

SAFETY DATA SHEET

HCS-2012 APPENDIX D TO §1910.1200

Version 1
Product Name R6(ER6MX ER6X HR6MX HR6X)

Issue Date 11-May-2015
Revision date 11-May-2015

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product identifier

Product Name R6(ER6MX ER6X HR6MX HR6X)
Chemical Name ER6MX ER6X HR6MX HR6X

Other means of identification

Product Type Carbon-Zinc Battery
Product Code Voltage: 1.5V

Recommended use of the chemical and restrictions on use

Recommended Use Power supply
Uses advised against No information available

Details of the supplier of the safety data sheet

Supplier HI-Watt Battery Industry Co., LTD
Address 2308, 23/F, Delta House, 3 On Yiu Street, Shatin, Hong Kong
Postal Code 999077
Phone +852-23480111
FAX +852-27727703
E-mail harley.zhou@hi-watt.com.hk

Emergency telephone number

+852-23480111

2. HAZARDS IDENTIFICATION

GHS Classification

Not classified

Label elements

Symbols/Pictograms None
Signal word None
Hazard Statements None
Precautionary Statements
Prevention None
Response None
Storage None
Disposal None

Hazards not otherwise classified (HNOC)

No information available

Unknown acute toxicity

.?% of the mixture consists of ingredient(s) of unknown toxicity

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature Mixture

| Chemical Name | CAS No | Weight-% |
|---------------|-----------|----------|
| Zinc | 7440-66-6 | 25.96 |

| | | |
|-------------------|------------|-------|
| Tin | 7440-31-5 | 20.3 |
| Manganese dioxide | 1313-13-9 | 19.15 |
| Ammonium chloride | 12125-02-9 | 13.96 |
| Graphite | 7782-42-5 | 10.83 |
| Zinc chloride | 7646-85-7 | 5.988 |
| Polystyrene | 9003-53-6 | 2.23 |
| Cellulose | 9004-34-6 | 1.57 |
| Lead | 7439-92-1 | 0.012 |

4. FIRST AID MEASURES

Description of first aid measures

| | |
|----------------|--|
| General advice | Remove contaminated clothing and shoes. If symptoms persist, call a physician. |
| Inhalation | If fumes from reactions are inhaled, move to fresh air immediately. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If breathing is difficult, give oxygen. |
| Skin Contact | In case of contact with substance, keep exposed skin areas immersed in water or covered with wet bandages until medical attention is received. |
| Eye contact | Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician. |
| Ingestion | Rinse mouth. Get medical attention. Never give anything by mouth to an unconscious person. |

Most important symptoms and effects, both acute and delayed

No information available.

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Extinguishing media

Suitable extinguishing media Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media No information available.

Specific hazards arising from the chemical

Thermal decomposition can lead to release of irritating and toxic gases and vapors

Keep product and empty container away from heat and sources of ignition

In the event of fire and/or explosion do not breathe fumes

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.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Evacuate personnel to safe areas

Ensure adequate ventilation, especially in confined areas

Remove all sources of ignition

Use personal protection recommended in Section 8

Methods and material for containment and cleaning up

Should not be released into the environment

Pick up and transfer to properly labeled containers

7. HANDLING AND STORAGE

Precautions for safe handling

- Handle in accordance with good industrial hygiene and safety practice
- Ensure adequate ventilation, especially in confined areas
- Avoid creating dust
- Avoid contact with eyes
- Wash thoroughly after handling
- Use personal protection recommended in Section 8

Conditions for safe storage, including any incompatibilities

- Keep containers tightly closed in a dry, cool and well-ventilated place
- Keep away from heat

