



Material Safety Data Sheet

Issue Date: February 15, 2018

Section 1 – Product Identification

Product Name: Electronically Managed Energy Storage Device (Battery)

Models: PHI 2.7, PHI 3.5, PHI 1352, PHI 675, and all LibertyPak Battery Systems: LG400, LG1150, LP640 and other models.

Product Use: Electric Power Supply - Harmony Code #8507.60.00.00, Foreign Trade Schedule B

Manufacturer: SimpliPhi Power, Inc., Ojai CA 805 640 6700

Section 2 - Composition and Ingredient Information

Under normal use, this battery is not expected to expose the user to hazardous ingredients. USA: This battery is an article pursuant to 29 CFR 1910.1200 and, as such, is not subject to the OSHA Hazard Communication Standard Requirement. The information contained in this Material Safety Data Sheet contains valuable information critical to the safe handling and proper use of the product. This MSDS should be retained and available for employees and other users of this product. Canada: This is not a controlled product under WHMIS. This product meets the definition of a “Manufactured Article” and is not subject to the regulations of the Hazardous Products Act.

Common Chemical Name	CAS #	Percent of Content (%)	Classification and Hazard Labelling
Lithium Iron Phosphate (LiFePO ₄)	15365-14-7	25-35	Eye, Skin, Respiratory Irritant
Carbon, as Graphite	7440-44-0	12-18	Eye, Skin, Respiratory Irritant
Aluminum metal	7429-90-5	3-7	Inert
Copper metal	7440-50-8	5-9	Inert
Electrolyte:		12-17	Mixture:
Ethylene carbonate	96-49-1		Flammable; Reactive;
Dimethyl carbonate	616-38-6		Sensitizer;
Ethyl methyl carbonate	623-53-0		Eye, Skin & Respiratory
Lithium Hexafluorophosphate	21324-40-3		

Section 3 - Hazards Identification

Preparation Hazards and Classification: Not dangerous with normal use. The battery should not be disassembled or incinerated. Exposure to the ingredients contained within or their combustion products could be harmful.

Appearance, Color, and Odor: Solid object, no odor.

Primary Route(s) of Exposure: Risk of exposure will only occur if the battery or cell is mechanically, thermally or electrically abused and the enclosure is compromised. If this occurs, exposure to electrolyte solutions contained within the battery or cell may occur by inhalation, eye contact, skin contact and ingestion.

Potential Health Effects:

Inhalation: Inhalation of material from a sealed battery is not an expected route of exposure. Vapors or mists from a ruptured battery may cause respiratory irritation.

Ingestion: Swallowing of material from a sealed battery is not an expected route of exposure. Swallowing mists from a ruptured battery may cause respiratory irritation, chemical burns of the mouth and gastrointestinal tract irritation.

Skin: Contact between the battery and skin will not cause any harm. Skin contact with positive and negative terminals of high voltages may cause burns to the skin. Skin contact with a ruptured battery can cause skin irritation.

Eye: Contact between the battery and eye will not cause any harm. Eye contact with the contents of a ruptured battery can cause severe irritation to the eye.

Medical Conditions Aggravated by Exposure: Not Available

Section 4 – First Aid Measures

Skin Contact: Wash affected area with lukewarm water for at least 30 minutes. If irritation or pain persists, seek medical attention.

Eye Contact: Wash affected eye with lukewarm water for at least 30 minutes. Rinse with saline solution if possible. Seek medical attention.

Inhalation: Move victim to fresh air and remove source of contamination from area. Seek medical attention.

Caution: In all cases if irritation persists, seek medical assistance at once.

Section 5 - Fire Fighting Measures

Extinguishing Media: Water, carbon dioxide, dry chemical powder and foam are most effective means to extinguish a LiFePO₄ battery fire.

Fire Fighting Procedure: Put on fully protective gear, including self-contained breathing apparatus, goggles, fireproof jacket and gloves.

Unusual Fire and Explosion Hazards: Exposing battery pack or cell to excessive heat, fire or over voltage condition may cause a leak, fire, hazardous vapors and hazardous decomposition products. Damaged or opened cells can result in rapid heating and the release of flammable vapors.

Section 6 - Accidental Release Measures

The material contained within the batteries or cells is only expelled under abusive conditions. Use a shovel and cover battery with sand or vermiculite, place in an approved container and dispose in accordance with section 13.

Section 7 – Handling and Storage

Handling: Do not expose battery or cell to extreme temperatures or fire. Do not disassemble, crush or puncture battery.

Storage: Insulate positive and negative terminals to avoid short circuit. Store in a cool and well - ventilated area and avoid direct sunlight. Elevated temperatures can result in reduced battery life.

Section 8 – Exposure Controls and Personal Protection

Respiratory Protection: Not necessary under normal use. In case of battery or cell rupture, use a self- contained full-face respiratory mask.

