

# Product Information Sheet

## Panasonic Batteries

Panasonic Industrial Company  
A Division Panasonic Corporation of North America  
5201 Tollview Drive, 1F-3  
Rolling Meadows, IL 60008  
Toll Free: 877-726-2228  
Fax: 847-637-4660  
Internet: [www.panasonic.com/industrial/batteries-oem](http://www.panasonic.com/industrial/batteries-oem)  
e-mail: [ombatteries@panasonic.com](mailto:ombatteries@panasonic.com)

**Product:** Manganese Dioxide (CR Type) Lithium Batteries  
**Applicable models/sizes:** All CR type coin batteries

**Revision:** January 1, 2019

**The batteries referenced herein are exempt articles and are not subject to the OSHA Hazard Communication Standard requirement. This sheet is provided as a service to our customers.**

## SDS

Safety Data Sheets (SDS) are a sub-requirement of the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard, 29 CFR Subpart 1910.1200. This Hazard Communication Standard does not apply to various subcategories including anything defined by OSHA as an "article". OSHA has defined "article" as a manufactured item other than a fluid or particle; (i) which is formed to a specific shape or design during manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and (iii) which under normal conditions of use does not release more than very small quantities, e.g. minute or trace amounts of a hazardous chemical, and does not pose a physical hazard or health risk to employees.

*Because all of our batteries are defined as "articles", they are exempt from the requirements of the Hazard Communication Standard; hence a SDS is not required.*

### The following components are found in a Panasonic Manganese Dioxide (CR) Lithium battery:

Coin Cell Components	Material	Formula	
Positive Electrode	Manganese Dioxide	MnO <sub>2</sub>	1313-13-9
Negative Electrode	Lithium	Li	7439-93-2
Electrolyte	Propylene Carbonate-Solvent	C <sub>4</sub> H <sub>6</sub> O <sub>3</sub>	108-32-7
	1,2 Dimethoxyethane-Solvent	C <sub>4</sub> H <sub>10</sub> O <sub>2</sub>	110-71-4
	Lithium Perchlorate-Salt	LiClO <sub>4</sub>	7791-03-9

## DISPOSAL

Lithium batteries are neither specifically listed nor exempted from the Federal Environmental Protection Agency (EPA) hazardous waste regulations as promulgated by the Resource Conservation and Recovery Act (RCRA). The only metal of possible concern in a lithium battery is lithium that is not a listed or characteristic toxic hazardous waste. Waste lithium batteries can be considered a reactive hazardous waste if there is a significant amount of unreacted, or unconsumed lithium remaining in the spent battery. The key to disposing of a lithium battery as a non-hazardous waste is to guarantee that it is fully or mostly discharged. Once it is discharged it can be disposed of as non-hazardous waste. You can dispose of a fully charged or partially discharged lithium battery as a hazardous waste after they are first neutralized through an approved secondary treatment. The need for a secondary treatment prior to disposal is a requirement of the U.S. Land Ban Restrictions of the Hazardous and Solid Waste Amendments of 1984. A secondary treatment center can only receive these batteries as manifested hazardous waste. The waste code for charged lithium

batteries is D003, reactive. **In either case, button cell batteries contain so little lithium that they never qualify as a reactive hazardous waste. These batteries are safe for disposal in the normal municipal waste stream.**

Disposal of large quantities of undischarged lithium batteries should be performed by permitted, professional disposal firms knowledgeable in Federal, State and local hazardous materials and hazardous waste transportation and disposal requirements. As always, households are exempt from the RCRA hazardous waste guidelines.

**Notice:** The information and recommendations set forth are made in good faith and are believed to be accurate at the date of preparation. Panasonic Industrial Company makes no warranty expressed or implied.

In California, packages that contain CR lithium coin cells and the Owners/Operating Instructions of products that contain CR lithium coin cells must include the following statement: "Perchlorate Material – special handling may apply, See [www.dtsc.ca.gov/hazardouswaste/perchlorate/](http://www.dtsc.ca.gov/hazardouswaste/perchlorate/)".

## **TRANSPORTATION**

All Panasonic lithium batteries are not subject to the requirements of the Department of Transportation (DOT) Subchapter C, Hazardous Materials Regulations if shipped in compliance with 49 CFR 173.185.

