

MATERIAL SAFETY DATASHEET

Jade-Technologie

Technology : Rechargeable Ni-CD Cylindrical
Chemical System : Nickel Cadmium
Date : 2008-11-05

1. IDENTIFICATION OF THE PREPARATION AND COMPANY

1.1. IDENTIFICATION OF THE PREPARATION

Product name : Ni-CD cell model

NC80AAAL; NC200AAAK; NC350AAA; NC170AAL; NC330AAN; NC400AAK; NC1000AA;
NC1300AAF; NC250AL; NC1200AH; NC1400A; NC2000AF; NC1200SCH; NC2000SC; NC2300SCE;
NC3000C; NC2500DN; NC5000D; NC8000F

1.2. USE OF THE PREPARATION

Batteries and battery pack

1.3. IDENTIFICATION OF THE COMPANY

Jade-Technologie, 3, rue de Longjumeau, 91300, Massy, France

1.4. EMERGENCY TELEPHONE NUMBER

In France : ORIFLA : +33 1 45 42 59 59

In Europe : 112

In USA : CHEMTREC : +1 (800) 424 9300

2. COMPOSITION AND INGREDIENTS (typical weight percentage of basic material)

Product name	CAS-No	Concentration%	Danger	Risk	TLV-TWA
Nickel	7440-02-0 1313-99-1 12054-48-7	20 – 32	Xn, N	R21, R22, R40, R43, R50, R53	1,5mg/m3 TWA
Cadmium	7440-43-9 1306-19-0 21041-95-2	8 – 22	Xn	R20, R21, R22, R50, R53	0,01mg/m3 TWA
Steel	7439-89-6	15 – 25	N/A	N/A	N/A
Cobalt	7440-48-4 1307-96-6 21041-93-0	0.5 – 2	Xn, N	R22, R42, R43, R50, R53	0,02mg/m3 TWA
Sodium Hydroxide	1310-73-2	<4	C	N/A	<2mg/m3
Lithium Hydroxide	1310-65-2	<4	C	N/A	<2mg/m3
Paper, plastic, other...	/	Balance	N/A	N/A	N/A

CAS-No: from Chemical Abstracts Service

TLV-TWA: Threshold Limit Value-Time Weighted Average concentration

3. HAZARD IDENTIFICATION

- ◆ The rechargeable nickel cadmium batteries described here are hermetically sealed in metal cases, designed to withstand temperatures and pressures encountered.
- ◆ When used according to normal condition of use and as long as their integrity is maintained, the inner active materials and electrolyte can't be exposed to outside.
- ◆ Do not short circuit, pierce, incinerate, crush, immerse in liquid, force discharge or expose to specified maximum temperatures.
- ◆ The materials can be released in case of mechanical damaging or if exposed to fire.

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4. FIRST AID MEASURE

In case of leaking or accidentally opened cells:

- ◆ **Inhalation:** Remove from exposure, Make the victim blow his/her nose, gargle, take fresh air. Seek medical attention if necessary.
- ◆ **Skin contact:** Remove contaminated clothes and shoes immediately. Immediately wash extraneous matter or contact region with soap and plenty of water. In severe cases seek for medical attention.
- ◆ **Eye contact:** Do not rub eyes. Immediately flush eyes with water continuously for at least 15 minutes. Obtain medical attention.
- ◆ **Ingestion:** Make the victim vomit, wash out mouth with water. Immediately seek medical attention.