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

| Chemical Name | ACGIH TLV | OSHA PEL | NIOSH IDLH | Denmark | European Union |
|---------------------------------------|---|--|---|-----------------------------|-------------------------------|
| Manganese dioxide (CAS #: 1313-13-9) | TWA: 0.02 mg/m ³ Mn TWA: 0.1 mg/m ³ Mn | (vacated) Ceiling: 5 mg/m ³ Ceiling: 5 mg/m ³ Mn | IDLH: 500 mg/m ³ Mn TWA: 1 mg/m ³ Mn STEL: 3 mg/m ³ Mn | TWA: 0.2 mg/m ³ | - |
| Tin (CAS #: 7440-31-5) | TWA: 2 mg/m ³ TWA: 2 mg/m ³ Sn except Tin hydride | - | IDLH: 100 mg/m ³ IDLH: 100 mg/m ³ Sn TWA: 2 mg/m ³ TWA: 2 mg/m ³ except Tin oxides Sn | TWA: 2 mg/m ³ | TWA 2 mg/m ³ as Sn |
| Ammonium chloride (CAS #: 12125-02-9) | STEL: 20 mg/m ³ fume TWA: 10 mg/m ³ fume | (vacated) TWA: 10 mg/m ³ fume (vacated) STEL: 20 mg/m ³ fume | TWA: 10 mg/m ³ fume STEL: 20 mg/m ³ fume | TWA: 10 mg/m ³ | - |
| Zinc chloride (CAS #: 7646-85-7) | STEL: 2 mg/m ³ fume TWA: 1 mg/m ³ fume | TWA: 1 mg/m ³ fume (vacated) TWA: 1 mg/m ³ fume (vacated) STEL: 2 mg/m ³ fume | IDLH: 50 mg/m ³ fume TWA: 1 mg/m ³ fume STEL: 2 mg/m ³ fume | TWA: 0.5 mg/m ³ | - |
| Graphite (CAS #: 7782-42-5) | TWA: 2 mg/m ³ respirable fraction all forms except graphite fibers | - | IDLH: 1250 mg/m ³ TWA: 2.5 mg/m ³ natural respirable dust | TWA: 2.5 mg/m ³ | - |
| Cellulose (CAS #: 9004-34-6) | TWA: 10 mg/m ³ | - | TWA: 10 mg/m ³ total dust TWA: 5 mg/m ³ respirable dust TWA: 1 mg/m ³ | TWA: 1 mg/m ³ | - |
| Lead (CAS #: 7439-92-1) | TWA: 0.05 mg/m ³ TWA: 0.05 mg/m ³ Pb | - | IDLH: 100 mg/m ³ IDLH: 100 mg/m ³ Pb TWA: 0.050 mg/m ³ TWA: 0.050 mg/m ³ Pb | TWA: 0.05 mg/m ³ | TWA: 0.15 mg/m ³ |

| Chemical Name | Latvia | France | Finland | Germany | Italy |
|--------------------------------------|----------------------------|--------|--|--|-------|
| Zinc (CAS #: 7440-66-6) | | - | - | TWA: 0.1 mg/m ³ TWA: 2 mg/m ³ Ceiling / Peak: 0.4 mg/m ³ Ceiling / Peak: 4 mg/m ³ | - |
| Manganese dioxide (CAS #: 1313-13-9) | TWA: 0.3 mg/m ³ | - | TWA: 0.2 mg/m ³ TWA: 0.1 mg/m ³ | TWA: 0.2 mg/m ³ TWA: 0.02 mg/m ³ Ceiling / Peak: 1.6 mg/m ³ Ceiling / Peak: 0.16 mg/m ³ TWA: 0.5 mg/m ³ | - |

| | | | | | |
|---------------------------------------|---------------------------|---|----------------------------|---|---|
| Tin (CAS #: 7440-31-5) | | - | TWA: 2 mg/m ³ | - | - |
| Ammonium chloride (CAS #: 12125-02-9) | TWA: 10 mg/m ³ | TWA: 10 mg/m ³ | - | - | - |
| Zinc chloride (CAS #: 7646-85-7) | | TWA: 1 mg/m ³ | TWA: 1 mg/m ³ | TWA: 0.1 mg/m ³ TWA: 2 mg/m ³ Ceiling / Peak: 2 mg/m ³ Ceiling / Peak: 0.4 mg/m ³ Ceiling / Peak: 4 mg/m ³ | - |
| Graphite (CAS #: 7782-42-5) | | TWA: 2 mg/m ³ | TWA: 2 mg/m ³ | TWA: 1.5 mg/m ³ TWA: 4 mg/m ³ | - |
| Cellulose (CAS #: 9004-34-6) | | TWA: 10 mg/m ³ TWA: 1 mg/m ³ | - | Skin | TWA: 5.00 mg/m ³ |
| Lead (CAS #: 7439-92-1) | | TWA: 0.1 mg/m ³ | TWA: 0.1 mg/m ³ | Skin | TWA: 0.075 mg/m ³ TWA: 0.15 mg/m ³ |

| Chemical Name | Poland | Portugal | Spain | Switzerland | Netherlands |
|---------------------------------------|---|---|---|----------------------------|-------------|
| Manganese dioxide (CAS #: 1313-13-9) | TWA: 0.3 mg/m ³ | TWA: 0.2 mg/m ³ | TWA: 0.2 mg/m ³ | TWA: 0.5 mg/m ³ | - |
| Ammonium chloride (CAS #: 12125-02-9) | STEL: 20 mg/m ³ TWA: 10 mg/m ³ | STEL: 20 mg/m ³ TWA: 10 mg/m ³ | STEL: 20 mg/m ³ TWA: 10 mg/m ³ | TWA: 3 mg/m ³ | - |
| Zinc chloride (CAS #: 7646-85-7) | STEL: 2 mg/m ³ TWA: 1 mg/m ³ | STEL: 2 mg/m ³ TWA: 1 mg/m ³ | STEL: 2 mg/m ³ TWA: 1 mg/m ³ | TWA: 1 mg/m ³ | - |

| Chemical Name | Norway | United Kingdom | Australia | Austria | Belgium |
|---------------------------------------|--|---|---|--|---------|
| Manganese dioxide (CAS #: 1313-13-9) | TWA: 1 mg/m ³ TWA: 0.1 mg/m ³ STEL: 3 ppm STEL: 0.3 mg/m ³ | TWA: 0.5 mg/m ³ | 1 mg/m ³ | STEL 2 mg/m ³ TWA: 0.5 mg/m ³ | - |
| Tin (CAS #: 7440-31-5) | - | - | 2 mg/m ³ | STEL 4 mg/m ³ TWA: 2 mg/m ³ | - |
| Ammonium chloride (CAS #: 12125-02-9) | TWA: 10 mg/m ³ STEL: 20 mg/m ³ | STEL: 20 mg/m ³ TWA: 10 mg/m ³ | 10 mg/m ³ 20 mg/m ³ STEL | - | - |
| Zinc chloride (CAS #: 7646-85-7) | TWA: 1 mg/m ³ STEL: 3 mg/m ³ | STEL: 2 mg/m ³ TWA: 1 mg/m ³ | 1 mg/m ³ 2 mg/m ³ STEL | - | - |
| Graphite (CAS #: 7782-42-5) | - | - | 3 mg/m ³ | STEL 10 mg/m ³ TWA: 5 mg/m ³ | - |
| Cellulose (CAS #: 9004-34-6) | - | - | 10 mg/m ³ | - | - |
| Lead (CAS #: 7439-92-1) | - | - | 0.15 mg/m ³ | STEL 0.4 mg/m ³ TWA: 0.1 mg/m ³ | - |

Appropriate engineering controls

Ensure adequate ventilation, especially in confined areas
Remove all sources of ignition

Individual protection measures, such as personal protective equipment

| | |
|--------------------------|---|
| Respiratory protection | If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations. |
| Hand Protection | No special technical protective measures are necessary. |
| Eye/face protection | No special technical protective measures are necessary. |
| Skin and body protection | Wear suitable protective clothing. |

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

| | |
|----------------|----------------|
| Appearance | Solid |
| Color | Black |
| Odor | None |
| Odor Threshold | Not determined |
| pH | Not determined |

| | |
|--------------------------------|--|
| Melting point/freezing point | 419 °C |
| Boiling point / boiling range | Not determined |
| Flash point | Not applicable |
| Evaporation rate | Not determined |
| Flammability (solid, gas) | Not flammable |
| Flammability Limit in Air | Not applicable |
| Vapor Pressure | Not applicable |
| Vapor density | Not applicable |
| Density | Not determined |
| Relative density | Not determined |
| Bulk density | Not determined |
| Specific gravity | Not determined |
| Water solubility | Insoluble in water |
| Partition coefficient (LogPow) | Manganese dioxide: <0 Ammonium chloride: -3.2 |
| Autoignition temperature | Not applicable |
| Decomposition temperature | Not determined |
| Kinematic viscosity | Not determined |
| Dynamic viscosity | Not determined |
| Explosive properties | Not an explosive |
| Oxidizing properties | Not determined |

Other information

No 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

Possibility of Hazardous Reactions

None under normal processing

Conditions to avoid

Extremes of temperature and direct sunlight

Incompatible materials

None known based on information supplied

Hazardous Decomposition Products

None known based on information supplied

11. TOXICOLOGICAL INFORMATION**Information on likely routes of exposure**

| | |
|--------------|--|
| Inhalation | Not an expected route of exposure |
| Eye contact | No eye irritation under normal conditions |
| Skin Contact | Non-irritating to the skin under normal conditions |
| Ingestion | Ingestion may be harmful |