Effective January 1, 2019 all Panasonic lithium batteries can be shipped by air in accordance with International Civil Aviation Organization (ICAO), 2019-2020 edition, Section II or Section 1B or International Air Transport Association (IATA) 60th edition, Section II or Section 1B Packing Instructions (PI) 968 (Batteries), PI 969 (Batteries, packed with equipment) and PI 970 (Batteries, contained in equipment) as appropriate

All Panasonic lithium batteries are regulated by the International Maritime Organization (IMO), 2018, 39<sup>th</sup> amendment, under Special Provisions 188 and 230.

All Panasonic lithium cells are tested and comply with the UN Model Regulations, Manual of Test and Criteria, Part III, subsection 38.3.

If you build any of our lithium cells into a battery pack, you must also assure that they are tested in accordance with the UN Model Regulations, Manual of Test and Criteria. Part III, subsection 38.3, 6<sup>th</sup> Revised Edition, Amendment 1.

If you plan on transporting any untested prototype battery packs contact your Panasonic Sales Representative for regulatory information. Check with your air carrier before shipping. Many air carriers have additional requirements.

## **First Aid**

If you get electrolyte in your eyes, flush with water for 15 minutes without rubbing and immediately contact a physician. If you get electrolyte on your skin wash the area immediately with soap and water. If irritation continues, contact a physician. If a battery is ingested, call the Rocky Mountain Poison and Drug Center at 800-498-8666 for the US and Canada and 303-389-1300 internationally or your local poison center immediately. Lithium coin batteries lodged in the esophagus should be removed immediately. Leakage, chemical burns and perforation can occur within hours of ingestion.



## **General Recommendations**

CAUTION: Risk of fire, explosion and burns. Do not recharge, crush, heat above 212<sup>o</sup>F (100<sup>o</sup>C) or incinerate.

## **Fire Safety**

In case of fire, you can use a Class "D" fire extinguisher or other smothering agent such as Lith-X, copper powder or dry sand. If you use water, use enough to smother the fire. Cooling the exterior of the batteries will help prevent rupturing. Fire fighters should use self-contained breathing apparatus. Detailed information on fighting a lithium metal battery fire can be found in Guide 138 (Substances – Water – Reactive) of the US DOT Emergency Response Guide.

## Safety Data Sheets (SDSs)

Client	Huizhou Huiderui Lithium Battery Technology Co.,Ltd.
Add. of Client	No.4, Xingye Avenue, Chenjiang, Zhongkai Hi-Tech Development Zone, Huizhou, Guangdong 516029, China.
Description	Lithium Manganese Dioxide Battery
Model /Type	CR2
Manufacturer	Huizhou Huiderui Lithium Battery Technology Co.,Ltd.
Add. of Manufacturer	No.4, Xingye Avenue, Chenjiang, Zhongkai Hi-Tech Development Zone, Huizhou, Guangdong 516029, China.
Nominal Voltage	3V, 1000mAh
Date of Receipt	2022-10-24
Laboratory	Dongguan ZRLK Testing Technology Co., Ltd.
Address	Building D, No.2, Jinyuyuan Mansion, No.18, Industrial West Road, Songshan Lake High-tech Industrial Development Zone, Dongguan, Guangdong, China
Approved Signatory	Maggie.Gao 
Inspected by	Ailis.Ma 
Censored by	Lahm Peng 



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

### Product Identifier

Product name: Lithium Manganese Dioxide Battery

Model: CR2

### Other means of identification

Synonyms:none

### Recommended use of the chemical and restrictions on use

Recommended Use:Used in portabl electronic equipments;

Uses advised against:

- a) Do not dismantle, open or shred secondary cells or batteries.
- b) Keep batteries out of the reach of children  
Battery usage by children should be supervised. Especially keep small batteries out of reach of small children.
- c) Seek medical advice immediately if a cell or a battery has been swallowed.
- d) Do not expose cells or batteries to heat or fire. Avoid storage in direct sunlight.
- e) Do not short-circuit a cell or a battery. Do not store cells or batteries haphazardly in a box or drawer where they may short-circuit each other or be short-circuited by other metal objects.
- f) Do not remove a cell or battery from its original packaging until required for use.
- g) Do not subject cells or batteries to mechanical shock.
- h) In the event of a cell leaking, do not allow the liquid to come in contact with the skin or eyes. If contact has been made, wash the affected area with copious amounts of water and seek medical advice.
- i) Do not use any charger other than that specifically provided for use with the equipment.
- j) Observe the plus (+) and minus (–) marks on the cell, battery and equipment and ensure correct use.
- k) Do not use any cell or battery which is not designed for use with the equipment.
- l) Do not mix cells of different manufacture, capacity, size or type within a device.
- m) Always purchase the battery recommended by the device manufacturer for the equipment.
- n) Keep cells and batteries clean and dry.
- o) Wipe the cell or battery terminals with a clean dry cloth if they become dirty.
- p) Secondary cells and batteries need to be charged before use. Always use the correct charger and refer to the manufacturer's instructions or equipment manual for proper charging instructions.
- q) Do not leave a battery on prolonged charge when not in use.
- r) After extended periods of storage, it may be necessary to charge and discharge the cells or batteries several times to obtain maximum performance.
- s) Retain the original product literature for future reference.
- t) Use the cell or battery only in the application for which it was intended.
- u) When possible, remove the battery from the equipment when not in use.
- v) Dispose of properly.

