

# MATERIAL SAFETY DATA SHEET

FILE NO.: 101511

NAME OF PRODUCT: High Power Lithium Iron Phosphate Battery

MSDS Revision Date: Jan 2, 2015

## SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME:** High Power Lithium Iron Phosphate Battery  
**SYNONYMS:** LFP, Lithium Ion  
**PRODUCT CODES:** ETX6A, ETX12A, ETX12B, ETX18B, ETX18F, ETX18C, ETX24C, ETX24D, ETX36C, ETX36D, ETX36E, ETX48E

**MANUFACTURER:** EarthX, Inc.  
**ADDRESS:** P.O. Box 767  
1111 Diamond Valley Parkway, Unit 101  
Windsor, CO 80550

**EMERGENCY PHONE:** 970 301 6227  
**OTHER CALLS:** 970 301-6064

**PRODUCT USE:** Motorsports battery



## SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

As a factory sealed battery, exposure to hazardous ingredients is not expected with normal use.

<u>INGREDIENT:</u>	<u>%</u>	<u>CAS NO.</u>
Lithium Iron Phosphate	30-35	15365-14-7
Aluminum	9-12	7429-90-5
Copper	8-10	7440-50-8
Nickel	1.1	7440-02-0
Zinc	2	7440-66-6
Graphite	13-15	7782-42-5
Rubber	2-5	69028-37-1
Acrylonitrile butadiene styrene (ABS)	7-10	9003-56-9
Polypropylene	1-2	9003-07-0
Polyethylene	1-1	9002-88-4
Polychloroprene	5-10	184963-09-5
<b>Electrolyte:</b>		
Lithium hexafluoroarsenate	1-2	21324-40-3
Ethylene carbonate	4-5	96-49-1
Diethyl carbonate	8-9	105-58-8
Propylene Carbonate	.8	108-32-7

**SECTION 2 NOTES:** 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 SDS should be retained and available for employees and other users of this product.

## SECTION 3: HAZARDS IDENTIFICATION

Protective Clothing	NFPA Rating (USA)	EC Classification	WHMIS (Canada)	Transportation
Not required with normal use		Not Classified as Hazardous		See Section 14

### EMERGENCY OVERVIEW:

Not classified as dangerous or hazardous with normal use. The battery cells should not be opened or burned. Exposure to the ingredients contained within or their combustion products could be harmful. European Communities (EC): This product is not classified as hazardous

# MATERIAL SAFETY DATA SHEET

FILE NO.: 101511

NAME OF PRODUCT: High Power Lithium Iron Phosphate Battery

**MSDS Revision Date:** Jan 2, 2015

according to Regulation (EC) No. 1272/2008. This product contains dangerous ingredients however, there is no expected release during use of the product and there is a barrier preventing exposure of the user and the environment.

## ROUTES OF ENTRY:

These chemicals are contained in a sealed enclosure inside sealed cells. Risk of exposure occurs only if the cells within the battery are mechanically, thermally or electrically abused to the point of compromising the enclosure. If this occurs, exposure to the electrolyte solution contained within can occur by Inhalation, Ingestion, Eye contact and Skin contact.

## POTENTIAL HEALTH EFFECTS:

**EYES:** Contact between the cell and the eye will not cause any harm. Eye contact with contents of an open cell can cause severe irritation or burns to the eye.

**SKIN:** Contact between the cell and skin will not cause any harm. Skin contact with contents of an open cell can cause severe irritation or burns to the skin.

**INGESTION:** Swallowing of materials from a sealed cell is not an expected route of exposure. Swallowing the contents of an open cell can cause serious chemical burns of mouth, esophagus, and gastrointestinal tract.

**INHALATION:** Inhalation of materials from a sealed cell is not an expected route of exposure. Vapors or mists from a ruptured cell may cause respiratory irritation.

**ACUTE HEALTH HAZARDS:** In the event that the cell(s) has been ruptured, the electrolyte solution contained within the cell(s) would be corrosive and can cause burns to skin and eyes.

**CHRONIC HEALTH HAZARDS:** See Section 11

**MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:** Not applicable

---

## SECTION 4: FIRST AID MEASURES

**EYES:** Contact with the contents of an opened cell can cause burns. If eye contact with contents of an open cell occurs, immediately flush the contaminated eye(s) with lukewarm, gently flowing water for at least 30 minutes while holding the eyelids open. Neutral saline solution may be used as soon as it is available. If necessary, continue flushing during transport to emergency care facility. Take care not to rinse contaminated water into the unaffected eye or onto face. Quickly transport victim to an emergency care facility.

**SKIN:** Contact with the contents of an opened cell can cause burns. If skin contact with contents of an open cell occurs, as quickly as possible remove contaminated clothing, shoes and leather goods. Immediately flush with lukewarm, gently flowing water for at least 30 minutes. If irritation or pain persists, seek medical attention. Completely decontaminate clothing, shoes and leather goods before reuse or discard.

