



Light Pen

J-B Weld Company LLC

Version No: 1.3.4.1

Safety Data Sheet according to OSHA HazCom Standard (2012) requirements

Issue Date: 05/26/2021

Print Date: 05/26/2021

S.GHS.USA.EN

SECTION 1 Identification

Product Identifier

Product name	Light Pen
Synonyms	33301 SuperWeld Light Activated Glue
Other means of identification	Not Available

Recommended use of the chemical and restrictions on use

Relevant identified uses	Use according to manufacturer's directions.
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Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party

Registered company name	J-B Weld Company LLC
Address	400 CMH Road Sulphur Springs TX 75482 United States
Telephone	903-885-7696
Fax	Not Available
Website	WWW.JBWeld.com
Email	info@JBWeld.com

Emergency phone number

Association / Organisation	InfoTrac
Emergency telephone numbers	Transportation Emergencies: 800-535-5053 or (24 hours)
Other emergency telephone numbers	Poison Control Centers: Medical Emergencies 800-222-1222 (24 hours)

SECTION 2 Hazard(s) identification

Classification of the substance or mixture

Classification	Not Applicable
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Label elements

Hazard pictogram(s)	Not Applicable
Signal word	Not Applicable

Hazard statement(s)

Not Applicable

Hazard(s) not otherwise classified

Not Applicable

Supplementary statement(s)

Not Applicable

Precautionary statement(s) Prevention

Not Applicable

Precautionary statement(s) Response

Not Applicable

Precautionary statement(s) Storage

Not Applicable

Precautionary statement(s) Disposal

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Not Applicable

SECTION 3 Composition / information on ingredients**Substances**

Not a dangerous substance or mixture according to OSHA 29 CFR 1910.1200.

SECTION 4 First-aid measures**Description of first aid measures**

Eye Contact	Eyelid Adhesion Do not force eyes or any bonded skin apart. Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Hold eyelids apart and consult an physician.
Skin Contact	Do not pull bonded skin apart. Wash off immediately with soap and plenty of water. If skin irritation persists, call a physician. ▶ Prevent skin contact.
Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
Ingestion	If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.

Most important symptoms and effects, both acute and delayed

See Section 11

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

Cyanoacrylate. Danger. Bonds skin and eyes in seconds. Keep out of the reach of children.

Treat symptomatically.

Skin which is glued or stuck together by accident should never be surgically removed. Even without any special treatment, it is only a matter of time until cyanoacrylate glues come off one's skin, eyes, or mouth, due to the effect of skin moisture, sweat, tears, or saliva. The effect can be supported by water and soap and/or use of fatty protective skin lotion or oil.

SECTION 5 Fire-fighting measures**Extinguishing media**

Carbon dioxide (CO2). Extinguishing powder. Water spray or fog. Alcohol resistant foam.

Special hazards arising from the substrate or mixture

Fire Incompatibility	▶ Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result
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Special protective equipment and precautions for fire-fighters

Fire Fighting	▶ Alert Fire Department and tell them location and nature of hazard. Special protective actions for fire-fighters As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.
Fire/Explosion Hazard	Specific hazards arising from the chemical Thermal decomposition can lead to release of toxic/corrosive gases and vapors. Carbon monoxide. Carbon dioxide (CO2). Nitrogen oxides (NOx). Hazardous combustion products: Carbon monoxide. Carbon dioxide (CO2). Hydrogen cyanide.

SECTION 6 Accidental release measures**Personal precautions, protective equipment and emergency procedures**

Use personal protection equipment. Ensure adequate ventilation, especially in confined areas. Do not get in eyes, on skin, or on clothing.

Environmental precautions

Prevent entry into waterways, sewers, basements or confined areas. Do not allow to enter into soil/subsoil. Dispose of material with no release to water. See Section 12 for additional Ecological Information.

Methods and material for containment and cleaning up

Spills	Contain and collect spillage with non-combustible absorbent material, (e.g. sand, earth,
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diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see Section 13). Use personal protective equipment as required. Flush area with flooding quantities of water. Polymerization can occur. Allow material to fully cure. Excess material should be mechanically scraped and disposed of in designated waste containers. Prevent product from entering drains.

Personal Protective Equipment advice is contained in Section 8 of the SDS.

SECTION 7 Handling and storage

Precautions for safe handling

Safe handling	Use personal protective equipment as required. Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Do not breathe dust/fume/gas/mist/vapors/spray. Ensure adequate ventilation, especially in confined areas. Reacts with water. Avoid contact with skin, eyes or clothing. Wash thoroughly after handling. ▶ DO NOT allow clothing wet with material to stay in contact with skin
Other information	▶ Store below 38 deg. C. ▶ Store in original containers. ▶ Keep containers securely sealed.

Conditions for safe storage, including any incompatibilities

Suitable container	Keep container tightly closed in a cool, well-ventilated place. Keep/store only in original container. Keep out of reach of children. Protect from direct contact with water or excessive moisture. Reacts with water. Keep from freezing.
Storage incompatibility	For cyanoacrylates: ▶ Avoid contact with acids, bases, amines. ▶ Avoid contact with clothes, fabric, rags (especially cotton and wool) rubber or paper; contact may cause polymerisation. ▶ Segregate from alcohol, water. ▶ Avoid reaction with oxidising agents

SECTION 8 Exposure controls / personal protection

Control parameters

Occupational Exposure Limits (OEL)

INGREDIENT DATA

This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

Exposure controls

Appropriate engineering controls	Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.
Personal protection	
Eye and face protection	▶ Safety glasses with side shields. ▶ Chemical goggles.
Skin protection	See Hand protection below
Hands/feet protection	▶ Wear chemical protective gloves, e.g. PVC. ▶ Wear safety footwear or safety gumboots, e.g. Rubber The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application. ▶ Polyethylene gloves Avoid contact with moisture.
Body protection	See Other protection below
Other protection	▶ Overalls. ▶ P.V.C apron.

Respiratory protection

Type A Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

SECTION 9 Physical and chemical properties

Information on basic physical and chemical properties

Continued...

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Appearance	Clear Liquid		
Physical state	Liquid	Relative density (Water = 1)	1.10-1.20
Odor	Not Available	Partition coefficient n-octanol / water	Not Available
Odour threshold	Not Available	Auto-ignition temperature (°C)	123
pH (as supplied)	Not Available	Decomposition temperature	Not Available
Melting point / freezing point (°C)	Not Available	Viscosity (cSt)	Not Available
Initial boiling point and boiling range (°C)	209	Molecular weight (g/mol)	Not Available
Flash point (°C)	123		
Evaporation rate	Not Available	Explosive properties	Not Available
Flammability	Not Applicable	Oxidising properties	Not Available
Upper Explosive Limit (%)	Not Available	Surface Tension (dyn/cm or mN/m)	Not Available
Lower Explosive Limit (%)	Not Available	Volatile Component (%vol)	Not Available
Vapour pressure (kPa)	Not Available	Gas group	Not Available
Solubility in water	Immiscible	pH as a solution (1%)	Not Available
Vapour density (Air = 1)	Not Available	VOC g/L	23

SECTION 10 Stability and reactivity

Reactivity	Product cures with moisture.
Chemical stability	Polymerization can occur. Do not expose to temperatures exceeding 25 °C/77 °F.
Possibility of hazardous reactions	Exothermic reaction with. Water. Amines. Alcohols. Hazardous polymerization: Hazardous polymerization may occur.
Conditions to avoid	Keep from any possible contact with water. Reacts with water.
Incompatible materials	Exothermic reaction with. Water. Strong oxidizing agents. Alkali. Amines.
Hazardous decomposition products	None under normal use conditions.

SECTION 11 Toxicological information

Information on toxicological effects

Inhaled	Based on available data, the classification criteria are not met.
Ingestion	Based on available data, the classification criteria are not met.
Skin Contact	Bonds skin and eyes in seconds.
Eye	Bonds skin and eyes in seconds.
Chronic	Symptoms No information available. Skin corrosion/irritation No information available. Serious eye damage/eye irritation No information available. Irritation No information available. Corrosivity No information available. Sensitization No information available. Germ cell mutagenicity No information available. Reproductive toxicity No information available. Developmental toxicity No information available. Teratogenicity No information available. STOT - single exposure No information available. STOT - repeated exposure No information available. Chronic Toxicity No information available. Target organ effects Skin, Eyes. Aspiration hazard Not applicable. Carcinogenicity This product does not contain any carcinogens or potential carcinogens as listed by ACGIH, OSHA, IARC or NTP at or above 0.1 wt%.

SECTION 12 Ecological information

Toxicity

Persistence and degradability

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Ingredient	Persistence: Water/Soil	Persistence: Air
	No Data available for all ingredients	No Data available for all ingredients

Bioaccumulative potential

Ingredient	Bioaccumulation
	No Data available for all ingredients

Mobility in soil

Ingredient	Mobility
	No Data available for all ingredients

SECTION 13 Disposal considerations

Waste treatment methods

Product / Packaging disposal	Disposal of Wastes It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Cured material can be disposed of via incineration or landfill. Uncured material should be disposed of via incineration. Dispose of material with no release to water. Contaminated packaging Dispose of in accordance with federal, state and local regulations
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SECTION 14 Transport information

Land transport (ADG): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Air transport (ICAO-IATA / DGR):

UN number UN3334
Proper Shipping Name Aviation regulated liquid, n.o.s.
Transport hazard class(es) 9
Packing group III
ERG Code 9A
Special Provisions A27
Description UN3334, Aviation regulated liquid, n.o.s.(2-Propenoic acid, 2-cyano-, 2-methoxyethyl ester), 9, III

Sea transport (IMDG-Code / GGVSee): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Not Applicable

SECTION 15 Regulatory information

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

methoxyethyl cyanoacrylate is found on the following regulatory lists	
US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory	US TSCA Chemical Substance Inventory - Interim List of Active Substances

Federal Regulations

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Section 311/312 hazard categories	
Flammable (Gases, Aerosols, Liquids, or Solids)	No
Gas under pressure	No
Explosive	No
Self-heating	No
Pyrophoric (Liquid or Solid)	No
Pyrophoric Gas	No
Corrosive to metal	No
Oxidizer (Liquid, Solid or Gas)	No
Organic Peroxide	No
Self-reactive	No
In contact with water emits flammable gas	No
Combustible Dust	No
Carcinogenicity	No
Acute toxicity (any route of exposure)	No
Reproductive toxicity	No
Skin Corrosion or Irritation	No

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Respiratory or Skin Sensitization	No
Serious eye damage or eye irritation	No
Specific target organ toxicity (single or repeated exposure)	No
Aspiration Hazard	No
Germ cell mutagenicity	No
Simple Asphyxiant	No
Hazards Not Otherwise Classified	No

US. EPA CERCLA Hazardous Substances and Reportable Quantities (40 CFR 302.4)

None Reported

State Regulations**US. California Proposition 65**

None Reported

National Inventory Status

National Inventory	Status
Australia - AIIC / Australia Non-Industrial Use	Yes
Canada - DSL	Yes
Canada - NDSL	No (methoxyethyl cyanoacrylate)
China - IECSC	Yes
Europe - EINEC / ELINCS / NLP	Yes
Japan - ENCS	No (methoxyethyl cyanoacrylate)
Korea - KECI	No (methoxyethyl cyanoacrylate)
New Zealand - NZIoC	Yes
Philippines - PICCS	Yes
USA - TSCA	Yes
Taiwan - TCSI	Yes
Mexico - INSQ	No (methoxyethyl cyanoacrylate)
Vietnam - NCI	Yes
Russia - FBEPH	No (methoxyethyl cyanoacrylate)

SECTION 16 Other information

Revision Date	05/26/2021
Initial Date	05/25/2021

SDS Version Summary

Version	Date of Update	Sections Updated
0.0.3.1	05/10/2021	Regulation Change
0.0.4.1	05/24/2021	Regulation Change

Other information

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings.

