

SAFETY DATA SHEET

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Revision Number 2



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

Product identifier

Product Name Vattnic CR2 Lithium Metal Battery

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 Power Glory Tech (Shenzhen) Co., Ltd.

Supplier Address Dong Keng Industrial Zone, Dong Keng Village,
Gongming Town
Shenzhen
NA
NA
CN

Supplier Phone Number Phone:755-2754-3060
Fax:+86 755 2754-3062

Supplier Email jerry@omnergy.com.hk

Emergency telephone number

Company Emergency Phone Number +852 6093-2825

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.


Acute toxicity - Oral	Category 4
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Acute toxicity - Inhalation (Vapors)	Category 2
Acute toxicity - Inhalation (Dusts/Mists)	Category 2
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 1
Skin sensitization	Category 1
Carcinogenicity	Category 1A
Reproductive Toxicity	Category 1A
Specific target organ toxicity (single exposure)	Category 3
Specific target organ toxicity (repeated exposure)	Category 1

GHS Label elements, including precautionary statements

Emergency Overview

Signal word	Danger	
Hazard Statements	Harmful 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 Causes damage to organs through prolonged or repeated exposure	
		
This is a battery. In case of rupture: the above hazards exist.		
Appearance	No information available	Physical state Solid
		Odor No information available

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
- Do not breathe dust/fume/gas/mist/vapors/spray
- Use only outdoors or in a well-ventilated area
- Wear respiratory protection
- 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 is urgent (see supplemental first aid instructions on this label)
- 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



Immediately call a POISON CENTER or doctor/physician

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

Inhalation

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

Immediately call a POISON CENTER or doctor/physician

Ingestion

IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell

Rinse mouth

Precautionary Statements - Storage

Store locked up

Store in a well-ventilated place. Keep container tightly closed

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)

Not applicable

Unknown Toxicity

4 % of the mixture consists of ingredient(s) of unknown toxicity

Other information

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	Percent	Trade Secret
Manganese dioxide	1313-13-9	30 - 60	*
Steel manufacture, chemicals	65997-19-5	10 - 30	*
Propylene carbonate	108-32-7	5 - 10	*
Ethylene glycol dimethyl ether	110-71-4	5 - 10	*
Lithium	7439-93-2	1 - 5	*
Graphite	7782-42-5	1 - 5	*
Aluminum	7429-90-5	1 - 5	*
Nickel	7440-02-0	1 - 5	*

*The exact percentage (concentration) of composition has been withheld as a trade secret

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. Immediate medical attention is required.
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. Do not rub affected area. Seek immediate medical attention/advice.
Skin contact	Wash off immediately with soap and plenty of water for at least 15 minutes. May cause an allergic skin reaction. In the case of skin irritation or allergic reactions see a physician.
Inhalation	Remove to fresh air. If breathing is difficult, (trained personnel should) give oxygen. If not breathing, give artificial respiration.
Ingestion	Rinse mouth immediately and drink plenty of water. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Call a physician or poison control center immediately.
Self-protection of the first aider	Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.

Most important symptoms and effects, both acute and delayed

Most Important Symptoms and Effects Burning sensation. Itching. Rashes. Hives. Coughing and/ or wheezing.

Indication of any immediate medical attention and special treatment needed

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

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Dry chemical, soda ash, lime or sand. DRY sand, dry chemical, soda ash or lime or withdraw from area and let fire burn. Move containers from fire area if you can do it without risk.

Unsuitable extinguishing media

DO NOT USE WATER OR FOAM.

Specific hazards arising from the chemical

Produce flammable gases on contact with water. May ignite on contact with water or moist air. Some react vigorously or explosively on contact with water. May be ignited by heat, sparks or flames. Some are transported in highly flammable liquid. Runoff may create fire or explosion hazard.

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 Attention! Corrosive material. 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.

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: Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse. Do not breathe dust. Avoid generation of dust. In case of insufficient ventilation, wear suitable respiratory equipment. Use only with adequate ventilation and in closed systems.

