

—Alkaline Zinc Manganese Dioxide Battery

[Prepared according to Commission Regulation (EU) 2015/830]

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name: Alkaline Zinc Manganese Dioxide Battery

Alternative names: Alkaline zinc-manganese battery; Alkaline zinc-manganese dry battery

Model No.: LR6; LR03; LR20; LR14

Nominated voltage: 1.5V

1.2. Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses: Used in household products such as remote controls, digital cameras, toys, etc. **Uses advised against:** Do not recharge batteries. Do not short circuit or install incorrectly.

1.3. Details of the supplier of the safety data sheet

Manufacturer: Jiaxing Vestel Battery Co., Ltd.

Address: Xinhuang Industrial Zone, Fengqiao Town, Nanhu Dist., Jiaxing, Zhejiang, China

Website: www.vestelbattery.cn (http://jxvestel.en.alibaba.com)

Tel: +86-573-83145550

Fax: +86-573-83145222

E-mail address for a competent person responsible for the SDS: vestelbattery@vestelbattery.cn

1.4. Emergency telephone number

+86-573-83145333 (Mon-Fri 8:00-17:00)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 (CLP)

This article is not subject to the classification in accordance with CLP Regulation.

2.2. Label elements

Labelling according to Regulation (EC) No 1272/2008 (CLP)

This article is not subject to the labelling in accordance with CLP Regulation.

2.3. Other hazards

This product does not meet the criteria for PBT or vPvB.

In case of abuse, there is a risk of rupture, fire, leakage of internal components, which could cause casualty loss. May explode or leak, and cause burn injury, if recharged, disposed of in fire, inserted incorrectly or disassembled.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

Chemical name	CAS No.	EC No.	Index No.	Concentration (%)	Classification - Regulation (EC) No 1272/2008
Manganese dioxide	1313-13-9	215-202-6	025-001-00-3	42.61	Acute Tox. 4; H302 Acute Tox. 4; H332



Page 2 of 10 Version: 6.0 SDS No.: VB202001 Revision date: Jan 9, 2020

—Alkaline Zinc Manganese Dioxide Battery

Steel (Iron)		7439-89-6	231-096-4	-	16.93	Not classified
Zinc		7440-66-6	231-175-3	030-001-01-9	16.56	Aquatic Acute 1; H400 Aquatic Chronic 1; H410
Potassium hydroxide		1310-58-3	215-181-3	019-002-00-8	7.48	Acute Tox. 4; H302 Skin Corr. 1A; H314
Graphite		7782-42-5	231-955-3	-	2.82	Not classified
	Copper	7440-50-8	231-159-6	-		Not classified
Cu-Zn alloy	Zinc	7440-66-6	231-175-3	030-001-01-9	1.86	Aquatic Acute 1; H400 Aquatic Chronic 1; H410
Zinc oxide	·	1314-13-2	215-222-5	030-013-00-7	0.49	Aquatic Acute 1; H400 Aquatic Chronic 1; H410
Butanone		78-93-3	201-159-0	606-002-00-3	0.15	Flam. Liq. 2; H225 Eye Irrit. 2; H319 STOT SE 3; H336 EUH066
Calcium stear	rate	1592-23-0	216-472-8	-	0.11	Not classified
Other ingredi (water, paper etc.)	ents * r, nylon,	Mixture	Mixture	-	Balance	Not classified

Remarks

- ① This battery is considered an "article" under Regulation (EC) No 1907/2006.
- (2) The chemicals are contained in a sealed steel can. The Cu-Zn alloy contains 65% copper and 35% zinc.
- ③ *: Other ingredients do not contain reportable quantities of hazardous ingredients under EU regulations.
- ④ For the full text of H- and EUH-phrases, see Section 16.

SECTION 4: First aid measures

4.1. Description of first aid measures

Eye contact

If battery contents contact the eyes, immediately flush eyes with plenty of water for at least 15 minutes, holding lids apart to ensure flushing of the entire surface. Seek immediate medical assistance.

Skin contact

If battery contents contact the skin, remove any contaminated cloth immediately. Wash exposed skin with cold water and soap for 15 minutes. Seek immediate medical assistance.

Inhalation

Not applicable for products in purchased form. If dusts/vapors/mists are inhaled, immediately move to fresh air. Keep affected person warm and at rest. If irritation persists or breathing discomfort occurs, seek medical attention. Give oxygen if breathing is difficult. If not breathing, give artificial respiration.

Ingestion

Swallowing is not anticipated due to battery size. If battery contents are swallowed, do not induce vomiting. Rinse mouth and give large quantities of water or milk. Never give anything by mouth to an unconscious person. Seek medical attention immediately. No trials for neutralization.

