

## Material/Product Safety Data Sheet

### Ni-MH battery with sleeve

1. Identification of Product and Company	
Product	Rechargeable Ni-MH multi-cell battery pack
<a href="http://www.leclanche.com">www.leclanche.com</a> (contact: <a href="mailto:integration@leclanche.com">integration@leclanche.com</a> )	
Company Sites	Leclanché SA Avenue des Sports 42 1400 Yverdon-les-Bains, Switzerland Tel.: +41 (0)24 424 65 00 Fax: +41 (0)24 424 65 02
Emergency number	+1 703 527 3887 (CHEMTREC US Service Center)

2. Composition and Information on Ingredients				
Each cell consists of a hermetically sealed metallic container containing a number of chemicals and materials of construction of which the following could potentially be hazardous upon release. Under normal use there is no potential for exposure to these materials. Nevertheless in case of cell leakage, following exposure to high temperature, mechanical or electrical abuse, the following materials could potentially be hazardous upon release.				
Ingredient	CAS-Nr.	Content (wt. %)	Hazard symbols	CHIP classification
Cell		80-95%		
Nickel	7440-02-0 12054-48-7	30-45 % Nickel (powder) Nickel hydroxide	 <small>HARMSFUL TO THE ENVIRONMENT</small>	R20/22, R40, R43, R17, R50/53  S2, S22, S36, S60, S61
Cobalt hydroxide	21041-93-0	1-5 %	 <small>HARMSFUL TO THE ENVIRONMENT</small>	R22 R43 R50/53  S2, S24, S37, S60, S61
Alkalis	1310-58-3 1310-73-2 1310-65-2	1.5 – 3.5 % Potassium hydroxide Sodium hydroxide Lithium hydroxide	 <small>HARMSFUL TO THE ENVIRONMENT</small>	R22, R35, R36, R37  S26, S37/39, S45
Rare earth, Fe, Mn, Al,		7-15%		
PA/PP, PE, PVC		2.9-4.6%		
Other components				
PVC (Poly Vinyl Chloride)	9002-86-2	0.5 – 3 %		
Polyamide	25038-54-4	0 – 3 %		
Polystyrene	9003-53-6	0 – 3 %		R36 R37
Copper	7440-50-8	0.5 – 3 %		

Ingredient	CAS-Nr.	Content (wt. %)	Hazard symbols	CHIP classification
Glass fibre	65997-17-3	0 – 2 %		R36, R37, R38
Steel, nickel and inert components		0 – 2 %		
Other		balance		

### 3. Hazards Identification

The product described in this material (product) safety data sheet is a nickel metal-hydride rechargeable battery which is composed of sealed units non hazardous when used according to the manufacturers recommendations and as long as the product maintains its integrity.

Under normal conditions of use, the active materials and electrolyte contained in the product are not exposed to the outside. Risk of exposure only occurs in case of abuse (mechanical, electrical, thermal).

Do not short circuit, puncture, incinerate, crush, immerse in water, force discharge or expose to temperatures exceeding the maximal usage temperature. Abuse could result in fire or explosion.

### 4. First Aid Measures

In case of accidental exposure to materials contained within the product following a leakage of burst of the cell, the following measures must be taken.

Evacuate all employees from the contaminated area and ventilate all rooms exposed to fumes in order to evacuate all corrosive gas, smoke and unpleasant odours.

Inhalation	Not expected under normal use. Remove from exposure, ventilate contaminated area. Rest and keep warm in area with plenty of fresh air. In extreme cases provide oxygen and breathing aid. Consult a physician immediately.
Eye contact	Not expected under normal use. Remove from exposure, ventilate contaminated area. Wash with cold water immediately and maintain running water with eyelids open for 15 to 20 minutes. Consult a physician immediately.
Skin contact	Not expected under normal use. Remove from exposure, ventilate contaminated area. Remove all contaminate clothing and wash skin abundantly with cold water for 10 to 15 minutes. Consult a physician immediately.
Ingestion	Not expected under normal use. Remove from exposure, ventilate contaminated area. Wash mouth thoroughly with water, and if possible make patient drink abundantly, preferably milk. Consult a physician immediately.
Further treatment	If any persistent signs of irritation remain (skin or eye irritation, breathing difficulties...), consult immediately a doctor

### 5. Fire Fighting Measures

Use dry chemical clas D, CO<sub>2</sub> type extinguishers or sand.

It is recommended to wear a self-contained breathing apparatus, and all contact with the irritant fumes must be avoided. Evacuate all non essential personnel from the contaminate area until all fumes and extinguishing agents have been purged.

### 6. Accidental Release Measures

In a case of electrolyte leakages, all direct contact must be avoided; particular attention must be taken to avoid any inhalation of the gas coming from the electrolyte. Electrolyte may react with zinc, aluminium, tin or other active materials releasing flammable hydrogen gas.