Conditions for safe storage, including any incompatibilities

Storage Keep containers tightly closed in a dry, cool and well-ventilated place. Store locked up. 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 The following ingredients are the only ingredients of the product above the cut-off level (or level that contributes to the hazard classification of the mixture) which have an exposure limit applicable in the region for which this safety data sheet is intended or other recommended limit. At this time, the other relevant constituents have no known exposure limits from the sources listed here

Chemical name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Manganese dioxide 1313-13-9	TWA: 0.02 mg/m ³ Mn respirable particulate matter TWA: 0.1 mg/m ³ Mn inhalable particulate matter	(vacated) Ceiling: 5 mg/m ³ Ceiling: 5 mg/m ³ Mn	IDLH: 500 mg/m ³ Mn TWA: 1 mg/m ³ Mn STEL: 3 mg/m ³ Mn
Steel manufacture, chemicals 65997-19-5	STEL: 10 mg/m ³ Zr TWA: 0.05 mg/m ³ Pb TWA: 0.00005 mg/m ³ Be inhalable particulate matter	TWA: 50 µg/m ³ Pb TWA: 0.2 µg/m ³ Be TWA: 0.2 mg/m ³ Se TWA: 5 mg/m ³ Zr Action Level: 30 µg/m ³ Pb Poison;See	IDLH: 4 mg/m ³ Be IDLH: 100 mg/m ³ Cu dust and mist IDLH: 500 mg/m ³ Mn IDLH: 1 mg/m ³ Se IDLH: 500 mg/m ³ Y

	TWA: 1 mg/m ³ Cu dust and mist TWA: 0.2 mg/m ³ Se TWA: 3 mg/m ³ W respirable particulate matter in the absence of cobalt TWA: 1 mg/m ³ Y TWA: 5 mg/m ³ Zr TWA: 0.02 mg/m ³ Mn respirable particulate matter TWA: 0.1 mg/m ³ Mn inhalable particulate matter TWA: 0.5 mg/m ³ Hf	29 CFR 1910.1025 (vacated) TWA: 2 µg/m ³ Be (vacated) TWA: 0.2 mg/m ³ Se (vacated) TWA: 5 mg/m ³ Zr (vacated) STEL: 25 µg/m ³ 30 min (vacated) STEL: 10 mg/m ³ Zr (vacated) Ceiling: 5 µg/m ³ (vacated) Ceiling: 5 mg/m ³ Be Ceiling: 2 µg/m ³ Be Ceiling: 5 mg/m ³ Mn	IDLH: 25 mg/m ³ Zr IDLH: 100 mg/m ³ Pb IDLH: 10 mg/m ³ Ni IDLH: 50 mg/m ³ Hf Ceiling: 0.05 mg/m ³ V dust and fume 15 min Ceiling: 0.0005 mg/m ³ Be TWA: 1 mg/m ³ Cu dust and mist TWA: 1 mg/m ³ Mn TWA: 0.2 mg/m ³ except Selenium hexafluoride Se TWA: 1 mg/m ³ Y TWA: 5 mg/m ³ except Zirconium tetrachloride Zr TWA: 0.050 mg/m ³ Pb TWA: 0.015 mg/m ³ except Nickel carbonyl Ni TWA: 0.5 mg/m ³ Hf STEL: 3 mg/m ³ Mn STEL: 10 mg/m ³ Zr
Graphite 7782-42-5	TWA: 2 mg/m ³ respirable particulate matter all forms except graphite fibers	TWA: 15 mg/m ³ total dust synthetic TWA: 5 mg/m ³ respirable fraction synthetic (vacated) TWA: 2.5 mg/m ³ respirable dust natural (vacated) TWA: 10 mg/m ³ total dust synthetic (vacated) TWA: 5 mg/m ³ respirable fraction synthetic TWA: 15 mppcf natural	IDLH: 1250 mg/m ³ TWA: 2.5 mg/m ³ respirable dust
Aluminum 7429-90-5	TWA: 1 mg/m ³ respirable particulate matter	TWA: 15 mg/m ³ total dust TWA: 5 mg/m ³ respirable fraction (vacated) TWA: 15 mg/m ³ total dust (vacated) TWA: 5 mg/m ³ respirable fraction (vacated) TWA: 5 mg/m ³ Al Aluminum	TWA: 10 mg/m ³ total dust TWA: 5 mg/m ³ respirable dust TWA: 5 mg/m ³ Al
Nickel 7440-02-0	TWA: 1.5 mg/m ³	TWA: 1 mg/m ³ (vacated) TWA: 1 mg/m ³	IDLH: 10 mg/m ³ TWA: 0.015 mg/m ³

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 Tight sealing safety goggles.

