

SAFETY DATA SHEET
SECONDARY NICKEL-CADMIUM SEALED CELLS
Date issue: August 10th, 2007 Version: Europe

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1. IDENTIFICATION

1.1 Product

Sealed secondary (or rechargeable) Cells

Trade name and model: STI...according model.

IEC designation: KR... according international standard IEC 61951-1

Electrochemical system: Nickel/Cadmium, alkaline electrolyte

Positive electrode: Nickel hydroxide

Negative electrode: Cadmium hydroxide

Electrolyte: Potassium, Sodium and Lithium hydroxide in water solution.

Nominal voltage: 1.2Volts

1.2 Supplier

Name: SHANGHAI SUPREME TECHNOLOGIES INDUSTRIAL LTD.

Address: BLOCK2, F5A, 499KANGYI ROAD, KANG QIAO AREA, SHANGHAI.

Tel/Fax: 86-21-68193513 / 86-21-68192594

Emergency contact: STI local dealer

2. COMPOSITION (Weight percentage of basic materials)

Single cell with steel container

Metals (%)	Plastics (%)	Other (%)
Iron Fe 25-37	Polyamide PA/PP 2.5-3.5	Potassium K/Na/Li 1.8-2.9
Nickel Ni 20-28	Rubber EPDM <0.05	Water H2O 4-9
Cadmium Cd 10-15	Polyethylene PE 0.2-0.4	OH- 8-14
Cobalt Co 0.4-1.0	PVC 0.2-0.7	

3. HAZARDS

A- Human hazards

A sealed Nickel-Cadmium hydride cell is not hazardous in normal use.

3.1 Physical

Nickel plated steel can do not present any risk of cells are used for its intended purpose and according to valid directions for use.

3.2 Chemical

Nickel plated steel cannot present chemical risk in normal use.

In case of misuse (abusive over charge, reverse charge,, external short circuit...) and in case of default, some electrolyte can leak from the cell through the safety vent.

In these cases refer to the risk of the alkaline hydroxides.

The toxic properties of the electrode materials are hazardous only if the materials are released by mechanical damaging the cell or if exposed to fire.

Classification of dangerous substances contained into the cells.

SUBSTANCES			CLASSIFICATION			
Name	EEC Number CAS Number	Symbol	Letter	Identification of danger	Special risk (1)	Safety advice (2)
Cadmium Hydroxide	048-001-00-5 21041-95-2	Cd(OH) ₂	Xn	Harmful	R 20/21/22	S 22
Nickel Hydroxide	028-008-x 12054-48-7	Ni(OH) ₂	Xn	Harmful	R20/22-43-40	S 22/36
Cobalt Hydroxide	- 2141-93-0	Co(OH) ₂	Xn	Harmful	R22-42/43	S22-24-37
Alkaline hydroxide	019-002-00-8 1310-58-3	KOH NaOH LiOH	C	Corrosive	R35	S26-37/39 -45

(1) Nature of special risk

- R 20/21/22: Harmful by inhalation, skin contact or if swallowed.
R20/22: Harmful by inhalation or if swallowed.
R35: Causes serious burns.
R40: Possible risk of irreversible effects.
R43: May cause sensitizing by skin contact.
R42/43: May cause sensitizing by inhalation and skin contact.

(2) Safety advice

- S22: Do not breathe dust.
S24: Avoid contact with skin
S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S36: Wear suitable protection clothing.
S37: Wear suitable protection gloves.
S37/39: Wear suitable gloves and eyes/face protection.
S45: In case of accident or of you feel unwell, seek medical advice immediately.

B- Ecological hazards

Metals used in a Ni-Cd cell, and specifically the cadmium, have to be collected and recycled.

4. FIRST AID MEASURES

In case of electrolyte solution spill (cell leakage) precautions must be taken to avoid any contact of human tissues. If it accidentally happens following must be done:

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

Rinse immediately with plenty of water during at least 15-30 min. Immediate hospital treatment. Consult eye specialist.

4.4 Ingestion

If the injured is fully conscious: plenty of drink, preferably milk. Do not induce vomiting. Immediate Hospital treatment.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Suitable: Class D-Dry chemical, sand, CO₂.

Not to be used: Water

5.2 Special exposure hazards

Cells can be overheated by an external source or by internal shorting and release alkaline electrolyte mist or liquid. In fire situations fumes containing Cadmium may evolve. Electrolyte reacts with zinc, aluminum, tin and other active materials releasing flammable hydrogen gas. In case of PVC sleeved products, the combustion releases chloride gas.

