



Material Safety Data Sheet

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

CHEMICAL PRODUCT NAME: Alkaline Battery
COMMON NAME: Alkaline Battery(Dry battery, not IATA restricted as per SP A123)
TYPE: IEC : LR03/LR6/LR14/LR20/6LR61

MANUFACTURER'S NAME: Ningbo Bodawutong Battery Co., Ltd.
ADDRESS: Tangye village, Jiangshan Town, Yinzhou district, Ningbo, China

TELEPHONE NUMBER: 86 574 27728388
FAXNUMBER FOR INFORMATION: 86 574 27713685

2. COMPOSITION/INFORMATION ON INGREDIENTS

SUBSTANCE MIXTURE: Mixture
INGREDIENT:

| Active Materials: | Approximate percent of total weight % | CAS No. |
|--------------------------|---------------------------------------|-----------|
| Manganese Dioxide(Mno2) | 39.6 | 1313-13-9 |
| Zinc Powder(Zn) | 16.8 | 7440-66-6 |
| Water(H2O) | 9.2 | 7732-18-5 |
| Potassium Hydroxide(KOH) | 6.7 | 1310-58-3 |
| Conductive Material | 0.1 | |
| | | |
| Passive Materials: | Approximate percent of total weight % | |
| Pigments | 0.46 | |
| Bass metal | 22.0 | |
| Binder | 0.33 | |
| Alloy | 2.33 | |
| Others | 1.59 | |
| Label | 0.88 | |
| Metallic traces Hg | <0.0001 | 7439-97-6 |
| Pb | <0.0005 | 7439-92-1 |
| Cd | <0.0002 | 7440-43-9 |

3. HAZARDS SUMMARIZING

Routes of Entry:

Inhalation: Yes **Skin:** Yes **Eye:** Yes **Ingestion:** Yes



Inhalation: During normal use inhalation is an unlikely route of exposure due to containment of hazardous materials within the battery case. However, should the batteries be exposed to extreme heat or pressures causing a breach in the battery cell case, exposure to the constituents may occur.

Ingestion: If the battery case is breached in the digestive tract, the electrolyte may cause localized burns.

Skin: Exposure to the electrolyte contained inside the battery may result in chemical burns.

Eye: Exposure to the electrolyte contained inside the battery may result in severe irritation and chemical burns.

3. FIRST-AID MEASURES

Eye:

Wash thoroughly with running water. Get medical advice if irritation develops.

Skin:

If the internal cell materials of an opened battery cell come into contact with the skin, immediately flush with water for at least 15 minutes. Take off the contaminated clothes immediately. Get medical advice if irritation develops.

Inhalation:

Remove to fresh air. Get medical attention for any breathing difficulty.

Ingestion:

Do not induce vomiting, seek immediate medical attention.

4. FIRE-FIGHTING MEASURES

Extinguishing Media:

Use water, foam or dry powder, as appropriate to extinguish fire.

Fire Fighting Procedures:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full-face piece operated in the pressure demand or other positive pressure mode. Fight fire from maximum distance. Evacuate area.

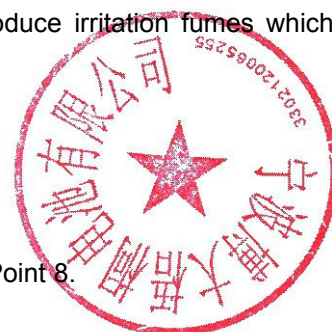
Specific Hazards:

When involved in a fire, this material may decompose and produce irritation fumes which are harmful for fire-fighter.

5. ACCIDENTAL RELEASE MEASURES

Personal Precautions:

Wear appropriate personal protective equipment as specified in Point 8.



Methods of clean up:

Spill and leaks are unlikely because cells are contained in a hermetically-sealed case. In the event of a battery rupture, prevent skin contact all released material in a plastic lined metal container. Dispose in accordance with applicable state and federal regulations.

6. HANDLING AND STORAGE**Handling and Storage:**

Use and store at room temperature. Avoid mechanical or electrical abuse. DO NOT short or install incorrectly. Batteries may explode, pyrolyze or vent if disassembles, crushed recharged or exposed to high Temperature. 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.

