Material - Safety - Data Sheet (MSDS)

for

Ansmann Lithium-Manganese-Dioxide (Li-metal) Batteries

single cells and multi-cell battery packs

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1. Product and Supplier Identification

Product names: ANSMANN Lithium Photo Battery; ANSMANN Lithium Button Cell; ANSMANN EXTREME Lithium

Designation: Lithium Metal Battery

Models / types: CR123, CR2, CR-P2, 2CR5

CR1216, CR1220, CR1225, CR1616, CR1620, CR1632
CR2016, CR2025, CR2032, CR2330, CR2430, CR2450, CR2477

E-Block, 9V, (CR-V9, ER9V)

Electrochemical system: Li-MnO_2 (Lithium-Manganse-Dioxide)

Supplier:

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EMERGENCY CONTACT: For chemical emergency only (spill, leak, fire, exposure or accident)
call CHEMTREC at: 800-424-9300 within the USA and Canada
+1 703-527-3887 outside the USA and Canada
Non-emergency calls cannot be serviced at this number.

2. Product and Supplier Identification

The Lithium-Manganese-Dioxide batteries described in this MSDS are hermetically sealed units, which are not hazardous when used according to the recommendations of the manufacturer.
Under normal condition of use of the batteries, the electrode materials and the liquid electrolyte they contained are non-reactive provided the battery integrity is maintainted.
Risk of exposure exists only in case of mechanical, electrical or thermal abuse. Thus the batteries should not short circuited, recharged, punctured, incinerated, crushed, immersed in water, force discharged or exposed to temperatures above the temperature range of the cell or battery.
In these cases there is risk of fire or explosion.

3. Composition and Informations on Ingredients

Each cell consists of a 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)	2 - 5%	7439-93-2		F;C R14/15; R34 S43C; S45; S8
Manganese Dioxide (MnO_2)	15 - 45%	1313-13-9		Xn R20/22 S25
Propylene Carbonate	<10%	108-32-7		Xi R36 S24/25
Lithium trifluoromethyl sulfonate (only Photo Batteries)	<5%	33454-82-9		Xi R36/37/38 S26; S37/39
Lithium Perchlorate (only Button Cells)	<1%	7791-03-9		O; Xn R20/22; R36/37/38; R9 S17; S26; S27; S36/37/38
Graphite, synthetic (only Button Cells)	3 - 10%	7440-44-0		S22; S24/25
stainless steel plastic	30 - 75% 0 -10%	7439-89-6		

Remark:

The weight of metallic lithium per cell is: ≤ 1g
The weight of metallic lithium per battery (2CR5, CR-P2) is: ≤ 2g

4. First Aid Measures

Inhalation: Provide fresh air. In severe cases obtain medical attention.

Skin Contact: Wash off skin thoroughly with water. Remove contaminated clothing and wash before re-use. In severe cases obtain medical attention.

Eye Contact: Irrigate thoroughly with water for at least 15 minutes. Lifting upper and lower lids, until no evidence of the chemical remains. Obtain medical attention.

Ingestion: Wash out mouth thoroughly with water. Do not induce vomiting or give food or drink. Seek medical attention immediately.

Further treatment: All cases of eye contamination, persistent skin irritation and casualities who have swallowed this substance or been affected by breathing its vapours should be seen by a doctor.

5. Product and Supplier Identification

CO_2 extinguishers or, even preferably, copious quantities of water or water-based foam, can be used to cool down burning Li- MnO_2 cells and batteries, as long as the extent of the fire has not progressed to the point that the lithium metal they contain is exposed (marked by deep red flames).
Do not use for this purpose sand, dry powder or soda ash, graphite powder or fire blankets.
Use only metal (Class D) extinguishers on raw lithium.

Extinguishing media Use water or CO_2 on burning Li-MnO_2 cells or batteries and class D fire extinguishing agent only on raw lithium.

6. Accidental Release Measures

Remove personnel from area until fumes dissipate. 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.

