



MATERIAL SAFETY DATA SHEET

Lithium Cylindrical Rechargeable Battery

Model: 18500-1000mAh

Prepared by	Approved by
Zenghui	Yinshishu
Date: Jan 10, 2014	Date: Jan 10, 2014

Material Safety Data Sheet

Section 1-Chemical Product and Company Identification

Product Identification

BKT Lithium-Ion Cylindrical Cell

Nominal Voltage : 3.2 V
Nominal Capacity : 1000mAh
Equivalent Lithium content : 3.2Wh
Testing Period : Jan 8, 2014 To Jan 10, 2014

Manufacturer

SHENZHEN BEST ELECTRONICS CO., LTD.
Ganbei Industrial Park, Longgang, Shenzhen, China
contact person : zenghui
Telephone : +86-755- 28904316
Fax : +86-755-89989591
E-mail : bkt0008@163.com

Section 2-Composition/Information on Ingredients

Chemical Composition	Molecular Formula	Weight%	CAS No	OSHA(PEL)	ACGIH(TLV)
LiFePO ₄	LiFePO ₄	25~30%	15365-14-7	N/A	N/A
Polyvinylidene fluoride	(CH ₂ CF ₂) _n	0.5~2%	24937-79-9	N/A	N/A
Graphite powder	C	15~20%	7782-42-5	N/A	N/A
Electrolyte	LiPF ₆ C ₃ H ₄ O ₃ C ₄ H ₆ O ₃ C ₃ H ₁₀ O ₃	10~15%	21324-40-3	N/A	N/A
Polyethylene	(C ₂ H ₄) _n	0.5~1%	9002-88-4	N/A	N/A
Copper foil	Cu	5~10%	7440-50-8	N/A	N/A
Nickel	Nickel	5~10%	7440-02-0	N/A	N/A
Iron	Fe	15~20%	7439-89-6	N/A	N/A
Aluminum foil	Al	5~10%	7429-90-5	N/A	N/A
PVC	(C ₂ H ₃ Cl) _x	0.2~0.5%	9002-86-2	N/A	N/A

Section 3-Hazards Identification

Page 2 of 6

The information and recommendations set forth are made in good faith and believed to be accurate as of the date of preparation. SHENZHEN BEST ELECTRONICS CO., LTD. makes no warranty, expressed or implied, with respect to this information and disclaims all liabilities from reliance on it

--- File No./Rev.: BKT-MSDS-001/E00

Health Hazards (Acute and Chronic)

These chemicals are contained in a sealed can. Risk of exposure occurs only if the battery is mechanically or electrically abused. Contact of electrolyte and extruded lithium with skin and eyes should be avoided.

Sign/Symptoms of Exposure

A shorted battery can cause thermal and chemical burns upon contact with the skin. May be a reproductive hazard.

Section 4-First-aid Measures**Eye**

Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

Skin

Remove contaminated clothes and rinse skin with plenty of water or shower for 15 minutes. Get medical aid.

Inhalation

Remove from exposure and move to fresh air immediately. Use oxygen if available.

Ingestion

Give at least 2 glasses of milk or water. Induce vomiting unless patient is unconscious. Call a physician.

Section 5-Fire Fighting Measures

Flash Point: N/A.

Auto-Ignition Temperature: N/A.

Extinguishing Media: Water, CO₂.

Special Fire-Fighting Procedures

Self-contained breathing apparatus.

Unusual Fire and Explosion Hazards

Cell may vent when subjected to excessive heat-exposing battery contents.

Hazardous Combustion Products

Carbon monoxide, carbon dioxide, lithium oxide fumes.

Section 6-Accidental Release Measures**Steps to be Taken in case Material is Released or Spilled**

If the battery material is released, remove personnel from area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. Wipe it up with a cloth, and dispose of it in a plastic bag and put into a steel can. The preferred response is to leave the area and allow the battery to cool and vapors to dissipate. Provide maximum ventilation. Avoid skin and eye contact or inhalation of vapors. Remove spilled liquid with absorbent and incinerate.

Waste Disposal Method

It is recommended to discharge the battery to the end, to use up the metal lithium inside the battery, and to bury the discharged battery in soil.

