

## PRODUCT SAFETY DATA SHEET

**1. PRODUCTS AND COMPANY IDENTIFICATION**

Product Name : Zinc Carbon Battery R20,R6, and R03

**Company Identification**Name : Panasonic Energy (Shanghai) Co., Ltd.  
Address : No.5033, Luoshan Road, Pudong New Area,  
Shanghai CHINA  
Tel : +21-3390-6270  
Fax : +21-3390-6621  
Emergency Tel : +21-3390-6661 (Holiday)**2. HAZARDS IDENTIFICATION****Most Important Hazardous**Adverse Human Health Effects : When electrolyte touches skin, itch may occur.  
Physical And Chemical Hazard : There is the risk of explosion if batteries are disposed in fire, heated above 100 degree C. Stacking or jumbling batteries may cause external short circuits, heat generation and explosion.  
Specific Hazards : Not Applicable.  
Class Name Of Hazardous Chemicals : Not Applicable.**3. COMPOSITION / INFORMATION ON INGREDIENTS**Substance Name : Zinc Carbon Battery  
CAS Number : Not Specified**Composition**

COMPONENT	CONCENTRATION (Wt %)	FORMULA	CAS NO.
<b>&lt;Positive Electrode&gt;</b> Manganese dioxide Acetylene Black	20—30 3.5—6.0	MnO <sub>2</sub> C	1313-13-9 1333-86-4
<b>&lt;Negative Electrode&gt;</b> Zinc Lead	16—37 0.05—0.2	Zn Pb	7440-66-6 7439-92-1
<b>&lt;Electrolyte&gt;</b> Zinc Chloride Water	5—8 10—18	ZnCl <sub>2</sub> H <sub>2</sub> O	7546-85-7 —

#### 4. FIRST AID MEASURES (If leaked solution will contact.)

- Skin Contact : Wash the affected area under tepid running water using a mild soap. If appropriate procedures are not taken, this may cause sores on the skin. Get medical attention if irritation develops or persists.
- Eye Contact : Not rubbing the eyes, flush immediately with plenty of clean water for at least 15 minutes. Take medical treatment, if appropriate procedures are not taken, this may cause eye irritation.
- Ingestion : Arrange for transport to the nearest medical facility for examination and treatment by a physician as soon as possible.

#### 5. FIRE FIGHTING MEASURES

- Extinguishing Media : Dry chemical, carbon dioxide, great deal of water.
- Specific Fire-Fighting Methods : Be sure on the windward to extinguish the fire, since vapor from burning batteries may make eyes, nose and throat irritate, Wear the respiratory protection equipment in some cases.

#### 6. ACCIDENTAL RELEASE MEASURES (in case of electrolyte leakage from the battery)

- Health Considerations : Wear proper protective equipment.
- And Protective Equipment
- Environmental Precautions : Prevent spills from entering sewers, watercourses.
- Spill Clean-Up Procedures : Collect material to minimize dust generation ; use wet mop, damp sponge. Place collected material into a suitable container for disposal.

#### 7. HANDLING AND STORAGE

##### Handling

- Technical Measures : No exposure limits exist for the battery.
- Precaution : When packing the batteries, do not allow battery terminals to contact each other, or contact with electrically conductive materials. Be sure to pack batteries by providing partitions in packaging boxes, or in separate plastic bags to avoid they are mixed together. Use strong material for packaging boxes to avoid damage by vibration, impact, dropping and stacking during transportation. Do not recharge batteries. Do not deform batteries. Do not mix different types of batteries. Do not solder directly onto batteries.

##### Storage

- Storage Condition : Do not let water penetrate into packaging boxes during their storage and transportation. Do not store the batteries in the high temperature exceeding 35 degree C, under direct sunlight or near heat source. Also avoid high humidity. Be sure not to expose the batteries to condensation, water drop or not to store them under frozen condition.

- Safe Packaging Materials : Carton boxes, Wooden boxes.

**8. EXPOSURE CONTROLS AND PERSONAL PROTECTION (in case of electrolyte leakage from the battery)**

- Engineering Measures : No special facility is necessary.  
Occupational Exposure Limits (OELs) : Not specified in ACGIH and OSHA

**Protective Equipments**

- Respiratory Protection : For most condition no respiratory protection.  
Hand Protection : Safety gloves.  
Eye Protection : Safety glasses with side shields must be worn when handling this product.  
Skin and Body Protection : To prevent any contact, wear impervious clothing such as boots or whole body suits as appropriate.

**9. PHYSICAL AND CHEMICAL PROPERTIES****Physical Style**

- Appearance : Cylindrical shape.  
Color : Depend on the design.  
Odor : Odorless~Characteristic odor  
pH : Not Applicable.  
Specific temperatures / Temperature range at which changes in physical state occur : Not Applicable.  
Flash Point : Not Applicable.  
Explosion Properties : Not Data.  
Specific Gravity (g/cm<sup>3</sup>) : Not Data.  
Solubility : Not Applicable.  
Voltage : 1.5 Volts.

**10. STABILITY AND REACTIVITY (Physical Hazard)**

- Stability** : Stable under normal conditions.  
When batteries are short—circuited : There is the possibility that stacking or jumbling batteries cause short circuits, heat generation, leakage or explosion.  
When batteries are recharge : Risk of swelling leakage or explosion, contents may protrude.  
When batteries are heated or disposed in fire : Risk of leakage or explosion.  
When batteries are disassembled : Risk of short circuits. Electrolyte may cause skin itching.  
**Reactivity** : Stable under normal conditions.  
**Hazardous Decomposition Products** : No information.

**11. TOXICOLOGICAL INFORMATION**

- Acute Toxicity : No information as a battery.  
Local Effects : No information as a battery.

**12. ECOLOGICAL INFORMATION**

In case of the worn out battery was disposed in land, the battery case may be corroded, and leak electrolyte. But, we have no ecological information. Heavy metal quantity in a cell

<R20/R6>

- Hg < 1 ppm : Reducing Vaporization Atomic Absorption Spectrometer  
Cd < 10 ppm : Inductively Coupled Plasma Atomic Emission Spectroscopy  
Pb < 1000 ppm : Inductively Coupled Plasma Atomic Emission Spectroscopy

<R03>

Hg	< 1 ppm	: Reducing Vaporization Atomic Absorption Spectrometer
Cd	< 10 ppm	: Inductively Coupled Plasma Atomic Emission Spectroscopy
Pb	≤ 1950 ppm	: Inductively Coupled Plasma Atomic Emission Spectroscopy

### 13. DISPOSAL CONSIDERATIONS

When the battery is worn out, dispose of it under the ordinance of each local government or the law issued by relating government.

### 14. TRANSPORT INFORMATION

As Zinc Carbon battery is listed in Special Provision A123 of IATA Dangerous Goods Regulations when it is shipped by air, alkaline battery is not a regulation substance in the hazardous substance shipping regulations. In addition, this battery requires the following attentions.

- ① Protect the terminals of batteries and prevent them from short circuit so as not to cause dangerous heat generation.
- ② During the transportation of a large amount of batteries by ship, trailer or railway, do not leave them in the places of high temperatures and do not allow them to be exposed to dew condensation.
- ③ Avoid transportation with the possibility of the collapse of cargo piles and the packing damage.

### 15. REGULATORY INFORMATION

No information. (Follow all regulations in your country.)

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This PSDS is described on the basis of present materials, information and data. So, please notice that it will be revised by new information. Also this is supplied to entrepreneurs as reference information in order to handle batteries safety. Please notice that entrepreneurs have to deal with batteries, as they think fit.