GP Batteries

Safety Data Sheet for Cylindrical Alkaline Battery

Document Number: SDS100 Revision: 00 Date of prepared: 26 May 2015

Section I – Product and Company Identification

Information of Product

Product Identity (used on the label)	Cylindrical Alkaline Battery – LR20, LR14, LR6, LR03

Information of Manufacturer

Manufacturer's Name GPI International Ltd.	**Emergency Telephone Number** Within USA & Canada call: +1-800-424-9300 Outside USA and Canada call: +1-703-527-3887
Address (Number, Street, City State, and ZIP Code) 8/F GP Building, 30 Kwai Wing Road, Kwai Chung, N.T., Hong Kong	**Telephone Number for Information** +852-24843333
	Date of prepared and revised 26th May 2015

Recommended use of chemicals:

N.A.

Section II – Hazards Identification

Hazards identifications

General advice: The common known rules for handling of chemicals should be obeyed. These chemicals are contained in a sealed steel can. For consumer use, adequate hazard warnings are printed on both the package and the battery. Potential for exposure should not exist unless the battery leaks, is exposed to high temperatures or is mechanically or electrically abused. Concentrated potassium hydroxide contained is caustic. Anticipated potential leakage of potassium hydroxide is 2-20 ml, depending on battery size. Do not eat and drink batteries. Keep batteries away from small children.

Physical-Chemical Hazards: This preparation is not classified as dangerous according to the criteria of directive 99/45/EEC.

Hazards to man: If battery leaking, exposure to caustic ingredients may occur. Therefore, may cause sensitization by skin contract.

Hazards to environment: N.A.

Remark: "N.A." is indicated if not applicable.

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Section III – Composition/Information on Ingredients

Chemical Nature: Alkaline zinc-manganese dioxide batteries

Ingredient	CAS No.	Approximate %/wt			
		LR03	LR6	LR14	LR20
Manganese Dioxide (MnO2)	1313-13-9	40.9	42.6	40.6	41.8
Zinc (Zn)	7440-66-6	14.8	16.1	16.0	17.4
Water (H2O)	7732-18-5	11.7	12.2	11.0	11.1
Potassium Hydroxide (KOH)	1310-58-3	4.8	5.2	7.0	7.0
Graphite	7782-42-5	1.7	3.0	3.2	3.4
Brass	12597-71-6	3.0	2.4	1.2	0.8
Steel	7439-89-6	20.4	15.7	18.6	16.3
Ni-plating	7440-02-0	0.3	0.3	0.2	0.2
Nylon-66	None	1.5	1.6	1.6	1.4
Fiber	None	0.9	0.9	0.6	0.6
Mercury (Hg)	7439-97-6	<0.0001	<0.0001	<0.0001	<0.0001
Lead (Pb)	7439-92-1	<0.0030	<0.0030	<0.0030	<0.0030
Cadmium (Cd)	7440-43-9	<0.0003	<0.0003	<0.0003	<0.0003
Arsenic (As)	7440-38-2	<0.0001	<0.0001	<0.0001	<0.0001

Section IV – First-aid Measures

Inhalation: In case of excessive inhalation due to leaking batteries remove to fresh air. Obtain medical advice.

Skin Contact: If exposed to a leaking battery, remove contaminated clothing. Wash exposed areas with plenty of water and soap. If irritation occurs, consult a physician.

Eye contact: If a battery is leaking and materials contact eyes, flush immediately with running water for at least 15 minutes. Consult an ophthalmologist at once.

Ingestion: Not anticipated due to size of batteries. Choking may occur with the smaller size batteries. If exposed to a leaking battery, rinse mouth and surrounding areas with running water for at least 15 minutes. Give plenty of water to drink. Do not induce vomiting. Obtain medical advice.

Remark: "N.A." is indicated if not applicable.

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Section V – Fire-fighting Measures

Suitable extinguishing media: Carbon dioxide (CO_2), foam, dry chemical powder.

Extinguishing media not to be used: Never use a direct water jet.

Exposure hazards from combustion products: In case of fire, carbon dioxide, carbon monoxide and other toxic organic substances will be generated. Do not inhale fumes and smoke.