Information on toxicological effects**Acute toxicity**

| Chemical Name | Oral LD50 | Dermal LD50 | Inhalation LC50 |
|---------------|-----------|-------------|-----------------|
|---------------|-----------|-------------|-----------------|

| | | | |
|---------------------------------------|----------------------|----------------------|------------------|
| Manganese dioxide (CAS #: 1313-13-9) | = 9000 mg/kg (Rat) | - | - |
| Ammonium chloride (CAS #: 12125-02-9) | = 1410 mg/kg (Rat) | > 2000 mg/kg bw | - |
| Zinc chloride (CAS #: 7646-85-7) | = 350 mg/kg (Rat) | - | - |
| Cellulose (CAS #: 9004-34-6) | >3160 mg/kg bw (rat) | >2000 mg/kg bw (rat) | >5.35 mg/L (rat) |

Skin corrosion/irritation

Non-irritating to the skin

Serious eye damage/eye irritation

No eye irritation

Sensitization

No information available

Germ cell mutagenicity

No information available

Carcinogenicity

| Chemical Name | ACGIH | IARC | NTP | OSHA |
|--------------------------------|-------|----------|-----|------|
| Cellulose (CAS #: 9004-34-6) | - | Group 1 | - | - |
| Polystyrene (CAS #: 9003-53-6) | - | Group 3 | - | - |
| Lead (CAS #: 7439-92-1) | A3 | Group 2A | - | - |

Reproductive toxicity

No information available

STOT - single exposure

No information available

STOT - repeated exposure

No information available

Aspiration hazard

No information available

12. ECOLOGICAL INFORMATION

Ecotoxicity

| Chemical Name | Algae/aquatic plants EC50 | Fish LC50 | Crustacea EC50 |
|-------------------------|--|--|---|
| Zinc (CAS #: 7440-66-6) | 0.11 - 0.271 mg/L/96h Pseudokirchneriella subcapitata static 0.09 - 0.125 mg/L/72h Pseudokirchneriella subcapitata static | 2.16 - 3.05 mg/L/96h Pimephales promelas flow-through 0.211 - 0.269 mg/L/96h Pimephales promelas semi-static 2.66: mg/L/96h Pimephales promelas static 30 mg/L/96h Cyprinus carpio 0.45 mg/L/96h Cyprinus carpio semi-static 7.8 mg/L/96h Cyprinus carpio static 3.5 mg/L/96h Lepomis macrochirus static 0.24 mg/L/96h Oncorhynchus | 0.139 - 0.908 mg/L/48h Daphnia magna Static |

| | | | |
|---------------------------------------|---|---|-----------------------------|
| | | mykiss flow-through 0.59 mg/L/96h Oncorhynchus mykiss semi-static 0.41 mg/L/96h Oncorhynchus mykiss static | |
| Ammonium chloride (CAS #: 12125-02-9) | 1300 mg/L/5d (Chlorella vulgaris) 90.4 mg/L/5d(Navicula sp.) | 209 mg/L/96h(Cyprinus carpio) 174 mg/L/96h | 101 mg/L/48h(Daphnia magna) |
| Cellulose (CAS #: 9004-34-6) | >100mg/L | >100mg/L | >100mg/L |
| Lead (CAS #: 7439-92-1) | - | 0.44: 96 h Cyprinus carpio mg/L LC50 semi-static 1.17: 96 h Oncorhynchus mykiss mg/L LC50 flow-through 1.32: 96 h Oncorhynchus mykiss mg/L LC50 static | - |

Persistence and degradability

No information available

Bioaccumulative potential

| Chemical Name | Partition coefficient (LogPow) |
|---------------------------------------|--------------------------------|
| Manganese dioxide (CAS #: 1313-13-9) | <0 |
| Ammonium chloride (CAS #: 12125-02-9) | -3.2 |

| Chemical Name | Bioconcentration factor (BCF) |
|----------------------------------|-------------------------------|
| Zinc chloride (CAS #: 7646-85-7) | 16000 |

Mobility in soil

No information available

Other adverse effects

No information available

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal of wastes Disposal should be in accordance with applicable regional, national and local laws and regulations
 Contaminated packaging Dispose of in accordance with federal, state and local regulations

| Chemical Name | California Hazardous Waste Status |
|----------------------------|-----------------------------------|
| Zinc 7440-66-6 | Ignitable powder Toxic |
| Zinc chloride 7646-85-7 | Toxic Corrosive |
| Lead 7439-92-1 | Toxic |

14. TRANSPORT INFORMATION

Not regulated as a dangerous goods for transportation according to IATADGR 56th, IMDG Code 37-14 edition, UN TDG Rev.18)

DOT

UN/ID No. Not regulated
Proper shipping name Not regulated
Hazard Class Not regulated
Packing Group Not regulated
Special precautions Batteries must be separated from each other and prevent movement that could lead to short-circuits. Products must also be packed in strong packaging that can withstand the rigors normal to transportation.

