



MATERIAL SAFETY DATA SHEET
PRODUCT NAME: NICKEL CADMIUM SEALED CELL BATTERY

SAFT AMERICA Inc. 711 Industrial Blvd. Valdosta, GA 31601 Information: Phone 912-247-2331 Fax 912-245-2880	For Chemical Emergency Spill, Leak, Fire, Exposure or Accident Call CHEMTREC - Day or Night 800-424-9300
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SAFT BRAND INDUSTRIAL NICKEL CADMIUM STORAGE BATTERY
HMIS RATINGS 3 Health 1 Flammability 2 Reactivity

1. HEALTH HAZARD INFORMATION

Effects of Overexposure	
Eye Effects:	Contact with electrolyte solution inside battery causes very rapid, severe damage. Extremely corrosive to eye tissues. May result in permanent blindness. Contact with nickel oxide may cause minor irritation.
Skin Effects:	Contact with electrolyte solution inside battery may cause serious burns to skin tissues. Contact with nickel compounds may cause skin sensitization, resulting in chronic eczema or nickel itch.
Ingestion:	Ingestion of electrolyte solution causes tissue damage to throat area and gastro/respiratory tract. Ingestion of cadmium and/or nickel compounds causes nausea and intestinal disorders.
Inhalation:	No exposure possible except in the case of fire or abuse. Effects of inhalation of metallic compounds vary from mild irritation of nasal mucous membranes to damage of mucous membranes and respiratory tract tissues and lung tissues proper. Inhalation of cadmium oxide may cause dry throat, cough, headache, vomiting, chest pain, chills, excessive overexposure may result in pulmonary edema, breathing difficulty, and prostration.
Carcinogenicity:	NIOSH recommends that nickel and cadmium be treated as occupational carcinogens.

2. EMERGENCY FIRST AID

Battery Electrolyte	
Eye Contact:	Flush with plenty of water for at least 20 minutes. Get immediate medical attention.
Skin Contact:	Remove contaminated clothing and flush affected areas with plenty of water for at least 20 minutes.
Ingestion:	Do not induce vomiting. Dilute by giving large volumes of water or milk. Get immediate medical attention. Do not give anything by mouth to an unconscious person.
Inhalation:	Remove to fresh air. Give oxygen or artificial respiration if needed. Get immediate medical attention.
Nickel Oxide	
Skin contact:	Wash with cold water and soap.

3. SPECIAL PROTECTION INFORMATION

Respiratory Protection: Use self-contained breathing apparatus (SCBA) if cell is broken open during a fire to maintain exposure levels below the PEL for cadmium and nickel compounds.
Eye Protection: Use splash goggles or face shield if cell ruptures due to abuse.
Hand Protection: If exposure to electrolyte solution or dried salts is likely, use any water-insoluble, non-permeable glove, i.e., synthetic rubber. DO NOT use leather or wool.
Other protective Equipment: Rubber apron or equivalent if exposure to electrolyte solution is likely.

4. REACTIVITY DATA

Incompatibilities: Aluminum, zinc, tin and other active metals, acid, chlorinated and aromatic hydrocarbons, nitrocarbons, halocarbons. Trichloroethylene will react with electrolyte solution to form dichloroacetylene which is spontaneously combustible.
Hazardous Decomposition Products: Nickel oxide, cadmium, cadmium oxide, and potassium hydroxide.
Hazardous Polymerization will not occur.

5. FIRE AND EXPLOSION HAZARDS

Extinguishing Media

CO₂, Sand

	Melting Point	Boiling Point
Cadmium	608°F	1410°F
Cadmium Oxide	N/A	2840°F (sublimes)
Nickel	2645°F	4950°F
Nickel Hydroxide	N/A	445°F (Decomposes to NiO)
Nickel Oxide	3605°F	3990°F (Decomposes to Ni and O ₂)

Special Fire Fighting Procedures

Use self-contained breathing apparatus to avoid breathing toxic fumes. Wear protective clothing and equipment to prevent potential body contact with electrolyte solution or mixture of water and electrolyte solution.

Fire and Explosion Hazards

Electrolyte solution is corrosive to all human tissues and will react violently with many organic chemicals, especially nitrocarbons and chlorocarbons. Electrolyte solution reacts with zinc, aluminum, tin and other active materials releasing flammable hydrogen gas.

Cadmium fumes may be released when batteries are subjected to high temperatures. In case of fire, do not breath smoke and fumes!

Use self-contained breathing apparatus

6. INGREDIENTS

	CAS #	EXPOSURE LIMITS	QUANTITY
Cadmium (as Cadmium,	7440-43-9	5.0 mcg/m ³ dust – OSHA	≈ 17%
Cadmium Hydroxide, and	21041-95-2	0.05 mg/m ³ ACGIH CEILING-Fume	
Cadmium Oxide)	1306-19-0		
Nickel (as Nickel,	7440-02-0	1 mg/m ³ - OSHA	≈ 19%
Nickel Hydroxide, and	1205-44-87		
Nickel Oxide)	1313-99-1		
Electrolyte Solution	1310-58-3	2 mg/m ³ ACGIH CEILING-Air	≈ 8%
(18-28% potassium hydroxide)			
Steel		None Established - OSHA	≈ 9%
Cobalt Hydroxide (as Cobalt Metal)	7440-48-4	0.1 mg/m ³ - OSHA	≈ 1%

7. PHYSICAL PROPERTIES

Boiling Point -	Not Applicable	Melting Point -	Not applicable
Vapor Pressure -	Not Applicable	Vapor Density -	Not applicable
Specific Gravity -	1.170 - 1.250 (electrolyte)	Evaporation Rate -	Not Determined
Solubility in Water -	Electrolyte solution is completely soluble.	Remainder -	is insoluble

8. SPILL MANAGEMENT PROCEDURES

Electrolyte Solution Spills: Flush with water and neutralize with dilute citric acid.

9. DISPOSAL INFORMATION

The storage battery is a universal waste under RCRA. It may be returned to SAFT for recycling.

Battery is TCLP Toxic. Battery and electrolyte solution are corrosive. If not recycled, must be disposed of in accordance with all federal, state, and local regulations.

10. PRECAUTIONS AND COMMENTS

These cells and the batteries constructed from them may be highly charged and are capable of high energy discharge. Care should be taken to handle cells properly to avoid shorting or misuse that will result in a rapid, uncontrolled electrical, chemical, or heat energy release.

Do not short circuit – may cause burns.

Do not break open cell.

Do not allow an exposed flame or spark to come near the cells.

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