

## Safety Data Sheets (SDSs)

Client	SHENZHEN YALIWANG BATTERYCO., LTD.
Add. of Client	B4 BUILDING INDUSTRIAL AREA OF ZHUANGBIANG, XIXIANG ROAD, BAOAN DISTRICT, SHENZHEN CITY, GUANGDONG PROVINCE, CHINA.
Description	AA BATTERY
Model /Type	AA LR6
Manufacturer	SHENZHEN YALIWANG BATTERYCO., LTD.
Add. of Manufacturer	B4 BUILDING INDUSTRIAL AREA OF ZHUANGBIANG, XIXIANG ROAD, BAOAN DISTRICT, SHENZHEN CITY, GUANGDONG PROVINCE, CHINA.
Nominal Voltage	1.5V
Weight	23.7g
Date of Receipt	2015-07-10

Laboratory	Shenzhen ZRLK Testing Technology Co., Ltd.
Address	6F, Fuxinfa Industrial Park, Liuxiandong, Xili Street, Nanshan District, Shenzhen, China

Approved Signatory	William. Liu	<i>William Liu</i>
Inspected by	Bella.Wang	<i>Bella.Wang</i>
Censored by	Frank. feng	<i>Frank.feng</i>

## 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

### Product Identifier

Product name: AA BATTERY

Model: AA LR6

### Other means of identification

Synonyms: none

### Recommended use of the chemical and restrictions on use

Recommended Use: Used in portable electronic equipments;

Uses advised against:

- a) Do not dismantle, open or shred alkaline battery.
- b) Do not expose alkaline battery to heat or fire. Avoid storage in direct sunlight.
- c) Do not short-circuit an alkaline battery. Do not store alkaline battery haphazardly in a box or drawer where they may short-circuit each other or be short-circuited by other metal objects.
- d) Do not remove an alkaline battery from its original packaging until required for use.
- e) Do not subject alkaline battery to mechanical shock.
- f) In the event of an alkaline battery leaking, do not allow the liquid to come in contact with the skin or eyes. If contact has been made, wash the affected area with copious amounts of water and seek medical advice.
- g) Observe the plus (+) and minus (-) marks on the alkaline battery and equipment and ensure correct use.
- h) Battery usage by children should be supervised.
- i) Seek medical advice immediately if an alkaline battery has been swallowed.
- j) Keep batteries clean and dry.
- k) When possible, remove the battery from the equipment when not in use.
- l) Dispose of properly.

### Details of the supplier of the safety data sheet:

Supplier Name: SHENZHEN YALIWANG BATTERY CO., LTD.

Address: B4 BUILDING INDUSTRIAL AREA OF ZHUANGBIANG, XIXIANG ROAD, BAOAN DISTRICT, SHENZHEN CITY, GUANGDONG PROVINCE, CHINA.

Telephone number of the supplier: 0086-0755-27935155

E-mail address: 429354158@qq.com

### Emergency telephone number

Company Emergency Phone Number: 0086-0755-27935155

## 2. HAZARDS IDENTIFICATION

### Classification

No harm at the normal use. If contact the Electrolyte in the alkaline battery, reference as follows:

### Classification of the substance or mixture

Classification according to GHS

Acute Toxicity, Oral (Hazard category 4)

Acute Toxicity, Dermal (Hazard category 3)

Acute Toxicity, Inhalation (Hazard category 4)

Skin, irritate(Hazard Category 1B)

Hazardous to the aquatic environment, short-term(Acute): (Hazard category Acute 1)

Hazardous to the aquatic environment, long-term(Chronic): (Hazard category Chronic 1)

Eye Irritate (Hazard category 1)

**GHS Label elements, including precautionary statements:**



GHS02



GHS05



GHS07



GHS09

Signal word: **Warning**

Hazard statement(s):

H242:Heating may cause a fire;

H314:Causes severe skin burns and eye damage;

H302:Harmful if swallowed;

H332:Harmful if inhaled;

H260:In contact with water releases flammable gases which may ignite spontaneously

H250:Catches fire spontaneously if exposed to air

H400:Very toxic to aquatic life

H410: Very toxic to aquatic life with long lasting effects

**precautionary statements:**

**Prevention:**

P264 Wash thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P261:Avoid breathing dust/fume/gas/mist/vapours/spray.

P271:Use only outdoors or in a well-ventilated area.

P223:Do not allow contact with water.

P231+P232:Handle and store contents under inert gas/...protect from moisture;

P210:Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P222: Do not allow contact with air.

P231+P232:Handle and store contents under inert gas/....Protect from moisture;

P233:Keep container tightly closed.

P273:Avoid release to the environment.

**Response:**

P312:Call a Poison center or doctor/physician if you feel unwell.

P302+P350-IF ON SKIN: Gently wash with plenty of soap and water

P301+P330+P331-IF SWALLOWED: rise mouth. Do NOT induce vomiting

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P304+P340:IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P302+P335+P334:IF ON SKIN:Brush off loose particles from skin and immerse in cool water.

P370+P378: In case of fire: Use...to extinguish

P302+P334:IF ON SKIN:Immerse in cool water or wrap in wet bandages.

P391:Collect spillage.

Storage:

P402+P404:Store in a dry place, store in a closed container.

Disposal

P501: Dispose of contents/container in accordance with local/national regulations

Hazards not otherwise classified (HNOC)

Not Applicable

Other information

No information available.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical characterization: Mixtures

Description:

Product: Consisting of the following components.

Common Chemical Name	Concentration (%)	CAS Number
Manganese dioxide	45	1313-13-9
Potassium hydroxide	10	1310-58-3
Zinc	25	7440-66-6
Graphite	6	7782-42-5
Zinc chloride	4.5	7646-85-7
Ammonium chloride	9.5	12125-02-9

Note: CAS number is Chemical Abstract Service Registry Number.

N/A=Not apply.

### 4. FIRST-AID MEASURES

#### First aid measures

Eye Contact Rinse thoroughly with plenty of water, also under the eyelids. If symptoms persist, call a physician.

Skin Contact Remove contaminated clothing and shoes. Wash skin with soap and water. In the case of skin irritation or allergic reactions see a physician.

Inhalation Move to fresh air. If symptoms persist, call a physician.

Ingestion Do NOT induce vomiting. Drink plenty of water. If symptoms persist, call a physician.

Most important symptoms and effects, both acute and delayed

Swallowing Do not induce vomiting. Get medical attention.

Most Important Symptoms/Effects No information available.

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**Indication of any immediate medical attention and special treatment needed**

Notes to Physician    Treat symptomatically

**5. FIRE-FIGHTING MEASURES****Suitable Extinguishing Media**CO<sub>2</sub>, dry chemical powder, water spray.

Unsuitable Extinguishing Media: No information available.

**Specific Hazards Arising from the Chemical**

Formation of toxic gases is possible during heating or in case of fire.

In case of fire, the following can be released:

Carbon monoxide(CO)

Carbon dioxide

Other irritating and toxic gases.

**Hazardous Combustion Products**

Carbon oxides.

Explosion Data

Sensitivity to Mechanical Impact    No

Sensitivity to Static Discharge    No

**Protective Equipment and Precautions for Firefighters**

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. For example: Wear self-contained respiratory protective device. Wear suitable protective clothing and eye/face protection.

