

**MATERIAL SAFETY DATA SHEET – LITHIUM MANGANESE DIOXIDE BATTERIES**

Technote 46

Rev 04

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**STATEMENT OF HAZARDOUS NATURE**

Not classified as hazardous, classified as dangerous according to Worksafe Australia criteria.

**COMPANY DETAILS**

Manufactured for:

**Arlec Australia Pty Ltd (ACN 009 322 105)**  
**Building 3, 31-41 Joseph St**  
**Blackburn North Vic 3130**  
**PO Box 1065**  
**Blackburn North Vic 3130**

**IDENTIFICATION****Product Name:** Lithium Coin Battery**Manufacturer's Product Code:**

CR2016, CR3025, CR3032

**UN Number/s:** 3090, 3091**Dangerous Goods Class and Subsidiary Risk:** 9-Miscellaneous Dangerous Goods**Hazchem Code:** 4W**Packing Group:** II**Poisons Schedule Number:** None**Use:** Energy source**Chemical System:** Lithium / Manganese Dioxide**Physical Description/Properties****Appearance:** Various "coin" shaped battery sizes.**Boiling Point/Melting Point:** Not available**Flashpoint:** Not available**Vapour Pressure:** Not available**Flammability Limits:** Not available**Specific Gravity:** Not available**Solubility in Water:** Not applicable**Other Properties****Ingredients\*:**

<b>Chemical Name:</b>	<b>CAS Number:</b>	<b>% by weight</b>
Carbon Black	1333-86-4	0-1
1,2-Dimethoxyethane	110-71-4	0-6
1,3-Dioxolane	646-06-0	0-8
Graphite	7782-42-5	0-3
Lithium Trifluoromethanesulfonate	33454-82-9	0-3

Lithium or Lithium Alloy	7439-93-2	1-6
Lithium Trifluoromethanesulfonimide	90076-65-6	0-3
Manganese Dioxide	1313-13-9	12-42
Propylene Carbonate	108-32-7	0-8
<b>Non hazardous components:</b>		
Steel	7439-89-6	20
Plastics and other		balance

## HEALTH HAZARD INFORMATION

These chemicals and metals are contained in a sealed can. For consumer use, adequate hazard warnings are included on both the package and on the battery. Potential for exposure should not exist unless the battery leaks, is exposed to high temperatures or is mechanically, physically, or electrically abused.

### First Aid:

**Ingestion:** Swallowing a battery can be harmful.

Can cause serious chemical burns of mouth, oesophagus, and gastrointestinal tract.

If battery or open battery is ingested, do not induce vomiting or give food or drink. Seek medical attention immediately.

**Inhalation:** Contents of an open battery can cause respiratory irritation. Provide fresh air and seek medical attention.

**Skin Absorption:** Dimethoxyethane and dioxolane may be absorbed through the skin, causing localized inflammation.

**Skin Contact:** Contents of an open battery can cause skin irritation and/or chemical burns. Remove contaminated clothing and wash skin with soap and water. If a chemical burn occurs or if irritation persists, seek medical attention.

**Eye Contact:** Contents of an open battery can cause severe irritation and chemical burns. 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).

**First Aid Facilities:** Not applicable for normal consumer use. For warehouse/storage facilities have an eyewash and safety shower available in case batteries leak or rupture.

## PRECAUTIONS FOR USE

**Exposure Standards:** 8-Hour TWA's:

Carbon Black -	3.5 mg/m <sup>3</sup> (OSHA);	3.5 mg/m <sup>3</sup> (ACGIH)
1,2-Dimethoxyethane -	None established	
1,3-Dioxolane -	None established(OSHA); 20 ppm (ACGIH)	
Graphite -	15 mg/m <sup>3</sup> (total dust) 5 mg/m <sup>3</sup> (respirable fraction) (OSHA);	2 mg/m <sup>3</sup> (respirable fraction) (ACGIH)
Lithium Trifluoromethanesulfonate-	None established	
Lithium or Lithium Alloy -	None established	
Lithium Trifluoromethanesulfonimide-	None established	
Manganese Dioxide-	5mg/m <sup>3</sup> ceiling (as Mn)(OSHA); 0.2mg/m <sup>3</sup> TWA(as Mn)	

These levels are not anticipated under normal consumer use conditions.

