

MATERIAL SAFETY DATA SHEET

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

Product Name: SwissMilitary ALKALINE BATTERIES

Product Identification: Alkaline Manganese Dioxide Cells

Nanfu Designations: LR03 (AAA) ; LR6 (AA) ; LR14 (C) ; LR20 (D) ; 6LR61 (9V)

Product Use: Energy Source

MSDS Date of Preparation: 2013-11-04

Company Identification

Fujian Nanping Nanfu Battery Co., Ltd.

109 Industry Road, Nanping, Fujian, P.R.C., 353000

Fax: +86 599 400 8873599

Tel: +86 599 8735117

Email: service@nanfu.com

Emergency Phone Number: INFOTRAC 24-Hour Emergency Response Hotline: 400-8873599 (P.R.C.)

SECTION 2: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

CAUTION: May explode or leak, and cause burn injury, if recharged, disposed of in fire, mixed with a different battery type, inserted backwards or disassembled. Replace all used batteries at the same time. Do not carry batteries loose in your pocket or purse. Do not remove the battery label.

Potential Health Effects:

The chemicals and metals in this product are contained in a sealed can. Exposure to the contents will not occur unless the battery leaks, is exposed to high temperatures or is mechanically, physically, or electrically abused. Damaged battery will release concentrated potassium hydroxide, which is caustic. Anticipated potential leakage of potassium hydroxide is 2 to 20 mL, depending on battery size.

Eye Contact: Contact with battery contents may cause severe irritation and burns. Eye damage is possible.

Skin Contact: Contact with battery contents may cause severe irritation and burns.

Inhalation: Inhalation of vapors or fumes released due to heat or a large number of leaking batteries may cause respiratory and eye irritation.

Ingestion: Swallowing is not anticipated due to battery size. Choking may occur if smaller AAA batteries are swallowed. Ingestion of battery contents (from a leaking battery) may cause mouth, throat and intestinal burns and damage.

MATERIAL SAFETY DATA SHEET

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	Amount (%)
Manganese Dioxide	1313-13-9	36-44
Zinc	7440-66-6	13-18
Potassium Hydroxide (40%)	1310-58-3	4-9
Graphite, natural or synthetic	7782-42-5, 7440-44-0	1-4
Zinc Oxide	1314-13-2	<1

SECTION 4: FIRST AID MEASURES

General Advice: The chemicals and metals in this product are contained in a sealed can. Exposure to the contents will not occur unless the battery leaks, is exposed to high temperatures or is mechanically, physically, or electrically abused. Damaged battery will release concentrated potassium hydroxide, which is caustic. Anticipated potential leakage of potassium hydroxide is 2 to 20 ml, depending on battery size.

Eye Contact: If battery is leaking and material contacts the eye, flush thoroughly with copious amounts of running water for 30 minutes. Seek immediate medical advice.

Skin Contact: If battery is leaking and material contacts the skin, remove any contaminated clothing and flush exposed skin with copious amounts of running water for at least 15 minutes. If irritation, injury or pain persists, seek medical advice.

Inhaled: If battery is leaking, contents may be irritating to respiratory passages. Move to fresh air. If irritation persists, seek medical advice.

Swallowed: If battery contents are swallowed, do not induce vomiting. If the victim is alert, have them rinse their mouth and the surrounding skin with water for at least 15 minutes. Seek immediate medical attention.

Note: This SDS does not include or address the small button cell batteries which can be ingested.

SECTION 5: FIRE FIGHTING MEASURES

Fire and Explosion Hazards: Batteries may burst and release hazardous decomposition products when exposed to a fire situation.

Extinguishing Media: Use any extinguishing media that is appropriate for the surrounding fire.

Special Fire Fighting Procedures: Firefighters should wear positive pressure self-contained breathing apparatus and full protective clothing. Fight fire from a distance or protected area. Cool fire exposed batteries to prevent rupture. Use caution when handling fire-exposed containers (containers may rocket or explode in heat of fire).

MATERIAL SAFETY DATA SHEET

Hazardous Combustion Products: Thermal degradation may produce hazardous fumes of zinc and manganese; hydrogen gas, caustic vapors of potassium hydroxide and other toxic by-products.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Notify safety personnel of large spills. Caustic potassium hydroxide may be released from leaking or ruptured batteries. Clean-up personnel should wear appropriate protective clothing to avoid eye and skin contact and inhalation of vapors or fumes. Increase ventilation. Carefully collect batteries and place in an appropriate container for disposal.

SECTION 7: HANDLING AND STORAGE

Avoid mechanical or electrical abuse. DO NOT short circuit or install incorrectly. Batteries may explode, pyrolize or vent if disassembled, crushed, recharged or exposed to high temperatures. Install batteries in accordance with equipment instructions. Do not mix battery systems, such as alkaline and zinc carbon, in the same equipment. Replace all batteries in equipment at the same time. Do not carry batteries loose in a pocket or bag. Do not remove battery tester or battery label.