**Special hazards arising from the substance or mixture:**

The leaking electrolyte may corrosive. Under the conditions of short-circuited, overcharged, overdischarged, punctured, crushed, put into the fire and exposed on the temperature higher than that specified by manufacture(100°C), the battery may burn or explode.

**6. ACCIDENTAL RELEASE MEASURES****Personal precautions, protective equipment and emergency procedures**

Personal Precautions    Avoid contact with eyes.

Refer to section 8 for personal protective equipment. Ensure adequate ventilation. Remove all sources of ignition.

Evacuate personnel to safe areas.

**Environmental precautions**

Environmental Precautions    Refer to protective measures listed in Sections 7 and 8.

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Dispose contaminated material as waste according to item 13.

**Methods and material for containment and cleaning up**

Methods for Containment Prevent further leakage or spillage if safe to do so.

Methods for Cleaning up Use personal protective equipment. Dam up. Cover liquid spill with sand, earth or other Non combustible absorbent material. Pick up and transfer to properly labeled containers. Clean contaminated surface thoroughly.

## 7. HANDLING AND STORAGE

### Precautions for safe handling

Handling Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing. Wear personal protective equipment.  
Wash thoroughly after handling. Use this material with adequate ventilation.  
The product is not explosive.

### Conditions for safe storage, including any incompatibilities

The storage area should be clean, cool, dry, ventilated and weatherproof. Incompatibilities: strong oxidizing agents, corrosives and foods. Such batteries must be packed in inner packaging in such a manner as to effectively prevent short circuits and to prevent movement which could lead to short circuits. For normal storage, the temperature should be between +10 °C and +25 °C and never exceed +30 °C. Extremes of humidity (over 95% and below 40% relative humidity) for sustained periods should be avoided since they are detrimental to both batteries and packaging. Batteries should therefore not be stored next to radiators or boilers, nor in direct sunlight. The above recommendations are equally valid for storage conditions during prolonged transit. Thus, Batteries shall be stowed away from ships' engines and not left for long periods in unventilated metal box cars during summer.

Incompatible Products None known.

## 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

### Control parameters

none

Other Exposure Guidelines Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962(11th Cir., 1992).

### Appropriate engineering controls

Engineering Measures Showers  
Eyewash stations  
Ventilation systems

Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits. Ensure adequate ventilation.

### Individual protection measures, such as personal protective equipment

Eye/Face Protection:



Tightly sealed goggles

Body protection:

Protective work clothing.

Skin protection:



### Protective gloves

#### Material of gloves:

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

#### Penetration time of glove material:

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

**Respiratory Protection** No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

**Hygiene Measures** Handle in accordance with good industrial hygiene and safety practice.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Form: Solid
	Color: Gold
	Odour: Monotony
	Odor Threshold: No information available
Change in condition:	
pH, with indication of the concentration	Not determined.
Melting point/freezing point	Not determined.
Initial boiling point and Boiling range:	Not determined.
Flash Point	Not determined.
Evaporation rate	Not determined.
Flammability (solid, gas)	Not determined.
Upper/lower flammability or explosive limits	Not determined.
Vapor Pressure:	Not determined.
Vapor Density:	Not determined.
relative density:	Not determined.
Solubility in Water:	Not determined.
Solubility in other solvents	Not determined.
n-octanol/water partition coefficient	Not determined.
Auto-ignition temperature	Product is not self-igniting.

Decomposition temperature	Not determined.
Odour threshold	Not determined.
Evaporation rate	Not determined.
Viscosity	Not determined.
Other Information	No further relevant information available.

## 10. STABILITY AND REACTIVITY

**Reactivity:** Stable under recommended storage and handling conditions (see section 7, Handling and storage).

**Chemical stability:** Stable under normal conditions of use, storage and transport.

**Thermal decomposition/conditions to be avoided:** No decomposition if used according to specifications.

**Possibility of Hazardous Reactions:** None under normal processing.

**Hazardous Polymerization:** Hazardous polymerization does not occur.

**Conditions to avoid:** Strong heating, fire, Incompatible materials.

**Incompatible materials:** Strong oxidizing agents. Strong acids. Base metals.

**Hazardous Decomposition Products:** Carbon oxides, Other irritating and toxic gases.

## 11. TOXICOLOGICAL INFORMATION

**Acute toxicity:** No data available.

**Skin corrosion/irritation:** No irritant effect.

**Serious eye damage/irritation:** Cause serious eye irritation.

**Respiratory or skin sensitization:** No sensitizing effects known.

**Specific target organ system toxicity:** No information available.

**CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction):** No information available.

## 12. Ecological Information

### **Toxicity:**

Acquatic toxicity:

No further relevant information available.

**Persistence and degradability:** No further relevant information available.

**Bioaccumulative potential:** No further relevant information available.

**Mobility in soil:** No further relevant information available.

Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

**Other adverse effects:** No information available.



### 13. DISPOSAL CONSIDERATIONS

#### Waste treatment methods

Recommendation: Must not be disposed together with household garbage.

Do not allow product to reach sewage system

#### Uncleaned packaging:

Recommendation: Disposal must be made according to official regulations.

### 14. TRANSPORT INFORMATION

#### Land transport

ADR/RID class: Not regulated.

#### Maritime transport

Non-Hazardous for sea transport: Non-hazardous for sea transport.

#### Air transport

Not restricted to IATA DGR according to special provision A123.

The Panasonic alkaline battery according to SP A 123 of the 2015 IATA Dangerous Goods regulations 56th Edition may be transported, and applicable U.S. DOT regulations for the safe transport of Panasonic alkaline battery.

The packaging shall be adequate to avoid mechanical damage during transport, handling and stacking. The materials and pack design shall be chosen so as to prevent the development of unintentional electrical conduction, corrosion of the terminals and ingress of moisture.

The Nickel-cadmium rechargeable batter having the potential of a dangerous evolution of heat must be prepared for transport so as to prevent: (a) a short-circuit (e.g. in the case of batteries, by the effective insulation of exposed terminals; or, in the case of equipment, by disconnection of the battery and protection of exposed terminals); 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.

The package must be handled with care and that a flammability hazard exists if the package is damaged;

### 15. REGULATORY INFORMATION

#### Safety, health and environmental regulations/legislation specific for the substance or mixture

EU Regulation:

Authorisations: No information available.

Restrictions on use: No information available.

#### Regulatory information

CAS No.	EU (EINECS)	US (TSCA)	Japan (ENCS)	Canada (DSL/ NDSL)	Australia (AICS)	Korea (ECL)	China (IECSC)
1313-13-9	Listed	Not listed	Not listed	NDSL	Not listed	Not listed	Not listed

1310-58-3	Listed	Listed	Listed	DSL	Listed	Listed	Listed
7440-66-6	Listed	Listed	Listed	DSL	Listed	Listed	Listed
7782-42-5	Not listed	Listed	Not listed	DSL	Listed	Listed	Listed
7646-85-7	Not listed	Listed	Not listed	DSL	Listed	Listed	Listed
12125-02-9	Listed	Listed	Listed	DSL	Listed	Listed	Listed

Chemical safety assessment A Chemical Safety Assessment has not been carried out.

