MATERIAL SAFETY DATA SHEET

Date：1 /2/2024
File No.: HR-M5-8851

1. Identification of the substance/preparation and of the company/undertaking

Identification of the product

Product name：	Zinc-Manganese Battery/ALKALINE Battery
Chemical System:	Zinc-Manganese Battery
Model:	LR03
Designated for RECHARGE?	（1000mah）,LR20(12500mah),LR6(2000mah),LR14(6000 mah),6LR61(500mah),4LR25
	No

Manufacturer/supplier identification

Company：	Zhejiang HuaRong Battery Co., LTD
Contact for information：	517 dongda Road, JIAXING,ZHEJIANG, PRC
Emergency telephone No.：	86-573-83593608

2. Composition/information on ingredients

Ingredient	Percent	CAS Index No./EC No.	Molar mass	Molecular formula	Symbol
Zinc	25.8%	7440-66-6		Zn	
Manganese(EMD)	48%	7439-96-5		MNO2	
Acetylene	3.8%	74-86-2			
Electrolyte	0.3%	Blend			
Kryptol	0.54%	Blend			
Others	21.56%	Blend			

3. Hazards identification

Health Hazards (Acute and Chronic):
For the battery cell, chemical materials are stored in a hermetically sealed can, designed to withstand temperatures and pressures encountered during normal use. As a result, during normal use, there is no physical danger of ignition or explosion and chemical danger of hazardous materials leakage.

However, if exposed to a fire, added mechanical shocks, decomposed, or added electric stress by misuse the cell case will be breached and hazardous materials may be released. Moreover, if heated strongly by the surrounding fire, acrid gas may be emitted.

Carcinogenicity:
NTP: None IARC Monograph: None OSHA Regulated: None

Medical Conditions Generally Aggravated by Exposure:
An acute exposure will not generally aggravate any medical condition.
Human health effects:
Inhalation: The steam of the electrolyte has an anesthesia action and stimulates a respiratory tract.
Skin contact: The steam of the electrolyte stimulates a skin. The electrolyte skin contact causes a sore and the stimulation on the skin.
Eye contact: The steam of the electrolyte stimulates eyes. The electrolyte eye contact causes a sore and the stimulation on the eye. Inflammation of the eyes may occur.

Environmental effects:
Since a battery cell remains in the environment, do not throw out it into the environment.

Specific hazards:
If the electrolyte contacts with water, it may generate detrimental hydrogen fluoride.
Since the leaked electrolyte is inflammable liquid, do not bring close to fire.

4. First aid measures

After inhalation contact:	Make the victim blow his/her nose, gargle. Seek medical attention if necessary.
After skin contact:	Remove contaminated clothes and shoes immediately. Immediately wash extraneous matter or contact region with soap and plenty of water.
After eye contact:	Do not rub eyes. Immediately flush eyes with water continuously for at least 15 minutes. Seek medical attention.
After ingestion contact:	Make the victim vomit. Immediately seek medical attention.

5. Fire-fighting measures

Extinguishing Media:	Plenty of water, CO_2 gas, nitrogen gas, chemical powder fire extinguishing medium and fire foam.
Specific methods of fire-fighting:	When the battery burns with other combustibles simultaneously, take fire extinguishing method which corresponds to the combustibles. Extinguish a fire from the windward as much as possible.
Flammable Limits:	Not available

6. Accidental release measures

The preferred response is to leave the area and allow the batteries to cool and the vapors to dissipate. Avoid skin and eye contact or inhalation of vapors. Remove spilled liquid with absorbent and incinerate.

7. Handling and storage

Avoid mechanical or electrical abuse. Batteries may explode or cause burns, if disassembled, crushed or exposed to fire or high temperatures. Do not short or install with incorrect polarity.

8. Exposure controls/personal protection

Specific control parameter：

Personal protective equipment ：

Respiratory protection (Specify Type)：	Not necessary under conditions of normal use.
Ventilation:	Not necessary under conditions of normal use.
Protective Gloves:	Not necessary under conditions of normal use.
Eye protection:	Not necessary under conditions of normal use.
Other Protective (Clothing or Equipment):	Not necessary under conditions of normal use.

9. Physical and chemical properties

Appearance

Physical state:	Solid
Form:	Cylindrical/Square
Color:	Metallic color
Odor:	No odor
PH	N/A
Specific temperatures	Temperature ranges changes in physical state occur.
Flash point	N/A
Explosion properties	N/A
Density	N/A
Solubility	with indication of the solvent(s): Insoluble in water

10. Stability and reactivity

Stability:	Stable
Conditions to Avoid:	When cell is exposed to an external short-circuit, crushes, deformation, high temperature above 100 degree C, it will cause heat generation and ignition. Avoid direct sunlight and high humidity.
Hazardous Decomposition or By-products:	Acrid or harmful gas is emitted during fire.
Materials to avoid:	Conductive materials, water, seawater, strong oxidizers and strong acids.

Hazardous polymerization will not occur.

11. Toxicological information

Acute toxicity：

Copper	60-100mg sized coarse particulate causes a gastrointestinal disturbance with nausea and inflammation. TDLo, hypodermic - Rabbit 375mg/kg
Organic electrolyte	LD50, oral - Rat 2,000mg/kg or more

Further toxicological information：

Aluminum	By the long-term inhalation of coarse particulate or fume, it is possible to cause lung damage (aluminum lungs).
Lithium Cobaltate	By the long-term inhalation of coarse particulate or vapor of cobalt, it is possible to cause the serious respiratory-organs disease. Skin reaction or a lung disease for allergic or hypersensitive person may be caused.
Graphite	Long-term inhalation of high levels of graphite coarse particulate may cause lung disease or a tracheal disease.

12. Ecological information

Ecotoxic effects： N/A

Further ecological data：N/A

When prompty used or disposed the battery does not present environmental hazard. When disposed, keep away from water, rain and snow.

13. Disposal considerations

Appropriate metod of disposal of substance or preparetion

Dispose of the batteries in accordance with approved local, state, and federal requirements. Consult state environmental agency.

14. Transport information

This substance is not subject to IMO IMGG Code.

This substance is not subject to IATA DGR.

This goods can be packaged according to the packaging requirement of ordinary goods

Large batteries are considered to be “Dry cell” batteries and are unregulated for purpose of transportation by the U.S. DOT,ICAO,IATA and IMDG. The only DOT requirement for shipping these batteries is special provision 130 which states:”Batteries, dry are not subject to the requirements of this subchapter only when they are offered for transportation in a manner that prevents the dangerous evolution of heat(For example, by the effective insulation of exposed terminals). The only requirement for shipping these batteires by ICAO and IATA is special provision A123 which states:”An electrical battery or battery powered device having the potential of dangerous evolutions of heat that is not prepared so as to prevent a short-circuit(e.g.in the case of batteries,by the effective insulation of exposed terminals;or in the case of equipment.

Transport fashion:By air,by sea,by railway,by highway.

IMDG:NOT REGULATED

15. Regulatory information

N/A

16. Other information

Make people： Professional post：R&D Engineer Name(sign)：JUMEI XIN

Make unit： Name：R&D Department Phone：0086-5[illegible]83593608

Address：R&D Dept., JIAXING Plant.,

Date of issue： 2023/12/30

DISCLAIMER：

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