LITHIUM MANGANESE BUTTON CELL CR2016

Safety Data Sheet

This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200

Date of issue: 22/08/2019

Revision date: 22/08/2019

Version: 1.0

SECTION 1: Identification

1.1. Identification

Product form : Article
Trade name : LITHIUM MANGANESE BUTTON CELL CR2016
Other means of identification : Voltage : 3V
Lithium Weight: 0.021g
Battery Weight: 1.8g

1.2. Recommended use and restrictions on use

Main use category : Power supply.
Restrictions on use : No information available.

1.3. Supplier

Supplier : CHANGZHOU JINTAN CHAOCHUANG BATTERY CO., LTD.
Address : Rm.13A10-11,Baoyuan Huafeng Headquarter Economy Building,Xiyang Rd.Bao'an District,Shenzhen,China.
Postal Code : 511483
Tel. : +86-755-27597836
Fax : +86-755-29369623
E-mail : boss@chaochuang.com

1.4. Emergency telephone number

+86-13510093096

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS-US classification

The batteries are not hazardous when used according to the instructions of manufacturer under normal conditions. In case of abuse, there's risk of rupture, fire, heat, leakage of internal components, which could cause casualty loss.

In the case of rupture, the following hazards may expose:

Skin corrosion/irritation, Category 2

Serious eye damage/eye irritation, Category 2

Reproductive toxicity, Category 1B

2.2. GHS Label elements, including precautionary statements

GHS-US labeling

Hazard pictograms (GHS US) :



Signal word (GHS US) : Danger

Hazard statements (GHS US) : Causes skin irritation.
Causes serious eye irritation.
May damage fertility or the unborn child.

Precautionary statements (GHS US) : Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Wash hands, forearms and face thoroughly after handling.
Wear protective gloves/protective clothing/eye protection/face protection.
If on skin: Wash with plenty of water/...
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If exposed or concerned: Get medical advice/attention.
If skin irritation occurs: Get medical advice/attention.
If eye irritation persists: Get medical advice/attention.
Take off contaminated clothing and wash it before reuse.

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Store locked up.

Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation

2.3. Other hazards which do not result in classification

This product should not present a health hazard when used under reasonable conditions. If contact with the internal components of the battery may be irritating to skin, eyes and mucous membranes. Fire will produce irritating, corrosive and/or toxic gases. May damage fertility or the unborn child.

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%
Stainless steel	(CAS-No.) 12597-68-1	71.604
Manganese oxide (MnO ₂)	(CAS-No.) 1313-13-9	18.192
Polypropylene	(CAS-No.) 9003-07-0	2.39
Propylene carbonate	(CAS-No.) 108-32-7	2.047
Ethylene glycol dimethyl ether	(CAS-No.) 110-71-4	1.545
Lithium	(CAS-No.) 7439-93-2	1.224
Polytetrafluoroethylene	(CAS-No.) 9002-84-0	1.114
Graphite	(CAS-No.) 7782-42-5	1.114
Perchloric acid, lithium salt	(CAS-No.) 7791-03-9	0.77

Full text of hazard classes and H-statements : see section 16

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures general	: No hazards which require special first aid measures. If you feel unwell, seek medical advice (show directions for use or safety data sheet if possible).
First-aid measures after inhalation	: There will be no dangerous during normal use. But breathe in a large number of batteries, or heat released from the gas, it will stimulate the respiratory tract and eyes. Remove to fresh air immediately. Get medical treatment immediately
First-aid measures after skin contact	: There will be no dangerous during normal use. But contacting battery electrolyte, may cause severe irritation or burns.
First-aid measures after eye contact	: There will be no dangerous during normal use. But contacting battery electrolyte can burn the eyes. Flush the eyes with plenty of clean water for at least 15 minutes immediately, without rubbing. Get immediate medical treatment. If appropriate procedures are not taken, this may cause eye injury.
First-aid measures after ingestion	: Ingestion of internal chemical materials may cause mouth, throat and intestinal irritation and damage. Rinse mouth Get medical attention Never give anything by mouth to an unconscious person

4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects	: This product should not present a health hazard when used under reasonable conditions. If contact with the internal components of the battery may be irritating to skin, eyes and mucous membranes. May damage fertility or the unborn child.
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4.3. Immediate medical attention and special treatment, if necessary

Treat symptomatically.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media	: Carbon dioxide, dry chemical, or foam
Unsuitable extinguishing media	: No information available.

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5.2. Specific hazards arising from the chemical

- Fire hazard : Battery can be overheated by an external source or by internal shorting and develop metal hydroxide mist.
Toxic vapor may release in case of fire.
Containers may explode when heated.
Fire fighting water runoff and dilution water may be toxic and corrosive and may cause adverse environmental impacts.
Since vapour, generated from burning batteries may make eyes, nose and throat irritates, be sure to extinguish the fire on the windward side. Wear the respiratory protection equipment in some cases.
Exposure to the ingredients contained within the battery pack could be harmful under some circumstances.
- Toxic vapor may release in case of fire. : Thermal decomposition can lead to release of irritating and toxic gases and vapors

5.3. Special protective equipment and precautions for fire-fighters

- Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.
- Other information : Evacuate personnel to a safe area. Ensure adequate ventilation, especially in confined areas. Eliminate every possible source of ignition. Move containers from fire area if it can be done without personal risk. Cool tanks/drums with water spray/remove them into safety. Stay upwind/keep distance from source.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

- Emergency procedures : No open flames, no sparks, and no smoking. Avoid contact with skin, eyes and clothing. Do not breathe dust/fume/gas/mist/vapors/spray.

6.1.2. For emergency responders

- Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".
- Emergency procedures : Stop leak if safe to do so. Evacuate personnel to a safe area. Ensure adequate ventilation, especially in confined areas.

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

- For containment : Collect spillage. Move containers from fire area if it can be done without personal risk. Contain large spillage with sand or earth.
- Methods for cleaning up : Take up liquid spill into absorbent material. Clean up any spills as soon as possible, using an absorbent material to collect it. Notify authorities if product enters sewers or public waters.
- Other information : Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : When packing the batteries, do not allow battery terminals to contact each other, or contact with other metals.
Be sure to pack batteries by providing partitions in the packaging box, or in a separate plastic bag so that the single batteries are not mixed together.
Use strong material for packaging boxes so that they will not be damaged by vibration, impact, dropping and stacking during their transportation.
Do not short-circuit, recharge, deform, throw into fire or disassemble.
Do not mix different type of batteries.
Do not solder directly onto batteries.
Insert the battery correctly in electrical equipment.
- Hygiene measures : Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

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7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store in a cool and dry area, but prevent condensation on cell or battery terminals.
High temperature may damage the performance of the battery.
Protect from physical damage and short circuits.
To avoid risk of fire or explosion, keep sparks and other sources of ignition away from the battery.
Do not allow metal objects to simultaneously contact both positive and negative terminal of batteries.
Do not stack battery directly on another battery.
Do not store batteries on electrically conductive surfaces.
Keep containers tightly closed in a dry, cool and well-ventilated place (-20 - 45 °C, humidity: 45-75%)
Keep locked up and out of reach of children
Keep away from food, drink and animal feeding stuffs
Store in accordance with local regulations

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Stainless steel (12597-68-1)		
Not applicable		
Polypropylene (9003-07-0)		
Not applicable		
Manganese oxide (MnO₂) (1313-13-9)		
Not applicable		
Lithium (7439-93-2)		
Not applicable		
Perchloric acid, lithium salt (7791-03-9)		
Not applicable		
Polytetrafluoroethylene (9002-84-0)		
Not applicable		
Graphite (7782-42-5)		
ACGIH	ACGIH TWA (mg/m ³)	2 mg/m ³ (all forms except graphite fibers-respirable particulate matter)
OSHA	OSHA PEL (TWA) (mg/m ³)	15 mg/m ³ (synthetic-total dust) 5 mg/m ³ (synthetic-respirable fraction)
IDLH	US IDLH (mg/m ³)	1250 mg/m ³
NIOSH	NIOSH REL (TWA) (mg/m ³)	2.5 mg/m ³ (natural-respirable dust)
Propylene carbonate (108-32-7)		
Not applicable		
Ethylene glycol dimethyl ether (110-71-4)		
Not applicable		

8.2. Appropriate engineering controls

Appropriate engineering controls : Ensure good ventilation of the work station. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Remove all sources of ignition.

Environmental exposure controls : Avoid release to the environment.

8.3. Individual protection measures/Personal protective equipment

Hand protection:

Under normal condition of use and handling no special protection is required for sealed battery. In the event of battery case breakage, should be wear appropriate safety gloves

Eye protection:

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Under normal condition of use and handling no special protection is required for sealed battery. Use appropriate safety glasses when there is the risk of splash

Skin and body protection:

Under normal condition of use and handling no special protection is required for sealed battery. It is recommended to wear appropriate protective clothing when the battery case is broken.

Respiratory protection:

If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Solid
Color	: Metallic color
Odor	: Odourless.
Odor threshold	: No data available
pH	: Not applicable
Melting point	: No data available
Boiling point	: No data available
Flash point	: Not applicable
Relative evaporation rate (butyl acetate=1)	: No data available
Flammability (solid, gas)	: Not flammable
Vapor pressure	: Not applicable
Relative vapor density at 20 °C	: No data available
Relative density	: No data available
Solubility	: Not applicable
Log Pow	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity, kinematic	: Not applicable
Viscosity, dynamic	: Not applicable
Explosion limits	: Not applicable
Explosive properties	: Not applicable
Oxidizing properties	: No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

Avoid contact with hot surfaces. Heat. No flames, no sparks. Eliminate all sources of ignition. Avoid contact with incompatible materials

10.5. Incompatible materials

Oxidizing agent. Strong acid. Strong base. Water. Seawater. Conductive materials

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

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SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

Manganese oxide (MnO ₂) (1313-13-9)	
LD50 oral rat	9000 mg/kg
Propylene carbonate (108-32-7)	
LD50 oral rat	29000 mg/kg
LD50 dermal rabbit	> 3000 mg/kg
Ethylene glycol dimethyl ether (110-71-4)	
LD50 oral rat	> 4000 mg/kg
LD50 dermal rabbit	1000 - 2000 mg/kg
LC50 inhalation rat (mg/l)	20 - 63 mg/l (Exposure time: 6 h)

Skin corrosion/irritation : Causes skin irritation.
Serious eye damage/irritation : Causes serious eye irritation.
Respiratory or skin sensitization : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified

Polypropylene (9003-07-0)	
IARC group	3 - Not classifiable
Polytetrafluoroethylene (9002-84-0)	
IARC group	3 - Not classifiable

Reproductive toxicity : May damage fertility or the unborn child.
Specific target organ toxicity – single exposure : Not classified

Specific target organ toxicity – repeated exposure : Not classified

Aspiration hazard : Not classified

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.

Propylene carbonate (108-32-7)	
LC50 fish	> 1000 mg/l (Exposure time: 96 h - Species: Cyprinus carpio [semi-static])
EC50 Daphnia	> 500 mg/l (Exposure time: 48 h - Species: Daphnia magna)

12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

Manganese oxide (MnO ₂) (1313-13-9)	
Log Pow	< 0 (at 20 °C)
Propylene carbonate (108-32-7)	
Log Pow	0.48 (at 25 °C)

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12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Effect on the global warming : No known effects from this product.

GWPmix comment : No known effects from this product.

SECTION 13: Disposal considerations

13.1. Disposal methods

Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.

Product/Packaging disposal recommendations : Dispose of contents/container in accordance with licensed collector's sorting instructions.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Not applicable

Transportation of Dangerous Goods

Not applicable

Transport by sea

Not applicable

Air transport

Not applicable

SECTION 15: Regulatory information

15.1. US Federal regulations

Polypropylene (9003-07-0)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

EPA TSCA Regulatory Flag	XU - XU - indicates a substance exempt from reporting under the Chemical Data Reporting Rule, (40 CFR 711).
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Manganese oxide (MnO₂) (1313-13-9)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Lithium (7439-93-2)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Perchloric acid, lithium salt (7791-03-9)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Polytetrafluoroethylene (9002-84-0)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

EPA TSCA Regulatory Flag	XU - XU - indicates a substance exempt from reporting under the Chemical Data Reporting Rule, (40 CFR 711).
--------------------------	---

Graphite (7782-42-5)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Propylene carbonate (108-32-7)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Ethylene glycol dimethyl ether (110-71-4)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

EPA TSCA Regulatory Flag	S - S - indicates a substance that is identified in a final Significant New Use Rule.
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LITHIUM MANGANESE BUTTON CELL CR2016

Safety Data Sheet

This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200

15.2. International regulations

CANADA

Polypropylene (9003-07-0)
Listed on the Canadian DSL (Domestic Substances List)
Manganese oxide (MnO₂) (1313-13-9)
Listed on the Canadian DSL (Domestic Substances List)
Lithium (7439-93-2)
Listed on the Canadian DSL (Domestic Substances List)
Perchloric acid, lithium salt (7791-03-9)
Listed on the Canadian DSL (Domestic Substances List)
Polytetrafluoroethylene (9002-84-0)
Listed on the Canadian DSL (Domestic Substances List)
Graphite (7782-42-5)
Listed on the Canadian DSL (Domestic Substances List)
Propylene carbonate (108-32-7)
Listed on the Canadian DSL (Domestic Substances List)
Ethylene glycol dimethyl ether (110-71-4)
Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

Manganese oxide (MnO₂) (1313-13-9)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Lithium (7439-93-2)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Perchloric acid, lithium salt (7791-03-9)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Graphite (7782-42-5)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Propylene carbonate (108-32-7)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Ethylene glycol dimethyl ether (110-71-4)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

National regulations

Stainless steel (12597-68-1)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the TCSI (Taiwan Chemical Substance Inventory)
Polypropylene (9003-07-0)
Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

LITHIUM MANGANESE BUTTON CELL CR2016

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This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200

Manganese oxide (MnO₂) (1313-13-9)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Japanese Pollutant Release and Transfer Register Law (PRTR Law)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

Lithium (7439-93-2)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

Perchloric acid, lithium salt (7791-03-9)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

Polytetrafluoroethylene (9002-84-0)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

Graphite (7782-42-5)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

Propylene carbonate (108-32-7)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

Ethylene glycol dimethyl ether (110-71-4)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

LITHIUM MANGANESE BUTTON CELL CR2016

Safety Data Sheet

This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200

15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

SECTION 16: Other information

Issue date : 22/08/2019

Revision date : 22/08/2019

Key or legend to abbreviations and acronyms used in the safety data sheet

ADR	European Agreement Concerning the International Carriage of Dangerous Goods by Road
IMDG	International Maritime Dangerous Goods
IATA	International Air Transport Association
ADN	European Agreement Concerning the International Carriage of Dangerous Goods by Inland Waterway
RID	Regulations Concerning the International Carriage of Dangerous Goods by Rail
PBT	Persistent, Bioaccumulative and Toxic
vPvB	Very Persistent and Very Bioaccumulative
DNEL	Derived No Effect Level
PNEC	Predicted No Effect Concentration
LC50	Lethal Concentration 50
LD50	Lethal Dose 50
EC50	Effective Concentration 50
TWA	Time Weighted Average
STEL	Short Term Exposure Limit

Key literature references and sources for data

ECHA: <http://echa.europa.eu/>
IFA GESTIS: [http://gestis-en.itrust.de/nxt/gateway.dll?f=templates\\$fn=default.htm\\$vid=gestiseng:sdbeng](http://gestis-en.itrust.de/nxt/gateway.dll?f=templates$fn=default.htm$vid=gestiseng:sdbeng)
HSDB: <http://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>
ICSC: <http://www.ilo.org/dyn/icsc/showcard.home>
eChemPortal: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en
NITE-CHIRP: http://www.nite.go.jp/en/chem/chrip/chrip_search/srhInput

SDS US (GHS HazCom 2012)

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product

LITHIUM MANGANESE BUTTON CELL CR2016

Safety Data Sheet

This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200

Date of issue: 22/08/2019

Revision date: 22/08/2019

Version: 1.0

SECTION 1: Identification

1.1. Identification

Product form : Article
Trade name : LITHIUM MANGANESE BUTTON CELL CR2016
Other means of identification : Voltage : 3V
Lithium Weight: 0.021g
Battery Weight: 1.8g

1.2. Recommended use and restrictions on use

Main use category : Power supply.
Restrictions on use : No information available.

1.3. Supplier

Supplier : CHANGZHOU JINTAN CHAOCHUANG BATTERY CO., LTD.
Address : Rm.13A10-11,Baoyuan Huafeng Headquarter Economy Building,Xiyang Rd.Bao'an District,Shenzhen,China.
Postal Code : 511483
Tel. : +86-755-27597836
Fax : +86-755-29369623
E-mail : boss@chaochuang.com

1.4. Emergency telephone number

+86-13510093096

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS-US classification

The batteries are not hazardous when used according to the instructions of manufacturer under normal conditions. In case of abuse, there's risk of rupture, fire, heat, leakage of internal components, which could cause casualty loss.

In the case of rupture, the following hazards may expose:

Skin corrosion/irritation, Category 2

Serious eye damage/eye irritation, Category 2

Reproductive toxicity, Category 1B

2.2. GHS Label elements, including precautionary statements

GHS-US labeling

Hazard pictograms (GHS US) :



Signal word (GHS US) : Danger

Hazard statements (GHS US) : Causes skin irritation.
Causes serious eye irritation.
May damage fertility or the unborn child.

Precautionary statements (GHS US) : Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Wash hands, forearms and face thoroughly after handling.
Wear protective gloves/protective clothing/eye protection/face protection.
If on skin: Wash with plenty of water/...
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If exposed or concerned: Get medical advice/attention.
If skin irritation occurs: Get medical advice/attention.
If eye irritation persists: Get medical advice/attention.
Take off contaminated clothing and wash it before reuse.

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Safety Data Sheet

This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200

Store locked up.

Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation

2.3. Other hazards which do not result in classification

This product should not present a health hazard when used under reasonable conditions. If contact with the internal components of the battery may be irritating to skin, eyes and mucous membranes. Fire will produce irritating, corrosive and/or toxic gases. May damage fertility or the unborn child.

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%
Stainless steel	(CAS-No.) 12597-68-1	71.604
Manganese oxide (MnO ₂)	(CAS-No.) 1313-13-9	18.192
Polypropylene	(CAS-No.) 9003-07-0	2.39
Propylene carbonate	(CAS-No.) 108-32-7	2.047
Ethylene glycol dimethyl ether	(CAS-No.) 110-71-4	1.545
Lithium	(CAS-No.) 7439-93-2	1.224
Polytetrafluoroethylene	(CAS-No.) 9002-84-0	1.114
Graphite	(CAS-No.) 7782-42-5	1.114
Perchloric acid, lithium salt	(CAS-No.) 7791-03-9	0.77

Full text of hazard classes and H-statements : see section 16

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures general	: No hazards which require special first aid measures. If you feel unwell, seek medical advice (show directions for use or safety data sheet if possible).
First-aid measures after inhalation	: There will be no dangerous during normal use. But breathe in a large number of batteries, or heat released from the gas, it will stimulate the respiratory tract and eyes. Remove to fresh air immediately. Get medical treatment immediately
First-aid measures after skin contact	: There will be no dangerous during normal use. But contacting battery electrolyte, may cause severe irritation or burns.
First-aid measures after eye contact	: There will be no dangerous during normal use. But contacting battery electrolyte can burn the eyes. Flush the eyes with plenty of clean water for at least 15 minutes immediately, without rubbing. Get immediate medical treatment. If appropriate procedures are not taken, this may cause eye injury.
First-aid measures after ingestion	: Ingestion of internal chemical materials may cause mouth, throat and intestinal irritation and damage. Rinse mouth Get medical attention Never give anything by mouth to an unconscious person

4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects	: This product should not present a health hazard when used under reasonable conditions. If contact with the internal components of the battery may be irritating to skin, eyes and mucous membranes. May damage fertility or the unborn child.
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4.3. Immediate medical attention and special treatment, if necessary

Treat symptomatically.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media	: Carbon dioxide, dry chemical, or foam
Unsuitable extinguishing media	: No information available.

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Safety Data Sheet

This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200

5.2. Specific hazards arising from the chemical

- Fire hazard : Battery can be overheated by an external source or by internal shorting and develop metal hydroxide mist.
Toxic vapor may release in case of fire.
Containers may explode when heated.
Fire fighting water runoff and dilution water may be toxic and corrosive and may cause adverse environmental impacts.
Since vapour, generated from burning batteries may make eyes, nose and throat irritates, be sure to extinguish the fire on the windward side. Wear the respiratory protection equipment in some cases.
Exposure to the ingredients contained within the battery pack could be harmful under some circumstances.
- Toxic vapor may release in case of fire. : Thermal decomposition can lead to release of irritating and toxic gases and vapors

5.3. Special protective equipment and precautions for fire-fighters

- Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.
- Other information : Evacuate personnel to a safe area. Ensure adequate ventilation, especially in confined areas. Eliminate every possible source of ignition. Move containers from fire area if it can be done without personal risk. Cool tanks/drums with water spray/remove them into safety. Stay upwind/keep distance from source.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

- Emergency procedures : No open flames, no sparks, and no smoking. Avoid contact with skin, eyes and clothing. Do not breathe dust/fume/gas/mist/vapors/spray.

6.1.2. For emergency responders

- Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".
- Emergency procedures : Stop leak if safe to do so. Evacuate personnel to a safe area. Ensure adequate ventilation, especially in confined areas.

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

- For containment : Collect spillage. Move containers from fire area if it can be done without personal risk. Contain large spillage with sand or earth.
- Methods for cleaning up : Take up liquid spill into absorbent material. Clean up any spills as soon as possible, using an absorbent material to collect it. Notify authorities if product enters sewers or public waters.
- Other information : Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : When packing the batteries, do not allow battery terminals to contact each other, or contact with other metals.
Be sure to pack batteries by providing partitions in the packaging box, or in a separate plastic bag so that the single batteries are not mixed together.
Use strong material for packaging boxes so that they will not be damaged by vibration, impact, dropping and stacking during their transportation.
Do not short-circuit, recharge, deform, throw into fire or disassemble.
Do not mix different type of batteries.
Do not solder directly onto batteries.
Insert the battery correctly in electrical equipment.
- Hygiene measures : Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

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Safety Data Sheet

This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store in a cool and dry area, but prevent condensation on cell or battery terminals.
High temperature may damage the performance of the battery.
Protect from physical damage and short circuits.
To avoid risk of fire or explosion, keep sparks and other sources of ignition away from the battery.
Do not allow metal objects to simultaneously contact both positive and negative terminal of batteries.
Do not stack battery directly on another battery.
Do not store batteries on electrically conductive surfaces.
Keep containers tightly closed in a dry, cool and well-ventilated place (-20 - 45 °C, humidity: 45-75%)
Keep locked up and out of reach of children
Keep away from food, drink and animal feeding stuffs
Store in accordance with local regulations

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Stainless steel (12597-68-1)		
Not applicable		
Polypropylene (9003-07-0)		
Not applicable		
Manganese oxide (MnO₂) (1313-13-9)		
Not applicable		
Lithium (7439-93-2)		
Not applicable		
Perchloric acid, lithium salt (7791-03-9)		
Not applicable		
Polytetrafluoroethylene (9002-84-0)		
Not applicable		
Graphite (7782-42-5)		
ACGIH	ACGIH TWA (mg/m ³)	2 mg/m ³ (all forms except graphite fibers-respirable particulate matter)
OSHA	OSHA PEL (TWA) (mg/m ³)	15 mg/m ³ (synthetic-total dust) 5 mg/m ³ (synthetic-respirable fraction)
IDLH	US IDLH (mg/m ³)	1250 mg/m ³
NIOSH	NIOSH REL (TWA) (mg/m ³)	2.5 mg/m ³ (natural-respirable dust)
Propylene carbonate (108-32-7)		
Not applicable		
Ethylene glycol dimethyl ether (110-71-4)		
Not applicable		

8.2. Appropriate engineering controls

Appropriate engineering controls : Ensure good ventilation of the work station. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Remove all sources of ignition.

Environmental exposure controls : Avoid release to the environment.

8.3. Individual protection measures/Personal protective equipment

Hand protection:

Under normal condition of use and handling no special protection is required for sealed battery. In the event of battery case breakage, should be wear appropriate safety gloves

Eye protection:

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This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200

Under normal condition of use and handling no special protection is required for sealed battery. Use appropriate safety glasses when there is the risk of splash

Skin and body protection:

Under normal condition of use and handling no special protection is required for sealed battery. It is recommended to wear appropriate protective clothing when the battery case is broken.

Respiratory protection:

If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Solid
Color	: Metallic color
Odor	: Odourless.
Odor threshold	: No data available
pH	: Not applicable
Melting point	: No data available
Boiling point	: No data available
Flash point	: Not applicable
Relative evaporation rate (butyl acetate=1)	: No data available
Flammability (solid, gas)	: Not flammable
Vapor pressure	: Not applicable
Relative vapor density at 20 °C	: No data available
Relative density	: No data available
Solubility	: Not applicable
Log Pow	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity, kinematic	: Not applicable
Viscosity, dynamic	: Not applicable
Explosion limits	: Not applicable
Explosive properties	: Not applicable
Oxidizing properties	: No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

Avoid contact with hot surfaces. Heat. No flames, no sparks. Eliminate all sources of ignition. Avoid contact with incompatible materials

10.5. Incompatible materials

Oxidizing agent. Strong acid. Strong base. Water. Seawater. Conductive materials

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

LITHIUM MANGANESE BUTTON CELL CR2016

Safety Data Sheet

This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

Manganese oxide (MnO ₂) (1313-13-9)	
LD50 oral rat	9000 mg/kg
Propylene carbonate (108-32-7)	
LD50 oral rat	29000 mg/kg
LD50 dermal rabbit	> 3000 mg/kg
Ethylene glycol dimethyl ether (110-71-4)	
LD50 oral rat	> 4000 mg/kg
LD50 dermal rabbit	1000 - 2000 mg/kg
LC50 inhalation rat (mg/l)	20 - 63 mg/l (Exposure time: 6 h)

Skin corrosion/irritation : Causes skin irritation.
Serious eye damage/irritation : Causes serious eye irritation.
Respiratory or skin sensitization : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified

Polypropylene (9003-07-0)	
IARC group	3 - Not classifiable
Polytetrafluoroethylene (9002-84-0)	
IARC group	3 - Not classifiable

Reproductive toxicity : May damage fertility or the unborn child.
Specific target organ toxicity – single exposure : Not classified

Specific target organ toxicity – repeated exposure : Not classified

Aspiration hazard : Not classified

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.

Propylene carbonate (108-32-7)	
LC50 fish	> 1000 mg/l (Exposure time: 96 h - Species: Cyprinus carpio [semi-static])
EC50 Daphnia	> 500 mg/l (Exposure time: 48 h - Species: Daphnia magna)

12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

Manganese oxide (MnO ₂) (1313-13-9)	
Log Pow	< 0 (at 20 °C)
Propylene carbonate (108-32-7)	
Log Pow	0.48 (at 25 °C)

LITHIUM MANGANESE BUTTON CELL CR2016

Safety Data Sheet

This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Effect on the global warming : No known effects from this product.

GWPmix comment : No known effects from this product.

SECTION 13: Disposal considerations

13.1. Disposal methods

Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.

Product/Packaging disposal recommendations : Dispose of contents/container in accordance with licensed collector's sorting instructions.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Not applicable

Transportation of Dangerous Goods

Not applicable

Transport by sea

Not applicable

Air transport

Not applicable

SECTION 15: Regulatory information

15.1. US Federal regulations

Polypropylene (9003-07-0)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

EPA TSCA Regulatory Flag	XU - XU - indicates a substance exempt from reporting under the Chemical Data Reporting Rule, (40 CFR 711).
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Manganese oxide (MnO₂) (1313-13-9)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Lithium (7439-93-2)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Perchloric acid, lithium salt (7791-03-9)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Polytetrafluoroethylene (9002-84-0)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

EPA TSCA Regulatory Flag	XU - XU - indicates a substance exempt from reporting under the Chemical Data Reporting Rule, (40 CFR 711).
--------------------------	---

Graphite (7782-42-5)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Propylene carbonate (108-32-7)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Ethylene glycol dimethyl ether (110-71-4)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

EPA TSCA Regulatory Flag	S - S - indicates a substance that is identified in a final Significant New Use Rule.
--------------------------	---

LITHIUM MANGANESE BUTTON CELL CR2016

Safety Data Sheet

This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200

15.2. International regulations

CANADA

Polypropylene (9003-07-0)
Listed on the Canadian DSL (Domestic Substances List)
Manganese oxide (MnO₂) (1313-13-9)
Listed on the Canadian DSL (Domestic Substances List)
Lithium (7439-93-2)
Listed on the Canadian DSL (Domestic Substances List)
Perchloric acid, lithium salt (7791-03-9)
Listed on the Canadian DSL (Domestic Substances List)
Polytetrafluoroethylene (9002-84-0)
Listed on the Canadian DSL (Domestic Substances List)
Graphite (7782-42-5)
Listed on the Canadian DSL (Domestic Substances List)
Propylene carbonate (108-32-7)
Listed on the Canadian DSL (Domestic Substances List)
Ethylene glycol dimethyl ether (110-71-4)
Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

Manganese oxide (MnO₂) (1313-13-9)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Lithium (7439-93-2)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Perchloric acid, lithium salt (7791-03-9)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Graphite (7782-42-5)
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Propylene carbonate (108-32-7)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Ethylene glycol dimethyl ether (110-71-4)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

National regulations

Stainless steel (12597-68-1)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the TCSI (Taiwan Chemical Substance Inventory)
Polypropylene (9003-07-0)
Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

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Manganese oxide (MnO₂) (1313-13-9)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Japanese Pollutant Release and Transfer Register Law (PRTR Law)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

Lithium (7439-93-2)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

Perchloric acid, lithium salt (7791-03-9)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

Polytetrafluoroethylene (9002-84-0)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

Graphite (7782-42-5)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

Propylene carbonate (108-32-7)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

Ethylene glycol dimethyl ether (110-71-4)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
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15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

SECTION 16: Other information

Issue date : 22/08/2019

Revision date : 22/08/2019

Key or legend to abbreviations and acronyms used in the safety data sheet

ADR	European Agreement Concerning the International Carriage of Dangerous Goods by Road
IMDG	International Maritime Dangerous Goods
IATA	International Air Transport Association
ADN	European Agreement Concerning the International Carriage of Dangerous Goods by Inland Waterway
RID	Regulations Concerning the International Carriage of Dangerous Goods by Rail
PBT	Persistent, Bioaccumulative and Toxic
vPvB	Very Persistent and Very Bioaccumulative
DNEL	Derived No Effect Level
PNEC	Predicted No Effect Concentration
LC50	Lethal Concentration 50
LD50	Lethal Dose 50
EC50	Effective Concentration 50
TWA	Time Weighted Average
STEL	Short Term Exposure Limit

Key literature references and sources for data

ECHA: <http://echa.europa.eu/>
IFA GESTIS: [http://gestis-en.itrust.de/nxt/gateway.dll?f=templates\\$fn=default.htm\\$vid=gestiseng:sdbeng](http://gestis-en.itrust.de/nxt/gateway.dll?f=templates$fn=default.htm$vid=gestiseng:sdbeng)
HSDB: <http://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>
ICSC: <http://www.ilo.org/dyn/icsc/showcard.home>
eChemPortal: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en
NITE-CHIRP: http://www.nite.go.jp/en/chem/chrip/chrip_search/srhInput

SDS US (GHS HazCom 2012)

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product

LITHIUM MANGANESE BUTTON CELL CR2016

Safety Data Sheet

This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200

Date of issue: 22/08/2019

Revision date: 22/08/2019

Version: 1.0

SECTION 1: Identification

1.1. Identification

Product form : Article
Trade name : LITHIUM MANGANESE BUTTON CELL CR2016
Other means of identification : Voltage : 3V
Lithium Weight: 0.021g
Battery Weight: 1.8g

1.2. Recommended use and restrictions on use

Main use category : Power supply.
Restrictions on use : No information available.

1.3. Supplier

Supplier : CHANGZHOU JINTAN CHAOCHUANG BATTERY CO., LTD.
Address : Rm.13A10-11,Baoyuan Huafeng Headquarter Economy Building,Xiyang Rd.Bao'an District,Shenzhen,China.
Postal Code : 511483
Tel. : +86-755-27597836
Fax : +86-755-29369623
E-mail : boss@chaochuang.com

1.4. Emergency telephone number

+86-13510093096

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS-US classification

The batteries are not hazardous when used according to the instructions of manufacturer under normal conditions. In case of abuse, there's risk of rupture, fire, heat, leakage of internal components, which could cause casualty loss.

In the case of rupture, the following hazards may expose:

Skin corrosion/irritation, Category 2

Serious eye damage/eye irritation, Category 2

Reproductive toxicity, Category 1B

2.2. GHS Label elements, including precautionary statements

GHS-US labeling

Hazard pictograms (GHS US) :



Signal word (GHS US) : Danger

Hazard statements (GHS US) : Causes skin irritation.
Causes serious eye irritation.
May damage fertility or the unborn child.