Personal protective equipments: Wear full protective clothing. Use self-contained breathing apparatus.

Section VI – Accidental Release Measures

Personal precautions: 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 vapours. Increase the ventilation. Wear protective clothing. Keep unprotected persons away.

Environmental precautions: Avoid discharge and penetration into sewerage systems, waterways, pits, and cellars.

Methods for cleaning up: Collect spilled material with an insert standard absorbent like sand or silica. Care for well-ventilated conditions. Recycle or dispose of the materials in an appropriate way.

Section VII – Handling and Storage

General handling:

Obey the common known rules and precautions for handling with chemicals. Avoid mechanical and electrical abuse. Do not short battery or install incorrectly. Batteries may explode, pyrolize or vent if disassembled, crushed, recharged or exposed to high temperatures. Install batteries according to equipment instructions. Do not mix battery systems, such as alkaline and zinc- carbon. Replace all batteries in equipment at the same time. Do not carry batteries loose in pocket or bag. Do not remove battery labels.

Storage:

Store product in well-filled, appropriate coated and tightly closed containers avoiding influence of oxygen/air, light and humidity. Storage at room temperature.

Section VIII – Exposure Controls/Personal Protection

Exposition/Technical measures: Atmospheric vapour concentrations must be minimized by adequate ventilation.

Protection of hands, eyes and skin: None required under normal use conditions. When handling leaking batteries, use neoprene, rubber or nitrile gloves and wear safety glasses to protect hands, eyes and skin.

General safety and hygiene measures: Use only as directed.

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Section IX – Physical and Chemical Properties

Physical state: Stainless steel top battery Colour: Contents dark and gray in colour
Odour: N.A.
Melting point: N.A.
Boiling point: N.A.
Flash point: N.A.
Explosion limit: Not available
Ignition temperature: Not available
Vapour pressure: Not available
Specific gravity: N.A.
Solubility in water: N.A.
Solubility in other solvents: N.A.
PH value: Not available
Partition coefficient: Not available
Viscosity: Not available

Section X – Stability and Reactivity

Thermal decomposition: Batteries may burst and release hazardous decomposition products when exposed to fire.
Substances to avoid: Strong oxidation agents.
Hazardous reactions: Contents incompatible with strong oxidizing agents.
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.

Section XI – Toxicological Information

Toxicity information is available on the battery ingredients noted in Section III, but in general, N.A. to intact batteries

Chronic health effects: N.A.

Section XII – Ecological Information

Not available.

Section XIII – Disposal Considerations

Product: Dispose in accordance with appropriate regulations. If in doubt, contact your local government office concerned for information. Do not incinerate, since batteries may explode at excessive temperatures.

Remark: "N.A." is indicated if not applicable.

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Safety Data Sheet for Cylindrical Alkaline Battery

Document Number: SDS100 Revision: 00 Date of prepared: 26 May 2015

Section XIV – Transport Information

Road (ADR/RID): Not regulated

Air (ICAO/IATA):

IATA DGR（55th）: Special Provision A123: “Examples of such batteries are: alkali-manganese, zinc-carbon, nickel-metal hydride 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.”

Sea (IMDG):

IMDG CODE:Special Provision 304 which says: “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: alkaline-manganese, zinc-carbon, nickel metal hydride and nickel-cadmium batteries”

These batteries are not regulated by international agencies as hazardous materials or dangerous goods when shipped. A shipping name of “Alkaline Batteries – Non-hazardous” may be used on all domestic and international bills of lading.

In general, all batteries in all forms of transportation (ground, air, or ocean) must be packaged in a safe and responsible manner. Regulatory concerns from all agencies for safe packaging require that batteries be packaged in a manner that prevents short circuits and be contained in “strong outer packaging” that prevents spillage of contents. All original packaging for GP alkaline batteries has been designed to be compliant with these regulatory concerns.

Section XV – Regulatory Information

Symbol: N.A.

EC labeling: None

Risk phrases: None

Safety phrases: None

Labeling is not required because cylindrical alkaline batteries are classified as “ articles “ under the Dangerous Preparations Directive and as such are exempt from the requirements of the Directive.

