

## 1 Identification/Preparation/Company

### 1.1 Product name

Lithium Iron Phosphate Battery

### 1.2 Company

PBQ Batteries

[www.pbqbatteries.com](http://www.pbqbatteries.com)

[info@pbqbatteries.com](mailto:info@pbqbatteries.com)

## 2 Hazards identification

Under normal conditions of battery use, internal components will not present a health hazard. The following is provided for battery electrolyte for exposure that may occur during battery production or container breakage or under extreme heat conditions such as fire.

### 2.1 Risk and safety sentences:

(1) – Nature of special risks :

R14/15 Reacts with water and yields flammable gasses

R21 Harmful in contact with skin

R22 Harmful if swallowed

R35 Causes severe burns

R41 Risk of serious damage to the eye

R42/43 May cause sensitization by inhalation and skin contact

R43 May cause sensitization by skin contact

(2) – Safety advices :

S2 Keep out of reach from children

S8 Keep away from moisture

S22 Do not breathe dust

S24 Avoid contact with skin

S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical attention

S36 Wear suitable protective clothing

S37 Wear suitable gloves

S45 In case of incident, seek medical attention

### 2.2 EU-GHS Classification:

Hazard statements:

H301 Toxic if swallowed

H312 Harmful in contact with skin

H315 Causes skin irritation

H318 Causes serious eye damage

H332 Harmful if inhaled

Precautionary statements:

P102 Keep out of reach of children

P222 Keep away from any possible contact with water, because of violent reaction and possible flash fire

P232 Protect from moisture

P260 Do not breathe dust/fume/gas/mist/vapors/spray

P262 Do not get in eyes, on skin, or on clothing

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

P280    Wear protective gloves / protective clothing / eye protection / face protection

### 3 Composition / information on ingredients

Principal Hazardous Component	% Wt.	CAS no.
Lithium iron phosphate	23 ~ 33	15365-14-7
ABS	5	-
Carbon	12 ~ 17	7440-44-0
Organic solvents:    EC	3	
PC	3	
DEC	3	
LiPF6		21324-40-3

### 4 First aid measures

In case of battery rupture or explosion, evacuate personnel from contaminated area and provide maximum ventilation to clear out corrosive fumes/gases and pungent odors. In all case, seek immediate medical attention,

Eye contact: Flush with plenty of water (eyelids-held open) for at least 15 minutes

Skin contact: Remove all contaminated clothing and flush affected areas with plenty of water and sop for at least 15 minutes.

Ingestion: Dilute by giving plenty of water and get immediate medical attention. Assure that the victim does not aspirate vomited material by use of positional drainage. Assure that mucus does not obstruct the airway. Do not give anything by mouth to an unconscious person

Inhalation: Remove to fresh air and ventilate the contaminated area. Give oxygen or artificial respiration if needed.

### 5 Fire-fighting measures

The batteries can leak and/or spout vaporized or decomposed and combustible electrolyte fumes in case of exposure above 90°C resulting from inappropriate use or from the environment. Possible formation of hydrogen fluoride (HF) and phosphorous oxides during fire. LiPF<sub>6</sub> salt contained in the electrolyte releases hydrogen fluoride (HF) in contact with water.

**5.1 Extinguishing media.**

Suitable : CO<sub>2</sub>,  
Dry chemical or Foam extinguishers  
Not to be used : Type D extinguishers

**5.2 Special fire fighting instructions.**

If possible, remove cells from fire fighting area. If heated above 125°C, cells can explode/vent.

### 5.3 Fire fighting equipment

Use NIOSH/MSHA approved full face self contained breathing apparatus (SCBA) with full protective gear.

## 6 Accidental release measures

The material contained within the batteries would only be expelled under abusive conditions. Using shovel or broom, cover battery or spilled substances with dry sand or vermiculite, place in approved container (after cooling if necessary) and dispose in accordance with local regulations.

## 7 Handling and storage

The batteries should not be opened, destroyed nor incinerated since they may leak or rupture and release in the environment the ingredients they contain

### 7.1 Handling

Do not crush, pierce, short (+) and (-) battery terminals with conductive (i.e. metal) goods. Do not directly heat or solder. Do not throw into fire. Do not mix batteries of different types and brands. Do not mix new and used batteries. Keep batteries in non-conductive (i.e. plastic) trays.