5. FIRE FIGHTING MEASURE

- ◆ **Suitable extinguishing media:** Plenty of water, carbon dioxide gas, nitrogen gas, chemical powder fire extinguishing medium and fire foam.
- ◆ **Specific hazards:** Corrosive gas may be emitted during fire.
- ◆ **Specific methods of fire-fighting:** When the battery burns with other combustibles simultaneously, take fire extinguishing method which corresponds to the combustibles. Extinguish a fire from the windward as much as possible.
- ◆ **Special protective equipment for firefighters:**
 - **Respiratory protection:** Respiratory equipment of a gas cylinder style or protection-against-dust mask.
 - **Hand protection:** Protective gloves
 - **Eye protection:** Goggle or protective glasses designed to protect against liquid splashes
 - **Skin and body protection:** Protective clothes

6. ACCIDENTAL RELEASE MEASURES

- ◆ Before cleanup measures begin, review the entire MSDS with particular attention to Potential Health Effects; and on Recommended Personal Protective Equipment.
- ◆ Prevent further leakage or spillage. Do not allow material to contaminate ground water system to avoid risk for human and environment.
- ◆ Procedure for Release and Spill: Sweep up and place in a suitable labelled container, dispose or waste according to all local Laws and Regulations.

7. HANDLING AND STORAGE

7.1. HANDLING

- ◆ Do not connect the positive terminal (+) to the negative terminal (-) with electrically conductive material (i.e. metal)
- ◆ Never throw out cells in a fire or expose to high temperatures.
- ◆ Do not soak cells in water and seawater. Do not expose to strong oxidising materials.
- ◆ Do not give a strong mechanical shock or throw down. Never crush, pierce, disassemble, modify or deform.

7.2. STORAGE

- ◆ Do not place the battery cell near heating equipment, nor expose to direct sunlight for long periods.
- ◆ Elevated temperatures can result in shortened battery cell life and degrade performance. Store in a cool, dry and well ventilated area (temperature: -20/+45C, humidity: 45-75%).
- ◆ It is suitable to store the batteries in a plastic or insulated holder.

7.3. USE

- ◆ Prior to use read and follow product specification regarding current, voltage and temperature maximum ratings.
- ◆ Do not mix batteries of different types, brands as well as new and used batteries.

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- ◆ Use only dedicated charger or charge according to the conditions specified in product specification.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

8.1. EXPOSURE

- ◆ Engineering controls: Investigate engineering techniques to reduce exposures. Use with adequate ventilation and recommended personal protective equipment.

8.2. PERSONAL PROTECTION

- ◆ **Respiratory protection:** Respirator with air cylinder, dust mask,
- ◆ **Hand protection:** Protective gloves,
- ◆ **Eye protection:** Goggle or protective glasses designed to protect against liquid splashes,
- ◆ **Skin and body protection:** Working clothes with long sleeve and long trousers.

9. PHYSICAL AND CHEMICAL PROPERTIES

- ◆ Only applicable in case of damaged batteries with inner components dripped or accidentally opened cells.

9.1. PHYSICAL PROPERTIES

- **Physical state:** Solid
- **Form:** Geometric solid
- **Color:** Metallic color (without outer PVC cover)
- **Odor:** No odor

9.2. CHEMICAL PROPERTIES

- **pH:** Not Applicable
- **Flash point:** Not Applicable
- **Explosion properties:** Not Applicable
- **Density:** Not Applicable
- **Solubility:** Not Soluble

10. STABILITY AND REACTIVITY

- ◆ Hazardous reactions may occur under some specific conditions.
- ◆ **Conditions to avoid:** Exposing a battery cell to an external short-circuit, crushes, modification, high temperature above 150°C will be the cause of heat generation and rupture. Avoid to be exposed to direct sunlight and high humidity,
- ◆ **Materials to avoid:** Conductive materials, water, seawater, alkali solutions, strong oxidising materials and strong acids,
- ◆ **Hazardous decomposition products:** Harmful gas is emitted during fire.

11. TOXICOLOGICAL INFORMATION

- ◆ **Chronic toxicity/Long term toxicity:** Nickel, Nickel compounds, cobalt and cobalt compounds are listed as possible carcinogens by "Centre international de Recherche sur le Cancer" (CIRC - <http://www.iarc.fr>).

