TECHNICAL SPECIFICATION
FOR
MANGANESE DIOXIDE LITHIUM BATTERY
TYPE:CR2025

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1. *Scope*

This specification is applicable to the Manganese Dioxide Lithium Battery CR2025 supplied by Guangdong TIANQIU Electronics Technology Co. Ltd.

2. *Designations*

2.1Defining

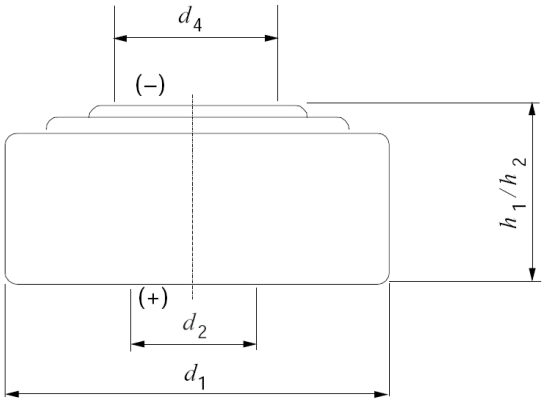
At the temperature of 20±2℃, loading at 15kΩ continuous discharge, till the voltage down to 2.0V

3. *Designations and Dimensions*

3.1 Designations：

Manganese Dioxide Lithium Battery CR2025

3.2 Dimensions



SPEC code	specification standard(mm)	
	MAX	MIN
h1/h2	2.5	2.2
d1	20.0	19.7
d2	-	-
d4	-	8.0

Note: h1 battery maximum total height
h2 battery positive and negative minimum distance between contacting surfaces
d1 Maximum and minimum diameter of the battery
d2 minimum diameter of the anode contact area
d4 minimum diameter of the cathode surface

4. *Product characteristic*

Item	Characteristic
Nominal capacity	150mAh /0.45Wh
Nominal voltage	3.0V
Discharge Voltage	2.0 V
Suggested continuously discharge	0.2mA
Suggested maximum pulse curren	15mA
Service temperature	-20~60℃
Storage Temperature	0℃～35℃
Storage humidity	45% ~ 75 % RH (no condensate)
Dimensions	maximum height:2.5mm Maximum diameter: Φ20mm
Average weight	2.3g

5. *Technical requirements*

5.1 Test conditions

Unless otherwise specified, the test conditions shall be, as a general rule, at the temperature of 20±2℃ and the relative humidity of 60±15%.

5.2 Electrical characteristics

NO.	Item	Test condition	Requirement
5.2.1	storage characteristics	Sampling plan：MIL-STD-105E, General Inspection Lever Ⅱ, Single Sampling, AQL=0.4 Remark: Load voltage test method: 15KΩ/1S, The initial samples shall be tested within 30 days after delivery	Open Circuit Voltage(V) load voltage(V) Initial： 3.10-3.50 3.0-3.40 12 months @ RT: 3.0-3.40 3.0-3.40
5.2.2	Service output	Load resistance:15kΩ; Discharge method:24h/d continuously discharge; End point voltage 2.0V Remark: The initial samples shall be tested within 30 days after delivery.	Initial≥750hrs 12 months @ RT≥720hrs
5.2.3	Temperature characteristics	Load resistance:15kΩ; Discharge method:24 hrs/d continuously discharge; End point voltage 2.0V	0±2℃≥650hrs 60±2℃≥735hrs
5.2.4	Over-discharge	Continuously discharge: 15KΩ, End point voltage 1.2V	No leakage, No deformation; N=9, Ac=0, Re=1
5.2.5	High temp. storage	60℃, RH below 70% for 30days	No leakage; N=40, Ac=0, Re=1
5.2.6	Short circuit test	The battery short circuit in 55 ℃ environment, When the battery shell after the temperature dropped to 55 ℃ continue to short circuit at least 1 hrs	No explosion、No fire ; N=5，Ac=0，Re=1.

5.2.2&5.2.3 acceptance standard:

1) 9 pieces of battery will be tested for each discharging method.
2) The average discharging time from each discharging method shall be equal to or greater than the specified figure, and no more than one battery has a service output less than 80% of the specified figure.
3) One retest is allowed to confirm the results if the first test didn't meet the requirements.

