

No.: PSDS001A

Edition: 9.2




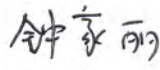
PRODUCT SAFETY DATA SHEET

FOR

CARBON ZINC BATTERIES

(R03, R6, R14 & R20)

T.G. Battery Co. (China) Limited

| GM | QA | | |
|---|---|---|---|
| Approved | Verified | Checked | Drafted |
|  |  |  |  |
| Issued date: May 26, 2015 | | | |

GP Batteries

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Please follow the warnings and precautions listed below to avoid possible hazards from the improper uses of Carbon Zinc Batteries and to ensure correct and safe use of them.

The following notes should be put in an appropriate and effective location in each end-use product and its instruction manual. Failure to observe the following instructions may cause battery leakage, heat generation, explosion, or appliance trouble.

Remark: In accordance with OSHA standard 1910.1200 App D (USA)

Section I – Product and Company Identification

Information of Product

| | |
|---|--|
| Product Identity (used on the label) | Carbon Zinc Batteries (1) R03 AAA Size (2) R6 AA Size (3) R14 C Size (4) R20 D Size |
|---|--|

Information of Manufacturer

| | |
|--|---|
| Manufacturer's Name | Emergency Telephone Number |
| GPI International Ltd. | 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) | Telephone Number for Information |
| 8/F GP Building, 30 Kwai Wing Road, Kwai Chung, N.T., Hong Kong | +852-24843333 |
| | Date of prepared and revised |
| | 20 th May 2015 |

Recommended use of chemicals:

Don't directly connect (+) and (-) of a battery to make a short circuit. Don't disassemble, heat or put the battery into fire.

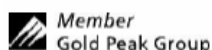
Section II – Hazards Identification

GHS Classification: N.A.

Charging Carbon Zinc Battery may cause electrolyte leakage or damage, because this type of battery is not designed as rechargeable battery.

Improper handling of the battery could lead to distortion, leakage, overheating, or explosion and cause human injury or equipment trouble. Especially touch with liquid leaked out of battery could cause injury like a loss of eyesight. Please strictly observe safety instructions.

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



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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. |
| Skin contact | The electrolyte can cause skin irritation, chemical burns. |
| Eye contact | The electrolyte leaked from the battery cell can cause severe irritation and chemical burns. |
| Ingestion | If the battery is swallowed and opened, or the electrolyte is ingested, the electrolyte irritates the mouth and the throat seriously. |

Environmental Effects

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

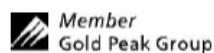
Specific Hazards

As previously described.

Section III – Composition/Information on Ingredients

| Ingredient | CAS № | EINECS № | Content (w/w) | | | |
|---|----------------|----------------|---------------------|-------------------|-------------------|-------------------|
| | | | R03 | R6 | R14 | R20 |
| Manganese Dioxide | 1313-13-9 | 215-202-6 | 23 ~ 28% | 17 ~ 27% | 17 ~ 29.5% | 17.5 ~ 33% |
| Zinc | 7440-66-6 | 231-175-3 | 34 ~ 38% | 20 ~ 23% | 17 ~ 20% | 17 ~ 22% |
| Zinc Chloride | 7646-85-7 | 231-592-0 | 4.0 ~ 6.0% | 4.3 ~ 6.8% | 6.0 ~ 8.0% | 6.0 ~ 8.8% |
| Ammonium Chloride | 12125-02-9 | 235-186-4 | 0.2 ~ 0.4% | 0.2 ~ 0.7% | 0.6 ~ 0.8% | 0.3 ~ 0.9% |
| Acetylene Black | 1333-86-4 | 215-609-9 | 3.7 ~ 4.7% | 3.4 ~ 4.4% | 4.0 ~ 5.0% | 4.4 ~ 5.9% |
| Lead | 7439-92-1 | 231-100-4 | < 1500ppm | < 1000 ppm | < 1000ppm | < 1000ppm |
| Cadmium | 7440-43-9 | 231-152-8 | < 10 ppm | < 10 ppm | < 10 ppm | < 10 ppm |
| Mercury | 7439-97-6 | 231-106-7 | < 1 ppm | < 1 ppm | < 1 ppm | < 1 ppm |
| Other Non-hazardous (Iron Water and others) | 7439-89-6 / | 231-096-4 / | 4.0-4.4% Balance | 21-22% Balance | 17-18% Balance | 14-15% Balance |

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Section IV – First-aid Measures

None unless internal materials exposure. If contents are leaked out, observe following instructions.

| | |
|---------------------|---|
| Inhalation | If electrolyte leakage occurs, provide fresh air and seek medical attention. |
| Skin Contact | If liquid solution from the battery comes out and contact with skin or clothes, flush out with clean water. |
| Eye Contact | If any liquid from the battery comes out and contact with eyes, flush out with clean water immediately and consult a doctor. |
| Ingestion | If swallowing a battery, consult a physician immediately. If contents come into mouth, immediately rinse by plenty of water and consult a physician. |

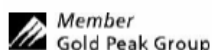
Section V – Fire-fighting Measures

| | |
|---|---|
| Extinguishing Media | Any class of extinguisher is effective. |
| Unusual Fire and Explosion Hazards | Acrid or harmful fume is emitted during fire. |
| Special Protective equipment and Precautions for fire-fighters | Fire fighters should wear self-contained breathing apparatus. |

Section VI – Accidental Release Measures

| | |
|----------------------------------|--|
| Personal Precautions | Eye Protection: Wear safety glasses with side shields if handling an open or leaking battery. Gloves: Use neoprene or natural rubber gloves if handling an open or leaking battery. |
| Environmental precautions | Room ventilation may be required in areas where there are open or leaking batteries. |
| Containment and Clean Up | Battery materials should be collected in a leak-proof container. |

