

# Material Safety Data Sheet

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Revision Number 2

## 1. PRODUCT AND COMPANY IDENTIFICATION

**Product Name** 40v Li-ion Battery (4 Ah)

**UN-No** UN3480

**Recommended Use** Lithium ion battery.

### Supplier Address

Hongkong Sun Rise Trading Ltd.  
Room 713, No.8-9, Lane 1500, South  
LianHua Road, Minhang  
District, Shanghai, 201108 China  
Shanghai  
Jiangsu  
201108  
CN  
Phone: 772.633.4452  
Contact: Frank Mannino  
Email: FMannino@Sunrisetoolsusa.com  
Contact Phone 772.633.4452

## 2. HAZARDS IDENTIFICATION

**DANGER!**

### Emergency Overview

In case of rupture:  
Harmful by inhalation, in contact with skin and if swallowed  
Corrosive  
The product causes burns of eyes, skin and mucous membranes  
May produce an allergic reaction

**Appearance** Varies

**Physical State** Solid.

**Odor** None

### OSHA Regulatory Status

This product is an article which contains a sealed battery and as such does not require an MSDS per the OSHA Hazard Communication Standard. While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this MSDS contains valuable information critical to the safe handling and proper use of the product. This MSDS should be retained and available for employees and other users of this product.

### Potential Health Effects

#### Principle Routes of Exposure

Eye contact. Skin contact.

#### Acute Toxicity

##### Eyes

In case of rupture: Causes burns. Corrosive to the eyes and may cause severe damage including blindness. Risk of serious damage to eyes.

##### Skin

In case of rupture: Causes burns. May be harmful in contact with skin.

##### Inhalation

In case of rupture: Harmful by inhalation. Inhaled corrosive substances can lead to a toxic edema of the lungs.

##### Ingestion

In case of rupture: Ingestion causes burns of the upper digestive and respiratory tract. Can burn mouth, throat, and stomach. Harmful if swallowed.

<b>Chronic Effects</b>	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. Avoid repeated exposure. Possible risks of irreversible effects. May cause adverse liver effects.
<b>Aggravated Medical Conditions</b>	Allergies. Skin disorders. Respiratory disorders. Pre-existing eye disorders.
<b>Interactions with Other Chemicals</b>	Irritants. Sensitizers. Epoxies.
<b>Environmental Hazard</b>	See Section 12 for additional Ecological Information. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No	Weight %
Cobalt lithium manganese nickel oxide	182442-95-1	40-70
Graphite	7782-42-5	15-40
Copper	7440-50-8	10-30
Propylene carbonate	108-32-7	5-10
Aluminum	7429-90-5	5-10
Phosphate(1-), hexafluoro-, lithium	21324-40-3	3-7
Nickel	7440-02-0	1 - 5

### 4. FIRST AID MEASURES

<b>General Advice</b>	First aid is upon rupture of sealed battery.
<b>Eye Contact</b>	Immediate medical attention is required. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area.
<b>Skin Contact</b>	Immediate medical attention is required. Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes.
<b>Inhalation</b>	Move to fresh air. Call a physician or Poison Control Center immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.
<b>Ingestion</b>	Immediate medical attention is required. Do NOT induce vomiting. Drink plenty of water. Never give anything by mouth to an unconscious person. Remove from exposure, lie down. Call a physician or Poison Control Center immediately.
<b>Notes to Physician</b>	Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Do not give chemical antidotes. Asphyxia from glottal edema may occur. Marked decrease in blood pressure may occur with moist rales, frothy sputum, and high pulse pressure. Treat symptomatically.
<b>Protection of First-aiders</b>	Use personal protective equipment. Avoid contact with skin, eyes and clothing.

### 5. FIRE-FIGHTING MEASURES

<b>Flammable Properties</b>	This article contains flammable electrolytes and therefore can cause a fire hazard if ruptured and chemicals are leaked out.
<b>Flash Point</b>	Not determined.
<b>Suitable Extinguishing Media</b>	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
<b>Hazardous Combustion Products</b>	Carbon oxides.

**Explosion Data****Sensitivity to Mechanical Impact** No.**Sensitivity to Static Discharge** No.**Specific Hazards Arising from the Chemical** The product causes burns of eyes, skin and mucous membranes. Thermal decomposition can lead to release of irritating gases and vapors. In the event of fire and/or explosion do not breathe fumes.**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.