### 7.2 Storage

Store in a cool (preferably below 30°C) and ventilated area away from moisture, sources of heat, open flames, food and drink. Keep adequate clearance between walls and batteries. Temperature above 90°C may result in battery leakage and rupture. Since short circuit can cause burn, leakage and rupture hazard, keep batteries in original packaging until use and do not jumble them.

## 8 Exposure control/Personal protection

### 8.1 Engineering control

Keep away from heat and open flame. Store in a cool dry place.

### 8.2 Personal protection

Respirator: Not required during normal operations. SCBA required in the event of fire.

Eye/face protection: Not required beyond safety practices of employer.

Gloves: Not required for handling cells

Foot protection: Safety shoes recommended for large container handling

## 9 Physical and chemical properties

Odor	Density	Melting Point (°C)	Solubility in H <sub>2</sub> O	Gravity	Appearance
N/A	N/A	N/A	Not	N/A	Solid

## 10 Stability and reactivity

### 10.1 Reactivity

None during normal operation or handling conditions.

### 10.2 Hazardous decomposition

Corrosive/Irritant Hydrogen fluoride (HF) is produced in case of reaction of lithium (LiPF6) with water. Combustible vapors and formation of Hydrogen fluoride (HF) and phosphorous oxides during fire.

### 10.3 Incompatibilities

None during normal operations. Avoid exposure to heat, open flame and corrosives.

### 10.4 Conditions to avoid

Do not short terminals or immerse in water or pour.

Do not heat or throw in fire or solder

Do not attempt to crush or drop

Do not put in microwave oven, oven or pressure container

Do not attempt to modify

## 11 Toxicological information

The Li-ion batteries do not contain toxic materials.

## 12 Ecological information

When properly used or disposed, the Li-ion batteries do not present environmental hazard.

## 13 Disposal considerations

Dispose in accordance with applicable regulations which vary from country to country. (In more countries, the thrashing of used batteries is forbidden and the end-users are invited to dispose them properly, eventually through not-for-profit organizations, mandated by local governments or organized on a voluntary basis by professionals). Lithium-Ion batteries should have their terminals insulated and be preferably wrapped in plastic bags prior to disposal.

### 13.1 Incineration:

Incineration should never be performed by battery users but eventually by trained professionals in authorized facilities with proper gas and fumes treatment.

## 14 Transport information

### 14.1 International conventions :

Air IATA

For cells with a watt-hour rating of more than 20Wh and batteries with a watt-hour rating of more than 100Wh Packing instruction 965 part 1 applies.

For cells with a watt-hour rating of 20Wh or less and batteries with a watt-hour rating of 100Wh or less Packing instruction 965 part 2 applies.

Sea IMDG; Yes

Land ADR(road); Yes

RID (Rail); Yes

#### 14.2 Other :

Each cell and battery is of the type proven to meet the requirements of each test in the UN *Manual of Tests and Criteria*, Part III, subsection 38.3

## 15 Regulatory information



#### 15.1 Signal word:

Danger

#### 15.2 Hazard statements:

- H302 Harmful if swallowed
- H312 Harmful in contact with skin
- H314 Causes severe skin burns and eye damage.
- H318 Causes serious eye damage
- H332 Harmful if inhaled

#### 15.3 Precautionary statements:

- P102 Keep out of reach of children
- P223 Keep away from any possible contact with water, because of violent reaction and possible flash fire
- P232 Protect from moisture
- P260 Do not breathe dust/fume/gas/mist/vapors/spray
- P262 Do not get in eyes, on skin, or on clothing
- P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
- P280 Wear protective gloves / protective clothing / eye protection / face protection

## 16 Other information

Training requirements for handling and preparing:

#### 16.1 Air transport:

Personnel handling/preparing need to be trained according to the guidelines set out in the "IATA Dangerous Goods Regulations 53<sup>rd</sup> edition" chapter 1.5. or the current ICAO Chapter 4.

#### 16.2 For Road Transport:

We recommend that personnel handling and preparing the goods for transport should have had sufficient training.

#### 16.3 For Sea Transport:

We recommend that personnel handling and preparing the goods for transport should have had sufficient training.

#### **16.4 For Rail Transport:**

We recommend that personnel handling and preparing the goods for transport should have had sufficient training.

#### **16.5 For River Transport:**

We recommend that personnel handling and preparing the goods for transport should have had sufficient training.

Training requirements may diver from country to country, check with your national transport authority what training may be required.

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