Safety data sheet for chemical products (SDS)

1. PRODUCT AND COMPANY IDENTIFACAION

- Product name: Lithium –ion Battery Cell

- Product code: 3UR18650F-2-QC-7 (FPCBP93)
  3UR18650F-2-QC-11 (FPCBP94)

●● Company name : SHENZHEN UNITE-FORTUNE DEVELOPMENT CO,. LTD

- Address: 17/F,SHICHU BAOGUAN BUILDING, DONGMEN SOUTH ROAD,SHENZHEN,CHINA
- Telephone number: 0755-82184183
- Fax number: 0755-82196346

2. COMPOSITION/INFORMATION ON INGREDIENTS

- Substance or preparation : Preparation
- Information about the chemical nature of product:

Common chemical name / General name	CAS number	Concentration/ Concentration range	Classification and hazard labeling
Lithium Cobaltate ($LiCoO_2$)	12190-79-3	25-40%	
Iron	7439-89-6	15-25%	
Aluminum foil	7429-90-3	2-6%	
Graphite (natural graphite) (Artificial graphits)	 7782-42-5 7740-44-0	10-20%	
Copper foil		5-15%	Sensitization of the skin group No.2
Organic electrolyte		10-20%	Inflammable liquid

3. HAZARDS INENFICATION

For the battery cell, chemical materials are stored in a hermetically sealed metal case, designed to withstand Temperatures and pressures encountered during normal use. As a result, during normal use ,there is no physical danger of ignition or explosion and chemical danger of hazardous materials' leakage.

However, if exposed to a fire, added mechanical shocks, decomposed, added electric stress by miss-use, the gas release vent will be operated. The battery cell case will be breached at the extreme, hazardous materials may be released.

Moreover, if heated strongly by the surrounding fire, acrid gas may be emitted.

- Most important hazard and effects

  Human health effects:

  Inhalation: The steam of the electrolyte has an anesthesia action and stimulates a respiratory tract.

  Skin contact: The steam of the electrolyte stimulates a skin,The electrolyte skin contact causes a sore and a stimulation on the skin.

  Eye contact: The steam of the electrolyte stimulates eyes. The electrolyte eye contact causes a sore and a stimulation on the eye, Especially, substance that causes a strong inflammation of the eyes is contained.

- Environmental effects:

  Since a battery cell remains in the environment, do not throw out it into the environment.

- Specific hazards:

  If the electrolyte contact with water, it will generate detrimental hydrogen fluoride.

  Since the leaked electrolyte is inflammable liquid, it does not bring close to fire.

4. FIRST-AID MEASURES

Internal cell materials or a opened battery cell

- Inhalation:

  Make the victim blow his/her nose, gargle. Seek medical attention if necessary.

- Skin contact:

  Remove contaminated clothes and shoes immediately, Wash the adhere or contact region with soap and plenty of water immediately.

- Eye contact:

  Immediately flush eyes with water continuously for at lease 15 minutes. Seek medical attention immediately.

A battery cell and internal cell materials of an opened battery cell.

- Ingestion:

  Induce vomiting. When it is impossible or the feeling is not well after vomiting. Seek medical attention.

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5. FIRE-FIGHTING MEASURE

- Suitable extinguishing media: Pouring water, carbon dioxide gas, oaitrogen gas. chemical power fire extinguishing medium and fire foam
- Specification hazards: Corrosive gas may be emitted during fire.
- Specific methods of fire-lighting: When the battery burns with other combustibles simultaneously, take fire-extinguishing method which correspond to the combustibles. Extinguish a fire from the windward as much as possible.
- Special protective equipment for firefighters:

  Respiratory protection: Respiratory equipment of a gas cylinder style or protection-against-dust mask

  Hand protection: protective gloves

  Eye protection: Goggle or protective glasses designed to protect against liquid splashes

  Skin and body protection: Protective cloth

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6. ACCIDENTAL RELEASE MEASURES

Internal cell materials. Such as electrolyte leaked form battery cell, are carefully dealt with according to the followings.

- Personal precautions:

  Remove leaked materials with protective equipment (protective glassed and protective gloves).Do not inhale the gas as much as possible, Moreover, avoid touching with as much as possible.

- Environmental precautions : Do not throw out into the environment.
- Method of cleaning up: The leaked solid is moved to a container. The leaked place is wiped off with dry cloth.
- Prevention of secondary hazards: Avoid re-scattering, Do not bring the collected materials close to fire

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7. HANDLING AND STORAGE

- Handing

  Technical measures

  Prevention of user exposure: Not necessary under normal use.

  Prevention of fire and explosion: Not necessary under normal use.

  Precaution for safe handing advice: Never throw out cells in a fire or expose to high temperatures. Do not soak cells in water and seawater. Do not expose to strong oxdizers. 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 charger or charge according to the conditions specified by Sanyo.

- Storage

  Technical measures

  Storage conditions (suitable to be avoid): Avoid direct sunlight, high temperature, high humidity.

  Store in cool place (temperature: -20~35 degree C, humidity : 45~85%).

Incompatible products: Conductive materials, water, seawater, strong oxidizers and strong acids.

Packing material (recommended, not suitable): Insulative and tearproof materials are recommended.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

- Engineering measures:

No engineering measure is necessary during normal use. In case of internal cell materials' leakage operate the local exhaust or improve ventilation.

