



UNICOBA IND. DE COMPONENTES ELETRÔNICOS LTDA.

Rua Josepha Gomes de Souza, 302 – Distrito Industrial – Extrema-MG – Brazil, CEP: 37640-000

Phone: +55 11 5078-5555

## MSDS - MATERIAL SAFETY DATASHEET

### 1. PRODUCT AND COMPANY IDENTIFICATION

#### Product Information:

**Product Category:** Lithium Iron Phosphate Battery

**Model Name:** UPLFP

**Rated Capacity:** 10 Ah ~ 100 Ah

**Average Operating Voltage:** 48.0 V

#### Company Identification

**Company Name:** Unicoba Indústria de Componentes Eletrônicos Ltda.

**Company Address:** Rua Josepha Gomes de Souza, 302 – Distrito Industrial – 37640-000

**Information Telephone:** +55 11 5078-5555

**Date Prepared:** April 08<sup>th</sup>, 2019.

### 2. COMPOSITION / Information on Ingredients

CHEMICAL NAME	PERCENT OF CONTENT	CAS NUMBER
Lithium Iron Phosphate	25%-30%	12057-17-9
Graphite ( C )	8%-12%	7782-42-5
LiFP	15%-22%	
Aluminium (AL)	5%-8%	7429-90-5
Copper (Cu)	10%-15%	7440-50-8
High Molecular Polymer	3%-5%	
Nickel (Ni)	0.5%-1%	7440-02-0
Iron (Fe)	22%-30%	7439-89-6

### 3. HAZARDS IDENTIFICATION

Danger Sort: N/A



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**Routes of Entry:**

**1. Eyes and Skin** – When leaking, the electrolyte solution contained in the battery irritates to ocular tissues and skins;

**2. Inhalation** – Respiratory (and eye) irritation may occur if fumes are released due heat or and abundance of leaking batteries;

**3. Ingestion** – The Ingestion of the battery can be harmful. Content of open battery can cause serious chemical burns of mouth, esophagus and gastrointestinal tract;

**Health Harm:**

**Exposure to Leaking electrolyte from ruptured or leaking battery can cause:**

**1. Inhalation** – Burns and irritation of the respiratory system, coughing, wheezing and shortness of breath;

**2. Eyes** – Redness, tearing, burns. The electrolyte is corrosive to all ocular tissues;

**3. Skin** – The Electrolyte is corrosive and causes tissue damage to throat and gastrointestinal track.

**Environment Harm:** Not necessary under conditions of normal use.

**Explosion Danger:** The battery may be explosive at high temperature (above 150°C) or exposing to the fire.

## 4. FIRST AID MEASURES

**Skin Contact:** Not anticipated. If the battery is leaking and the contained material contacts the skin, flush with copious amounts of clear water for at least 15 minutes.

**Eye Contact:** Not anticipated. If the battery is leaking and contained material contact eyes, flush with copious amounts of clear water for at least 15 minutes. Get medical attention at once.

**Inhalation:** Not anticipated. If the battery is leaking, remove to fresh air. If irritation persists, consult a physician.

**Ingestion:** Not anticipated. If the battery is leaking and the contained material is ingested, rinse mouth and surrounding area with clear water at once. Consult a physician immediately for treatment.

## 5. FIRE FIGHTING MEASURES



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**Unusual Fire and Explosion Hazards:** Battery may be explode or leak potentially hazardous vapor subject to; exposed to excessive heat (above the maximum rated temperature as specified by the manufacturer) or fire, over-charged, short circuit, punctured and crushed.

**Hazardous Combustion Products:** Fire, excessive heat, or over voltage conditions may produce hazardous decomposition products. Damaged batteries can result in rapid heating and the release of flammable vapors.

**Extinguishing Media:** Dry chemical type extinguishers are most effective means to extinguish a battery fire. A CO2 extinguisher will also work effectively.

**Fire Fighting Procedures:** Use a positive pressure self-contained breathing apparatus if the batteries are involved in a fire. Full protective clothing is necessary. During water application, caution is advised as burning pieces of flammable particles may be ejected from the fire.

## 6. ACCIDENTAL RELEASE MEASURES

The Material contained within the battery would only be released under abusive conditions. In the event of battery rupture and leakage, collect all the released materials that are not hot or burning in an appropriate waste disposal container while wearing proper protective clothing and ventilate the area. Placed in approved container and disposed according to the local regulations.

## 7. HANDLING AND STORAGE

### HANDLING:

1. Batteries are designed to be recharged. However, improperly charging a battery may cause the battery to flame. When charging the battery, use dedicated chargers and follow the specified conditions;

2. Never disassemble or modify the battery;

3. Do not immerse, throw, and wet a battery in water;

4. Should a battery unintentionally be crushed, thus releasing its contents, rubber must be

Used to handle all batteries components. Avoid the inhalation of any vapor that may be emitted;

5. Short circuit causes heating. In addition, short circuit reduces the life of the battery and can lead of ignition of surrounding materials. Physical contact with to short-circuited battery can cause skin burn;



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6. Avoid reversing the battery polarity, which can cause the battery to be damaged or flame;
7. In the event of skin or eye exposure to the electrolyte, refer to section 4. First Aid Measures.

