

# Material Safety Data Sheet

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## 1. Product & Company Identification

<b>Product:</b>	Lithium Manganese Dioxide Battery, CR-123A, non-rechargeable
<b>Nominal voltage:</b>	3 V
<b>Nominal capacity:</b>	1400 mAh
<b>Manufacturer:</b>	Conrad Electronic SE
<b>Address:</b>	Klaus-Conrad-Str. 1, D-92240 Hirschau
<b>Telephone:</b>	+49 (0) 9604 / 40 - 8988
<b>Date of issue:</b>	01.01.2021

## 2. Hazards Identification

Battery Nominal Voltage 3 V

Lithium Content: 0.56g, 3.57%

Significant Risk: No reference

Peculiar Risk: No reference

### General avoidable issues:

Chemicals in the steel can may leak without proper storage.

Rupture or fire may happen to battery if disposed in fire or placed over 100°C.

Heat, rupture and fire may happen to battery if short-circuit caused by stack or mixture.

**GHS classifications do not apply to our batteries.**

## 3. Components of the Battery

Component	CAS No.	Content
Manganese-Dioxide	1313-13-9	30 ~ 40 wt%
Lithium Metal	7439-93-2	2 ~ 4 wt%
Electrolyte [Organic Electrolyte Mixture]	-	10 ~ 14 wt%
Iron	7439-89-6	32 ~ 38 wt%
Carbon	7440-44-0	3 ~ 5 wt%
Polypropylene	9003-07-0	2 ~ 4 wt%
Polyethylene	9002-88-4	1 ~ 24 wt%
Others	-	3 ~ 4 wt%



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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. Remove to fresh air and consult a physician.

#### Skin

Immediately flush skin with plenty of water. If itch or irritation by chemical burn persists, consult a physician.

#### Eyes

Immediately flush eye 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

#### Extinguishing Media

Extinguisher of alkaline metal fire is effective.

Plenty of cold water is also effective to cool the surrounding area and control the spread fire. But hydrogen gas may be evolved by the reaction of water and lithium and it can form an explosive mixture. Therefore in the case that lots of lithium batteries are burning in a confined space, use a smothering agent.

#### Fire fighting procedure

Use self-contained breathing apparatus and full protective gear not to inhale harmful gas.

### 6. Accidental Release Measures

NA

### 7. Handling and Storage

#### 1) Handling

Never swallow. Never charge. Never hear. 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. Never keep in touch with battery.

#### 2) Storage

Never let the battery contact with water. Never store the battery in hot and high humid place.



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### 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 respiratorius)

**Hand protective equipment:**

Synthetic rubber gloves

**Eye protective equipment:**

Protective spectacles

### 9. Physical/Chemical Characteristics

NA

### 10. Stability and Reactivity

**Stability:**

It is extremely stable for normal use.

**Avoid Condition:**

External short-circuit, deformation by press, excessive temperature (above 100., which may cause heat or fire), expose to sun directly or high humidity.

**Avoid Substance:**

Substance may cause short-circuit.

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### 11. Toxicological Information

Chemicals are sealed in the steel can without danger.

The followings are toxicological information for materials of batteries for reference.

Component	Classification	Symptom
Manganese Dioxide	Acute Toxicity	RabbitLDL0(vein)=45mg/kg MouseLD50(subcutaneous)=422mg/kg
	Partially Affected	Irritation to eyes, nose, throat and skin.
	Chronic Toxicity or Long-Term Toxicity	Parkinson's central nervous syndrome may caused by longterm (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 of proper regulation. As electric capacity is left in a discarded battery and it comes into contact with other metals, it could lead to distortion, leakage, overheating, or explosion, so 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. All of our products 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 when delivery.

<Air Transport >

All batteries produced by our company, 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. All of our products 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 produced by our company, 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 Regulation:**

Transport form	Relevant agencies/Issued documents
Air transport	ICAO/ TI, IATA/ DGR
Sea transport	IMO/ IMDG Code
Land transport (within Europe)	RID, ADR

US/International	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 – 62th Edition Effective 1 January 2021: International Air Transport Association (IATA)/Packaging Instructions 968-970

\*2 IMDG Code 39-18

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

\*4 ADR - ADR/Part 3/CHAPTER 3.3/3.3.1/Clause188, 230, 238, 239, 310



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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, Brazil, North America or Canada have similar regulations.

### 16. Other Information

#### Reference

- (1) IATA DGR( Dangerous Goods Regulations), latest edition
  - (2) Notice defined in air transport regulations for dangerous goods may cause explosion.
- This instruction established based on the normal use of the battery, without any insurance.