SAFETY DATA SHEET
SECONDARY BATTERY
(FORM: EEC Directive 93/112)

1. IDENTIFICATION

1.1. PRODUCT
NICKEL CADMIUM BATTERY (Rechargeable & Alcaline & vented)
Trade name: NBL, NBM, NBH, NAL, NAM, NAH, NFL, NFM, ANM, ANL, SOL, NPH, H14E, and other plastics/steel cells.
IEC Designation: KH ; KM ; KL acc. To IEC 60623
Proper shipping name: BATTERIES, WET, FILLED WITH ALKALI electric storage.
Electrochemical System: Nickel Cadmium, alcaline electrolyte.

<table>
<thead>
<tr>
<th>Electrode Positive</th>
<th>Nickel hydroxide and Cobalt hydroxide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrode Negative</td>
<td>Nickel Plated</td>
</tr>
<tr>
<td>Electrolyte Nominal</td>
<td>Cadmium Hydroxide and iron oxide on Nickel plated subtrade</td>
</tr>
<tr>
<td>Voltage</td>
<td>Potassium Hydroxide + water</td>
</tr>
<tr>
<td></td>
<td>1,2 V</td>
</tr>
</tbody>
</table>

1.2. SUPPLIER
NAME: SAFT S.A. (HEADQUARTER)
Address: 12 rue Sadi Carnot – 93170 BAGNOLET – France –
Phone/Fax: +33 (0) 1 49 93 19 18 / +33 (0) 1 49 93 19 50
Nom de l’usine: SAFT OSKARSHAMN
Address: Jungnergatan – Box 709 SE-572 28 OSKARSHAMN – Sweden -
Phone/Fax: +46 491 68 000/ + 46 491 68 180

1.3. EMERGENCY CONTACT: www.nicadpower.com look for « contact ».

2. COMPOSITION (weight percentage of basic materials)

2.1. MEDIUM SIZE SINGLE CELL WITH STEEL CONTAINER

<table>
<thead>
<tr>
<th>Métal %</th>
<th>Plastic %</th>
<th>Other %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel Fe</td>
<td>20</td>
<td>Polypropylène 8-11</td>
</tr>
<tr>
<td>Nickel Ni</td>
<td>3-10</td>
<td>Lithium Hydroxide 0,5</td>
</tr>
<tr>
<td>Cadmium Cd</td>
<td>3-10</td>
<td>Carbon 2-4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Water 28-35</td>
</tr>
</tbody>
</table>

2.2. MEDIUM SIZE SINGLE CELL WITH PLASTIC CONTAINER

3. HAZARDS

3.1. PHYSICAL

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

If the directions for use are not followed as regards ventilation, oxygen and hydrogen gas, which may developed during over charging the batteries, can be collected in battery box or room. If the gas is ignited by an electric spark or open fire, a violent explosion may occur.
3.2 CHEMICAL

In normal use the only chemical risk is the caustic nature of the electrolyte. Precautions must be taken when emptying and filling the battery cells. The properties of the electrode materials are hazardous only if the materials are released by crushing the battery or if it is exposed to fire.

CLASSIFICATION OF DANGEROUS SUBSTANCES CONTAINED INTO THE PRODUCT.

<table>
<thead>
<tr>
<th>Name</th>
<th>Chemical Form</th>
<th>EINEC number</th>
<th>CAS Number</th>
<th>Letter</th>
<th>Identifications of danger</th>
<th>Special risk (1)</th>
<th>Safety device -2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nickel hydroxide</td>
<td>Ni (OH)₂</td>
<td>235-008-5</td>
<td>12054-48-7</td>
<td>Xn</td>
<td>Harmful</td>
<td>R20/22 R40, R43</td>
<td>S2, S22, S26</td>
</tr>
<tr>
<td>Cadmium hydroxide</td>
<td>Cd(OH)₂</td>
<td>244-168-5</td>
<td>21041-95-2</td>
<td>Xn</td>
<td>Harmful</td>
<td>R20/21/22 R50/53</td>
<td>S2, S60, S61</td>
</tr>
<tr>
<td>Lithium hydroxide</td>
<td>Li OH</td>
<td>215-183-4</td>
<td>1310-65-2</td>
<td>C</td>
<td>Not classified</td>
<td>Not classified</td>
<td>Not classified</td>
</tr>
<tr>
<td>Cobalt hydroxide</td>
<td>Co(OH)₂</td>
<td>244-166-4</td>
<td>21041-93-0</td>
<td>C</td>
<td>Not classified</td>
<td>Not classified</td>
<td>Not classified</td>
</tr>
<tr>
<td>Chromium</td>
<td>Cr</td>
<td>231-157-5</td>
<td>774-47-3</td>
<td>Not classified</td>
<td>Not classified</td>
<td>Not classified</td>
<td></td>
</tr>
</tbody>
</table>