### Details of the supplier of the safety data sheet:

Supplier Name: Huizhou Huiderui Lithium Battery Technology Co.,Ltd.

Address: No.4, Xingye Avenue, Chenjiang, Zhongkai Hi-Tech Development Zone, Huizhou, Guangdong 516029, China.

Telephone number of the supplier: 0086-13143109458

Fax: /

Postcode: 516006

E-mail address: xuwx@huiderui.com

**Emergency telephone number****Company Emergency Phone Number:** 0086-13143109458

## 2. HAZARDS IDENTIFICATION

**Classification**

Acute toxicity - Dermal	Category 3
Serious eye damage/eye irritation	Category 2A
Carcinogenicity	Category 2
Specific target organ toxicity (repeated exposure)	Category 1

**GHS Label elements, including precautionary statements****Danger****Hazard statements**

Toxic in contact with skin

Causes serious eye irritation

Suspected of causing cancer

Causes damage to organs through prolonged or repeated exposure

**Precautionary statements-Prevention**

Obtain special instructions before use

Do not handle until all safety precautions have been read and understood

Wear protective gloves/protective clothing/eye protection/face protection

Wash face, hands and any exposed skin thoroughly after handling

Do not breathe dust/fume/gas/mist/vapors/spray

Do not eat, drink or smoke when using this product

**Precautionary Statements - Response**

If exposed or concerned: Get medical advice/attention

Specific treatment (see supplemental first aid instructions on this label)

Report No.:DSP22100390

TRF No. SDS-1A



**Eyes**

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing If eye irritation persists: Get medical advice/attention

**Skin**

IF ON SKIN: Wash with plenty of water and soap

Call a POISON CENTER or doctor if you feel unwell

Take off immediately all contaminated clothing and wash it before reuse

**Precautionary Statements - Storage**

Store locked up

**Precautionary Statements - Disposal**

Dispose of contents/container to an approved waste disposal plant

**Other information**

harmful if swallowed. Very toxic to aquatic life with long lasting effects.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

**Chemical characterization: Mixtures**

**Description:**

Product: Consisting of the following components.

Common Chemical Name	Concentration (%)	CAS Number
Lithium	3	7439-93-2
Propylene Carbonate	5	108-32-7
Manganese Dioxide	34	1313-13-9
Methylal	7	109-87-5
Perchloric acid, lithium salt	1.5	7791-03-9
Graphite	4	7782-42-5
Iron	45.5	7439-89-6

Note: CAS number is Chemical Abstract Service Registry Number.

N/A=Not apply.

## 4. FIRST-AID MEASURES

### First aid measures

Eye Contact Rinse thoroughly with plenty of water, also under the eyelids. If symptoms persist, call a physician.

Skin Contact Remove contaminated clothing and shoes. Wash skin with soap and water. In the case of skin irritation or allergic reactions see a physician.

Inhalation Move to fresh air. If symptoms persist, call a physician.

Ingestion Do NOT induce vomiting. Drink plenty of water. If symptoms persist, call a physician.

Most important symptoms and effects, both acute and delayed

Swallowing Do not induce vomiting. Get medical attention.

**Most Important Symptoms/Effects** No information available.

### **Indication of any immediate medical attention and special treatment needed**

Notes to Physician Treat symptomatically

## 5. FIRE-FIGHTING MEASURES

### **Suitable Extinguishing Media**

CO<sub>2</sub>, dry chemical powder, water spray.

Unsuitable Extinguishing Media: No information available.

### **Specific Hazards Arising from the Chemical**

Formation of toxic gases is possible during heating or in case of fire.

In case of fire, the following can be released:

Carbon monoxide(CO)

Carbon dioxide

Other irritating and toxic gases.

### **Hazardous Combustion Products**

Carbon oxides.

Explosion Data

Sensitivity to Mechanical Impact No

Sensitivity to Static Discharge No

### **Protective Equipment and Precautions for Firefighters**

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. For example: Wear self-contained respiratory protective device. Wear suitable protective clothing and eye/face protection.