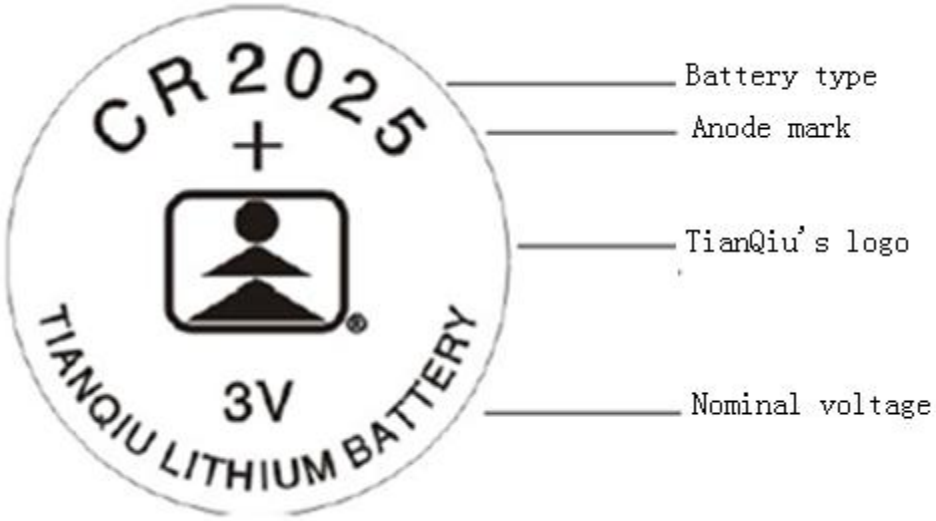
5.3 Expiration date

1 year storage in the conditions of GB/T 8897.1-2013, appendix E part

6. *Packing and marking*

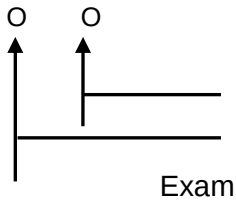
6.1Marking Design

Any specific design and packing requirements will be accommodated as required. But as a general, the following markings will be printed, stamped or impressed on the body of the battery:



6.2 date code

Manufacturing marks: the year and month of product shall be marked on the negative (-) terminal side.



Month of product（1 letter）

Year of product（the last number of Christian era）

Example：

69 (manufactured in September,2016)

6X (manufactured in October,2016)

6Y (manufactured in November,2016)

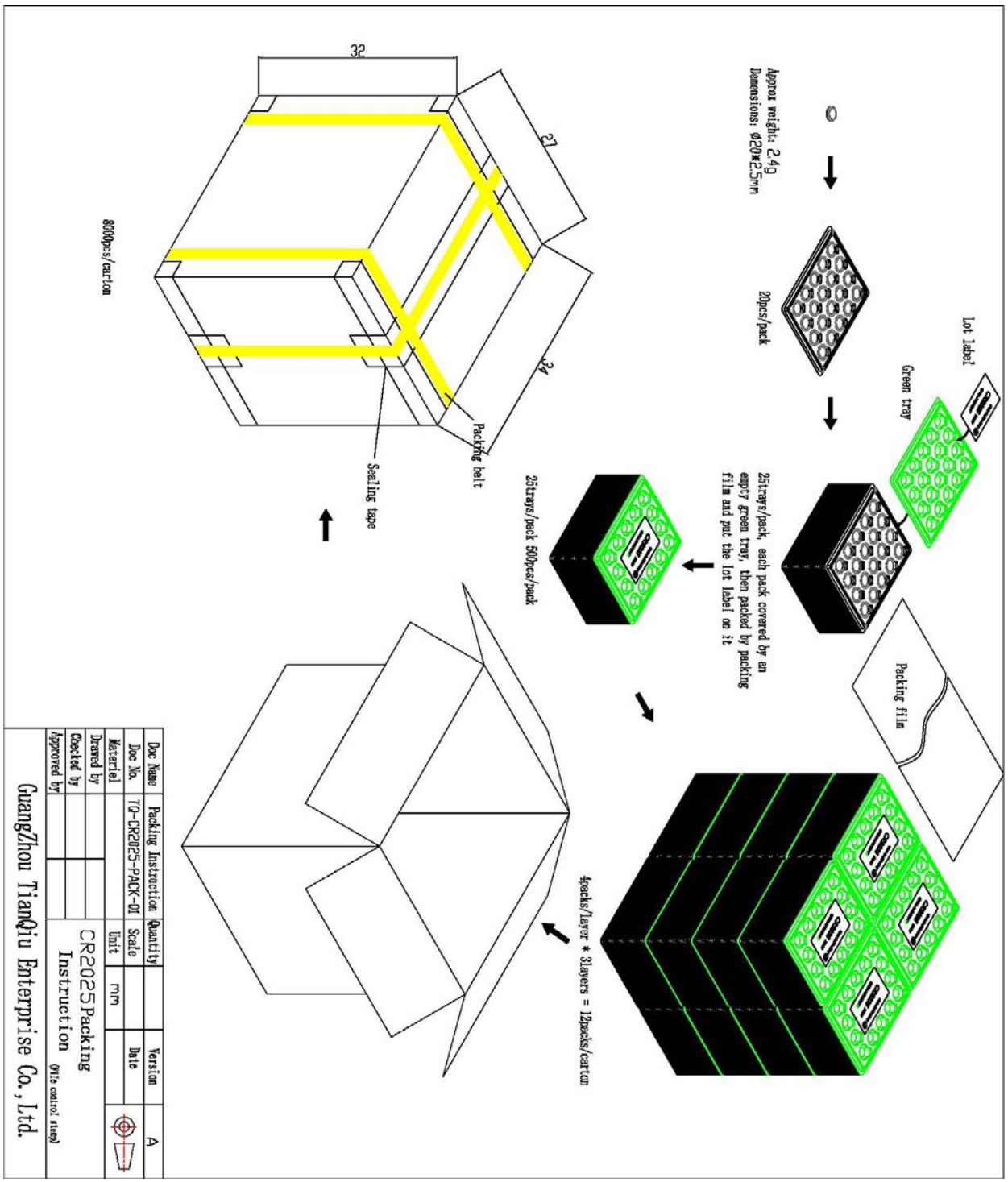
6Z (manufactured in December,2016)

