

Safety Data Sheet

According to HCS-2012 APPENDIX D TO §1910.1200

Version: 1.0/EN

Product name: Mercury-Free Alkaline Manganese Dioxide Battery

Revision date: 24/06/2013

Printing date: 24/06/2013

1. Identification

(a) Product identifier

Product name: Mercury-Free Alkaline Manganese Dioxide Battery

(b) Other means of identification

Product description: Alkaline battery

Product type: LR6 AM3 AA 1.5V

LR03 AM4 AAA 1.5V

(c) Recommended use of the chemical and restrictions on use

Recommended use: Widely applied to MP4, CD, MD, razor, electric toys, calculators, cameras, electronic notebook, instrument, flashing light, wireless mouse etc.

Restriction on use: No information available.

(d) Details of the supplier of the product

Company name: DONGGUAN ANDALI ELECTRONICS CO., LTD.

Address: No.102 YunHe Dong San Road, Nancheng District, Dongguan City

E-mail: andaliesz@126.com

Telephone: +86 769-22386515

Fax: +86 769-22386535

(e) Emergency phone number

+86 13912779466

2. Hazard(s) identification

(a) Classification of the chemical

The battery is considered as an article, and this product is not classified as hazardous.

(b) Label elements

Pictogram(s): No pictogram is used.

Signal word: No signal word is used.

Hazard statements: Not classified.

Precautionary statements: Not classified.

(c) Description of any hazards not otherwise classified

Exposure to the ingredients contained within the battery pack could be harmful under some circumstances.

(d) Ingredient with unknown acute toxicity

No information available.

3. Composition/information on ingredients

(a) Mixtures information: ingredients contained within the battery

| Chemical name | CAS No. | Concentration |
|-------------------|-----------|---------------|
| Manganese dioxide | 1313-13-9 | 36-44% |
| Zinc | 7440-66-6 | 15.8-19.3% |

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| Steel | 12597-69-2 | 14.9-18.2% |
| Water | 7732-18-5 | 12.9-15.7% |
| Graphite | 7782-42-5 | 2.8-3.4%3.4 |
| Potassium hydroxide | 1310-58-3 | 2.5-3.0% |
| Copper | 7440-50-8 | 1.8-2.2% |
| PolyacrylicAcid | 9003-01-4 | 1.5-1.8% |
| Poly(ethylene) | 9002-88-4 | 1.0-1.2% |
| Diaphragm paper | - | 0.6-0.8% |

4. First-aid measures

(a) Description of first aid measures

Caution! No effect under routine handling and use. If exposure to internal materials within cell due to damaged outer metal casing, the following actions are recommended.

Inhalation: If inhaled, remove from exposure and move to fresh air immediately. Rinse mouth and nose with water. Get medical aid immediately. DO NOT use mouth-to-mouth resuscitation. If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.

Skin contact: In case of contact, immediately flush skin with copious amounts of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing and shoes before reuse. Get medical aid.

Eye contact: Rinse immediately with plenty of water during at least 15-30 minutes, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses if easily possible. Get medical aid immediately.

Ingestion: Do not induce vomiting. If the injured is fully conscious: wash mouth out with water, then give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

(b) Most important symptoms/effects, acute and delayed

These chemicals are contained in a sealed can. Risk of exposure occurs only if the battery is mechanically or electrically abused. The most likely risk is acute exposure when a battery vents. Leaking material exposure to skin, eyes may cause irritation. Leaking can cause thermal and chemical burns upon contact with the skin. Inhalation of fumes may cause respiratory irritation.

(c) Immediate medical attention and special treatment

No information available.

5. Fire-fighting measures

(a) Extinguishing media

Suitable extinguishing media: Dry chemical powder, CO₂

Unsuitable extinguishing media: No information available.

(b) Special hazards arising from the chemical

Battery can be overheated by an external source or by internal shorting and develop metal hydroxide mist. In fire situations fumes containing, Zinc may evolved. Toxic vapor may release in case of fire.

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(c) Special protective equipment and precautions for fire-fighters

If batteries are on working, turn off power.

Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Move containers from fire area if this can be done without risk. Prevent run off from fire control dilution from entering streams or drinking water supply.

As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

6. Accidental release measures

(a) Personal precautions, protective equipment and emergency procedures

No action shall be taken involving any personal risk or without suitable training. Review Section 5 and Section 7 sections before proceeding with clean-up. Use proper personal protective equipment as indicated in Section 8. Appropriate ventilation. If electrolyte leaks or spills, do not touch or walk through electrolyte.

