# Alkaline Zinc-Manganese Dioxide Dry Battery

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations / According to HCS-2012 APPENDIX D TO §1910.1200 )

Issue date: 12/08/2020 Revision date: 12/08/2020 Version: 1.0

## SECTION 1: Identification

### 1.1. Identification

Product form : Article

Trade name : Alkaline Zinc-Manganese Dioxide Dry Battery

Battery model : LR6/ LR03/ LR14/ LR20/ LR1/ LR61/ 6LR61

Trade Mark : GREATCELL

### 1.2. Recommended use and restrictions on use

Recommended use : Power supply

Restrictions on use : No information available

### 1.3. Supplier

Manufacturer: ZhongShan Sunrise Electronics Co., Ltd.

Address: No.7, DaMei Road GangKou Town ZhongShan City

Factory: ZhongShan Sunrise Electronics Co., Ltd.

Address: No.7, DaMei Road GangKou Town ZhongShan City

Telephone no: 0760-88409128

Fax: 0760-88481819

E-mail: sunrise@greatcell.com.cn

### 1.4. Emergency telephone number

Emergency number : 86-760-88409128

## SECTION 2: Hazard(s) identification

### 2.1. Classification of the substance or mixture

**GHS US classification**

Not classified

### 2.2. GHS Label elements, including precautionary statements

**GHS US labelling**

No labelling applicable

### 2.3. Other hazards which do not result in classification

Important notes: Use under normal conditions, the lithium 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. Immediately see doctor;

Inhalation: Contents of an open battery can cause respiratory irritation.

Skin Contact: Contents of an open battery can cause skin irritation/ or chemical burns.

Eye Contact: Contents of an open battery can cause severe irritation and chemical burns

### 2.4. Unknown acute toxicity (GHS US)

Not applicable

## SECTION 3: Composition/information on ingredients

### 3.1. Substances

Not applicable

### 3.2. Mixtures

| Name | Product identifier | % |
|---|---|---|
| Zinc | (CAS-No.) 7440-66-6 | 28 |
| Manganese oxide (MnO2) | (CAS-No.) 1313-13-9 | 22 |
| Iron | (CAS-No.) 7439-89-6 | 20 |
| Water | (CAS-No.) 7732-18-5 | 15 |
| Carbon black | (CAS-No.) 1333-86-4 | 8 |
| Potassium hydroxide | (CAS-No.) 1310-58-3 | 4 |

| Name | Product identifier | % |
|---|---|---|
| Others | N/A | Balance |

Full text of hazard classes and H-statements : see section 16

## SECTION 4: First-aid measures

### 4.1. Description of first aid measures

First-aid measures general : If symptoms persist, call a physician.

First-aid measures after inhalation : Provide fresh air and seek medical attention.

First-aid measures after skin contact : Remove contaminated clothing and wash skin with soap and water. If a chemical burn occurs of if irritation persists, seek medical attention.

First-aid measures after eye contact : 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.

First-aid measures after ingestion : Do not induce vomiting or give food or drink. Seek medical attention immediately. Call National Battery Ingestion Hotline for advice.

### 4.2. Most important symptoms and effects (acute and delayed)

No information available.

### 4.3. Immediate medical attention and special treatment, if necessary

Treat symptomatically.

## SECTION 5: Fire-fighting measures

### 5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Water spray. Dry powder. Foam.
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.

Unsuitable extinguishing media : No information available.

### 5.2. Specific hazards arising from the chemical

Hazardous decomposition products in case of fire : Toxic fumes may be released.

### 5.3. Special protective equipment and precautions for fire-fighters

Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

#### 6.1.1. For non-emergency personnel

Emergency procedures : Ventilate spillage area.

#### 6.1.2. For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

### 6.2. Environmental precautions

Avoid release to the environment.

### 6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Mechanically recover the product. Pick up mechanically.

Other information : Dispose of materials or solid residues at an authorized site.