7. EXPOSURE CONTROLS/PERSONAL PROTECTION**Exposure guidelines:**

Manganese Dioxide(as Mn): 5.0mg/m³ (OSHA); 0.2/m³(ACGIH)

Potassium Hydroxide: 0.2/m³(ACGIH)

Zinc(as ZnO, Dust): 0.2/m³(ACGIH)

Engineering Measure:

Use general ventilation under normal use condition.

Personal Protection equipment:

Respiration protection: Not required under normal use.

Eye protection: Not required under normal use. Wear safety glasses or face shield as appropriate when handling leaking batteries.

Hand protection: Not required under normal use. Use gloves when handling leaking batteries.

Skin and Body Protection: Not required under normal use. Use protected clothes when handling leaking batteries.

Recommended decontamination facilities:

Eye bath, safety shower, washing facilities.

8. PHYSICAL AND CHEMICAL PROPERTIES

Odor: Odorless

Appearance: Colorful cylindrical solid.

Melting Point: >300° C

Solubility: Partial soluble in water / slightly soluble in acetone/ slightly soluble in ethanol

Ignition temperature: The rate of burning is less than 2.2mm/s, so the substance does not belong



to flammable solid.

PH: 7-8

9. STABILITY AND REACTIVITY

Stability:

The product is considered stable under normal conditions.

Materials to Avoid:

The battery cells are encased in a non-reactive container; however, if the breached or rupture avoid contact of internal battery components with acids, strong oxidizing agents.

Stability Condition to Avoid:

Avoid heat, open flames, moisture, crush, disassemble, short circuit or recharge.

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.

10. TOXICOLOGICAL INFORMATION

Manganese Dioxide:

Harmful by inhalation or ingestion. Long term exposure to manganese compounds may reduce fertility in men.

Toxicity data:

ORL-TAT LD50>3478mg/kg

Zinc:

May be harmful if swallowed or inhaled. May act as an irritant.

Potassium Hydroxide:

Corrosive-may cause serious burns. Harmful by ingestion, inhalation and in contact with skin. If the solid or solution comes into contact with the eyes, serious eye damage may result.

Toxicity data:

ORL-TAT LD50 365mg kg⁻¹

Irritation data:

SKN-HMN 50mg/24h/sev

SKN-TBT 50mg/24h/sev

EYE-RBT 1mg/24h/rinse mod

SKN-GPG 50mg/24h/sev

11. ECOLOGICAL INFORMATION



**Environmental Precautions:**

This product conforms to the requirements of IEC Publication 86. So it may be non-hazardous in ordinary use and may be discarded in accordance with applicable governmental regulations and take order with the demands of the environmental protection section.

Environmental Toxicity:

On the basis of available information, this material is not expected to produce any significant adverse environmental effects when recommended use instruction are followed.

12.DISPOSAL**Waste Disposal Methods:**

Individual consumers may dispose of spent (used) batteries with household trash. This product dose not recommend that spent batteries be accumulated (quantities of five gallons or more should be dispose of in a secure landfill), in accordance with Federal, State or Local Laws and Regulations. Do not incinerate, since batteries may explode at excessive temperature.

Note:

This product meets the Lead, Cadmium and Mercury content requirement.

13.REGULATORY INFORMATION**Overview:**

Do not dispose in fire, mix with other battery types, recharge, connect improperly, or short circuit, which may result in overheating, explosion or leakage of cell contents.

Observe all warnings and precautions listed for the product before use.

The children should be instructed before they make use of the product.

Manganese Dioxide:

EC#: 215-202-6

CAS#: 1313-13-9

Classification and Labeling Information: Annex I Index#025-001-00-3

European Priority Lists and Risk Assessment Information (Council Regulation (EEC) 793/93):

This chemical substance is not listed in a priority list (as foreseen under Council Regulation (EEC) No 793/93 on the evaluation and control of the risks of existing substances.)

Risk phrases: R20 R22

Safety phrase: S25

Zinc:

EC#: 231-175-3

CAS#: 7440-66-6

