



**SAFETY DATA SHEET for LITHIUM ION POLYMER  
& LITHIUM IRON PHOSPHATE BATTERIES**

**1 IDENTIFICATION**

This material safety data sheet covers all models of Lithium Ion Polymer and Lithium Iron Phosphate batteries supplied by Tracer Power. See above for contact details for Tracer Power.

**2 HAZARDS IDENTIFICATION**

All chemical materials of lithium ion batteries are stored in a hermetically sealed metal case, designed to withstand temperature and pressures encountered during normal use. There is no physical danger of ignition or explosion and chemical danger of hazardous materials leakage during normal use. However, if exposed to a fire, added mechanical shocks or electronic stress by miss-use, the gas release vent will operate and hazardous gasses may be released.

Handle with care. Flammability hazard exists if the package is damaged. Special procedures should be followed in the event that the package is damaged, to include inspection and repacking if necessary. The consignment must not contain any recalled and/or defective batteries.

Potential Health Effects: Cobalt and Cobalt compounds are considered to be possible human carcinogens. These chemicals may cause allergic skin sensitization (rash) and irritate eyes, skin, nose, throat or respiratory system.

Since electrolyte is a flammable liquid, keep away from heat or open flame. It may cause moderate to severe eye irritation and dryness of the skin. Breathing of its mist, vapor or fumes may irritate nose, throat and lungs. Exposure of electrolyte material in the area which contains water may generate hydrofluoric acid, which can cause immediate burns on skin and severe eye burn. The ingestion of electrolyte can cause serious chemical burns of mouth, esophagus and gastrointestinal tract.

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**3 COMPOSITION/INFORMATION ON INGREDIENTS**

<u>INDREDIENT NAME</u>	<u>CAS No</u>	<u>Concentration</u>	<u>ACGIH-TLV</u>
Lithium Cobalt Oxide(LiCoO <sub>2</sub> )	12190-79-3	25-40%	0.02mg/m <sup>3</sup> (Co,TWA)
Equivalent Max Lithium Content	7439-93-2	0.95g/pcs	--
Aluminum foil	7429-90-5	2-6%	2mg/m <sup>3</sup> (Soluble salts, TWA)
Graphite(various carbons)	7782-42-5	11-21%	2mg/m <sup>3</sup> (Dust, TWA)
Copper foil	7440-50-8	6-16%	0.2mg/m <sup>3</sup> (Fume, TWA)
Organic electrolyte	--	8-18%	None established
Lithium hexafluorophoshate	21324-40-3	1-4%	2.5mg/m <sup>3</sup> (F, TWA)
Steel and Inert components	7439-89-6	Balance	--

LiFePO<sub>4</sub> ONLY:

Lithium iron Phosphate Carbon  
Coated 15365-14-7

**4 FIRST AID MEASURES**

The information below refers to the exposure of the ingredients of the battery.

Eyes: Flush with water for at least 15 minutes. If irritation occurs and persists, contact a medical doctor.

Skin: Remove contaminated clothing and thoroughly wash with soap and plenty of water. If irritation persists, contact a medical doctor.

Inhalation: Remove to fresh air. If breathing difficulty or discomfort occurs and persists, see a medical doctor. If breathing has stopped, give artificial respiration and see a medical doctor IMMEDIATELY.

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5 FIRE-FIGHTING MEASURES

HAZARDOUS COMBUSTION PRODUCTS: When burned, hazardous products of combustion including fumes of carbon monoxide, carbon dioxide, and fluorine can occur.

EXTINGUISHING MEDIA: Water, carbon dioxide, dry chemical or foam.

BASIC FIRE FIGHTING PROCEDURES: Wear NIOSH/MSHA approved positive pressure self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

UNUSUAL FIRE & EXPLOSION HAZARDOUS: This materials does not represent an unusual fire or explosion hazardous.

- Flash Point: 65C(CC)(149F)
- Auto-ignition Temperature: No data
- Flammability Limits in Air, Lower, % by volume: 1.4
- Flammability in Air, Upper, % by volume: 11

6 ACCIDENTAL RELEASE MEASURES

PROCEDURE FOR RELEASE AND SPILL:

Sweep up and place in a suitable container, dispose of waste according to all local, state and Federal Laws and Regulations. Before cleanup measures begin, review the entire MSDS with particular attention Potential Health Effects, and on Recommended Personal Protective Equipment.

7 HANDLING AND STORAGE

HANDLING - SPECIFIC SAFE HANDLING ADVICE:

- Never throw batteries in a fire or expose to high temperatures.
- Do not soak batteries in water or seawater.
- Do not expose to strong oxidizers.
- Do not expose to strong mechanical shock.
- Never disassemble, modify or deform.
- Do not connect the positive terminal to the negative terminal with electrically conductive material.