## 16. OTHER INFORMATION

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

**Relevant phrases:**

R20/22: Harmful by inhalation and if swallowed.

R36: Irritating to eyes.

H302: Harmful if swallowed.

\*\*\*\*\*End of SDS\*\*\*\*\*

# Safety Data Sheet

According to HCS-2012 APPENDIX D TO §1910.1200

Version: 1.0/EN  
Product name: ALKALINE BATTERY

Revision date: 19/03/2015  
Printing date: 19/03/2015

## 1. Identification

### *(a) Product identifier*

Product name: ALKALINE BATTERY

### *(b) Other means of identification*

Product description: Model: LR03  
Nominal Voltage: 1.5V  
Weight: 11.3g  
Dimension: 10.5mm×44.5mm (D×H)

### *(c) Recommended use of the chemical and restrictions on use*

Recommended use: Battery.  
Restriction on use: No information available.

### *(d) Details of the supplier of the product*

Company name(China) Guangdong Liwang New Energy Co., Ltd  
Address: Liwang Industrial Estate, Shima Village, Tangxia Town, Dongguan City, Guangdong Province, CHINA  
E-mail: Liwang@Liwangbattery.com  
Telephone: +86-769-87888653

### *(e) Emergency phone number*

+86-769-87888653

## 2. Hazard(s) identification

### *(a) Classification of the chemical*

The batteries are defined as "articles", they are exempted from the requirements of the Hazard Communication Standard. A sealed ALKALINE BATTERY is not hazardous in normal use.

### *(b) Label elements*

Pictogram(s): No pictogram.  
Signal word: No signal word.  
Hazard statements: No hazard statement.  
Precautionary statements: No precautionary statement.

### *(c) Description of any hazards not otherwise classified*

In case of mistreatment (abusive over charge, reverse charge, external short circuit...) and in case of fault some electrolyte can leak from the cell through the safety device. In these cases refer to the risk of the electrolyte. Contact with internal components may cause irritation or severe burns. Irritating to eyes, respiratory system, and skin. The electrode materials are only hazardous, if the materials are released by mechanical damaging of the cell or if exposed to fire.

Skin touch: Contact with battery electrolyte may cause burns and skin irritation.

Eyes touch: Contact with battery electrolyte may cause burns. Eye damage is possible.

Inhalation: Inhalation of a large number of vapors or fumes released due to heat may cause respiratory.

Ingestion: Ingestion of battery contents may cause mouth, throat and intestinal burns and damage.

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(d) *Ingredient with unknown acute toxicity*

No information available.

## 3. Composition/information on ingredients

### (a) *Mixtures information*

Chemical name	CAS No.	Concentration%
Manganese dioxide	1313-13-9	40
Zinc	7440-66-6	16
Potassium hydroxide	1310-58-3	8
Water	7732-18-5	10
Iron	7439-89-6	17
Paper	RR-01108-5	1
Copper	7440-50-8	3
Nylon-6	25038-54-4	2
Graphite	7782-42-5	3

## 4. First-aid measures

### (a) *Description of first aid measures*

Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical advice / attention if you feel unwell.

Skin contact: Remove contaminated clothes and rinse the skin with plenty of water. Get medical advice / attention if you feel unwell.

Eye contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.  
Continue rinsing. Get medical advice / attention if you feel unwell.

Ingestion: Have victim drink 60 to 240 mL (2-8 oz.) of water. and DO NOT induce vomiting. Get medical aid.

### (b) *Most important symptoms/effects, acute and delayed*

Contact with internal components may cause allergic skin sensitization (rash) and irritate eyes, skin, nose, throat, respiratory system. Cobalt and Cobalt compounds are considered to be possible human carcinogen(s).

### (c) *Immediate medical attention and special treatment*

No information available.

## 5. Fire-fighting measures

### (a) *Extinguishing media*

Suitable extinguishing media: Use foam, dry powder or dry sand, CO<sub>2</sub> as appropriate.

Unsuitable extinguishing media: No information available.

### (b) *Special hazards arising from the chemical*

Under fire conditions, batteries may burst and release hazardous decomposition products when exposed to a fire situation. This could result in the release of flammable or corrosive materials. Hazardous combustion products: CO,

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CO<sub>2</sub>, Metal oxides, Irritating fumes

*(c) Special protective equipment and precautions for fire-fighters*

Firefighters must wear fire resistant protective equipment and appropriate breathing apparatus. The staff must equip with filtermask (full mask) or isolated breathing apparatus. The staff must wear the clothes which can defense the fire and the toxic gas. Put out the fire in the upwind direction. Remove the container to the open space as soon as possible. Spray water on the containers in the fireplace to keep them cool until finish extinguishment.

## 6. Accidental release measures

*(a) Personal precautions, protective equipment and emergency procedures*

If the battery material is released, remove personnel from area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. The preferred response is to leave the area, dispose the case after the batteries cool and vapors dissipate. Provide maximum ventilation. Avoid skin and eye contact or inhalation of vapors.

*(b) Methods and materials for containment and cleaning up*

If battery casing is dismantled, small amounts of electrolyte may leak. Collect all released material in a plastic lined container. Dispose off according to the local law and rules. Avoid leached substances to get into the earth, canalization or waters.

## 7. Handling and storage

*(a) Precautions for safe handling*

Always follow the warning information on the batteries and in the manuals of devices. Only use the recommended battery types. Keep batteries away from children. For devices to be used by children, the battery casing should be protected against unauthorized access. Unpacked batteries shall not lie about in bulk. In case of battery change always replace all batteries by new ones of identical type and brand. Do not swallow batteries. Do not throw batteries into water. Do not throw batteries into fire. Avoid deep discharge. Do not short-circuit batteries Use recommended charging time and current.

*(b) Conditions for safe storage, including any incompatibilities*

Don't handling ALKALINE BATTERY with metalwork. Do not open, dissemble, crush or burn battery. Ensure good ventilation/ exhaustion at the workplace.

Prevent formation of dust.

Information about protection against explosions and fires: Keep ignition sources away- Do not smoke.

Recommended at 0°C~+35°C for long period storage.

Do not storage ALKALINE BATTERY haphazardly in a box or drawer where they may short-circuit each other or be short-circuited by other metal objects.

Keep out of reach of children.

Do not expose ALKALINE BATTERY to heat or fire. Avoid storage in direct sunlight.

Do not store together with oxidizing and acidic materials.

## 8. Exposure controls/personal protection

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## *(a) Control parameters*

Not established.

## *(b) Appropriate engineering controls*

Under normal conditions (during charge and discharge) release of ingredients does not occur.

## *(c) Personal protective equipment*

Respiratory protection:

No personal respiratory protective equipment normally required. In case of inadequate ventilation wear respiratory protection.

Hand protection:

Wear protective gloves.

Eye/face protection:

No personal protective equipment normally required.

Skin/body protection:

Wear protective clothing to prevent contact.

