

SAFETY DATA SHEETS

Based on 1910.1200 App D

The batteries are articles and are not subject to the OSHA Hazard Communication Standard Requirement as shown in paragraph (b)(6)(v) of §1910.1200. This sheet is provided as technical information only. The information and recommendations set forth are made in good faith and are believed to be accurate as of the date of preparation. However, **Maxell makes no warranty expressed or implied.**

**1. Identification**

- (a) Product identifier used on the label:

CR/maxell/3V/+

- (b) Other means of identification:

Lithium manganese dioxide battery

- (c) Recommended use of the chemical and restrictions on use:

See 7. Handling and storage

- (d) Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party:

Manufacturer: Hitachi Maxell, Ltd.**2. Hazard(s) identification**

- (a) Classification of the chemical in accordance with paragraph (d) of §1910.1200

Chemical battery (Primary)

- (b) Signal word, hazard statement(s), symbol(s) and precautionary statement(s) in accordance with paragraph (f) of §1910.1200. (Hazard symbols may be provided as graphical reproductions in black and white or the name of the symbol, e.g., flame, skull and crossbones)

N/A

- (c) Describe any hazards not otherwise classified that have been identified during the classification process

This contains lithium, organic solvent, and other combustible materials. For this reason, improper handling of the battery could lead to distortion, leakage\*, overheating, explosion, or fire and cause human injury or equipment trouble. Please strictly observe safety instructions.

(\* Leakage is defined as an unintended escape of liquid from a battery.)

- (d) Where an ingredient with unknown acute toxicity is used in a mixture at a concentration  $\geq 1\%$  and the mixture is not classified based on testing of the mixture as a whole, a statement that X% of the mixture consists of ingredient(s) of unknown acute toxicity is required

No such an ingredient is contained in the product.

### 3. Composition/information on ingredients

Except as provided for in paragraph (i) of §1910.1200 on trade secrets:

For Substances:

- (a) Chemical name  
 (b) Common name and synonyms  
 (c) CAS number and other unique identifiers  
 (d) Impurities and stabilizing additives which are themselves classified and which contribute to the classification of the substance

Chemical Name	Common Name and Synonyms	CAS #	Content (Wt %)
Manganese Dioxide	MnO <sub>2</sub>	1313-13-9	15 to 40
Propylene Carbonate	C <sub>4</sub> H <sub>6</sub> O <sub>3</sub>	108-32-7	2 to 6
1,2-Dimethoxyethane	C <sub>4</sub> H <sub>10</sub> O <sub>2</sub>	110-71-4	1 to 5
Lithium Perchlorate	LiClO <sub>4</sub>	7791-03-9	0.1 to 1.5
Lithium or Lithium Alloy	Li	7439-93-2	1 to 5
Graphite	C	7782-42-5	1 to 4

For Mixtures

In addition to the information required for substances:

- (a) The chemical name and concentration (exact percentage) or concentration ranges of all ingredients which are classified as health hazards in accordance with paragraph (d) of §1910.1200 and
- (1) Are present above their cut-off/concentration limits; or
  - (2) Present a health risk below the cut-off/concentration limits.

No such an ingredient is contained in the product.

- (b) The concentration (exact percentage) shall be specified unless a trade secret claim is made in accordance with paragraph (i) of §1910.1200, when there is batch-to-batch variability in the production of a mixture, or for a group of substantially similar mixtures

(See A.0.5.1.2) with similar chemical composition. In these cases, concentration ranges may be used.

No such a situation would happen during the production from batch to batch.

For All Chemicals Where a Trade Secret is claimed

Where a trade secret is claimed in accordance with paragraph (i) of §1910.1200, a statement that the specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret is required.

#### 4. First-aid measures

(a) Description of necessary measures, subdivided according to the different routes of exposure, i.e., inhalation, skin and eye contact, and ingestion

Inhalation                    Fumes can cause respiratory irritation. Remove to fresh air and consult a physician.

Skin Contact                Immediately flush skin with plenty of water. If itch or irritation by chemical burn persists, consult a physician.

