PAK KO BATTERIES FACTORY LIMITED
Unit 11, 9/F., Block A, Hoi Luen Ind. Ctr., No. 55 Hoi Yuen Rd., Kwun Tong, Kln., H.K.
Tel.: (852) 2345-5245 Fax.: (852) 2797-9591 E-mail: pakko@pakkobatteries.com
http://www.pakkobatteries.com

Material Safety Data Sheet

Product Name : Mercury Free Alkaline Manganese Dioxide Button Cell No. L1154C

Section1 : 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	22
Zinc	7440-66-6	231-175-3	9
Graphite	7782-42-5	231-955-3	4
Potassium Hydroxide	1310-58-3	231-119-8	4
Iron	7439-89-6	231-096-4	61

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.

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Section 5: Reactivity Data

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

Imcompatibility (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) / Toxicoloogical in formation

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

Section 7: First Aid Measures

Firs aid Procedures

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

If electroyte 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)	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.

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 Materual is Released or Spilled

Batteries that are leaking should be handed with rubber gloves.

Avoid direct contact with electrolyte.

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Section 10: Handling 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 tempeature change. Do not place near boiler or radiator, nor expose to direct sun light. Do not disposeof 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 diassemble 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 of 1/97 IATA requires that batteries being transported by air must be protected from short-circuting and protected from movement that could lead to short-circuting.

Section 15: Regulatory Information

Special requirement be according to the local regulatories.

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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 matterial. Cool exterior of batteries if exposed to fire to prevent rupture.
Fire fighters should wear self-contained breathing apparatus.