Section 7-Handling and Storage

The battery should not be opened, destroyed or incinerate, since they may leak or rupture and release to the environment the ingredients that they contain in the hermetically sealed container.

Do not short circuit terminals, or over charge the battery, forced over-discharge, throw to fire. Do not crush or puncture the battery, or immerse in liquids.

Precautions to be taken in handling and storing

Avoid mechanical or electrical abuse. Storage preferably in cool, dry and ventilated area, which is subject to little temperature change. Storage at high temperatures should be avoided.

Do not place the battery near heating equipment, nor expose to direct sunlight for long periods.

Other Precautions

The battery may explode or cause burns, if disassembled, crushed or exposed to fire or high temperatures. Do not short or install with incorrect polarity.

Section 8-Exposure Controls/Personal Protection

Respiratory Protection

In case of battery venting, provide as much ventilation as possible. Avoid confined areas with venting cell cores.

Respiratory Protection is not necessary under conditions of normal use.

Ventilation

Not necessary under conditions of normal use.

Protective Gloves

Not necessary under conditions of normal use.

Other Protective Clothing or Equipment

Not necessary under conditions of normal use.

Personal Protection is recommended for venting battery

Respiratory Protection, Protective Gloves, Protective Clothing and safety glass with side shields.

Section 9-Physical and Chemical Properties

Nominal Voltage: 3.2V.

Rated Capacity: 1000mAh.

Appearance characters: Silvery-white, cylindrical, odorless, solid battery.

Chemical Uses: Digital electronic products.

Section 10- Stability and Reactivity

Stability

Stable

Conditions to Avoid

Heating, mechanical abuse and electrical abuse.

Hazardous Decomposition Products

N/A.

Hazardous Polymerization

N/A.

If leaked, forbidden to contact with strong oxidizers, mineral acids, strong alkalis, halogenated hydrocarbons.

Section 11-Toxicological Information

Inhalation, skin contact and eye contact are possible when the battery is opened.

Exposure to internal contents, the corrosive fumes will be very irritating to skin, eyes and mucous membranes.

Overexposure can cause symptoms of non-fibrotic lung injury and membrane irritation.

Section 12-Ecological Information

Lithium polymer batteries do not contain heavy metals as defined by the European directives 2006/66/EC Article 21. Mercury has not been “intentionally introduced (as distinguished from mercury that may be incidentally present in other materials)” in the sense of the U.S.A. “Mercury-Containing and Rechargeable Battery Management Act” (May 13 1996).

Heavy metals in Lithium polymer batteries should comply with European directives 2006/66/EC Article 21.

Mercury: less than 5ppm

Cadmium: less than 20ppm

Lead: less than 40ppm

Besides that, BEST commit to meet the requirements of directive 2002/95/EC(RoHS), which has limitation for the other 3 types of hazardous substance:

Cr(+6): less than 1000ppm

PBB(s): less than 1000ppm

PBDE(s): less than 1000ppm

When promptly used or disposed the battery does not present environmental hazard. When disposed, keep away from water, rain and snow.

Section 13-Disposal Considerations

Appropriate Method of Disposal of Substance or Preparation

If waste Li-ion Polymer batteries are still fully charged or only partially discharged, they can be considered a reactive hazardous waste because of significant amount of not reaction, or unconsumed lithium remaining in the spent battery. The batteries must be neutralized through an approved secondary treatment facility prior to disposal as a hazardous waste. Recycling of battery can be done in authorized facility, through licensed waste carrier. Use a professional disposal firm for disposal of mass quantities of undischarged Li-ion Polymer batteries.

Section 14-Transport Information

According to PACKING INSTRUCTION 965 ~ 970 of IATA DGR 52nd Edition for transportation or the special provision 188 of IMDG.

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

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

Transport Fashion: By air, by sea.

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-Other Information

This information is not effective to all the batteries manufactured by BEST. This information comes from reliable sources, but no warranty is made to the completeness and accuracy of information contained. BEST doesn't assume responsibility for any damage or loss because of misuse of batteries. Users should grasp the correct use method and be responsible for the use of batteries.