

MATERIAL SAFETY DATA SHEET

IDENTITY	Product Category	:	Rechargeable Lithium-ion Battery
	Model Name	:	V4
	Brand	:	ring
	Nominal Capacity	:	6040 mAh
	Nominal Voltage	:	3.65V
	Watt-hour	:	22.046 W/hr
	Chemical System	:	Lithium Cobaltate / Carbon
	Designed for Recharge	:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

SECTION 1 MANUFACTURER'S INFORMATION

Manufacturer's Name	:	CHANGZHOU SOARING TECHNOLOGY CO., LTD
Supplier's Name	:	Welltech Energy Inc.
Supplier's Address	:	2F, No.181, An Mei St., Nei Hu District, Taipei City 11484, Taiwan
Information Telephone	:	886-2-2790-7958
Emergency Telephone	:	886-2-2790-7959
Date Prepared	:	2019/12/18

SECTION 2 HAZARDS IDENTIFICATION

PRIMARY ROUTES OF ENTRY

Skin contact, Skin absorption, Eye contact, Inhalation, and Ingestion : NO

SYMPTOMS OF EXPOSURE

Skin contact: No effect under routine handling and use.

Skin absorption: No effect under routine handling and use.

Eye contact: No effect under routine handling and use.

Inhalation: No effect under routine handling and use.

REPORTED AS CARCINOGEN : Not applicable

SECTION 3 MATERIAL AND INGREDIENTS INFORMATION

Battery Cell :

- Substance or preparation : Preparation
- Information about the chemical nature of product : *1

Portion	Material name	CAS number	Concentration range (wt%)
Positive electrode	Lithium transition metal oxidate (Li[M]m[O]n*2)	12190-79-3 12031-65-1 12057-17-9 182442-95-1 207803-51-8	20~60
Positive electrode's base	Aluminum	7429-90-5	1~10
Negative electrode	Carbon	7782-42-5 7440-44-0	10~30
Negative electrode's base	Copper	7440-50-8	1~15
Electrolyte	Organic electrolyte principally involves ester carbonate	623-53-0 105-58-8 96-49-1 21324-40-3	5~25
Outer case	Aluminum, iron, aluminum laminated plastic	7439-89-6	1~30

* 1 Not every product includes all or these materials.

* 2 The letter M means transition metal and candidates of M are Co, Mn and Ni. One compound includes one ore more of these metals and one product includes one or more of the compounds.

The letter m and n means the number of atoms.

Circuit Module :

HAZARDOUS INGREDIENTS	%	CAS number
Lead	<0.1	7439-92-1
Mercury	0	7439-97-6
Chromium	0	7440-47-3
Cadmium	0	7440-43-9

Plastic Parts :

CHEMICAL NAME	: Polycarbonate based on bisphenol A		
COMPOSITION	: Polycarbonate	more than 81wt%	(CAS No. 25971-63-5)
	: 1.3-phenylen-bis(dixylenyl-phosphate)	less than 12 wt%	(CAS No. 139189-30-3)
	: Elastomer	less than 7 wt%	
CHEMICAL FORMULA	: [O-C6H4-C(CH3)2-C6H4-O-CO-]n		
CAS REGISTRY No.	: 25971-63-5		

SECTION 4 FIRST-AID MEASURES

Internal cell materials of an 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 least 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.

SECTION 5 FIRE-FIGHTING MEASURE

- Suitable extinguishing media : Pouring water, carbon dioxide gas, nitrogen gas, chemical powder fire extinguishing medium and fire foam.
- Specific hazards : Corrosive gas may be emitted during fire.
- Specific methods of fire-fighting : 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

SECTION 6 ACCIDENTAL RELEASE MEASURES

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

- Personal precautions :
Remove leaked materials with protective equipment (protective glasses 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.
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- 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.

SECTION 7 HANDLING AND STORAGE

- Storage : Store in a cool, well-ventilated area. Do not expose to high temperature (40°C) .
Since short circuit can cause burn hazard or safety vent to open, do not store with metal jewelry, metal covered tables, or metal belt.
- Handling : Do not disassemble, crush or solder. Do not short + and – terminals with a metal.
Do not open the battery.
- Charging : Charge within the limits of 0°C to 45°C temperature. Charge with specified charger designed for this battery.
- Discharging : Discharge within the limits of -20°C to 60°C temperature.
- Battery Energy Rate : The cell capacity at shipment is 30% of the full capacity.
- Disposal : Dispose in accordance with applicable federal, state and local regulations.
- Warning : Fire or explosion if incorrectly installed, shorted, disassembled, hated or disposed of in fire.