Month of product：

January to September…… （1-9）

Oct, Nov, Dec……（X,Y,Z）

6.3 Packing Picture



7. *Caution for Use*

1) Since the battery is not designed to be charged, there are risks of electrolyte leakage or causing damage to the device if the battery is charged.
2) The battery shall be installed with its "+" and "-" polarity in correct position, otherwise may cause the battery to be charged or over-discharged.
3) Short-circuiting, heating, disposing of in fire and disassembling the battery are prohibited.
4) Battery cannot be forced discharge, which lead to excess internal gas generation and, may result in bulging, leakage and explosion.
5) New and used batteries cannot be mix used at the same time, when replaced batteries, it is recommend to replace all and with the same brand type.
6) Exhausted batteries should be removed from compartment to prevent over-discharge, which cause leakage and damage to the device.
7) Direct soldering is not allowed, which will damage the battery.
8) Keep the battery out of the reach of children to prevent swallow, in case of accident should contact physician at once.
9) The battery should not be dismantled and deformed.

caution:

- If a battery is leakage and materials contact eyes, flush immediately with running water for at least 15 minutes. Consult an ophthalmologist at once.
- If battery emits an odor, fever, discoloration, deformation or any abnormal phenomena appeared in the process of use/storage, removed the battery immediately from the device and dispose of the battery.

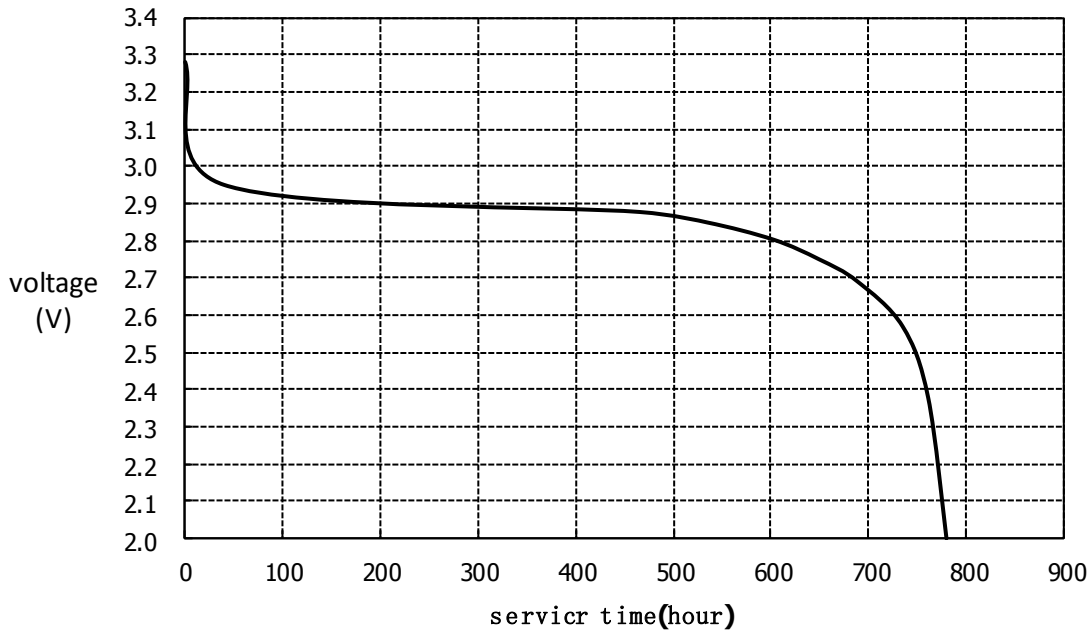
8. *Referenced Standards*

IEC 60086-1:2015 –Primary Batteries –Part 1: General

IEC 60086-2:2015–Primary Batteries –Part 2: Physical and electrical specifications