**INGESTION:** Contact with the contents of an opened cell can cause burns. If ingestion of contents of an open cell occurs, NEVER give anything by mouth if victim is rapidly losing consciousness, or is unconscious or convulsing. Have victim rinse mouth thoroughly with water. DO NOT INDUCE VOMITING. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Have victim rinse mouth with water again. Quickly transport victim to an emergency care facility.

**INHALATION:** If contents of an opened cell are inhaled, remove source of contamination or move victim to fresh air. Obtain medical advice.

---

## SECTION 5: FIRE-FIGHTING MEASURES

**FLAMMABLE :** Battery cells contain flammable liquid electrolyte that may vent, ignite and produce sparks when subjected to high temperatures (> 150 °C (302 °F)), when damaged or abused (e.g., mechanical damage or electrical overcharge). Burning cells can ignite other batteries in close proximity.

### NFPA HAZARD CLASSIFICATION

HEALTH: 0

FLAMMABILITY: 1

REACTIVITY: 0

OTHER:

**EXTINGUISHING MEDIA:** Small Fires - Dry chemical, CO<sub>2</sub>, water spray or regular foam.  
Large Fires - Water spray, fog or regular foam.

# MATERIAL SAFETY DATA SHEET

FILE NO.: 101511

NAME OF PRODUCT: High Power Lithium Iron Phosphate Battery

MSDS Revision Date: Jan 2, 2015

**SPECIAL FIRE FIGHTING PROCEDURES:** The interaction of water or water vapor and exposed lithium hexafluorophosphate (Li PF<sub>6</sub>) may result in the generation of hydrogen and hydrogen fluoride (HF) gas. Wear positive pressure self-contained breathing apparatus (SCBA).

Structural firefighters' protective clothing will only provide limited protection. Fight fire from a safe distance.

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** Not applicable

**HAZARDOUS DECOMPOSITION PRODUCTS:** Not applicable

---

## SECTION 6: ACCIDENTAL RELEASE MEASURES

---

**ACCIDENTAL RELEASE MEASURES:** As an immediate precautionary measure, isolate spill or leak area for at least 25 meters (75 feet) in all directions. Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate closed areas before entering.

**SECTION 6 NOTES:** Absorb spilled material with an inert absorbent (dry sand or earth). Scoop contaminated absorbent into an acceptable waste container. Collect all contaminated absorbent and dispose of according to directions in Section 13. Scrub the area with detergent and water; collect all contaminated wash water for proper disposal.

---

## SECTION 7: HANDLING AND STORAGE

---

**HANDLING AND STORAGE:** Do not open, disassemble, crush or burn cell. Do not expose cell to temperatures outside the range of -40°C to 80°C. Store cell in a dry location. To minimize any adverse effects on battery performance it is recommended that the cells be kept at room temperature (25°C +/- 5°C). Elevated temperatures can result in shortened cell life. Keep out of reach of children.

---

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

---

**ENGINEERING CONTROLS:** Use local exhaust ventilation or other engineering controls to control sources of dust, mist, fume and vapor.

**VENTILATION:** Not necessary under normal conditions.

**RESPIRATORY PROTECTION:** Not necessary under normal conditions.

**EYE PROTECTION:** Not necessary under normal conditions. Wear safety glasses if handling an open or leaking cell.

**SKIN PROTECTION:** Not necessary under normal conditions. Wear neoprene or natural rubber gloves if handling an open or leaking cell.

**OTHER PROTECTIVE CLOTHING OR EQUIPMENT:** Not necessary under normal conditions.

**WORK HYGIENIC PRACTICES:** Do not eat, drink or smoke in work areas. Maintain good housekeeping.

**EXPOSURE GUIDELINES:** Airborne exposures to hazardous substances are not expected when product is used for its intended purpose.

# MATERIAL SAFETY DATA SHEET

FILE NO.: 101511

NAME OF PRODUCT: High Power Lithium Iron Phosphate Battery

MSDS Revision Date: Jan 2, 2015

---

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

---

**APPEARANCE:** Sealed plastic case

**ODOR:** Odorless

**PHYSICAL STATE:** Solid

**pH AS SUPPLIED:** Not applicable

**BOILING POINT:** Not applicable

**MELTING POINT:** Not applicable

**FREEZING POINT:** Not applicable

**VAPOR PRESSURE (mmHg):** Not applicable

**VAPOR DENSITY (AIR = 1):** Not applicable

**SPECIFIC GRAVITY (H<sub>2</sub>O = 1):** Not applicable

**EVAPORATION RATE:** Not applicable

**BASIS (=1):** Not applicable

**SOLUBILITY IN WATER:** Insoluble

**PERCENT SOLIDS BY WEIGHT:** 88-92%

**PERCENT VOLATILE BY WT:** 8-12%

---

## SECTION 10: STABILITY AND REACTIVITY

---

**STABILITY:** Stable

**CONDITIONS TO AVOID (STABILITY):** Avoid exposing the battery to fire or temperatures above 80°C. Do not disassemble, crush, short or install with incorrect polarity. Avoid mechanical or electrical abuse.