(b) Methods and materials for containment and cleaning up

Remove all sources of ignition or heat. Stop leak if safe to do so. Move containers from spill area. Carefully collect undamaged batteries in a clean, dry and appropriate container for reuse or disposal. If electrolyte leaks or spills, collect all released material in an appropriate container before proper disposal.

7. Handling and storage

(a) Precautions for safe handling

Do not dispose in fire, mix with other battery types, charge above specified rate, connect improperly, or short circuit, which may result in overheating, explosion or leakage of cell contents. Accidental short circuit will bring high temperature elevation to the battery as well as shorten the battery life. Be sure to avoid prolonged short circuit since the heat can burn attendant skin and even rupture of the battery cell case. Battery bulk container, coins, metal jewelry, metal work table, metal belt or other equipment for assembly battery may be the source for short circuit. Use effective anti short circuit measures. Do not use organic solvents or other chemical cleaners on battery. Do not disassembly or decompose. Avoid contacting with water, avoid straight sunlight.

(b) Conditions for safe storage, including any incompatibilities

Store in a cool and dry area, but prevent condensation on cell or battery terminals. High temperature may damage the performance of the battery, cause leaking or rusting. Protect from physical damage and short circuits. To avoid risk of fire or explosion, keep sparks and other sources of ignition away from the battery. Do not allow metal objects to simultaneously contact both positive and negative terminal of batteries. Do not stack battery directly on another battery. Do not store batteries on electrically conductive surfaces.

8. Exposure controls/personal protection

(a) Control parameters

| CAS No. | ACGIH | NIOSH | OSHA |
|-----------|---|--|--|
| 1313-13-9 | 0.2 mg/m ³ TWA (as Mn) (listed under Manganese, | 1 mg/m ³ TWA (as Mn) (listed under Manganese compounds, n.o.s.). | 5 mg/m ³ Ceiling (as Mn) (listed under Manganese |

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| | inorganic compounds) | 500 mg/m ³ IDLH (as Mn) (listed under Manganese compounds, n.o.s.) | compounds, n.o.s.) |
|-----------|----------------------|---|--|
| 7440-66-6 | N/A | N/A | N/A |
| 1310-58-3 | 2 mg/m ³ | C 2 mg/m ³ | 2 mg/m ³ ^{Ceiling} |

(b) Appropriate engineering controls

General room ventilation is sufficient during normal use and handling. Do not install these batteries in sealed, unventilated areas. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

(c) Personal protective equipment

Respiratory protection: Under normal condition of use and handling no special protection is required for sealed battery. Use appropriate respirator if airborne dust or mist concentrations exceed.

Hand protection: Under normal condition of use and handling no special protection is required for sealed battery.

Eye/face protection: Under normal condition of use and handling no special protection is required for sealed battery.

Skin/body protection: Under normal condition of use and handling no special protection is required for sealed battery.

9. Physical and chemical properties

| | |
|--|----------------|
| (a) Appearance | Solid |
| (b) Odor | Not available. |
| (c) Odor threshold | Not available. |
| (d) pH | Not available. |
| (e) Melting point/freezing point | Not available. |
| (f) Initial boiling point and boiling range | Not available. |
| (g) Flash point | Not available. |
| (h) Evaporation rate | Not available. |
| (i) Flammability | Not available. |
| (j) Upper/lower flammability or explosive limits | Not available. |
| (k) Vapor pressure | Not available. |
| (l) Vapor density | Not available. |
| (m) Relative density | Not available. |
| (n) Solubility(ies) | Not available. |
| (o) Partition coefficient: n-octanol/water | Not available. |
| (p) Auto-ignition temperature | Not available. |
| (q) Decomposition temperature | Not available. |
| (r) Viscosity | Not available. |

10. Stability and reactivity

(a) Reactivity

Stable under recommended storage and handling conditions.

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(b) Chemical stability

Stable under normal condition.

(c) Possibility of hazardous reactions

When a battery cell is exposed to an external short-circuit, crushed, modification, high temperature, open flames, it will be the cause of heat generation and ignition.

(d) Conditions to avoid

Exposed to an external short-circuit, crushed, modification, high temperature, open flames, incompatible materials, direct sunlight and high humidity.

(e) Incompatible materials

Conductive materials, water, seawater, strong oxidizers and acids.

(f) Hazardous decomposition products

Metal oxides, harmful gas and etc.

