SAFETY DATA SHEET

Revision Number 1 Issuing Date No data available

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

Product identifier

Product Name Lithium Metal Battery

Model Name 3V-CR2025

Other means of identification

Synonyms None

Recommended use of the chemical and restrictions on use

Recommended Use Lithium Primary/Metal Batteries

Uses advised against No information available

Details of the supplier of the safety data sheet

Supplier Name ZHONGSHAN KEZHUOER ELECTRONIC CO.,LTD.

Supplier Address A block,NO.60,Dongfu four road,Dongfeng district,Zhongshan city,Guangdong
China
528425

Supplier Phone Number Phone: +860757-28179133
Contact Phone : +860757-28179133

Supplier Email xing_heng001@163.com

Emergency telephone number

2. HAZARDS IDENTIFICATION

Classification

This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).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.

Carcinogenicity	Category 1A
Serious eye damage/eye irritation	Category 1
Skin corrosion/irritation	Category 2
Skin sensitization	Category 1
Specific target organ toxicity (single exposure)	Category 3
Specific target organ toxicity (repeated exposure)	Category 1
Acute toxicity(Oral)	Category 3
Acute Inhalation(Gases)	Category 2
Acute Inhalation(Dusts/Mists)	Category 2
Acute toxicity - Inhalation (Vapors)	Category 2
Reproductive Toxicity	Category 1A

GHS Label elements, including precautionary statements

Emergency Overview

Signal word **Danger**

Hazard Statements

Toxic if swallowed
Fatal if inhaled
Causes skin irritation
Causes serious eye damage
May cause an allergic skin reaction
May cause cancer
May damage fertility or the unborn child
May cause respiratory irritation. May cause drowsiness or dizziness

This is a battery. In case of rupture: the above hazards exist

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
Do not eat, drink or smoke when using this product
Use only outdoors or in a well-ventilated area
Contaminated work clothing should not be allowed out of the workplace
Wear protective gloves
Do not breathe dust/fume/gas/mist/vapors/spray
Wear eye/face protection

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
Use of alcoholic beverages may enhance toxic effects.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	weight %
Stainless steel	12597-68-1	55.4
Polypropylene	9003-07-0	3.4
Manganese Dioxide	1313-13-9	26.2
Lithium	7439-93-2	1.7
Perchloric acid, lithium salt	7791-03-9	2.1
Polytetrafluoroethylene	9002-84-0	0.2
Graphite	7782-42-5	2.5
Propylene Carbonate	108-32-7	4.5
Ethylene glycol dimethyl ether	110-71-4	4

4. FIRST AID MEASURES

First aid measures

General Advice First aid is upon rupture of sealed battery. Show this safety data sheet to the doctor in attendance.

Eye Contact 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. Get medical attention if irritation develops and persists. 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 mmediately 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 Coughing and/ or wheezing. Itching

Indication of any immediate medical attention and special treatment needed

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

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

Hazardous Combustion Products
Carbon Oxides

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. Keep people away from and upwind of spill/leak

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 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.

Conditions for safe storage, including any incompatibilities

Storage Keep containers tightly closed in a dry, cool and well-ventilated place. Keep out of the reach of children.

