



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

Date of issue: MARCH 2004
REF. MSDS-IBG-NICA-EN

1. IDENTIFICATION

- 1.1. **PRODUCT** NICKEL CADMIUM BATTERY (Rechargeable & Alkaline & 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, alkaline electrolyte.

Electrode Positive	Nickel hydroxide and Cobalt hydroxide Nickel Plated
Electrode Négative	Cadmium Hydroxyde and iron oxide on Nickel plated substrade
Electrolyte Nominal voltage	Potassium Hydroxide + water 1,2 V

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**
2.2. **MEDIUM SIZE SINGLE CELL WITH PLASTIC CONTAINER**

Métals %	Plastic %	Other %
Steel Fe 20	Polypropylène 8-11	Potassium Hydroxyde 5,5-6,2
Nickel Ni 3-10		Lithium Hydroxyde 0,5
Cadmium Cd 3-10		Carbon 2-4
		Water 28-35

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.

SUBSTANCES				CLASSIFICATION			
Name	Chemical	EINEC number	CAS Number	Letter	Identifications of danger	Special risk (1)	Safety device -2
Nickel hydroxide	Ni (OH) ₂	235-008-5	12054-48-7	Xn	Harmful	R20/22 R40, R43	S2, S22, S26
Cadmium hydroxide	Cd(OH) ₂	244-168-5	21041-95-2	Xn	Harmful	R20/21/22 R50/53	S2, S60, S61
Potassium	KOH	215-181-3	1310-58-3	C Xi	Corrosive	R35, R22, R36/37	S1/2, S26, S36/37/39, S45
Lithium hydroxide	Li OH	215-183-4	1310-65-2	C	Not classified	Not classified	Not classified
Cobalt hydroxide	Co(OH) ₂	244-166-4	21041-93-0	C	Not classified	Not classified	Not classified Not classified
Chromium	Cr	231-157-5	774-47-3		Not classified	Not classified	Not classified

(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)

Cell Type	Continuous	Occasional
Steel container	-40 +50	-50 +85
Plastic container	-40 +50	-50 +70

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 : $W = 0.5 \times \text{nominal voltage} \times I_p$ with I_p = current in Amperes delivered by a fully charged battery for half the nominal voltage at one second.

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

Nickel hydroxide LD50 / oral / rat : 1600mg / kg*

Cadmium Hydroxyde No data available

Potassium Hydroxyde LD50 / oral / rat : 365 mg / kg*

Lithium Hydroxyde No data available.

* (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.

UN N°	NAME	RAIL & ROAD (ADR)				SEA (IMDG)					AIR (IATA)			
		CL	Code	Packing group	Labelling	CL	Risk	EmS	Packing group	Labelling	CL	Risk	Packing group	Labelling
2795	WET, FILLED WITH ALKALI Electric storage	8	C 11	***	None	8	***	F-A, S-B.	III	8	8	***	***	8

15. REGULATORY INFORMATION

According to item 14.2.

16. OTHER INFORMATIONS

None.

Disclaimer : This information has been compiled for sources considered to be dependable and is, to the best of our knowledge and belief, accurate and reliable as of the dated compiled. However, no representation, warranty (either expressed or implied) or guarantee is made to the accuracy, reliability or completeness of the information contained herein. This information relates to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. It is the user's responsibility to satisfy himself as to the suitability and completeness of this information for his own particular use. We do not accept liability for any loss or damage that may occur, whether direct, indirect, incidental or consequential, from the use of this information nor do we offer warranty against patent infringement. Additional information is available by calling the telephone number above designated for this purpose.