MANUFACTURER:
BYD LITHIUM BATTERY CO., LTD

Material Safety Data Sheet

DATE：2016-02-15

Section 1 – Product and Company Identification

MANUFACTURER: BYD LITHIUM BATTERY CO., LTD	Product name: Lithium-ion Battery ($LiFe_{1-X}Co_XPO_4$ Battery U3A1-50P-A)	Product code: 11282545-00/ 11571932-00/ 11582621-00/ 11638073-00
Address: No.1,Baoping Road, Baolong Industrial Town, Longgang Shenzhen, China	Telephone Number : +86-755-8988 8888 ext.55274 Emergency Telephone Number: +86-755-8988 8888 ext.55274 Fax Number: +86-755-8420 2222 E-mail: www.byd.com.cn	
Prior Notice of Usage	You are kindly requested to use the battery which is delivered from BYD COMPANY LIMITED in strict accordance with the specification and remarks include at the end of the document. Due to improper usage of the battery, an accident or a fire may occur due to the battery generating heat, catching fire or rupture, smoke.	

Section 2 - Hazard Identification

Emergency overview: A lithium ion battery is normally stable under appropriate handling and storage conditions. If a lithium ion battery generates abnormal heat, leave away from the battery to avoid inhaling internal materials. Chemicals which are contained in lithium ion or batteries, have some toxicity and it may cause irritation.

Routes of entry	Inhalation, Ingestion, Skin absorption.
Eye	The spilliable electrolyte can cause eye irritation.
Skin	The spilliable electrolyte can cause skin irritation.
Environment hazards	Do not throw out it into the environment.
Explosion hazards	May explode in a fire.

Section 3 – Composition/Information on ingredients

Hazardous components	CAS#	% (by weight)
$LiFe_{1-X}CoPO_4$	---	18-27
PVDF	24937-79-9	1.0-1.6
Carbon	7440-44-0	7-16
PTFE	---	0.2-0.9
Electrolyte	---	17-26
PP	---	2.0-3.6
Copper	7440-50-8	7-14
Aluminum	7429-90-5	0.8-1.3
Steel	---	15-25

Section 4 – First Aid Measures

Skin contact	Remove contaminated clothes and shoes immediately. Wash the adherence or contact region with soap and plenty of water. Seek medical attention immediately.
Eye contact	Immediately flush eyes with water continuously for at least 15 minutes. Seek medical attention immediately.
Inhalation	Cover the victim in a blanket, move to the place of fresh air and keep quiet. Seek medical attention immediately. When dyspnea (breathing difficulty) or asphyxia (breath-bald), give artificial respiration immediately.
Ingestion	Get medical aid. Do not induce vomiting. Get medical attention immediately.
Section 5 – Fire Fighting Measures	
Types of hazard	May explode in a fire.
Fire-fighting measures	Although a battery cell is not flammability, in case of fire, move it to the safe place quickly. The following measures are taken when it cannot be moved: ◆ Suitable extinguishing media: Dry sand, chemical power fire extinguishing medium. ◆ Special hazards: Acrid or harmful fume is emitted during fire. ◆ Special protective equipment for firefighters: Protective equipment written in section 8.
Special Information	In the event of a fire, wear full protective clothing and self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.
Section 6 – Accidental Release Measures	
General Information	Use proper personal protective equipment as indicated in section 8.
Spills/Leaks	Internal cell materials, such as electrolyte leaked from battery cell are carefully deals with according to the followings. Personal precaution: Forbid unauthorized person to enter. Remove leaked materials with protective equipment noted in Section 8. Environmental precautions: Do not throw out into the environment. Method of cleaning up: Dilute the leaked electrolyte with water and neutralize with diluted sulfuric acid. The leaked solid is moved to a container. The leaked place is fully flushed with water.
Section 7 – Handling and Storage	
Handling	Technical measures: Prevention of user exposure; Not necessary under normal use.

	Prevention of fire and explosion: Not necessary under normal use. Precaution for safe handling: Do not damage or remove the external shell. Specific safe handling advice: Never throw out battery in a fire or expose to high temperatures. Do not soak battery in water and seawater. Do not expose to strong oxidizers. Do not give a strong mechanical shock or throw down. Never disassemble, modify or deform. Do not connect the positive terminal to the negative terminal with electrically conductive material. In the case of charging, use only dedicated charge or charge according to the conditions specified by the supplier.
Storage	Storage conditions (suitable to be avoided) Avoid direct sunlight, high temperature, high humidity. Store in cool place (temperature:-30～35℃,humidity: 45～85%). Incompatible products Conductive materials, water, seawater, strong oxidizers and strong acids. Packing material (recommended, not suitable) Insulative and tear-proof, waterproof materials are recommended.