### 6.4. Reference to other sections

For further information refer to section 13.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

Precautions for safe handling : Ensure good ventilation of the work station. Wear personal protective equipment. 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

Hygiene measures : Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

| | | |
|---|---|---|
| Mechanical Containment | : | If potting or sealing the battery in an airtight or watertight container is required, consult your New Leader Battery Limited 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. |
| Charging | : | This battery is manufactured in a charged state. Its is not designed for recharging. Recharging can cause battery leakage or in some case, high pressure rupture. Inadvertent charging can occur if a battery |

### 7.2. Conditions for safe storage, including any incompatibilities

| | | |
|---|---|---|
| Storage conditions | : | Store in a well-ventilated place. Keep cool. Elevated temperatures can result in shortened battery life. |

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

| **Alkaline Zinc-Manganese Dioxide Dry Battery** | |
|---|---|
| No additional information available | |

| **Zinc (7440-66-6)** | |
|---|---|
| No additional information available | |

| **Carbon black (1333-86-4)** | |
|---|---|
| **USA - ACGIH - Occupational Exposure Limits** | |
| ACGIH TWA (mg/m³) | 3 mg/m³ (inhalable particulate matter) |
| ACGIH chemical category | Confirmed Animal Carcinogen with Unknown Relevance to Humans |
| **USA - OSHA - Occupational Exposure Limits** | |
| OSHA PEL (TWA) (mg/m³) | 3.5 mg/m³ |
| **USA - IDLH - Occupational Exposure Limits** | |
| US IDLH (mg/m³) | 1750 mg/m³ |
| **USA - NIOSH - Occupational Exposure Limits** | |
| NIOSH REL (TWA) (mg/m³) | 3.5 mg/m³<br>0.1 mg/m³ (Carbon black in presence of Polycyclic aromatic hydrocarbons) |

| **Manganese oxide (MnO2) (1313-13-9)** | |
|---|---|
| No additional information available | |

| **Potassium hydroxide (1310-58-3)** | |
|---|---|
| **USA - ACGIH - Occupational Exposure Limits** | |
| ACGIH Ceiling (mg/m³) | 2 mg/m³ |
| **USA - NIOSH - Occupational Exposure Limits** | |
| NIOSH REL (ceiling) (mg/m³) | 2 mg/m³ |

| **Water (7732-18-5)** | |
|---|---|
| No additional information available | |

| **Iron (7439-89-6)** | |
|---|---|
| No additional information available | |

### 8.2. Appropriate engineering controls

| | | |
|---|---|---|
| Appropriate engineering controls | : | Ensure good ventilation of the work station. |
| Environmental exposure controls | : | Avoid release to the environment. |

### 8.3. Individual protection measures/Personal protective equipment

**Hand protection:**

Use neoprene or natural rubber gloves if handling an open or leaking battery. Battery materials should be collected in a leak-proof container

**Eye protection:**

Wear safety glasses with side shields if handling an open or leaking battery

**Skin and body protection:**

Wear suitable protective clothing

**Respiratory protection:**

In case of insufficient ventilation, wear suitable respiratory equipment

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

| | | |
|---|---|---|
| Physical state | : | Solid |
| Appearance | : | LR6, LR03, LR14, LR20, LR1, LR61: cylindrical shape with primary cell of 1.5V nominal voltage.<br>6LR61: prismatic shape with primary cell of 9V nominal voltage |
| Colour | : | No data available |
| Odour | : | No data available |
| Odour threshold | : | No data available |
| pH | : | No data available |
| Melting point | : | No data available |
| Freezing point | : | Not applicable |
| Boiling point | : | No data available |
| Flash point | : | Not applicable |
| Relative evaporation rate (butylacetate=1) | : | No data available |
| Flammability (solid, gas) | : | Non flammable. |
| Vapour pressure | : | No data available |
| Relative vapour density at 20 °C | : | No data available |
| Relative density | : | No data available |
| Solubility | : | Insoluble in water. |
| Partition coefficient n-octanol/water (Log Pow) | : | No data available |
| Auto-ignition temperature | : | Not applicable |
| Decomposition temperature | : | No data available |
| Viscosity, kinematic | : | No data available |
| Viscosity, dynamic | : | No data available |
| Explosive limits | : | Not applicable |
| Explosive properties | : | No data available |
| Oxidising properties | : | No data available |

### 9.2. Other information

No additional information available

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

The 1.5V Alkaline Alkaline Secondary Battery do not meet any of the criteria established in 40 CFR 261.2 of reactivity.

### 10.2. Chemical stability

Stable under normal conditions.

### 10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

### 10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

### 10.5. Incompatible materials

No information available.

