

PRODUCT SAFETY DATA SHEET

1. Name of Product and Manufacturer

Name of Product : Lithium Iron Phosphate Rechargeable cell or battery pack
Name of Company : Intec Industries Company Ltd.
Address : Room 2703, Well Tech Centre, 9 Pat Tat Street, San Po Kong,
Hong Kong
Telephone number : (852) 2885 1100
For emergency : (852) 2947 0588

Effective date: January 3, 2017

2. Hazards identification

A sealed Lithium Iron Phosphate cell is not hazardous in normal use.

GHS Classification : Not applicable
Hazard : The materials within the battery may only represent a hazard if the structural integrity of the battery is compromised. Do not expose the batteries to fire or open flame. Do not mix batteries of varying sizes, chemistries, or types. Do not short circuit, puncture, incinerate, crush, over-charge, over discharge, or expose the batteries to temperatures above or below the declared limit. Damage to the batteries will result in the risk of fire or explosion, which could release dangerous gas mixture and exposure to the ingredients contained within or their combustion products could be harmful.
WHMIS Classification: Not Controlled.
Toxicity : Vapor generated from burning batteries, may make eyes, skin and throat irritate.

3. Compositions

IMPORTANT NOTE: The battery cell should not be opened or exposed to heat because exposure to the following ingredients contained within could be harmful under some circumstances.

Chemical Name	CAS No.	PEL (OSHA)	TLV (ACGIH)
Lithium Iron Phosphate (LiFePO ₄)	15365-14-17	None Established	None Established
Graphite (C)	7782-42-5	2.5 mg/m ³ (as dust)	2.5 mg/m ³ (as dust)
Organic Solvent		None Established	None Established
Lithium Salt		None Established	None Established
Weight of lithium per cell: 0g			

Remarks: Concentrations may vary under different condition of charging or discharging.

4. First Aid Measures

The product contains inorganic electrolyte. In case electrolyte leakage from the battery, action described below are required.

- Eye contact : Exposure of eye to contents of an open cell will cause chemical burns and severe irritation. Rinse thoroughly with large quantity of distilled water at once, and seek medical attention immediately.
- Skin contact : Electrolyte will cause chemical burns, and others chemical compound may cause allergic dermatitis. Remove contaminated clothing at once, and rinse with large quantity of water. If the symptoms persist, seek medical attention.
- Inhalation : Do not dispose of cells or battery packs in fire or mutilate, they may burst explosively or release toxic fumes. Inhalation of those may cause significant harm to human body. Provide fresh air at once and seek medical attention.
- Ingestion : Cells of any size should never be placed in the mouth, nose, or ears. Damage to tissue may result from chemical and/or electrical burning. In all cases of ingestion, seek medical attention immediately. The progress of the cell through the body should be carefully monitored and surgical interventions.

5. First Fighting Measures

- Extinguishing method : If fire or explosion occurs when the cells or battery packs are being charged, stop charging immediately.
Fire fighters should wear self-contained breathing apparatus.
Lithium Iron Phosphate batteries involved in a fire can produce toxic fumes including metallic oxides.
- Fire extinguishing agent: Dry powder and dry sand are effective means to extinguish a battery fire. Carbon dioxide and class D extinguishers should be considered on the cell/battery packs or packing material.

6. Measures for electrolyte leakage from the battery

- Take up with absorbent cloth.
- Move the battery away from the fire.

7. Handling and Storage

- Storage : - Cells or Battery packs should be stored in a cool, dry and well ventilated area. Cell life degradation is a function of time, even if the battery is never used. As temperature increases, the degradation rate of the cell increases, making it desirable to keep inventory between 0°C to 30°C when practical. Cells or battery packs that will be stored for extended periods should undergo regular OCV checks and receive boost charges on a regular schedule.
- Do not store the battery in place of the high temperature or under direct sunlight or in front of a stove. Please also avoid the places of high humidity. Be sure not to expose the battery to condensation, water drop or not to store it under frozen condition.
- Airtight, watertight Compartment : - Cell or battery packs normally evolve very small amount of hydrogen, which might cause harm to human body. In an airtight compartment, proper ventilation is suggested.
- Packaging : - When packing the batteries, do not allow battery terminals to contact each other, or contact with other metals. Be sure to pack batteries by providing partitions in the packaging box, or in a separate plastic bag so that the single batteries are not mixed together.
- Use strong material for packaging boxes so that they will not be damaged by vibration, impact, dropping and stacking during their transportation.
- Short Circuit : - Care must be exercised in the handling and use of the cells or battery packs to avoid external shorts. A current-limited device such as a fuse, resistor, diode, or circuit breaker, may be used in the discharge circuit to prevent short-circuit current.
- Soldering or Welding : - Avoid solder or weld to cells directly, contact Intec Industries Co. Ltd. for the proper handling procedures whenever in doubt.
- Charging : - Incorrect chargers or reverse charging may result high temperature and gas formation, which risk fire or cell rupture. Do not leave the cell or battery packs charging over extend period unless it is specifically designed to do so.

