



Material Safety Data Sheet (MSDS)

Secondary Nickel-Metal Hydride Sealed Cells

Date: 2009-3-10 Prepared by: Pang Liuping

The information contained within is provided as a service to our customers and for their information only. The information and recommendations set forth herein are made in good faith and are believed to be accurate at the date compiled SUPPO makes no warranty expressed or implied.

1. IDENTIFICATION

1.1 Product

Sealed rechargeable Cells

Trade name and model; All types in steel container.

IEC designation: HR.... According IEC 285

Electrochemical system: Nickel/Metal hydride, alkaline electrolyte

Electrodes:

Positive: Nickel hydroxide

Negative: metal hydride

Electrolyte: Potassium hydroxide water solution.

Nominal voltage: 1.2 Volts

1.2 Supplier

Name: SUPPO

Address: No, 269, Anqian Road, High-tech (east) District, Anshan, Liaoning, 114051, China

Tel/Fax: +86-412-2516884/2516888-412-2516886

Emergency contact: SUPPO local dealer.

2. COMPOSITION(Weigh percentage of basic materials)

Medium single cell with steel container

| Metals           |    | %       | Plastics         | %       | Others    | %         |
|------------------|----|---------|------------------|---------|-----------|-----------|
| Iron             | Fe | 23-27   | Polypropylene PP | 2.5-3.5 | Potassium | K 1.8-2.5 |
| Nickel           | Ni | 17-23   | Rubber EPDM      | <0.05   | Water     | H2O 4-7   |
| Metal Hydride MH |    | 25-35   | Polyethylene PE  | 0.2-0.4 | OH-       | 9-11      |
| Cobalt           | Co | 0.4-1.0 | PVC              | 0.5-0.7 |           |           |

### 3. Hazards

A sealed Nickel-Metal Hydride cell is not hazardous on principle.

#### 3.1 Physical

No risk if cells are used for its intended purpose and according to valid directions for use.

#### 3.2 Chemical

In normal use, no chemical risk.

On some bad using conditions (high over charge, external short circuit...) and in case of a bad functioning, some electrolyte can be removed from the cell by the security vent.

In these cases the risk is the caustic nature of electrolyte.

The toxic properties of the electrode materials are hazardous only if the materials are released by damaging the cell or if exposed to fire.

Classification of dangerous substances contained into the cells.

| SUBSTANCKES            |                           |            |             | CLASSIFICATION |                              |                      |                     |
|------------------------|---------------------------|------------|-------------|----------------|------------------------------|----------------------|---------------------|
| Name                   | EEC Number<br>Number      | CAS        | Symbol      | Letter         | Identificatio<br>n of danger | Special<br>risk(1)   | Safety<br>advice(2) |
| Nickel<br>Hydroxide    | 028-008-x*                | 12054-48-7 | Ni(OH)<br>2 | Xn             | Harmful                      | R<br>20/22-4<br>3-40 | S 22/36             |
| Cobalt<br>Hydroxide    | 21041-93-0                |            | Co(OH)<br>2 | Xn             | Harmful                      | R22-42/<br>43        | S22-24-37           |
| Potassium<br>Hydroxide | 019-002-00-81310-<br>58-3 |            | KOH         | C              | Corrosive                    | R 35                 | S 26-37/39-45       |

#### (1) Nature of special risk

R 20/21/22: Harmful by inhalation, skin contact or if swallowed.

R 20/22: Harmful by inhalation or if swallowed.

R 35: Causes serious burns.

R 40: Possible risk of irreversible effects.

R 43: Many cause sensitizing by skin contact.

R 42/43: Many cause sensitizing by inhalation and skin contact.

#### (2) Safety advice

S 22: Do not breathe dust.

S 24: Avoid contact with skin.

S 26: In case of contact with eyes, rinse immediately with plenty of water and seek medical



advice.

S 36: Wear suitable protection clothing.

S 37: Wear suitable gloves.

S37/39: Wear suitable gloves and eyes/face protection.

