# Safety Data Sheet

Issue Date: April 22, 2022

## Section 1 – Product Identification

**Product Name:** LFP Rechargeable Battery
**Trade Name:** LiFePO4 (LFP); Li-ion Battery
**Models:**

| PRODUCT NAME | NOMINAL VOLTAGE | NOMINAL CAPACITY |
|---|---|---|
| **PHI 3.8** | 48V/24V | 75Ah/151Ah |
| **PHI 2.9** | 48V/24V | 57Ah/115Ah |
| **PHI 1.4** | 24V/12V | 57Ah/115Ah |
| **PHI 730** | 24V/12V | 28Ah/57Ah |
| **Big Genny EK** | 12V | 97Ah |
| **Little Genny EK** | 12V | 29Ah |
| **LG400** | 24V | 12Ah |
| **LP640** | 24V | 24Ah |
| **BG1150** | 24V | 48Ah |
| **PHI AmpliPhi** | 48V | 75Ah |
| **SPHI-B-4.9** | 48V | 92.7Ah |

**Product Use:** Electric Power Supply - Harmony Code #8507.60.00.00, Foreign Trade Schedule B
**Manufacturer:** SimpliPhi Power, Inc., Oxnard CA 805 640 6700

## Section 2 - Composition and Ingredient Information

Under normal use, this battery will not expose the user to hazardous outgassing or chemicals. 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 Safety Data Sheet contains valuable information critical to the safe handling and proper use of the product. This SDS 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 (LiFePO4) | 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; Sensitizer; |
| Dimethyl carbonate | 616-38-6 | | Eye, Skin & Respiratory |
| Ethyl methyl carbonate | 623-53-0 | | |
| 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°)** | 260~270 |
| **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)** | 260~270 |
| **Venting Temperature (°C)** | 110~120 |

| | |
|---|---|
| **Storage Temperature (°C)** | -20~45 |
| **Discharge Temperature (°C)** | -20~60 |
| **Charge Temperature (°C)** | 0~45 |
| **Water/ Oil distribution coefficient** | Not Applicable |
| **Specific Energy (Wh/kg)** | ~100 |

## Section 10 – Stability and Reactivity

**Stability:** Stable
**Conditions to Avoid:** Avoid exposing battery to high temperatures over 233 degrees C (452 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

**Bio accumulative 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 - EEC Directive 93/112/EC

## 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**

## Section 15 – Regulatory Information

**Hazardous Classifications:**

In all cases, the SHIPPER bares 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 its amendments.

**Risk Phrases:** None

**Safety Phrases:** S2: Keep out of the reach of children.

**Section 16 – Other Information**

This information has been compiled from sources considered to be dependable and is, to the best of our knowledge and belief, accurate and reliable as of the date compiled. However, no representation, warranty (either expressed or implied) or guarantee is made to the accuracy, reliability or completeness of the information contained herein.

This information relates to the specific materials designated and may not be valid for such material used in combination with any other materials or in any process. It is the user's responsibility to satisfy their self as to the suitability and completeness of this information for their use.

SimpliPhi Power does not accept liability for any loss or damage that may occur, whether direct, indirect, incidental or consequential, from the use of this information.

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