



MSDS Report

Product name : **Lithium Iron Phosphate Battery**
M/N : **TDFP-100AH**
TDFP-10AH, TDFP-20AH, TDFP-30AH,
TDFP-40AH, TDFP-50AH, TDFP-60AH,
TDFP-160AH, TDFP-200AH, TDFP-300AH, TDFP-XXXAH.
Prepared for : **Tornado Science Groups Limited**
Address : **1-1-104, Nankai Industrial Zone, Nankai District, Tianjin, P.R.China**
Prepared by : **Shenzhen BCTC Technology Co., Ltd.**
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Report Number : **BCTC-12122543**
Date of Test : **Dec.10 - Dec. 17, 2012**
Date of Report : **Dec. 17, 2012**

Prepared by : *Tony Zhou*

Reviewer by : *Sophie Lee*

Approved by : *Casey Wang*





Material Safety Data Sheet

Section 1 – Chemical Product and Company Identification

Product name: Lithium Iron Phosphate Battery
Company: **Tornado Science Groups Limited**
Address: 1-1-104, Nankai Industrial Zone, Nankai District, Tianjin, P.R.China
Post code: 518103
Email: info@tnd-battery.com
Tel: --
Fax: --
Emergency phone: 13662168047
MSDS Number: BCTC-12122543
MSDS Date: Dec. 17, 2012

Ingredient	Concentration	CAS NO.
Aluminum Foil(Al)	10.0%	7429-90-5
Copper Foil (Cu)	20%	7440-50-8
PVDF(-[CH ₂ -CF ₂]-n)	3.0%	24937-79-9
Graphite(C)	15.0%	7782-42-5
Ethylene carbonate	0.5%	96-49-1
Ascorbic acid	0.2%	50-81-7
Nickel strap	0.2%	7440-02-0
Aluminum strap	0.4%	7429-90-5
Silastic rubber	0.1%	N/A
Carbonaceous additive	1.9%	N/A
Lithiu iron phosphate	45.0%	N/A
Acrylic size fat	0.5%	N/A
Phosphate	0.25	N/A
PE film/ PP film	3.0%	N/A



Section 3 – Hazards Identification

Hazards Identification:

Class 9, miscellaneous.

Emergency Overview:

Caution: Avoid contact and inhalation the electrolyte contained inside the battery.

Section 4 – First Aid Measures

Skin Exposure:

If the internal battery materials of an opened battery cell come into contact with the skin, immediately flush with plenty of water.

Eye Exposure:

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

Inhalation Exposure:

If inhaled the internal materials of battery, remove immediately to fresh air and seek medical attention.

Oral Exposure:

If swallowed, do not induce vomiting. Seek immediate medical attention.

Section 5 – Fire Fighting Measures

Extinguishing Media:

Suitable: Dry chemical. Sandy soil, Carbon dioxide or appropriate foam.

Firefighting:

Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

Specific hazards: Emit toxic fumes under fire conditions.

Section 6 – Accidental Release Measures

Procedure of Personal Precaution:

If batteries show signs of leaking, avoid skin or eye contact with the material leaking from the battery. Use chemical resistant rubber gloves and non-flammable absorbent materials for clean up. Mix with inert material (e.g. dry sand, vermiculite) and transfer to sealed container for disposal.



Section 7 – Handling and Storage

Handling

Keep away from ignition sources, heat and flame.

Such batteries must be packed in inner packages in such a manner as to effectively prevent short circuits and to prevent movement which could lead to short circuits.

Avoid mechanical or electrical abuse.

More than a momentary short circuit will generally reduce the battery service life.

Avoid reversing battery polarity within the battery assembly.

In case of a battery unintentionally be crushed, rubber gloves must be used to handle all battery components.

Avoid contact with eyes, skin.

Avoid inhalation.

No smoking at working site.

Materials to Avoid: Strong oxidizing agents, Corrosives.

Storage

Store in a cool, well-ventilated area.

Keep away from ignition sources, heat and flame.

Such batteries must be packed in inner packages in such a manner as to effectively prevent short circuits and to prevent movement which could lead to short circuits.

Materials to Avoid: Strong oxidizing agents, Corrosives.

Section 8 – Exposure Controls, Personal Protection

Engineering Controls:

Use ventilation equipment if available.

Safety shower and eye bath.

Personal Protective Equipment:

Respiratory system: Not necessary under conditions of normal use.

Eyes: Not necessary under conditions of normal use.

Clothing: Wear appropriate protective clothing.

Hand: Safety gloves.

Other Protect:

NO smoking, drinking and eating at working site.

Wash thoroughly after handling.



Section 9 – Physical and Chemical Properties

Appearance:	Solid, White color
Odor:	Odorless
Melting Point/°C:	>300°C
PH Value:	Not applicable
Stability:	Partial soluble in water

Section 10 – Stability and Reactivity

Stability:

Stable under normal temperatures and pressures.

Conditions to Avoid:

Avoid exposure to heat and open flame.

Avoid mechanical or electrical abuse.

Prevent short circuits.

Prevent movement which could lead to short circuits.

Materials to Avoid:

Strong oxidizing agents, Corrosives.

Hazardous Polymerization:

Will not occur.

Hazardous Decomposition Products:

Metal oxides, CO, CO₂

Section 11 – Toxicological Information

Toxicity Data: Not available.

Irritation Data: The internal battery materials may cause irritation to eyes and skin.

Section 12 – Ecological Information

NO data available.

Section 13 – Disposal Considerations

Appropriate Method of Disposal of Substance:

Lithium batteries are best disposed of as non-hazardous waste when fully or mostly discharged. Contact a licensed professional waste disposal service to dispose of large quantities materials.



Section 14 – Transport Information

The Lithium Iron Phosphate Battery has passed the test UN38.3, according to the report ID:1109030193. According to the packaging instruction 965 section II of IATA DGR 53rd Edition for transportation or the special provision 188 of IMDG, or the Recommendations on The Transport of Dangerous Goods-Model Regulations.

The goods are not subject to dangerous goods.

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

Separate Lithium-ion batteries when shipping to prevent short-circuiting. They should be packed in strong packaging for support during transport. Take in a cargo of them without falling, dropping, and breakage. Prevent collapse of cargo piles and wet by rain.

Transport fashion: By air, by sea, by railway, by road.

Section 15 – Regulatory Information

Law Information

- 《Dangerous Goods Regulation》
- 《Recommendations on the Transport of Dangerous Goods Model Regulations》
- 《International Maritime Dangerous Goods》
- 《Technical Instructions for the Safe Transport of Dangerous Goods》
- 《Classification and code of dangerous goods》
- 《Occupational Safety and Health Act》 (OSHA)
- 《Toxic Substances Control Act》 (TSCA)
- 《Consumer Product Safety Act》 (CPSA)
- 《Federal Environmental Pollution Control Act》 (FEPCA)
- 《The Oil Pollution Act》 (OPA)
- 《Superfund Amendments and Reauthorization Act Title III (302/311/312/313)》 (SARA)
- 《Resource Conservation and Recovery Act》 (RCRA)
- 《Safety Drinking Water Act》 (CWA)
- 《California Proposition 65》
- 《Code of Federal Regulations》 (CFR)

In accordance with all Federal, State and Local laws.



Section 16 – Additional Information

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



PHOTOGRAPHS OF TEST SAMPLE

EUT Photo 1



EUT Photo 2



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