Eye Contact                Immediately flush eye with plenty of water for at least 15 minutes. Consult a physician immediately

Ingestion                    If swallowing a battery, consult a physician immediately.  
If contents come into mouth, immediately rinse by plenty of water and consult a physician.

(b) Most important symptoms/ effects, acute and delayed

NA.

(c) Indication of immediate medical attention and special treatment needed, if necessary

Wash with clean water immediately.

#### 5. Fire-fighting measures

(a) Suitable (and unsuitable) extinguishing media.

Extinguisher of alkaline metal fire is effective. Plenty of cold water is also effective to cool the surrounding area and control the spread fire.

(b) Specific hazards arising from the chemical (e.g., nature of any hazardous combustion products).

Hydrogen gas may be evolved by the reaction of water and lithium and it can form an explosive mixture. Therefore when lots of lithium batteries are burning in a confined space, use a smothering agent (ex. Carbon dioxide or dry sand).

- (c) Special protective equipment and precautions for fire-fighters.

Use self-contained breathing apparatus and full protective gear not to inhale harmful gas.

## 6. Accidental release measures

- (a) Personal precautions, protective equipment, and emergency procedures.

Wear protective clothing. Keep unprotected persons away.

- (b) Methods and materials for containment and cleaning up.

When the liquid leaks out of the battery, absorb and wipe it with dry cloth.

Keep the battery away from fire or heat.

## 7. Handling and storage

- (a) Precautions for safe handling.

• **Never swallow.**

If swallowed, see Section 4 - First Aid Measures.

• **Never charge.**

The battery is not designed to be charged by any other electrical source. Charging could generate gas and internal short-circuiting, leading to distortion, leakage, overheating, explosion, or fire.

• **Never heat.**

Heating the battery to more than 100 degree centigrade could increase the internal pressure, causing distortion, leakage, overheating, explosion, or fire.

• **Never expose to open flames.**

Exposing to flames could cause the lithium metal to melt, causing the battery to catch on fire and explosion.

• **Never disassemble the battery.**

Do not disassemble the battery, because the separator or gasket could be damaged, leading to distortion, leakage, overheating, explosion or fire.

• **Never reverse the positive and negative terminals when mounting.**

Improper mounting of the battery could lead to short-circuiting, charging or forced-discharging. This could cause distortion, leakage, overheating, explosion, or fire.

• **Never short-circuit the battery.**

Do not allow the positive and negative terminals to short-circuit. Never carry or store the battery with metal objects such as a necklace or a hairpin. Do not take multiple batteries out of the package and pile or mix them when storing. Otherwise, this could lead to

distortion, leakage, overheating, explosion, or fire.

● **Never weld the terminals or weld a wire to the body of the battery directly.**

The heat of welding or soldering could cause the lithium to melt, or cause damage to the insulating material in the battery. This could cause distortion, leakage, overheating, explosion, or fire.

● **Never use different batteries together.**

Using different batteries together, i.e. different type or used and new or different manufacturer could cause distortion, leakage, overheating, explosion, or fire because of the differences in battery property.

● **Never allow liquid leaking from the battery to get in your eyes or mouth.**

If the liquid comes into eyes, or mouth, see Section 4 - First Aid Measures.

● **Keep leaking batteries away from fire.**

If leakage is suspected or you detect a strong odor, keep the battery away from fire, because the leaked liquid could catch on fire.

● **Never touch the battery electrodes.**

Do not allow the battery electrodes to come in contact with your skin or fingers. Otherwise, the moisture from your skin could cause a discharge of the battery, which could produce certain chemical substances causing you to receive a chemical burns.

(b) Conditions for safe storage, including any incompatibilities.

Never let the battery contact with water. Never store the battery in hot and high humid place.

## 8. Exposure controls/personal protection

(a) OSHA permissible exposure limit (PEL), American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV), and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the safety data sheet, where available.

N/A

(b) Appropriate engineering controls.

Do not disassemble the product without professional basis.

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

No special equipment is required for handling, carrying or using the product. The chemical materials concluded in the Product is sealed up, thus being stable, safe and eco-friendly under common conditions.