IEC 60086-4:2019 –Primary Batteries –Part 4: Safety of lithium batteries

9. *Discharge Curves*



Discharge method:15KΩ, 24 hours/day EV 2.0V
temperature of 20±2℃

SDS

SAFETY DATA SHEET

According to 2012 OSHA Hazard Communication Standard
(29 CFR 1910.1200)

Prepared For : DONG GUAN LIXUNG BATTERY TECHNOLOGY., LTD.
Xiao Bian Industrial Park, Zhenan East Road, Changan Town Dongguan, China

Prepared By : Shenzhen LCS Compliance Testing Laboratory Ltd.
101, 601, Xingyuan Industrial Park, Gushu Community, Xixiang Street, Bao'an District, Shenzhen, Guangdong, China

Issue Date : 2019.10.22

Report Number : LCS190930042ASD

Written by: Seven Liu **Approved by:**

** The SDS is prepared based on the information provided by client. The contents and formats of this SDS are revised as per client's request.*

Section 1- Identification

(a) Product identifier	
Product name	Alkaline Battery
(b) Other means of identification	
Product description	Model: LR03 SIZE AAA AM4 1.5V Nominal Voltage: 1.5V Weight: 11.0g
(c) Recommended use of the chemical and restrictions on use	
Recommended use	ALKALINE BATTERY
Uses advised against	No information available.
(d) Details of the supplier of the safety data sheet	
Supplier Name	DONG GUAN LIXUNG BATTERY TECHNOLOGY., LTD.
Supplier Address	Xiao Bian Industrial Park, Zhenan East Road, Changan Town Dongguan, China
Manufacture Company	DONG GUAN LIXUNG BATTERY TECHNOLOGY., LTD.
Manufacture Address	Xiao Bian Industrial Park, Zhenan East Road, Changan Town Dongguan, China
Supplier Phone Number	+86-769-38975657
(e) Emergency telephone number	
+86-769-38975657	

Section 2- Hazards Identification

(a) 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
Acute toxicity-Inhalation	Category 4
Skin corrosion/Irritation	Category 1
Serious eye damage/eye irritation	Category 2
Hazardous to the aquatic environment , long-term (Chronic)	Category 1

(b) GHS Label elements, including precautionary statements

Emergency Overview	
Signal word	Danger

Hazard Statements

Harmful if swallowed
Harmful if inhaled.
Causes severe skin burns and eye damage
Causes serious eye irritation.
Very toxic to aquatic life with long lasting effects.

Appearance: No information available **Physical State**: Solid **Odor**: No information available

P101	If medical advice is needed,,have product containet or label at hand
P261 P264 P270 P271 P260 P280 P273	Avoid breathing dust/fume/gas/mist/vapours/spray Wash ... thoroughly after handling Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area Do not breathe dust/fume/gas/mist/vapours/spray. Wear protective gloves/protective clothing/eye protection/face protection. Avoid release to the environment.
P301+P312 P330 P304+P340 P312 303+P361+P353 P363 P304+P340 P310 P305+P351+P338 P321 P391 P337+P313	IF SWALLOWED: Call a POISON CENTER/doctor/\u2026if you feel unwell. Rinse mouth. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor/\u2026if you feel unwell. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower]. Wash contaminated clothing before reuse. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor/\u2026 Specific treatment (see ... on this label). IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Collect spillage. If eye irritation persists: Get medical advice/attention
P405	Store locked up.
P501	Dispose of contents/container to ...

(c) Hazards not otherwise classified (HNOC)

Not applicable

(d) Unknown Toxicity

88.8 % of the mixture consists of ingredient(s) of unknown toxicity
11.5 % of the mixture consists of ingredient(s) of unknown acute oral toxicity
88.8 % of the mixture consists of ingredient(s) of unknown acute dermal toxicity
58.7 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (gas)
58.7 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (vapor)
58.7 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (dust/mist)

(e) Other information

Very toxic to aquatic life with long lasting effects.

(f) Interactions with Other Chemicals

No information available.

Section 3- Composition/Information On Ingredients

Chemical Name	CAS Number	EC#	Weight (%)
Zinc	7440-66-6	231-175-3	28.5
Manganese dioxide	1313-13-9	215-202-6	23.5
Water	7732-18-5	231-791-2	20.1
Carton black	1333-86-4	215-609-9	7.6
Zinc Chloride	7646-85-7	231-592-0	6.7
Ammonium Chloride	12125-02-9	235-186-4	5.6
Carbon	7440-44-0	231-153-3	5.5
Copper	7440-50-8	231-159-6	2.5

Section 4- First-aid Measures

Description of first aid measures

· **After inhalation:** Supply fresh air; consult doctor in case of complaints.
· **After skin contact:** Immediately rinse with water.
· **After eye contact:** Rinse opened eye for several minutes under running water. Then consult a doctor.
· **After swallowing:** If symptoms persist consult doctor.
· **Most important symptoms and effects, both acute and delayed** No further relevant information available.
· **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

Section 5- Fire-fighting measures

(a) Suitable Extinguishing Media

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

(b) Unsuitable extinguishing media

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

(c) 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.

