

# SAFETY DATA SHEET

## 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

### Product identifier

**Product Name** Li-ion Battery

### Other means of identification

**Synonyms** None

### Recommended use of the chemical and restrictions on use

**Recommended Use** Lithium Ion Battery

**Uses advised against** No information available

### Details of the supplier of the safety data sheet

**Supplier Name** Qixin Advanced Power Source Materials Co., Ltd

**Supplier Address** Sanli Qiao, Xinhui Road., Xinxiang, Henan, China  
453002

**Supplier Phone Number** Phone: +860373-2688565  
Contact Phone +860373-2688565

**Supplier Email** Liuxiaofei0818@163.com

### Emergency telephone number

## 2. HAZARDS IDENTIFICATION

### Classification

This product is an article which is a sealed battery and as such does not require an MSDS per the OSHA hazard communication standard unless ruptured. The hazards indicated are for a ruptured battery.

|                                   |            |
|-----------------------------------|------------|
| Serious eye damage/eye irritation | Category 2 |
| Skin corrosion/irritation         | Category 2 |

### GHS Label elements, including precautionary statements

**Signal word** **Emergency Overview**  
**Danger**

### **Hazard Statements**

Cause skin irritation

Causes serious eye irritation



**Appearance** Silver

**Physical State** Solid

**Odor** Odorless

### **Precautionary Statements - Prevention**

Obtain special instructions before use

Do not handle until all safety precautions have been read and understood

Use personal protective equipment as required

Wash face, hands and any exposed skin thoroughly after handling

Contaminated work clothing should not be allowed out of the workplace  
Wear protective gloves

#### **Precautionary Statements - Response**

IF exposed or concerned: Get medical advice/attention  
Specific treatment (see supplemental first aid instructions on this label)

#### **Eyes**

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
If eye irritation persists: Get medical advice/attention

#### **Skin**

IF ON SKIN: Wash with plenty of soap and water  
Take off contaminated clothing and wash before reuse  
If skin irritation or rash occurs: Get medical advice/attention

#### **Precautionary Statements - Storage**

Store locked up

#### **Precautionary Statements - Disposal**

Dispose of contents/container to an approved waste disposal plant

#### **Hazards not otherwise classified (HNOC)**

Not applicable

#### **Unknown Toxicity**

#### **Other information**

Very toxic to aquatic life with long lasting effects  
Repeated or prolonged skin contact may cause allergic reactions with susceptible persons

#### **Interactions with Other Chemicals**

No information available

### **3. COMPOSITION/INFORMATION ON INGREDIENTS**

| Chemical Name                     | CAS No.    | weight % |
|-----------------------------------|------------|----------|
| Copper                            | 7440-50-8  | 7        |
| Aluminum                          | 7429-90-5  | 5        |
| Dimethyl carbonate                | 616-38-6   | 3        |
| Ethyl acetate                     | 141-78-6   | 3        |
| Ethylene carbonate                | 96-49-1    | 2        |
| Phosphate(1-),hexafluoro-,lithium | 21324-40-3 | 2        |
| Nickel                            | 7440-02-0  | 11       |
| Lithium manganese oxide (LiMn2O4) | 12057-17-9 | 23       |
| Cobalt(II) oxide                  | 1307-96-6  | 4        |
| Polyethylene                      | 9002-88-4  | 3        |
| Lithium Cobalt Oxide              | 12190-79-3 | 19       |
| Iron                              | 7439-89-6  | 18       |

### **4. FIRST AID MEASURES**

#### **First aid measures**

**General Advice**

First aid is upon rupture of sealed battery.

**Eye Contact**

If symptoms persist, call a physician. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Remove contact lenses, if present and easy to do. Continue rinsing. Do not rub affected area

**Skin Contact**

Wash off immediately with soap and plenty of water for at least 15 minutes. In the case of skin irritation or allergic reactions see a physician. May cause an allergic skin reaction.

**Inhalation**

Remove to fresh air. If symptoms persist, call a physician. Get medical attention immediately if symptoms occur.

**Ingestion**

Do NOT induce vomiting. Rinse mouth immediately and drink plenty of water. Never give anything by mouth to an unconscious person. Call a physician.

**Self-protection of the first aider**

Avoid contact with skin, eyes or clothing. Use personal protective equipment as required. Wear personal protective clothing (see section 8).