**9. Physical and chemical properties**

(a) Appearance (physical state, color, etc.)	:	The appearance is a coin shape and it is a primary cell with 3V nominal voltage.
(b) Odor	:	not applicable
(c) Odor threshold	:	not applicable
(d) pH	:	not applicable
(e) Melting point/ freezing point	:	not applicable
(f) Initial boiling point and boiling range	:	not applicable
(g) Flash point	:	not applicable
(h) Evaporation rate	:	not applicable
(i) Flammability (solid, gas)	:	not applicable
(j) Upper/lower flammability or explosive limits	:	not applicable
(k) Vapor pressure	:	not applicable
(l) Vapor density	:	not applicable
(m) Relative density	:	not applicable
(n) Solubility(ies)	:	not applicable
(o) Partition coefficient: n-octanol/ water	:	not applicable
(p) Auto-ignition temperature	:	not applicable
(q) Decomposition temperature	:	not applicable
(r) Viscosity	:	not applicable

**10. Stability and reactivity**

(a) Reactivity

N/A

(b) Chemical stability

Stable (performance deterioration depends on circumstance.)

(c) Possibility of hazardous reactions

No.

- (d) Conditions to avoid (e.g., static discharge, shock, or vibration)

See 7.Handling and storage

- (e) Incompatible materials

Water

- (f) Hazardous decomposition products

Hydrogen (By moisture).

## 11. Toxicological information

Description of the various toxicological (health) effects and the available data used to identify those effects, including

- (a) Information on the likely routes of exposure (inhalation, ingestion, skin and eye contact)

As the contents are sealed in the battery case, there is no toxicity.

- (b) Symptoms related to the physical, chemical and toxicological characteristics

People might feel itching, if the inner liquid splashes onto skin.

- (c) Delayed and immediate effects and also chronic effects from short- and long-term exposure

N/A

- (d) Numerical measures of toxicity (such as acute toxicity estimates)

N/A

- (e) Whether the hazardous chemical is listed in the National Toxicology Program (NTP) Report on Carcinogens (latest edition) or has been found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest edition), or by OSHA

No.

## 12. Ecological information (Non-mandatory)

- (a) Ecotoxicity (aquatic and terrestrial, where available): N/A

- (b) Persistence and degradability: N/A

- (c) Bio-accumulative potential: N/A

- (d) Mobility in soil: N/A



- (e) Other adverse effects (such as hazardous to the ozone layer) : If the battery is disposed in land or water, battery case may be corroded and the liquid may leak out of the battery. Information regarding ecological concerns has not been reported.

### 13. Disposal considerations (Non-mandatory)

Description of waste residues and information on their safe handling and methods of disposal, including the disposal of any contaminated packaging.

The battery may be regulated by national or local regulation. Please follow the instructions of proper regulation. As electric capacity is left in a discarded battery and it comes into contact with other metals, it could lead to distortion, leakage, overheating, or explosion, so make sure to cover the (+) and (-) terminals with friction tape or some other insulator before disposal.

### 14. Transport information (Non-mandatory)

- (a) UN number, UN3090
- (b) UN proper shipping name: Lithium metal batteries
- (c) Transport hazard class(es) : Class 9 (Miscellaneous
- (d) Packing group, if applicable: N/A
- (e) Environmental hazards (e.g., Marine pollutant (Yes/No)) No.
- (f) Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code)

N/A for Annex II of MARPOL 73/78 and the IBC Code.

The products can be transported if complying with ICAO Technical Instructions or IMDG-Code.

- (g) Special precautions which a user needs to be aware of, or needs to comply with, in connection with transport or conveyance either within or outside their premises

Avoid high-temperature, high-humidity condition.

### 15. Regulatory information (Non-mandatory)

Safety, health and environmental regulations specific for the product in question.

The product is complying with the environmental requirements in EU BATTERY DIRECTIVE (2006/66/EC).

### 16. Other information, including date of preparation or last revision

The date of preparation of the SDS or the last change to it

NA=Not Applicable

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