(d) Hazardous Combustion Products

Carbon oxides.

(e) 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.

Section 6- Accidental Release Measures

(a) Personal precautions, protective equipment and emergency procedures

If the battery is released, remove personnel from area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. The preferred response is to leave the area and allow the vapors to dissipate. Avoid skin and eyes contact or inhalation of vapors. Remove spilled liquid with absorbent and incinerated. If leakage of the battery happens, liquid could be absorbed with sand, earth or other inert substance and contaminated area should be ventilated meantime.

(b) Environment precautions

Do not allow product to reach sewage system or any water source.
Inform respective authorities in case of seepage into water course or sewage system.
Do not allow to enter sewers/ surface or ground water.

(c) Methods and material for containment and cleaning up

If battery casing is dismantled, small amounts of electrolyte may leak. Collect all released material in a plastic lined container. Dispose off according to the local law and rules. Avoid leached substances to get into the earth, canalization or waters.

Section 7- Handling and Storage

(a) Precautions for safe handling

Handling

Handle in accordance with good industrial hygiene and safety practice. Wear personal protective equipment. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse.

(b) 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

Section 8- Exposure Controls/Personal Protection

(a) Control parameters

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
Zinc 7440-66-6	STEL: 10 mg/m ^{3} respirable fraction TWA: 2 mg/m ^{3} respirable fraction	TWA: 5 mg/m ^{3} fume TWA: 15 mg/m ^{3} total dust TWA: 5 mg/m ^{3} respirable fraction	IDLH: 500 mg/m ^{3} Ceiling: 15 mg/m ^{3} dust TWA: 5 mg/m ^{3} dust and fume STEL: 10 mg/m ^{3} fume

Chemical name	Alberta	British Columbia	Ontario TWAEV	Quebec
Manganese dioxide 1313-13-9	TWA: 0.2 mg/m ^{3}	TWA: 0.2 mg/m^3	TWA: 0.02 mg/m ^{3} TWA: 0.1 mg/m	TWA: 0.2 mg/m^3
Other Exposure Guidelines	Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962(11th Cir., 1992) .			

(b) Appropriate engineering controls

Engineering Measures	Showers Eyewash stations Ventilation systems

(c) Individual protection measures, such as personal protective equipment

Eye/Face Protection	Face protection shield.
Skin and body Protection	Wear protective gloves and protective clothing. Long sleeved clothing. Chemical resistant apron. 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. 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.

Section 9- Physical and Chemical Properties

Form	Solid
Color	No information available
Odor	No information available
pH	No information available
Melting point/freezing point	No information available

Boiling Point and Boiling range	Not Available
Flash Point	Not Available
Upper/lower flammability or explosive limits	Not Available
Vapor Pressure	Not Available
Vapor Density	Not Available
Relative density	Not Available
Solubility in Water	Not Available
Auto-ignition temperature	Not Available
Decomposition temperature	Not Available
Evaporation rate	Not Available
Flammability (soil, gas)	Not Available
Viscosity	Not Available

Section 10- Stability and reactivity

Reactivity	No information available.
Chemical stability	Stable under normal conditions.
Possibility of Hazardous Reactions	None under normal processing.
Hazardous Polymerization	Hazardous polymerization does not occur.
Conditions to avoid	Exposure to air or moisture over prolonged periods. Excessive heat.
Incompatible materials	Acids. Bases. Oxidizing agent.
Hazardous Decomposition Products	Carbon oxides.

Section 11 – Toxicological Information

Product Information	Product does not present an acute toxicity hazard based on known or supplied information In case of rupture:
Irritation	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. Harmful by inhalation.
Eye contact	Specific test data for the substance or mixture is not available. Causes burns. (based on components). Corrosive to the eyes and may cause severe damage including blindness. Causes serious eye damage. May cause irreversible damage to eyes.
Skin contact	Specific test data for the substance or mixture is not available. Corrosive. (based on components). Causes burns.
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.
Information on toxicological effects	
Symptoms	Redness. Burning. May cause blindness. Coughing and/ or wheezing.
Numerical measures of toxicity	
Acute Toxicity The following values are calculated based on chapter 3.1 of the GHS document . ATEmix (oral) 749.00 mg/kg ATEmix (inhalation-gas) 6,174.00 mg/L ATEmix (inhalation-dust/mist) 2.06 mg/L ATEmix (inhalation-vapor) 15.09 mg/L	
Unknown acute toxicity 88.8 % of the mixture consists of ingredient(s) of unknown toxicity 11.5 % of the mixture consists of ingredient(s) of unknown acute oral toxicity 88.8 % of the mixture consists of ingredient(s) of unknown acute dermal toxicity 58.7 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (gas) 58.7 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (vapor) 58.7 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (dust/mist)	