### **Special hazards arising from the substance or mixture:**

Battery may burst and release hazardous decomposition products when exposed to a fire situation. Lithium ion batteries contain flammable electrolyte that may vent, ignite and produce sparks when subjected to high temperature(>150°C), When damaged or abused(e.g. mechanical damage or electrical overcharging); may burn rapidly with flare-burning effect; may ignite other batteries in clothes proximity.

## 6. ACCIDENTAL RELEASE MEASURES

### **Personal precautions, protective equipment and emergency procedures**

Personal Precautions Avoid contact with eyes.

Refer to section 8 for personal protective equipment. Ensure adequate ventilation. Remove all sources of ignition.

Evacuate personnel to safe areas.

### **Environmental precautions**

Environmental Precautions Refer to protective measures listed in Sections 7 and 8.

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Dispose contaminated material as waste according to item 13.

### **Methods and material for containment and cleaning up**

Methods for Containment Prevent further leakage or spillage if safe to do so.

Methods for Cleaning up Use personal protective equipment. Dam up. Cover liquid spill with sand, earth or other Non combustible absorbent material. Pick up and transfer to properly labeled containers. Clean contaminated surface thoroughly.

## 7. HANDLING AND STORAGE

### **Precautions for safe handling**

Handling Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing. Wear personal protective equipment.

Wash thoroughly after handling. Use this material with adequate ventilation.

The product is not explosive.

### **Conditions for safe storage, including any incompatibilities**

If the Lithium-ion Battery is subject to storage for such a long term as more than 3 months, it is recommended to recharge the Li-ion Polymer Battery periodically.

3 months: -10°C~+40°C, 45 to 85%RH

And recommended at 0°C~+35°C for long period storage.

The capacity recovery rate in the delivery state (50% capacity of fully charged) after storage is assumed to be 80% or more.

The voltage for a long time storage shall be 3.7V~4.2V range.

Do not storage Lithium-ion Battery haphazardly in a box or drawer where they may short-circuit each other or be short-circuited by other metal objects.

Keep out of reach of children.

Do not expose Li-ion Polymer Battery to heat or fire. Avoid storage in direct sunlight.

Do not store together with oxidizing and acidic materials.

Keep ignition sources away- Do not smoke.

Store in cool, dry and well-ventilated place.

**Incompatible Products** None known.



## 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

### Control parameters

CAS Number	ACGIH	NIOSH	OSHA
7782-42-5	TLV-TWA 2mg/m <sup>3</sup>	RELs-TWA2.5mg/m <sup>3</sup>	PELs-TWA 15mppcf
1333-86-4	TLV-TWA 3mg/m <sup>3</sup>	RELs-TWA3.5mg/m <sup>3</sup>	PELs-TWA 3.5mg/m <sup>3</sup>
1313-13-9	PELs-TWA 0.1mg/m <sup>3</sup> PELs-TWA 0.02mg/m <sup>3</sup>	N/A	N/A

**Other Exposure Guidelines** Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962(11th Cir., 1992).

### Appropriate engineering controls

**Engineering Measures** Showers  
Eyewash stations  
Ventilation systems

Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits. Ensure adequate ventilation.

### Individual protection measures, such as personal protective equipment

#### **Eye/Face Protection:**



**Tightly sealed goggles**

#### **Body protection:**

Protective work clothing.

#### **Skin protection:**



**Protective gloves**

#### **Material of gloves:**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product 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.

#### **Penetration time of glove material:**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

**Respiratory Protection** No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

**Hygiene Measures** Handle in accordance with good industrial hygiene and safety practice.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Form: Cylindrical	
	Color: Yellow	
	Odour: Odourless	
	Odor Threshold: No information available	
Change in condition:		
pH, with indication of the concentration	Not determined.	
Melting point/freezing point	Not determined.	
Initial boiling point and Boiling range:	Not determined.	
Flash Point	Not determined.	
Evaporation rate	Not determined.	
Flammability (solid, gas)	Not determined.	
Upper/lower flammability or explosive limits	Not determined.	
Vapor Pressure:	Not determined.	
Vapor Density:	Not determined.	
relative density:	Not determined.	
Solubility in Water:	Not determined.	
Solubility in other solvents	Not determined.	
n-octanol/water partition coefficient	Not determined.	
Auto-ignition temperature	Product is not self-igniting.	
Decomposition temperature	Not determined.	
Odour threshold	Not determined.	
Evaporation rate	Not determined.	
Viscosity	Not determined.	
Other Information	:	
Voltage	3.0V	
Electric capacity	1600mAh	
Lithium content	0.51g	

