

# MATERIAL SAFETY DATA SHEET

According to the European directive 2001/58/CE

Dated: March 1, 2008

Rev: A3

## 1. Product and Company Identification

Product Name: Lithium-ion Polymer Battery  
Manufacturer: YOKU Energy (Zhangzhou) Co., LTD  
Address: YOKU Industrial Zone, Nanjing, Zhangzhou, Fujian, China  
Telephone: 0596-7666040

Model: 11.1V/20000mAh  
Lithium Content: 18.0 per battery

For Emergency: CHEMTREC Day or Night  
DOMESTIC NORTH AMERICA 800-424-9300  
INTERNATIONAL, CALL 703-527-3887

## 2. Composition/Information on Ingredients

Dangerous Ingredients:

Description	CAS No	PEL	TLV	Percent
Lithium dioxocobaltite (LiCoO <sub>2</sub> )	12190-79-3	0.05 mg/m <sup>3</sup>	0.02mg/m <sup>3</sup>	25~35%
Graphite (C)	7782-42-5	2.5mg/ m <sup>3</sup> as dust	2.5mg/ m <sup>3</sup> as dust	10~15%
Copper	7440-50-8	None established	None established	15~20%
LiPF <sub>6</sub>	21324-40-3	None established	None established	3~5%
Ethylene Glycol Carbonate	96-49-1			10~15%
Nylon	--			0.1~2%
Nickel (Ni)	21595-53-9			0.1~1%
Poly-Vinylidene Difluoride (PVdF)	24937-79-9	None established	None established	15~20%

## 3. Hazards Identifications

General: The battery may become dangerous if mechanically, thermally or electrically abused.  
Never disassemble a battery or bypass a safety device.  
Do not crush, bend or pierce the battery.  
Do not short battery terminals with conductive metal objects.  
Do not subject to excessive heat or soldering  
Do not throw into fire or expose to flame or excessive heat.  
Do not mix new, used or different types of batteries.  
Store batteries in non-conductive trays.  
Use only approved chargers.  
Do not put this product into your mouth or bite it.  
Keep away from children.

Hazards to Humans: Contact with skin can cause irritation.

Hazards to Environment: When spilled, this product may distort the surface of plastic or leather, destroy paint, or contaminate underground and surface water.

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## 4. First Aid Measures

- Inhalation: In case of inhalation, get to fresh air immediately, and consult a physician.
- Skin Contact: Remove contaminated clothing. Wash affected areas with plenty of soap and water. If irritation occurs, consult a physician.
- Eye Contact: Rinse eyes immediately with running water for at least ten (10) minutes. Obtain immediate medical attention.
- Ingestion: Rinse the mouth with water. Give plenty to drink. Do not induce vomiting. Obtain immediate medical attention.

## 5. Fire-Fighting Measures

- Proper Extinguishing Media: Carbon dioxide (CO<sub>2</sub>), foam, dry chemical powder.
- Do NOT use water: Water will cause situation to worsen
- Exposure Hazards: In case of fire, carbon dioxide, carbon monoxide and other toxic organic substances will be generated. Do not inhale fumes or smoke.
- Personal Protective Equipment: Wear full protective clothing. Use self contained breathing apparatus.

## 6. Accidental Release Measures

- Personal Precautions: Wear protective clothing. Keep unprotected persons away.
- Environmental Precautions: Do not discard into sewage systems, waterways, or landfill.
- Methods of Cleaning Up: Absorb liquid with a standard absorbent material like sand or silica. Ventilate the area with fresh air. Recycle or dispose of the materials in an appropriate way.
- Cover with dry sand or silica. Collect the spilled material with a shovel or broom and place in a fire retardant container and dispose of in accordance with local regulations.
- Continue to ventilate the affected area.

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## 7. Handling and Storage

Handling: Never disassemble a battery or bypass a safety device.  
Do not crush, bend or pierce battery.  
Do not short battery terminals with conductive metal objects.  
Do not expose to excessive heat or soldering.  
Do not throw into fire.  
Do not mix new, used or different type batteries.  
Store batteries in non-conductive trays.  
Use only approved chargers.

