

Material Safety Data Sheet

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Safety data sheet according to 91/155 EWG / ISO 11014-1

Edition: August 08, 2003 Version: 2003/2/V/Lithium

1. IDENTIFICATION

Lithium-Manganese-Dioxide-Batteries**Sizes:** All cells = 1 g Lithium content
All batteries = 2 g Lithium content**VARTA Consumer Batteries**
GmbH &Co. KGaADaimlerstrasse 1 73479 Ellwangen/Germany
Phone ++49 (0) 7961 / 83-0
Fax ++49 (0) 7961 / 83-595**Emergency Telephone Number:**

++49 (0) 911 / 65372260

2. COMPOSITION / INFORMATION on INGREDIENTS

Substance	Approximate percent of total weight
Lithium Metal	1 - 5
Lithium-Trifluoromethane-Sulfonate	< 1.5
Lithium perchlorate	< 1.6
Manganese Dioxide	13 - 75
Dimethoxyether	1 - 10
Graphite	1 - 5
Stainless Steel	33 - 75
Teflon	1 - 5
Propylene Carbonate	2 - 9
Plastic	< 20

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3. HAZARDS IDENTIFICATION

Note: The batteries described in this Safety Data Sheet are sealed and are not harmful, as long as they are used in compliance with the manufacturer instructions. The content of the battery housing does not create a hazard, as long as the integrity of the battery housing is not affected by abuse (mechanical, thermal, electrical). Fire, explosion and severe, burn hazard in such abuse conditions may occur.

Warning: Do not charge, short circuit, puncture, deform, disassemble, heat above 85 °C, incinerate or expose contents to water. Keep batteries away from small children. International Standard IEC 60086-4 contains more detailed information on safety of lithium batteries.

4. FIRST AID MEASURES

Contact to internal Battery content:

- ? **Skin:** Immediately flush with plenty of water for at least 15 minutes. If symptoms are present after flushing, get medical attention.
- ? **Eyes:** Immediately flush with plenty of water for at least 15 minutes and get medical attention.
- ? **Respiratory system:** Leave area immediately. With large quantities and irritation of the respiratory tract get medical attention.
- ? **Ingestion:** Rinse mouth and surrounding area with water. Seek for immediate medical attention.

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5. FIRE – FIGHTING MEASURES

A. Extinguishing Media:

- ? Copious amounts of water is an effective extinguishing medium for lithium batteries, as long as batteries are not yet venting or exploding.
- ? Lith-X (Class D extinguishing media) is effective on fires involving only a few lithium batteries.
- ? Dry chemical type extinguishers have only limited extinguishing potential.

B. Fire Fighting Procedures:

- ? Use a positive pressure self-contained breathing apparatus if batteries are involved in a fire.
- ? Full protective clothing is necessary.
- ? During water application caution is advised as burning pieces of lithium may be ejected from the fire.

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6. ACCIDENTAL RELEASE MEASURES

When the battery housing is damaged, small amounts of electrolyte may leak. Seal battery air tight in a plastic bag, adding some dry sand, chalk (CaCO₃) or lime (CaO) powder or Vermiculite. Electrolyte traces may be wiped off dryly using household paper. Rinse with water afterwards.

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7. HANDLING AND STORAGE

- ? Do not allow terminals to short-circuit.
 - ? Storage preferably in a cool (below 30 °C), dry area that is subject to little temperature change.
 - ? Do not place near heating equipment, nor expose to direct sunlight for long periods. Elevated temperatures can result in reduced battery service life.
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8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Respiratory equipment: None required under normal use conditions.
Hand protection: None required under normal use conditions. Use butyl gloves when handling leaking batteries.
Eye protection: None required under normal use conditions. Wear safety glasses when handling leaking batteries.

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9. PHYSICAL AND CHEMICAL PROPERTIES

Geometric solid objects.

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10. STABILITY AND REACTIVITY

May rupture violently when heated above 100 °C or when charged.

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11. TOXIOLOGICAL INFORMATION

Not applicable.

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12. ECOLOGICAL INFORMATION

Not applicable.

13. DISPOSAL CONSIDERATIONS

? Batteries do not contain hazardous materials according to EC directives 91/157/EEC and 93/86/EEC.

? In accordance with appropriate national regulations (EC 91/157 item 4).

14. TRANSPORT INFORMATION

Lithium batteries shipped by VARTA Gerätebatterie GmbH are not regarded as hazardous goods as they comply with the special provision A45 of the *IATA* Resolution 618*. In addition, they comply with the renewed agreements ADR** release 2003 Code 188/230/310 and 636, as well as, IMDG*** Code 188/230 and 297.

Therefore the requirements of the *UN Manual of Test and Criteria, Part III, sub-section 38.3* are fulfilled, as well as, the other criteria concerning package marking, appropriate shipping documents and package stability of withstanding the 1.2 m droptest.

* International Air Transport Association.

** European agreement concerning the international carriage of dangerous goods by road.

***International Maritime Dangerous Goods.

Please contact the emergency telephone number given in section 1, in case the packaging has been damaged.

15. REGULATORY INFORMATION

Not applicable.

16. OTHER INFORMATION

For lithium batteries in general, Safety standard IEC 60086-4 applies. It contains detailed recommendations for manufactures of equipment and users.