12. ECOLOGICAL INFORMATION

- ◆ Since some internal materials remain in the environment, do not bury or throw out into environment. If use as directed, and if the integrity of the battery casing is maintained, the ingredient are not expected to pose a significant risk to the environment.
 - **Eco Toxicity:** No data available
 - **Mobility:** No data available
 - **Persistence and degradability:** Not readily biodegradable

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13. DISPOSAL CONSIDERATIONS

- ◆ Waste disposal must be in accordance with the applicable regulations. Disposal of the Nickel Cadmium battery cells should be performed by permitted, professional disposal firms knowledgeable in State or Local requirements of hazardous waste treatment and hazardous waste transportation. Incineration should never be performed by battery users, eventually by trained professional in authorized facility with proper gas and fume treatment.

14. TRANSPORTATION INFORMATION

14.1. REGULATORY

- ◆ Nickel Cadmium cylindrical cells/batteries are considered to be "dry cell" batteries and are unregulated for purposes of transportation by the U.S. Department of Transportation (DOT), International Civic Aviation Administration (ICAO), International Air Transport Association (IATA), the International Maritime Organization (IMO), the "Accord Européen Relatif au Transport International des Marchandises Dangereuses par Route" (ADR)) and the "Règlement concernant le transport international ferroviaire de marchandises Dangereuses" (RID).
- ◆ **IATA DGR:** Special Provision A123: "Examples of such batteries are: alkali-manganese, zinc-carbon,, nickel-metal hydride and nickel-cadmium batteries. Any electrical battery ... having the potential of a dangerous evolution of heat must be prepared for transport as to prevent (a) a short-circuit (e.g. in the case of batteries, by the effective insulation of exposed terminais...) is forbidden from transport; and (b) accidental activation. The words "Not Restricted" and the Special Provision number must be included in the description of the substance on the Air Waybill as required by 8.2.6, when an Air Waybill is issued. "
- ◆ **EU:** Special Provision 304 (ADR/RID): "Batteries, dry, containing corrosive electrolyte which will not flow out of the battery if the battery case is cracked are not subject to the requirements of RID/ADR provided the batteries are securely packed and protected against short-circuits. Examples of such batteries are: alkali-manganese, zinc-carbon, nickel-metal hydride and nickel-cadmium batteries."
- ◆ **USA:** 49 CFR § 172.102 Special Provision 130: "For other than a dry battery specifically covered by another entry in the § 172. 101 Table, "Batteries, dry" are not subject to the requirements of this subchapter when they are securely packaged and offered for transportation in a manner that prevents the dangerous evolution of heat (for example, by the effective insulation of exposed terminais) and protects against short circuits.

14.2. MARKING

- ◆ According to DIRECTIVE 2006/66/EC on batteries and accumulators and waste batteries and accumulators and repealing Directive 91/157/EEC all batteries have to be marked with the crossed bin.

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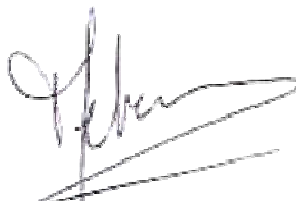
15. CLASSIFICATION

Symbol	Risk phrases	
T = Toxic	R11 = Highly flammable	R43 = May cause sensitization by skin contact
Xn = Harmful	R17 = Spontaneously flammable in air	R50 = Very toxic to aquatic organisms
Xi = Irritant	R21 = Harmful in contact with skin	R53 = May cause long-term adverse effects in the aquatic environment
C = Corrosive	R22 = Harmful if swallowed	
F = Highly Flammable	R35 = Causes severe burns	
N = Danger for the environment	R40 = Limited evidence of a carcinogenic effect	

16. OTHER INFORMATION

- ◆ The information contained in this Safety data sheet is based on the present state of knowledge and current legislation.
- ◆ This safety data sheet provides guidance on health, safety and environmental aspects of the product and should not be construed as any guarantee of technical performance or suitability for particular applications.

Signature



Céline METAIS
 Quality Manager