### 10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

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

Toxicity data: ORL-RAT LD50 > 3478 mg/kg

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

Acute toxicity (oral) : Not classified

Acute toxicity (dermal) : Not classified

Acute toxicity (inhalation) : Not classified

| **Zinc (7440-66-6)** | |
|---|---|
| LD50 oral rat | 630 mg/kg |
| LD50 dermal rabbit | > 2000 mg/kg |
| LC50 Inhalation - Rat | > 5.41 mg/m³ |
| ATE US (oral) | 630 mg/kg bodyweight |
| ATE US (dust,mist) | 0.005 mg/l/4h |

| **Carbon black (1333-86-4)** | |
|---|---|
| LD50 oral rat | > 15400 mg/kg |
| LC50 Inhalation - Rat | > 4.6 mg/l/4h |
| ATE US (dust,mist) | 1.5 mg/l/4h |

| **Manganese oxide (MnO2) (1313-13-9)** | |
|---|---|
| LD50 oral rat | 9000 mg/kg |
| ATE US (oral) | 9000 mg/kg bodyweight |

| **Potassium hydroxide (1310-58-3)** | |
|---|---|
| LD50 oral rat | 284 mg/kg |
| ATE US (oral) | 284 mg/kg bodyweight |

| **Water (7732-18-5)** | |
|---|---|
| LD50 oral rat | > 90 ml/kg |

| **Iron (7439-89-6)** | |
|---|---|
| LD50 oral rat | 30 g/kg |
| ATE US (oral) | 30000 mg/kg bodyweight |

Skin corrosion/irritation : Not classified

Serious eye damage/irritation : Not classified

Respiratory or skin sensitisation : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

| **Carbon black (1333-86-4)** | |
|---|---|
| IARC group | 2B - Possibly carcinogenic to humans |
| In OSHA Hazard Communication Carcinogen list | Yes |

Reproductive toxicity : Not classified

STOT-single exposure : Not classified

STOT-repeated exposure : Not classified

| **Zinc (7440-66-6)** | |
|---|---|
| NOAEL (oral, rat, 90 days) | 13.3 mg/kg bodyweight/day |
| STOT-repeated exposure | May cause damage to organs through prolonged or repeated exposure. |

Aspiration hazard : Not classified

Viscosity, kinematic : No data available

## SECTION 12: Ecological information

### 12.1. Toxicity

Ecology - general : The product is not considered harmful to aquatic organisms nor to cause long-term adverse effects in the environment.

| Zinc (7440-66-6) | |
|---|---|
| LC50 fish 1 | 2.16 – 3.05 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through]) |
| EC50 Daphnia 1 | 0.139 – 0.908 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static]) |
| LC50 fish 2 | 0.211 – 0.269 mg/l (Exposure time: 96 h - Species: Pimephales promelas [semi-static]) |

| Carbon black (1333-86-4) | |
|---|---|
| LC50 fish 1 | > 1000 mg/l |

| Potassium hydroxide (1310-58-3) | |
|---|---|
| LC50 fish 1 | 80 mg/l (Gambusia affinis) (ECHA) |

### 12.2. Persistence and degradability

| Zinc (7440-66-6) | |
|---|---|
| Persistence and degradability | No information available. |

### 12.3. Bioaccumulative potential

| Zinc (7440-66-6) | |
|---|---|
| Bioaccumulative potential | No information available. |

| Manganese oxide (MnO2) (1313-13-9) | |
|---|---|
| BCF fish 1 | (no bioaccumulation expected) |
| Partition coefficient n-octanol/water (Log Pow) | < 0 (at 20 °C) |

| Potassium hydroxide (1310-58-3) | |
|---|---|
| Partition coefficient n-octanol/water (Log Pow) | 0.65 |

### 12.4. Mobility in soil

| Zinc (7440-66-6) | |
|---|---|
| Ecology - soil | No information available. |

### 12.5. Other adverse effects

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

## SECTION 13: Disposal considerations

### 13.1. Disposal methods

Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.

Individual consumers may dispose of spent (used) batteries with household trash. This product 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 Federal, State or Local Laws and Regulations. Do not incinerate, since batteries may explode at excessive temperature.

