

## Product Safety Data Sheet

**LM 01**  
10/05/01

**Lithium Manganese Dioxide Batteries**

**Simplified Advice Code**  
**G**

### 1. Identification of the Substance or Preparation and Company







**Product** Lithium Manganese Dioxide Cells (Batteries)  
LM 26500, LM 26600, LM 33600, LM 22

**Company** Saft Ltd  
River Drive  
South Shields  
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NE33 2TR

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### 2. Composition & Information on Ingredients

Each cell consists of an hermetically sealed metallic container containing a number of chemicals and materials of construction of which the following could potentially be hazardous upon release.

Ingredient	Content	CAS No.	CHIP Classification
Lithium (Li)	3.24%	7439-93-2	 <b>F</b> ; R14/15 <b>C</b> ; R34 R14/15, R34 S(1/2), S8, S43, S45
Manganese Dioxide (MnO <sub>2</sub> )	40.56%	1313-13-9	 <b>R</b> 20, R22 S25
Lithium Perchlorate (LiClO <sub>4</sub> )	1.53%	7791-03-9	 <b>R</b> 8, R36/37/38 S17, S26/27, S36/37/38
Tetrahydrofuran (C <sub>4</sub> H <sub>8</sub> O)	5.89%	109-99-9	 <b>F</b> ; R11, R19 <b>Xi</b> ; R36/37 R11, R19, R36/37 S2, S16, S29, S33 R36
Propylene Carbonate (C <sub>3</sub> H <sub>6</sub> CO <sub>3</sub> )	6.75%	108-32-7	 <b>R</b> 11, R19/20 S24/25
1,2 Dimethoxyethane (CH <sub>3</sub> OCH <sub>2</sub> CH <sub>2</sub> OCH <sub>3</sub> )	5.78%	110-71-4	 NONE KNOWN
Carbon (C <sub>n</sub> )	2.25%	1333-86-4	

### 3. Hazards Identification

Do not short circuit, recharge, puncture, incinerate, crush, immerse, force discharge or expose to temperatures above the temperature range of the battery. The cell has a vent, which upon severe mechanical, electrical or thermal abuse will open and allow some of the chemicals listed above to escape.

### 4. First Aid Measures

<b>Inhalation</b>	Remove from exposure, rest and keep warm. In severe cases obtain medical attention.
<b>Skin Contact</b>	Wash off skin thoroughly with water. Remove contaminated clothing and wash before reuse. In severe cases obtain medical attention.
<b>Eye Contact</b>	Irrigate thoroughly with water for at least 10 minutes. Obtain medical attention.
<b>Ingestion</b>	Wash out mouth thoroughly with water and give plenty of water to drink. Obtain medical attention.
<b>Further Treatment</b>	All cases of eye contamination, persistent skin irritation and casualties who have swallowed this substance or been affected by breathing its vapours should be seen by a Doctor.

### 5. Fire Fighting Measures

If cells are directly involved in a fire, DO NOT USE SAND, DRY POWDER OR SODA ASH, GRAPHITE, METAL (CLASS D) EXTINGUISHERS OR A FIRE BLANKET. Copious quantities of a water based foam is the only recommended extinguishing media for fires involving cells. If a fire is in an adjacent area, and cells are packed in their original containers, the fire can be fought based on fueling material, e.g. paper and plastic products. Avoid fume inhalation.

**Extinguishing Media** Copious quantities of a water based foam.

### 6. Accidental Release Measures

Do not breathe vapours or touch liquid with bare hands. If the skin has come into contact with the electrolyte it should be washed thoroughly with water. Earth or sand should be used to absorb the exudation, seal leaking battery and earth in a heavy duty polythene bag and dispose of as Special Waste.

### 7. Handling and Storage

<b>Handling</b>	Do not short circuit or expose to temperatures above the temperature rating of battery. Do not recharge, over-discharge, force discharge, immerse, puncture or crush.
<b>Storage</b>	Store in a cool place but prevent condensation on cells and batteries. Elevated temperatures can result in shortened battery life and degrade performance. Do not store batteries in high humidity environments for long periods.

