



Material Safety Data Sheet

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

Product:	Lithium Iron Disulfide Battery FR03//LR03/LR3Micro/AAA, non-rechargeable
Nominal voltage:	1.5 V
Nominal capacity:	1100 mAh, 1.65 Wh
Manufacturer:	Conrad Electronic SE
Address:	Klaus-Conrad-Str. 1, D-92240 Hirschau
Telephone:	+49 (0) 9604 / 40 - 8988
Date of issue:	01.01.2018

2. Hazards identifications

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.

Note:

GHS classifications do not apply to the battery.

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3. Compositions /Information on Ingredients

Chemical Nature:

Lithium/Iron Disulfide Battery

Chemical Name/Common Name	CAS No.	%/wt
Iron Disulfide	1309-36-0	30~40 wt%
Lithium Metal	7439-93-2	5~7 wt%
Electrolyte [Organic Electrolyte Mixture]	/	10~16 wt%
Iron	7439-89-6	30~40 wt%
Aluminum	7429-90-5	4~6 wt%
Carbon	7440-44-0	1~3 wt%
Polypropylene	9003-07-0	1~2 wt%
Polyethylene	9002-88-4	0.5~1 wt%
Other	/	0.5~1 wt%

Lithium Content for each cell: 0.45g (6.3%)

4. First-aid measures

Inhalation:

Seek fresh air and immediately get medical attention after inhaling leaking component.

Skin Contact:

Wash affected area with plenty of soap and water. If irritation develops, get medical attention.

Eye Contact:

Wash affected area with plenty of soap and water. If irritation develops, get medical attention.

Ingestion:

Get medical attention immediately if ingestion.

5. Fire-fighting measures

Fire extinguisher:

Carbon dioxide; fire foam; dry sand and powder etc.

Means of extinction:

Remove batteries to safe place to avoid fire spread. Use water, carbon dioxide, powder if the materials for packing is paper. Burning vapour may cause irritation to eyes, nose and throat. Hence, it is suggested put out the fire in the draught. Use mask when necessary.



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6. Accidental release measures

Steps to Be Taken in Case Material is Released or Spilled

Batteries that are leakage should be handled with rubber gloves. Avoid direct contact with electrolyte. Wear protective clothing and a positive pressure Self-Contained Breathing Apparatus (SCBA).

7. Handling and storage

Do not dispose batteries to fire in case of charge, short-circuit, disassembling, disformation or heat.

Do not stack or mix batteries.

Do not place batteries in metal container, metal sheet or antistatic materials.

Batteries should be changed at the same time when used in a multiple-cell applied device.

Stored in a dry and cool place with good ventilation.

Avoid water, snow, frost or condensation of moisture when packing.

Do not place batteries near heat or hot air outlet.

Do not expose batteries to sun directly.

Avoid condensation of moisture when transferring batteries from cold to hot place.

Provide several fire extinguishers in the warehouse.

8. Exposure controls and 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 and chemical properties

Not available



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10. Stability and Reactivity

Stability:

It is extremely stable for normal use.

Avoid Condition:

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

Avoid Substance:

Substance may cause short-circuit.

11. Toxicological information

Chemicals are sealed in the steel can without danger.

Chronic health effects: N.A.

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

12. Ecological information

Not available

13. Disposable considerations

Dispose of the batteries according to the government regulations.

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14. Transport 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 (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 when delivery.

Air Transport:

The battery (lithium content more than 0.3g but less than 1g), conform to 968 Section IB or II defined in Packing Instruction of IATA-DGR. The product and its packing form 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:

The battery (lithium content less than 1g), 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 – 58th Edition Effective 1 January 2017: International Air Transport Association (IATA)

*2 IMDG Code 37-14

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

*4 ADR - ADR/Part 3/CHAPTER 3.3/3.3.1/Clause 188, 230, 238, 239, 310

*5 Dangerous Goods Regulations – 59th Edition Effective 1 January 2018: International Air Transport Association (IATA)/Packaging Instructions 968-970

*6 IMDG Code 38-16



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15. Regulatory Information

Special requirement be according to the local regulatory.

16. Other information

This instruction established based on the normal use of the battery, without any insurance.