

MATERIAL SAFETY DATA SHEET

According the European directive 98/101/EC 91/157/EEC

Date : 1.1 2017
Rev :PB-ST-1006

1. Chemical Product

MSDS Name: Camelion Alkaline Button cell/stack Battery

Manufacturer: Camelion Battery Co. Ltd

Address: Unit 705-708, Cyber Timers Tower A, Tian'an Cyber Park, Shenzhen, China

Tel: 0755-83618088

2. Composition /Information on Ingredients:

Chemical Nature: Alkaline Manganese Dioxide

Dangerous ingredients which have to be mentioned acc.

Component	Approximate % of total weight (%wt)	Appearance	Odor	Corrosion	Toxicity	Flammability
Zinc	4-10	Metal Can	None	None	None	None
Manganese Dioxide	14-35.0	Black-brown Powder	None			
Distilled Water	8-14	Black Solid	None	None		
KOH Solution	2~13.5	White liquid	None	Strong Corrosion		
Steel	30-43	Metal Solid	None	None	None	None
Graphite	1.0-5.0	Plate	None	None	None	None

3. Hazards identifications

General

The battery should not be opened or discarded in fire or recharged or used improperly, or it could exposure. The ingredient and their combustion could be harmful .

Material or Ingredient	PEL (OSHA)	TLV (ACGIH)
Graphite	15.0mg/m ³ TWA (total dust) 5.0mg/m ³ TWA (respirable fraction)	2.0mg/m ³ TWA (respirable fraction)
Potassium Hydroxide	None established	2.0mg/m ³ CEILING
Manganese Dioxide	5.0mg/m ³ CEILING (as Mn)	0.2mg/m ³ TWA (as Mn)
Zinc	15.0mg/m ³ TWA (Total dust as particulates not otherwise regulated) 5.0mg/m ³ TWA (Respirable fraction as particulates not otherwise regulated)	10.0mg/m ³ TWA (Inhalable particulate) 3.0mg/m ³ TWA (Respirable particulate)

The Common known rules for handing of chemicals should be obeyed. Do not eat drink the product.

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

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Hazards to man:	This is preparation is classified Xi, N R38-43 according to the CE directive , May cause sensitization by skin contact
Hazards to environment:	When spilled, this product may raze the surface of plastic, leather and paint, underground and surface water.

4. First –aid measures:

Inhalation:	In case of excessive inhalation remove the person to fresh air and at rest Obtain medical advice.
Skin Contact:	Remove contaminated clothing. Wash affected areas with plenty of water and soap. If irritation occurs, consult a physician.
Eye contact:	Rinse eyes immediately with running water for at least ten minutes. Consult an ophthalmologist.
Ingestion:	Rinse mouth with water. Give plenty of water to drink. Do not induce vomiting. Obtain medical advice.

5. Fire-fighting measures

Suitable extinguishing media:	Carbon dioxide (CO2), 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 dioxide, carbon monoxide and other toxic organic substances will be generated. Do not inhale fumes and smoke.
Personal protective equipments:	Wear full protective clothing. Use self contained breathing apparatus.
Remark:	Because of only keep about 10ml auto perfume in care. Even if fire, It can be extinguished by car extinguisher.

6. Accidental release measures:

Personal precautions	Wear protective clothing. Keep unprotected persons away.
Environmental precautions:	Avoid discharge and penetration into sewerage systems, waterways, pits, and cellars.
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.

7. Handling and storage

General	Obey the common known rules and precautions for handling with chemicals.
Fire/Explosion protection	Product vapors and oxygen/air may lead to potentially explosive mixtures. Keep ignition sources away. Do not smoke. Avoid electrostatic charge. Provide fire extinguisher.
Handling:	Accidental short circuit for a few seconds will not seriously affect the battery. But prolonged short circuit will cause the battery to lose energy, and can cause the safety release vent to open. Sources of short

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	circuit include jumbled batteries in bulk containers, metal jewelry, metal covered tables or metal belts used for assembly of batteries in devices.
Charging:	This battery is not designed for recharging. Recharging can cause battery leakage or high pressure rupture, in some cases. Inadvertent charging can happen if a battery is installed backwards.
Storage:	Store product in well-filled, appropriate coated and tightly closed containers avoiding influence of oxygen/air, light and humidity .Store at a cool and constant temperature. Disposal: Dispose in accordance with all applicable federal, state, and local regulations. Appropriate disposal technologies include incineration and landfill.

8. Exposure controls/Personal protection

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

Protection of hands, eyes and skin: To protect hands, eyes and skin, the use of appropriate chemical resistant gloves, safety glasses and suitable protective clothing is strictly recommended.

9. Physical and chemical Characteristics

Boiling Point	N.A.	Specific Gravity (H ₂ O=1)	N.A.
Vapor Pressure (mm Hg)	N.A.	Melting Point	N.A.
Vapor Density (AIR=1)	N.A.	Evaporation Rate(Butyl Acetate)	N.A.
Solubility in Water	N.A.		
Appearance and Odor		Button or cylindrical shape, odorless	

10. Stability and Reactivity

Good stability at standard temperature. Avoid temperatures above or close to the flash point. Never heat sealed containers. This product presents no significant reactivity hazard, by itself or in contact water.

Reactivity: Avoid contact with acids. Alkali or strong oxidizing agents.

Hazardous decomposition products: carbon monoxide and unidentified organic compounds may be formed during combustion.

11. Toxicological information

The product is multi component mixture for which no toxicological date exists.

This preparation is classified XI, N R38-43.

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12. Ecological information

In general, no ecological date is available for preparations.

Precautions Avoid disposing into drainage systems and in the environment.

13. Disposable considerations

Don not dispose of in environment or into sewerage. If recycling is not possible, the product and its container have to be disposed of in accordance with your local legislation and regulations.

14. Transport Information

Road : not regulated

Air(IATA/ICAO) : A123

Sea(IMO) : not regulated

Zinc-air batteries are considered to be "Dry cell" batteries and are unregulated for purposes of transportation by the U.S. Department of Transportation (DOT), International Civil Aviation Administration (ICAO), International Air Transport Association (IATA), the International Maritime Organization (IMO), International Maritime Dangerous Goods Regulations (IMDG) and also is not classified as dangerous under the current edition of the IATA DANGEROUS GOODS REGULATIONS (IATA DGR 57th Edition) Special provision A123 and all applicable carrier and governmental regulations..

Camelion batteries are unregulated for purposes of transportation. It must be protected from short-circuiting and protected from movement that could lead to short-circuiting. During the transportation of large amount of batteries by ship, trailer or railway, do not leave them in the places of high temperature and do not allow them to be exposed to condensation.

In addition, this battery is not a application of UN3028 because it doesn't use a dry potassium hydroxide.

15. Regulatory Information

Symbol: N/A

Contains: Expiration date is on the card.

16. Other information

The information on this Material Safety Date 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.

Since the materials in this battery are sealed in the can, the potential for exposure to the components of the battery is negligible, when the battery is used as directed however, technical or electrical abuse of the battery may result in the release of battery contents.

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