## 9. Physical and chemical properties

(a) Appearance	Cylindrical solid
(b) Odor	Monotony
(c) Odor threshold	Not available.
(d) pH	Not available.
(e) Melting point/freezing point	Not available.
(f) Initial boiling point and boiling range	Not available.
(g) Flash point	Not applicable.
(h) Evaporation rate	Not applicable.
(i) Flammability	Non flammable.
(j) Upper/lower flammability or explosive limits	Not available.
(k) Vapor pressure	Not applicable.
(l) Vapor density	Not available.
(m) Relative density	Not available.
(n) Solubility(ies)	Insoluble in water.
(o) Partition coefficient: n-octanol/water	Not available.
(p) Auto-ignition temperature	130°C
(q) Decomposition temperature	Not available.
(r) Viscosity	Not available.

## 10. Stability and reactivity

### *(a) Reactivity*

Stable under recommended storage and handling conditions.

### *(b) Chemical stability*

Stable under normal conditions.

### *(c) Possibility of hazardous reactions*

When heated above 150°C the risk of rupture occurs. Due to special safety construction, rupture implies controlled release of pressure without ignition.

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## *(d) Conditions to avoid*

Do not subject ALKALINE BATTERY to mechanical shock. Keep away from open flames, high temperature.

## *(e) Incompatible materials*

Strong oxidizer, strong acid.

## *(f) Hazardous decomposition products*

Under fire conditions, the electrode materials can form carcinogenic nickel and cobalt oxides.

## 11. Toxicological information

### *(a) Information on the likely routes of exposure*

Inhalation:	Inhalation of a large number of vapors or fumes released due to heat may cause respiratory.
Ingestion:	Ingestion of battery contents may cause mouth, throat and intestinal burns and damage.
Skin contact:	Contact with battery electrolyte may cause burns and skin irritation.
Eye contact:	Contact with battery electrolyte may cause burns. Eye damage is possible.

Under normal conditions (during charge and discharge) release of ingredients does not occur. If accidental release occurs see information in section 2, 3, and 4. Swallowing of a battery can be harmful. Call the local Poison Control Centre for advice and follow-up.

### *(b) Information on toxicological characteristics*

Acute toxicity:	No data available.
Skin corrosion/irritation:	The liquid in the battery irritates.
Serious eye damage/irritation:	The liquid in the battery irritates.
Respiratory sensitization:	The liquid in the battery may cause sensitization to some person.
skin sensitization:	The liquid in the battery may cause sensitization to some person.
Carcinogenicity:	Cobalt and Cobalt compounds are considered to be possible human carcinogen(s).
Germ Cell Mutagenicity:	No data available.
Reproductive Toxicity:	No data available.
STOT-Single Exposure:	No data available.
STOT-Repeated Exposure:	No data available.
Aspiration Hazard:	No data available.

## 12. Ecological information

### *(a) Ecotoxicity*

Water hazard class 1(Self-assessment): slightly hazardous for water.

### *(b) Persistence and Degradability*

No information available.

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## (c) Bioaccumulative potential

No information available.

## (d) Mobility in soil

No information available.

## (e) Other adverse effects

No information available.

## 13. Disposal considerations

### (a) Safe handling and methods of disposal

Disposal should be in accordance with applicable regional, national and local laws and regulations.  
Local regulations may be more stringent than regional or national requirements.

## 14. Transport information

According to PACKING INSTRUCTION 965 ~ 970 of IATA DGR 56rd Edition for transportation, the special provision 188 of IMDG (inc Amdt 35-10). The batteries should be securely packed and protected against short-circuits. Examine whether the package of the containers are integrate and tighten closed before transport. Take in a cargo of them without falling, dropping, and breakage. Prevent collapse of cargo piles. Don't put the goods together with oxidizer and chief food chemicals. The transport vehicle and ship must be cleaned and sterilized otherwise it is not allowed to assemble articles. During transport, the vehicle should prevent exposure, rain and high temperature. For stopovers, the vehicle should be away from fire and heat sources. When transported by sea, the assemble place should keep away from bedroom and kitchen, and isolated from the engine room, power and fire source. Under the condition of Road Transportation, the driver should drive in accordance with regulated route, don't stop over in the residential area and congested area. Forbid to use wooden, cement for bulk transport.

(a) UN number	3480&3481
(b) UN Proper shipping name	LITHIUM ION BATTERIES (including lithium ion polymer batteries) or; LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT or LITHIUM ION BATTERIES PACKED WITH EQUIPMENT (including lithium ion polymer batteries)
(c) Transport hazard class(es)	9
(d) Packing group (if applicable)	II
(e) Marine pollutant (Yes/No)	No
(f) Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code)	No information available.
(g) Special precautions	No information available.

## 15. Regulatory information

### (a) Safety, health and environmental regulations specific for the product in question

CAS No.	USA	EU	Japan	Korea	China	Canada
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# Safety Data Sheet

According to HCS-2012 APPENDIX D TO §1910.1200

Version: 1.0/EN  
Product name: ALKALINE BATTERY

Revision date: 19/03/2015  
Printing date: 19/03/2015

	TSCA	EINECS	ENCS	ECL	IECSC	DSL
1313-13-9	Listed	Listed	Listed	Listed	Listed	Listed
7440-66-6	Listed	Listed	Not listed	Listed	Listed	Not listed
1310-58-3	Listed	Not listed	Listed	Not listed	Listed	Not listed
7732-18-5	Listed	Listed	Listed	Listed	Listed	Not listed
7439-89-6	Listed	Listed	Listed	Listed	Listed	Not listed
RR-01108-5	Listed	Listed	Listed	Listed	Listed	Listed
7440-50-8	Not listed	Listed	Listed	Listed	Listed	Not listed
25038-54-4	Listed	Not listed	Listed	Not listed	Not listed	Not listed
7782-42-5	Listed	Listed	Not listed	Listed	Listed	Listed

## 16. Other information, including date of preparation or last revision

### (a) Preparation and revision Information

Date of previous revision: Not applicable.

Date of this revision: 19/03/2015

Revision summary: The first New SDS

### (b) Abbreviations and acronyms

TSCA:	Toxic Substances Control Act, The American chemical inventory.
DSL	Domestic Substances List
EINECS:	European Inventory of Existing Commercial chemical Substances
ENCS	Japanese Existing and New Chemical Substances
ECL:	Existing Chemicals List, the Korean chemical inventory.
IECSC:	Inventory of existing chemical substances in China.

### (c) Disclaimer

Because all of our batteries are defined as "articles", they are exempted from the requirements of the Hazard Communication Standard. The information in this SDS is provided all the relevant data fully and truly. However, the information is provided without any warranty on their absolute extensiveness and accuracy. This SDS was prepared to provide safety preventive measures for the users who have got professional training. The personal user who obtained this SDS should make independent judgment for the applicability of this SDS under special conditions. In these special cases, we do not assume responsibility for the damage.

----- End of the SDS -----

# Safety Data Sheet

According to HCS-2012 APPENDIX D TO §1910.1200

Version: 1.0/EN  
Product name: Carbon Zinc Battery

Revision date: 18/06/2015  
Printing date: 18/06/2015

## 1. Identification

### *(a) Product identifier*

Product name: Carbon Zinc Battery

### *(b) Other means of identification*

Product description: Model: R6P  
Nominal Voltage: 1.5V  
Weight: 14.0g  
Dimension: 14,5mm×50.5mm (D×H)

### *(c) Recommended use of the chemical and restrictions on use*

Recommended use: Battery.  
Restriction on use: No information available.