Marine pollutant Not applicable

15. REGULATORY INFORMATION

International Inventories

| Component | AICS | DSL/NDSL | EINECS/ELI NCS | ENCS | IECSC | KECL | PICCS | TSCA |
|---|------|----------|-------------------|--------|-------|------|-------|------|
| Zinc 7440-66-6 (25.96%) | X | X | X | Expect | X | X | X | X |
| Tin 7440-31-5 (20.3%) | X | X | X | Expect | X | X | X | X |
| Manganese dioxide 1313-13-9 (19.15%) | X | X | X | X | X | X | X | X |
| Ammonium chloride 12125-02-9 (13.96%) | X | X | X | X | X | X | X | X |
| Graphite 7782-42-5 (10.83%) | X | X | X | Expect | X | X | X | X |
| Zinc chloride 7646-85-7 (5.988%) | X | X | X | X | X | X | X | X |
| Polystyrene 9003-53-6 (2.23%) | X | X | - | Expect | X | - | - | - |
| Cellulose 9004-34-6 (1.57%) | X | X | X | X | X | X | X | X |
| Lead 7439-92-1 (0.012%) | X | X | X | X | X | X | X | X |

"-" Not Listed
"X" Listed

US Federal Regulations

SARA 313

| Chemical Name | SARA 313 - Threshold Values % |
|--------------------------------|-------------------------------|
| Zinc - 7440-66-6 | 1.0 |
| Manganese dioxide - 1313-13-9 | 1.0 |
| Ammonium chloride - 12125-02-9 | 1.0 |
| Zinc chloride - 7646-85-7 | 1.0 |

SARA 311/312 Hazard Categories

CWA (Clean Water Act)

| Chemical Name | CWA - Reportable Quantities | CWA - Toxic Pollutants | CWA - Priority Pollutants | CWA - Hazardous Substances |
|---------------------------------|-----------------------------|------------------------|---------------------------|----------------------------|
| Zinc 7440-66-6 | - | X | X | - |
| Ammonium chloride 12125-02-9 | 5000 lb | - | - | X |
| Zinc chloride 7646-85-7 | 1000 lb | X | - | X |
| Lead 7439-92-1 | - | X | X | - |

CERCLA

| Chemical Name | Hazardous Substances RQs | CERCLA/SARA RQ | Reportable Quantity (RQ) |
|---------------|--------------------------|----------------|--------------------------|
|---------------|--------------------------|----------------|--------------------------|

| | | | |
|---------------------------------|---------|---|--|
| Zinc 7440-66-6 | 1000 lb | - | RQ 454 kg final RQ RQ 1000 lb final RQ |
| Ammonium chloride 12125-02-9 | 5000 lb | - | RQ 5000 lb final RQ RQ 2270 kg final RQ |
| Zinc chloride 7646-85-7 | 1000 lb | - | RQ 1000 lb final RQ RQ 454 kg final RQ |

US State Regulations**California Proposition 65**

| Chemical Name | California Proposition 65 |
|-----------------------|---|
| Cellulose - 9004-34-6 | Carcinogen |
| Lead - 7439-92-1 | Carcinogen Developmental Female Reproductive Male Reproductive |

U.S. State Right-to-Know Regulations

| Chemical Name | New Jersey | Massachusetts | Pennsylvania |
|---------------------------------|------------|---------------|--------------|
| Zinc 7440-66-6 | X | X | X |
| Manganese dioxide 1313-13-9 | X | - | X |
| Ammonium chloride 12125-02-9 | X | X | X |
| Zinc chloride 7646-85-7 | X | X | X |

16. OTHER INFORMATION**Revision Note**

| | |
|---------------|----------------|
| Issue Date | 11-May-2015 |
| Revision date | 11-May-2015 |
| Revision Note | Not applicable |

Key or legend to abbreviations and acronyms used in the safety data sheet

- TWA** - TWA (time-weighted average)
STEL - STEL (Short Term Exposure Limit)
Ceiling - Maximum limit value
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

Disclaimer

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

----- End of Safety Data Sheet -----