- Control parameters

Common chemical name/ General name	ACGIH (1999)	
	TLV-TWA	BEL
Lithium Cobelate ($LiCoO_2$)	0.02g/m^3 (as cobalt)	-
Aluminum foil	-	-
Carbon (natural graphite) (Artificial graphite)	Emission nature dust 10mg/ m^3	-
Copper foil	Fume 0.05 mg/ m^3 A coarse particulate, Mist 1.0mg/ m^3	-
Orgenic electrolyte	-	-

ACGIH: American Conference of Governmental Industrial Hygienists, Inc.

TLV-TWA: Threshold Limit Value-time weighted average concentration

BEI: Biological Exposure Indioes

- Personal protective equipment

Respiratory protection: Protective against dust mask

Hand protection: Protective gloves

Eye protection: Goggle or protective glasses designed to protect against liquid splashes

Skin and boldy protection: Working clothes with long sleeve and long trousers.

9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance

Physical state: Solid

Form: Cylindrical

Color: Metallic color (without lube)

Odor: No odor

- PH:NA
- Specific temperatures/temperature ranges at which changes in physical state occur.

There's no useful information for the product as a mixture.

- Flash point: NA
- Bolubitity, with indication of the solvent(s): Insoluble in water.

10. STABILITY AND REACTIVITY

- Stability: Stable under normal use
- Hazardous reactions occurring under specific conditions

Conditions to avoid: When a battery cell is exposed to an external short-circuit, crushes, modification, high temperature above 100 degree C. It will be the cause of heat generation and ignition. Direct sunlight and high humidity.

Materials to avoid: Conductive materials, water, seawater, strong oxidizers and strong acids.

Hazardous decomposition products: Acrid or harmful gas is emitted during fire.

11. TOXICOLOGICAL INFORMATION

There is no date available on the product itself, The information of the internal cell materials is as follows.

Lithium cobattate-$LiCoO_2$

- Acute Loxicity: Unknown.
- Local effects: Unknown.
- Sensitization:

  The nervous system of respiratory organs may be stimulated sensitively
- Chronic toxicity/Long term toxicity:

  By the inhalation of coarse particulate and steamy gas of cobalt, it is possible to cause the serious respiratory-organs disease, The Person energy-natured or sensitive-natured may cause a skin reaction or a lung disease. It is reguulated by the coarse particulate obstacle prevention rule and the dust=lung method enforcement regulations.
- Carcinogenicity:

  Graphite is not recognized as a cause of cancer by research organizations and natural toxic substance research organizations of cancer.

●●Copper foil

- Acute toxicity:

  Coarse particulate stimulates a nose and a tracheal.

  LD_{50},orai-sheep 18,000-182,000 mg/kg.

  60-100my of coarse particulate causes a gastrointestinal disturbance with nausea and inflammation.
- Local effects: Unknown.

Organic Electrolyte

- Acute toxicity:

  LD_{50},orai-rate 2,000mg/kg or more
- Local effects: Unknown.
- Skin irritation study: Rabbit-Mild
- Eye irritation study: Rabbit-Very severe

12. ECOLOGICAL INFORMATION

- Persistence/degradability:

  Since a battery cell and the internal materials remain the environment, do not bury or throw out into the environment.

13. DISPOSAL CONSIDERATIONS

- Recommenced methods for safe and environmentally prefarred disposal:

Product(Water from residues)

Do not throw out a used battery cell. Recycling company.

●●**Contaminated packaging**

Neither a container nor packing is contaminated during normal use. When internal materials leaked from a battery cell contaminates, dispose as industrial wastes subject to special control.

14. TRANSPORT INFORMATION

In the case of transportation, confirm no leakage and no overspill from a container. Take in a cargo of them without falling, dropping and breakage. Prevent collapse of cargo piles and wet by rain, The container must be handked carefully. Do not give shocks that result in a mark of hitting on a cell. Please refer to Section 7-HANDLING AND STORAGE also.

- Codes and classifications according to international regulations for transport.

  Air

IATA-DGR Code: special provision A45

Sea

IMO-IMDG Code: special provision 188

- The UN classification number : Class 9 3090

  However, since it corresponds to special provision A45 of IATA-DGR or special provision 188 of IMO-IMDG Code, this battery cell can be conveyed normally.

15. REGULATOLRY INFORMATION

- Regulations specificate applicable to the product.
- IATA UN No.3090 (air transportation)
- IMO UN No.3090(sea transportation)
- US Department of Transportation 49 Code of Federal Regulations[USA]
- Wastes Dispose and Public Cleaning Law [Japan]

16. OTHER INFORMATION

- The information contained in this Safety data sheet in based on the present state of knowledge and current legislation.
- This safety data sheet provides guidance on health, safety and environmental aspects of the product and should not be construed as any guarantee of technical performance or suitability for particular applications.

- Reference

  Chemical substances information: Japan Advanced information center of Safety and Health.

  International Chemical Safety Cards (ICSCs):

  International Occupational Safety and Health Information Centre (CIS)

  1999 TLVs and BEIs : American Conference of Governmental Industrial Hygienists (ACGIH)

  Dangerous Goods Regulations – 45th Edition Effective 1 January 2004 : International Air transport Association (IATA)

  IMDG Code – 2002 Edition: International Maritime Organization (IMO)

  MSDS of raw materials prepared by the manufactures.

First edition

Latest edition

Prepared and approved By

(Shipping Department)

Company name:

SHENZHEN UNIE-FORTUNE DEVELOPMENT CO.,LTD

Signature and company chop: