SAFETY DATA SHEET

Date Prepared : 02/27/2017
MSDS No : Light Curing Adhesive
Date-Revised : 08/10/2017
Revision No : 2

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT DESCRIPTION: Light Curing Adhesive

MANUFACTURER

Pacer Technology
3281 E. Guasti Rd., Suite 260
Ontario, CA 91761
Emergency Contact: CHEMTREC
Emergency Phone: 800-424-9300
Alternate Emergency Phone: 703-527-3887
Product Stewardship: 909-987-0550

2. HAZARDS IDENTIFICATION

GHS CLASSIFICATIONS

Physical:

Flammable Liquids, Category 4

GHS LABEL ELEMENTS

Note: If this product is a consumer product it is labeled in accordance with the Consumer Product Safety Commission regulations and not OSHA regulations. The requirements for the labeling of consumer products take precedence over OSHA labeling so the actual product label will not contain the OSHA label elements shown below on this SDS.

SIGNAL WORD: WARNING

HAZARD STATEMENTS

H227: Combustible liquid.

PRECAUTIONARY STATEMENT(S)

Prevention:

P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P280: Wear protective gloves/protective clothing/eye protection/face protection.

Response:

P370: In case of fire: Use dry chemical extinguisher or flush with large amounts of water to extinguish.

Storage:

P403+P235: Store in a well-ventilated place. Keep cool.

Disposal:

P501: Dispose of in a manner consistent with federal, state, and local regulations.

HAZARDS NOT OTHERWISE CLASSIFIED: Bonds skin and eyes instantly. Do not get in eyes, in mouth or on skin.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	Wt.%	CAS
2-Methoxyethyl 2-cyanoacrylate	≤ 85 - 100	27816-23-5
Hydroquinone	< 0.01 - 0.1	123-31-9

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4. FIRST AID MEASURES

EYES: Immediately flush eyes with large quantities of water for several minutes, while holding eyelids apart. Remove contact lenses if easy to do so. Continue rinsing. Get medical attention if irritation or bonding occurs.

SKIN: Flush skin with water for several minutes. If bonded, immerse bonded areas in warm, soapy water for several minutes. Peel or roll skin or bonded material apart. Get medical attention if irritation occurs. Remove and launder clothing before re-use.

INGESTION: Flush lips with warm water to release lips if bonded. Ingestion is unlikely, though the product may stick in the mouth. Over a period 1-2 days, the product will be loosened by saliva. Avoid swallowing the product. Get medical attention if symptoms occur.

INHALATION: Remove victim to fresh air. Get medical attention if symptoms of exposure persist.

SIGNS AND SYMPTOMS OF OVEREXPOSURE

EYES: Bonds eyelids immediately.

SKIN: Bonds skin immediately.

SKIN ABSORPTION: Large quantities may react with skin and cause skin burns.

INGESTION: May be harmful if swallowed.

ADDITIONAL INFORMATION: Immediate medical attention should not be required.

5. FIRE FIGHTING MEASURES

GENERAL HAZARD: Combustible liquid and vapor. Contact with water will cause the product to polymerize and become solid. Combustion will produce oxides of carbon and nitrogen, and other toxic or irritating compounds.

EXTINGUISHING MEDIA: Use dry chemical extinguisher or flush with large amounts of water.

FIRE FIGHTING PROCEDURES: Evacuate area and fight fire from a safe distance.

FIRE FIGHTING EQUIPMENT: Wear an approved, positive pressure, self-contained breathing apparatus and full protective clothing. Cool fire exposed containers with water.

HAZARDOUS DECOMPOSITION PRODUCTS: Combustible by-products of carbon monoxide/dioxide.

6. ACCIDENTAL RELEASE MEASURES

ENVIRONMENTAL PRECAUTIONS

WATER SPILL: Avoid releases to the environment. Report spills and releases as required to appropriate authorities.

LAND SPILL: Avoid releases to the environment. Report spills and releases as required to appropriate authorities.

AIR SPILL: Avoid releases to the environment. Report spills and releases as required to appropriate authorities.

GENERAL PROCEDURES: Evacuate spill area and keep unprotected personnel away. Remove all ignition sources such as open flames, etc. Avoid contact with eyes, skin or clothing. Wear appropriate protective clothing to prevent eye and skin contact including impervious gloves, safety goggles, and respirator if needed. Avoid breathing mists or vapors. Ventilate area.

RELEASE NOTES: Collect material with absorbent rags (not paper towels) or wash the material down with water to solidify and scrape off surface. Rinse spill area with water.

7. HANDLING AND STORAGE

GENERAL PROCEDURES: Avoid breathing mists or vapors. Use with adequate ventilation.

HANDLING: Avoid contact with the eyes, skin, and clothing. Wear appropriate protective clothing as described in section 8. Wash

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thoroughly after handling. Keep away from flames and sources of ignition. No smoking in storage or use areas. Keep containers closed when not in use.

STORAGE: Store in a container in a cool, dry, well-ventilated location away from heat, sunlight and incompatible materials. Keep in original container. Prevent moisture contact. Keep container tightly closed when not in use.

STORAGE TEMPERATURE: 2°C (35.6°F) Minimum to 8°C (46.4°F) Maximum

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE GUIDELINES

OSHA HAZARDOUS COMPONENTS (29 CFR1910.1200)				
	EXPOSURE LIMITS			
Chemical Name	**Type**		**ppm**	**mg/m³**
2-Methoxyethyl 2-cyanoacrylate	**Supplier OEL**	**TWA**	0.2	
Hydroquinone	**ACGIH TLV**	**TLV (DSEN)**		1
	OSHA PEL	**TWA**		2

ENGINEERING CONTROLS: Use with adequate general or local exhaust ventilation to minimize exposure levels.

PERSONAL PROTECTIVE EQUIPMENT

EYES AND FACE: Chemical safety goggles are recommended where splashing is possible.

SKIN: Impervious gloves such as nitrile gloves are suggested to prevent skin contact. Do not use PVC, Nylon, or cotton materials. Contact your glove supplier for selection assistance.

RESPIRATORY: If needed, an approved respirator with organic vapor cartridges may be used. For higher exposures, a supplied air respirator may be required. Respirator selection and use should be based on contaminant type, form, and concentration. Follow applicable regulations and good Industrial Hygiene practice.

OTHER USE PRECAUTIONS: Impervious clothing is required to prevent skin contact and contamination of personal clothing. An eye wash facility and safety shower should be available in the work area.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: Liquid

ODOR: Odorless

ODOR THRESHOLD: No data available

APPEARANCE: Transparent liquid

COLOR: Yellow to light green.

pH: No data available

PERCENT VOLATILE: No data available

FLASHPOINT AND METHOD: 80°C (176°F) to 93.3°C (199.94°F)

FLAMMABLE LIMITS: No data available

AUTOIGNITION TEMPERATURE: No data available

VAPOR PRESSURE: No data available

VAPOR DENSITY: No data available

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BOILING POINT: 74°C (165.2°F) to 76°C (168.8°F)

FREEZING POINT: No data available

MELTING POINT: No data available

POUR POINT: No data available

THERMAL DECOMPOSITION: No data available

SOLUBILITY IN WATER: Polymerizes in presence of water

PARTITION COEFFICIENT: N-OCTANOL/WATER: No data available

EVAPORATION RATE: No data available

DENSITY: No data available

SPECIFIC GRAVITY: 1.19

VISCOSITY #1: 180 to 220 at 25°C (77°F)

MOLECULAR WEIGHT: No data available

(VOC): < 3 %

10. STABILITY AND REACTIVITY

REACTIVITY: Rapid exothermic polymerization will occur in presence of incompatible materials.

HAZARDOUS POLYMERIZATION: Polymerization will occur on contact with water, amines, alkali, and alcohols. The polymerization is an exothermic reaction and may cause thermal burns.

STABILITY: Stable under normal storage and handling conditions.

CONDITIONS TO AVOID: Keep away from heat, flames, and other sources of ignition. Keep dry. Avoid high humidity or high temperatures above 80C/176F.

POSSIBILITY OF HAZARDOUS REACTIONS: Possible polymerization reaction in the presence of water, amines, alkalis and alcohols.

HAZARDOUS DECOMPOSITION PRODUCTS: Thermal decomposition will produce oxides of carbon and nitrogen, and other toxic or irritating compounds.

INCOMPATIBLE MATERIALS: Water, alcohol, amines, and alkaline materials.

11. TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

Chemical Name	ORAL LD_{50} (rat)	DERMAL LD_{50} (rabbit)
2-Methoxyethyl 2-cyanoacrylate	> 5000 mg/kg	> 2000 mg/kg
Hydroquinone	367.3 mg/kg	> 2000 mg/kg

RESPIRATORY OR SKIN SENSITISATION: No data available for the mixture. Testing for skin sensitization is technically not feasible. The adhesive bonds instantaneous to the surface of the skin and polymerizes. The polymerized material is not able to penetrate into the epidermis.

GERM CELL MUTAGENICITY: Hydroquinone: Positive with metabolic activation and negative without metabolic activation in an In-vitro mammalian chromosome aberration test. Positive in mammalian germ cell cytogenetic assay.

CARCINOGENICITY

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IARC: None known

NTP: None known

OSHA: None known

NOTES: Hydroquinone is classified as a category 2 carcinogen by the EU CLP. None of the other components of this product are listed as carcinogen or suspected carcinogen by IARC, NTP, ACGIH, OSHA, or the EU CLP.

REPRODUCTIVE TOXICITY: None of the components are considered a reproductive hazard.

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL DATA: This product is expected to be harmful to the aquatic environment. Releases to the environment should be avoided.

BIOACCUMULATION/ACCUMULATION: No data available

AQUATIC TOXICITY (ACUTE): Hydroquinone: 96 hr LC50 Rainbow trout: 0.638 mg/L, 48 hr EC50 Daphnia magna: 0.134 mg/L, 48 hr NOEC Daphnia magna: 0.095 mg/L, 21 day NOEC Daphnia magna: 0.0057 mg/L

COMMENTS: Persistence and Degradability: Hydroquinone: Readily biodegradable - 70% in 14 days.

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Dispose of in accordance with local, state, and federal regulations.

14. TRANSPORT INFORMATION

DOT (DEPARTMENT OF TRANSPORTATION)

PROPER SHIPPING NAME: NOT REGULATED

AIR (ICAO/IATA)

SHIPPING NAME: ID8000 CONSUMER COMMODITY, 9 (PKG LESS THAN OR EQUAL TO 30 kg G); UN3334, AVIATION REGULATED LIQUID, N.O.S. (CYANOACRYLATE ESTER), 9, III, (LTD QTY, IP VOL LESS THAN OR EQUAL TO 5.0 L, OP WGT LESS THAN OR EQUAL TO 30 kg G) **

VESSEL (IMO/IMDG)

SHIPPING NAME: NOT REGULATED

COMMENTS:

* Exempt from HazMat in Non-Bulk Packaging

** This product may be shipped as EXCEPTED QUANTITIES OF CLASS 9, UN3334 (IP VOL LESS THAN OR EQUAL TO 0.03 L, OP VOL LESS THAN OR EQUAL TO 1.0 L)

The transport information provided in this section only applies to the material formulation/itself, and is not specific to any package/configuration. This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. It is the responsibility of the transporting organizations to follow all applicable laws, regulations, and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

UNITED STATES

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SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

311/312 HAZARD CATEGORIES: Fire Hazard

313 REPORTABLE INGREDIENTS: None

TITLE III NOTES: Section 302 Extremely Hazardous Substances (TPQ): Hydroquinone (500 lbs).

CERCLA (COMPREHENSIVE RESPONSE, COMPENSATION, AND LIABILITY ACT)

CERCLA REGULATORY: This product has an RQ of 100,000 lbs (based on RQ of Hydroquinone of 100 lbs present at <0.1%). Some states have more stringent reporting requirements. Report all spills in accordance with local, state, and federal regulations.

TSCA (TOXIC SUBSTANCE CONTROL ACT)

Chemical Name	CAS
2-Methoxyethyl 2-cyanoacrylate	27816-23-5
Hydroquinone	123-31-9

TSCA STATUS: All components are listed on or are exempt from listing on the Toxic Substances Control Act.

CALIFORNIA PROPOSITION 65: This product does not contain substances known to the State of California to cause cancer and/or reproductive harm.

16. OTHER INFORMATION

APPROVED BY: Pacer Technology Regulatory Department

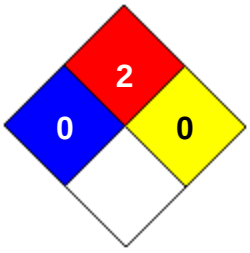
PREPARED BY: Pacer Technology Regulatory Department **Date-Revised:** 08/10/2017

REVISION SUMMARY: This MSDS replaces the 08/10/2017 MSDS. Revised: **Section 1:** Date Issued.

HMIS RATING

HEALTH	1
FLAMMABILITY	2
PHYSICAL HAZARD	0
PERSONAL PROTECTION	

NFPA CODES



MANUFACTURER DISCLAIMER:

To the best of our knowledge, the information contained herein is accurate. However, Pacer Technology does not assume any liability for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist.

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.

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 (MnO2)	(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.

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.

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.

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/m³)	2 mg/m³ (all forms except graphite fibers-respirable particulate matter)
OSHA	OSHA PEL (TWA) (mg/m³)	15 mg/m³ (synthetic-total dust) 5 mg/m³ (synthetic-respirable fraction)
IDLH	US IDLH (mg/m³)	1250 mg/m³
NIOSH	NIOSH REL (TWA) (mg/m³)	2.5 mg/m³ (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:

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.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

Manganese oxide (MnO2) (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 (MnO2) (1313-13-9)	
Log Pow	< 0 (at 20 °C)

Propylene carbonate (108-32-7)	
Log Pow	0.48 (at 25 °C)

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.

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)

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)

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 Godds 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
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-CHRIP: 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