



Zhejiang Yonggao Battery Co., Ltd.

浙江永高电池股份有限公司

MATERIAL SAFETY DATA SHEET

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SECTION 1 - Product and Company Identification

Product name: ALKALINE BATTERY

Chemical name: ALKALINE ZINC-MANGANESE DRY BATTERY

Chemical formula : Zn-MnO₂

Manufacturer/supplier: ZHEJIANG YONGGAO BATTERY CO., LTD.

ADD.: No. 199, Yonggao Road, South Lake Economic Zone, Jiaxing, Zhejiang, China.

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SECTION 2 - Hazards Identification

General advice: The common known rules for handling of chemicals should be obeyed. These chemicals are contained in a sealed steel can. For consumer use, adequate hazard warnings are printed on both the package and the battery. Potential for exposure should not exist unless the battery leaks, is exposed to high temperatures or is mechanically or electrically abused. Concentrated potassium hydroxide contained is caustic. Anticipated potential leakage of potassium hydroxide is 2-20 ml, depending on battery size. Do not eat and drink batteries. Keep batteries away from small children.

Physical-Chemical Hazards: This preparation is not classified as dangerous according to the criteria of directive 99/45/EEC.

Hazards to man: If battery leaking, exposure to caustic ingredients may occur . Therefore, may cause sensitization by skin contract.

Hazards to environment: N.A..

SECTION 3- Information On Ingredients

TYPE	LR20	LR14	LR6	LR03	6LR61	3LR12	4LR25	4LR25-2 4LR20-2	CAS NO.
AVERAGE WEIGHT	145.0 g	70.0 g	22.8 g	11.4 g	47.0 g	175g	650g	1300g	/
ZINC	17.4%	16.9%	16.2%	13.9%	15.45%	13.4%	15.53%	15.6%	7440-66-6
MANGANESE DIOXIDE	43.09%	41.97%	37.57%	34.31%	36.46%	35.6%	38.45%	38.8%	1313-13-9
CARBON	2.93%	2.65%	3.27%	2.95%	3.29%	2.75%	2.61%	2.78%	1333-86-4
STEEL	22.07%	21.07%	20.75%	25.89%	24.80%	14.90%	22.91%	29.32%	/
BRASS	1.10%	1.43%	2.41%	4.56%	3.64%	1.03%	0.66%	1.01%	12597-71-6
PLASTIC	1.17%	1.57%	1.71%	1.75%	1.06%	9.74%	2.07%	1.1%	/
PAPER	0.625%	1.36%	0.92%	0.96%	1.21%	0.53%	6.01%	0.82%	/



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POTASSIUM HYDROXID	3.66%	4.36%	6.3%	5.6%	5.55%	6.36%	3.27%	3.28%	1310-58-3
WATER	7.03%	7.50%	9.56%	8.51%	5.24%	14.9%	6.27%	6.42%	/
ZINC OXIDE	0.53%	0.50%	0.49%	0.42%	0.45%	0.53%	0.47%	0.51%	1314-13-2
MERCURY	<1ppm	<1ppm	<1ppm	<1ppm	<1ppm	<1ppm	<1ppm	<1ppm	7439-97-6
CADMIUM	<5ppm	<5ppm	<5ppm	<5ppm	<5ppm	<5ppm	<5ppm	<5ppm	7440-43-9
LEAD	<10ppm	<10ppm	<10ppm	<10ppm	<10ppm	<10ppm	<1000 ppm	<1000 ppm	7439-92-1
OTHER	0.39%	0.69%	0.82%	1.15%	2.85%	0.26%	1.75%	0.36%	/

SECTION 4 First-Aid Measures

Inhalation: In case of excessive in halation due to leaking batteries remove to fresh air. Obtain medical advice.

Skin Contact: If exposed to a leaking battery, remove contaminated clothing. Wash exposed areas with plenty of water and soap. IF irritation occurs, consult a physician.

Eye contact: Not anticipated due to size of batteries. Choking may occur with the smaller size batteries. If exposed to a leaking battery, rinse mouth and surrounding areas with running water for at least 15minutes. Give plenty of water to drink. Do not induce vomiting. Obtain medical advice.

SECTION 5 - Fire Fighting Measures

Suitable extinguishing media: Carbon dioxide, foam, dry chemical powder.

Extinguishing media not to be used: Never use a direct water jet.

Exposure hazards from combustion products: In case of fire, carbon monoxide and other toxic organic substances will be generated. Do not inhale fumes and smoke.