Sand or earth should be used to absorb any exuded material. Seal leaking battery and contaminated absorbent material in plastic bag and dispose of as Special Waste in accordance with local regulations.

7. Precautions for safe Handling and Use

Storage: Store in a cool (preferable below 30°C), well ventilated area, away from moisture, sources of heat, open flames, food and drink.
Elevated temperatures can result in shortened battery life. Temperautes above 100°C may result in battery leakage and rupture.
In locations that handle large quantities of lithium batteries, such as warehouses, lithium batteries should be isolated from unnecessary combustibles.
Keep batteries in original packaging until use and do not jumble them.

Mechanical Containment: If potting or sealing the battery in an airtight or watertight container is required, consult Ansmann AG 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 cause the safety vent 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 your Ansmann representative for proper precautions to prevent seal damage or short-circuit.

Charging: Do not charge this batteries! This battery type 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.

8. Special Protection Information

Ventilation Requirements: Not necessary under normal conditions. Room ventilation may be required in areas where there are open or leaking batteries.

Respiratory Protection: Not necessary under normal conditions. Avoid exposure to electrolyte fumes from open or leaking battery. In all fire situations, use self-contained breathing apparatus

Eye Protection: Not necessary under normal conditions. Wear safety glasses with side shields if handling an open or leaking battery.

Hand Protection: Not necessary under normal conditions. Use neoprene or natural rubber gloves if handling an open or leaking battery

Other: Not necessary under normal conditions. Use chemical apron in case of leakage

9. Physical and Chemical Properties

Appearance:	cylindrical shape
Odour:	not applicable; unless in case of leakage, then smell of ether appears
Flash Point:	not applicable; unless individual components exposed
Flammability:	not applicable; unless individual components exposed
Relative density:	not applicable; unless individual components exposed
Solubility (water):	not applicable; unless individual components exposed
Solubility (other):	not applicable; unless individual components exposed

10. Stability and Reactivity

Product is stable under conditions described in Section 7.

Conditions to avoid:	Heat above 100° or incinerate. Deform. Mutilate. Crush. Pierce. Disassemble. Recharge. Short circuit. Expose over a long period to humid conditions.
Materials to avoid:	Oxidising agents, alkalis, water.
Hazardous reactions:	Lithium metal reacts with water to produce highly flammable gases
Hazardous decomposition reactions:	Toxic fumes, and may form peroxides

11. Toxicological Information

Signs & symptoms:	None, unless battery ruptures. In the event of exposure to internal contents, vapour fumes may be very irritating to the eyes and skin.
Inhalation:	Lung irritant
Skin contact:	Skin irritant
Eye contact:	Eye irritant
Ingestion:	Poisoning if swallowed
Medical conditions aggravated by exposure:	In the event of exposure to internal contents, moderate to severe irritation, burning and dryness of the skin may occur. Target organs nerves, liver and kidneys.

12. Ecological Information

Mammalian effects:	None known if used / disposed of correctly
Eco-toxicity:	None known if used / disposed of correctly
Environmental fate:	None known if used / disposed of correctly

13. Disposal Information

Do not incinerate, recharge, disassemble short, or subject cells to temperatures in excess of 100°C. Such abuse can result in loss of seal, leakage, and/or cell explosion. Dispose of in accordance with appropriate local regulations.
When properly used and disposed the battery does not present environmental hazard. The battery does not contain mercury, cadmium, or lead. Do not let internal components enter marine environment.
Avoid release to waterways, wastewater or ground water.

USA: Batteries must be completely discharged prior to disposal and / or the terminals must be taped or capped to prevent short circuit. This product does not contain any materials listed by the United Stated EPA as requiring specific waste disposal requirements. When completely discharged it is not considered hazardous. Disposal of large quantities of lithium power cells may be subject to Federal, State, or Local regulations.