S45: In case of accident or if you feel unwell, seek medical advice immediately.

#### **4. FIRST AID MEASURES**

In case of electrolyte leakage precautions must be taken to avoid personal to get in direct contact with it. If it accidentally happens following must be done:

##### **4.1 Inhalation**

Fresh air. Rinse mouth and nose with water. Medical treatment.

##### **4.2 Skin contact**

Rinse immediately with plenty of water. Medical treatment.

##### **4.3 Eyes contact**

Rinse immediately with plenty of water during at least 15-30 min. Immediately hospital treatment. Eye specialist.

##### **4.4 Ingestion**

If the injured is fully conscious: plenty of drink, preferably milk. Do not induce vomiting. Immediate Hospital treatment.

#### **5. FIRE FIGHTING MEASURES**

##### **5.1 Extinguishing media**

Suitable: Class D-Dry chemical, sand.

Not to be used: Water.

##### **5.2 Special exposure hazards**

Cells can be overheated by an external source or by internal shorting and develop potassium hydroxide mist and/or hydrogen gas. In fire situations fumes containing Nickel, cobalt and iron may evolved.

##### **5.3 Special protective equipment**

Use self-contained breathing apparatus and full fire-fighting protective clothing.

#### **6. HANDLING AND STORAGE**



No hazards during handling, no electrolyte can pour out of the sealed NI-MH cells.

Storage following SUPPO specifications: +5 to +25°C in a 65 +/- 5% relative humidity.

## **7. EXPOSURE CONTROLS/PERSONAL PROTECTION**

Under normal condition of use and handling no special protection is required for sealed NI-MH cells.

## **8. PHYSICAL PROPERTIES**

### 8.1 Appearance

Physical shape and colour as supplied.

### 8.2 Temperature range

Continuous: +5 to +25°C .

Occasional: -40 to +50°C .

### 8.3 Specific energy

65 to 75 Wh/Kg

Note: Wh=Nominal voltage x rated Ah as defined in IEC standard.

Kg: Average battery weight in Kg.

### 8.4 Specific instant power

About: 1500 W/Kg

Note:  $w = 0.5 \times \text{nominal voltage} \times I_p$

With  $I_p$ = current in Amperes delivered by a fully charged battery for half the nominal Voltage at one second.

$R_g$ = Average battery weight in Kg.

### 8.5 Mechanical resistance

As defined in relevant IEC standard.

## **9. STABILITY AND REACTIVITY**

### 9.1 Conditions

Temperature over 85°C. Internal shortage. Melting of gasket and rubber of vent.



## 9.2 Hazardous decomposition products

Nickel compounds, Cobalt compounds, Caustic liquid.

## 10. TOXICOLOGICAL INFORMATION

Nickel hydroxide LD50/oral/rat: 1600 mg/Kg

Potassium hydroxide Ld50/oral/rat: 365 mg/Kg

Cobalt hydroxide LD50. Not available

## 11. ECOLOGICAL INFORMATION

Ni-MH cells contain no cadmium, no mercury, no lead and no toxic metals.

## 12. DISPOSAL CONSIDERATIONS

### 12.1 Incineration.

Never incinerate NI-MH batteries.

### 12.2 Landfill

Never dispose NI-MH batteries as landfill.

### 12.3 Recycling

NI-MH batteries can be recycled.

### 12.4 Additional information

Dispose in accordance with all applicable federal, state and local regulations.

Nickel Metal Hydride batteries- which in some countries may not be subject to collection & recycling and/or disposal requirements- do however contain recyclable materials and SUPPO recommends proper recycling of these batteries whenever possible.

You may refer to the following web page for further information and guidance:

[www.collectnicad.org\(1\)](http://www.collectnicad.org(1))

You can also contact SUPPO.

(1) This page provides links to different National Battery Associations and National Collection & recycling Organizations that can provide you with the latest update on collection & recycling in their respective CO

## 13. TRANSPORT INFORMATION

Sealed Ni-MH batteries don't require specific transport obligations.