Personal protective equipment:

Wear full protective clothing. Use self-contained breathing apparatus

SECTION 6 - Accidental Release Measures

Personal precautions: Notify safety personnel of large spills. Caustic potassium hydroxide may be released from leaking or ruptured batteries. Avoid eye or skin contact and in halation of vapors. Increase the ventilation. Wear protective clothing. Keep unprotected persons away.

Methods for cleaning up: Collect spilled material with an insert standard absorbent like sand or silica. Care for well-ventilated conditions. Recycle or dispose of the materials in an appropriate way.

Environmental precautions: Avoid discharge and penetration into sewerage systems, waterways, pits, and cellars.





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SECTION 7 - Handling and Storage

General handling: Obey the common known rules and precautions for handling with chemicals. Avoid mechanical and electrical abuse. Do not short battery or install incorrectly. Batteries may explode, pyrolyze or vent if disassembled. Crushed, recharged or exposed to high temperatures. Install batteries according to equipment instructions. Do not mix battery systems, such as alkaline and zinc-carbon. Replace all batteries in equipment at the same time. Do not carry batteries loose in pocket or bag. Do not remove battery labels.

Storage: Store product in well-filled, appropriate coated and tightly closed containers avoiding influence of oxygen/air, light and humidity, storage at room temperate.

SECTION 8 - Exposure Control/PPE

Exposition/Technical measures: Atmospheric vapor concentrations must be minimized by adequate ventilation.

Protection of hands, eyes and skin: None required under normal use conditions. When handling leaking batteries, use neoprene, rubber or nitrile gloves and wear safety glasses to protect hands, eyes and skin.

General safety and hygiene measures: use only as directed.

SECTION 9 Physical / Chemical Properties

Physical state: Stainless steel top battery Colour: Contents dark and gray in colour

Odour: N.A.

Melting point: N.A.

Boiling point: N.A.

Flash point: N.A.

Explosion limit: Not available

Ignition temperature: Not available

Vapor pressure: Not available

Specific gravity: N.A. *Solubility in water:* N.A.

Solubility in other solvents: N.A.

PH value: Not available

Partition coefficient: Not available

Viscosity: Not available



SECTION 10 - Stability and Reactivity

Thermal decomposition: batteries may burst and release hazardous decomposition products when exposed to fire.

Substances to avoid: Strong Oxidation agents.

Hazardous reactions: Contents incompatible with strong oxidizing agents.

Hazardous decomposition products: Thermal degradation may produce hazardous fumes of zinc and manganese; hydrogen gas; caustic vapors of



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potassium hydroxide and other toxic by-products.

SECTION 11 - Toxicological Information

Toxicity information is available on the battery ingredients noted in Section 2, but in general, N.A. to intact batteries. *Chronic health effects*: N.A.

SECTION 12 - Ecological Information

Toxicity:

Not data available.

Persistence and degradability:

Not data available.

Bioaccumulative potential:

No data available.

Mobility in soil:

No data available.

SECTION 13 - Disposal Consideration

Product: Dispose in accordance with appropriate regulations. If in doubt, contact your local government office concerned for information. Do not incinerate, since batteries may explode at excessive temperatures.

SECTION 14 - Transport Information

The batteries are securely packed and protected against short-circuits. The “dry battery” is non-dangerous goods according to IMO IMDG CODE and meets both sea and air shipping standards. These batteries are not regulated by international agencies as hazardous materials or dangerous goods when shipped. A shipping name of “zinc-manganese dry battery” may be used on all domestic and international bills of lading. The batteries are fulfill IATA DGR 59th Edition requirement.

RID/ADR:Non-Hazardous for Transport:This substance is considered to be non-hazardous for transport.

IATA:Non-Hazardous for Air Transport:Non-hazardous for air transport.

IMO:Non-Hazardous for Sea Transport:Non-hazardous for sea transport.

SECTION 15 - Regulatory Information

Symbol: N/A

EC labeling: None

Risk phrases: None

Safety phrases: None

Labeling is not required because alkaline batteries are classified as “articles” under the Dangerous Preparations Directive and as such are exempt from the requirements of the Directive.





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SECTION 16 - Other Information

The information on this Material Safety Data Sheet(MSDS) was obtained from current and reputable sources. However, the data is provided without any warranty; expressed or implied, regarding its correctness or accuracy. It is the user's responsibility to assume liability on loss, injury, damage, or expense resulting from improper use of this product. Any previous MSDS of this product mentioned above are hereby replaced with this new document. We urge you to make this information available as appropriate in your organization and to any others with whom you arrange to handle this product.