(1) Nature of special risk

- R20/22 Harmful by inhalation and if swallowed
- R20/21/22 Harmful by inhalation, in contact with skin and if swallowed.
- R22 Harmful if swallowed.
- R35 Causes severe burns.
- R36/37 Irritating to eyes and respiratory system.
- R40 Limited evidence of a carcinogenic effect.
- R43 May cause sensitization by skin contact.
- R50/53 Very Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

(2) Safety advice

- S ½ Keep locked up and out of the reach of children.
- S2 Keep out of the reach of children
- S22 Do not breathe dust
- S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
- S36/37/39 Wear suitable protective clothing, gloves and eyes/face protection.
- S45 In case of accident or if you feel unwell, seek medical advice immediately.
- S60 Must be disposed of as hazardous waste.
- S61 Avoid release to the environment.

4. FIRST AID MEASURES

When handling electrolyte, precautions must be taken to avoid personal to get in direct contact with it. If this accidentally happens the following must be exercised:

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:

- Important: Rinse immediately with plenty of water during at least 15-30 minutes.

4.4. Ingestion:

- If the injured is fully conscious: plenty of drink; preferable milk. Do not induce vomiting. Immediately 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 Cadmium, Nickel and Iron may be evolved.

5.3. **Special protective equipment**

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

6. **ACCIDENTAL RELEASE MEASURES**

Flush electrolyte spillage with plenty of water. Beware risk of slipping.

7. **HANDLING AND STORAGE**

Handle and store cells filled with electrolyte always with vents upwards. Store in a dry place.

8. **EXPOSURE CONTROLS/PERSONAL PROTECTION**

When emptying or filling cells with electrolyte, eye protection glasses and protection gloves must be used. Under normal condition of use no special personnel protection is required.

9. **PHYSICAL PROPERTIES**

9.1. **Appearance**

Physical shape and colour as supplied.

9.2. **Temperature range (ambient °C)**

<table>
<thead>
<tr>
<th>Cell Type</th>
<th>Continuous</th>
<th>Occasional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel container</td>
<td>-40 +50</td>
<td>-50 +85</td>
</tr>
<tr>
<td>Plastic container</td>
<td>-40 +50</td>
<td>-50 +70</td>
</tr>
</tbody>
</table>

9.3. **Specific energy : 13-22 Wh/kg**

*Note: WH : Nominal voltage x rated Ah as defined in IEC standard.

Kg : Average battery weight in kg.

9.4. **Specific instant power : 53-106 W/kg**

*Note: W = 0.5 x nominal voltage x Ip with Ip = current in Amperes delivered by a fully charged battery for half the nominal voltage at one second.

Kg = Average battery weight in kg.

9.5. **Mechanical resistance**

As defined in relevant IEC standard.

10. **STABILITY AND REACTIVITY**

10.1. **Conditions to avoid**

Temperatures over 85°C. short-circuit of electrode connections. Deformation of cells.

10.2. **Material to avoid**

Do not fill cells with lead/acid battery electrolyte.

10.3. **Hazardous decomposition products**

Nickel compounds, Cadmium compounds, Caustic liquid.

11. **TOXICOLOGICAL INFORMATION**

<table>
<thead>
<tr>
<th>Substance</th>
<th>LD50 / oral / rat</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nickel hydroxide</td>
<td>1600mg / kg*</td>
<td></td>
</tr>
<tr>
<td>Cadmium Hydroxide</td>
<td>No data available</td>
<td></td>
</tr>
<tr>
<td>Potassium Hydroxide</td>
<td>365mg / kg*</td>
<td></td>
</tr>
<tr>
<td>Lithium Hydroxide</td>
<td>No data available</td>
<td></td>
</tr>
</tbody>
</table>

* (INRS data)
12. ECOLOGICAL INFORMATION

See item n° 3

13. DISPOSAL CONSIDERATIONS

13.1. Incineration

Never incinerate NiCd cells.

13.2. Landfill

Never dispose NiCd cells as landfill.

13.3. Recycling

NiCd cells must be recycled. Contact local NICA dealer for information.

14. TRANSPORT INFORMATION

14.1. United Nations

UN N° : 2795

14.2. International conventions

Air : IATA
Sea : IMDG
Land : ADR (road) or RID (rail) Batteries exempt acc to special paragraph n° 598.

<table>
<thead>
<tr>
<th>UN N°</th>
<th>NAME</th>
<th>RAIL &amp; ROAD (ADR)</th>
<th>SEA (IMDG)</th>
<th>AIR (IATA)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Proper shipping name</td>
<td>CL</td>
<td>Code</td>
<td>Packing group</td>
</tr>
<tr>
<td>2795</td>
<td>WET, FILLED WITH ALKALI Electric storage</td>
<td>8</td>
<td>C-11</td>
<td>***</td>
</tr>
</tbody>
</table>

15. REGULATORY INFORMATION

According to item 14.2.

16. OTHER INFORMATIONS

None.

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