Precautionary statements (GHS US) : Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Wash hands, forearms and face thoroughly after handling.
Wear protective gloves/protective clothing/eye protection/face protection.
If on skin: Wash with plenty of water/...
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If exposed or concerned: Get medical advice/attention.
If skin irritation occurs: Get medical advice/attention.
If eye irritation persists: Get medical advice/attention.
Take off contaminated clothing and wash it before reuse.

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Store locked up.

Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation

2.3. Other hazards which do not result in classification

This product should not present a health hazard when used under reasonable conditions. If contact with the internal components of the battery may be irritating to skin, eyes and mucous membranes. Fire will produce irritating, corrosive and/or toxic gases. May damage fertility or the unborn child.

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%
Stainless steel	(CAS-No.) 12597-68-1	71.604
Manganese oxide (MnO ₂)	(CAS-No.) 1313-13-9	18.192
Polypropylene	(CAS-No.) 9003-07-0	2.39
Propylene carbonate	(CAS-No.) 108-32-7	2.047
Ethylene glycol dimethyl ether	(CAS-No.) 110-71-4	1.545
Lithium	(CAS-No.) 7439-93-2	1.224
Polytetrafluoroethylene	(CAS-No.) 9002-84-0	1.114
Graphite	(CAS-No.) 7782-42-5	1.114
Perchloric acid, lithium salt	(CAS-No.) 7791-03-9	0.77

Full text of hazard classes and H-statements : see section 16

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures general	: No hazards which require special first aid measures. If you feel unwell, seek medical advice (show directions for use or safety data sheet if possible).
First-aid measures after inhalation	: There will be no dangerous during normal use. But breathe in a large number of batteries, or heat released from the gas, it will stimulate the respiratory tract and eyes. Remove to fresh air immediately. Get medical treatment immediately
First-aid measures after skin contact	: There will be no dangerous during normal use. But contacting battery electrolyte, may cause severe irritation or burns.
First-aid measures after eye contact	: There will be no dangerous during normal use. But contacting battery electrolyte can burn the eyes. Flush the eyes with plenty of clean water for at least 15 minutes immediately, without rubbing. Get immediate medical treatment. If appropriate procedures are not taken, this may cause eye injury.
First-aid measures after ingestion	: Ingestion of internal chemical materials may cause mouth, throat and intestinal irritation and damage. Rinse mouth Get medical attention Never give anything by mouth to an unconscious person

4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects	: This product should not present a health hazard when used under reasonable conditions. If contact with the internal components of the battery may be irritating to skin, eyes and mucous membranes. May damage fertility or the unborn child.
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4.3. Immediate medical attention and special treatment, if necessary

Treat symptomatically.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media	: Carbon dioxide, dry chemical, or foam
Unsuitable extinguishing media	: No information available.

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5.2. Specific hazards arising from the chemical

- Fire hazard : Battery can be overheated by an external source or by internal shorting and develop metal hydroxide mist.
Toxic vapor may release in case of fire.
Containers may explode when heated.
Fire fighting water runoff and dilution water may be toxic and corrosive and may cause adverse environmental impacts.
Since vapour, generated from burning batteries may make eyes, nose and throat irritates, be sure to extinguish the fire on the windward side. Wear the respiratory protection equipment in some cases.
Exposure to the ingredients contained within the battery pack could be harmful under some circumstances.
- Toxic vapor may release in case of fire. : Thermal decomposition can lead to release of irritating and toxic gases and vapors

5.3. Special protective equipment and precautions for fire-fighters

- Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.
- Other information : Evacuate personnel to a safe area. Ensure adequate ventilation, especially in confined areas. Eliminate every possible source of ignition. Move containers from fire area if it can be done without personal risk. Cool tanks/drums with water spray/remove them into safety. Stay upwind/keep distance from source.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

- Emergency procedures : No open flames, no sparks, and no smoking. Avoid contact with skin, eyes and clothing. Do not breathe dust/fume/gas/mist/vapors/spray.

6.1.2. For emergency responders

- Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".
- Emergency procedures : Stop leak if safe to do so. Evacuate personnel to a safe area. Ensure adequate ventilation, especially in confined areas.

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

- For containment : Collect spillage. Move containers from fire area if it can be done without personal risk. Contain large spillage with sand or earth.
- Methods for cleaning up : Take up liquid spill into absorbent material. Clean up any spills as soon as possible, using an absorbent material to collect it. Notify authorities if product enters sewers or public waters.
- Other information : Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : When packing the batteries, do not allow battery terminals to contact each other, or contact with other metals.
Be sure to pack batteries by providing partitions in the packaging box, or in a separate plastic bag so that the single batteries are not mixed together.
Use strong material for packaging boxes so that they will not be damaged by vibration, impact, dropping and stacking during their transportation.
Do not short-circuit, recharge, deform, throw into fire or disassemble.
Do not mix different type of batteries.
Do not solder directly onto batteries.
Insert the battery correctly in electrical equipment.
- Hygiene measures : Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

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7.2. Conditions for safe storage, including any incompatibilities

Storage conditions	: Store in a cool and dry area, but prevent condensation on cell or battery terminals. High temperature may damage the performance of the battery. Protect from physical damage and short circuits. To avoid risk of fire or explosion, keep sparks and other sources of ignition away from the battery. Do not allow metal objects to simultaneously contact both positive and negative terminal of batteries. Do not stack battery directly on another battery. Do not store batteries on electrically conductive surfaces. Keep containers tightly closed in a dry, cool and well-ventilated place (-20 - 45 °C, humidity: 45-75%) Keep locked up and out of reach of children Keep away from food, drink and animal feeding stuffs Store in accordance with local regulations
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SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Stainless steel (12597-68-1)		
Not applicable		
Polypropylene (9003-07-0)		
Not applicable		
Manganese oxide (MnO₂) (1313-13-9)		
Not applicable		
Lithium (7439-93-2)		
Not applicable		
Perchloric acid, lithium salt (7791-03-9)		
Not applicable		
Polytetrafluoroethylene (9002-84-0)		
Not applicable		
Graphite (7782-42-5)		
ACGIH	ACGIH TWA (mg/m ³)	2 mg/m ³ (all forms except graphite fibers-respirable particulate matter)
OSHA	OSHA PEL (TWA) (mg/m ³)	15 mg/m ³ (synthetic-total dust) 5 mg/m ³ (synthetic-respirable fraction)
IDLH	US IDLH (mg/m ³)	1250 mg/m ³
NIOSH	NIOSH REL (TWA) (mg/m ³)	2.5 mg/m ³ (natural-respirable dust)
Propylene carbonate (108-32-7)		
Not applicable		
Ethylene glycol dimethyl ether (110-71-4)		
Not applicable		

8.2. Appropriate engineering controls

Appropriate engineering controls	: Ensure good ventilation of the work station. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Remove all sources of ignition.
Environmental exposure controls	: Avoid release to the environment.

8.3. Individual protection measures/Personal protective equipment

Hand protection:

Under normal condition of use and handling no special protection is required for sealed battery. In the event of battery case breakage, should be wear appropriate safety gloves

Eye protection:

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Under normal condition of use and handling no special protection is required for sealed battery. Use appropriate safety glasses when there is the risk of splash

Skin and body protection:

Under normal condition of use and handling no special protection is required for sealed battery. It is recommended to wear appropriate protective clothing when the battery case is broken.

Respiratory protection:

If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Solid
Color	: Metallic color
Odor	: Odourless.
Odor threshold	: No data available
pH	: Not applicable
Melting point	: No data available
Boiling point	: No data available
Flash point	: Not applicable
Relative evaporation rate (butyl acetate=1)	: No data available
Flammability (solid, gas)	: Not flammable
Vapor pressure	: Not applicable
Relative vapor density at 20 °C	: No data available
Relative density	: No data available
Solubility	: Not applicable
Log Pow	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity, kinematic	: Not applicable
Viscosity, dynamic	: Not applicable
Explosion limits	: Not applicable
Explosive properties	: Not applicable
Oxidizing properties	: No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

Avoid contact with hot surfaces. Heat. No flames, no sparks. Eliminate all sources of ignition. Avoid contact with incompatible materials

10.5. Incompatible materials

Oxidizing agent. Strong acid. Strong base. Water. Seawater. Conductive materials

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

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SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

Manganese oxide (MnO ₂) (1313-13-9)	
LD50 oral rat	9000 mg/kg
Propylene carbonate (108-32-7)	
LD50 oral rat	29000 mg/kg
LD50 dermal rabbit	> 3000 mg/kg
Ethylene glycol dimethyl ether (110-71-4)	
LD50 oral rat	> 4000 mg/kg
LD50 dermal rabbit	1000 - 2000 mg/kg
LC50 inhalation rat (mg/l)	20 - 63 mg/l (Exposure time: 6 h)

Skin corrosion/irritation : Causes skin irritation.
Serious eye damage/irritation : Causes serious eye irritation.
Respiratory or skin sensitization : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified

Polypropylene (9003-07-0)	
IARC group	3 - Not classifiable
Polytetrafluoroethylene (9002-84-0)	
IARC group	3 - Not classifiable

Reproductive toxicity : May damage fertility or the unborn child.
Specific target organ toxicity – single exposure : Not classified

Specific target organ toxicity – repeated exposure : Not classified

Aspiration hazard : Not classified

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.

Propylene carbonate (108-32-7)	
LC50 fish	> 1000 mg/l (Exposure time: 96 h - Species: Cyprinus carpio [semi-static])
EC50 Daphnia	> 500 mg/l (Exposure time: 48 h - Species: Daphnia magna)

12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

Manganese oxide (MnO ₂) (1313-13-9)	
Log Pow	< 0 (at 20 °C)
Propylene carbonate (108-32-7)	
Log Pow	0.48 (at 25 °C)

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12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Effect on the global warming : No known effects from this product.

GWPmix comment : No known effects from this product.

SECTION 13: Disposal considerations

13.1. Disposal methods

Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.