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Manganese dioxide 1313-13-9	= 9000 mg/kg (Rat)	-	-

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

Skin corrosion/irritation	Classification based on data available for ingredients. Causes burns.
Serious eye damage/eye irritation	Classification based on data available for ingredients. Risk of serious damage to eyes. Causes burns.
Respiratory or skin sensitization	No information available.
Germ cell mutagenicity	No information available.
Carcinogenicity	No information available.
Reproductive toxicity	No information available.
STOT - single exposure	No information available.
STOT - repeated exposure	No information available.
Aspiration hazard	No information available.

Section 12- Ecological Information

Ecological Toxicity	Very toxic to aquatic life with long lasting effects.

Chemical name	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Daphnia Magna (Water Flea)
Zinc 7440-66-6	96h EC50: 0.11 - 0.271 mg/L (Pseudokirchneriella subcapitata) 72h EC50: 0.09 - 0.125 mg/L (Pseudokirchneriella subcapitata)	96h LC50: = 3.5 mg/L (Lepomis macrochirus) 96h LC50: = 7.8 mg/L (Cyprinus carpio) 96h LC50: = 0.24 mg/L (Oncorhynchus mykiss) 96h LC50: = 0.59 mg/L (Oncorhynchus mykiss) 96h LC50: = 0.41 mg/L (Oncorhynchus mykiss) 96h LC50: 0.211 - 0.269 mg/L (Pimephales promelas) 96h LC50: = 2.66 mg/L (Pimephales promelas) 96h LC50: = 30 mg/L (Cyprinus carpio) 96h LC50: = 0.45 mg/L (Cyprinus carpio) 96h LC50: 2.16 - 3.05 mg/L (Pimephales promelas)	-	48h EC50: 0.139 - 0.908 mg/L

Persistence and Degradability	No information available.

Bioaccumulation	
Chemical name	**Log Pow**
Manganese dioxide 1313-13-9	<0

Section 13- Disposal Considerations

Waste treatment methods	
Waste from residues/unused products	Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.
Contaminated packaging	Do not reuse empty containers.

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**
Zinc 7440-66-6	Ignitable powder Toxic

Section 14 – Transport Information

DOT Proper Shipping Name Hazard Class	NOT REGULATED NOT REGULATED N/A
TDG	NOT REGULATED
MEX	NOT REGULATED
ICAO	NOT REGULATED
IATA Proper Shipping Name Hazard Class	NOT REGULATED NON REGULATED N/A
IMDG/IMO Hazard Class Marine Pollutant	NOT REGULATED N/A Product is a marine pollutant according to the criteria set by IMDG/IMO
RID	NOT REGULATED
ADR	NOT REGULATED

ADN	NOT REGULATED

Section 15- Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture

International Regulations

Ozone-depleting substances (ODS) Not applicable

Persistent Organic Pollutants Not applicable

Export Notification requirements Not applicable

International Inventories

TSCA Contact supplier for inventory compliance status.

DSL/NDSL Contact supplier for inventory compliance status.

EINECS/ELINCS Contact supplier for inventory compliance status.

ENCS Contact supplier for inventory compliance status.

KECL Contact supplier for inventory compliance status.

PICCS Contact supplier for inventory compliance status.

AICS Contact supplier for inventory compliance status.

Legend

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

ENCS - Japan Existing and New Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

AICS - Australian Inventory of Chemical Substances

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	30.1	1.0
Zinc - 7440-66-6	7440-66-6	8.2	1.0

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
Manganese dioxide 1313-13-9	1000 lb			X
Zinc 7440-66-6		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
Manganese dioxide 1313-13-9	1000 lb		RQ 1000 lb final RQ RQ 454 kg final RQ
Zinc 7440-66-6	1000 lb		RQ 454 kg final RQ RQ 1000 lb final RQ

US State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals.

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
Zinc 7440-66-6	X	X	X	X	

Section 16- Other Information

NFPA	**Health hazards 1**	**Flammability 0**	**Instability 0**	**Physical and Chemical Properties -**
HMIS	**Health hazards 0**	**Flammability 0**	**Physical hazards 0**	**Personal Protection X**

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******

SAFETY DATA SHEET

Issuing Date No data available **Revision Date** 10-Apr-2020 **Revision Number** 2

NGHS / English

1. IDENTIFICATION

Product identifier

Product Name Omnergy CR Type Lithium Coin Cell

Other means of identification

Product Code(s) 1199222

Recommended use of the chemical and restrictions on use

Recommended Use Lithium Primary/Metal Batteries

Restrictions on use No information available

Details of the supplier of the safety data sheet

Supplier Identification Power Glory Tech (Shenzhen) Co., Ltd.