5.3 Special protective equipment

Use self-contained breathing apparatus and full fore-fighting protective clothing.

6. SPILL MANAGEMENT PROCEDURE

The sealed Ni-Cd cells when sleeved are safe in case of spilling.

Non-sleeved cells may generate short-circuits, causing release of alkaline electrolyte mist or liquid. Electrolyte reacts with zinc, aluminum, tin and other active materials releasing flammable hydrogen gas. In such a case, use self-contained breathing apparatus and protective clothing.

7. HANDLING AND STORAGE

In normal use conditions, no safety rule is specified to handle the cells.

It is recommended to store following STI specifications in order to ensure longer usage: +5 to +25⁰C in a 65+-5% relative humidity.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Under normal condition of use and handing no special protection is required for sealed Ni-Cd cells.

9. PHISICAL PROPERTIES

9.1 Appearance

Nickel plated steel cylindrical cell, eventually sleeved. Dimensions and color according specification.

9.2 Temperature range

Risk of electrolyte leakage over 100°C

9.3 Specific energy

35 to 45 Wh/Kg

9.4 Specific instant power

Up to 1000 W/Kg during 1 second

9.5 Mechanical resistance

According mechanical tests in IEC 61951-1 standard.

10. STABILITY AND REACTIVITY

10.1 Conditions

Ni-Cd cells are stable in storage.

In case of storage in Humidity, some rust may appear on the product.

In case of storage in a charged state, cells progressively loose their energy, generating eventually a progressive temperature increase according the thermal insulation efficiency of the packaging.

In case of exposure to temperature over 100°C, a risk of release of alkaline electrolyte mist or liquid is created. A higher temperature (160°C) the plastics used can melt or decompose (Polyamide gasket, rubber valve, PVC sleeve,...).

In case of mechanical deterioration of the cells, active materials contained as powder can be dispersed (Nickel, Cobalt, Cadmium).

10.2 Hazardous decomposition products

Electrolyte solution is corrosive to all human tissues and will react violently with many organic chemicals.

Electrolyte solution reacts with zinc, aluminum, tin and other materials releasing flammable hydrogen gas.

11. TOXICOLOGICAL INFORMATION

SUBSTANCES			HAZARDS		
Name	N ^o EEC CAS	N ^o Symbol	Effects	Dust exposure limits	Carcinogenicity
Cadmium Hydroxide	048-01-00-5 21041-95-2	Cd(OH) ₂	LD50. Not available	VME : 50µg/m ³ VLE: 50µg/m ³ (for CdO)	Occupational
Nickel Hydroxide	028-008-X* 12054-48-7	Ni(OH) ₂	LD50/oral/rat: 1600 mg/Kg	VME : 1000µg/m ³ VLE: /	Occupational
Cobalt Hydroxide	- 21041-93-0	Co(OH) ₂	LD50. Not available	VME : 100µg/m ³ VLE: /	/
Alkaline	019-002-00-8	KOH	LD50/oral/rat:	KOH VME: 2mg/m ³	/

Hydroxydes	1310-58-3	NaOH LiOH	365mg/Kg	NaOH VME:2mg/m3 LiOHVME:25µg/m3	
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12. ECOLOGICAL INFORMATION

The storage battery is TCLP toxic. If not recycle, must be disposed of in accordance with all state and local regulations.

13. DISPOSAL CONSIDERATIONS

13.1 Incineration

Never incinerate Ni-Cd batteries.

13.2 Landfill

Never dispose Ni-Cd batteries as landfill.

13.3 Recycling

Nickel Cadmium batteries can be fully recyclable. They are submitted to the European community directive 91-157/CE. STI recommends proper recycling of these batteries whenever possible.

You may refer to the following web page for further information and guidance: www.ocde.org/ehs/nicd/nicdloc.htm *. You can also contact STI.

* This page provides links to different National Battery Associations and National Collection & Recycling Organizations that can provide you with the latest update on collection & recycling in their respective Countries.

14. TRANSPORT INFORMATION

Sealed Ni-Cd batteries with sleeve are not submitted to specific transport obligations Sealed Ni-Cd batteries without sleeve are submitted to ADR prescription under UNO code 2800.

15. REFULATORY INFORMATIONS

Nickel Cadmium batteries are submitted to the European community directive 91-157/CE for recycling.

16. OTHER INFORMATIONS

Consult STI specifications and precautions of use for optimized use.