Product/Packaging disposal recommendations : Dispose of contents/container in accordance with licensed collector's sorting instructions.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Not applicable

Transportation of Dangerous Goods

Not applicable

Transport by sea

Not applicable

Air transport

Not applicable

SECTION 15: Regulatory information

15.1. US Federal regulations

Polypropylene (9003-07-0)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

EPA TSCA Regulatory Flag	XU - XU - indicates a substance exempt from reporting under the Chemical Data Reporting Rule, (40 CFR 711).
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Manganese oxide (MnO₂) (1313-13-9)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Lithium (7439-93-2)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Perchloric acid, lithium salt (7791-03-9)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Polytetrafluoroethylene (9002-84-0)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

EPA TSCA Regulatory Flag	XU - XU - indicates a substance exempt from reporting under the Chemical Data Reporting Rule, (40 CFR 711).
--------------------------	---

Graphite (7782-42-5)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Propylene carbonate (108-32-7)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Ethylene glycol dimethyl ether (110-71-4)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

EPA TSCA Regulatory Flag	S - S - indicates a substance that is identified in a final Significant New Use Rule.
--------------------------	---

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15.2. International regulations

CANADA

Polypropylene (9003-07-0)
Listed on the Canadian DSL (Domestic Substances List)
Manganese oxide (MnO₂) (1313-13-9)
Listed on the Canadian DSL (Domestic Substances List)
Lithium (7439-93-2)
Listed on the Canadian DSL (Domestic Substances List)
Perchloric acid, lithium salt (7791-03-9)
Listed on the Canadian DSL (Domestic Substances List)
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Graphite (7782-42-5)
Listed on the Canadian DSL (Domestic Substances List)
Propylene carbonate (108-32-7)
Listed on the Canadian DSL (Domestic Substances List)
Ethylene glycol dimethyl ether (110-71-4)
Listed on the Canadian DSL (Domestic Substances List)

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Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
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Polypropylene (9003-07-0)
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Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

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Manganese oxide (MnO₂) (1313-13-9)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Japanese Pollutant Release and Transfer Register Law (PRTR Law)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

Lithium (7439-93-2)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
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Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

Perchloric acid, lithium salt (7791-03-9)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
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Polytetrafluoroethylene (9002-84-0)

Listed on the AICS (Australian Inventory of Chemical Substances)
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Graphite (7782-42-5)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Korean ECL (Existing Chemicals List)
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Listed on the TCSI (Taiwan Chemical Substance Inventory)

Propylene carbonate (108-32-7)

Listed on the AICS (Australian Inventory of Chemical Substances)
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Ethylene glycol dimethyl ether (110-71-4)

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15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

SECTION 16: Other information

Issue date : 22/08/2019

Revision date : 22/08/2019

Key or legend to abbreviations and acronyms used in the safety data sheet

ADR	European Agreement Concerning the International Carriage of Dangerous Goods by Road
IMDG	International Maritime Dangerous Goods
IATA	International Air Transport Association
ADN	European Agreement Concerning the International Carriage of Dangerous Goods by Inland Waterway
RID	Regulations Concerning the International Carriage of Dangerous Goods by Rail
PBT	Persistent, Bioaccumulative and Toxic
vPvB	Very Persistent and Very Bioaccumulative
DNEL	Derived No Effect Level
PNEC	Predicted No Effect Concentration
LC50	Lethal Concentration 50
LD50	Lethal Dose 50
EC50	Effective Concentration 50
TWA	Time Weighted Average
STEL	Short Term Exposure Limit

Key literature references and sources for data

ECHA: <http://echa.europa.eu/>
IFA GESTIS: [http://gestis-en.itrust.de/nxt/gateway.dll?f=templates\\$fn=default.htm\\$vid=gestiseng:sdbeng](http://gestis-en.itrust.de/nxt/gateway.dll?f=templates$fn=default.htm$vid=gestiseng:sdbeng)
HSDB: <http://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>
ICSC: <http://www.ilo.org/dyn/icsc/showcard.home>
eChemPortal: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en
NITE-CHIRP: http://www.nite.go.jp/en/chem/chrip/chrip_search/srhInput

SDS US (GHS HazCom 2012)

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product

LITHIUM MANGANESE BUTTON CELL CR2016

Safety Data Sheet

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Date of issue: 22/08/2019

Revision date: 22/08/2019

Version: 1.0

SECTION 1: Identification

1.1. Identification

Product form : Article
Trade name : LITHIUM MANGANESE BUTTON CELL CR2016
Other means of identification : Voltage : 3V
Lithium Weight: 0.021g
Battery Weight: 1.8g

1.2. Recommended use and restrictions on use

Main use category : Power supply.
Restrictions on use : No information available.

1.3. Supplier

Supplier : CHANGZHOU JINTAN CHAOCHUANG BATTERY CO., LTD.
Address : Rm.13A10-11,Baoyuan Huafeng Headquarter Economy Building,Xiyang Rd.Bao'an District,Shenzhen,China.
Postal Code : 511483
Tel. : +86-755-27597836
Fax : +86-755-29369623
E-mail : boss@chaochuang.com

1.4. Emergency telephone number

+86-13510093096

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS-US classification

The batteries are not hazardous when used according to the instructions of manufacturer under normal conditions. In case of abuse, there's risk of rupture, fire, heat, leakage of internal components, which could cause casualty loss.

In the case of rupture, the following hazards may expose:

Skin corrosion/irritation, Category 2

Serious eye damage/eye irritation, Category 2

Reproductive toxicity, Category 1B

2.2. GHS Label elements, including precautionary statements

GHS-US labeling

Hazard pictograms (GHS US) :



Signal word (GHS US) : Danger

Hazard statements (GHS US) : Causes skin irritation.
Causes serious eye irritation.
May damage fertility or the unborn child.

Precautionary statements (GHS US) : Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Wash hands, forearms and face thoroughly after handling.
Wear protective gloves/protective clothing/eye protection/face protection.
If on skin: Wash with plenty of water/...
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If exposed or concerned: Get medical advice/attention.
If skin irritation occurs: Get medical advice/attention.
If eye irritation persists: Get medical advice/attention.
Take off contaminated clothing and wash it before reuse.

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Store locked up.

Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation

2.3. Other hazards which do not result in classification

This product should not present a health hazard when used under reasonable conditions. If contact with the internal components of the battery may be irritating to skin, eyes and mucous membranes. Fire will produce irritating, corrosive and/or toxic gases. May damage fertility or the unborn child.

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%
Stainless steel	(CAS-No.) 12597-68-1	71.604
Manganese oxide (MnO ₂)	(CAS-No.) 1313-13-9	18.192
Polypropylene	(CAS-No.) 9003-07-0	2.39
Propylene carbonate	(CAS-No.) 108-32-7	2.047
Ethylene glycol dimethyl ether	(CAS-No.) 110-71-4	1.545
Lithium	(CAS-No.) 7439-93-2	1.224
Polytetrafluoroethylene	(CAS-No.) 9002-84-0	1.114
Graphite	(CAS-No.) 7782-42-5	1.114
Perchloric acid, lithium salt	(CAS-No.) 7791-03-9	0.77

Full text of hazard classes and H-statements : see section 16

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures general	: No hazards which require special first aid measures. If you feel unwell, seek medical advice (show directions for use or safety data sheet if possible).
First-aid measures after inhalation	: There will be no dangerous during normal use. But breathe in a large number of batteries, or heat released from the gas, it will stimulate the respiratory tract and eyes. Remove to fresh air immediately. Get medical treatment immediately
First-aid measures after skin contact	: There will be no dangerous during normal use. But contacting battery electrolyte, may cause severe irritation or burns.
First-aid measures after eye contact	: There will be no dangerous during normal use. But contacting battery electrolyte can burn the eyes. Flush the eyes with plenty of clean water for at least 15 minutes immediately, without rubbing. Get immediate medical treatment. If appropriate procedures are not taken, this may cause eye injury.
First-aid measures after ingestion	: Ingestion of internal chemical materials may cause mouth, throat and intestinal irritation and damage. Rinse mouth Get medical attention Never give anything by mouth to an unconscious person

4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects	: This product should not present a health hazard when used under reasonable conditions. If contact with the internal components of the battery may be irritating to skin, eyes and mucous membranes. May damage fertility or the unborn child.
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4.3. Immediate medical attention and special treatment, if necessary

Treat symptomatically.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media	: Carbon dioxide, dry chemical, or foam
Unsuitable extinguishing media	: No information available.

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5.2. Specific hazards arising from the chemical

- Fire hazard : Battery can be overheated by an external source or by internal shorting and develop metal hydroxide mist.
Toxic vapor may release in case of fire.
Containers may explode when heated.
Fire fighting water runoff and dilution water may be toxic and corrosive and may cause adverse environmental impacts.
Since vapour, generated from burning batteries may make eyes, nose and throat irritates, be sure to extinguish the fire on the windward side. Wear the respiratory protection equipment in some cases.
Exposure to the ingredients contained within the battery pack could be harmful under some circumstances.
- Toxic vapor may release in case of fire. : Thermal decomposition can lead to release of irritating and toxic gases and vapors

5.3. Special protective equipment and precautions for fire-fighters

- Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.
- Other information : Evacuate personnel to a safe area. Ensure adequate ventilation, especially in confined areas. Eliminate every possible source of ignition. Move containers from fire area if it can be done without personal risk. Cool tanks/drums with water spray/remove them into safety. Stay upwind/keep distance from source.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

- Emergency procedures : No open flames, no sparks, and no smoking. Avoid contact with skin, eyes and clothing. Do not breathe dust/fume/gas/mist/vapors/spray.

6.1.2. For emergency responders

- Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".
- Emergency procedures : Stop leak if safe to do so. Evacuate personnel to a safe area. Ensure adequate ventilation, especially in confined areas.

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

- For containment : Collect spillage. Move containers from fire area if it can be done without personal risk. Contain large spillage with sand or earth.
- Methods for cleaning up : Take up liquid spill into absorbent material. Clean up any spills as soon as possible, using an absorbent material to collect it. Notify authorities if product enters sewers or public waters.
- Other information : Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : When packing the batteries, do not allow battery terminals to contact each other, or contact with other metals.
Be sure to pack batteries by providing partitions in the packaging box, or in a separate plastic bag so that the single batteries are not mixed together.
Use strong material for packaging boxes so that they will not be damaged by vibration, impact, dropping and stacking during their transportation.
Do not short-circuit, recharge, deform, throw into fire or disassemble.
Do not mix different type of batteries.
Do not solder directly onto batteries.
Insert the battery correctly in electrical equipment.
- Hygiene measures : Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

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7.2. Conditions for safe storage, including any incompatibilities

Storage conditions	: Store in a cool and dry area, but prevent condensation on cell or battery terminals. High temperature may damage the performance of the battery. Protect from physical damage and short circuits. To avoid risk of fire or explosion, keep sparks and other sources of ignition away from the battery. Do not allow metal objects to simultaneously contact both positive and negative terminal of batteries. Do not stack battery directly on another battery. Do not store batteries on electrically conductive surfaces. Keep containers tightly closed in a dry, cool and well-ventilated place (-20 - 45 °C, humidity: 45-75%) Keep locked up and out of reach of children Keep away from food, drink and animal feeding stuffs Store in accordance with local regulations
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SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Stainless steel (12597-68-1)		
Not applicable		
Polypropylene (9003-07-0)		
Not applicable		
Manganese oxide (MnO₂) (1313-13-9)		
Not applicable		
Lithium (7439-93-2)		
Not applicable		
Perchloric acid, lithium salt (7791-03-9)		
Not applicable		
Polytetrafluoroethylene (9002-84-0)		
Not applicable		
Graphite (7782-42-5)		
ACGIH	ACGIH TWA (mg/m ³)	2 mg/m ³ (all forms except graphite fibers-respirable particulate matter)
OSHA	OSHA PEL (TWA) (mg/m ³)	15 mg/m ³ (synthetic-total dust) 5 mg/m ³ (synthetic-respirable fraction)
IDLH	US IDLH (mg/m ³)	1250 mg/m ³
NIOSH	NIOSH REL (TWA) (mg/m ³)	2.5 mg/m ³ (natural-respirable dust)
Propylene carbonate (108-32-7)		
Not applicable		
Ethylene glycol dimethyl ether (110-71-4)		
Not applicable		

8.2. Appropriate engineering controls

Appropriate engineering controls	: Ensure good ventilation of the work station. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Remove all sources of ignition.
Environmental exposure controls	: Avoid release to the environment.