**Engineering Controls:** General ventilation under normal use conditions.

**Personal Protection:** None under normal use conditions. Wear safety glasses and neoprene, rubber or latex gloves when handling open or leaking batteries. Avoid exposure to fumes from open or leaking batteries.

**Fire and Explosion Hazard Data:** 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-iron disulphide batteries produce toxic and corrosive lithium hydroxide fumes and sulphur dioxide gas.

## SAFE HANDLING INFORMATION

**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:** 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 jewellery, 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 your Energizer representative for proper precautions to prevent seal damage or short circuit.

**Charging:** This battery is manufactured in a ready-to-use state. It is not designed for recharging. Recharging can cause battery leakage or, in some cases, can cause the safety release vent to open. Inadvertent charging can occur if a battery is installed backwards.

**Disposal:** Dispose in accordance with all applicable federal, state and local regulations.

## TRANSPORT:

### Classification – Class 9 – Miscellaneous Dangerous Goods



Lithium Metal batteries can be shipped by air when in accordance with International Civil Aviation Organization (ICAO), 2015-2016 edition requirements or International Air Transport Association (IATA) DGR 57th edition, Section II or Section 1 Packing Instructions (PI) 969 (Lithium Metal Batteries, packed with equipment) & (PI) 970 (Lithium Metal Batteries, contained in equipment) or Section 1A Packing Instructions (PI) 968 (Lithium Metal Batteries) or 1B Packing Instructions (PI) 968 (Lithium Metal Batteries), (PI) 969 (Lithium Metal Batteries, packed with equipment) and (PI) 970 (Lithium Metal Batteries, contained in equipment), as appropriate.

Lithium Metal batteries are regulated by the International Maritime Organization (IMO), 2010, 35<sup>th</sup> amendment, under Special Provisions 188 and 230.

Lithium Metal cells / batteries are not restricted for Australian road transport where they meet the requirements of ADG SP188

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

Lithium Metal batteries are not subject to the requirements of the US Department of Transportation (DOT) Subchapter C, Hazardous Materials Regulations if shipped in compliance with 49 CFR 173.185, Special Provision 188 & State Variation USG-02.

The (DOT) requires that the outside of each package that contains lithium metal batteries, regardless of size or number of batteries, be labeled with the following statement:

**“LITHIUM METAL BATTERIES- FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT”**. The labeling requirement covers shipments via highway, rail, vessel or cargo-only aircraft and covers all shipments inside, into or out of the US. The label must be in contrasting color and the letters must be 12 mm (0.5 in) in height for packages weighing more than 30 kg and 6 mm (0.25 in) in height for packages weighing less than 30 kg.

By complying with the requirements specified above, Lithium Batteries are not otherwise regulated by international agencies as hazardous materials or dangerous goods when shipped.

### **MARKING:**

It is Arlec policy that when these batteries are provided to consumers, the following warning information is provided on the instruction sheet of the accompanying product or as a separate information sheet:

This product contains a Lithium Coin type battery

**WARNING!** Please ensure the coin battery is kept **OUT OF REACH OF CHILDREN**

The battery presents a significant choking and burn hazard to young children should they swallow a battery. Under 4 year-olds are especially prone to accidental swallowing of objects such as these.

If a lithium coin battery is swallowed, **SEEK IMMEDIATE MEDICAL ATTENTION.**  
Do not let the child eat or drink; Do not induce vomiting.

To keep your children safe:

- Keep devices that use coin batteries out of reach of small children
- Keep new batteries in their packaging until ready to use and store in places out of reach of children
- Safely dispose of spent batteries immediately
- Share this information with your family, friends, caregivers and babysitters.

We have designed the coin battery holder to require dexterity normally beyond that of a small child to access, but nevertheless you should always follow the advice given above

### **OTHER INFORMATION:**

**CONTACT POINT:** Australian Poisons Information Centre

24 hour service: -13 11 26

Police or Fire Brigade: -000 (exchange): -1100

New Zealand Poisons Information Centre

Dunedin: -(03)479 1200 (Normal hours)

-(03)474 0999 (Emergency)