

MATERIAL SAFETY DATA SHEET

NAME: DURACELL ZINC CHLORIDE / MALLORY SUPER BATTERIES

CAS NO: Not applicable

Effective Date: 11/17/2003 **Rev:** 4

A. — IDENTIFICATION

| | | |
|--|--|---|
| Manganese Dioxide (1313-13-9) Zinc (7440-66-6) Zinc Chloride (7646-85-7) Ammonium Chloride (12125-02-9) Carbon Black (1333-86-4) | % | Formula: Mixture Mixture |
| | | Molecular Weight: NA |
| | 25-42 15-25 5-25 0.5-15 1-10 | Synonyms: Zinc Chloride Cells: M13SHD (D); M14SHD (C); M15SHD (AA); M9VSHD (9V) |
| | | |

B. — PHYSICAL DATA

| | | |
|---|--|---|
| Boiling Point NA °F NA °C | Melting Point NA °F NA °C | Freezing Point NA °F NA °C |
| Specific Gravity (H ₂ O=1) NA | Vapor Density (air=1) NA | Vapor Pressure @ _____ °F NA mm Hg |
| Evaporation (_____ Ether =1) NA | Saturation in Air (by volume@ _____ °F) NA | Autoignition Temperature _____ °F _____ °C NA |
| % Volatiles NA | Solubility in Water NA | pH NA |

Appearance/Color Cylindrical batteries. Contents dark in color.

Flash Point and Test Method(s) NA

Flammable Limits in Air (% by volume) Lower NA % Upper NA %

C. — REACTIVITY

| | | | | | |
|---|--|-----------------------------------|---|------------------------------------|--|
| Stability | <input checked="" type="checkbox"/> stable | <input type="checkbox"/> unstable | Polymerization | <input type="checkbox"/> may occur | <input checked="" type="checkbox"/> will not occur |
| <u>Conditions to Avoid</u> Do not heat, crush, disassemble, short circuit or recharge. | | | <u>Conditions to Avoid</u> Not applicable | | |
| <u>Incompatible Materials</u> Contents incompatible with strong oxidizing agents. | | | <u>Hazardous Decomposition Products</u> Thermal degradation may produce hazardous fumes of manganese, caustic vapors of zinc chloride and other toxic by-products. | | |

*** IF MULTIPLE INGREDIENTS, INCLUDE CAS NUMBERS FOR EACH NA=NOT AVAILABLE**

Footnotes

Not applicable

D. — HEALTH HAZARD DATA

Occupational Exposure Limits PEL's, TLV's, etc.)

8-Hour TWAs: Manganese Dioxide (as Mn) - 5 mg/m³ (Ceiling) (OSHA); 0.2 mg/m³ (ACGIH/Gillette)
 Zinc Chloride (Fume) - 1 mg/m³ (OSHA/ACGIH); 2 mg/m³ (STEL) (OSHA/ACGIH)
 Ammonium Chloride (Fume) - 10 mg/m³ (ACGIH); 20 mg/m³ (STEL)(ACGIH)
 Carbon Black - 3.5 mg/m³ (OSHA/ACGIH)

These levels are not anticipated under normal consumer use conditions.

Warning Signals

Not applicable

Routes/Effects of Exposure

These chemicals and metals are contained in a sealed can. For consumer use, adequate hazard warnings are included on both the package and on the battery. Potential for exposure should not exist unless the battery leaks, is exposed to high temperatures or is mechanically, physically, or electrically abused. Concentration of aqueous zinc chloride ranges from 10-30%. Concentration of aqueous ammonium chloride ranges from 1-20%. Anticipated potential leakage volume of zinc chloride/ammonium chloride of 1 to 5 ml, depending on battery size.