Address

Dong Keng Industial Zone, Dong Keng Village,
Gongming Town
Shenzhen
NA
NA
CN

Telephone

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

E-mail jerry@omnergy.com.hk

Emergency telephone number

Company Emergency Phone Number +852 6093-2825

2. HAZARDS IDENTIFICATION

Classification

Acute toxicity - Oral	Category 4
Acute toxicity - Inhalation (Vapors)	Category 4
Acute toxicity - Inhalation (Dusts/Mists)	Category 4
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2A

Reproductive toxicity	Category 1A

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

Appearance Solid **Physical state** Solid **Odor** None

GHS Label elements, including precautionary statements

Danger

Hazard statements
Harmful if swallowed
Harmful if inhaled
Causes skin irritation
Causes serious eye irritation
May damage fertility or the unborn child

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
Avoid breathing dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area

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
If skin irritation occurs: Get medical advice/attention
Take off contaminated clothing and wash before reuse

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

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

Precautionary Statements - Storage
Store locked up

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Other information

Unknown acute toxicity 94.7 % of the mixture consists of ingredient(s) of unknown toxicity
55.4 % of the mixture consists of ingredient(s) of unknown acute oral toxicity
94.7 % of the mixture consists of ingredient(s) of unknown acute dermal toxicity

61.5 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (gas)
61.5 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (vapor)
61.5 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (dust/mist)

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance

Not applicable.

Mixture

Chemical name	CAS-No	Percent	Hazardous Material Information Review Act registry number (HMIRA registry #)	Date HMIRA filed and date exemption granted (if applicable)
Supplier Trade Secret	-	20 - 30%	-	-
Supplier Trade Secret	-	0 - 10%	-	-
Supplier Trade Secret	-	0 - 10%	-	-
Supplier Trade Secret	-	0 - 10%	-	-
Supplier Trade Secret	-	0 - 10%	-	-

4. FIRST AID MEASURES

First aid measures

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

Inhalation Remove to fresh air. Get medical attention immediately if symptoms occur. If breathing has stopped, give artificial respiration. Get medical attention immediately. If symptoms persist, call a physician.

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. Get medical attention if irritation develops and persists.

Skin contact Wash off immediately with soap and plenty of water for at least 15 minutes. Get medical attention if irritation develops and persists.

Ingestion Do NOT induce vomiting. Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Get medical attention.

Self-protection of the first aider Avoid contact with skin, eyes or clothing. Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Avoid breathing dust/fume/gas/mist/vapors/spray. Use personal protective equipment as required. See section 8 for more information.

Most important symptoms and effects, both acute and delayed

Symptoms Burning sensation. Coughing and/ or wheezing. Difficulty in breathing.

Indication of any immediate medical attention and special treatment needed

Note to physicians 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

No information available.

Hazardous Combustion Products

Carbon oxides.

Explosion Data

Sensitivity to Mechanical Impact None.

Sensitivity to Static Discharge None.

Special protective equipment for fire-fighters

Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

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. Avoid generation of dust. Do not breathe dust.

Other Information

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

Advice on safe 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. Remove contaminated clothing and shoes. Take off contaminated clothing and wash before reuse. Avoid breathing dust/fume/gas/mist/vapors/spray. Avoid generation of dust. Ensure adequate ventilation.

Conditions for safe storage, including any incompatibilities

Storage Conditions

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

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Limits .

Chemical name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Supplier Trade Secret	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

Supplier Trade Secret	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

Chemical name	Alberta	British Columbia	Ontario TWAEV	Quebec
Supplier Trade Secret	TWA: 0.2 mg/m^3	TWA: 0.2 mg/m^3	TWA: 0.02 mg/m^3 TWA: 0.1 mg/m^3	TWA: 0.2 mg/m^3
Supplier Trade Secret			TWA: 5 ppm TWA: 18 mg/m^3 Skin	
Supplier Trade Secret	TWA: 2 mg/m^3	TWA: 2 mg/m^3	TWA: 2 mg/m^3	TWA: 2 mg/m^3

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 controls 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.

Hand protection Wear suitable gloves. Impervious gloves.

Skin and body protection Wear suitable protective clothing. Long sleeved clothing.

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.