Storage: Store batteries in a dry place at normal room temperature. Do not refrigerate – this will not make them last longer.

SECTION 8: EXPOSURE CONTROLS/PRESONAL PROTECTION

The following occupational exposure limits are provided for informational purposes. No exposure to the battery components should occur during normal consumer use.

Refer to specific country regulations for additional exposure limit information.

Chemical Name	Exposure Limits
Manganese Dioxide	5 mg/m ³ Ceiling OSHA PEL 0.2 mg/m ³ TWA ACGIH TLV 0.5 mg/m ³ TWA UK WEL 0.5 mg/m ³ TWA (inhalable) DFG MAK 0.2 mg/m ³ VL Belgium 0.2 mg/m ³ TWA Denmark LV
Zinc	None established for zinc metal

MATERIAL SAFETY DATA SHEET

Potassium Hydroxide	2 mg/m ³ Ceiling ACGIH TLV 2 mg/m ³ STEL UK WEL 2 mg/m ³ VCD Belgium 2 mg/m ³ Ceiling Denmark LV
Graphite	15 mppcf TWA OSHA PEL (natural-non-fibrous) 2 mg/m ³ TWA (respirable dust) ACGIH TLV (natural-non-fibrous) 5 mg/m ³ TWA (respirable dust), 15 mg/m ³ TWA (total dust) OSHA PEL 2 mg/m ³ TWA (respirable dust) ACGIH TLV (synthetic non-fibrous) 4 mg/m ³ TWA UK WEL (respirable dust) 10 mg/m ³ TWA UK WEL (inhalable dust) 1.5 mg/m ³ TWA DFG MAK (respirable dust) 4 mg/m ³ TWA DFG MAK (inhalable dust) 2 mg/m ³ VL Belgium (respirable dust)

Ventilation: No special ventilation is needed for normal use.

Respiratory Protection: None required for normal use.

Skin Protection: None required for normal use. Use neoprene, rubber or latex gloves when handling leaking batteries.

Eye Protection: None required for normal use. Wear safety goggles when handling leaking batteries.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor	Solid object / no odor
Boiling Point @ 760 mm Hg (°C)	Not applicable for an Article
Water Solubility	Insoluble
Vapor Pressure (mm Hg @ 25°C)	Not applicable for an Article
Vapor Density (Air = 1)	Not applicable for an Article
Density (g/cm ³)	3.0 – 4.2
Percent Volatile by Volume (%)	Not applicable for an Article
Evaporation Rate (Butyl Acetate = 1)	Not applicable for an Article

MATERIAL SAFETY DATA SHEET

Physical State	Solid
Solubility in Water (% by weight)	Not applicable for an Article
pH	Not applicable for an Article

SECTION 10: STABILITY AND REACTIVITY

Stability: This product is stable.

Incompatibility/Conditions to Avoid: Contents are incompatible with strong oxidizing agents. Do not heat, crush, disassemble, short circuit or recharge.

Hazardous Decomposition Products: Thermal decomposition may produce hazardous fumes of zinc and manganese; caustic vapors of potassium hydroxide and other toxic by-products.

Hazardous Polymerization: Will not occur.

SECTION 11: TOXICOLOGICAL INFORMATION

Potential Health Effects:

The chemicals and metals in this product are contained in a sealed can. Exposure to the contents will not occur unless the battery leaks, is exposed to high temperatures or is mechanically, physically, or electrically abused. Damaged battery will release concentrated potassium hydroxide, which is caustic. Anticipated potential leakage of potassium hydroxide is 2 to 20 ml, depending on battery size.

Eye Contact: Contact with battery contents may cause severe irritation and burns. Eye damage is possible.

Skin Contact: Contact with battery contents may cause severe irritation and burns.

Inhalation: Inhalation of vapors or fumes released due to heat or a large number of leaking batteries may cause respiratory and eye irritation.

Ingestion: Swallowing is not anticipated due to battery size. Choking may occur if smaller AAA batteries are swallowed. Ingestion of battery contents (from a leaking battery) may cause mouth, throat and intestinal burns and damage.

Acute Toxicity Data:

Manganese Dioxide: LD50 oral rat >3478 mg/kg

Potassium Hydroxide: LD50 oral rat 273 mg/kg

Chronic Effects: The chemicals in this product are contained in a sealed can and exposure does not occur during normal handling and use. No chronic effects would be expected from handling a leaking battery.

Target Organs: Skin, eyes and respiratory system.

Carcinogenicity: None of the components of this product are listed as carcinogens by ACGIH, IARC, NTP or OSHA.

MATERIAL SAFETY DATA SHEET

SECTION 12: ECOLOGICAL INFORMATION

No ecotoxicity data is available. This product is not expected to present an environmental hazard.

