



MATERIAL SAFETY DATA SHEET

NAME: NANFU(EXCELL) ALKALINE BATTERIES
LR20(D);LR14(C);LR6(AA);LR03(AAA);6LR61(9V)
CAS No.: Not applicable

1. IDENTIFICATION

Manganese Dioxide (CAS No.:1313-13-9)	36%-43%
Zinc (CAS No.:7440-66-6)	13%-18%
Potassium Hydroxide (40%) (CAS No.:1310-58-3)	4%-9%
Graphite, natural (CAS No.:7782-42-5)	1%-4%
Zinc Oxide (CAS No.:1314-13-2)	<1

2. PHYSICAL/CHEMICAL CHARACTERISTICS

Appearance And Odor: N/R	Boiling Point: N/R	Melting Point: N/R
Vapor Pressure (MM Hg/70 F): N/R	Vapor Density (Air=1): N/R	Specific Gravity: N/R
Decomposition Temperature: UNKNOWN	Evaporation Rate And Ref: N/R	Solubility In Water: N/R
Percent Volatiles By Volume: N/R	Viscosity: N/R	pH: N/R
Corrosion Rate (IPY): UNKNOWN	Autoignition Temperature: N/R	

3. REACTIVITY

Stability: YES	Polymerization: Will not occur
Condition to avoid: Avoid electrical shorting	Materials to avoid: Not applicable
Hazardous Decomposition Products: Thermal degradation may produce hazardous fumes of zinc and manganese; Hydrogen gas; caustic vapors of potassium hydroxide and other toxic by-products.	

4. HEALTH HAZARD DATA

LD50-LC50 Mixture: LD 50 oral rat is unknown
Route of entry - Inhalation: NO
Route of entry - Skin: YES
Route of entry - Ingestion: NO
Health Haz Acute And Chronic: No health hazard unless battery ruptures. In that event, It may cause burns and irritation.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO

5. EXPOSURE CONTROL METHODS

Engineering Controls	General ventilation under normal use conditions.
Eye Protection	None under normal use conditions. Wear safety glasses when handling leaking batteries.
Skin Protection	None under normal use conditions. Use neoprene, rubber or latex gloves when handling leaking batteries.
Respiratory Protection	None under normal use conditions.
Other	Keep batteries away from small children.

6. HANDLING AND STORAGE

Store at room temperature. Avoid mechanical or electrical abuse. Do not short or install incorrectly. Batteries may explode, pyrolyze 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 pocket or bag. Do not remove battery label.

7. WASTE DISPOSAL METHODS

Individual consumers may dispose of spent (used) batteries with household trash. Nanfu does not recommend that spent batteries be accumulated (quantities of five gallons or more should be disposed of in a secure landfill), in accordance with appropriate federal, state and local regulations. Do not incinerate, since batteries may explode at excessive temperatures.

8. EMERGENCY PROCEDURES

Steps to be taken if material is released to the environment or spilled in the work area	Notify safety personnel of large spills. Caustic potassium hydroxide may be released from leaking or ruptured batteries. Avoid eye or skin contact and inhalation of vapors. Increase ventilation. Clean-up personnel should wear appropriate protective gear.
Fire and Explosion Hazard	Batteries may burst and release hazardous decomposition products when exposed to a fire situation. See Sec. 3.
Extinguishing Media	As appropriate for surrounding area.
Firefighting Procedures	Use self-contained breathing apparatus and full protective gear.

9. FIRST AID AND MEDICAL EMERGENCY PROCEDURES

Eyes	Not anticipated. If battery is leaking and material contacts eyes, flush with copious amounts of clear, tepid water for 30 minutes. Contact physician at once.
Skin	Not anticipated. If battery is leaking, irrigate exposed skin with copious amounts of clear, tepid water for at least 15 minutes. If irritation, injury or pain persists, consult a physician.
Inhalation	Not anticipated. If battery is leaking, contents may be irritating to respiratory passages. Remove to fresh air. Contact physician if irritation persists.
Ingestion	Not anticipated. Rinse the mouth and surrounding area with clear, tepid water for at least 15 minutes. Consult a physician immediately for treatment and to rule out involvement of the esophagus and other tissues.
Notes to Physician	<ol style="list-style-type: none">1) The primary acutely toxic ingredient is concentrated (40%) potassium hydroxide.2) Anticipated potential leakage of potassium hydroxide is 1-3 ml, depending on battery size.3) This MSDS does not include or address the small button cell batteries, which can be ingested.