SECTION 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 (2009)	
	TLV-TWA	BEI
Lithium transition metal oxidate	0.02mg/m ³ (as cobalt) * 0.02mg/m ³ (as manganese) * 0.02mg/m ³ (as nickel) *	-
Aluminum	10mg/m ³ (metal coarse particulate) 5mg/m ³ (inflammable powder) 5mg/m ³ (weld fume)	-
Carbon (natural graphite) (Artificial graphite)	2mg/m ³ (inhalant coarse particulate)	-

Copper	0.02mg/m ³ (fume) 1.0mg/m ³ (a coarse particulate, Mist)	-
Organic electrolyte	-	-

ACGIH : American Conference of Governmental Industrial Hygienists ,Inc.

TLV-TWA : Threshold Limit Value-time Weighted Average concentration

BEI : Biological Exposure Indices

* Not every product includes all of these metals.

- 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 body protection : Working clothes with long sleeve and long trousers

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

- Appearance
 - Physical state : Solid
 - Form : Prismatic
 - Color : Metallic color (without tube)
 - Odor : No odor
- pH : NA
- Specific temperatures/temperature ranges at which changes in physical state occur.
There is no useful information for the product as a mixture.
- Flash point : Not available
- Explosion properties : NA
- Density : NA
- Solubility ,with indication of the solvent(s) : Insoluble in water

SECTION 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.

SECTION 11 TOXICOLOGICAL INFORMATION

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

Lithium cobaltate – LiCoO₂

- Acute toxicity : 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 of allergy-natured or sensitive-natured may cause a skin reaction or a lung disease.

- Local effects(skin) : Although it is very rare, the rash of the skin and allergic erythema may result.

Graphite

- Acute toxicity : Unknown.
- Local effects : Unknown.
- Chronic toxicity/Long term toxicity :

Since the prolonged inhalation under the high concentration of a graphite coarse particulate may become a cause of a lung disease or a tracheal disease, it is regulated 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.

LD50, oral-sheep 18,000-182,000mg/kg

60-100mg of coarse particulate causes a gastrointestinal disturbance with nausea and inflammation.

- Local effects : Unknown.

Organic Electrolyte

- Acute toxicity :

LD50, oral-rat 2,000mg/kg or more

- Local effects : Unknown.
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Reference Number : MSDS-200515-02



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- Skin irritation study : Rabbit - Mild
- eye irritation study : Rabbit - Very severe

SECTION 12 ECOLOGICAL INFORMATION

- Persistence/degradability :

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

SECTION 13 DISPOSAL CONSIDERATIONS

- Recommended methods for safe and environmentally preferred disposal :

Product(waste from residues)

Do not throw out a used battery cell. Recycle it through the recycling company.

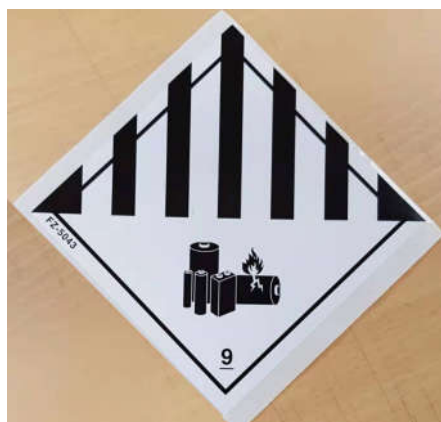
Contaminated packaging

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.

SECTION 14 Transport information

The Lithium Ion batteries are considered to be "Rechargeable batteries" and meet the requirements of transportation by the U.S. Department of Transportation(DOT), International Civil Aviation Administration(ICA), International Air Transport Association(IATA) Dangerous Goods Regulations (61th Edition,2020. Special Provision A88, A99, A154 , A164, A181, A182 and Section II or IB of package instruction,966 or 967 for lithium ion batteries for UN 3481, 965 for lithium ion batteries for UN 3480) and belong to non-dangerous goods and meets all requirements under UN Manual of Tests and Criteria Part III, subsection 38.3.

The International Maritime Dangerous Goods (IMDG) Code · 2018 Edition (Incorporating Amendment 39-18) with special provision 188 & 230.



SECTION 15 REGULATORY INFORMATION

Regulations specifically applicable to the product :

- The transport of the lithium batteries is regulated by the United Nations, "Model Regulations on Transport of Dangerous Goods Special Provisions A188".
- Lithium batteries are subject to shipping requirements exceptions under 49 CFR 173.185(paragraph c).
- Shipping of Lithium batteries in aircrafts are regulated by the International Civil Aviation Organization (ICAO) and the International Air Transport Association (IATA) requirements in Special Provision "A48".
- Shipping of lithium batteries on sea are regulated the International Maritime Dangerous Goods (IMDG) requirements.
- The internal component (thionyl chloride) is non-hazardous and under the criteria of the Federal OSHA Hazard Communication Standard 29 CFR 190.1200.

SECTION 16 SPECIAL PROTECTION INFORMATION

Respiratory Protection	:	Not necessary under normal use.
Ventilation	:	Not necessary under normal use.
Eye Protection	:	Not necessary under normal use.
Protective Gloves	:	Not necessary under normal use.