Using protective equipment (glasses and gloves), absorb all leakage material with sand or earth. Dispose of all cleaning material and damaged cell, by sealing it in a plastic bag and dispose of it as Special Waste in accordance with local regulations.




### 7. Handling and storage

Handling	Do not crush, pierce, short battery terminals or fold pouch edges. Do not expose to excessive heat, or solder tabs. Do not mix batteries of different types and/or brands. Do not mix new and old cells. Do not assemble cells into a pack prior to consent from manufacturer of cells. Do not disassemble, mutilate or mechanically abuse cells.
Storage	Store in cool place, temperature should be lower than 25°C, and ventilated room. Keep adequate clearance between cell packagings . Keep away from moisture, sources of heat and flames. Do not keep in proximity of food and beverages. To avoid any risk of short circuits, keep in original packaging and avoid storing on metal surfaces.

Other	For operating conditions, stick to all manufacturer recommendations contained in the Technical Data Sheet. Do not use with a charging apparatus that was not designed for the specific electrochemistry of these cells. Please check with Leclanché whether the charger is suitable or not. The use of inappropriate chargers can result in fire or explosion.
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### 8. Exposure Controls and Personal Protection

Occupational exposure standard: see section 3

	Respiratory protection	In case of electrolyte leakage use a protective mask, and in cases of extreme fumes such as seen in cases of fire, use a self-containing breathing apparatus.
	Hand protection	In all cases of cell rupture or leakage, wear protective gloves before touching the cell or any other leaked material.
	Eye protection	If any cell is showing signs of leakage, rupture, over heating, wear protective glasses before approaching the cell.

### 9. Physical and Chemical Properties

Appearance	Solid
Odour	Odourless, unless leakage of electrolyte
pH	Not applicable
Flash point	Not applicable
Flammability	Not applicable
Relative density	Not applicable
Solubility (water)	Not applicable
Solubility (other)	Not applicable

### 10. Stability and Reactivity

The product is stable under the conditions described in section 7.

Conditions to avoid	Do not expose to temperatures above 100 °C or incinerate. Do not use in application where generated heat is not adequately extracted. Do not deform, crush, pierce, disassembly or short circuit cell. Do not store in high humidity conditions for prolonged periods of time.
Materials and substances to avoid	Do not expose to strong acids or bases, oxidising agents or organic solvents. Do not use conductive materials in proximity of cell (tools must be properly insulated).
Decomposition Products	In case of exposure to temperature over 100°C, a risk of release of alkaline electrolyte mist or liquid is created. Exposure to higher temperature (160°C), the plastics used can melt or decompose. In case of mechanical deterioration of cells, active materials contained as powder can be dispersed.

### 11. Toxicological Information

Signs and Symptoms	None unless battery leaks or ruptures. If exposed to internal cell contents, skin eyes and mucous membranes could be exposed to high irritating fumes. Over exposure can lead to lung injuries and other several membrane irritations.
Inhalation	Lung irritant
Skin contact	Skin irritant
Eye contact	Eye irritant
Ingestion	Tissue damage
Carcinogenic	none
Other	Exposure to internal content can lead to or aggravate existing conditions such as eczema, skin allergies, asthma, and other respiratory disorders.

### 12. Ecological Information

When properly used and/or disposed of, rechargeable nickel metal hydride cells do not present an environmental hazard.

**13. Disposal considerations**

Do not incinerate. Dispose of or recycle in accordance with local regulations.

**14. Transport Information**

Labelling	Multi-cell battery packs are not restricted to transport, and are considered as "dry batteries"
UN number	-
Shipping name	Nickel metal hydride cells / batteries
Hazard classification	-
Packing group	-
IMDG Code	-
EmS No.	-
Marine pollutant	No
ADR Class	-

**15. Regulatory Information**

Risk phrases	R 17	Spontaneously flammable in air
	R 20	Harmful by inhalation
	R 21	Harmful in contact with skin
	R 22	Harmful if swallowed
	R 35	Causes severe burns
	R 36	Irritating to eyes
	R 37	Irritating to respiratory system
	R 38	Irritating to skin
	R 40	Limited evidence of a carcinogenic effect
	R 43	May cause sensitization by skin contact
	R 50	Very toxic to aquatic organisms
	R 53	May cause long-term adverse effects in the aquatic environment
	Safety phrases	S 2
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 36/37/39		Wear suitable protective clothing, gloves and eye/face protection
	S 45	In case of accident or if you feel unwell, seek medical advice immediately

**16. Other Information**

The information contained in this document relates to the specific materials and chemicals designated and is valid for the specific combination found within this product. The information is compiled from sources considered to be dependable and is, to the best of our knowledge and belief, accurate and reliable. All information is considered valid at the date of publication. It is the responsibility of the user to make sure that the information is suitable and complete for his particular application.