11. Toxicological information

(a) Information on the likely routes of exposure

Inhalation: No effect under routine handling and use for sealed battery. If battery is broken, inhale fume/dust may cause irritation, chemical burns or lung oedema.

Ingestion: No effect under routine handling and use for sealed battery. Harmful if swallowed the electrolyte contained inside the battery. Exposure to the electrolyte contained inside the battery may cause severe chemical burn to mouth, esophagus and gastrointestinal system.

Skin contact: No effect under routine handling and use for sealed battery. Exposure to the electrolyte contained inside the battery may result in chemical burns. Exposure to battery particulate may cause dermatitis.

Eye contact: No effect under routine handling and use for sealed battery. Exposure to the electrolyte contained inside the battery may result in severe irritation and chemical burns.

(b) Information on toxicological characteristics

Acute toxicity: No data available.

Skin corrosion/irritation: No data available.

Serious eye damage/irritation: No data available.

Respiratory sensitization: No data available.

skin sensitization: No data available.

Carcinogenicity: Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65.

Germ Cell Mutagenicity: No data available.

Reproductive Toxicity: No data available.

STOT-Single Exposure: No data available.

STOT-Repeated Exposure: No data available.

Aspiration Hazard: No data available.

12. Ecological information

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(a) Ecotoxicity

When promptly used or disposed, the battery does not present severe environmental hazard.

(b) Persistence and Degradability

No data available.

(c) Bioaccumulative potential

No data available.

(d) Mobility in soil

No data available.

(e) Other adverse effects

If the battery is discarded into the environment, the harmful contents inside may be dangerous.

13. Disposal considerations

(a) Safe handling and methods of disposal

The generation of waste should be avoided or minimized wherever possible. Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Disposal should be in accordance with applicable regional, national and local laws and regulations.

Do not incinerate, since batteries may explode at excessive temperature. Refer to Section 7-Handling and Storage and Section 8-Exposure Controls/Personal Protection for additional handling information and protection of employees.

14. Transport information

The product is not regulated as a hazardous material for transportation. (UN TDG Rev.17; IMDG CODE 35-10 edition; IATA DGR 53rd edition)

(a) UN number Not applicable.

(b) UN Proper shipping name Not applicable.

(c) Transport hazard class(es) Not applicable.

(d) Packing group (if applicable) Not applicable.

(e) Marine pollutant (Yes/No) No

(f) Transport in bulk (according to Annex Not applicable.

II of MARPOL 73/78 and the IBC Code)

(g) Special precautions Batteries must be separated from each other to prevent short circuits and to prevent movement that could lead to short circuits. Products must also be packed in strong packaging that can withstand the rigors normal to transportation. These products are labeled in accordance to requirements for cargo shipments of Li-polymer batteries and cells.

15. Regulatory information

(a) Safety, health and environmental regulations specific for the product in question

| CAS No. | USA | China | Canada |
|---------|-----|-------|--------|
|---------|-----|-------|--------|

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| | TSCA | IECSC | DSL |
|-----------|--------|--------|--------|
| 1313-13-9 | Listed | Listed | Listed |
| 7440-66-6 | Listed | Listed | Listed |
| 1310-58-3 | Listed | Listed | Listed |

Remark: The above-mentioned search results are based on the Non-Confidential Inventory.

16. Other information, including date of preparation or last revision

(a) Preparation and revision information

Date of previous revision: Not applicable.

Date of this revision: 24/06/2013

Revision summary: The first New SDS

(b) Abbreviations and acronyms

| | |
|--------|--|
| ACGIH | American Conference of Governmental Industrial Hygienists |
| OSHA: | The United States Occupational Safety and Health Administration. |
| TWA: | time-weighted average |
| STEL: | Short term exposure limit |
| DOT: | US Department Of Transportation) |
| IMDG: | International Maritime Dangerous Goods |
| IATA: | International Air Transport Association |
| TSCA: | Toxic Substances Control Act, The American chemical inventory. |
| DSL | Domestic Substances List |
| IECSC: | Inventory of existing chemical substances in China. |

(c) Disclaimer

The information in this SDS is provided all the relevant data fully and truly. However, the information is provided without any warranty on their absolute extensiveness and accuracy. This SDS was prepared to provide safety preventive measures for the users who have got professional training. The personal user who obtained this SDS should make independent judgment for the applicability of this SDS under special conditions. In these special cases, we do not assume responsibility for the damage.

----- End of the SDS -----