In the European Union, manufacturing, handling and disposal of batteries is regulated on the basis of the DIRECTIVE 2006/66/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 6 September 2006 on batteries and accumulators and waste batteries and accumulators and repealing Directive 91/157/EEC.

Customers find detailed information on disposal in their specific countries using the web site of the European Portable Batteries Association ***(http://www.epbaeurope.net/legislation_national.html)***
Importers and users outside EU should consider the local laws and rules.

14. Transport Information

ADR

UN-Number:	3090
description	Lithium metal batteries
class:	9
packaging group:	II
packaging order:	P903
special provision:	188; 230; 310; 636
tunnel forbitten code:	E

UN-Number:	3091
description	Lithium metal batteries contained in equipment / packed with equipment
class:	9
packaging group:	II
packaging order:	P903
special provision:	188; 230; 360; 636
tunnel forbitten code:	E

IATA

UN-Number:	3090
description	Lithium metal batteries
class:	9
packaging group:	II
packaging order:	968
special provision:	A88; A99; A154; A164; A183

UN-Number:	3091
description	Lithium metal batteries contained in equipment
class:	9
packaging group:	II
packaging order:	970
special provision:	A48; A99; A154; A164; A181; A185

UN-Number:	3091
description	Lithium metal batteries packed with equipment
class:	9
packaging group:	II
packaging order:	969
special provision:	A99; A154; A164; A181; A185

IMDG-Code

UN-Number:	3090
description	Lithium metal batteries
class:	9
packaging group:	II
packaging order:	P903
special provision:	188; 230; 310; 957

UN-Number:	3091
description	Lithium metal batteries contained in equipment / packed with equipment
class:	9
packaging group:	II
packaging order:	P903
special provision:	188; 230; 360; 957

Since 1st of January 2013 it is necessary to produce both, lithium cells and lithium batteries under an existing quality assurance program.
The quality assurance program is detailed in following parts of the international dangerous goods laws:

- ADR (2013): 2.2.9.1.7 (e)
- IATA (54th edition): 3.9.2.6 (e)
- IMDG-Code (Amendment 36-12): 2.9.4 (5.)

Ansmann hereby declare that all lithium cells and batteries of the Ansmann product range are produced according the above named quality assurance program.

15. Regulatory Information

Regulations specifically applicable to the product:
- ACGIH and OSHA: see exposure limits of the internal
- IATA / ICAO (air transportation): UN 3090 or UN 3091
- Transportation within the US-DOT, 49 Code of Federal Regulations

substance	**Risk Phrases**	
Lithium (Li)	R14 / R15	Reacts violently with water, liberating extremely flammable gases.
	R34	Causes burns.
Manganse-Dioxide	R20/22	Harmfull 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.
Propylene Carbonate	R36	Irritating to the eyes.
1,2 Dimethoxyethane	R11	Highly flammable.
	R19	May form eplosive peroxides
	R20	Harmful by inhalation
Lithium Trifluoromethyl sulfonate	R36/37/38	Irritating to eyes, respiratory system and skin.
Lithium Perchlorate	R20/22	Harmful by inhalation and if swallowed
	R36/37/38	Irritating to eyes, respiratory system and skin.
	R9	Explosive when mixed with combustible material

substance	**Safety Phrases**	
Lithium (Li)	S1/S2	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.
1,2 Dimethoxyethane	S45	In case of accident or if you feel unwell seek medical advice immediately.
	S53	Avoid exposure - obtain special instructions before use
Propylene Carbonate	S24/25	Avoid contact with skin and eyes.
Lithium trifluoromethyl sulfonate	S26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
	S37/39	Wear suitable gloves and eye/face protection
Graphite, synthetic	S22	Do not breathe dust
	S24/25	Avoid contact with skin and eyes

16. Other Information

This information has been compiled from sources considered to be dependable and is, to the best of our knowledge and belief, accurate and reliable as of the date compiled. However, no representation, warranty (either expressed or implied) or guarantee is made to the accuracy, reliability or completeness of the information contained herein.
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