- | | |
|----------------|---|
| 1. Inhalation | Respiratory (and eye) irritation may occur if fumes are released due to heat or an abundance of leaking batteries. |
| 2. Ingestion | Not anticipated due to size of battery. Irritation, including caustic burns/injury, may occur following exposure to a leaking battery. |
| 3. Skin | <p>a. <u>Contact</u> Not anticipated. Zinc chloride/ammonium chloride from a leaking battery may cause burns.</p> <p>b. <u>Absorption</u> Not anticipated</p> |
| 4. Eye Contact | Not anticipated. Zinc chloride/ammonium chloride from a leaking battery may cause burns or permanent injury. |
| 5. Other | Not applicable |

E. — ENVIRONMENTAL IMPACT

1. Applicable Regulations All ingredients listed in TSCA inventory.

2. DOT Hazard Class - Not applicable

3. DOT Shipping Name - Not applicable

Environmental Effects

These batteries pass the U. S. EPA's Toxicity Characteristic Leaching Procedure and therefore, may be disposed of with normal waste.

F. — EXPOSURE CONTROL METHODS

Engineering Controls

General ventilation under normal use conditions.

Eye Protection

None under normal use conditions. Wear safety glasses when handling leaking batteries.

Skin Protection

None under normal use conditions. Use neoprene, rubber or latex-nitrile gloves when handling leaking batteries.

Respiratory Protection

None under normal use conditions.

Other

Keep batteries away from small children.

G. — WORK PRACTICES

Handling and Storage

Store at room temperature. Avoid mechanical or electrical abuse. **DO NOT** short or install incorrectly. Batteries may explode, pyrolyze or vent if disassembled, crushed, recharged or exposed to high temperatures. Install batteries in accordance with equipment instructions. Do not mix battery systems, such as alkaline and zinc chloride, in the same equipment. Replace all batteries in equipment at the same time. Do not carry batteries loose in pocket or bag.

Normal Clean Up

Not applicable

Waste Disposal Methods

Individual consumers may dispose of spent (used) batteries with household trash. Duracell does not recommend that spent batteries be accumulated (quantities of five gallons or more should be disposed of in a secure landfill), in accordance with appropriate federal, state and local regulations. Do not incinerate, since batteries may explode at excessive temperatures.

H. — EMERGENCY PROCEDURES

Steps to be taken if material is released to the environment or spilled in the work area

Notify safety personnel of large spills. Caustic zinc chloride may be released from leaking or ruptured batteries. Avoid eye or skin contact and inhalation of vapors. Increase ventilation. Clean-up personnel should wear appropriate protective gear.

Fire and Explosion Hazard

Batteries may burst and release hazardous decomposition products when exposed to a fire situation. See Sec. C.

Extinguishing Media

As appropriate for surrounding area.

Firefighting Procedures

Use self-contained breathing apparatus and full protective gear.

I. — FIRST AID AND MEDICAL EMERGENCY PROCEDURES**Eyes**

Not anticipated. If battery is leaking and material contacts eyes, flush with clear, tepid water for 30 minutes. Contact physician at once.

Skin

Not anticipated. If battery is leaking, irrigate exposed skin with copious amount of clear, tepid water for at least 15 minutes. If irritation, injury or pain persists, consult a physician.

Inhalation

Not anticipated. If battery is leaking, contents may be irritating to respiratory passages. Remove to fresh air. Contact physician if irritation persists.

Ingestion

Not anticipated. Rinse the mouth and surrounding area with clear, tepid water for at least 15 minutes. Consult a physician immediately for treatment and to rule out involvement of the esophagus and other tissues.

Notes to Physician

- 1) The primary acutely toxic ingredient is zinc chloride/ammonium chloride.
- 2) The potential leakage volume is 1-5 ml, depending on battery size.
- 3) This MSDS does not include or address the small button or cell batteries which can be ingested.

Replaces #2022.3

The information contained in the Material Safety Data Sheet is based on data considered to be accurate, however, no warranty is expressed or implied regarding the accuracy of the data or the results to be obtained from the use thereof.