### *(d) Details of the supplier of the product*

Company name(China) Guangdong Liwang New Energy Co., Ltd  
Address: Liwang Industrial Estate, Shima Village, Tangxia Town, Dongguan City, Guangdong Province, CHINA  
E-mail: Liwang@Liwangbattery.com  
Telephone: +86-769-87888653

### *(e) Emergency phone number*

+86-769-87888653

## 2. Hazard(s) identification

### *(a) Classification of the chemical*

The batteries are defined as "articles", they are exempted from the requirements of the Hazard Communication Standard. A sealed Carbon Zinc Battery is not hazardous in normal use.

### *(b) Label elements*

Pictogram(s): No pictogram.  
Signal word: No signal word.  
Hazard statements: No hazard statement.  
Precautionary statements: No precautionary statement.

### *(c) Description of any hazards not otherwise classified*

In case of mistreatment (abusive over charge, reverse charge, external short circuit...) and in case of fault some electrolyte can leak from the cell through the safety device. In these cases refer to the risk of the electrolyte. Contact with internal components may cause irritation or severe burns. Irritating to eyes, respiratory system, and skin. The electrode materials are only hazardous, if the materials are released by mechanical damaging of the cell or if exposed to fire.

Skin touch: Contact with battery electrolyte may cause burns and skin irritation.

Eyes touch: Contact with battery electrolyte may cause burns. Eye damage is possible.

Inhalation: Inhalation of a large number of vapors or fumes released due to heat may cause respiratory.

Ingestion: Ingestion of battery contents may cause mouth, throat and intestinal burns and damage.

# Safety Data Sheet

According to HCS-2012 APPENDIX D TO §1910.1200

Version: 1.0/EN  
Product name: Carbon Zinc Battery

Revision date: 18/06/2015  
Printing date: 18/06/2015

*(d) Ingredient with unknown acute toxicity*

No information available.

## 3. Composition/information on ingredients

### *(a) Mixtures information*

Chemical name	CAS No.	Concentration%
Manganese dioxide	1313-13-9	37
Zinc	7440-66-6	33
Carbon black	1333-86-4	10
Water	7732-18-5	14.2
Ammonium chloride	12125-02-9	0.6
Iron	7439-89-6	2
Paper	RR-01108-5	0.5
Polypropylene	9003-07-0	1.5
Zinc chloride	7646-85-7	1.2

## 4. First-aid measures

### *(a) Description of first aid measures*

Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical advice / attention if you feel unwell.

Skin contact: Remove contaminated clothes and rinse the skin with plenty of water. Get medical advice / attention if you feel unwell.

Eye contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.  
Continue rinsing. Get medical advice / attention if you feel unwell.

Ingestion: Have victim drink 60 to 240 mL (2-8 oz.) of water. and DO NOT induce vomiting. Get medical aid.

### *(b) Most important symptoms/effects, acute and delayed*

Contact with internal components may cause allergic skin sensitization (rash) and irritate eyes, skin, nose, throat, respiratory system. Cobalt and Cobalt compounds are considered to be possible human carcinogen(s).

### *(c) Immediate medical attention and special treatment*

No information available.

## 5. Fire-fighting measures

### *(a) Extinguishing media*

Suitable extinguishing media: Use foam, dry powder or dry sand, CO<sub>2</sub> as appropriate.

Unsuitable extinguishing media: No information available.

### *(b) Special hazards arising from the chemical*

Under fire conditions, batteries may burst and release hazardous decomposition products when exposed to a fire situation. This could result in the release of flammable or corrosive materials. Hazardous combustion products: CO,

# Safety Data Sheet

According to HCS-2012 APPENDIX D TO §1910.1200

Version: 1.0/EN  
Product name: Carbon Zinc Battery

Revision date: 18/06/2015  
Printing date: 18/06/2015

CO<sub>2</sub>, Metal oxides, Irritating fumes

***(c) Special protective equipment and precautions for fire-fighters***

Firefighters must wear fire resistant protective equipment and appropriate breathing apparatus. The staff must equip with filtermask (full mask) or isolated breathing apparatus. The staff must wear the clothes which can defense the fire and the toxic gas. Put out the fire in the upwind direction. Remove the container to the open space as soon as possible. Spray water on the containers in the fireplace to keep them cool until finish extinguishment.

## 6. Accidental release measures

***(a) Personal precautions, protective equipment and emergency procedures***

If the battery material is released, remove personnel from area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. The preferred response is to leave the area, dispose the case after the batteries cool and vapors dissipate. Provide maximum ventilation. Avoid skin and eye contact or inhalation of vapors.

***(b) Methods and materials for containment and cleaning up***

If battery casing is dismantled, small amounts of electrolyte may leak. Collect all released material in a plastic lined container. Dispose off according to the local law and rules. Avoid leached substances to get into the earth, canalization or waters.

## 7. Handling and storage

***(a) Precautions for safe handling***

Always follow the warning information on the batteries and in the manuals of devices. Only use the recommended battery types. Keep batteries away from children. For devices to be used by children, the battery casing should be protected against unauthorized access. Unpacked batteries shall not lie about in bulk. In case of battery change always replace all batteries by new ones of identical type and brand. Do not swallow batteries. Do not throw batteries into water. Do not throw batteries into fire. Avoid deep discharge. Do not short-circuit batteries Use recommended charging time and current.

***(b) Conditions for safe storage, including any incompatibilities***

Don't handling Carbon Zinc Battery with metalwork. Do not open, dissemble, crush or burn battery. Ensure good ventilation/ exhaustion at the workplace.

Prevent formation of dust.

Information about protection against explosions and fires: Keep ignition sources away- Do not smoke.

Recommended at 0°C~+35°C for long period storage.

Do not storage Carbon Zinc Battery haphazardly in a box or drawer where they may short-circuit each other or be short-circuited by other metal objects.

Keep out of reach of children.

Do not expose Carbon Zinc Battery to heat or fire. Avoid storage in direct sunlight.

Do not store together with oxidizing and acidic materials.

## 8. Exposure controls/personal protection

# Safety Data Sheet

According to HCS-2012 APPENDIX D TO §1910.1200

Version: 1.0/EN  
Product name: Carbon Zinc Battery

Revision date: 18/06/2015  
Printing date: 18/06/2015

## (a) Control parameters

Not established.

## (b) Appropriate engineering controls

Under normal conditions (during charge and discharge) release of ingredients does not occur.

## (c) Personal protective equipment

Respiratory protection:

No personal respiratory protective equipment normally required. In case of inadequate ventilation wear respiratory protection.

Hand protection:

Wear protective gloves.

Eye/face protection:

No personal protective equipment normally required.

Skin/body protection:

Wear protective clothing to prevent contact.

## 9. Physical and chemical properties

(a) Appearance	Cylindrical solid
(b) Odor	Monotony
(c) Odor threshold	Not available.
(d) pH	Not available.
(e) Melting point/freezing point	Not available.
(f) Initial boiling point and boiling range	Not available.
(g) Flash point	Not applicable.
(h) Evaporation rate	Not applicable.
(i) Flammability	Non flammable.
(j) Upper/lower flammability or explosive limits	Not available.
(k) Vapor pressure	Not applicable.
(l) Vapor density	Not available.
(m) Relative density	Not available.
(n) Solubility(ies)	Insoluble in water.
(o) Partition coefficient: n-octanol/water	Not available.
(p) Auto-ignition temperature	130°C
(q) Decomposition temperature	Not available.
(r) Viscosity	Not available.