**Most important symptoms and effects, both acute and delayed**

**Most Important Symptoms and Effects** Itching. Coughing and/ or wheezing.

**Indication of any immediate medical attention and special treatment needed**

**Notes to Physician** Treat symptomatically. May cause sensitization of susceptible persons.

## 5. FIRE-FIGHTING MEASURES

**Suitable Extinguishing Media**

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

**Unsuitable Extinguishing Media**

CAUTION: Use of water spray when fighting fire may be inefficient

**Specific Hazards Arising from the Chemical**

Product is or contains a sensitizer. May cause sensitization by skin contact.

**Uniform Fire Code**

Sensitizer: Solid  
Highly Toxic: Solid

**Hazardous Combustion Products****Explosion Data**

**Sensitivity to Mechanical Impact** No.

**Sensitivity to Static Discharge** No.

**Protective equipment and precautions for firefighters**

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

## 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions, protective equipment and emergency procedures**

**Personal Precautions** Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas.

**Other Information** Refer to protective measures listed in Sections 7 and 8.

**Environmental Precautions**

**Environmental Precautions** Refer to protective measures listed in Sections 7 and 8.

**Methods and material for containment and cleaning up**

**Methods for Containment** Prevent further leakage or spillage if safe to do so.

**Methods for cleaning up** In case of rupture: Soak up with inert absorbent material. Pick up and transfer to properly labeled containers.

## 7. HANDLING AND STORAGE

**Precautions for safe handling**

**Handling** In case of rupture. Use personal protection equipment. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Do not breathe dust/fume/gas/mist/vapors/spray

**Conditions for safe storage, including any incompatibilities**

**Storage** Keep containers tightly closed in a dry, cool and well-ventilated place.

**Incompatible Products** Strong acids. Strong oxidizing agents. Strong bases.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Control parameters****Exposure Guidelines**

| Chemical Name                                                             | ACGIH TLV                                                                       | OSHA PEL                                                                                                                                                                                                                                     | NIOSH IDLH                                                                                                                   |
|---------------------------------------------------------------------------|---------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| Lithium Cobalt Oxide (CoLiO <sub>2</sub> )<br>12190-79-3                  | TWA: 0.02 mg/m <sup>3</sup>                                                     | -                                                                                                                                                                                                                                            | -                                                                                                                            |
| Lithium manganese oxide (LiMn <sub>2</sub> O <sub>4</sub> )<br>12057-17-9 | TWA: 0.2 mg/m <sup>3</sup> Mn                                                   | (vacated) Ceiling: 5 mg/m <sup>3</sup><br>Ceiling: 5 mg/m <sup>3</sup> Mn                                                                                                                                                                    | IDLH: 500 mg/m <sup>3</sup> Mn<br>TWA: 1 mg/m <sup>3</sup> Mn<br>STEL: 3 mg/m <sup>3</sup> Mn                                |
| Copper<br>7440-50-8                                                       | TWA: 0.2 mg/m <sup>3</sup><br>fume TWA: 1 mg/m <sup>3</sup><br>Cu dust and mist | TWA: 0.1 mg/m <sup>3</sup> fume<br>TWA: 1 mg/m <sup>3</sup><br>dust and mist (vacated) TWA: 0.1 mg/m <sup>3</sup> Cu dust, fume, mist                                                                                                        | IDLH: 100 mg/m <sup>3</sup> dust, fume and mist<br>TWA: 1 mg/m <sup>3</sup> dust and mist<br>TWA: 0.1 mg/m <sup>3</sup> fume |
| Aluminum<br>7429-90-5                                                     | TWA: 1 mg/m <sup>3</sup><br>respirable fraction                                 | TWA: 15 mg/m <sup>3</sup> total dust<br>TWA: 5 mg/m <sup>3</sup> respirable fraction (vacated) TWA: 15 mg/m <sup>3</sup> total dust (vacated) TWA: 5 mg/m <sup>3</sup> respirable fraction (vacated)<br>TWA: 5 mg/m <sup>3</sup> Al Aluminum | TWA: 10 mg/m <sup>3</sup> total dust<br>TWA: 5 mg/m <sup>3</sup> respirable dust                                             |

|                                                         |                              |                                                                                                         |  |
|---------------------------------------------------------|------------------------------|---------------------------------------------------------------------------------------------------------|--|
| Phosphate(1-),<br>hexafluoro-,<br>lithium<br>21324-40-3 | TWA: 2.5 mg/m <sup>3</sup> F | TWA: 2.5 mg/m <sup>3</sup> F<br>TWA: 2.5 mg/m <sup>3</sup> dust<br>(vacated) TWA: 2.5 mg/m <sup>3</sup> |  |
|---------------------------------------------------------|------------------------------|---------------------------------------------------------------------------------------------------------|--|

ACGIH TLV: American Conference of Governmental Industrial Hygienists - Threshold Limit Value OSHA PEL:  
Occupational Safety and Health  
Administration - Permissible Exposure Limits NIOSH IDLH Immediately Dangerous to Life or Health

**Other Exposure Guidelines**

Vacated limits revoked by the Court of Appeals decision in  
AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992) See section 15  
for national exposure control parameters

**Appropriate engineering controls****Engineering Measures**

Showers  
Eyewash stations  
Ventilation systems

**Individual protection measures, such as personal protective equipment****Eye/Face Protection**

If splashes are likely to occur: Wear safety glasses with side  
shields (or goggles). None required for consumer use.

