packaging group: II



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By Ocean:

Maritime Transport IMDG: Lithium ion batteries+(including lithium polymer batteries)

IMDG Class: 9

UN Number: UN3480

Packaging group: II

Lithium-Ion (Rechargeable) Batteries by Ocean

Pass each test in the UN Manual of Tests and Criteria, Part III, Sub-section 38.3

Cells ≤ 20 Wh[a] Batteries ≤ 100 Wh	Cells > 20 Wh[a] Batteries > 100 Wh
Not subject to the regulations if:	Class 9
Packed in inner packagings that completely enclose the cell or battery and protected from short circuits or contained in equipment.	Pack to prevent to short circuits, reverse current flow.
Packed, with cushioning, in strong outer packagings. Unless in or with equipment, quantity limit: • 30 kg G	Package in UN Specification packaging unless contained in equipment. (Exceptions for batteries ≥ 12 kg)
Except when installed in equipment, each package must be capable of passing 1.2 m drop test without shifting of contents or damage.	Mark, label, document as Class 9
Marked with and accompanied by document indicating: [b] • "Lithium ion Battery". • handle with care, flammability hazard if damaged • special procedures for damaged packages • telephone number for additional information	

a. Wh = Watt-hours rating

b. Does not apply to a package containing button cells installed in equipment or no more than four cells or two batteries installed in equipment

Separate Li-ion batteries when shipping to prevent short-circuiting. They should be packed in strong packaging for support during transport. In the case of transportation, confirm no leakage and no overspill from a container. Take in a cargo of them without falling, dropping and breakage. Prevent collapse of cargo piles and wet by rain. The container must be handled carefully. Do not give shocks that result in a mark of hitting on a cell. Please refer to Section 7-HANDLING AND STORAGE also.

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 2015 DGR 56th edition

49CFR 173.185

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 22nd, 2010

MSDS Revision Date: March 6, 2015

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