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. Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Do not breathe dust. Take off contaminated clothing and wash before reuse. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product. For environmental protection, remove and wash all contaminated protective equipment before re-use.



9. PHYSICAL AND CHEMICAL PROPERTIES

Physical and Chemical Properties

Physical state	Solid	Odor	No information available
Appearance	No information available	Odor Threshold	No information available
Color	No information available		

<u>Property</u>	<u>Values</u>	<u>Remarks</u>	<u>Method</u>
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	Insoluble in water		
Solubility in other solvents	No data available	None known	
Partition coefficient: n-octanol/water	No data available	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	No data available	None known	
Explosive properties	No data available		
Oxidizing properties	No data available		

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

Excessive heat.

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. May cause irritation of respiratory tract. Fatal if inhaled. (based on components).

Eye contact

Specific test data for the substance or mixture is not available. Causes serious eye damage. (based on components). Severely irritating to eyes. May cause irreversible damage to eyes.

Skin contact

Specific test data for the substance or mixture is not available. Causes skin irritation. (based on components). 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. 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)	> 3000 mg/kg (Rabbit)	-
Ethylene glycol dimethyl ether 110-71-4	> 4000 mg/kg (Rat) = 775 mg/kg (Rat)	1000 - 2000 mg/kg (Rabbit)	20 - 63 mg/L (Rat) 6 h

Nickel 7440-02-0	> 9000 mg/kg (Rat)	-	-
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Information on toxicological effects

Symptoms Erythema (skin redness). May cause redness and tearing of the eyes. May cause blindness. Burning. Coughing and/ or wheezing. Difficulty in breathing. Itching. Rashes. Hives.

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

Sensitization May cause sensitization in 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
Steel manufacture, chemicals 65997-19-5	A3 A1	Group 2B Group 2A Group 1 Group 3	Reasonably Anticipated Known	X
Nickel 7440-02-0		Group 2B	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 2A - Probably Carcinogenic to Humans
 Group 2B - Possibly Carcinogenic to Humans
 Group 3 - Not Classifiable as to Carcinogenicity in Humans
 NTP (National Toxicology Program)
 Known - Known Carcinogen
 Reasonably Anticipated - Reasonably Anticipated to be a Human 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 Respiratory system.

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 Effects from this product caused by acute exposure may cause permanent damage to target organs and/or may cause chronic conditions. 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. May cause adverse liver effects.

Target Organ Effects Respiratory system. Eyes. Skin. Systemic Toxicity. Gastrointestinal tract (GI). Reproductive System. Blood. Central Nervous System (CNS). Central Vascular System (CVS). Kidney. Liver. Lungs. Nasal cavities. Cardiovascular system.

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)

304.00 mg/kg

ATEmix (dermal)

14,286.00 mg/kg

ATEmix (inhalation-gas)

414.00 ppm

ATEmix (inhalation-dust/mist)

0.20 mg/l

ATEmix (inhalation-vapor)

2.00 ATEmix

12. ECOLOGICAL INFORMATION

Ecotoxicity

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
Nickel 7440-02-0	72h EC50: = 0.18 mg/L (Pseudokirchneriella subcapitata) 96h EC50: 0.174 - 0.311 mg/L (Pseudokirchneriella subcapitata)	96h LC50: > 100 mg/L (Brachydanio rerio) 96h LC50: = 1.3 mg/L (Cyprinus carpio) 96h LC50: = 10.4 mg/L (Cyprinus carpio)		48h EC50: > 100 mg/L 48h EC50: = 1 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

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 contents/containers in accordance with local regulations.