Eye Protection: Not necessary under normal use. Wear safety goggles if handling a ruptured or leaking cell or battery pack.

Hand Protection: Not necessary under normal use. Wear rubber gloves when if handling a ruptured or leaking cell or battery pack.

Skin Protection: Not necessary under normal use. Wear rubber apron and rubber gloves if handling a ruptured or leaking cell or battery pack.

Section 9 – Physical and Chemical Properties

Physical State	Solid
Odor Type	Odorless
Appearance	Battery
Odor Threshold	Not Applicable
pH	Not Applicable
Evaporative Rate	(n-Butyl Acetate = 1) Not Applicable
Relative Density	Not Applicable
Auto Ignition Temperature(C°)	Not Applicable
Boiling Point	Not Applicable
Flammability Limits (%)	Not Applicable
Melting Point	Not Applicable
Vapor Pressure	(mm Hg @ 20 C°) Not Applicable
Viscosity	Not Applicable
Vapor Density	(Air = 1) Not Applicable
Oxidizing Properties	Not Applicable
Solubility in Water	Insoluble
Flash Point and Method (C°)	Not Applicable
Water/ Oil distribution coefficient	Not Applicable

Section 10 – Stability and Reactivity

Stability: Stable

Conditions to Avoid: Avoid exposing battery to high temperatures over 452 degrees F. Do not incinerate, deform, mutilate, crush, pierce, short circuit or disassemble.

Materials to Avoid: Not Applicable

Hazardous Decomposition Products: Combustible vapors may be released if exposed to fire.

Possibility of Hazardous Reactions: Not available.

Section 11 - Toxicological Information

Irritation: Risk of irritation only occurs if cells or batteries are mechanically, thermally or electrically abused and the enclosure is compromised.

Neurological Effects: Not applicable.

Sensitization: Not applicable.

Teratogenicity: Not applicable.

Reproductive Toxicity: Not applicable.

Mutagenicity (Genetic Effects): Not applicable.

Toxicologically Synergistic Materials: Not available

Section 12 – Ecological Information

Bioaccumulative potential: Not available.

Persistence and degradability: Not available.

Mobility: Not available.

Ecotoxicity: Not available.

Other adverse effects: Not available.

Section 13 – Disposal Considerations

Waste Disposal Method: Recycling is encouraged. Dispose of in accordance with local, state and federal laws and regulations.

USA: Dispose of in accordance with local, state and federal laws and regulations.

Canada: Dispose of in accordance with local, state and federal laws and regulations.

EC: Dispose of in accordance with relevant EC Directives.

Section 14 – Transport Information

Hazardous Classifications:

SimpliPhi Power PHI Batteries are categorized in the following manner and should be packaged, labeled, documented and declared accordingly:

UN3480, Lithium Ion Batteries, 9

In all cases, the SHIPPER bears the responsibility to prepare all shipments in accordance with the requirements set forth and/or enforced by United Nations Comity of Experts (UNCOE), the International Civil Aviation Organization (ICAO), FAA, U.S. Department of Transportation (DOT), and International Maritime Organization (IMO).

Note:

- Shipping guidelines are updated over time. Please refer to the most up to date requirements.
- Parcel Carriers will have their own guidelines and requirements that must be observed. Contact your carrier for specific guidelines and requirements.

The following website may be helpful for HazMat Guidelines, within the US.

<http://www.phmsa.dot.gov/hazmat>

<http://www.dot.gov/>

Please contact SimpliPhi Support for additional documentation, if required.

The PHI battery cells do not contain metallic lithium and pass the tests defined in UN model regulation section 38.3. Do not expose to temperatures over 452 degrees F. or direct flame. Ferro Phosphate based batteries are incapable of thermal runaway or spontaneous ignition under any condition and are non-hazardous. Based on lithium content, lithium ferro phosphate cells and batteries are regulated in the U.S. in accordance with Part 49 of the Code of Federal Regulations, (49 CFR Sections 105-180) of the U.S. Hazardous Materials Regulations. The cells in PHI batteries are UN DOT certified regulation 38.3 safe for transport.

California Prop 65:

This product does not contain chemicals known to the State of California to cause cancer or reproductive toxicity.

Canada

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contain all the information required by the Controlled Products Regulations.

WHMIS Classification: Not Controlled

New Substance Notification Regulations: All ingredients in the product are listed, as required, on Canada's Domestic Substance List.

NPRI Substances (National Pollutant Release Inventory): This product does not contain any NPRI chemicals.

EC Classification for the Substance/ Preparation:

Symbol: This product is not classified as dangerous according to Directive 1999/45/EC and it's amendments.

Risk Phrases: None

Safety Phrases: S2: Keep out of the reach of children.
Section 16 – Other Information