<b>NFPA</b>	<b>Health Hazard 1</b>	<b>Flammability 0</b>	<b>Stability 0</b>	<b>Physical and Chemical Hazards -</b>
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## 6. ACCIDENTAL RELEASE MEASURES

<b>Personal Precautions</b>	Evacuate personnel to safe areas. Use personal protective equipment. Avoid contact with skin, eyes and clothing. Keep people away from and upwind of spill/leak.
<b>Environmental Precautions</b>	Do not allow material to contaminate ground water system. Should not be released into the environment. Do not flush into surface water or sanitary sewer system. Prevent further leakage or spillage if safe to do so. Prevent product from entering drains.
<b>Methods for Containment</b>	Prevent further leakage or spillage if safe to do so.
<b>Methods for Cleaning Up</b>	In case of rupture: Cover powder spill with plastic sheet or tarp to minimize spreading and keep powder dry. Pick up and transfer to properly labeled containers. Avoid dust formation. Clean contaminated surface thoroughly.
<b>Other Information</b>	Refer to protective measures listed in Sections 7 and 8.

## 7. HANDLING AND STORAGE

<b>Handling</b>	In case of rupture: Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing.
<b>Storage</b>	Keep containers tightly closed in a dry, cool and well-ventilated place. Keep out of the reach of children. Keep in properly labeled containers.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Cobalt lithium manganese nickel oxide 182442-95-1	TWA: 0.02 mg/m <sup>3</sup> Co TWA: 0.2 mg/m <sup>3</sup> Mn	(vacated) Ceiling: 5 mg/m <sup>3</sup> Ceiling: 5 mg/m <sup>3</sup> Mn	IDLH: 500 mg/m <sup>3</sup> Mn IDLH: 10 mg/m <sup>3</sup> Ni TWA: 1 mg/m <sup>3</sup> Mn TWA: 0.015 mg/m <sup>3</sup> except Nickel carbonyl Ni STEL: 3 mg/m <sup>3</sup> Mn
Graphite 7782-42-5	TWA: 2 mg/m <sup>3</sup> respirable fraction all forms except graphite fibers	TWA: 15 mg/m <sup>3</sup> total dust synthetic TWA: 5 mg/m <sup>3</sup> total dust synthetic (vacated) TWA: 2.5 mg/m <sup>3</sup> respirable dust natural (vacated) TWA: 10 mg/m <sup>3</sup> total dust synthetic (vacated) TWA: 5 mg/m <sup>3</sup> respirable fraction synthetic TWA: 15 mppcf natural	IDLH: 1250 mg/m <sup>3</sup> TWA: 2.5 mg/m <sup>3</sup> respirable dust
Copper 7440-50-8	TWA: 0.2 mg/m <sup>3</sup> fume	TWA: 0.1 mg/m <sup>3</sup> fume TWA: 1 mg/m <sup>3</sup> 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 TWA: 1 mg/m <sup>3</sup> dust and mist TWA: 0.1 mg/m <sup>3</sup> fume
Aluminum 7429-90-5	TWA: 1 mg/m <sup>3</sup> respirable fraction	TWA: 15 mg/m <sup>3</sup> total dust 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	TWA: 10 mg/m <sup>3</sup> total dust TWA: 5 mg/m <sup>3</sup> respirable dust
Phosphate(1-), hexafluoro-, lithium 21324-40-3	TWA: 2.5 mg/m <sup>3</sup> F	TWA: 2.5 mg/m <sup>3</sup> F (vacated) TWA: 2.5 mg/m <sup>3</sup>	
Nickel 7440-02-0	TWA: 1.5 mg/m <sup>3</sup>	TWA: 1 mg/m <sup>3</sup> (vacated) TWA: 1 mg/m <sup>3</sup>	IDLH: 10 mg/m <sup>3</sup> TWA: 0.015 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).

### Engineering Measures

Showers  
Eyewash stations  
Ventilation systems

### Personal Protective Equipment

#### Eye/Face Protection Skin and Body Protection Respiratory Protection

Tightly fitting safety goggles. Face-shield.  
Protective gloves.  
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. When using, do not eat, drink or smoke. Keep away from food, drink and animal feeding stuffs. Wash hands and face before breaks and immediately after handling the product. Remove and wash contaminated clothing before re-use. Contaminated work clothing should not be allowed out of the workplace. Provide regular cleaning of equipment, work area and clothing.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance</b>	Varies.	<b>Odor</b>	None.
<b>Odor Threshold</b>	No information available	<b>Physical State</b>	Solid
<b>pH</b>	No information available		
<b>Flash Point</b>	No information available.	<b>Autoignition Temperature</b>	No information available
<b>Decomposition Temperature</b>	No information available	<b>Boiling Point/Range</b>	No information available
<b>Melting Point/Range</b>	No information available		
<b>Flammability Limits in Air</b>	No information available	<b>Explosion Limits</b>	No information available
<b>Water Solubility</b>		<b>Solubility</b>	No information available
<b>Evaporation Rate</b>	No information available	<b>Vapor Pressure</b>	No data available
<b>Vapor Density</b>	No data available	<b>Partition Coefficient: n-octanol/water</b>	

