

Material Safety Data Sheet

Section 1: Information of Manufacturer

Product name: zinc carbon batteries

Product designation: 6F22

Nominal Voltage: 9V

Chemical system: Zinc/ Manganese Dioxide

Designed for recharge: Yes No√

Section 2: Hazardous Ingredients / Identity Information

Description	Approximate % of total weightt	CAS No.	Remarks
Mercury (Hg)	<1.0ppm	7439-97-6	Impurity
Lead (Pb)	<1000ppm	7439-92-1	Added in Zinc plate
Cadmium (Cd)	<10ppm	7440-43-9	Impurity
Hexavalent Chromium (Cr ⁶⁺)	<10ppm	7440-47-3	Impurity
Zinc Chloride (ZnCl ₂)	2-10Wt%	7646-85-7	
Ammonium Chloride (NH ₄ Cl)	0-10Wt%	2125-02-9	
Manganese Dioxide (MnO ₂)	25-35Wt%	1313-13-9	
Zinc (Zn)	10-20Wt%	7440-66-6	
Acetylene Black	5-15Wt%	1333-86-4	

Section 3 : Physical / Chemical Characteristics

Form :	N.A.	Specific Gravity (H2O=1)	N.A.
Boiling Point	N.A.	Melting Point	N.A.
Vapor Pressure (mm Hg)	N.A.	Evaporation Rate (Buty 1 Acetate=1)	N.A.
Vapor Density (AIR=1)	N.A.	pH	N.A.
Solubility in Water	N.A.	Appearance and Odor	N.A.

Section 4: Hazard classification

N.A.

Section 5: Reactivity Data

Stability	Unstable ()	Conditions to Avoid
Yes (X)	Stable (X)	

Incompatibility (Materials to Avoid)

Hazardous Decomposition or By products

When heated, battery may emit hazardous vapour of KOH/ NaOH and Hg

Hazardous Reactions	May Occur ()	Conditions to Avoid
Yes (X)	Will Not Occur (X)	

Section 6: Health Hazard Data

Route(s) of Entry Yes=(X)

Inhalation (N.A.)

Skin(N.A.)

Ingestion (N.A.)

Health Hazard (Acute and Chronic) / Toxicological in formation

In case of electrolyte leakage, skin will be itchy when contaminated with electrolyte.

In contact with electrolyte can cause severe irritation and chemical burns.

Inhalation of electrolyte vapors may cause irritation of the upper respiratory tract and lungs.

Section 7: First Aid Measures

If electrolyte leakage occurs and makes contact with skin, wash immediately.

If electrolyte comes into contact with eyes, wash with copious amounts of water for fifteen minutes, and contact a physician.

If electrolyte vapors are inhaled, provide fresh air and seek medical attention if respiratory irritation develops. Ventilate the contaminated area.

Section 8: Fire and Explosion Hazard Data

Flash point (Method Used): N.A.	Ignition temp.: N.A.
Flammable Limits: N.A.	LEL: N.A.
UEL: N.A.	Extinguishing Media: N.A.
Special Fire Fighting Procedures: N.A.	
Extinguishing Media: Carbon Dioxide, Dry Chemical or Foam extinguishers	

Unusual Fire and Explosion Hazards

Do not dispose of battery in fire - may explode.

Do not short - circuit battery - may explode.

Section 9: Accidental Release or Spillage

Steps to Be Taken in Case Material is Released or Spilled

Batteries that are leaking should be handled with rubber gloves.

Avoid direct contact with electrolyte.

Section 10: Handling and Storage

Safe handling and storage advice

The battery is extremely sensitive to adverse effects of humidity. Be sure to store them in a place that is dry and subject to little temperature change. Do not place near boiler or radiator, nor expose to direct sun light. Do not dispose of the battery in fire. Do not charge the battery. Do not short-circuit the battery. Do not put in backward position. Do not store in disorderly fashion, or allow metal objects to be mixed with stored batteries. Do not disassemble the battery, handling in such manner can cause the battery to explode, leak and injury.

Section 11: Exposure Controls / Personal Protection

No engineering measure is necessary during normal use. If internal cell materials are leaked, the information below will be useful.

Chemical Name / General Name	OSHA PEL	ACGIH TLV
Manganese compounds (as Mn)	(Ceiling) 5 mg/m ³	TWA 0.02 mg/m ³ (resp.)
Nickel, metal and insoluble compounds	(as Ni) TWA 1 mg/m ³	Elemental: 1.5mg/m ³ (IHL); Insoluble inorganic compounds: 0.2mg/m ³ (IHL)
Zinc oxide	Respirable fraction: 5 mg/m ³	Respirable fraction: 2 mg/m ³
Graphite	Respirable fraction: 5 mg/m ³	2 mg/m ³ (all forms except fibers)
Carbon black	3.5 mg/m ³	3.5 mg/m ³ (IHL)

TWA – Time Weighted Average
ACGIH TLV: American Conference of Governmental Industrial Hygienists Threshold Limit Value
OSHA PEL: Occupational Safety & Health Administration Permissible Exposure Limit

Section 12: Ecological Information

N.A.

Section 13: Disposal Method

Dispose of batteries according to government regulations

Section 14: Transportation Information

Carbon zinc cylindrical cells/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). (Carbon zinc batteries are not regulated for transportation as “DANGEROUS GOODS”.)

IATA DGR: Special Provision A123: “Example of such batteries are: alkali-manganese, zinc carbon, and nickel-cadmium batteries. Any electrical battery...having the potential of a dangerous evolution of heat must be prepared for transport as to prevent (a) a short-circuit (e.g. in the case of batteries, by the effective insulation of exposed terminals.) is forbidden from transport; and (b) accidental activation. The words “Not Restricted” and the Special Provision number must be included in the description of the substance on the Air Waybill as required by 8.2.6 when an Air Waybill is issued.

EU: As primary carbon zinc cells/batteries are not explicitly mentioned in RID/ADR, there are no special Dangerous Goods shipment requirements for these products.

USA: 49 CFR§172.102 Special Provision 130: "For other than dry battery specifically covered by another entry in the §172.101 Table, "Batteries, dry" are not subject to the requirements of this subchapter when they are securely packaged and offered for transportation in a manner that prevents the dangerous evolution of heat (for example, by the effective insulation of exposed terminals) and protects against short circuits."

Section 15: Regulatory Information

Special requirement be according to the local regulatory.

Section 16: Other Information

The data in this Material Safety Data Sheet relates only to the specific material designated herein.

Section 17: Measures for fire extinction

In case of fire, it is permissible to use any class of extinguishing medium on these batteries or their packing material. Cool exterior of batteries if exposed to fire to prevent rupture. Fire fighters should wear self-contained breathing apparatus.