Remark: “N.A.” is indicated if not applicable.

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Safety Data Sheet for Cylindrical Alkaline Battery

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Section XVI – Other Information

The information on this Safety Date Sheet (SDS) was obtained form current and reputable sources. However, the data is provided without any warranty; expressed or implied, regarding its correctness or accuracy. It is the user's responsibility to assume liability on loss, injury, damage, or expense resulting from improper use of this product. Any previous MSDS of this product mentioned above are hereby replaced with this new document. We urge you to make this information available as appropriate in your organization and to any others with whom you arrange to handle this product.

Remark: "N.A." is indicated if not applicable.

Section I – Product and Company Identification

Information of Product

Product Identity (Used on the Label)	Lithium Metal Battery

Information of Manufacturer

Manufacturer's Name GPI International Ltd.	**Emergency Telephone Number** Within USA and Canada call: +1-800-424-9300 Outside USA and Canada call: +1-703-527-3887
Address (Number, Street, City State, and ZIP Code) 7/F, Building 16W, 16 Science Park West Avenue Hong Kong Science Park, New Territories, Hong Kong	**Telephone Number for Information** +852-2484-3333
	Date of prepared and revision Feb 03, 2016

Section II – Hazards Identification

GHS Classification: N.A.

Under normal conditions of use, the battery is hermetically sealed. If the electrolyte is leaked, hazardous material may be released.

Human Health Effects

Inhalation	The electrolyte inhalation can cause respiratory irritation. It could be possibly carcinogen.
Skin contact	The electrolyte can cause skin irritation.
Eye contact	The electrolyte leaked from the battery cell can cause severe irritation.
Ingestion	If the battery is swallowed and opened, or the electrolyte is ingested, the electrolyte irritates the mouth and the throat seriously, may lead to vomiting, nausea, hematemesis, stomach pains and diarrhea.

Environmental Effects
The battery cell remains in the environment. Do not throw it out into the environment.

Specific Hazards
As previously described.

Section III – Composition/Information on Ingredients

Chemical Name/Common Name	CAS No.	Approximate % of total weight

Lead	7439-92-1	0
Mercury	7439-97-6	0
Cadmium	7440-43-9	0
Lithium	7439-93-2	~2Wt%
Manganese Dioxide	1313-13-9	~31Wt%
Graphite	7782-42-5	~3Wt%
Iron	7439-89-6	~55Wt%
Organic electrolyte	N.A.	~8wt%
Polypropylene	9003-07-0.	~1wt%

Section IV – First-aid Measures

Inhalation	If electrolyte vapors are inhaled, remove from exposure and provide fresh air, seek medical attention if respiratory irritation develops. Ventilate the contaminated area.
Skin Contact	If electrolyte leakage occurs and makes contact with skin, wash with plenty of water immediately. Remove contaminated clothing and wash before reuse. In severe cases obtain medical attention.
Eye Contact	If electrolyte comes into contact with eyes, wash with copious amounts of water for fifteen (15) minutes, and contact a physician.
Ingestion	Wash out mouth thoroughly with water and give plenty of water to drink. Obtain medical attention.

Section V – Fire-fighting Measures

Although a battery cell is not flammability, in case of fire, move it to the safe place quickly.

The following measures are taken when it cannot be moved.

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 cause burns.
Special Protective equipment and Precautions for fire-fighters	N/A

Section VI – Accidental Release Measures

Personal Precautions, protective equipment, emergency procedures	Cells that are leakage should be handled with rubber gloves. Avoid direct contact with electrolyte. Wear protective clothing and a positive pressure Self-Contained Breathing Apparatus (SCBA). If the skin has come into contact with the electrolyte, it should be washed thoroughly with water.

Environmental precautions	Do not throw out into the environment.
Containment and Clean Up	Sand or earth should be used to absorb any exuded material. Seal leaking battery and contaminated absorbent material in plastic bag and dispose of as Special Waste in accordance with local regulations.