## 10. Stability and reactivity

### (a) Reactivity

Stable under recommended storage and handling conditions.

### (b) Chemical stability

Stable under normal conditions.

### (c) Possibility of hazardous reactions

When heated above 150°C the risk of rupture occurs. Due to special safety construction, rupture implies controlled release of pressure without ignition.

# Safety Data Sheet

According to HCS-2012 APPENDIX D TO §1910.1200

Version: 1.0/EN  
Product name: Carbon Zinc Battery

Revision date: 18/06/2015  
Printing date: 18/06/2015

## *(d) Conditions to avoid*

Do not subject Carbon Zinc Battery to mechanical shock. Keep away from open flames, high temperature.

## *(e) Incompatible materials*

Strong oxidizer, strong acid.

## *(f) Hazardous decomposition products*

Under fire conditions, the electrode materials can form carcinogenic nickel and cobalt oxides.

## 11. Toxicological information

### *(a) Information on the likely routes of exposure*

Inhalation:	Inhalation of a large number of vapors or fumes released due to heat may cause respiratory.
Ingestion:	Ingestion of battery contents may cause mouth, throat and intestinal burns and damage.
Skin contact:	Contact with battery electrolyte may cause burns and skin irritation.
Eye contact:	Contact with battery electrolyte may cause burns. Eye damage is possible.

Under normal conditions (during charge and discharge) release of ingredients does not occur. If accidental release occurs see information in section 2, 3, and 4. Swallowing of a battery can be harmful. Call the local Poison Control Centre for advice and follow-up.

### *(b) Information on toxicological characteristics*

Acute toxicity:	No data available.
Skin corrosion/irritation:	The liquid in the battery irritates.
Serious eye damage/irritation:	The liquid in the battery irritates.
Respiratory sensitization:	The liquid in the battery may cause sensitization to some person.
skin sensitization:	The liquid in the battery may cause sensitization to some person.
Carcinogenicity:	Cobalt and Cobalt compounds are considered to be possible human carcinogen(s).
Germ Cell Mutagenicity:	No data available.
Reproductive Toxicity:	No data available.
STOT-Single Exposure:	No data available.
STOT-Repeated Exposure:	No data available.
Aspiration Hazard:	No data available.

## 12. Ecological information

### *(a) Ecotoxicity*

Water hazard class 1(Self-assessment): slightly hazardous for water.

### *(b) Persistence and Degradability*

No information available.

# Safety Data Sheet

According to HCS-2012 APPENDIX D TO §1910.1200

Version: 1.0/EN  
Product name: Carbon Zinc Battery

Revision date: 18/06/2015  
Printing date: 18/06/2015

## (c) Bioaccumulative potential

No information available.

## (d) Mobility in soil

No information available.

## (e) Other adverse effects

No information available.

## 13. Disposal considerations

### (a) Safe handling and methods of disposal

Disposal should be in accordance with applicable regional, national and local laws and regulations.  
Local regulations may be more stringent than regional or national requirements.

## 14. Transport information

According to PACKING INSTRUCTION 965 ~ 970 of IATA DGR 56rd Edition for transportation, the special provision 188 of IMDG (inc Amdt 35-10). The batteries should be securely packed and protected against short-circuits. Examine whether the package of the containers are integrate and tighten closed before transport. Take in a cargo of them without falling, dropping, and breakage. Prevent collapse of cargo piles. Don't put the goods together with oxidizer and chief food chemicals. The transport vehicle and ship must be cleaned and sterilized otherwise it is not allowed to assemble articles. During transport, the vehicle should prevent exposure, rain and high temperature. For stopovers, the vehicle should be away from fire and heat sources. When transported by sea, the assemble place should keep away from bedroom and kitchen, and isolated from the engine room, power and fire source. Under the condition of Road Transportation, the driver should drive in accordance with regulated route, don't stop over in the residential area and congested area. Forbid to use wooden, cement for bulk transport.

(a) UN number	3480&3481
(b) UN Proper shipping name	LITHIUM ION BATTERIES (including lithium ion polymer batteries) or; LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT or LITHIUM ION BATTERIES PACKED WITH EQUIPMENT (including lithium ion polymer batteries)
(c) Transport hazard class(es)	9
(d) Packing group (if applicable)	II
(e) Marine pollutant (Yes/No)	No
(f) Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code)	No information available.
(g) Special precautions	No information available.

## 15. Regulatory information

### (a) Safety, health and environmental regulations specific for the product in question

CAS No.	USA	EU	Japan	Korea	China	Canada
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# Safety Data Sheet

According to HCS-2012 APPENDIX D TO §1910.1200

Version: 1.0/EN  
Product name: Carbon Zinc Battery

Revision date: 18/06/2015  
Printing date: 18/06/2015

	TSCA	EINECS	ENCS	ECL	IECSC	DSL
1313-13-9	Listed	Listed	Listed	Listed	Listed	Listed
7440-66-6	Listed	Listed	Not listed	Listed	Listed	Not listed
1333-86-4	Listed	Listed	Listed	Listed	Listed	Not listed
7732-18-5	Listed	Listed	Listed	Listed	Listed	Not listed
12125-02-9	Listed	Listed	Listed	Listed	Listed	Listed
7439-89-6	Listed	Listed	Listed	Listed	Listed	Not listed
RR-01108-5	Listed	Listed	Listed	Listed	Listed	Listed
9003-07-0	Listed	Listed	Listed	Listed	Listed	Listed
7646-85-7	Listed	Listed	Listed	Listed	Listed	Listed

## 16. Other information, including date of preparation or last revision

### (a) Preparation and revision information

Date of previous revision: Not applicable.

Date of this revision: 19/03/2015

Revision summary: The first New SDS

### (b) Abbreviations and acronyms

TSCA:	Toxic Substances Control Act, The American chemical inventory.
DSL	Domestic Substances List
EINECS:	European Inventory of Existing Commercial chemical Substances
ENCS	Japanese Existing and New Chemical Substances
ECL:	Existing Chemicals List, the Korean chemical inventory.
IECSC:	Inventory of existing chemical substances in China.

### (c) Disclaimer

Because all of our batteries are defined as "articles", they are exempted from the requirements of the Hazard Communication Standard. The information in this SDS is provided all the relevant data fully and truly. However, the information is provided without any warranty on their absolute extensiveness and accuracy. This SDS was prepared to provide safety preventive measures for the users who have got professional training. The personal user who obtained this SDS should make independent judgment for the applicability of this SDS under special conditions. In these special cases, we do not assume responsibility for the damage.

----- End of the SDS -----



# Safety Data Sheet

According to HCS-2012 APPENDIX D TO §1910.1200

Version: 1.0/EN  
Product name: Carbon Zinc Battery

Revision date: 19/03/2015  
Printing date: 19/03/2015

## 1. Identification

### *(a) Product identifier*

Product name: Carbon Zinc Battery

### *(b) Other means of identification*

Product description: Model: R03&R03P  
Nominal Voltage: 1.5V  
Weight: 7.0g  
Dimension: 10.5mm×44.5mm (D×H)

### *(c) Recommended use of the chemical and restrictions on use*

Recommended use: Battery.  
Restriction on use: No information available.

