



PRODUCT SAFETY DATA SHEET

Coin/Button Lithium Manganese Dioxide Batteries

Type No.: CR2032

Approximate Weight: 3.2g

CHEMICAL SYSTEM: Lithium Manganese Dioxide **Designed for Recharge:** No

HAZARDS IDENTIFICATION

Under normal conditions of use, the battery is hermetically sealed.

Ingestion: Swallowing may lead to serious injury or death in as little as 2 hours due to chemical burns and potential perforation of the esophagus. **Immediately see doctor.** Do not induce vomiting or give food or drink.

Inhalation: Contents of an open battery can cause respiratory irritation.

Skin Contact: Contents of an open battery can cause skin irritation.

Eye Contact: Contents of an open battery can cause severe irritation.

INGREDIENTS

IMPORTANT NOTE: The battery should not be opened or burned. Exposure to the ingredients contained within or their combustion products could be harmful.

| Material | CAS No. | Approximate Percent (wt %) |
|---------------------|-----------|------------------------------|
| Manganese dioxide | 1313-13-9 | 26.8 |
| Graphite | 7782-42-5 | 2.2 |
| Teflon | 9002-84-0 | 1.5 |
| Lithium | 7439-93-2 | 2.1 |
| Lithium Perchlorate | 7791-03-9 | 0.9 |
| Propylene carbonate | 108-32-7 | 6.5 |
| 1,2 Dimethoxyethane | 110-71-4 | 1.7 |
| Stainless Steel | 7439-89-6 | 53.6 |
| Plastic | 9003-07-0 | 4.7 |

FIRST AID MEASURES

Ingestion: Swallowing may lead to serious injury or death in as little as 2 hours due to chemical burns and potential perforation of the esophagus. **Immediately see doctor.** Do not induce vomiting or give food or drink.

Inhalation: Provide fresh air and seek medical attention.

Skin Contact: Remove contaminated clothing and wash skin with soap and water.

Eye Contact: Immediately flush eyes thoroughly with water for at least 15 minutes, lifting upper and lower lids, until no evidence of the chemical remains. Seek medical attention.

Note: Carbon black is listed as a possible carcinogen by International Agency for Research on Cancer (IARC).

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All specifications subject to change without notice.



UPG is ISO Certified

120 Dividend Dr. Ste 100
Coppell, TX 75019

Main 469.892.1122
Toll Free 866.892.1122

Fax 469.892.1123
sales@upgi.com

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FIRE FIGHTING MEASURES

In case of fire where lithium batteries are present, flood area with water or smother with a Class D fire extinguishant appropriate for lithium metal, such as Lith-X. Water may not extinguish burning batteries but will cool the adjacent batteries and control the spread of fire. Burning batteries will burn themselves out. Virtually all fires involving lithium batteries can be controlled by flooding with water. However, the contents of the battery will react with water and form hydrogen gas. In a confined space, hydrogen gas can form an explosive mixture. In this situation, smothering agents are recommended. A smothering agent will extinguish burning lithium batteries.

Emergency Responders should wear self-contained breathing apparatus. Burning lithium manganese dioxide batteries produce toxic and corrosive lithium hydroxide fumes.

ACCIDENTAL RELEASE MEASURES

To cleanup leaking batteries:

Ventilation Requirements: Room ventilation may be required in areas where there are open or leaking batteries.

Respiratory Protection: Avoid exposure to electrolyte fumes from open or leaking batteries.

Eye Protection: Wear safety glasses with side shields if handling an open or leaking battery.

Gloves: Use neoprene or natural rubber gloves if handling an open or leaking battery.

Battery materials should be collected in a leak-proof container.

HANDLING AND STORAGE

Storage: Store in a cool, well ventilated area. Elevated temperatures can result in shortened battery life. In locations that handle large quantities of lithium batteries, such as warehouses, lithium batteries should be isolated from unnecessary combustibles.

Mechanical Containment: If potting or sealing the battery in an airtight or watertight container is required, consult a **Universal Power Group, Inc.** representative for precautionary suggestions. Do not obstruct safety release vents on batteries. Encapsulation of batteries will not allow cell venting and can cause high pressure rupture.