8.3. Individual protection measures/Personal protective equipment

Hand protection:

Under normal condition of use and handling no special protection is required for sealed battery. In the event of battery case breakage, should be wear appropriate safety gloves

Eye protection:

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Under normal condition of use and handling no special protection is required for sealed battery. Use appropriate safety glasses when there is the risk of splash

Skin and body protection:

Under normal condition of use and handling no special protection is required for sealed battery. It is recommended to wear appropriate protective clothing when the battery case is broken.

Respiratory protection:

If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Solid
Color	: Metallic color
Odor	: Odourless.
Odor threshold	: No data available
pH	: Not applicable
Melting point	: No data available
Boiling point	: No data available
Flash point	: Not applicable
Relative evaporation rate (butyl acetate=1)	: No data available
Flammability (solid, gas)	: Not flammable
Vapor pressure	: Not applicable
Relative vapor density at 20 °C	: No data available
Relative density	: No data available
Solubility	: Not applicable
Log Pow	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity, kinematic	: Not applicable
Viscosity, dynamic	: Not applicable
Explosion limits	: Not applicable
Explosive properties	: Not applicable
Oxidizing properties	: No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

Avoid contact with hot surfaces. Heat. No flames, no sparks. Eliminate all sources of ignition. Avoid contact with incompatible materials

10.5. Incompatible materials

Oxidizing agent. Strong acid. Strong base. Water. Seawater. Conductive materials

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

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SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

Manganese oxide (MnO ₂) (1313-13-9)	
LD50 oral rat	9000 mg/kg
Propylene carbonate (108-32-7)	
LD50 oral rat	29000 mg/kg
LD50 dermal rabbit	> 3000 mg/kg
Ethylene glycol dimethyl ether (110-71-4)	
LD50 oral rat	> 4000 mg/kg
LD50 dermal rabbit	1000 - 2000 mg/kg
LC50 inhalation rat (mg/l)	20 - 63 mg/l (Exposure time: 6 h)

Skin corrosion/irritation : Causes skin irritation.
Serious eye damage/irritation : Causes serious eye irritation.
Respiratory or skin sensitization : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified

Polypropylene (9003-07-0)	
IARC group	3 - Not classifiable
Polytetrafluoroethylene (9002-84-0)	
IARC group	3 - Not classifiable

Reproductive toxicity : May damage fertility or the unborn child.
Specific target organ toxicity – single exposure : Not classified

Specific target organ toxicity – repeated exposure : Not classified

Aspiration hazard : Not classified

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.

Propylene carbonate (108-32-7)	
LC50 fish	> 1000 mg/l (Exposure time: 96 h - Species: Cyprinus carpio [semi-static])
EC50 Daphnia	> 500 mg/l (Exposure time: 48 h - Species: Daphnia magna)

12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

Manganese oxide (MnO ₂) (1313-13-9)	
Log Pow	< 0 (at 20 °C)
Propylene carbonate (108-32-7)	
Log Pow	0.48 (at 25 °C)

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12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Effect on the global warming : No known effects from this product.

GWPmix comment : No known effects from this product.

SECTION 13: Disposal considerations

13.1. Disposal methods

Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.

Product/Packaging disposal recommendations : Dispose of contents/container in accordance with licensed collector's sorting instructions.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Not applicable

Transportation of Dangerous Goods

Not applicable

Transport by sea

Not applicable

Air transport

Not applicable

SECTION 15: Regulatory information

15.1. US Federal regulations

Polypropylene (9003-07-0)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

EPA TSCA Regulatory Flag

XU - XU - indicates a substance exempt from reporting under the Chemical Data Reporting Rule, (40 CFR 711).

Manganese oxide (MnO₂) (1313-13-9)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Lithium (7439-93-2)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Perchloric acid, lithium salt (7791-03-9)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Polytetrafluoroethylene (9002-84-0)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

EPA TSCA Regulatory Flag

XU - XU - indicates a substance exempt from reporting under the Chemical Data Reporting Rule, (40 CFR 711).

Graphite (7782-42-5)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Propylene carbonate (108-32-7)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Ethylene glycol dimethyl ether (110-71-4)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

EPA TSCA Regulatory Flag

S - S - indicates a substance that is identified in a final Significant New Use Rule.

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15.2. International regulations

CANADA

Polypropylene (9003-07-0)
Listed on the Canadian DSL (Domestic Substances List)
Manganese oxide (MnO₂) (1313-13-9)
Listed on the Canadian DSL (Domestic Substances List)
Lithium (7439-93-2)
Listed on the Canadian DSL (Domestic Substances List)
Perchloric acid, lithium salt (7791-03-9)
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Polytetrafluoroethylene (9002-84-0)
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Propylene carbonate (108-32-7)
Listed on the Canadian DSL (Domestic Substances List)
Ethylene glycol dimethyl ether (110-71-4)
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EU-Regulations

Manganese oxide (MnO₂) (1313-13-9)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Lithium (7439-93-2)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
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National regulations

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Listed on the TCSI (Taiwan Chemical Substance Inventory)

Graphite (7782-42-5)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

Propylene carbonate (108-32-7)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Japanese ISHL (Industrial Safety and Health Law)
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Listed on the TCSI (Taiwan Chemical Substance Inventory)

Ethylene glycol dimethyl ether (110-71-4)

Listed on the AICS (Australian Inventory of Chemical Substances)
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Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
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15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

SECTION 16: Other information

Issue date : 22/08/2019

Revision date : 22/08/2019

Key or legend to abbreviations and acronyms used in the safety data sheet

ADR	European Agreement Concerning the International Carriage of Dangerous Goods by Road
IMDG	International Maritime Dangerous Goods
IATA	International Air Transport Association
ADN	European Agreement Concerning the International Carriage of Dangerous Goods by Inland Waterway
RID	Regulations Concerning the International Carriage of Dangerous Goods by Rail
PBT	Persistent, Bioaccumulative and Toxic
vPvB	Very Persistent and Very Bioaccumulative
DNEL	Derived No Effect Level
PNEC	Predicted No Effect Concentration
LC50	Lethal Concentration 50
LD50	Lethal Dose 50
EC50	Effective Concentration 50
TWA	Time Weighted Average
STEL	Short Term Exposure Limit

Key literature references and sources for data

ECHA: <http://echa.europa.eu/>
IFA GESTIS: [http://gestis-en.itrust.de/nxt/gateway.dll?f=templates\\$fn=default.htm\\$vid=gestiseng:sdbeng](http://gestis-en.itrust.de/nxt/gateway.dll?f=templates$fn=default.htm$vid=gestiseng:sdbeng)
HSDB: <http://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>
ICSC: <http://www.ilo.org/dyn/icsc/showcard.home>
eChemPortal: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en
NITE-CHIRP: http://www.nite.go.jp/en/chem/chrip/chrip_search/srhInput

SDS US (GHS HazCom 2012)

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product

LITHIUM MANGANESE BUTTON CELL CR2016

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This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200

Date of issue: 22/08/2019

Revision date: 22/08/2019

Version: 1.0

SECTION 1: Identification

1.1. Identification

Product form : Article
Trade name : LITHIUM MANGANESE BUTTON CELL CR2016
Other means of identification : Voltage : 3V
Lithium Weight: 0.021g
Battery Weight: 1.8g

1.2. Recommended use and restrictions on use

Main use category : Power supply.
Restrictions on use : No information available.

1.3. Supplier

Supplier : CHANGZHOU JINTAN CHAOCHUANG BATTERY CO., LTD.
Address : Rm.13A10-11,Baoyuan Huafeng Headquarter Economy Building,Xiyang Rd.Bao'an District,Shenzhen,China.
Postal Code : 511483
Tel. : +86-755-27597836
Fax : +86-755-29369623
E-mail : boss@chaochuang.com

1.4. Emergency telephone number

+86-13510093096

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS-US classification

The batteries are not hazardous when used according to the instructions of manufacturer under normal conditions. In case of abuse, there's risk of rupture, fire, heat, leakage of internal components, which could cause casualty loss.

In the case of rupture, the following hazards may expose:

Skin corrosion/irritation, Category 2

Serious eye damage/eye irritation, Category 2

Reproductive toxicity, Category 1B

2.2. GHS Label elements, including precautionary statements

GHS-US labeling

Hazard pictograms (GHS US) :



Signal word (GHS US) : Danger

Hazard statements (GHS US) : Causes skin irritation.
Causes serious eye irritation.
May damage fertility or the unborn child.

Precautionary statements (GHS US) : Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Wash hands, forearms and face thoroughly after handling.
Wear protective gloves/protective clothing/eye protection/face protection.
If on skin: Wash with plenty of water/...
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If exposed or concerned: Get medical advice/attention.
If skin irritation occurs: Get medical advice/attention.
If eye irritation persists: Get medical advice/attention.
Take off contaminated clothing and wash it before reuse.

LITHIUM MANGANESE BUTTON CELL CR2016

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Store locked up.

Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation

2.3. Other hazards which do not result in classification

This product should not present a health hazard when used under reasonable conditions. If contact with the internal components of the battery may be irritating to skin, eyes and mucous membranes. Fire will produce irritating, corrosive and/or toxic gases. May damage fertility or the unborn child.

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%
Stainless steel	(CAS-No.) 12597-68-1	71.604
Manganese oxide (MnO ₂)	(CAS-No.) 1313-13-9	18.192
Polypropylene	(CAS-No.) 9003-07-0	2.39
Propylene carbonate	(CAS-No.) 108-32-7	2.047
Ethylene glycol dimethyl ether	(CAS-No.) 110-71-4	1.545
Lithium	(CAS-No.) 7439-93-2	1.224
Polytetrafluoroethylene	(CAS-No.) 9002-84-0	1.114
Graphite	(CAS-No.) 7782-42-5	1.114
Perchloric acid, lithium salt	(CAS-No.) 7791-03-9	0.77

Full text of hazard classes and H-statements : see section 16

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures general	: No hazards which require special first aid measures. If you feel unwell, seek medical advice (show directions for use or safety data sheet if possible).
First-aid measures after inhalation	: There will be no dangerous during normal use. But breathe in a large number of batteries, or heat released from the gas, it will stimulate the respiratory tract and eyes. Remove to fresh air immediately. Get medical treatment immediately
First-aid measures after skin contact	: There will be no dangerous during normal use. But contacting battery electrolyte, may cause severe irritation or burns.
First-aid measures after eye contact	: There will be no dangerous during normal use. But contacting battery electrolyte can burn the eyes. Flush the eyes with plenty of clean water for at least 15 minutes immediately, without rubbing. Get immediate medical treatment. If appropriate procedures are not taken, this may cause eye injury.
First-aid measures after ingestion	: Ingestion of internal chemical materials may cause mouth, throat and intestinal irritation and damage. Rinse mouth Get medical attention Never give anything by mouth to an unconscious person

4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects	: This product should not present a health hazard when used under reasonable conditions. If contact with the internal components of the battery may be irritating to skin, eyes and mucous membranes. May damage fertility or the unborn child.
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4.3. Immediate medical attention and special treatment, if necessary

Treat symptomatically.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media	: Carbon dioxide, dry chemical, or foam
Unsuitable extinguishing media	: No information available.