### *(d) Details of the supplier of the product*

Company name(China) Guangdong Liwang New Energy Co., Ltd  
Address: Liwang Industrial Estate, Shima Village, Tangxia Town, Dongguan City, Guangdong Province, CHINA  
E-mail: Liwang@Liwangbattery.com  
Telephone: +86-769-87888653

### *(e) Emergency phone number*

+86-769-87888653

## 2. Hazard(s) identification

### *(a) Classification of the chemical*

The batteries are defined as "articles", they are exempted from the requirements of the Hazard Communication Standard. A sealed Carbon Zinc Battery is not hazardous in normal use.

### *(b) Label elements*

Pictogram(s): No pictogram.  
Signal word: No signal word.  
Hazard statements: No hazard statement.  
Precautionary statements: No precautionary statement.

### *(c) Description of any hazards not otherwise classified*

In case of mistreatment (abusive over charge, reverse charge, external short circuit...) and in case of fault some electrolyte can leak from the cell through the safety device. In these cases refer to the risk of the electrolyte. Contact with internal components may cause irritation or severe burns. Irritating to eyes, respiratory system, and skin. The electrode materials are only hazardous, if the materials are released by mechanical damaging of the cell or if exposed to fire.

Skin touch: Contact with battery electrolyte may cause burns and skin irritation.

Eyes touch: Contact with battery electrolyte may cause burns. Eye damage is possible.

Inhalation: Inhalation of a large number of vapors or fumes released due to heat may cause respiratory.

Ingestion: Ingestion of battery contents may cause mouth, throat and intestinal burns and damage.

# Safety Data Sheet

According to HCS-2012 APPENDIX D TO §1910.1200

Version: 1.0/EN  
Product name: Carbon Zinc Battery

Revision date: 19/03/2015  
Printing date: 19/03/2015

*(d) Ingredient with unknown acute toxicity*

No information available.

## 3. Composition/information on ingredients

### *(a) Mixtures information*

Chemical name	CAS No.	Concentration%
Manganese dioxide	1313-13-9	37
Zinc	7440-66-6	33
Carbon black	1333-86-4	10
Water	7732-18-5	14,2
Ammonium chloride	12125-02-9	0.6
Iron	7439-89-6	2
Paper	RR-01108-5	0.5
Polypropylene	9003-07-0	1.5
Zinc chloride	7646-85-7	1.2

## 4. First-aid measures

### *(a) Description of first aid measures*

- Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical advice / attention if you feel unwell.
- Skin contact: Remove contaminated clothes and rinse the skin with plenty of water. Get medical advice / attention if you feel unwell.
- Eye contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.  
Continue rinsing. Get medical advice / attention if you feel unwell.
- Ingestion: Have victim drink 60 to 240 mL (2-8 oz.) of water, and DO NOT induce vomiting. Get medical aid.

### *(b) Most important symptoms/effects, acute and delayed*

Contact with internal components may cause allergic skin sensitization (rash) and irritate eyes, skin, nose, throat, respiratory system. Cobalt and Cobalt compounds are considered to be possible human carcinogen(s).

### *(c) Immediate medical attention and special treatment*

No information available.

## 5. Fire-fighting measures

### *(a) Extinguishing media*

- Suitable extinguishing media: Use foam, dry powder or dry sand, CO<sub>2</sub> as appropriate.
- Unsuitable extinguishing media: No information available.

### *(b) Special hazards arising from the chemical*

Under fire conditions, batteries may burst and release hazardous decomposition products when exposed to a fire situation. This could result in the release of flammable or corrosive materials. Hazardous combustion products: CO,

# Safety Data Sheet

According to HCS-2012 APPENDIX D TO §1910.1200

Version: 1.0/EN  
Product name: Carbon Zinc Battery

Revision date: 19/03/2015  
Printing date: 19/03/2015

CO<sub>2</sub>, Metal oxides, Irritating fumes

*(c) Special protective equipment and precautions for fire-fighters*

Firefighters must wear fire resistant protective equipment and appropriate breathing apparatus. The staff must equip with filtermask (full mask) or isolated breathing apparatus. The staff must wear the clothes which can defense the fire and the toxic gas. Put out the fire in the upwind direction. Remove the container to the open space as soon as possible. Spray water on the containers in the fireplace to keep them cool until finish extinguishment.

## 6. Accidental release measures

*(a) Personal precautions, protective equipment and emergency procedures*

If the battery material is released, remove personnel from area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. The preferred response is to leave the area, dispose the case after the batteries cool and vapors dissipate. Provide maximum ventilation. Avoid skin and eye contact or inhalation of vapors.

*(b) Methods and materials for containment and cleaning up*

If battery casing is dismantled, small amounts of electrolyte may leak. Collect all released material in a plastic lined container. Dispose off according to the local law and rules. Avoid leached substances to get into the earth, canalization or waters.

## 7. Handling and storage

*(a) Precautions for safe handling*

Always follow the warning information on the batteries and in the manuals of devices. Only use the recommended battery types. Keep batteries away from children. For devices to be used by children, the battery casing should be protected against unauthorized access. Unpacked batteries shall not lie about in bulk. In case of battery change always replace all batteries by new ones of identical type and brand. Do not swallow batteries. Do not throw batteries into water. Do not throw batteries into fire. Avoid deep discharge. Do not short-circuit batteries Use recommended charging time and current.

*(b) Conditions for safe storage, including any incompatibilities*

Don't handling Carbon Zinc Battery with metalwork. Do not open, dissemble, crush or burn battery. Ensure good ventilation/ exhaustion at the workplace.

Prevent formation of dust.

Information about protection against explosions and fires: Keep ignition sources away- Do not smoke.

Recommended at 0°C~+35°C for long period storage.

Do not storage Carbon Zinc Battery haphazardly in a box or drawer where they may short-circuit each other or be short-circuited by other metal objects.

Keep out of reach of children.

Do not expose Carbon Zinc Battery to heat or fire. Avoid storage in direct sunlight.

Do not store together with oxidizing and acidic materials.

## 8. Exposure controls/personal protection

# Safety Data Sheet

According to HCS-2012 APPENDIX D TO §1910.1200

Version: 1.0/EN  
Product name: Carbon Zinc Battery

Revision date: 19/03/2015  
Printing date: 19/03/2015

## *(a) Control parameters*

Not established.

## *(b) Appropriate engineering controls*

Under normal conditions (during charge and discharge) release of ingredients does not occur.

## *(c) Personal protective equipment*

Respiratory protection:	No personal respiratory protective equipment normally required, in case of inadequate ventilation wear respiratory protection.
Hand protection:	Wear protective gloves.
Eye/face protection:	No personal protective equipment normally required.
Skin/body protection:	Wear protective clothing to prevent contact.