#### **STORAGE:**

1. Batteries should be separated from other materials and stored in a noncombustible, well ventilated, sprinkler-protected structure with sufficient clearance between fill and battery stacks. Do not place batteries near heating equipment, nor expose to direct sunlight for long periods.
2. Do not store batteries above 35°C or below -20°C. Store batteries in a cool (about 20±5°C) in a long time, dry and ventilated area that is subject to little temperature change. Elevated temperatures can result in reduced battery cycle life. Battery exposure to temperatures in excess of 60°C will result in the battery venting flammable liquid and gases.
3. Keep the battery venting flammable liquid and gases.

## **8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

**Engineering Controls:** Keep away from the heat and open flame;

**Ventilation:** Not necessary under conditions of normal use. In case of abuse, use adequate mechanical ventilation (local exhaust) for the battery that vent gas of fumes.

**Respiratory Protection:** Not necessary under conditions of normal use self-contained breathing, full-face respiratory equipment. Fires may be fought but only from safe firefighting distance, evacuate all persons from the area of fire immediately.

**Eye protection:** Not necessary under conditions of normal use. Use safety glasses with side of shields if handling a leaking or ruptured battery.

**Body Protection:** Not necessary under conditions of normal use. Use rubber apron and protective working in case of handling or rupture battery.

**Protective Gloves:** Not necessary under conditions of normal use. Use chemical resistant rubber gloves if handling a leaking or ruptured battery.

**Others:** Use good chemical hygiene practice. Wash hands thoroughly after cleaning-up a battery spill caused by leaking battery. No eating, drinking, or smoking in battery storage area.

## **9. PHYSICAL AND CHEMICAL PROPERTIES**



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<b>State:</b>	Solid
<b>Odor:</b>	N/A
<b>pH:</b>	N/A
<b>Vapor pressure:</b>	N/A
<b>Vapor density:</b>	N/A
<b>Boling Point:</b>	N/A
<b>Solutibility in water:</b>	Insoluble
<b>Specific gravity:</b>	N/A
<b>Density:</b>	N/A

## 10. STABILITY AND REACTIVITY

**Stability:** Stable

**Conditions to Avoid:** Do not heat, throw into fire, disassemble, short circuit, immerse in water or overcharge, etc.

**Incompatibility:** None during normal operation. Avoid exposure heat, open flame and corrosives.

**Hazardous Polymerization:** Will not occur.

**Hazardous Decomposition Products:** The battery may release irritative gas once the electrolyte leakage.

## 11. TOXICOLOGICAL INFORMATION

The battery does not elicit toxicological properties during routine handling and use. If the battery is opened through misuse or damage, discard immediately. Internal components of cell are irritant and sensitization.

**Irritancy:** The electrolytes contained in the battery can irritate eyes with any contact. Prolonged contact with the skin or mucous membranes may cause irritation.

**Sensitization:** No information is available.

**Teratogenicity:** No information is available.

**Carcinogenicity:** No information is available.



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**Mutagenicity:** No information is available.

**Reproductive toxicity:** No information is available.

## 12. ECOLOGICAL INFORMATION

1. When Properly used and disposed, the battery does not present environmental hazard.
2. The battery does not contain mercury, cadmium or lead.
3. Do not let internal components enter marine environment. Avoid releasing to water ways, wastewater or ground water.

## 13. DISPOSAL CONSIDERATIONS

1. Disposal of the battery should be performed by permitted, professional disposal firms knowledgeable in Federal, State or Local requirements of hazardous waste treatment and hazardous waste transportation.
2. The battery should be completely discharged prior to disposal and/or the terminals taped or capped to prevent short circuit. When completely discharged it is not considered hazardous.
3. The battery contains recyclable materials. Recycling options available in your local area should be considered when disposing of this product, through licensed waste carries.

## 14. TRANSPORT INFORMATION

**Proper Shipping name:** The steel shell of lithium ion phosphate battery

This report applies to by sea, by air and by land;

The steel shell of lithium iron phosphate battery (model: UPLFP) tested according to the requirements of the UN manual of test Criteria, Part III, subsection 38.3 and result was passed.

**Packing Group:**

The Watt-hour rating time is more than 20Wh/cell and 100Wh/cell pack can not be treated as “Non-dangerous goods” by the United Nations Recommendations on the Transport of Dangerous Good/Special Provision 188, products are prevented from being short- circuited each other and are packaged in an appropriate condition which satisfies packing Group IA performance level.

The Lithium Iron Phosphate Battery according to Section IA of PACKING INSTRUCTION 965, or section IA of PACKING INSTRUCTION 966 – 967 of the 2015 IATA Dangerous Goods regulations



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56<sup>th</sup> Edition may be transported and applicable U.S DOT regulations for the safe transport of Lithium Iron Phosphate Battery.

More Information concerning shipping, testing, marking and packaging can be obtained from label master at <http://www.labelmaster.com/> .

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.

UN number of lithium battery: UN3480 or UN3481.

## 15. REGULATORY INFORMATION

The Transport of rechargeable lithium-ion batteries regulated by the united nations detailed in the “model Regulations on the transport of dangerous goods Ref. ST/SG/AC/10/11 Fifth revised edition 2011”. The Lithium-ion Cells and the battery packs may or may not be assigned to the UN number 3480 Class-9 that is restricted for transport.

## 16. OTHER INFORMATION

The information contained within is provided for your information only. The information and recommendations set forth herein are made in good faith and are believed to be accurate as of 5/5 the date of preparation. However, Unicoba da Amazônia Ltda. MAKES NO WARRANTY, EITHER EXPRESSED OR IMPLIED, and WITH RESPECT TO THIS INFORMATION AND DISCLAIMS ALL LIABILITY.