### 8. Exposure Controls & Personal Protection

<b>Occupational Exposure Standard</b>	8hr TWA	10min TWA
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## S A F E T Y



**Respiratory Protection** In all fire situations, use self-contained breathing apparatus.



**Hand Protection** In the event of leakage wear gloves.



**Eye Protection** Safety glasses are recommended during handling



**Other** In the event of leakage, wear chemical apron.

### 9. Physical and Chemical Properties

<b>Appearance</b>	Cylindrical shape
<b>Odour</b>	If leaking, smells of medical ether.
<b>pH</b>	Not applicable as supplied
<b>Flash Point</b>	Not applicable unless individual components exposed
<b>Flammability</b>	Not applicable unless individual components exposed
<b>Relative Density</b>	Not applicable unless individual components exposed
<b>Solubility (Water)</b>	Not applicable unless individual components exposed
<b>Solubility (Other)</b>	Not applicable unless individual components exposed

### 10. Stability and Reactivity

Product is stable under conditions described in Section 7.

**Hazardous reactions** Lithium metal reacts with water to produce highly flammable gasses.

**Hazardous decomposition reactions** Toxic Fumes, and may form peroxides

### 11. Toxicological Information

<b>Signs &amp; Symptoms</b>	None, unless battery ruptures. In the event of exposure to internal contents, corrosive fumes will be very irritating to skin, eyes and mucous membranes. Overexposure can cause symptoms of non-fibrotic lung injury and membrane irritation.
<b>Inhalation</b>	Lung irritant.
<b>Skin Contact</b>	Skin irritant
<b>Eye Contact</b>	Eye irritant.
<b>Ingestion</b>	Poisoning if swallowed.
<b>Medical Conditions Generally Aggravated by Exposure</b>	In the event of exposure to internal contents, eczema, skin allergies, lung injuries, asthma and other respiratory disorders may occur.

### 12. Ecological Information

<b>Mammalian effects</b>	None known at present.
<b>Eco-toxicity</b>	None known at present.
<b>Bioaccumulation potential</b>	Slowly Bio-degradable.
<b>Environmental fate</b>	None known environmental hazards at present.

### 13. Disposal Considerations

DO NOT INCINERATE or subject cells to temperature in excess of 90°C. Such abuse can result in loss of seal, leakage, and/or cell explosion. Dispose of in accordance with appropriate local regulations.

### 14. Transport Information

<b>Label for Conveyance</b>	Cargo Aircraft Only, Class 9 Miscellaneous Dangerous Goods, UN Identification Number.
<b>UN Number</b>	UN3090
<b>Shipping Name</b>	Lithium Batteries
<b>Hazard Classification</b>	Class 9 (Miscellaneous)
<b>Packing group</b>	II
<b>IMDG Code</b>	9033
<b>CAS</b>	
<b>EmS No.</b>	<u>4.1-06</u>
<b>Marine Pollutant</b>	No
<b>ADR Class</b>	Class9,5

### 15. Regulatory Information

<b>Risk Phrases</b>	Lithium	R14/15	Reacts violently with water, liberating extremely flammable gases.
		R34	Causes burns.
	Manganese Dioxide	R20/22	Harmful by inhalation and if swallowed.
	Lithium Perchlorate	R8	Contact with combustible material may cause fire.
		R36/37/38	Irritating to eyes, respiratory system and skin.
	Tetrahydrofuran	R11	Highly Flammable
		R19	May form explosive peroxides.
		R36/37	Irritating to eyes and respiratory system.
	Propylene Carbonate	R36	Irritating to the eyes.
	1,2 Dimethoxyethane	R11	Highly Flammable
		R19	May form explosive peroxides
		R20	Harmful by inhalation

<b>Safety Phrases</b>	Lithium	S1/2	Keep locked up and out of reach of children.
		S8	Keep container dry
		S43	In case of fire, use Lith-X (Graphite based) fire extinguisher. Never use water.
		S45	In case of accident or if you feel unwell, seek medical advice immediately.
	Manganese Dioxide	S25	Avoid contact with eyes.
	Lithium Perchlorate	S17	Keep away from combustible material.
		S26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
		S27	Take off immediately all contaminated clothing.
		S36/37	Wear suitable protective clothing and gloves.
		S38	In case of insufficient ventilation, wear suitable respiratory equipment.
	Tetrahydrofuran	S2	Keep out of the reach of children.
		S16	Keep away from sources of ignition - No Smoking.
		S29	Do not empty into drains.
		S33	Take precautionary measures against static discharges.
	Propylene Carbonate	S24/25	Avoid contact with skin and eyes.
	1,2 Dimethoxyethane	S24/25	Avoid contact with skin and eyes.

**UK Regulatory References**    Classified under CHIP

## 16. Other Information

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