4.2. Most important symptoms and effects, both acute and delayed



Page 3 of 10 Version: 6.0 SDS No.: VB202001 Revision date: Jan 9, 2020

—Alkaline Zinc Manganese Dioxide Battery

No additional symptoms and effects are anticipated when used as intended.

When not used as intended, battery contents cause severe skin burns and eye damage; may cause respiratory irritation and may cause burns and damage of mouth, respiratory tract and digestive tract. Overexposure to manganese oxide fumes may cause metal fume fever.

4.3. Indication of any immediate medical attention and special treatment needed

Note to physicians: Treat symptomatically and supportively. For information on treatment, call the local Poison Control Centre.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media: Water spray, CO₂, dry chemical, or foam. Use any means suitable for extinguishing surrounding fire.

Unsuitable extinguishing media: Not applicable.

5.2. Special hazards arising from the substance or mixture

Battery may explode or leak if recharged or in fire. Contact with combustible material may cause fire. Short-circuit batteries may cause burns. Electrolyte solution is corrosive to all human tissues. Fire will produce toxic gases/fumes and black smoke.

5.3. Advice for firefighters

Firefighters should wear positive pressure self-contained breathing apparatus (SCBA) and full protective clothing. Approach fire from upwind side. Fight fire from a distance or protected area. Cool fire exposed containers with water spray to prevent battery rupture. Use caution when handling fire-exposed containers (containers may rocket or explode in heat of fire). If safe to do so, remove containers from path of fire.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Keep unnecessary people away. Isolate leakage areas and restrict access. Remove all ignition sources. Ensure adequate ventilation. Wear appropriate protective equipment to avoid eye and skin contact and inhalation of vapors or fumes.

6.2. Environmental precautions

Do not discharge to soils, streams, ponds, lakes or sewers.

6.3. Methods and material for containment and cleaning up

Stop leak if without risk. Move containers from spill area. Do not walk through spilled material. If intact batteries are scattered, pick up mechanically and place into a suitable container for reuse or disposal. In the event of battery rupture or leakage, caustic potassium hydroxide may be released. Carefully collect all released material in a suitable container for disposal. Flush with water and neutralize with dilute citric acid. DO NOT allow material to enter sewers, streams, or storm conduits. Notify safety personnel of large leakage.

6.4. Reference to other sections

See Sections 7, 8 and 13 for additional information.

SECTION 7: Handling and storage

7.1. Precautions for safe handling



—Alkaline Zinc Manganese Dioxide Battery

- Ensure good ventilation/exhaustion at the workplace. Minimize dust/vapor/mist generation and accumulation.
- Avoid sparks, open flames or ignition sources. Keep away from incompatibles.
- Use personal protective equipment as required. Avoid contact with eyes, skin and clothing. Do not inhale.
- Handle in accordance with good industrial hygiene and safety practices.
- Maintain good housekeeping practices. Take off contaminated clothing and wash it before reuse.
- Do not eat, drink or smoke in working areas. Wash hands thoroughly before breaks or after handling.
- In case of accident or if you feel unwell, seek medical advice immediately (show the lable where possible).
- Do not recharge batteries. Do not short circuit or install incorrectly.
- Do not open, disassemble, puncture or deform. Avoid mechanical or electrical abuse.
- Do not carry batteries loose in a pocket or bag. Unpacked batteries shall not lie about in bulk.
- Do not swallow batteries. Keep batteries away from children.
- Do not mix with used or other types of batteries together.
- Do not remove the battery label. Do not throw batteries into water or fire.
- Always follow the warning information on the batteries and in the manuals of devices.
- In case of battery change always replace all batteries by new ones of identical type and brand.

7.2. Conditions for safe storage, including any incompatibilities

- Store in a cool, dry and ventilated place at room temperature. Avoid large temperature changes.
- Do not refrigerate batteries this will not make them last longer.
- If possible, store the batteries in original packaging (short circuit protection). Protect from physical damage.
- For storage of large amounts, a fire alarm is recommended in the storehouse.
- Protect from moisture and sunlight. Keep away from heat and ignition sources. No smoking.
- Keep away from combustible materials and incompatible materials.
- Keep out of reach of children.

