

PRODUCT SAFETY DATASHEET

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Alkaline Batteries
June 2007

As a courtesy to our customers, Energizer has prepared copyrighted Product Safety Datasheets to provide information on the different Eveready/Energizer battery systems. As defined in OSHA Hazard Communication Standard, Section 1910.1200 (c), Eveready/Energizer batteries are manufactured "articles", which do not result in exposure to a hazardous chemical under normal conditions of use. For this reason, Material Safety Datasheets are not required. The information and recommendations set forth herein are made in good faith, for information only, and are believed to be accurate as of the date of preparation. However, ENERGIZER BATTERY MANUFACTURING, INC., MAKES NO WARRANTY, EITHER EXPRESS OR IMPLIED, WITH RESPECT TO THIS INFORMATION AND DISCLAIMS ALL LIABILITY FROM REFERENCE ON IT.

PRODUCT SAFETY DATA SHEET**PRODUCT NAME:** EVEREADY Battery**Type No.:****Volts:****TRADE NAMES:** ENERGIZER, ENERGIZER e², INDUSTRIAL ZMA, HERCULES, EVEREADY, WONDER**Approximate Weight:****CHEMICAL SYSTEM:** Alkaline Manganese Dioxide-Zinc**Designed for Recharge:** No**SECTION I - MANUFACTURER INFORMATION**Energizer Battery Manufacturing, Inc.
1359 Columbia Rd.
Westlake, OH 44145Telephone Number for Information:
800-383-7323 (USA / CANADA)

Date Prepared: June 2007

SECTION II - HAZARDOUS INGREDIENTS

IMPORTANT NOTE: The battery should not be opened or burned. Exposure to the ingredients contained within or their combustion products could be harmful.

MATERIAL OR INGREDIENT	PEL (OSHA)	TLV (ACGIH)	% / wt.
Graphite (CAS# 7782-42-5)	15 mg/m ³ TWA (total dust) 5 mg/m ³ TWA (respirable fraction)	2 mg/m ³ TWA (respirable fraction)	2-6
Manganese Dioxide (CAS# 1313-13-9)	5 mg/m ³ Ceiling (as Mn)	0.2 mg/m ³ TWA (as Mn)	30-45
Potassium Hydroxide (CAS# 1310-58-3)	None established	2 mg/m ³ Ceiling	4-8
Zinc (CAS# 7440-66-6)	15 mg/m ³ TWA PNOR* (total dust) 5 mg/m ³ TWA PNOR* (respirable fraction)	10 mg/m ³ TWA PNOC** (inhalable particulate) 3 mg/m ³ TWA PNOC** (respirable particulate)	12-25

* PNOR: Particulates not otherwise regulated

**PNOC: Particulates not otherwise classified

SECTION III - FIRE AND EXPLOSION HAZARD DATA

In case of fire, it is permissible to use any class of extinguishing medium on these batteries or their packing material. Cool exterior of batteries if exposed to fire to prevent rupture.

Fire fighters should wear self-contained breathing apparatus.

SECTION IV - HEALTH HAZARD DATA

Under normal conditions of use, the battery is hermetically sealed.

Ingestion: Swallowing a battery can be harmful.

Contents of an open battery can cause serious chemical burns of mouth, esophagus, and gastrointestinal tract.

If battery or open battery is ingested, do not induce vomiting or give food or drink. Seek medical attention immediately. CALL NATIONAL BATTERY INGESTION HOTLINE for advice and follow-up (202-625-3333) collect day or night.

Inhalation: Contents of an open battery can cause respiratory irritation. Provide fresh air and seek medical attention.

Skin Contact: Contents of an open battery can cause skin irritation and/or chemical burns. Remove contaminated clothing and wash skin with soap and water. If a chemical burn occurs or if irritation persists, seek medical attention.

Eye Contact: Contents of an open battery can cause severe irritation and chemical burns. Immediately flush eyes thoroughly with water for at least 15 minutes, lifting upper and lower lids, until no evidence of the chemical remains. Seek medical attention.

SECTION V - PRECAUTIONS FOR SAFE HANDLING AND USE

Storage: Store in a cool, well ventilated area. Elevated temperatures can result in shortened battery life.

Mechanical Containment: If potting or sealing the battery in an airtight or watertight container is required, consult your Energizer Battery Manufacturing, Inc. representative for precautionary suggestions. Batteries normally evolve hydrogen which, when combined with oxygen from the air, can produce a combustible or explosive mixture unless vented. If such a mixture is present, short circuits, high temperature, or static sparks can cause an ignition.

Do not obstruct safety release vents on batteries. Encapsulation (potting) of batteries will not allow cell venting and can cause high pressure rupture.

Handling: Accidental short circuit for a few seconds will not seriously affect the battery. Prolonged short circuit will cause the battery to lose energy, and can cause the safety release vent to open. Sources of short circuits include jumbled batteries in bulk containers, metal jewelry, metal covered tables or metal belts used for assembly of batteries into devices.