Section 8 – Exposure Controls and Person Protection.	
Occupational exposure limits	N/A
Engineering controls	N/A
Eye protection	When handling leaking batteries. Wear appropriate protective eyeglasses or chemical safely goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin protection	Use neoprene, rubber or nitrile gloves when handing leaking batteries to prevent skin exposure.
Clothing	Wear appropriate protective clothing to minimize contact with skin.

Section 9 – Physical and Chemical Properties	
Appearance and odor	N/A
PH	N/A
Flash point(℃)	N/A

Melting point (℃)	N/A
Boiling point (℃)	N/A
Relative density (water=1)	N/A
Relative Vapour density (air=1)	N/A
Vapour pressure (KPa)	N/A
Heat of combustion (KJ/mol)	N/A
Auto-ignition temperature (℃)	N/A
Solubility	Insoluble in water
Lower explosive limits % (V/V))	N/A
Upper explosive limits % (V/V)	N/A

Section 10 – Stability and Reactivity

Stability	Product is stable under storage conditions described in Section 7.
Incompatibilities	Strong oxidizing agents, acids.
Conditions to avoid	Direct sunlight, high temperature and high humidity. Do not heat above 100℃ (212℉), incinerate, or expose contents to water.
Hazardous Polymerization	Will not occur.
Hazardous decomposition	When a battery is heated strongly by the surrounding fire, acrid or harmful fume may be emitted.

Section 11 – Toxicological Information

None unless internal materials are exposed. Toxic information is available on the ingredients noted in section 2, but generally not available to intact batteries as used by customers.

In case of internal gas released or electrolyte spilled, electrolyte and organic solvents has small toxicity and may cause irritation of skin or eyes. Released gas may also cause irritation of skin of eyes.

Section 12 – Ecological Information

Ecological toxicity	No data available.
Environmental	Since a battery cell and the internal materials remain in the environment, it can't be degradable. Do not throw out into the environment.
Bioaccumulation	No information

Section 13 –Disposal Considerations

Disposal measures	Do not throw out a used battery cell. Lithium ion cells and batteries can be disposable in accordance with appropriate federal, state and local regulations. However, we recommend recycling, since these cells and batteries contain recyclable material ($LiFe_{1-X}Co_XPO_4$).

Section 14 – Transportation

PROPER SHIPPING NAME:
Lithium-ion Battery (LiFe$_{1-X}$Co$_X$PO$_4$ Battery U3A1-50P-A)

UN Number: 3480

Packaging Group: II

Land transport (ADR/RID)
Class 9

Sea transport (IMDG)
Class 9

Air transport (ICAO-TI/IATA DGR)
Class 9

National regulations:
National regulations for transport land GB 12268

This battery type is classified as dangerous goods for transport, because the watt-hour rating of the battery exceeds 100 Wh.
We also declare that this battery type meets the requirements of each test in the UN Manual of tests and Criteria Part III, Subsection 38.3 (ST/SG/AC.10/11/Rev.6)

Section 15 – Regulatory Information

Major applicable regulations for the transportation of lithium-ion cells and batteries are as follows:
The UN Model Regulations, United Nations ST/SG/AC.10/1/Rev 16. Recommendations on the Safe Transport of Dangerous Goods
The International Civil Aviation Organization (ICAO) Technical Instructions for the Safe Transport of Dangerous Goods by Air Transport
The International Air Transport Association (IATA) Dangerous Goods Regulations (57st Edition 2016)
International Maritime Organization (IMO) International Maritime Dangerous Goods Code (IMDG Code) Amdt. 34-08 2008
OSHA Hazard communication standard (29 CFR 1910.1200)
_____Hazardous _____√_____Non-hazard

Section 16 –Other Information

The information contained in this Safety data sheet is based on the present state of knowledge and current legislation.

This safety data sheet provider guidance on health. Safety and environmental specs

of the product and should not be construed as any guarantee of technical performance or suitability for particular applications.

The material safety data sheet is furnished to every manufacturer as a reference to secure the safe handling of chemical. Every manufacturer is requested to carry out appropriate actions for chemical handling as their own responsibility. The supplier makes no warrantee, either express or implied. Concerning of this products， User assumes all risks resulting from its use.