Section VII – Handling and Storage

Precautions for Safe Handling	Batteries should be handled carefully to avoid short circuits. Never disassemble a battery. Do not breathe cell vapors or touch internal material with bare hands.
Conditions for Safe Storage	Do not store in disorderly fashion, or allow metal objects to be mixed with stored batteries. The cells and batteries shall not be stored in high temperature , the maximum temperature allowed is 60℃ for a short period during the shipment , Otherwise the cells maybe leakage and can result in shortened service life.

Section VIII – Exposure Controls/Personal Protection

Exposure Control Limit

Common Chemical Name / General Name	OSHA PEL	ACGIH TLV
Aluminum metal (as Al)	TWA 15 mg/m^3 (total) TWA 5 mg/m^3 (resp)	-
Cobalt metal (As Co)	TWA 0.1 mg/m^3	TWA 0.02 mg/m^3
Lithium Hydroxide	-	-
Manganese compounds (as Mn)	(Celling) 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)

Engineering Control

No engineering measure is necessary during normal use. In case of internal leakage of cell materials, operate the local exhaust or enhance ventilation
The contents of cell are hermetically sealed.

Personal Protection

Respiratory protection: Protective mask
Hand protection: Protective gloves
Eye protection: Protective glasses designed to protect against liquid splashes
Skin and body protection: Working clothes with long sleeve and long trousers

Section IX – Physical and Chemical Properties

Appearance Coin Shape, silver	**Odor** odorless **Odor Threshold** N/A
pH N/A	**Melting point/freezing point** N/A
Initial boiling point and boiling range N/A	**Flash point** N/A
Evaporation rate N/A	**Flammability (solid, gas)** N/A **Upper/lower flammability or explosive limits** N/A
Vapor pressure N/A	**Vapor density** N/A
Relative density N/A	**Solubility** N/A
Partition coefficient: n-octanol/water N/A	**Auto-ignition temperature** N/A
Decomposition temperature N/A	**Viscosity** N/A

Section X – Stability and Reactivity

Reactivity	N/A
Chemical stability	Stable under normal use
Possibility of hazardous reactions	By misuse of a battery cell or the like, gas accumulates in the cell and the internal pressure rises. These gases may be emitted through the gas release vent. When fire is near, these gases may take fire. When a battery cell is heated strongly by the surrounding fire, acrid or harmful fume may be emitted

Conditions to avoid	Direct sunlight, high temperature and high humidity

Materials to avoid	Conductive materials, water, seawater, strong oxidizers and strong acids
Hazardous decomposition products	Acrid or harmful fume is emitted during fire.

Section XI – Toxicological Information

There is no toxicity data for Lithium Metal Battery. Under normal conditions of use, the battery is non-toxic.

Section XII – Ecological Information

Persistence/degradability :

Since a battery cell and the internal materials remain in the environment, do not bury or throw out into the environment.

Section XIII – Disposal Considerations

Recommended methods for safe and environmentally preferred disposal :

Product (waste from residues)

Do not throw out a used battery cell. Recycle it through the recycling company.

Contaminated packaging

Neither a container nor packing is contaminated during normal use. When internal materials leaked from a battery cell contaminates them, dispose them as industrial wastes subject to special control.

Section XIV – Transport Information

Regulatory Body	Special Provisions
ADR	P903，P903a，P903b
IMO	UN 3090， SP118， SP230，SP903
UN	UN 3090
US DOT	49 CFR section 173.185
IATA	PI968

UN No.	UN Proper Shipping Name	Shipping modes	Regulations	Packing instructions	Limit of Aggregated lithium content	Transport Hazard Class	Lithium handling label
UN3090	BATTERY containing lithium	USA	US Department of Transportation of Hazardous Substances (HMR) 49 CFR section 173.185		1 g (cell)/2 g (battery)	9	Needed
		Air	ICAO/IATA DGR 57th edition	PI968 Section II	< 0.3 g (cell/battery)	9	Needed
		Sea	IMO/IMDG Code 35-10	SP118 SP230 SP903	1 g (cell)/2 g (battery)	9	Needed
		Road/Rail	ADR / RID	P903 P903a P903b	1 g (cell)/2 g (battery)	9	Needed

Section XV – Regulatory Information

Special requirement be according to the local regulatory.

Section XVI – Other Information

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