## 10. STABILITY AND REACTIVITY

<b>Stability</b>	Stable under recommended storage conditions.
<b>Incompatible Products</b>	Incompatible with strong acids and bases. Incompatible with oxidizing agents.
<b>Conditions to Avoid</b>	Exposure to air or moisture over prolonged periods.
<b>Hazardous Decomposition Products</b>	Thermal decomposition can lead to release of irritating gases and vapors.
<b>Hazardous Polymerization</b>	Hazardous polymerization does not occur.

## 11. TOXICOLOGICAL INFORMATION

### Acute Toxicity

<b>Product Information</b>	In case of rupture:
<b>Inhalation</b>	Inhaled corrosive substances can lead to a toxic edema of the lungs.
<b>Eye Contact</b>	Corrosive to the eyes and may cause severe damage including blindness..
<b>Skin Contact</b>	Corrosive. Causes burns.
<b>Ingestion</b>	Ingestion causes burns of the upper digestive and respiratory tract..

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Propylene carbonate	= 29000 mg/kg ( Rat )	> 20 mL/kg ( Rabbit )	-
Nickel	> 9000 mg/kg ( Rat )	-	-
Graphite	> 10000 mg/kg ( Rat )	-	-

### Chronic Toxicity

<b>Chronic Toxicity</b>	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. Avoid repeated exposure. Possible risks of irreversible effects. May cause adverse liver effects.
<b>Carcinogenicity</b>	The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical Name	ACGIH	IARC	NTP	OSHA
Cobalt lithium manganese nickel oxide	A3	Group 1 Group 2B	Known	X
Nickel		Group 1	Reasonably Anticipated	X

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

A3 - Animal Carcinogen

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

Group 2B - Possibly Carcinogenic to Humans

**OSHA: (Occupational Safety & Health Administration)**

X - Present

**Target Organ Effects** Skin. Eyes. Respiratory system.

## 12. ECOLOGICAL INFORMATION

This product contains a chemical which is listed as a severe marine pollutant according to DOT.

**Ecotoxicity**

Harmful to aquatic organisms. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Chemical Name	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Daphnia Magna (Water Flea)
Copper	EC50: 0.031 - 0.054 mg/L (96 h static) <i>Pseudokirchneriella subcapitata</i> EC50: 0.0426 - 0.0535 mg/L (72 h static) <i>Pseudokirchneriella subcapitata</i>	LC50: 1.25 mg/L (96 h static) <i>Lepomis macrochirus</i> LC50: 0.112 mg/L (96 h flow-through) <i>Poecilia reticulata</i> LC50: 0.8 mg/L (96 h static) <i>Cyprinus carpio</i> LC50: 0.3 mg/L (96 h semi-static) <i>Cyprinus carpio</i> LC50: 0.052 mg/L (96 h flow-through) <i>Oncorhynchus mykiss</i> LC50: 0.0068 - 0.0156 mg/L (96 h ) <i>Pimephales promelas</i> LC50: 0.2 mg/L (96 h flow-through) <i>Pimephales promelas</i> LC50: < 0.3 mg/L (96 h static) <i>Pimephales promelas</i>		EC50: 0.03 mg/L (48 h Static) <i>Daphnia magna</i>
Propylene carbonate	EC50: > 500 mg/L (72 h ) <i>Desmodesmus subspicatus</i>	LC50: 5300 mg/L (96 h static) <i>Leuciscus idus</i> LC50: > 1000 mg/L (96 h semi-static) <i>Cyprinus carpio</i>	EC50 > 10000 mg/L 17 h	EC50: > 500 mg/L (48 h ) <i>Daphnia magna</i>
Nickel	EC50: 0.174 - 0.311 mg/L (96 h static) <i>Pseudokirchneriella subcapitata</i> EC50: 0.18 mg/L (72 h ) <i>Pseudokirchneriella subcapitata</i>	LC50: 10.4 mg/L (96 h static) <i>Cyprinus carpio</i> LC50: 1.3 mg/L (96 h semi-static) <i>Cyprinus carpio</i> LC50: > 100 mg/L (96 h ) <i>Brachydanio rerio</i>		EC50: 1 mg/L (48 h Static) <i>Daphnia magna</i> EC50: > 100 mg/L (48 h ) <i>Daphnia magna</i>

Chemical Name	Log Pow
Propylene carbonate	0.48

### 13. DISPOSAL CONSIDERATIONS

**Waste Disposal Methods** This material, as supplied, is not a hazardous waste according to Federal regulations (40 CFR 261). This material could become a hazardous waste if it is mixed with or otherwise comes in contact with a hazardous waste, if chemical additions are made to this material, or if the material is processed or otherwise altered. Consult 40 CFR 261 to determine whether the altered material is a hazardous waste. Consult the appropriate state, regional, or local regulations for additional requirements.