7.3. Specific end use(s)

This product can be used in most household products.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limit values

The following occupational exposure limits are provided for informational purposes. Exposure limits may differ from country to country. Refer to specific country regulations for additional exposure limit information. *Manganese dioxide*

UK:	TWA 0.5 mg/m ³ (as Mn)
Germany MAK:	TWA 0.2 mg/m ³ (inhalable fraction); TWA 0.02 mg/m ³ (respirable fraction)
OSHA PEL:	TWA 5 mg/m ³ (as Mn)
ACGIH TLV:	TWA 0.2 mg/m ³ (as Mn)
<u>Zinc</u>	
Germany MAK:	TWA 2 mg/m ³ (inhalable fraction); TWA 0.1 mg/m ³ (respirable fraction)
Potassium hydroxi	<u>de</u>
UK:	STEL 2 mg/m ³
ACGIH TLV:	Ceiling 2 mg/m ³
Graphite (natural)	



—Alkaline Zinc Manganese Dioxide Battery

Germany MAK	: TWA 4 mg/m ³ (inhalab	le fraction); TWA 1.5 mg/m ³ (respirable fraction)
ACGIH TLV:	TWA 2 mg/m ³ (respiral	ble)
OSHA PEL:	TWA 15 mppcf	
Zinc oxide		
Germany MAK	: TWA 2 mg/m ³ (inhalab	ele fraction); TWA 0.1 mg/m ³ (respirable fraction)
OSHA PEL:	TWA 5 mg/m ³ (fume);	TWA 5 mg/m ³ (respirable fraction); TWA 15 mg/m ³ (total dust)
ACGIH TLV:	TWA 2 mg/m ³ (respiral	ble); STEL 10 mg/m ³ (respirable)
<u>Butanone</u>		
UK:	TWA 600 mg/m ³ (200p	opm); STEL 899 mg/m ³ (300ppm)
Germany MAK	: TWA 600 mg/m ³ (200p	opm)
OSHA PEL:	TWA 590 mg/m ³ (200p	opm)
ACGIH TLV:	TWA 50 ppm; STEL 1	00 ppm
Biological limi	t values	
<u>Butanone</u>		
UK BMGV: 70	µmol butanone/L in urine;	; Sampling time: Post shift
Germany BAT:	2 mg/L; Parameter: Buta	none; Assay material: Urine; Sampling time: End of exposure or end
of shift		
BMGV = Biologic	al monitoring guidance values	
BAT = Biological	olerance value	
8.2. Exposure contr	rols	
Appropriate e	ngineering controls	
Provide local e	xhaust ventilation or other	engineering controls to keep airborne levels below the recommended
exposure limits	. Ensure that eyewash stat	ions and safety showers are close to the workstation location.
Individual pro	tection measures, such a	s personal protective equipment
(a) Eye/face pr	otection	
Wear safety gla	sses or face shield when p	rocessing. None required for normal use.
(b) Skin protec	tion	
Use chemical-re	esistant gloves & protectiv	e clothing when processing. None required for normal use.
(c) Respiratory	protection	
Use an approve	d respirator or equivalent	when processing. None required for normal use.
(d) Thermal ha	izards	
Not applicable.		
Environmenta	l exposure controls	
Do not allow m	aterial to be released to th	e environment without the proper governmental permits.
SECTION 9: Phy	ysical and chemical p	roperties
9.1. Information on	basic physical and chem	nical properties
(a) Appearance:		Color solid article, cylindrical shape
(b) Odour:		Odorless
(c) Odour thres	nold:	Not applicable
(d) pH:		14 (electrolyte)
(e) Melting poi	nt/freezing point.	Not applicable to an article
(e) mening pon	is needing point.	



-Alkaline Zinc Manganese Dioxide Battery

(f) Initial boiling point and boiling range:	Not applicable to an article
(g) Flash point:	Not applicable to an article
(h) Evaporation rate:	Not applicable to an article
(i) Flammability (solid, gas):	Nonflammable solid
(j) Upper/lower flammability or explosion limits:	Not applicable
(k) Vapour pressure:	Not applicable to an article
(l) Vapour density:	Not applicable to an article
(m) Relative density:	1.4-1.6 (electrolyte)
(n) Solubility(ies):	Completely soluble in water (electrolyte)
(o) Partition coefficient: n-octanol/water:	Not applicable to an article
(p) Auto-ignition temperature:	Not applicable to an article
(q) Decomposition temperature:	Not applicable to an article
(r) Viscosity:	Not applicable to an article
(s) Explosive properties:	Product is not explosive, but batteries may explode in fire
(t) Oxidising properties:	Product contains an oxidizer (MnO ₂)

9.2. Other information

No additional information available.

SECTION 10: Stability and reactivity

10.1. Reactivity

Not reactive under normal conditions of use.

10.2. Chemical stability

Stable under normal storage and handling conditions.