Fire/Explosion Protection: Chemical fumes and exposure to oxygen/air may lead to potentially explosive mixtures. Keep away from ignition sources and smoke. Avoid electrostatic discharge. Have fire extinguisher available.

Storage: Store in a cool and dry place with a constant temperature.  
Do not store batteries above 45°C or below -20°C.  
Elevated temperatures can result in reduced battery life.  
Do not expose to direct sunlight for extended periods of time.  
Keep out of reach of children.

## 8. Exposure Controls/Personal Protection

Exposition/Technical Measures: High concentrations of vapors/fumes must be minimized by adequate ventilation.

Protection of Hands, Eyes, Skin: Use of appropriate chemical resistant gloves, safety glasses and suitable protective clothing is highly recommended.

## 9. Physical and Chemical Properties

<b>Physical State</b>	Solid	<b>Solubility in Water</b>	Not Soluble
<b>Color</b>	None	<b>Vapor Pressure</b>	Not Applicable
<b>Odor</b>	Odorless	<b>Explosion Limit</b>	Not Applicable
<b>PH Value</b>	Not determined	<b>Oxidizing properties</b>	Not Applicable
<b>Specific gravity</b>	0.990-1.040 (at 25°C)	<b>Flashpoint</b>	130°C (closed)
<b>Freezing Point</b>	-40°C	<b>Auto Flammability</b>	Not determined
<b>Solubility in ethanol</b>	Not determined	<b>Partition Coefficient</b>	Not determined
<b>Melting Point</b>	Not applicable	<b>Boiling Point</b>	Not determined

## 10. Stability and Reactivity

Very stable at standard temperatures. Avoid temperatures close to or in excess of the flashpoint. Never heat the batteries. Do not bend, crush, pierce or disassemble. This product presents no significant reactivity hazard by itself or in contact with water.

Reactivity: Avoid contact with acids, alkali and strong oxidizing agents.  
Hazardous Decomposition: Carbon Monoxide and unidentified organic compounds may be formed during combustion.

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## 11. Toxicological Information

The product is multi component mixture for which no toxicological data exists. Risk of skin, eye or respiratory irritation occurs only if the battery is mechanically, thermally or electrically abused to the point of compromising the enclosure.

## 12. Ecological Information

In general, no ecological data is available for preparations.

Precautions: Do not dispose into drainage systems or the environment.

## 13. Disposable Considerations

Do not dispose batteries into the environment, sewer or water system. If recycling is not possible, the product and its container must be disposed of in accordance with local, state and federal laws and regulations.

## 14. Transport Information

Shipping Name: Secondary Lithium Ion Batteries  
UN Number: UN3090 or UN3091 if loaded in equipment  
Hazard Class: Class 9-Miscellaneous

YOKU batteries are exempted from these regulations if they meet all UN testing requirements (T1-T8) and contain no more than 8 grams of equivalent lithium content.

Equivalent Lithium Content Calculation: Multiply the rated capacity in ampere-hours of each cell by 0.3.

### Governing Shipping Regulations:

U.S. Department of Transportation (DOT), refer to 49CFR Section 173, 185  
International Air Transport Association (IATA), refer to Special Provision A45  
International Civil Aviation Organization (ICAO), refer to Special Provision A45  
International Maritime Organization (IMO), see Special Provision 188

Batteries should be packaged in accordance with these transportation regulations. Each regulation provides specifications on packaging for shipping lithium ion batteries. The shipper is responsible for the conditions and requirements when shipping.

## 15. Regulatory Information

Symbol	Not applicable.
R38	Irritation to skin.
R43	May cause sensitization by skin contact.
S2	Keep out of reach of children.
S24	Avoid contact with skin.
S37	Wear suitable gloves.
S61	Avoid release to environment. Refer to special instructions.

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## 16. Other information

Information in this Material Safety Data Sheet (MSDS) was obtained from current and reputable sources. However, this data is provided without any warranty; expressed or implied, regarding its correctness or accuracy. It is the user's responsibility to assume liable on loss, injury, damage, or expense resulting from improper use of this product. Any previous MSDS of this product mentioned above is hereby replaced by this new document. We urge you to make this information available as appropriate in your organization and to others with whom you arrange to handle this product.