**INCOMPATIBILITY (MATERIAL TO AVOID):** Do not immerse in seawater or other high conductivity liquids.

**HAZARDOUS DECOMPOSITION OR BY-PRODUCTS:** This material may release toxic fumes if burned or exposed to fire. Breaching of the cell enclosure may lead to generation of hazardous fumes which may include HF (hydrofluoric acid).

---

## SECTION 11: TOXICOLOGICAL INFORMATION

---

**TOXICOLOGICAL INFORMATION:** Risk of irritation occurs only if the cells are mechanically, thermally or electrically abused to the point of compromising the cell enclosure and battery case. If this occurs, irritation to the skin, eyes and respiratory tract may occur. Normal safe handling of this product will not result in exposure to substances that are considered human carcinogens by IARC (International Agency for Research on Cancer), ACGIH (American Conference of Governmental Industrial Hygienists, OSHA or NTP (National Toxicology Program).

---

## SECTION 12: ECOLOGICAL INFORMATION

---

**ECOLOGICAL INFORMATION:** Solid from the cells released into the natural environment will slowly degrade but may release harmful substances. The plastic case and cells should be disposed or recycled according to local regulations.

---

## SECTION 13: DISPOSAL CONSIDERATIONS

---

**WASTE DISPOSAL METHOD:** Plastic and cell recycling is encouraged. Do NOT dump on the ground or into any body of water. Store material for disposal as indicated in Section 7 Handling and Storage.

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

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

EU: Waste must be disposed of in accordance with relevant EC Directives and national, regional and local environmental control regulations. For disposal within the EC, the appropriate code according to the European Waste Catalogue (EWC) should be used.

**RCRA HAZARD CLASS:** Not applicable

# MATERIAL SAFETY DATA SHEET

FILE NO.: 101511

NAME OF PRODUCT: High Power Lithium Iron Phosphate Battery

MSDS Revision Date: Jan 2, 2015

## SECTION 14: TRANSPORT INFORMATION

---

EarthX batteries are designed to comply with all applicable shipping regulations as prescribed by industry and legal standards which includes compliance with the UN Recommendations on the Transport of Dangerous Goods; IATA Dangerous Goods Regulations and applicable U.S. DOT regulations for the safe transport of lithium-ion batteries and the International Maritime Dangerous Goods Code. Each of the listed batteries (and their cells) in Section 1 have passed the UN Manual of Tests and Criteria Part III Subsection 38.3, which is required by all of the directives listed above.

In the US, shipments of lithium ion cells and batteries are classified as Class 9, UN3480, Packing Group II, by the U.S. Hazardous Materials Regulations (HMR). Packaging, markings and documentation requirements are defined in Title 49 of the Code of Federal Regulations (CFR), Section 173.185. of the U.S. HMR.

EarthX batteries meet US exemption requirements and are allowed to be transported within the US without Class 9 packaging and markings, but must conform to other requirements as stipulated in Special Provisions 188 and 189 in the 49 CFR Section 173.185 of the U.S. HMR.

International shipments of lithium ion cells and batteries are generally classified as Class 9, UN3480, Packing Group II, by the International Civil Aviation Organization (ICAO) and the International Maritime Dangerous Goods (IMDG) Code. Packaging, markings and documentation requirements are defined in the International Air Transport Association (IATA) Dangerous Goods Regulations (DGR) Packing Instructions 965 and Packing Instruction P903 of the IMDG Code.

EarthX batteries meet international exemption requirements and are allowed to be transported internationally without Class 9 packaging and markings, but must conform to other requirements as stipulated in Packing Instructions 965 of the IATA DGR and Special Provision 188 under the IMDG Code.

Each EarthX cell and battery meets the provisions of IMDG 2.9.4 and may be transported by sea.

## SECTION 15: REGULATORY INFORMATION

---

### U.S. FEDERAL REGULATIONS

**TSCA (TOXIC SUBSTANCE CONTROL ACT):** All ingredients in the product are listed on the TSCA inventory.

**CERCLA (COMPREHENSIVE RESPONSE COMPENSATION, AND LIABILITY ACT):** None

**SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT):** None

**311/312 HAZARD CATEGORIES:** None

**313 REPORTABLE INGREDIENTS:** None

**STATE REGULATIONS: CA Prop 65;** This product does not contain chemicals known to the State of California to cause cancer or reproductive toxicity.

### INTERNATIONAL REGULATIONS:

**Canada;** This product has been classified in accordance with the hazard criteria of the *Controlled Products Regulations* and the SDS contains all the information required by the *Controlled Products Regulations*.

**EU;** This product is not classified as hazardous according to Regulation (EC) No. 1272/2008.

## SECTION 16: OTHER INFORMATION

---

### PREPARATION INFORMATION:

October 17, 2011:

Created new.

February 13, 2014:

Revised section 1 list of products.

January 2, 2015:

Revised section 15 for sea shipping.

**DISCLAIMER:** The information and recommendations set forth are believed to be accurate at the date of preparation.