## SECTION 14: Transport information

**Department of Transportation (DOT)**

In accordance with DOT

Not applicable

**Transportation of Dangerous Goods**

Not applicable

**Transport by sea**

Not applicable

### Air transport

Not applicable

## SECTION 15: Regulatory information

### 15.1. US Federal regulations

| **Zinc (7440-66-6)** | |
|---|---|
| Listed on the United States TSCA (Toxic Substances Control Act) inventory<br>Subject to reporting requirements of United States SARA Section 313 | |
| CERCLA RQ | 454 kg no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is >100 µm |

| **Carbon black (1333-86-4)** |
|---|
| Listed on the United States TSCA (Toxic Substances Control Act) inventory |

| **Manganese oxide (MnO2) (1313-13-9)** |
|---|
| Listed on the United States TSCA (Toxic Substances Control Act) inventory |

| **Potassium hydroxide (1310-58-3)** | |
|---|---|
| Listed on the United States TSCA (Toxic Substances Control Act) inventory | |
| CERCLA RQ | 1000 lb |

| **Water (7732-18-5)** |
|---|
| Listed on the United States TSCA (Toxic Substances Control Act) inventory |

| **Iron (7439-89-6)** |
|---|
| Listed on the United States TSCA (Toxic Substances Control Act) inventory |

### 15.2. International regulations

#### CANADA

| **Zinc (7440-66-6)** |
|---|
| Listed on the Canadian DSL (Domestic Substances List) |

| **Carbon black (1333-86-4)** |
|---|
| Listed on the Canadian DSL (Domestic Substances List) |

| **Manganese oxide (MnO2) (1313-13-9)** |
|---|
| Listed on the Canadian DSL (Domestic Substances List) |

| **Potassium hydroxide (1310-58-3)** |
|---|
| Listed on the Canadian DSL (Domestic Substances List) |

| **Water (7732-18-5)** |
|---|
| Listed on the Canadian DSL (Domestic Substances List) |

| **Iron (7439-89-6)** |
|---|
| Listed on the Canadian DSL (Domestic Substances List) |

#### EU-Regulations

| **Zinc (7440-66-6)** |
|---|
| Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances) |

| **Carbon black (1333-86-4)** |
|---|
| Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)<br>Listed on ELINCS (European List of Notified Chemical Substances) |

| **Manganese oxide (MnO2) (1313-13-9)** |
|---|
| Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances) |

| **Potassium hydroxide (1310-58-3)** |
|---|
| Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances) |

| **Water (7732-18-5)** |
|---|
| Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances) |

| **Iron (7439-89-6)** |
|---|
| Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances) |

#### National regulations

**Zinc (7440-66-6)**

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on KECL/KECI (Korean Existing Chemicals Inventory)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

**Carbon black (1333-86-4)**

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on KECL/KECI (Korean Existing Chemicals Inventory)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

**Manganese oxide (MnO2) (1313-13-9)**

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on KECL/KECI (Korean Existing Chemicals Inventory)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Japanese Pollutant Release and Transfer Register Law (PRTR Law)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

**Potassium hydroxide (1310-58-3)**

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on KECL/KECI (Korean Existing Chemicals Inventory)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Japanese Poisonous and Deleterious Substances Control Law
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

**Water (7732-18-5)**

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on KECL/KECI (Korean Existing Chemicals Inventory)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

**Iron (7439-89-6)**

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on KECL/KECI (Korean Existing Chemicals Inventory)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

### 15.3. US State regulations

| Carbon black (1333-86-4) | | | | | |
|---|---|---|---|---|---|
| U.S. - California - Proposition 65 - Carcinogens List | U.S. - California - Proposition 65 - Developmental Toxicity | U.S. - California - Proposition 65 - Reproductive Toxicity - Female | U.S. - California - Proposition 65 - Reproductive Toxicity - Male | No significant risk level (NSRL) | Maximum allowable dose level (MADL) |
| Yes | No | No | No | | |

## SECTION 16: Other information

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations ( According to HCS-2012 APPENDIX D TO §1910.1200 )

| | | |
|---|---|---|
| Revision date | : | 12/08/2020 |
| Data sources | : | LOLI. |
| Training advice | : | Normal use of this product shall imply use in accordance with the instructions on the packaging. |

SDS US (GHS HazCom 2012)

*This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.*