If soldering or welding to the battery is required, consult your Energizer Battery Manufacturing, Inc. representative for proper precautions to prevent seal damage or short circuit.

Charging: This battery is manufactured in a charged state. It is not designed for recharging. Recharging can cause battery leakage or, in some cases, high pressure rupture. Inadvertent charging can occur if a battery is installed backwards.

Labeling: If the Eveready label or package warnings are not visible, it is important to provide a package and/or device label stating:

WARNING: do not install backwards, charge, put in fire, or mix with other battery types. May explode or leak causing injury. **Replace all batteries at the same time.**

Where accidental ingestion of small batteries is possible, the label should include:

Keep away from small children. If swallowed, promptly see doctor; have doctor phone (202) 625-3333 collect.

Disposal: Dispose in accordance with all applicable federal, state and local regulations. Appropriate disposal technologies include incineration and land filling.

SECTION VI - SPECIAL PROTECTION INFORMATION

Ventilation Requirements: Not necessary under normal conditions.

Respiratory Protection: Not necessary under normal conditions.

Eye Protection: Not necessary under normal conditions. Wear safety glasses with side shields if handling an open or leaking battery.

Gloves: Not necessary under normal conditions. Use neoprene or natural rubber gloves if handling an open or leaking battery.

SECTION VII - REGULATORY INFORMATION

Batteries marketed by Energizer Battery Manufacturing, Inc. have been classified as non-dangerous goods by the US Department of Transportation and the major international regulatory bodies and are therefore not regulated.

SARA/TITLE III - As an article, this battery and its contents are not subject to the requirements of the Emergency Planning and Community Right-To-Know Act.

MATERIAL SAFETY DATA SHEET

NAME: DURACELL ALKALINE BATTERIES

CAS NO: Not applicable

Effective Date: 05/30/2001 **Rev:** 5

A. — IDENTIFICATION

<u>Composition*</u> (1% or greater)	<u>%</u>	Formula: Mixture
Manganese Dioxide (1313-13-9)	35-40	Molecular Weight: NA
Zinc (7440-66-6)	10-15	Synonyms: Alkaline Manganese Dioxide Batteries MN1300 (D); MN1400 (C); MN1500 (AA) MN2400 (AAA); MN908 (Lantern 6V); MN918 (Lantern 4.5V); MN1604 (9V); MN9100 (N), DAC100, 105,110,116- 118,123-124, 130, 200, 610,810,820,918, 5K69 (Flatpack); 7K67 (Flatpack) (J) and batteries comprised of these cells.
Potassium Hydroxide (35%) (1310-58-3)	5-10	
Carbon Black (1333-86-4) or Graphite, natural (7782-42-5) or synthetic (7440-44-0)	1-5	
Zinc Oxide (1314-13-2)	0-1	

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 Copper top battery. Contents dark in color.

Flash Point and
Test Method(s) NA

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

C. — REACTIVITY

Stability	☒ Stable ☐ Unstable	Polymerization	☐ may occur ☒ 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 zinc and manganese; hydrogen gas; caustic vapors of potassium hydroxide and other toxic by-products.		

Footnotes

NA=Not Available

Please note: Some Duracell alkaline batteries contain the Duracell Power Check™ battery energy gauge which is a small conductive strip located underneath the PVC battery label that indicates the amount of charge in the battery. It is composed of minute quantities of conductive materials. Due to the small quantity of materials and their solid form, a health or environmental risk is unlikely.

D. — HEALTH HAZARD DATA

Occupational Exposure Limits (PELs, TLVs, etc.)

8-Hour TWAs: Manganese Dioxide (as Mn) - 5 mg/m³ (Ceiling) (OSHA); 0.2 mg/m³ (ACGIH/Duracell)
 Potassium Hydroxide - 2 mg/m³ (Ceiling) (ACGIH)
 Graphite (all kinds except fibrous)-2 mg/ m³ (ACGIH); (synthetic)-15 mg/m³ (total, OSHA);
 5 mg/m³ (respirable, OSHA)
 Carbon Black - 3.5 mg/m³ (ACGIH/OSHA)
 Zinc Oxide (dust) - 10 mg/m³ (ACGIH), 15 mg/m³ (total, OSHA);
 5 mg/m³ (respirable, OSHA)

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. Contains concentrated (35%) potassium hydroxide, which is caustic. Anticipated potential leakage of potassium hydroxide is 2 to 20 ml, depending on battery size. A similar amount of zinc/zinc oxide may also leak.

