

Material Safety Data Sheet

1. IDENTIFICATION

Lithium-Manganese-Dioxide-Batteries

Sizes: All cells ≤ 1 g Lithium content
All batteries ≤ 2 g Lithium content

VARTA Consumer Batteries
GmbH & Co. KGaA

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+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
Dioxolane	1 - 9
Lithium Hexafluoroarsenate	1 - 4
Mercury (Hg)	< 0.0005
Lead (Pb)	< 0.004
Cadmium (Cd)	< 0.002

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.

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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.

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.

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13. DISPOSAL CONSIDERATIONS

In accordance with appropriate national regulations.

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14. TRANSPORT INFORMATION

The requirements of the UN manual of Test and Criteria, Part III, sub-section 38.3 are fulfilled. All of these batteries are packed and marked within appropriate protection for prevention of short circuits.

The shipping documents observe to the regulations.

Lithium-Metal-batteries

that we supply to our customers are not subject to dangerous goods transport regulations due to following regulations:

Air transport: IATA **Dangerous Goods Regulations** 53. Edition Packing instruction 968 Section II.

Hazardous Materials Resolution issued by the U.S. Department of Transportation (DOT) and codified in Title 49 of the U.S. Code of Federal Regulations (CFR)

See transport: IMDG Code 35. Amendment Special provision 188/230, packing instruction 903

Road and rail transport: ADR/RID 2011 special provision 188/230, packing instruction 903

Additional informations: Tel +49 911 65372260 for USA: Tel +18004249300

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15. REGULATORY INFORMATION

Not applicable.

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16. OTHER INFORMATION

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