**Skin and Body Protection**

Wear protective gloves and protective clothing. Long sleeved  
clothing. Impervious gloves

**Respiratory Protection**

No protective equipment is needed under normal use conditions.  
If exposure limits are exceeded or irritation is experienced,  
ventilation and evacuation may be required.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety  
practice. Do not eat, drink or smoke when using this product. Take  
off contaminated clothing and wash before reuse.  
Avoid contact with skin, eyes or clothing. Wear suitable gloves and  
eye/face protection.  
Wash hands before breaks and immediately after handling the  
product.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Physical and Chemical Properties**

Physical State  
Appearance  
Color

Solid  
Silver  
No information available

Odor  
Odor Threshold

Odorless  
No information available

| <b><u>Property</u></b>                        | <b><u>Values</u></b> | <b><u>Remarks/</u></b> |
|-----------------------------------------------|----------------------|------------------------|
| <b>pH</b>                                     | No data available    | None known             |
| <b>Melting / freezing point</b>               | No data available    | None known             |
| <b>Boiling point / boiling range</b>          | No data available    | None known             |
| <b>Flash Point</b>                            | No data available    | None known             |
| <b>Evaporation Rate</b>                       | No data available    | None known             |
| <b>Flammability (solid, gas)</b>              | No data available    | None known             |
| <b>Flammability Limit in Air</b>              |                      |                        |
| <b>Upper flammability limit</b>               | No data available    |                        |
| <b>Lower flammability limit</b>               | No data available    |                        |
| <b>Vapor pressure</b>                         | No data available    | None known             |
| <b>Vapor density</b>                          | No data available    | None known             |
| <b>Specific Gravity</b>                       | No data available    | None known             |
| <b>Water Solubility</b>                       | No data available    | None known             |
| <b>Solubility in other solvents</b>           | No data available    | None known             |
| <b>Partition coefficient: n-octanol/water</b> | 0.0001               | None known             |
| <b>Autoignition temperature</b>               | No data available    | None known             |

|                                  |                   |            |
|----------------------------------|-------------------|------------|
| <b>Decomposition temperature</b> | No data available | None known |
| <b>Kinematic viscosity</b>       | No data available | None known |
| <b>Dynamic viscosity</b>         | 0.0001            | None known |
| <b>Explosive properties</b>      | No data available | None known |
| <b>Oxidizing Properties</b>      | No data available | None known |

**Other Information**

|                                   |                   |
|-----------------------------------|-------------------|
| <b>Softening Point</b>            | No data available |
| <b>VOC Content (%)</b>            | No data available |
| <b>Particle Size</b>              | No data available |
| <b>Particle Size Distribution</b> |                   |

## 10. STABILITY AND REACTIVITY

**Reactivity**

No data available

**Chemical stability**

Stable under recommended storage conditions.

**Possibility of Hazardous Reactions**

None under normal processing.

**Hazardous Polymerization**

Hazardous polymerization does not occur.

**Conditions to avoid**

None known based on information supplied.

**Incompatible materials**

Strong acids. Strong oxidizing agents. Strong bases.

**Hazardous Decomposition Products**

Carbon oxides.

## 11. TOXICOLOGICAL INFORMATION

**Information on likely routes of exposure**

**Product Information**      Product does not present an acute toxicity hazard based on known or supplied information. In case of rupture.

**Inhalation**                      Specific test data for the substance or mixture is not available. Corrosive by inhalation. (based on components). Inhalation of corrosive fumes/gases may cause coughing, choking, headache, dizziness, and weakness for several hours. Pulmonary edema may occur with tightness in the chest, shortness of breath, bluish skin, decreased blood pressure, and increased heart rate. Inhaled corrosive substances can lead to a toxic edema of the lungs. Pulmonary edema can be fatal. May cause irritation of respiratory tract.

**Eye Contact**                      Specific test data for the substance or mixture is not available. Expected to be and irritant based on components. Irritating to eyes. May cause redness, itching, and pain. May cause temporary eye irritation.