California 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
Steel manufacture, chemicals 65997-19-5	Toxic
Lithium 7439-93-2	Corrosive Ignitable Reactive
Aluminum 7429-90-5	Ignitable powder
Nickel 7440-02-0	Toxic powder 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

Proper Shipping Name
Emergency Response Guide
Number

NOT REGULATED
NON-REGULATED
138

TDG

Not regulated

MEX

Not regulated

ICAO

Not regulated

IATA

Not regulated



Proper Shipping Name	NON 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
ADN	Not regulated

15. REGULATORY INFORMATION

International Inventories

TSCA	Not determined
DSL	Not determined

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
 DSL/NDL - 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	Percent	SARA 313 - Threshold Values %
Manganese dioxide - 1313-13-9	1313-13-9	30 - 60	1.0
Steel manufacture, chemicals - 65997-19-5	65997-19-5	10 - 30	1.0 0.1
Ethylene glycol dimethyl ether - 110-71-4	110-71-4	5 - 10	1.0
Aluminum - 7429-90-5	7429-90-5	1 - 5	1.0
Nickel - 7440-02-0	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

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
Steel manufacture, chemicals 65997-19-5		X		
Nickel 7440-02-0		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



Nickel 7440-02-0	100 lb		RQ 100 lb final RQ RQ 45.4 kg final RQ
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US State Regulations

California Proposition 65

This product contains the following Proposition 65 chemicals.

Chemical name	California Proposition 65
Steel manufacture, chemicals - 65997-19-5	Carcinogen
Nickel - 7440-02-0	Carcinogen

U.S. State Right-to-Know Regulations

This product may contain substances regulated by state right-to-know regulations.

Chemical name	New Jersey	Massachusetts	Pennsylvania	Rhode Island	Illinois
Manganese dioxide 1313-13-9	X		X	X	X
Steel manufacture, chemicals 65997-19-5	X		X	X	X
Ethylene glycol dimethyl ether 110-71-4	X	X	X	X	X
Graphite 7782-42-5	X	X	X		
Lithium 7439-93-2	X	X	X		
Aluminum 7429-90-5	X	X	X	X	
Nickel 7440-02-0	X	X	X	X	X

International Regulations

Mexico

National occupational exposure limits

Chemical name	Carcinogen Status	Exposure Limits
Manganese dioxide		Mexico: TWA= 0.2 mg/m ³
Steel manufacture, chemicals	A3 A2	Mexico: TWA 0.15 mg/m ³ Mexico: TWA 0.002 mg/m ³ Mexico: TWA 0.2 mg/m ³ Mexico: TWA 5 mg/m ³ Mexico: STEL 10 mg/m ³
Graphite		Mexico: TWA= 2 mg/m ³
Aluminum		Mexico: TWA= 10 mg/m ³
Nickel		Mexico: TWA 1 mg/m ³

A2 - Suspected Human Carcinogen

A3 - Confirmed Animal Carcinogen

Mexico - Occupational Exposure Limits - Carcinogens

Canada

WHMIS Hazard Class

Not determined

16. OTHER INFORMATION

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

Prepared By Product Stewardship



	23 British American Blvd.
	Latham, NY 12110
	1-800-572-6501
Issuing Date	10-Nov-2017
Revision Date	08-Nov-2017
Revision Note	No information available

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

SONY

Sony Energy Devices Corporation

1-1 Shimosugishita Takakura Hiwada-machi Koriyama-shi Fukushima 963-0531 JAPAN

Phone: 81-24-958-6376

Fax: 81-24-958-5897

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PRODUCT SAFETY DATA SHEET

IDENTITY	Product Category	: Manganese Dioxide Lithium Battery
	Model Name	: CR2032 SONY
	Nominal Voltage	: 3 V
	Nominal Capacity	: 220 mAh
	Chemical System	: Manganese Dioxide / Lithium
	Design for Recharge	: <input type="checkbox"/> Yes. <input checked="" type="checkbox"/> No.