**Contaminated Packaging** Dispose of in accordance with local regulations.

Chemical Name	RCRA	RCRA - Basis for Listing	RCRA - D Series Wastes	RCRA - U Series Wastes
Nickel - 7440-02-0	(hazardous constituent - no waste number)	Included in waste streams: F006, F039		

**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 EHW	California Carc	California Hazardous Waste	California Waste - Part 2
Cobalt lithium manganese nickel oxide			Toxic	STLC (for PBTs): 80 mg/L STLC (for PBTs): 20 mg/L TTLC (for PBTs): 8000 mg/kg TTLC (for PBTs): 2000 mg/kg
Copper			Toxic	STLC (for PBTs): 25 mg/L TTLC (for PBTs): 2500 mg/kg
Aluminum			Ignitable powder	
Nickel			Toxic powder Ignitable powder	STLC (for PBTs): 20 mg/L TTLC (for PBTs): 2000 mg/kg

### 14. TRANSPORT INFORMATION

**Emergency Response Guide Number** 147

**DOT**

**Description** UN3480, LITHIUM ION BATTERIES, 9, II

**TDG**

**Description** UN3480, LITHIUM ION BATTERIES, 9, II, MARINE POLLUTANT

**MEX**

**Description** UN3480 LITHIUM ION BATTERIES, 9, II, MARINE POLLUTANT

**ICAO**

**Description** UN3480, LITHIUM ION BATTERIES, 9, II, MARINE POLLUTANT

**IATA**

**Description** UN3480, LITHIUM ION BATTERIES, 9, II, MARINE POLLUTANT

**IMDG/IMO**

**Description** UN3480, LITHIUM ION BATTERIES, 9, II, MARINE POLLUTANT

**15. REGULATORY INFORMATION****International Inventories**

TSCA                                      Complies  
 DSL                                        Not determined

**U.S. 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 %
Cobalt lithium manganese nickel oxide	182442-95-1	40-70	1.0 0.1
Copper	7440-50-8	10-30	1.0
Aluminum	7429-90-5	5-10	1.0
Nickel	7440-02-0	1 - 5	0.1

**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

**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
Cobalt lithium manganese nickel oxide		X		
Copper		X	X	
Nickel		X	X	

**Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)**

This product contains the following substances which are listed hazardous air pollutants (HAPS) under Section 112 of the Clean Air Act:

Chemical Name	CAS-No	Weight %	HAPS data	VOC Chemicals	Class 1 Ozone Depletors	Class 2 Ozone Depletors
Propylene carbonate	108-32-7	5-10		Group V		
Nickel	7440-02-0	1 - 5				

**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
Copper	5000 lb	
Nickel	100 lb	

**U.S. State Regulations****California Proposition 65**

This product does not contain any Proposition 65 chemicals.



Chemical Name	CAS-No	California Prop. 65
Cobalt lithium manganese nickel oxide	182442-95-1	Carcinogen
Nickel	7440-02-0	Carcinogen

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

Chemical Name	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Lithium Cobalt Oxide (CoLiO <sub>2</sub> )		X	X	X	X
Aluminum	X	X	X		X
Aluminum			X		
Copper	X	X	X	X	X

### International Regulations

**Mexico - Grade** No information available.

Chemical Name	Carcinogen Status	Exposure Limits
Aluminum		Mexico: TWA= 10 mg/m <sup>3</sup>
Aluminum		Mexico: TWA 2 mg/m <sup>3</sup>
Copper		Mexico: TWA= 1 mg/m <sup>3</sup> Mexico: TWA= 0.2 mg/m <sup>3</sup> Mexico: STEL= 2 mg/m <sup>3</sup>

### Canada

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

### WHMIS Hazard Class

D2A Very toxic materials

Chemical Name	NPRI
Aluminum	X

### Legend

NPRI - National Pollutant Release Inventory

## 16. OTHER INFORMATION

**Prepared By** Product Stewardship  
23 British American Blvd.  
Latham, NY 12110  
1-800-572-6501

**Revision Date** 16-Jan-2014

**Revision Note** No information available

### General Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

**End of Safety Data Sheet**