## 9. Physical and chemical properties

(a) Appearance	Cylindrical solid
(b) Odor	Monotony
(c) Odor threshold	Not available.
(d) pH	Not available.
(e) Melting point/freezing point	Not available.
(f) Initial boiling point and boiling range	Not available.
(g) Flash point	Not applicable.
(h) Evaporation rate	Not applicable.
(i) Flammability	Non flammable.
(j) Upper/lower flammability or explosive limits	Not available.
(k) Vapor pressure	Not applicable.
(l) Vapor density	Not available.
(m) Relative density	Not available.
(n) Solubility(ies)	Insoluble in water.
(o) Partition coefficient: n-octanol/water	Not available.
(p) Auto-ignition temperature	130°C
(q) Decomposition temperature	Not available.
(r) Viscosity	Not available.

## 10. Stability and reactivity

### *(a) Reactivity*

Stable under recommended storage and handling conditions.

### *(b) Chemical stability*

Stable under normal conditions.

### *(c) Possibility of hazardous reactions*

When heated above 150°C the risk of rupture occurs. Due to special safety construction, rupture implies controlled release of pressure without ignition.

# Safety Data Sheet

According to HCS-2012 APPENDIX D TO §1910.1200

Version: 1.0/EN  
Product name: Carbon Zinc Battery

Revision date: 19/03/2015  
Printing date: 19/03/2015

## *(d) Conditions to avoid*

Do not subject Carbon Zinc Battery to mechanical shock. Keep away from open flames, high temperature.

## *(e) Incompatible materials*

Strong oxidizer, strong acid.

## *(f) Hazardous decomposition products*

Under fire conditions, the electrode materials can form carcinogenic nickel and cobalt oxides.

## 11. Toxicological information

### *(a) Information on the likely routes of exposure*

Inhalation:	Inhalation of a large number of vapors or fumes released due to heat may cause respiratory.
Ingestion:	Ingestion of battery contents may cause mouth, throat and intestinal burns and damage.
Skin contact:	Contact with battery electrolyte may cause burns and skin irritation.
Eye contact:	Contact with battery electrolyte may cause burns. Eye damage is possible.

Under normal conditions (during charge and discharge) release of ingredients does not occur. If accidental release occurs see information in section 2, 3, and 4. Swallowing of a battery can be harmful. Call the local Poison Control Centre for advice and follow-up.

### *(b) Information on toxicological characteristics*

Acute toxicity:	No data available.
Skin corrosion/irritation:	The liquid in the battery irritates.
Serious eye damage/irritation:	The liquid in the battery irritates.
Respiratory sensitization:	The liquid in the battery may cause sensitization to some person.
skin sensitization:	The liquid in the battery may cause sensitization to some person.
Carcinogenicity:	Cobalt and Cobalt compounds are considered to be possible human carcinogen(s).
Germ Cell Mutagenicity:	No data available.
Reproductive Toxicity:	No data available.
STOT-Single Exposure:	No data available.
STOT-Repeated Exposure:	No data available.
Aspiration Hazard:	No data available.

## 12. Ecological information

### *(a) Ecotoxicity*

Water hazard class 1(Self-assessment): slightly hazardous for water.

### *(b) Persistence and Degradability*

No information available.

# Safety Data Sheet

According to HCS-2012 APPENDIX D TO §1910.1200

Version: 1.0/EN  
Product name: Carbon Zinc Battery

Revision date: 19/03/2015  
Printing date: 19/03/2015

## (c) Bioaccumulative potential

No information available.

## (d) Mobility in soil

No information available.

## (e) Other adverse effects

No information available.

## 13. Disposal considerations

### (a) Safe handling and methods of disposal

Disposal should be in accordance with applicable regional, national and local laws and regulations.  
Local regulations may be more stringent than regional or national requirements.

## 14. Transport information

According to PACKING INSTRUCTION 965 ~ 970 of IATA DGR 56rd Edition for transportation, the special provision 188 of IMDG (inc Amdt 35-10). The batteries should be securely packed and protected against short-circuits. Examine whether the package of the containers are integrate and tighten closed before transport. Take in a cargo of them without falling, dropping, and breakage. Prevent collapse of cargo piles. Don't put the goods together with oxidizer and chief food chemicals. The transport vehicle and ship must be cleaned and sterilized otherwise it is not allowed to assemble articles. During transport, the vehicle should prevent exposure, rain and high temperature. For stopovers, the vehicle should be away from fire and heat sources. When transported by sea, the assemble place should keep away from bedroom and kitchen, and isolated from the engine room, power and fire source. Under the condition of Road Transportation, the driver should drive in accordance with regulated route, don't stop over in the residential area and congested area. Forbid to use wooden, cement for bulk transport.

(a) UN number	3480&3481
(b) UN Proper shipping name	LITHIUM ION BATTERIES (including lithium ion polymer batteries) or; LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT or LITHIUM ION BATTERIES PACKED WITH EQUIPMENT (including lithium ion polymer batteries)
(c) Transport hazard class(es)	9
(d) Packing group (if applicable)	II
(e) Marine pollutant (Yes/No)	No
(f) Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code)	No information available.
(g) Special precautions	No information available.

## 15. Regulatory information

### (a) Safety, health and environmental regulations specific for the product in question

CAS No.	USA	EU	Japan	Korea	China	Canada
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# Safety Data Sheet

According to HCS-2012 APPENDIX D TO §1910.1200

Version: 1.0/EN  
Product name: Carbon Zinc Battery

Revision date: 19/03/2015  
Printing date: 19/03/2015

	TSCA	EINECS	ENCS	ECL	IECSC	DSL
1313-13-9	Listed	Listed	Listed	Listed	Listed	Listed
7440-66-6	Listed	Listed	Not listed	Listed	Listed	Not listed
1333-86-4	Listed	Listed	Listed	Listed	Listed	Not listed
7732-18-5	Listed	Listed	Listed	Listed	Listed	Not listed
12125-02-9	Listed	Listed	Listed	Listed	Listed	Listed
7439-89-6	Listed	Listed	Listed	Listed	Listed	Not listed
RR-01108-5	Listed	Listed	Listed	Listed	Listed	Listed
9003-07-0	Listed	Listed	Listed	Listed	Listed	Listed
7646-85-7	Listed	Listed	Listed	Listed	Listed	Listed

## 16. Other information, including date of preparation or last revision

### (a) Preparation and revision information

Date of previous revision: Not applicable.

Date of this revision: 19/03/2015

Revision summary: The first New SDS

### (b) Abbreviations and acronyms

TSCA:	Toxic Substances Control Act, The American chemical inventory.
DSL	Domestic Substances List
EINECS:	European Inventory of Existing Commercial chemical Substances
ENCS	Japanese Existing and New Chemical Substances
ECL:	Existing Chemicals List, the Korean chemical inventory.
IECSC:	Inventory of existing chemical substances in China.

### (c) Disclaimer

Because all of our batteries are defined as "articles", they are exempted from the requirements of the Hazard Communication Standard. The information in this SDS is provided all the relevant data fully and truly. However, the information is provided without any warranty on their absolute extensiveness and accuracy. This SDS was prepared to provide safety preventive measures for the users who have got professional training. The personal user who obtained this SDS should make independent judgment for the applicability of this SDS under special conditions. In these special cases, we do not assume responsibility for the damage.

----- End of the SDS -----