SECTION MANUFACTURER'S INFORMATION

Manufacturer's Name	: Sony Energy Devices Corporation
Supplier's Name	: Sony Corporation
Supplier's Address	: 1-7-1 Kounan Minato-ku Tokyo 108-0075 Japan
Information Telephone	: Japan +81-3-6748-4005 (Sony Corporation)
Emergency Telephone	: Japan +81-24-958-3811 (Sony Energy Devices Corporation)
Date Prepared	: July 7, 2008

SECTION MATERIAL AND INGREDIENTS INFORMATION

Important Note The battery should not be opened or burned since the following ingredients contained within, or their discharge or combustion products, could be harmful under some circumstance if exposed.

<u>Material or Ingredients</u>		
Cathode	: Manganese Dioxide	(CAS# 1313-13-9)
	Graphite	(CAS# 7782-42-5)
Anode	: Metallic Lithium (0.062g)	(CAS# 7439-93-2)
Electrolyte	: Dimethoxyethane	(CAS# 110-71-4)
	Propylene Carbonate	(CAS# 108-32-7)
	Lithium Perchlorate	(CAS# 7791-03-9)

Others : Heavy Metals such as Mercury, Cadmium and Lead are not added in the battery.

SECTION FIRE AND EXPLOSION HAZARD DATA

In case of fire, use Co₂ or dry chemical extinguishers.

SECTION HEALTH HAZARD DATA

Under normal conditions of use, these chemicals are contained in sealed can; therefore, risk of exposure occurs if the battery is swallowed or mechanically abused.

Swallowing : Ingestion of a battery can be harmful. Contents of an opened battery can cause serious chemical burns of mouth, esophagus, and gastrointestinal tract. In either case, do not induce vomiting nor give food or drink. Seek medical attention immediately. CALL NATIONAL BATTERY INGESTION HOTLINE for advice and follow-up (U.S.A. 202-625-3333) collect, day or night.

Inhalation : Contents of an opened battery can cause respiratory irritation. Provide fresh air and call a doctor.

Skin Contact : Contents of an opened battery can cause skin irritation. Wash skin with soap and water.

Eye Contact : Contents of an opened battery can cause eye irritation. Immediately flush eyes thoroughly with water for at least 15 minutes. Seek medical attention.

SECTION	PRECAUTIONS FOR SAFE HANDLING AND USE
Storage	: Store in a cool, well-ventilated area. Elevated temperatures can result in shortened battery life. Since short circuit can cause burn hazard and leak or explode hazard, do not batteries jumbled in bulk containers.
Handling	: Do not short. Do not mix different type batteries or mix new and old ones together. Do not directly heat, solder or throw into fire. Such unsuitable use can cause leakage, explosion or fire.
Charging	: This battery is not designed for recharging. To do so can cause battery leakage or explosion.
Disposal	: Dispose in accordance with applicable federal state and local regulations.
CAUTION	: MAY EXPLODE OR LEAK IF INSERTED INCORRECTLY, SHORTED, DISASSEMBLED, HEATED, DISPOSED OF IN FIRE, OR RECHARGED. KEEP AWAY FROM SMALL CHILDREN. IF SWALLOWED, PROMPTLY SEE A DOCTOR.

SECTION	TRANSPORTATION
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Lithium batteries containing no more than 1g/cell and 2g/battery of lithium can be treated as “non-dangerous goods” under the United Nations recommendations on the Transport of Dangerous Goods, Special Provision 188, provided that packaging is strong and prevent the products from short-circuit.

With regard to air transport, the International Civil Aviation Organization (ICAO) Special Provision A45 accepts the above UN Recommendation as is; further, the International Air Transport Association (IATA) adopts ICAO Provision A45. In addition, the regulations of the US Department of Transportation for land, sea and air transportation are based on the UN Recommendations.

The Sony Lithium Manganese Dioxide Battery is all applicable to the UN Recommendations/Special Provision 188 (Special Provision A45 of the ICAO Technical Instructions) and treated as “non-dangerous goods”.

SECTION	SPECIAL PROTECTION INFORMATION
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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.

DISCLAIMER

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