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Material Safety Data Sheet Ref: PAKKOMSDSAG13

Mercury Free Alkaline Manganese Button Cell

Specification:

Model No: AG13 / L1154C / LR44

Weight: 2.0g

Section 1: Information of Manufacturer

Pak Ko Batteries Factory Limited

Section 2: Hazardous Ingredients / Identity Information

Ingredient	CAS NO.	EC No.	Content (wt%)
Manganese Dioxide	1313-13-9	215-202-6	31.75%
Zinc	7440-66-6	231-175-3	12.82%
Graphite	7782-42-5	231-955-3	4.66%
Potassium Hydroxide	1310-58-3	231-119-8	10.26%
Cadmium	7440-43-9	231-152-8	＜0.0005%
Mercury	7439-97-6	231-106-7	＜0.0001%
Lead	7439-92-1	7439-92-1	<0.001%
Iron	7439-89-6	231-096-4	40.51%

Section 3 : Physical / Chemical Characteristics

Form :	N/A	Specific Gravity (H2O=1)	N/A
Boiling Point	N/A	Melting Point	
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.

Section 7: First Aid Measures

First aid Procedures

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.

Section 8: Fire and Explosion Hazard Date

Flash point (Method Used): NA
Ignition temp.: NA
Flammable Limits: NA
LEL: NA
UEL: NA
Extinguishing Media: NA
Special Fire Fighting Procedures: NA

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 handed with rubber gloves.
Avoid direct contact with electrolyte.

Section 10: Handing and Storage

Safe handing 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, handing in such manner can cause the battery to explode, leak and injury.

Section 11: Exposure Controls / Personal Protection

Occupational Exposure Limits:	LTEP	N.A.	STEP	N.A.
Respiratory Protection (Specify Type)		N.A.		
Ventilation	Local Exhausts	N.A.	Special	N.A.
	Mechanical (general)	N.A.	Other	N.A.
Protection Gloves		N.A.	Eye Protection	N.A.
Other Protective Clothing or Equipment		N.A.		
Work / Hygienic Practices		N.A.		

Section 12: Ecological Information

N.A.

Section 13: Disposal Method

Dispose of batteries according to government regulations

Section 14: Transportation Information

Pak Ko 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) and International Maritime Dangerous Goods Regulations (IMDG). The only DOT requirement for shipping these batteries is special provision A123 which states: "Batteries, dry are not subject to the requirement of this subchapter only when they are offered for transportation in a manner that prevents the dangerous evolution of heat (For example, by the effective insulation of exposed terminals). As per 63rd edition of IATA (2022) requires that batteries being transported by air must be protected from short-circuiting and protected from movement that could lead to short-circuiting.

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.