- | | |
|----------------|---|
| 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 batteries; choking may occur with the smaller AAA and AAAA batteries. Irritation, including caustic burns/injury, may occur following exposure to a leaking battery. |
| 3. Skin | <p>a. <u>Contact</u>
 Irritation, including caustic burns/injury, may occur following exposure to a leaking battery.</p> <p>b. <u>Absorption</u>
 Not anticipated</p> |
| 4. Eye Contact | Irritation, including caustic burns/injury, may occur following exposure to a leaking battery. |
| 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
Please note: These batteries are not regulated by U. S. DOT or international agencies as hazardous materials or dangerous goods when shipped. Duracell uses the article name 'Alkaline Batteries - Non-hazardous' on all domestic and international bills of lading. |

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 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, pyrolize 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 carbon, in the same equipment. Replace all batteries in equipment at the same time. Do not carry batteries loose in pocket or bag. Do not remove battery tester or battery label.

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 potassium hydroxide 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 copious amounts of clear, tepid water for 30 minutes. Contact physician at once.

Skin

Not anticipated. If battery is leaking, irrigate exposed skin with copious amounts 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 concentrated (35%) potassium hydroxide.
- 2) Anticipated potential leakage of potassium hydroxide is 2-20 ml, depending on battery size.
- 3) This MSDS does not include or address the small button cell batteries, which can be ingested.

Replaces #1898, #1360, consolidation of information for similar products.

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.

MATERIAL SAFETY DATA SHEET

NAME: DURACELL ULTRA ALKALINE BATTERIES

CAS NO: Not applicable

Effective Date: 3/4/2001

Rev: 3

A. — IDENTIFICATION

Manganese Dioxide (1313-13-9) Zinc (7440-66-6) Potassium Hydroxide (35%) (1310-58-3) Graphite, natural (7782-42-5) or synthetic (7440-44-0) Zinc Oxide (1314-13-2) See 'Footnotes' below	%	Formula: Mixture
	35-40	Molecular Weight: NA
	10-15	Synonyms: Alkaline Manganese Dioxide Cell: MX1300 (D); MX1400 (C); MX1604 (9V); MX1500 (AA); MX2400 (AAA); MX2500 (AAAA)
	5-10	
	1-5	
	<1	

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 @ 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 Copper top battery. Contents dark in color.

Flash Point and Test Method(s) Not applicable

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

C. — REACTIVITY

Stability	☒ stable	☐ Unstable	Polymerization	☐ may occur	☒ will not occur
Conditions to Avoid Do not heat, crush, disassemble, short circuit or recharge.			Conditions to Avoid Not applicable		
Incompatible Materials Contents incompatible with strong oxidizing agents.			Hazardous Decomposition Products Thermal degradation may produce hazardous fumes of zinc and manganese; hydrogen gas; caustic vapors of potassium hydroxide and other toxic by-products.		

* IF MULTIPLE INGREDIENTS, INCLUDE CAS NUMBERS FOR EACH

NA=NOT AVAILABLE

Footnotes

Please note: Some Duracell alkaline batteries contain the Duracell Power Check™ battery energy gauge which is a small conductive strip located underneath the PVC battery label that indicates the amount of charge in the battery. It is composed of minute quantities of conductive materials. Due to the small quantity of materials and their solid form, a health or environmental risk is unlikely.

GMEL# 1881

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/Duracell)
Potassium Hydroxide - 2 mg/m³ (Ceiling) (ACGIH)
Graphite (all kinds except fibrous)-2 mg/ m³ (ACGIH); (synthetic)-15 mg/m³ (total, OSHA);
5 mg/m³ (respirable, OSHA)
Zinc Oxide (dust) -10 mg/m³ (ACGIH),15 mg/m³ (total, OSHA); 5 mg/m³ (respirable, OSHA)

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. Contains concentrated (35%) potassium hydroxide, which is caustic. Anticipated potential leakage of potassium hydroxide is 1 to 3 ml, depending on battery size. A similar amount of zinc/zinc oxide may also leak.

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 batteries; choking may occur with the smaller AAA battery. Irritation, including caustic burns/injury, may occur following exposure to a leaking battery.
3. Skin a. Contact
Irritation, including caustic burns/injury, may occur following exposure to a leaking battery.

 b. Absorption
Not anticipated.
4. Eye Contact Irritation, including caustic burns/injury, may occur following exposure to a leaking battery.
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
Please note: These batteries are not regulated by U. S. DOT or international agencies as hazardous materials or dangerous goods when shipped. Duracell uses the article name 'Alkaline Batteries - Non-hazardous' on all domestic and international bills of lading.

Environmental Effects

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

GMEL#

1881

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 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, pyrolize 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 carbon, in the same equipment. Replace all batteries in equipment at the same time. Do not carry batteries loose in pocket or bag. Do not remove battery tester or battery label.

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 potassium hydroxide 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 copious amounts of clear, tepid water for 30 minutes. Contact physician at once.

Skin

Not anticipated. If battery is leaking, irrigate exposed skin with copious amounts 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 concentrated (35%) potassium hydroxide.
- 2) Anticipated potential leakage of potassium hydroxide is 1-3 ml, depending on battery size.
- 3) This MSDS does not include or address the small button cell batteries, which can be ingested.

Replaces #1878, change of MSDS date only.

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.