Handling: Accidental short circuit for a few seconds will not seriously affect the battery. Prolonged short circuit will cause the battery to lose energy, generate significant heat and can cause the safety release vent to open. Sources of short circuits include jumbled batteries in bulk containers, metal jewelry, metal covered tables or metal belts used for assembly of batteries into devices. Damaging a lithium battery may result in an internal short circuit.

The contents of an open battery, including a vented battery, when exposed to water, may result in a fire and/or explosion. Crushed or damaged batteries may result in a fire.

If soldering or welding to the battery is required, consult **Universal Power Group, Inc.** for proper precautions to prevent seal damage or short circuit.

Charging: This battery is manufactured in a charged state. It is not designed for recharging. Recharging can cause battery leakage or, in some cases, high pressure rupture. Inadvertent charging can occur if a battery is installed backwards.

Labeling: If the label or package warnings are not visible, it is important to provide a package and/or device label stating:

WARNING: Battery can explode or leak and cause burns if installed backwards, disassembled, charged, or exposed to water, fire or high temperature.

Where accidental ingestion of small batteries is possible, the label should include:

(1) KEEP OUT OF REACH OF CHILDREN. Swallowing may lead to serious injury or death in as little as 2 hours due to chemical burns and potential perforation of the esophagus. **Immediately see doctor.** Keep in original package until ready to use. Dispose of used batteries immediately.

EXPOSURE CONTROLS/PERSONAL PROTECTION

Ventilation Requirements: Not necessary under normal conditions.

Respiratory Protection: Not necessary under normal conditions.

Eye Protection: Not necessary under normal conditions.

Gloves: Not necessary under normal conditions.

PHYSICAL AND CHEMICAL PROPERTIES

| | |
|--------------------------------------|-------------------------------|
| Boiling Point @ 760 mm Hg (°C) | Not applicable for an Article |
| Vapor Pressure (mm Hg @ 25°C) | Not applicable for an Article |
| Vapor Density (Air = 1) | Not applicable for an Article |
| Density (g/cm ³) | 2.0 – 3.0 |
| Percent Volatile by Volume (%) | Not applicable for an Article |
| Evaporation Rate (Butyl Acetate = 1) | Not applicable for an Article |
| Physical State | Solid |
| Solubility in Water (% by weight) | Not applicable for an Article |
| pH | Not applicable for an Article |
| Appearance and Odor | Solid object / no odor |

STABILITY AND REACTIVITY

Lithium manganese dioxide batteries do not meet any of the criteria established in 40 CFR 261.2 for reactivity.

TOXICOLOGICAL INFORMATION

Lithium manganese dioxide batteries are not hazardous waste. Under normal conditions of use, lithium manganese dioxide batteries are non-toxic.

ECOLOGICAL INFORMATION

Issues such as ecotoxicity, persistence and bioaccumulation are not applicable for articles.

DISPOSAL CONSIDERATIONS

Dispose of in accordance with all applicable federal, state and local regulations.

TRANSPORT INFORMATION

In general, all batteries in all forms of transportation (ground, air, or ocean) must be packaged in a safe and responsible manner. Regulatory concerns from all agencies for safe packaging require that batteries be packaged in a manner that prevents short circuits and be contained in "strong outer packaging" that prevents spillage of contents. All original packaging for lithium batteries are compliant with these regulatory concerns.

Lithium coin batteries are exempt from the classification as dangerous goods as they meet the requirements of the special provisions listed below. (Essentially, they are properly packaged and labeled, contain less than 1 gram of lithium and pass the tests defined in UN model regulation section 38.3).

| Regulatory Body | Special Provisions |
|-----------------|----------------------------------|
| ADR | 188, 230, 310, 636, 656 |
| IMDG | 188, 230, 310, 957 |
| UN | UN 3090, UN 3091 |
| US DOT | 29, A54, A100, A101 |
| IATA, ICAO | Packaging Instructions 968 - 970 |

REGULATORY INFORMATION

Outside of the transportation requirements noted in Section 14, lithium manganese dioxide batteries marketed by LIXING are not regulated.

SARA/TITLE III - As an article, this battery and its contents are not subject to the requirements of the Emergency Planning and Community Right-To-Know Act.