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
Manganese dioxide 1313-13-9	TWA: 0.02 mg/m3 Mn TWA: 0.1 mg/m3 Mn	(vacated) Ceiling: 5 mg/m3 Ceiling: 5 mg/m3 Mn	IDLH: 500 mg/m3 Mn TWA: 1 mg/m3 Mn STEL: 3 mg/m3 Mn
Graphite 7782-42-5	TWA: 2 mg/m3 respirable fraction all forms except graphite fibers	TWA: 15 mg/m3 total dust synthetic TWA: 5 mg/m3 respirable fraction synthetic (vacated) TWA: 2.5 mg/m3 respirable dust natural (vacated) TWA: 10 mg/m3 total dust synthetic (vacated) TWA: 5 mg/m3 respirable fraction synthetic TWA: 15 mppcf natural	IDLH: 1250 mg/m3 TWA: 2.5 mg/m3 respirable dust
Stainless steel 12597-68-1	STEL: 10 mg/m3 Zr TWA: 0.05 mg/m3 Pb TWA: 0.00005 mg/m3 Be inhalable fraction TWA: 1 mg/m3 Cu dust and mist TWA: 0.2 mg/m3 Se TWA: 1 mg/m3 Y TWA: 5 mg/m3 Zr TWA: 0.02 mg/m3 Mn TWA: 0.1 mg/m3 Mn TWA: 0.5 mg/m3 Hf S*	TWA: 50 µg/m3 Pb TWA: 2 µg/m3 Be TWA: 0.2 mg/m3 Se TWA: 5 mg/m3 Zr Action Level: 30 µg/m3 Pb Poison, See 29 CFR 1910.1025 (vacated) TWA: 2 µg/m3 Be (vacated) TWA: 0.2 mg/m3 Se (vacated) TWA: 5 mg/m3 Zr (vacated) STEL: 25 µg/m3 30 min (vacated) STEL: 10 mg/m3 Zr (vacated) Ceiling: 5 µg/m3 (vacated) Ceiling: 5 mg/m3 Ceiling: 5 µg/m3 Be Ceiling: 5 mg/m3 Mn	IDLH: 4 mg/m3 Be IDLH: 100 mg/m3 Cu dust and mist IDLH: 500 mg/m3 Mn IDLH: 1 mg/m3 Se IDLH: 500 mg/m3 Y IDLH: 25 mg/m3 Zr IDLH: 100 mg/m3 Pb IDLH: 10 mg/m3 Ni IDLH: 50 mg/m3 Hf Ceiling: 0.05 mg/m3 V dust and fume 15 min Ceiling: 0.0005 mg/m3 Be TWA: 1 mg/m3 Cu dust and mist TWA: 1 mg/m3 Mn TWA: 0.2 mg/m3 except Selenium hexafluoride Se TWA: 1 mg/m3 Y TWA: 5 mg/m3 except Zirconium tetrachloride Zr TWA: 0.050 mg/m3 Pb TWA: 0.015 mg/m3 except Nickel carbonyl Ni TWA: 0.5 mg/m3 Hf STEL: 3 mg/m3 Mn STEL: 10 mg/m3 Zr

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	Solid		
Appearance	Silver	**Odor**	Odorless
Color	No information available	**Odor Threshold**	No information available

Property	**Values**	**Remarks/**
pH	No data available	None known
Melting / freezing point	No data available	None known
Boiling point / boiling range	No data available	None known
Flash Point	No data available	None known
Evaporation Rate	No data available	None known
Flammability (solid, gas)	No data available	None known
Flammability Limit in Air		
Upper flammability limit	No data available	
Lower flammability limit	No data available	
Vapor pressure	No data available	None known
Vapor density	No data available	None known
Specific Gravity	No data available	None known
Water Solubility	No data available	None known
Solubility in other solvents	No data available	None known
Partition coefficient: n-octanol/water	0.0001	None known
Autoignition temperature	No data available	None known
Decomposition temperature	No data available	None known
Kinematic viscosity	No data available	None known
Dynamic viscosity	0.0001	None known
Explosive properties	No data available	None known
Oxidizing Properties	No data available	None known

Other Information

Softening Point — No data available
VOC Content (%) — No data available
Particle Size — No data available
Particle Size Distribution

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).

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. Expected to be an irritant based on components. Irritating to skin. Prolonged contact may cause redness and irritation.

Ingestion Specific test data for the substance or mixture is not available. Ingestion may cause irritation to mucous membranes. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. May be harmful if swallowed. (based on components).

Component Information

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Manganese dioxide 1313-13-9	= 9000 mg/kg (Rat)	-	-
Propylene carbonate 108-32-7	= 29000 mg/kg (Rat)	> 20 mL/kg (Rabbit)	-
Graphite 7782-42-5	> 10000 mg/kg (Rat)	-	-

Information on toxicological effects

Symptoms Erythema (skin redness). May cause redness and tearing of the eyes. Coughing and/ or wheezing.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. May cause sensitization by inhalation.