SECTION 13: DISPOSAL INFORMATION

Disposal should be in accordance with Federal, state/provincial and local regulations. Products covered by this MSDS, in their original form, when disposed as waste, are considered non hazardous waste according to Federal RCRA regulations (40 CFR 261).

Alkaline batteries can be safely disposed of with normal household waste. Due to concerns about mercury in the municipal solid waste stream, Nanfu has voluntarily eliminated all of the added mercury from its alkaline batteries since 2000. Individual consumers may dispose of spent (used) batteries with household trash. Nanfu does not recommend that spent batteries be accumulated and disposed of in large quantities. Do not incinerate except for disposal in a controlled incinerator.

Some communities offer recycling or collection of alkaline batteries – contact your local government for disposal practices in your area.

Nanfu/Excell alkaline manganese dioxide batteries are labeled in compliance with EU Battery Directive 2006/66.

SECTION 14: TRANSPORT INFORMATION

Products covered by this MSDS, in their original form, are considered “dry cell” batteries and are not regulated for transportation as “DANGEROUS GOODS.” The batteries must be packaged in a manner that prevents the generation of a dangerous quantity of heat and short circuits.

For finished packaged product transported by ground (US DOT/ADR/RID) – not regulated

For finished packaged product transported by sea (IMDG) – not regulated

For finished packaged product transported by air (IATA)– not regulated

Special provisions apply and shippers should consult the most current versions of the transportation regulations. Special Provision A123 in the IATA Dangerous Goods Regulations and ICAO Technical Instructions and Special Provision 130 in 49 CFR 172.102 of the U.S. DOT regulations require alkaline batteries be packed in such a way to prevent short circuits or generating a dangerous quantity of heat. In addition, the IATA Dangerous Goods Regulations and ICAO Technical Instructions require the words “not restricted” and the Special Provision number “A123” be provided on the air waybill, when an air waybill is issued. Special Provision 304 of the IMDG Code (Amdt. 33-06) provides batteries, dry, containing corrosive electrolyte which will not flow out of the battery if the battery case is cracked are not subject to the provisions of this Code provided the batteries are securely packed and protected against short-circuits. Examples of such batteries are alkali-manganese, zinc-carbon, nickel-metal hydride and nickel-cadmium batteries

MATERIAL SAFETY DATA SHEET

SECTION 15: REGULATORY INFORMATION

EU Classification of Preparation: Not classified as a dangerous preparation.

REACH: These products are manufactured articles and not subject to REACH registration requirements.

EU Labeling: None Required.

Labeling is not required because batteries are classified as articles under the both REACH and the Dangerous Preparations Directive and as such are exempt from the requirement for labeling.

United States

OSHA Status: While the finished product(s) is considered an article and not covered by the OSHA Hazard Communication Standard, 29 CFR 1910.1200, this MSDS contains valuable information critical to the safe handling and proper use of the product".

EPA TSCA Status: All intentionally-added components of this product are listed on the US TSCA Inventory.

SARA 313/302/304/311/312 chemicals: Manganese compounds 35-40%, Zinc 10-25%

California: This product has been evaluated and does not require warning labeling under California Proposition 65.

State Right-to-Know and CERCLA:

The following ingredients present in the finished product are listed on state right-to-know lists or state worker exposure lists

Ingredient	CAS #	Level %	CERCLA RQ	State				
				IL	MA	NJ	PA	RI
Manganese Dioxide	1313-13-9	36-44	None	Y	Y	N	Y	Y
Zinc	7440-66-6	13-18	1000 lb	Y	Y	Y	Y	N
Potassium Hydroxide	1310-58-3	4-9	1000 lb	Y	Y	Y	Y	Y
Graphite	7782-42-5 7440-44-0	1-4	None	Y	Y	N	Y	Y

Canada

All intentionally-added components of this product are listed on the Canadian DSL. This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and this MSDS contains all information required by the Controlled Products Regulations.

MATERIAL SAFETY DATA SHEET

SECTION 16: OTHER INFORMATION

Hazard Rating: Health: 0 Fire: 0 Reactivity: 0

EU Classes and Risk Phrases for Reference (See Sections 2 and 3)

C Corrosive

N Dangerous for the Environment

Xn Harmful

R20/22 : Harmful by inhalation and if swallowed.

R22 Harmful if swallowed.

R35 Causes severe burns

R50/53 : Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Data supplied is for use only in connection with occupational safety and health.

DISCLAIMER: This MSDS is intended to provide a brief summary of our knowledge and guidance regarding the use of this material. The information contained here has been compiled from sources considered by NANFU to be dependable and is accurate to the best of the Company's knowledge. It is not meant to be an all-inclusive document on worldwide hazard communication regulations.

This information is offered in good faith. Each user of this material needs to evaluate the conditions of use and design the appropriate protective mechanisms to prevent employee exposures, property damage or release to the environment. NANFU assumed no responsibility for injury to the recipient or third persons, or for any damage to any property resulting from misuse of the product.