
MATERIAL SAFETY DATA SHEET

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Section I – Product Identification

Product Name: Nickel Metal Hydride (NiMH) Battery

Trade Name: All Types in Steel Container

IEC Designation: HR... According to IEC 285

Chemical System: NiMH, Alkaline Electrode

Designated for Recharge: ☒ Yes ☐ No

Positive Electrode: Nickel Hydroxide

Negative Electrode: Metal Hydride

Electrolyte: Potassium Hydroxide Water Solution

Nominal Voltage: 1.2V

Section II – Product Composition

Metals			Plastics			Other		
		%			%			%
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	H ₂ O	4 – 7
Metal Hydride	MH	23 – 35	Polyethylene	PE	0.2 – 0.4	OH-		9 – 11
Cobalt	Co	0.4 – 1.0	PVC		0.5 – 0.7			

Section III – Hazards

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

Physical:

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

Chemical:

In normal use, no chemical risk

On some extreme conditions (high over charge, reverse polarity, external short circuit, etc) and in case of manufacturing defect, some electrolyte can be removed from the cell by the safety 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.

SUBSTANCES			CLASSIFICATION			
Name:	EEC No. CAS No.	Symbol:	Letter	Identification of Danger	Special Risk (1)	Safety Advice (2)
Nickel Hydroxide	028-008-X*	Ni(OH) ₂	Xn	Harmful	R 20/22-43-40	S 22/36
	12054-48-7					
Cobalt Hydroxide	*	Co(OH) ₂	Xn	Harmful	R 22-42/43	S22-24-37
	21041-93-0					
Potassium Hydroxide	019-002-00-8	KOH	C	Corrosive	R 35	S 26-37/39-45
	1310-58-3					

(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: May cause sensitizing by skin contact

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

(2) Safety Advice:

S 22: Do not breath 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

S 37/39: Wear suitable gloves and eyes/face protection

S 45: In case of accident or if you feel unwell, seek medical advice immediately

Section IV – First Aid Measures

In case of electrolyte leakage, precautions must be taken to avoid personnel to get in direct contact with it. If it leakage occurs, the following must be done:

Inhalation:

Fresh air, rinse and nose with water. Seek medical treatment

Skin contact:

Rinse immediately with plenty of water. Seek medical treatment

Eye Contact:

Rinse immediately with plenty of water for a minimum of 15-30 minutes. Seek medical treatment

Ingestion:

If the injured is fully conscious, do not induce vomiting – drink milk. Seek medical treatment

Section V – Health Hazard Data

Extinguishing Media:

Suitable Class D-Dry chemical, sand. Do not use water

Special Exposure Hazards:

Cells can be over heated by an external source or by internal short circuit and develop Potassium hydroxide mist and/or hydrogen gas. In fire situations fumes containing Nickel, cobalt, and iron may evolve.

Special Protective Equipment:

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

Section VI – Handling and Storage

No hazards during handling, no electrolyte can pour out of the sealed, NiMH cells.

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

Section VII – Exposure Controls/Personal Protection

Under normal conditions of use and handling, no special protection is required for sealed NiMH cells.

Section VIII – Physical Properties

Appearance:

Physical Shape and color as supplied.

Temperature Range:

Continuous: +5 to + 25°C

Occasional: -40 to + 50°C

Specific Energy:

Wh = Nominal Voltage x Rated Ah as Defined in IEC Standard

Kg = Average Battery Weight in Kg

65 to 75 Wh/Kg

Specific Instant Power:

W = 0.5 x Nominal Voltage x Ip

Ip = Amperes Delivered by a Fully Charged Battery for ½ Nominal Voltage at 1 Second

Kg = Average Battery Weight in Kg

1500 W/Kg

Mechanical Resistance:

As defined in relevant IEC standard.

Section IX – Stability and Reactivity

Conditions: Temperature over 85°C, Internal Short, Melting of gasket and rubber vent

Hazardous Decomposition Products: Nickel Compounds, Cobalt Compounds, Caustic Liquid

Section X – Toxicological Information

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

Potassium hydroxide LD50/oral/rat: 365 mg/Kg

Cobalt Hydroxide LD50 Not available

Section XI – Ecological Information

Nickel Metal Hydride (NiMH) cells contains no cadmium, no mercury, no lead, and no toxic metals.

Section XII – Disposal Considerations

Incineration:	Never incinerate NiMH batteries
Landfill:	Never dispose NiMH Batteries in landfill
Recycling:	NiMH batteries can be recycled

Dispose in accordance with all applicable federal, state, and local regulations. Nickel Metal Hydride batteries (NiMH) which in some countries may not be subject to collection & recycling and/or disposal requirements – do however contain recyclable materials and it is recommended to properly recycle these batteries whenever possible.

Section XIII – Transportation Information

U.S. DOT Information

Basic Description: NON HAZARDOUS MATERIAL
Proper Shipping Name: N/A
Hazardous Class: N/A
Packaging Group: N/A
UN Number: N/A
Limitations: N/A

IATA

Proper Shipping Name: NON HAZARDOUS MATERIAL
Hazard Class: N/A
Packing Group: N/A
UN Number: N/A
Limitations: N/A

IMO

Proper Shipping Name: NON HAZARDOUS MATERIAL
Class: N/A
UN Number: N/A
Packing Group: N/A
EMS: N/A
MFAG: N/A
Marine Pollutant: N/A
Canadian TDG: N/A

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