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Section VII – Handling and Storage

| | |
|-----------------|--|
| Handling | <p>Never swallow. Never touch the liquid leaked out of battery. Never short-circuit the battery. Never charge. Never expose to open flame. Never heat. Never disassemble or deform.</p> <ol style="list-style-type: none"> 1) Keep the battery out of reach of babies or small children. 2) Do not install the battery in the appliance in reversed positive (+) and negative (-) terminal connection. 3) Do not use the batteries mixed with new battery, old battery or different type battery. 4) Take out used batteries promptly from the appliance. 5) Do not expose the battery to rain or moisture. 6) When not in use for a long time, take out the battery from the appliance and store in a cool dry place. 7) Do not drop, give a strong shock or deform the battery. 8) Do not solder the battery directly. |
| Storage | Do not leave the batteries in an atmosphere over the temperature of 30 °C or over the humidity of 80% for a long time. Never let the battery contact with water. |

Section VIII – Exposure Controls/Personal Protection

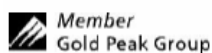
Engineering Control

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

Exposure Control Limit

| Common Chemical Name / General Name | OSHA PEL | ACGIH TLV |
|--|--|---|
| Manganese Dioxide | 5mg/m ³ CEILING (as Mn) | 0.2mg/m ³ TWA (as Mn) |
| Zinc | 15mg/m ³ TWA PNOR (total dust) | 10mg/m ³ TWA PNOC (inhalable particulate) |

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| | | |
|-------------------|--|---|
| | 5mg/m ³ TWA PNOR (respirable fraction) | 3mg/m ³ TWA PNOC (respirable particulate) |
| Zinc Chloride | 1mg/m ³ TWA (fume) | 1mg/m ³ TWA (fume) 2mg/m ³ STEL (fume) |
| Ammonium Chloride | None established | 10mg/m ³ TWA (fume) 20mg/m ³ STEL (fume) |
| Acetylene Black | 3.5mg/m ³ TWA (as carbon black) | 3.5mg/m ³ TWA (as carbon black) |

TWA – Time Weighted Average

ACGIH TLV: American Conference of Governmental Industrial Hygienists Threshold Limit Value

OSHA PEL: Occupational Safety & Health Administration Permissible Exposure Limit

PNOR: Particulates not otherwise regulated.

PNOC: Particulates not otherwise classified.

Personal protective equipment

Respiratory protection: N.A.

Hand protection: N.A.

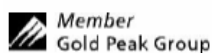
Eye protection: N.A.

Skin and body protection: N.A.

Section IX – Physical and Chemical Properties

| | |
|--|--|
| Appearance Solid, Cylindrical Shape | 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. |

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| | |
|---|---|
| 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

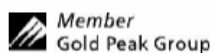
| | |
|---|---|
| Stability | Stable under normal use |
| Possibility of hazardous reactions | Carbon zinc batteries do not meet any of the criteria established in 40 CFR 261.2 for reactivity. |
| Conditions to avoid | Refer to Section VII |
| Materials to avoid | Conductive materials, water, seawater |
| Hazardous decomposition products | Acrid or harmful fume is emitted during fire. |

Section XI – Toxicological Information

There is no toxicity data for Battery. Nontoxic, because the chemical mixture from battery is sealed by the metal container, and then packed by the insulated pipe.

Section XII – Ecological Information

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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

The battery may be regulated by national or local laws/ regulations. Please follow the instructions of proper regulation. As electric capacity is left in a discarded battery and it comes into contact with other metals, it could lead to distortion, leakage, overheating, or explosion, In case of storage or throw away the battery, insulate a terminal of the battery with a tape.

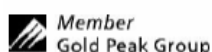
Section XIV – Transport Information

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 carbon zinc batteries has been designed to be compliant with these regulatory concerns.

Carbon zinc batteries (sometimes referred to as “Dry cell” batteries) are not listed as dangerous goods under the ADR European Agreement Concerning the International Carriage of Dangerous Goods by Road, the IMDG International Maritime Dangerous Goods Code, UN Dangerous Good Regulations, IATA Dangerous Goods Regulations, ICAO Technical Instructions and the U.S hazardous materials regulations (49 CFR). These batteries are not subject to the dangerous goods regulations provided they meet the requirements contained in the following special provisions.

| Regulatory Body | Special Provisions |
|-----------------|--------------------|
| ADR | Not regulated |
| IMDG | Not regulated |
| UN | Not regulated |

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| | |
|--------|------------------------------|
| US DOT | 49 CFR 172.102 Provision 130 |
| IATA | A123 |
| ICAO | Not regulated |

| Form of Transportation | UN No. | UN Proper Shipping Name | Transport Hazard Class | Packing Group Number | Environmental Hazards | Guidance Transport in bulk | Special Precaution |
|------------------------|--------|-------------------------|------------------------|----------------------|-----------------------|----------------------------|--------------------|
| N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. | N.A. |

All of carbon zinc batteries are packed in such a way to prevent short circuits or the generation dangerous quantities of heat and meet the special provisions listed above. In addition, the IATA Dangerous Goods regulations and ICAO Technical Instructions require the words “not restricted” and the Special provision number A123 be provided on the air waybill, when an air waybill is issued.

Section XV – Regulatory Information

National or local laws/ regulations applied to battery.

Section XVI – Other Information

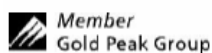
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Department: Quality Assurance Department

Edited by: Zhijin Huang

Remark: Contents of this manual have been edited based on data, information, etc. that TGBC could acquire when editing the manual, so the manual may be revised by new information, if any. Contents of the above data assume normal handling of cells, and are provided as referential information. Therefore, the manual provides no warranties. The customer is requested to use batteries on the basis of appropriate measures established depending on individual conditions, application and operation.

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