**Skin Contact**                      Specific test data for the substance or mixture is not available. Corrosive. (based on components). Causes burns. May be absorbed through the skin in harmful amounts. Harmful in contact with skin.

**Ingestion**                      Specific test data for the substance or mixture is not available. Causes burns. (based on components). Ingestion causes burns of the upper digestive and respiratory tracts. May cause severe burning pain in the mouth and stomach with vomiting and diarrhea of dark blood. Blood pressure may decrease. Brownish or yellowish stains may be seen around the mouth. Swelling of the throat may cause shortness of breath and choking. May cause lung damage if swallowed. May be fatal if swallowed and enters airways. Ingestion may cause irritation to mucous membranes. Ingestion may cause gastrointestinal

irritation, nausea, vomiting and diarrhea.

#### Component Information

|  |  |  |  |
|--|--|--|--|
|  |  |  |  |
|  |  |  |  |

#### Information on toxicological effects

**Symptoms** Erythema (skin redness). May cause redness and tearing of the eyes. Itching. Rashes Hives.

#### Delayed and immediate effects as well as chronic effects from short and long-term exposure

**Sensitization** May cause sensitization of susceptible persons. May cause sensitization by skin contact

**Mutagenic Effects** No information available

**Carcinogenicity** The table below indicates whether each agency has listed any ingredient as a carcinogen.

| Chemical Name                                            | ACGIH | IARC     | NTP | OSHA |
|----------------------------------------------------------|-------|----------|-----|------|
| Lithium Cobalt Oxide (CoLiO <sub>2</sub> )<br>12190-79-3 | A3    | Group 2B |     | X    |

**ACGIH (American Conference of Governmental Industrial Hygienists)**

A1 - Known Human Carcinogen

A3 - Animal Carcinogen

**IARC (International Agency for Research on Cancer)**

Group 1 - Carcinogenic to Humans

Group 2B - Possibly Carcinogenic to Humans

**NTP (National Toxicology Program)**

Known - Known Carcinogen

**OSHA (Occupational Safety and Health Administration of the US Department of Labor)**

X - Present

**Reproductive Toxicity** No information available.

**STOT - single exposure** No information available.

**STOT - repeated exposure** Causes damage to organs through prolonged or repeated exposure. Based on classification criteria from the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200), this product has been determined to cause systemic target organ toxicity from chronic or repeated exposure. (STOT RE).

**Chronic Toxicity** No known effect based on information supplied. Chronic exposure to corrosive fumes/gases may cause erosion of the teeth followed by jaw necrosis. Bronchial irritation with chronic cough and frequent attacks of pneumonia are common. Gastrointestinal disturbances may also be seen. Contains a known or suspected carcinogen. Avoid repeated exposure. Prolonged exposure may cause chronic effects. May cause adverse liver effects. Carbon black has been classified by the International Agency for Research on Cancer (IARC) as possibly carcinogenic to humans (Group 2B) by inhalation.

**Target Organ Effects** Respiratory system. Eyes. Skin. Gastrointestinal tract (GI). Central Vascular System (CVS). Kidney. Liver. Lymphatic System. Lungs.

**Aspiration Hazard** No information available.

## 12. ECOLOGICAL INFORMATION

#### Ecotoxicity

Very toxic to aquatic life with long lasting effects.

| Chemical Name       | Toxicity to Algae                                                                                | Toxicity to Fish                                                                                                                     | Toxicity to Microorganisms | Daphnia Magna (Water Flea) |
|---------------------|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|----------------------------|----------------------------|
| Copper<br>7440-50-8 | 96h EC50: 0.031 - 0.054 mg/L<br>(Pseudokirchneriella subcapitata) 72h EC50: 0.0426 - 0.0535 mg/L | 96h LC50: 0.0068 - 0.0156 mg/L (Pimephales promelas)<br>96h LC50: = 0.112 mg/L (Poecilia reticulata) 96h LC50: = 0.3 mg/L (Cyprinus) |                            | 48h EC50: = 0.03 mg/L      |

|  |                                   |                                                                                                                                                                                                                               |  |  |
|--|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
|  | (Pseudokirchneriella subcapitata) | carpio) 96h LC50: = 0.8 mg/L (Cyprinus carpio) 96h LC50: = 1.25 mg/L (Lepomis macrochirus) 96h LC50: = 0.052 mg/L (Oncorhynchus mykiss) 96h LC50: = 0.2 mg/L (Pimephales promelas) 96h LC50: < 0.3 mg/L (Pimephales promelas) |  |  |
|--|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|

**Persistence and Degradability**

No information available.

**Bioaccumulation**

No information available.