10.3. Possibility of hazardous reactions

Improper handling or disposal of the battery may lead to explosion. When heated above 150° C the risk of rupture occurs. Hazardous polymerization will not occur.

10.4. Conditions to avoid

Abuse, short circuit, recharge, refrigeration, direct sunlight, high temperatures, heat, ignition sources, moisture, combustible materials and incompatible materials.

10.5. Incompatible materials

Strong acids, oxidizable materials.

10.6. Hazardous decomposition products

Carbon oxides, hazardous fumes of zinc and manganese, caustic vapors of potassium hydroxide, etc.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

(a) Acute toxicity

Intact batteries are not expected to be acutely toxic by dermal and inhalation routes. Swallowing a battery can be harmful.

Component	LD ₅₀ Oral	LD ₅₀ Dermal	LC ₅₀ Inhalation
e e in p e in e in e	22 30 0101	22 30 2 411141	



Page 7 of 10 Version: 6.0 SDS No.: VB202001 Revision date: Jan 9, 2020

—Alkaline Zinc Manganese Dioxide Battery

Manganese dioxide	>3478 mg/kg (rat)	No data	No data
Iron	30000 mg/kg (rat)	No data	No data
Zinc	630 mg/kg(rat)	No data	No data
Potassium hydroxide	273 mg/kg (rat)	No data	No data
Zinc oxide	7950 mg/kg (mouse)	No data	>5.7 mg/L/4H (rat) 2500mg/m ³ (mouse)
Butanone	2737 mg/kg (rat)	6480mg/kg (rabbit)	23500mg/m ³ /8H (rat)
Calcium stearate	>10 g/kg (rat)	No data	No data

(b) Skin corrosion/irritation

Intact batteries are not corrosive or irritant to skin. However, the electrolyte in these batteries is highly corrosive; causes severe skin burns.

Manganese dioxide:	Human, skin(IUCLID 2000)	Slightly irritating
Potassium hydroxide:	Draize test, rabbit, skin: 50 mg/24H	Severe
	Guinea pig, skin: 50 mg/24H	Severe
	Human, skin: 50 mg/24H	Severe
Zinc oxide:	Draize test, rabbit, skin: 500 mg/24H	Mild
Butanone:	Draize test, rabbit, skin: 500 mg/24H	Moderate
	Draize test, rabbit, skin: 402 mg/24H	Mild

(c) Serious eye damage/irritation

Intact batteries are not irritant to eyes. However, the electrolyte in these batteries is highly corrosive; causes severe eye damage.

Manganese dioxide:	Human, eye (IUCLID 2000)	Irritating
Potassium hydroxide:	Rabbit, eye: 1 mg/24H/rinse	Moderate
Zinc oxide:	Draize test, rabbit, eye: 500 mg/24H	Mild

(d) Respiratory or skin sensitisation

This product is not expected to be sensitizing.

(e) Germ cell mutagenicity

Contains no component listed as a mutagen.

(f) Carcinogenicity

No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

(g) Reproductive toxicity

Contains manganese dioxide. Long term exposure to manganese compounds may reduce fertility in men.

(h) STOT-single exposure

This product is not classified as a specific target organ toxicant, single exposure.

(i) STOT-repeated exposure

This product is not classified as a specific target organ toxicant, repeated exposure.

(j) Aspiration hazard

This product is not an aspiration hazard.

SECTION 12: Ecological information



12.1. Toxicity

Batteries are not expected to present an environmental hazard under normal use. However, alkaline batteries are dangerous for the environment in the event of improper handling or disposal, and individual components are very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Electrolyte can be toxic for aquatic organisms because of the alkalinity.

Component	Aquatic toxicity
Zina	96 hr LC ₅₀ (Fish: Common carp): 0.45 mg/L
	48 hr EC ₅₀ (Crustaceans: Daphnia): 0.139-0.908mg/L
Potassium hydroxide	24 hr LC50(Fish: Mosquito fish): 80.0 mg/L
Zinc oxide	96 hr LC ₅₀ (Fish: Rainbow trout): 1.1 mg/L
	48 hr EC ₅₀ (Crustaceans: Daphnia): 0.098 mg/L

12.2. Persistence and degradability

Partial components in this product are not easily biodegradable. The steel can will persist in the environment.

12.3. Bioaccumulative potential

No data available for this product.

12.4. Mobility in soil

This product is not mobile in soil. If broken or damaged, the electrolyte is readily absorbed into soil. The steel can will exhibit limited mobility and remain in the upper layer.

12.5. Results of PBT and vPvB assessment

This product contains no component considered to be PBT or vPvB.

