

Material Safety Data Sheet

1. Identification of the substance/mixture and of the company/undertaking

Product name:	Lithium Manganese-Dioxide Battery, non-rechargeable
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Item no.	Size	Nominal Voltage	Capacity	Energy content	Lithium content
2542845	CR-123A	3 V	1500 mAh	4.5 Wh	0.56g
2542846	CR2	3 V	800 mAh	2.4 Wh	0.27g
2542847	CR-123A	3 V	1500 mAh	4.5 Wh	0.56g

Manufacturer:	Conrad Electronic SE
Address:	Klaus-Conrad-Str. 1, D-92240 Hirschau
Telephone:	+49 (0) 9604 / 40 - 8988
Date of issue:	01.01.2022

2. Hazards Identification

Significant Risk: No reference

Peculiar Risk: No reference

General avoidable issues:

- Battery chemicals may leak out of its steel enclosure in case of improper storage.
- Rupture or fire may occur to battery if disposed in fire or placed over 100°C (212 °F)
- Heat, rupture and fire may occur to battery if short-circuit caused by stack or mixture.

GHS classifications do not apply to the battery.

3. Composition/Information on Ingredients

Component	CAS#	% by weight
Manganese-Dioxide	1313-13-9	30 ~ 40%
Lithium Metal	7439-93-2	2 ~ 4%
Electrolyte [Organic Electrolyte Mixture]	-	10 ~ 14%
Iron	7439-89-6	32 ~ 38%
Carbon	7440-44-0	3 ~ 5%
Polypropylene	9003-07-0	2 ~ 4%
Polyethylene	9002-88-4	1 ~ 2%
Others	-	3 ~ 4%

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4. First Aid Measures

None unless internal materials exposure.

If contents are leaked out, observe following instructions:

Inhalation:

Fumes can cause respiratory irritation. Move to fresh air area and consult a physician.

Skin:

Immediately flush skin with plenty of water. If itch/irritation persists, consult a physician.

Eyes:

Immediately flush eyes 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.

5. Fire Fighting Measures

Fire Extinguishing Media

Fire extinguisher: Carbon dioxide; fire foam; dry sand; water spray and powder etc.

6. Accidental Release Measures

NA

7. Handling and Storage

Handling

Never swallow, charge, or heat. Never expose to open flame. Never disassemble. Never reverse the positive and negative terminals when mounting. Never short-circuit the battery. Never weld the terminal or wire to the body of the battery directly. Never use different batteries together. Never touch the liquid leaked out of battery. Never bring fire close to battery liquid. Keep away from children.

Storage

Never let the battery be in contact with water. Never store the battery in hot and high humidity area.

8. Exposure Controls, Personal Protection

No special protection tools needed for normal usage. In case of abnormal use in devices or appliances, electrolyte may leak, and certain protection tools should be used as below:

Respiratory protective equipment: Respirators (with apparatus respiratorium)

Hand protective equipment: Synthetic rubber gloves

Eye protective equipment: Protective spectacles

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9. Physical/Chemical Characteristics

NA

10. Stability and Reactivity

Stability:

Extremely stable for normal use.

Avoid Condition:

External short-circuit, deformation, excessive temperature (above 100°C (212 °F), which may cause heat or fire), exposure to direct sunlight or high humidity.

Avoid Substance:

Substance that may cause short-circuit.

11. Toxicological Information

Chemicals are sealed in the steel can without danger.

The specified below is toxicological information for battery materials for reference.

Component	Classification	Symptom
Manganese Dioxide	Acute Toxicity	Rabbit LD ₅₀ (vein)=45mg/kg Mouse LD ₅₀ (subcutaneous)=422mg/kg
	Partially Affected	Irritation to eyes, nose, throat, and skin
	Chronic Toxicity or Long-Term Toxicity	Parkinson's central nervous syndrome may be caused by long-term (at least 3 months) inhalation of dirt or gas.
Lithium Metal	Acute Toxicity	No reference
	Partially Affected	Chemical burning may occur in case of contact to skin or eyes.
Electrolyte	Acute Toxicity	No reference
	Partially Affected	A little irritation to eyes.

12. Ecological Information

NA

13. Disposal condition

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

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14. Transportation Information

*Attention - the latest regulation shall prevail, and the specifications of transportation and its difference shall be confirmed with the carrier.

All single lithium-metal cells or battery packs are considered as Class 9 according to international standards as shown below. The transport of lithium-metal cells or battery packs should meet requirements defined in International Transport Regulations. The product (defined in chapter 1) and its packing forms meet the requirements of UN Manual of Test and Criteria, Part III, subsection.

Besides, the following transportation requirements shall be met once in transit/delivery.

Air Transport

All batteries, including single cells with lithium content more than 0.3g but less than 1g or battery pack models with lithium content more than 0.3g but less than 2g, conform to 968 Section IB or II defined in Packing Instruction of IATA-DGR. The product and its packing forms meet the requirements of Section IB or II, though the battery itself is considered as dangerous goods, it can be transported without applying containers defined as Class II.

Sea Transport

All batteries, including single cells with lithium content less than 1g or battery pack models with lithium content less than 2g, conform to special regulation 188 and transport condition defined in IMDG-Code. It can be transported as non-dangerous goods.

UN No.	Proper Shipping Name/Description
UN 3090	Lithium Metal Batteries
UN 3091	Lithium Metal Batteries Contained in Equipment
UN 3091	Lithium Metal Batteries Packed with Equipment

Related Regulations:

Transport form	Relevant agencies/Issued documents
Air transport	ICAO/ TI IATA/DGR
Sea transport	IMO/ IMDG Code
Land transport (within Europe)	RID, ADR
US	USDOT/ DOT 49 CFR
	UN: Recommendations on the transport of dangerous goods: Manual of Tests and Criteria 5th revised edition Amendment 1 [ST/SG/AC.10/11/Rev.5/Amend.1]: Part III, Subsection 38.3

*1 Dangerous Goods Regulations – 63rd Edition Effective 1 January 2022: International Air Transport Association (IATA)/Packaging Instructions 968-970

*2 IMDG Code 40-20

*3 RID - COTIF 1999/Appendix C-RID/Article 5

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15. Regulatory Information

Related environment regulations for batteries: EU countries according to the Battery Directive 2006/66/EC, and other countries like China, Korea, USA, or Canada have similar regulations.

OSHA hazard communication standard (29 CFR 1910.1200)

Hazardous Non-hazardous

16. Other Information

If you want further information, please contact us.