
Section 1 – Chemical Product and Company Identification

Product Name: Cylindrical Lithium-ion Rechargeable Battery LiFePO4/C

Model: IFR17335

Product Identification: PSRCR-123A-002

Item	Value	Remark
Wh-capacity	3.2V, 450mAh	None

Manufacturer: Harding Energy, Inc.

Address: 509 East Ellis Road, Muskegon, MI 49441

Telephone Number: 231-798-7033

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Effective Date: January 8, 2020

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Section 2 – Hazardous Identification

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. Contact of electrolyte and extruded lithium with skin and eyes should be avoided.

Sign/Symptoms of Exposure

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

Section 3 – Composition/Information on Ingredient

Chemical Composition	Molecular Formula	CAS No.	Weight (%)
Lithium iron phosphate	LiFePO4	15365-14-7	~23%
Graphite	C	7782-42-5	~11.5 %
Organic Electrolyte		37348-94-0	~13.2%
Polypropylene		9003-07-0	~2%
Steel	Fe	7439-89-6	~38.1%
Copper	Cu	7440-50-8	~6.7%
Aluminum	Al	7429-90-5	~5.5%

Section 4 – First-Aid Measures

Ingestion: Give at least 2 glasses of milk or water and induce vomiting unless patient is unconscious. Seek medical attention immediately.

Inhalation: Remove from exposure and provide fresh air immediately. Seek medical attention.

Eyes contact: Immediately flush eyes thoroughly with water for at least 15 minutes, lifting upper and lower lids, until no evidence of the chemical remains. Seek medical attention.

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

Section 5 – Fire Fighting Measures

Flash Point: N/A

Auto-Ignition Temperature: N/A

Extinguishing Media: Dry chemical, CO₂

Special Fire-Fighting Procedures: Self-contained breathing apparatus.

Unusual Fire and Explosion Hazards: Cell may vent when subjected to excessive heat-exposing battery contents.

Hazardous Combustion Products: Carbon monoxide, carbon dioxide, lithium oxide fumes

Section 6 – Accidental Release Measures

Steps to be Taken in case Material is Released or Spilled

If the battery material is released, remove personnel from area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. 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, handing in the abandoned batteries to related department unified, dispose of the batteries in accordance with approved local, state and federal requirements. Consult state environmental protection agency and/or federal EPA.

Section 7 – Handling and Storage

Storage: Do not place the cell or battery near heating equipment, nor expose to direct sunlight for long periods. Elevated temperatures can result in shortened battery life and degrade performance. Store in cool place (temperature: -20-45C, humidity: 45-75%).

Mechanical Containment: If potting or sealing the cell or battery in an airtight or watertight container is required. Do not obstruct safety release vents on cells. Encapsulation of batteries will not allow cell venting and can cause high pressure rupture.

Handling: Never throw out cells in a fire or expose to high temperatures. Do not soak cells in water and seawater. Do not expose to strong oxidizers. Do not give a strong mechanical shock or throw down. Never disassemble, modify or deform. Do not connect the positive terminal to the negative terminal with electrically conductive material. Incompatible products: Conductive materials, water, seawater, strong oxidizers and strong acids. Packing material (recommended, not suitable): Insulative and tear proof materials are recommended. The contents of a leaking

cell, when exposed to water, may result in a fire and/or explosion. Crushed or damaged cells and batteries may result in a fire.

Section 8 – Exposure Controls/Personal Protection

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

Eye/Face protection: Use good industrial practice to avoid eye contact. Processing of this product releases vapors or fumes which may cause eye irritation. Where eye contact may be occur, wear chemical goggles and have eye flushing equipment available.

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

Respiratory protection: Avoid breathing dust and processing vapors. Avoid confined areas with venting batteries. Respiratory protection is not necessary under normal use and conditions.

Special clothing: Wear rubber gloves with venting batteries.

Section 9 – Physical and Chemical Properties

Voltage: 3.2V

Rated Capacity: 450mAh

Appearance Characters: Gray, cylindrical, odorless, solid battery

Section 10 – Stability and Reactivity

Stability: Stable

Conditions to Avoid: Heating, mechanical abuse and electrical

Hazardous Decomposition Products: N/A

Hazardous Polymerization: If leaked, forbidden to contact with strong oxidizers, mineral acids, strong alkalis, 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 irritation 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 Consideration

APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION

If batteries are still fully charged or partially discharged, they can be considered a reactive Hazardous waste because of significant amount of not reaction or unconsumed lithium remaining in the spent battery. The battery 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.

Section 14 – Transport Information

The rechargeable Lithium-Ion battery pack as stated in Appendix are made in compliance to the requirements stated in the latest edition of the IATA Dangerous Goods Regulations Packing Instruction 965 section IB such that they can be transported as a Class 9 dangerous goods. However, if those lithium-ion battery packs are pack with or contained in an equipment, then it is the responsibility of the shipper to ensure that the consignment are packed in compliance to the latest edition of the IATA Dangerous Goods Regulations section IB of either Packing Instruction 966 or 967 in order for that consignment to be declared as RESTRICTED

With regard to transport, the following regulations are cited and considered:

- The International Civil Aviation Organization (ICAO) Technical Instructions
- The International Air Transport Association (IATA) Dangerous Goods Regulations (61st Edition, 2020)
- The International Maritime Dangerous Goods (IMDG) Code
- US Hazardous Materials Regulations 49 CFR (Code of Federal Regulations) Sections 173-185 Lithium batteries and cells.
- The UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria UN38.3 Lithium batteries, 6th revised edition (UN3480 and UN3481)

Our products are properly classified, described, packaged, marked, and labeled, and are in proper condition for transportation according to all the applicable international and national governmental regulations, not limited to the above mentioned. We further certify that the enclosed products have been tested and fulfilled the requirements and conditions in accordance with UN Recommendations (T1-T8) on the Transport of Dangerous Goods Model Regulations and the Manual of Testes and Criteria that can be treated as “Class9 Dangerous Goods”.

Transport Fashion: By air, by sea.

Packaging Information: Carton

Lithium ion cells or batteries manufactured, packaged and shipped by Harding Energy, Inc., meet the requirements specified above. Any Lithium ion cells or batteries subsequently repackaged or reshipped are required to meet all the requirements specified above.

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 OSHA Hazard Communication Standard Status Toxic Substances Control Act (TSCA) Status

In accordance with all Federal, State and Local Laws.

Section 16 – Other Information

The above information is based on the data of which we are aware 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.

The data in this Material Safety Data Sheet relates only to the specific material designated herein.

More information concerning shipping, testing, marking and packaging can be obtained from Harding Energy, Inc. representative.

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