



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

Date of issue : APRIL 2003  
REF. MSDS-IBG-Bdx-EN

**1. IDENTIFICATION**

- 1.1. PRODUCT** NICKEL CADMIUM BATTERY (Rechargeable & Alkaline & vented)  
**Trade name :** SRX, SRM, SM, SPH, STH, STM, NCX, VO, MRX, 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.

<b>Electrode Positive</b>	Nickel hydroxide and Cobalt hydroxide Nickel Plated
<b>Electrode Négative</b>	Cadmium Hydroxyde on Nickel plated substrade
<b>Electrolyte</b>	Potassium Hydroxide + water
<b>Nominal voltage</b>	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 Bordeaux  
**Address :** 111/113 Boulevard Alfred DANEY – 33074 BORDEAUX – France –  
**Phone/Fax :** +33 (0) 5 57 10 64 00/ +33 (0) 5 57 10 66 70

**1.3. EMERGENCY CONTACT :** [www.saftbatteries.com](http://www.saftbatteries.com) look for « contact ».

**2. COMPOSITION (weight percentage of basic materials)**

**2.1. MEDIUM SIZE SINGLE CELL WITH STEEL CONTAINER**

Métals%	Plastic %	Other %
Steel Fe 43-51	Polypropylene 1,1-1,6	Potassium hydroxide 5,4-5,8
Nickel Ni 5-10		Lithium Hydroxyde 0,5
Cadmium Cd 5-14		
Chromium Cr 2,3-2,6		Water 27-31
Cobalt < 0.3		

**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 5-10		Lithium Hydroxyde 0,5
Cadmium Cd 5-14		
		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	EINECS Number	CAS Number	Letter	Identification of danger	Special risk (1)	Safety advice -2
Nickel hydroxide	Ni (OH) <sub>2</sub>	235-008-5	12054-48-7	Xn	Harmful	R20/22 R40, R43	S2, S22, S26
Cadmium hydroxide	Cd (OH) <sub>2</sub>	244-168-5	21041-95-2	Xn	Harmful	R20/21/22 R50/53	S2, S60, S61
Potassium hydroxide	KOH	215-181-3	1310-58-3	C Xi	Corrosive Irritant	R35, R22, R36/37	S <sup>1/2</sup> , 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) <sub>2</sub>	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<sub>1/2</sub> 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 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

Nickel hydroxide LD<sub>50</sub>/ oral / rat : 1600mg / kg\*

Cadmium Hydroxyde No data available

Potassium Hydroxyde LD<sub>50</sub>/ 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 Saft dealer for information. Saft has a recycling plant for all types of NiCd cells.

## 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	BATTERIES, WET, FILLED WITH ALKALI Electric storage	8	C 11	***	None	8	***	8-10	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 date 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.