STORAGE CONDITIONS:

- Do not place the battery near heating equipment, nor expose to direct sunlight for long periods. Elevated temperatures can result in shortened battery cell life and degrade performance.
- Store in cool place: Storage temperature range: -20 to +45C, humidity: 45 to 75%
- Incompatible products: Conductive materials, water, seawater, strong oxidizers and strong acids.

8 EXPOSURE CONTROLS/ PERSONAL PROTECTION

Engineering controls: Investigate techniques to reduce exposures, use with adequate ventilation and recommended personal protective equipments.

Eye protection: Minimize skin contamination by following good industrial hygiene practices. Wearing protective gloves is recommended. Wash hands and contaminated skin thoroughly after handling.

Respiratory protection: Avoid breathing dust and processing vapors. When adequate ventilation is not available, wear a NIOSH/MSHA respirator approved for protection against inorganic dusts.

Special clothing: Rubber gloves,

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**9 PHYSICAL & CHEMICAL PROPERTIES**

Physical state:	Solid
Form:	Geometric solid
Color:	Metallic color(without outer PVC cover)
PH:	Not applicable
Flash point:	Not applicable
Explosion properties:	Not applicable
Density:	Not applicable
Solubility:	Not soluble

**10 STABILITY AND REACTIVITY**

Hazardous reactions may occur under some specific conditions. Acrid or harmful gas could be emitted during fire.

Conditions to avoid:

- External short-circuit
- Strong mechanical shock including crushing
- Modification
- High temperature above 100 degree C
- Exposure to direct sunlight and high humidity.

Materials to avoid:

- Conductive materials
- Water
- Seawater
- Strong oxidizers
- Strong acids.
- Hazardous decomposition products

**11 TOXICOLOGICAL INFORMATION**

Eco Toxicological information: No information available.

Local environmental Effects: Unknown.

Since some internal materials remain in the environment, do not bury or throw out into the environment.

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**12 ECOLOGICAL INFORMATION**

If used as directed, and if the integrity of the battery casing and security vent are maintained, the ingredients are not expected to pose a significant risk to the environment.

**13 DISPOSAL INFORMATION**

Waste disposal must be in accordance with the applicable regulations. Disposal of lithium ion batteries should be performed by permitted, professional disposal firms knowledgeable in state or local requirements of hazardous waste treatment and hazardous waste transportation. Incineration should never be performed by battery users, but by trained professionals in an authorized facility with proper gas and fume treatment.

**14 TRANSPORT INFORMATION**

- The transport of Lithium ion batteries is subject to international regulation which can differ if the batteries are transported by air, sea or road. There are a range of fines for companies (including OEMs) who do not comply with these regulations.
- All Tracer Power batteries, covered in this document, have met the requirements of the UN Manual of Tests and Criteria, Fifth Revised Edition (ST/SG/AC.10/11/Rev.5 section 38.3 entitled "Lithium Metal and Lithium ion Batteries") and can therefore be transported.
- The UN numbers, and proper shipping names, of Lithium Ion batteries, are as follows:  
UN3480 – Lithium ion batteries  
UN3481 – Lithium iron batteries contained in equipment or packed with equipment
- Lithium ion batteries which have been transportation tested but have a possible stored energy of >100Wh must be transported as Class 9 dangerous goods which impose strict packaging, labeling and documentation requirements on those shipping the product. Special training and certification is required for those wishing to ship class 9 dangerous goods.
- Lithium ion batteries which have been transportation tested and have a possible stored energy of <100Wh are excepted from dangerous goods regulations but still have special packaging, labeling and document requirements.
- There are restrictions on the number and size of Lithium ion batteries which can be taken on board aircraft (as carry on or checked in luggage).

Please contact Tracer Power for full details of transport requirements.

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15 REGULATORY INFORMATION

None provided

16 OTHER INFORMATION

**Disclaimer**

**Important:** This document contains information which only relates to secondary (rechargeable) Lithium ion batteries (including Lithium ion polymer & Lithium Iron Phosphate). It does NOT cover primary (non rechargeable) Lithium cells or Lithium batteries. Information has been provided based on our understanding International regulations. Domestic regulations for individual counties or states can and does vary. While every attempt has been made to ensure the accuracy of the advice in this document, no claim or guarantee is made by Tracer Power for accuracy, completeness, applicability or compliance to the regulations which are subject to change. Tracer Power shall not be liable for any inclusions, omissions, errors or outdated information. This document does not constitute, and should not be considered legal advice. In all cases we recommend that you fully research the topic and seek appropriate advice from regulatory authorities to ensure your compliance with all applicable regulations.



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