General hygiene considerations Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Wash hands before breaks and immediately after handling the product. Wear suitable gloves and eye/face protection. Avoid contact with skin, eyes or clothing. Avoid breathing dust/fume/gas/mist/vapors/spray.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical and Chemical Properties

Physical state Solid

Appearance Solid

Odor None

Color No information available

Odor Threshold Not applicable

Property	Values	Remarks Method
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		None known
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
Relative density	No data available	None known
Water Solubility	Insoluble	
Solubility(ies)	No data available	None known
Partition coefficient: n-octanol/water	NA	
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

Other Information

Explosive properties	No information available
Oxidizing properties	No information available
Softening Point	No information available
Molecular Weight	No information available
VOC Content (%)	No information available
Liquid Density	No information available
Bulk Density	No information available
Particle Size	No information available
Particle Size Distribution	No information available

10. STABILITY AND REACTIVITY

Reactivity	No information available.
Chemical stability	Stable under normal 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 bases. Strong oxidizing agents.
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. Harmful by inhalation. (based on components).

Eye contact Specific test data for the substance or mixture is not available. Causes serious eye irritation. (based on components). Irritating to eyes.

Skin contact Specific test data for the substance or mixture is not available. Causes skin irritation. (based on components).

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

Information on toxicological effects

Symptoms Redness. May cause redness and tearing of the eyes. Coughing and/ or wheezing.

Numerical measures of toxicity

Acute Toxicity

The following values are calculated based on chapter 3.1 of the GHS document .

ATEmix (oral) 701.00 mg/kg
ATEmix (inhalation-gas) 5,218.00 mg/L
ATEmix (inhalation-dust/mist) 1.74 mg/L
ATEmix (inhalation-vapor) 12.76 mg/L

Unknown acute toxicity 94.7 % of the mixture consists of ingredient(s) of unknown toxicity

55.4 % of the mixture consists of ingredient(s) of unknown acute oral toxicity
94.7 % of the mixture consists of ingredient(s) of unknown acute dermal toxicity
61.5 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (gas)
61.5 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (vapor)
61.5 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (dust/mist)

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Supplier Trade Secret	= 9000 mg/kg (Rat)	-	-
Supplier Trade Secret	= 29000 mg/kg (Rat)	> 20 mL/kg (Rabbit)	-
Supplier Trade Secret	= 775 mg/kg (Rat)	-	-

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

Skin corrosion/irritation Classification based on data available for ingredients. Irritating to skin.

Serious eye damage/eye irritation Classification based on data available for ingredients. Irritating to eyes.

Respiratory or skin sensitization No information available.

Germ cell mutagenicity No information available. **Carcinogenicity** No information available.

Reproductive toxicity Classification based on data available for ingredients. Contains a known or suspected reproductive toxin.

STOT - single exposure No information available.

STOT - repeated exposure No information available.

Aspiration hazard No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity The environmental impact of this product has not been fully investigated.

Chemical name	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Daphnia Magna (Water Flea)

Supplier Trade Secret	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
Supplier Trade Secret	<0
Supplier Trade Secret	0.48

Mobility No information available.

Other adverse effects No information available.

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Waste from residues/unused products Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

Contaminated packaging Do not reuse empty containers.

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
Supplier Trade Secret	Corrosive Ignitable Reactive

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

Emergency Response Guide Number 138

TDG Not regulated

MEX Not regulated

ICAO Not regulated

IATA Not regulated
- **Proper Shipping Name** NON REGULATED
- **Hazard Class** N/A
- **ERG Code** 9FZ

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
- **Tunnel restriction code** (E)

ADN Not regulated

15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

International Regulations

Ozone-depleting substances (ODS) Not applicable

Persistent Organic Pollutants Not applicable

Export Notification requirements Not applicable

International Inventories

TSCA	Contact supplier for inventory compliance status.
DSL/NDSL	Contact supplier for inventory compliance status.
EINECS/ELINCS	Contact supplier for inventory compliance status.
ENCS	Contact supplier for inventory compliance status.
KECL	Contact supplier for inventory compliance status.
PICCS	Contact supplier for inventory compliance status.
AICS	Contact supplier for inventory compliance status.

Legend

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

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 %

Supplier Trade Secret -		20 - 30%	1.0
Supplier Trade Secret -		0 - 10%	1.0

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 does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

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 does not contain any Proposition 65 chemicals.

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
Supplier Trade Secret	X		X	X	X
Supplier Trade Secret	X	X	X	X	X
Supplier Trade Secret	X	X	X		
Supplier Trade Secret	X	X	X		

16. OTHER INFORMATION

NFPA	**Health hazards** 1	**Flammability** 0	**Instability** 0	**Physical and Chemical Properties** -
HMIS	**Health hazards** 0	**Flammability** 0	**Physical hazards** 0	**Personal Protection** X

Prepared By

Product Stewardship
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Latham, NY 12110 1-800-572-6501

Revision Date 10-Apr-2020 (Revised by Power Glory)

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