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
Stainless Steel 12597-68-1	A1 A3	Group 1 Group 2A Group 2B Group 3	Known Reasonably Anticipated	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	Contains a known or suspected reproductive toxin.
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 CFR1910.1200), 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. Contains a known or suspected carcinogen. Contains a known or suspected reproductive toxin. Possible risk of irreversible effects. Avoid repeated exposure. Prolonged exposure may cause chronic effects. May cause adverse effects on the bone marrow and blood-forming system. Repeated or prolonged skin contact may cause skin irritation and/or dermatitis and sensitization of susceptible persons.
Target Organ Effects	Respiratory system. Eyes. Skin. Gastrointestinal tract (GI). Reproductive System. Blood.Central Nervous System (CNS). Central Vascular System (CVS). Kidney. Lungs. Nasal cavities. Cardiovascular system. Systemic Toxicity. Liver.
Aspiration Hazard	No information available.

Numerical measures of toxicity Product Information
The following values are calculated based on chapter 3.1 of the GHS document
ATEmix (oral)
ATEmix (dermal)
ATEmix (inhalation-dust/mist)

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)
Propylene carbonate 108-32-7	72h EC50: > 500 mg/L (Desmodesmus subspicatus)	96h LC50: > 1000 mg/L (Cyprinus carpio) 96h LC50: = 5300 mg/L (Leuciscus idus)	EC50 > 10000 mg/L 17 h	48h EC50: > 500 mg/L

Persistence and Degradability
No information available.

Bioaccumulation

Chemical Name	Log Pow
Manganese dioxide 1313-13-9	<0
Propylene carbonate 108-32-7	0.48

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 7439-93-2	Corrosive Ignitable Reactive
Stainless Steel 12597-68-1	Toxic

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
Proper Shipping Name NON-REGULATED PER SP 188
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 %
Manganese dioxide	1313-13-9	26.2	1.0
Ethylene glycol dimethyl ether	110-71-4	4	1.0
Stainless Steel	12597-68-1	55.4	1.0 0.1

SARA 311/312 Hazard Categories

Acute Health Hazard	**Yes**
Chronic Health Hazard	**Yes**
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
Stainless Steel 12597-68-1		X		

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

US State Regulations

California Proposition 65

This product contains the following Proposition 65 chemicals.

Chemical Name	California Proposition 65
Stainless Steel -12597-68-1	Carcinogen Developmental

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania	Rhode Island	Illinois
Manganese dioxide 1313-13-9			X	X	X
Graphite 7782-42-5	X	X	X		
Ethylene glycol dimethyl ether 110-71-4	X	X	X	X	X
Lithium 7439-93-2	X	X	X		
Polytetrafluoroethylene 9002-84-0			X		

International Regulations

Mexico

National occupational exposure limits

Component	Carcinogen Status	Exposure Limits
Manganese dioxide 1313-13-9 (26.2%)		Mexico: TWA= 0.2 mg/m3
Graphite 7782-42-5(2.5%)		Mexico: TWA= 2 mg/m3
Stainless Steel 12597-68-1(55.4%)	A3 A2	Mexico: TWA 0.15 mg/m3 Mexico: TWA 0.002 mg/m3 Mexico: TWA 0.2 mg/m3 Mexico: TWA 5 mg/m3

		Mexico: STEL 10 mg/m3

Mexico - Occupational Exposure Limits - Carcinogens
A2 - Suspected Human Carcinogen
A3 - Confirmed Animal Carcinogen

Canada
WHMIS Hazard Class
D2A - Very toxic materials

16. OTHER INFORMATION

NFPA **Health Hazards** 1 **Flammability** 0 **Instability** 1 **Physical and Chemical Hazards** - **Personal Protection** X

MIS **Health Hazards** 4* **Flammability** 0 **Physical Hazard** 1
Chronic Hazard Star Legend * = Chronic Health Hazard

Prepared By ZHONGSHAN KEZHUOER ELECTRONIC CO.,LTD.
Revision Date 13-Aug-2015
Revision Note

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