

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**

Alfred Krupp Str 9, 73479 Ellwangen/Germany
Phone +49 7961 / 83-0
Fax +49 800 827 8274

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 |
| Dioxolane | 1 - 9 |
| Lithium Hexafluoroarsenate | 1 - 4 |

| | |
|--------------|----------|
| Mercury (Hg) | < 0.0005 |
| Lead (Pb) | < 0.004 |
| Cadmium (Cd) | < 0.002 |

SVHC substances according to REACH (Article 33)

| Contents | EC No. | CAS No. | Material |
|----------|-----------|----------|---|
| > 0,1% | 203-794-9 | 110-71-4 | 1,2-dimethoxyethane; ethylene glycol dimethyl ether (EGDME) |

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.

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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

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Not applicable.

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

Lithium-Metal Batteries (UN 3090)

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

Air transport: IATA Dangerous Goods Regulations 56th Edition Packing instruction 968 Section II

UN 3090 = FORBIDDEN with PAX (Passenger- and Cargo Aircraft) ONLY: CAO

ATTENTION: State variation USA (USG-02): Primary lithium metal batteries and cells (UN 3090), are forbidden for transportation aboard passenger-carrying aircraft and must be marked and labelled in accordance with USG-02.

Sea transport: IMDG Code 36. Amendment Special provision 188/230, packing instruction 903

Road and rail transport: ADR/RID 2015 special provision 188/230, packing instruction 903

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

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.

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Lithium-Metal Batteries contained in equipment (UN 3091)

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

Air transport: IATA Dangerous Goods Regulations 56th Edition Packing instruction 970 Section II

Sea transport: IMDG Code 36. Amendment Special provision 188/230, packing instruction 903

Road and rail transport: ADR/RID 2015 special provision 188/230, packing instruction 903
Additional information: Tel +49 911 65372260 for USA: Tel +18004249300

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.

Lithium-Metal Batteries contained with equipment (UN 3091)

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

Air transport: IATA Dangerous Goods Regulations 56th Edition Packing instruction 969 Section II

Sea transport: IMDG Code 36. Amendment Special provision 188/230, packing instruction 903

Road and rail transport: ADR/RID 2015 special provision 188/230, packing instruction 903
Additional information: Tel +49 911 65372260 for USA: Tel +18004249300

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.

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.