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Safety Data Sheet

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5.2. Specific hazards arising from the chemical

- Fire hazard : Battery can be overheated by an external source or by internal shorting and develop metal hydroxide mist.
Toxic vapor may release in case of fire.
Containers may explode when heated.
Fire fighting water runoff and dilution water may be toxic and corrosive and may cause adverse environmental impacts.
Since vapour, generated from burning batteries may make eyes, nose and throat irritates, be sure to extinguish the fire on the windward side. Wear the respiratory protection equipment in some cases.
Exposure to the ingredients contained within the battery pack could be harmful under some circumstances.
- Toxic vapor may release in case of fire. : Thermal decomposition can lead to release of irritating and toxic gases and vapors

5.3. Special protective equipment and precautions for fire-fighters

- Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.
- Other information : Evacuate personnel to a safe area. Ensure adequate ventilation, especially in confined areas. Eliminate every possible source of ignition. Move containers from fire area if it can be done without personal risk. Cool tanks/drums with water spray/remove them into safety. Stay upwind/keep distance from source.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

- Emergency procedures : No open flames, no sparks, and no smoking. Avoid contact with skin, eyes and clothing. Do not breathe dust/fume/gas/mist/vapors/spray.

6.1.2. For emergency responders

- Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".
- Emergency procedures : Stop leak if safe to do so. Evacuate personnel to a safe area. Ensure adequate ventilation, especially in confined areas.

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

- For containment : Collect spillage. Move containers from fire area if it can be done without personal risk. Contain large spillage with sand or earth.
- Methods for cleaning up : Take up liquid spill into absorbent material. Clean up any spills as soon as possible, using an absorbent material to collect it. Notify authorities if product enters sewers or public waters.
- Other information : Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : When packing the batteries, do not allow battery terminals to contact each other, or contact with other metals.
Be sure to pack batteries by providing partitions in the packaging box, or in a separate plastic bag so that the single batteries are not mixed together.
Use strong material for packaging boxes so that they will not be damaged by vibration, impact, dropping and stacking during their transportation.
Do not short-circuit, recharge, deform, throw into fire or disassemble.
Do not mix different type of batteries.
Do not solder directly onto batteries.
Insert the battery correctly in electrical equipment.
- Hygiene measures : Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

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7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store in a cool and dry area, but prevent condensation on cell or battery terminals.
High temperature may damage the performance of the battery.
Protect from physical damage and short circuits.
To avoid risk of fire or explosion, keep sparks and other sources of ignition away from the battery.
Do not allow metal objects to simultaneously contact both positive and negative terminal of batteries.
Do not stack battery directly on another battery.
Do not store batteries on electrically conductive surfaces.
Keep containers tightly closed in a dry, cool and well-ventilated place (-20 - 45 °C, humidity: 45-75%)
Keep locked up and out of reach of children
Keep away from food, drink and animal feeding stuffs
Store in accordance with local regulations

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Stainless steel (12597-68-1)		
Not applicable		
Polypropylene (9003-07-0)		
Not applicable		
Manganese oxide (MnO₂) (1313-13-9)		
Not applicable		
Lithium (7439-93-2)		
Not applicable		
Perchloric acid, lithium salt (7791-03-9)		
Not applicable		
Polytetrafluoroethylene (9002-84-0)		
Not applicable		
Graphite (7782-42-5)		
ACGIH	ACGIH TWA (mg/m ³)	2 mg/m ³ (all forms except graphite fibers-respirable particulate matter)
OSHA	OSHA PEL (TWA) (mg/m ³)	15 mg/m ³ (synthetic-total dust) 5 mg/m ³ (synthetic-respirable fraction)
IDLH	US IDLH (mg/m ³)	1250 mg/m ³
NIOSH	NIOSH REL (TWA) (mg/m ³)	2.5 mg/m ³ (natural-respirable dust)
Propylene carbonate (108-32-7)		
Not applicable		
Ethylene glycol dimethyl ether (110-71-4)		
Not applicable		

8.2. Appropriate engineering controls

Appropriate engineering controls : Ensure good ventilation of the work station. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Remove all sources of ignition.

Environmental exposure controls : Avoid release to the environment.

8.3. Individual protection measures/Personal protective equipment

Hand protection:

Under normal condition of use and handling no special protection is required for sealed battery. In the event of battery case breakage, should be wear appropriate safety gloves

Eye protection:

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Under normal condition of use and handling no special protection is required for sealed battery. Use appropriate safety glasses when there is the risk of splash

Skin and body protection:

Under normal condition of use and handling no special protection is required for sealed battery. It is recommended to wear appropriate protective clothing when the battery case is broken.

Respiratory protection:

If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Solid
Color	: Metallic color
Odor	: Odourless.
Odor threshold	: No data available
pH	: Not applicable
Melting point	: No data available
Boiling point	: No data available
Flash point	: Not applicable
Relative evaporation rate (butyl acetate=1)	: No data available
Flammability (solid, gas)	: Not flammable
Vapor pressure	: Not applicable
Relative vapor density at 20 °C	: No data available
Relative density	: No data available
Solubility	: Not applicable
Log Pow	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity, kinematic	: Not applicable
Viscosity, dynamic	: Not applicable
Explosion limits	: Not applicable
Explosive properties	: Not applicable
Oxidizing properties	: No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

Avoid contact with hot surfaces. Heat. No flames, no sparks. Eliminate all sources of ignition. Avoid contact with incompatible materials

10.5. Incompatible materials

Oxidizing agent. Strong acid. Strong base. Water. Seawater. Conductive materials

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

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Safety Data Sheet

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SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

Manganese oxide (MnO ₂) (1313-13-9)	
LD50 oral rat	9000 mg/kg
Propylene carbonate (108-32-7)	
LD50 oral rat	29000 mg/kg
LD50 dermal rabbit	> 3000 mg/kg
Ethylene glycol dimethyl ether (110-71-4)	
LD50 oral rat	> 4000 mg/kg
LD50 dermal rabbit	1000 - 2000 mg/kg
LC50 inhalation rat (mg/l)	20 - 63 mg/l (Exposure time: 6 h)

Skin corrosion/irritation : Causes skin irritation.
Serious eye damage/irritation : Causes serious eye irritation.
Respiratory or skin sensitization : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified

Polypropylene (9003-07-0)	
IARC group	3 - Not classifiable
Polytetrafluoroethylene (9002-84-0)	
IARC group	3 - Not classifiable

Reproductive toxicity : May damage fertility or the unborn child.
Specific target organ toxicity – single exposure : Not classified

Specific target organ toxicity – repeated exposure : Not classified

Aspiration hazard : Not classified

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.

Propylene carbonate (108-32-7)	
LC50 fish	> 1000 mg/l (Exposure time: 96 h - Species: Cyprinus carpio [semi-static])
EC50 Daphnia	> 500 mg/l (Exposure time: 48 h - Species: Daphnia magna)

12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

Manganese oxide (MnO ₂) (1313-13-9)	
Log Pow	< 0 (at 20 °C)
Propylene carbonate (108-32-7)	
Log Pow	0.48 (at 25 °C)

LITHIUM MANGANESE BUTTON CELL CR2016

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12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Effect on the global warming : No known effects from this product.

GWPmix comment : No known effects from this product.

SECTION 13: Disposal considerations

13.1. Disposal methods

Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.

Product/Packaging disposal recommendations : Dispose of contents/container in accordance with licensed collector's sorting instructions.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Not applicable

Transportation of Dangerous Goods

Not applicable

Transport by sea

Not applicable

Air transport

Not applicable

SECTION 15: Regulatory information

15.1. US Federal regulations

Polypropylene (9003-07-0)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

EPA TSCA Regulatory Flag	XU - XU - indicates a substance exempt from reporting under the Chemical Data Reporting Rule, (40 CFR 711).
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Manganese oxide (MnO₂) (1313-13-9)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Lithium (7439-93-2)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Perchloric acid, lithium salt (7791-03-9)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Polytetrafluoroethylene (9002-84-0)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

EPA TSCA Regulatory Flag	XU - XU - indicates a substance exempt from reporting under the Chemical Data Reporting Rule, (40 CFR 711).
--------------------------	---

Graphite (7782-42-5)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Propylene carbonate (108-32-7)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Ethylene glycol dimethyl ether (110-71-4)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

EPA TSCA Regulatory Flag	S - S - indicates a substance that is identified in a final Significant New Use Rule.
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LITHIUM MANGANESE BUTTON CELL CR2016

Safety Data Sheet

This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200

15.2. International regulations

CANADA

Polypropylene (9003-07-0)
Listed on the Canadian DSL (Domestic Substances List)
Manganese oxide (MnO₂) (1313-13-9)
Listed on the Canadian DSL (Domestic Substances List)
Lithium (7439-93-2)
Listed on the Canadian DSL (Domestic Substances List)
Perchloric acid, lithium salt (7791-03-9)
Listed on the Canadian DSL (Domestic Substances List)
Polytetrafluoroethylene (9002-84-0)
Listed on the Canadian DSL (Domestic Substances List)
Graphite (7782-42-5)
Listed on the Canadian DSL (Domestic Substances List)
Propylene carbonate (108-32-7)
Listed on the Canadian DSL (Domestic Substances List)
Ethylene glycol dimethyl ether (110-71-4)
Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

Manganese oxide (MnO₂) (1313-13-9)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Lithium (7439-93-2)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Perchloric acid, lithium salt (7791-03-9)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Graphite (7782-42-5)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Propylene carbonate (108-32-7)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Ethylene glycol dimethyl ether (110-71-4)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

National regulations

Stainless steel (12597-68-1)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the TCSI (Taiwan Chemical Substance Inventory)
Polypropylene (9003-07-0)
Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
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Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Japanese Pollutant Release and Transfer Register Law (PRTR Law)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

Lithium (7439-93-2)

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Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
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Perchloric acid, lithium salt (7791-03-9)

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Listed on NZIoC (New Zealand Inventory of Chemicals)
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Polytetrafluoroethylene (9002-84-0)

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Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

Ethylene glycol dimethyl ether (110-71-4)

Listed on the AICS (Australian Inventory of Chemical Substances)
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Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
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Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

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This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200

15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

SECTION 16: Other information

Issue date : 22/08/2019

Revision date : 22/08/2019

Key or legend to abbreviations and acronyms used in the safety data sheet

ADR	European Agreement Concerning the International Carriage of Dangerous Goods by Road
IMDG	International Maritime Dangerous Goods
IATA	International Air Transport Association
ADN	European Agreement Concerning the International Carriage of Dangerous Goods by Inland Waterway
RID	Regulations Concerning the International Carriage of Dangerous Goods by Rail
PBT	Persistent, Bioaccumulative and Toxic
vPvB	Very Persistent and Very Bioaccumulative
DNEL	Derived No Effect Level
PNEC	Predicted No Effect Concentration
LC50	Lethal Concentration 50
LD50	Lethal Dose 50
EC50	Effective Concentration 50
TWA	Time Weighted Average
STEL	Short Term Exposure Limit

Key literature references and sources for data

ECHA: <http://echa.europa.eu/>
IFA GESTIS: [http://gestis-en.itrust.de/nxt/gateway.dll?f=templates\\$fn=default.htm\\$vid=gestiseng:sdbeng](http://gestis-en.itrust.de/nxt/gateway.dll?f=templates$fn=default.htm$vid=gestiseng:sdbeng)
HSDB: <http://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>
ICSC: <http://www.ilo.org/dyn/icsc/showcard.home>
eChemPortal: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en
NITE-CHIRP: http://www.nite.go.jp/en/chem/chrip/chrip_search/srhInput

SDS US (GHS HazCom 2012)

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product