**Other adverse effects**

No information available.

### 13. DISPOSAL CONSIDERATIONS

**Waste treatment methods****Disposal methods**

Should not be released into the environment.

**Contaminated Packaging**

Dispose of in accordance with federal, state and local regulations.

**California Hazardous Waste Codes 141**

This product contains one or more substances that are listed with the State of California as a hazardous waste.

| Chemical Name                                            | California Hazardous Waste |
|----------------------------------------------------------|----------------------------|
| Lithium Cobalt Oxide (CoLiO <sub>2</sub> )<br>12190-79-3 | Toxic                      |
| Copper<br>7440-50-8                                      | Toxic                      |
| Aluminum<br>7429-90-5                                    | Ignitable powder           |

### 14. TRANSPORT INFORMATION

**Note:**

The transportation of primary lithium cells and batteries is regulated by the International Civil Aviation Organization, International Air Transport Association, International Maritime Dangerous Goods Code and the US Department of Transportation. The batteries must meet the following criteria for shipment: 1. Air shipments must meet the requirements listed in Special Provision A45 of the International Air Transport Association Dangerous Goods Regulations. 2. Meet the requirements for the US Department of Transportation listed in 49 CFR 173.185. 3. The transport of primary lithium batteries is prohibited aboard passenger aircraft. Refer to the Federal Register December 15, 2004 (Hazardous Materials; Prohibited on the Transportation of Primary Lithium Batteries and Cells Aboard Passenger Aircraft; Final Rule) Lithium batteries shipped as "Lithium batteries", "Lithium batteries packed with equipment", or "Lithium batteries contained in equipment" may not be classified as "Dangerous Goods" when shipped in accordance with "special provision A45 of IATA-DGR" or "special provision 188 of IMO-IMDG Code"

**DOT**

NOT REGULATED

**Proper Shipping Name**

NON REGULATED

**Hazard Class**

N/A

**TDG**

Not regulated

**MEX**

Not regulated

**CAO**

Not regulated

**IATA** Not regulated  
**Proper Shipping Name** Not regulated  
**Hazard Class** N/A

**IMDG/IMO** Not regulated  
**Hazard Class** N/A  
**EmS No.** F-A, S-I

**RID** Not regulated  
**ADR** Not regulated  
**AND** Not regulated

## 15. REGULATORY INFORMATION

### International Inventories

**TSCA** Complies  
**DSL** All components are listed either on the DSL or NDSL.  
**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory  
**DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List

### US Federal Regulations

#### SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

| Chemical Name                                               | CAS No     | Weight-% | SARA 313 - Threshold Values % |
|-------------------------------------------------------------|------------|----------|-------------------------------|
| Lithium Cobalt Oxide (CoLiO <sub>2</sub> )                  | 12190-79-3 | 19       | 0.1                           |
| Lithium manganese oxide (LiMn <sub>2</sub> O <sub>4</sub> ) | 12057-17-9 | 23       | 1.0                           |
| Copper                                                      | 7440-50-8  | 7        | 1.0                           |
| Aluminum                                                    | 7429-90-5  | 5        | 1.0                           |

#### SARA 311/312 Hazard Categories

**Acute Health Hazard** No  
**Chronic Health Hazard** No  
**Fire Hazard** No  
**Sudden release of pressure hazard** No  
**Reactive Hazard** No

#### CWA (Clean Water Act)

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

| Chemical Name     | CWA - Reportable Quantities | CWA - Toxic Pollutants | CWA - Priority Pollutants | CWA - Hazardous Substances |
|-------------------|-----------------------------|------------------------|---------------------------|----------------------------|
| Copper -7440-50-8 |                             | X                      | X                         |                            |

#### CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

| Chemical Name       | Hazardous Substances RQs | Extremely Hazardous Substances RQs | RQ                                         |
|---------------------|--------------------------|------------------------------------|--------------------------------------------|
| Copper<br>7440-50-8 | 5000 lb                  |                                    | RQ 5000 lb final RQ<br>RQ 2270 kg final RQ |

### US State Regulations

#### California Proposition 65

This product does not contain any Proposition 65 chemicals.

#### U.S. State Right-to-Know Regulations

| Chemical Name                                                  | New Jersey | Massachusetts | Pennsylvania | Rhode Island | Illinois |
|----------------------------------------------------------------|------------|---------------|--------------|--------------|----------|
| Lithium Cobalt Oxide<br>12190-79-3                             | X          |               | X            | X            | X        |
| Lithium manganese oxide<br>(LiMn <sub>2</sub> O <sub>4</sub> ) |            |               | X            | X            | X        |