12.6. Other adverse effects

The untreated electrolyte solution is alkaline and therefore neutralisation should be carried out before discharging to water/effluent systems. Once neutralised, no adverse effects on aquatic biosystems are to be expected.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

- Alkaline batteries can be safely disposed of with normal household waste. Do not accumulate large quantities used batteries for disposal as accumulation could cause batteries to shortcircuit.
- Do not allow product to reach sewage system. Incineration should never be performed by battery users. Disposal of in accordance with applicable local laws.
- In the European Union, manufacturing, handling and disposal of batteries is regulated on the basis of the Directive 2006/66/EC.
- Customers find detailed information on disposal in their specific countries using the web site of the European Portable Batteries Association (http://www.epbaeurope.net/legislation_national.html).

SECTION 14: Transport information

Alkaline zinc manganese dioxide batteries are considered to be "dry cell" batteries and are unregulated for purposes of transportation by ADR, IMDG, ICAO or IATA (61st Edition-2020).

All the alkaline dry batteries manufactured by Jiaxing Vestel Battery Co., Ltd. have been designed to be compliant with these tansportation regulations and packed in inner packaging in such a way to prevent short



—Alkaline Zinc Manganese Dioxide Battery

circuits or the generation dangerous quantities of heat. In addition, the IATA Dangerous Goods Regulations and ICAO Technical Instructions require the words "NOT RESTRICTED" and "SPECIAL PROVISION A123" to appear on the air waybill, when an air waybill is issued.

- 14.1. UN number: Not applicable
- 14.2. UN proper shipping name: Not applicable

14.3. Transport hazard class(es)

ADR/RID:	Not regulated
IMDG:	Not regulated
ICAO/IATA:	Not regulated

14.4. Packing group: Not applicable

14.5. Environmental hazards: Marine pollutant/Environmentally hazardous: No

14.6. Special precautions for user: Prevent wetting by rain or snow. Keep away from heat and ignition sources.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

- Regulation (EC) No 1907/2006 (REACH)
 This product is regarded as an "article" and not subject to REACH registration requirements.
 Annex XIV List of substances subject to authorisation
 None of the components in this product are listed.
- Battery Directive 2006/66/EC

According to this directive, the batteries have to be marked with the crossed-out wheeled bin. These batteries do not contain heavy metals as defined in Article 21 of Directive 2006/66/EC.

- Regulation (EU) No 649/2012 concerning the export and import of dangerous chemicals, Annex I None of the components in this product are listed.
- Commission Regulation (EC) No 465/2008 about certain substances that may be PBT and are listed in EINECS

None of the components in this product are listed.

- Regulation (EC) No 1005/2009 on substances that deplete the ozone layer, Annex I & II None of the components in this product are listed.
- EINECS inventory status All components are listed on or exempt from the EINECS inventory.

15.2. Chemical safety assessment

A chemical safety assessment has not been carried out.

SECTION 16: Other information

(a) Revision information

Revision date: January 9, 2020

Creation date: July 26, 2013

Changes: Updates on EU Regulations and IATA Dangerous Goods Regulations

(b) Abbreviations and acronyms



Page 10 of 10 Version: 6.0 SDS No.: VB202001 Revision date: Jan 9, 2020

Alkaline Zinc Manganese Dioxide Battery

CLP	Classification, Labelling and Packaging Regulation [Regulation (EC) No 1272/2008]
PBT	Persistent, Bioaccumulative and Toxic
vPvB	Very Persistent and Very Bioaccumulative
ACGIH	American Conference of Governmental Industrial Hygienists
OSHA	Occupational Safety and Health Administration
IUCLID	International Uniform Chemical Information Database
IARC	International Agency for Research on Cancer
STOT	Specific Target Organ Toxicity
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
RID	Regulations concerning the International Transport of Dangerous Goods by Rail
IMDG	International Maritime Code for Dangerous Goods
ICAO	International Civil Aviation Organization
IATA	International Air Transport Association
MARPOL	International convention for the prevention of pollution from ships, 1973 as modified by the
73/78	protocol of 1978
IBC Code	International code for the construction and equipment of ships carrying dangerous chemicals in
	bulk
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
EINECS	European Inventory of Existing Commercial Chemical Substances
(c) Key litera	ture references and sources for data
[1] EH40/200	5 Workplace exposure limits
[2] List of MA	AK and BAT Values
(d) Full text of	of H & EUH-statements
H225	Highly flammable liquid and vapour.
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H336	May cause drowsiness or dizziness.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
EUH066	Repeated exposure may cause skin dryness or cracking.

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