- Cautions : - Do not dispose in fire, mix with other battery types, charge above specified rate, connect improperly, or short circuit, which may result in overheating, explosion or leakage of cell contents.
- Do not incinerate or subject battery cells to temperature in excess of 100°C. Such treatment can cause cell rupture.
 - Do not open battery.
 - Do not let water penetrate into packaging boxes during their storage and transportation.
 - Fire fighting apparatus should be installed.

8. Exposure Control (in case of electrolyte leakage from the battery)

- Acceptable condition : Not specified in ACGIH.
- Facilities : Provide appropriate ventilation system such as local ventilator in the storage place.
- Protective clothing : Gas mask for toxic gases, safety goggle, and safety glove.

9. Physical and Chemical Properties

- Appearance : Cylindrical can shape
- Voltage : 3.2 volts

10. Stability and Reactivity

- Stability: Stable
- Conditions to Avoid: Do not heat, disassemble or overcharge.
- Hazardous Decomposition or By-products: N/A

Since batteries utilize a chemical reaction they are actually considered a chemical product. As such, battery performance will deteriorate over time even if stored for a long period of time without being used. In addition, the various usage conditions such as discharge, ambient temperature, etc. are not maintained within the specified ranges the life expectancy of the battery may be shortened or the device in which the battery is used may be damaged by electrolyte leakage.

11. Toxicological Information (in case of electrolyte leakage from the battery)

Acute toxicity	:	Not specified.
Irritation	:	Irritating to eye and skin.
Mutagenicity	:	Not specified.
Chronic toxicity	:	Not specified.

12. Ecological Information

No ecological impacts expected under normal use conditions.

In case of the worn-out battery was disposed in land, the battery case may be corroded, and leak electrolyte. But, we have no ecological information.

13. Disposal Considerations

When the battery is worn-out, dispose of it under the ordinance of each local government or the law issued by relating government.

14. Transportation Information

Intec sealed Lithium Iron Phosphate batteries are considered to be “dry cell” batteries and is not regulated by International Maritime Dangerous Goods Regulation (IMDG). Improperly packed cells or battery packs when exposed to the vibration of long-distance transportation can be caused short circuit. The keys to proper shipment are as the follows:

- a. Possible insulate the tables to prevent contact.
- b. Cells or battery packs are heavy and deserve the protection of adequate strength boxes.
- c. If stacking cells vertically, insulation between layers of cells must resist breaking down under the stress of transportation.
- d. Avoid over stacking boxes of cells or battery packs so that the packaging of the lower tier is damaged.
- e. During the transportation of a large amount of batteries by ship, trailer or railway, do not leave them in the places of high temperatures and do not allow them to be exposed to condensation.
- f. During the transportation do not allow packages to be fallen down or damaged.
- g. Small quantities of single lithium ion cells or battery packs are exempted from Class 9 dangerous goods.
- h. Lithium Ion batteries are not subject to the other requirement of the US Department of Transportation (DOT) Subchapter C, Hazardous Materials Regulations if shipped in compliance with 49 CFR 173.185 and Special Provision 188.

- i. ICAO Technical Instructions for the safe Transport of Dangerous Goods (TDG) by air. Lithium Ion batteries can be shipped by air in accordance with International Civil Aviation Organization (ICAO) 2013-2014 edition, Section II or Section 1B or International Air Transport Association (IATA), 58th edition, Section II or 1B, Packing Instructions PI 965 (Batteries), PI 966 (Batteries, packed with equipment) and PI 967 (Batteries contained in equipment) as appropriate.
- j. Lithium Ion batteries are regulated by the International Maritime Organization (IMO), 2014 edition, 37th amendment, under Special Provisions 188 and 230.
- k. All Lithium Ion cells are tested and comply with the UN Model Regulations, Manual of Test and Criteria, Part III, subsection 38.3 (UN 38.3).

15. Regulatory Information

US Department of Transportation (DOT) Hazardous Materials Regulations.

IATA Dangerous Goods Regulations

ICAO Technical Instructions for the safe transport of dangerous goods (TDG) by air

United Nations Recommendations on the Transport of Dangerous Goods (TDG) Model Regulations

International Maritime Organization (IMO) Regulations.

16. Other Information

This PSDS is provided in good faith and generally descriptive only and is not intended to make or imply any representation of warranty with respect to any product. Intec Industries Co., Ltd. reserves the rights on modification of this document without prior notice.

Potential hazards may arise from the improper use of cells or battery packs. Manufacturers and assemblers of battery-using systems, that are properly designed and that adequate battery handling procedures should be in place.