## 10. STABILITY AND REACTIVITY

**Reactivity:** Stable under recommended storage and handling conditions (see section 7, Handling and storage).

**Chemical stability:** Stable under normal conditions of use, storage and transport.

**Thermal decomposition/conditions to be avoided:** No decomposition if used according to specifications.

**Possibility of Hazardous Reactions:** None under normal processing.

**Hazardous Polymerization:** Hazardous polymerization does not occur.

**Conditions to avoid:** Strong heating, fire, Incompatible materials.

**Incompatible materials:** Strong oxidizing agents. Strong acids. Base metals.

**Hazardous Decomposition Products:** Carbon oxides, Other irritating and toxic gases.

## 11. TOXICOLOGICAL INFORMATION

**Acute toxicity:** No data available.

LD/LC50 values relevant for classification:
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Not available.
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**Skin corrosion/irritation:** No irritant effect.

**Serious eye damage/irritation:** Cause serious eye irritation.

**Respiratory or skin sensitization:** No sensitizing effects known.

**Specific target organ system toxicity:** No information available.

**CMR effects(carcinogenity, mutagenicity and toxicity for reproduction):** No information available.

## 12. Ecological Information

**Toxicity:**

Aquatic toxicity:
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No further relevant information available.
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**Persistence and degradability:** No further relevant information available.

**Bioaccumulative potential:** No further relevant information available.

**Mobility in soil:** No further relevant information available.

Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

**Other adverse effects:** No information available.

## 13. DISPOSAL CONSIDERATIONS

### Waste treatment methods

Recommendation: Must not be disposed together with household garbage.

Do not allow product to reach sewage system

### Uncleaned packaging:

Recommendation: Disposal must be made according to official regulations.

## 14. TRANSPORT INFORMATION

Land transport

ADR/RID class: Not regulated.

UN-Number: UN3090 or UN3091.

Maritime transport

IMDG Class: Class 9.

UN Number: UN3090 or UN3091.

Marine pollutant: No

Air transport

ICAO/IATA Class: Class 9

UN/ID Number: UN3090 or UN3091

Environmental hazards: Not applicable.

Special precautions for user: Not applicable.

Transport/Additional information: Not restricted goods according to the above specifications.

The Lithium Manganese Dioxide Battery had been tested according to the requirements of the UN manual of tests and Criteria, Part III, subsection 38.3;

The Lithium Manganese Dioxide Battery according to Section II of PACKING INSTRUCTION 968, or Section II of PACKING INSTRUCTION 969~970 of the Dangerous Goods regulations 59th Edition may be transported.

The packaging shall be adequate to avoid mechanical damage during transport, handling and stacking. The materials and pack design shall be chosen so as to prevent the development of unintentional electrical conduction, corrosion of the terminals and ingress of moisture.

Meets requirements of Special Provision 188 of IMDG(38-16) to be transported as non-dangerous goods

Meets the requirements of 49CFR173.185 to be transported as non-dangerous goods for road, rail, air, and vessel (Effective August 6, 2014 per HM224F)

The package must be handled with care and that a flammability hazard exists if the package is damaged;

## 15. REGULATORY INFORMATION

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

EU Regulation:

**Authorisations:** No information available.

**Restrictions on use:** No information available.

#### Regulatory information

CAS No.	EU (EINECS)	US (TSCA)	Japan (ENCS)	Canada (DSL/ NDSL)	Australia (AICS)	Korea (ECL)	China (IECSC)
231-102-5	Listed	Listed	Listed	DSL	Listed	Listed	Listed
203-572-1	Listed	Listed	Listed	DSL	Listed	Listed	Listed
215-202-6	Listed	Listed	Listed	DSL	Listed	Listed	Listed
203-714-2	Listed	Listed	Listed	DSL	Listed	Listed	Listed
232-237-2	Listed	Listed	Listed	DSL	Listed	Listed	Listed
231-955-3	Listed	Listed	Listed	DSL	Listed	Listed	Listed
231-096-4	Listed	Listed	Listed	DSL	Listed	Listed	Listed

**Chemical safety assessment** A Chemical Safety Assessment has not been carried out.

## 16. OTHER INFORMATION

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

#### Relevant phrases:

R20/22: Harmful by inhalation and if swallowed.

R36: Irritating to eyes.

H302: Harmful if swallowed.

H332: Harmful if inhaled.

\*\*\*\*\*End of SDS\*\*\*\*\*