



**MATERIAL SAFETY  
DATA SHEET**

**HOPPECKE FIBER NICKEL CADMIUM (FNC)  
PLATE VENTED BATTERY – UN# 2795**

(Filled with Electrolyte)

Date Prepared: January 2009

|   |   |
|---|---|
| <b>Hoppecke Batteries, Inc.</b><br>1960 Old Cuthbert Rd., Suite 130<br>Cherry Hill, NJ 08034<br>Phone: 856-616-0032 / Fax: 856-616-0132 | <b>For Chemical Emergency:</b><br>Spill, Leak, Fire, Exposure or Accident<br>Call CHEMTREC – Day or Night<br>(800) 424-9300 |
|---|---|

HMIS Ratings                      3 Health                      1 Flammability                      2 Reactivity

**Nickel Cadmium Batteries**, wet, filled with alkaline, Class 8 UN# 2795, Pkg Group III

**INGREDIENTS**

Polyethersulfone Container  
Polypropylene Container  
Nickel Hydroxide, Solid  
Lithium Hydroxide  
Electrolyte Solution (18-28% potassium hydroxide)  
Cadmium  
Cadmium Oxide, Solid (as Cadmium)

**EXPOSURE LIMITS**

None Established- OSHA  
None Established- OSHA  
1 mg/m<sup>3</sup> - OSHA  
None Established – OSHA  
2 mg/m<sup>3</sup> OSHA CEILING – Air  
0.005 mg/m<sup>3</sup> OSHA  
0.005 mg/m<sup>3</sup> OSHA

**PHYSICAL/CHEMICAL CHARACTERISTICS**

|                                |                 |                                   |               |
|--------------------------------|-----------------|-----------------------------------|---------------|
| Boiling Point (50% KOH)        | 132°C/270°F     | Specific Gravity                  | 1.185 – 1.225 |
| Vapor Pressure                 | 2 mm Hg at 68°F | Melting Point                     | - 29°C/ -4°F  |
| Vapor Density – Not Applicable |                 | Evaporation Rate – Not Determined |               |

|                     | <b>Melting Point</b> | <b>Boiling Point</b> |
|---------------------|----------------------|----------------------|
| Potassium Hydroxide | Not applicable       | 170°C                |
| Cadmium             | 321°C                | 767°C                |
| Cadmium Oxide       | 900°C                | Not applicable       |
| Nickel              | 1455°C               | 2900°C               |

Solubility in Water:            Electrolyte solution is completely soluble. REMAINDER is insoluble.

**FIRE AND EXPLOSION HAZARD DATA**

**Flash Point**

|                       |                      |                    |
|-----------------------|----------------------|--------------------|
| <b>Case Material:</b> | <b>Polypropylene</b> | <b>Polysulfone</b> |
| Melting Point:        | 279°F                | 374°F              |
| Auto Ignition:        |                      | 1022°F (550°C)     |

**Extinguishing Media**

CO<sup>2</sup>, Dry Chemical, Foam Water Spray



### Special Fire Fighting Procedures

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

### Unusual Fire and Explosion Hazards

Oxygen and hydrogen produced in an over charge may cause a fire or explosion, if a spark is present. Electrolyte solution is corrosive to all human tissues. It will react violently with many organic chemicals, especially nitro-carbons 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.

### REACTIVITY DATA -

Stable under normal conditions.

### CAUTION: NEVER ACTIVATE OR TOP OFF WITH ACID

**Incompatibilities:** Aluminum, zinc, tin and other active metals, acid, chlorinated and aromatic hydrocarbons, nitrocarbons, halocarbons. Trichlorethylene will react with electrolyte solution to form dichloroethylene which is spontaneously combustible.

**Hazardous Decomposition Products:** Nickel oxide, cadmium, cadmium oxide and potassium hydroxide. Note that normal reactions – inside battery liberate flammable hydrogen gas. Do not seal battery from atmosphere. Hazardous Polymerization will not occur. If cells are torn apart and allowed to dry in a charged state, cadmium may oxidize and cause a fire.

### 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 hydroxide may cause minor irritation.

**Skin Effects:** Contact with electrolyte solution inside battery may cause serious burns to skin tissues. Contact with nickel hydroxide and/or cadmium oxide 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 nickel hydroxide, cadmium and/or cadmium oxide causes nausea and giddiness.

**Inhalation:** During activation procedures mist generated may cause varying degrees of irritation of the nasal mucous membranes and respiratory tract tissues. May vary from mild irritation of nasal mucous membranes to damage to lung tissues proper. Inhalation of cadmium oxide may cause dry throat, cough, headache, vomiting, chest pains and chills. Excessive overexposure may result in pulmonary emphysema, cor pulmonate.

**Carcinogenicity:** NIGSA recommends that nickel and cadmium be treated as occupational carcinogens.



## **EMERGENCY FIRST AID – BATTERY ELECTROLYTE AND NICKEL HYDROXIDE**

|                    | <b><u>BATTERY</u></b>  | <b><u>ELECTROLYTE</u></b>  |
|--------------------|--|--|
| <b>Eye Contact</b> | Flush with plenty of water for at least 15 minutes. Get immediate medical attention.   | <b>Skin Contact</b> Remove contaminated clothing and flush affected areas with plenty of water for at least 15 minutes     |
| <b>Ingestion</b>   | Do not induce vomiting. Dilute by giving water. If available, give several glasses of milk. Get immediate medical attention. Do not give anything by mouth to an unconscious person. | <b>Inhalation:</b> Remove to fresh air. Give oxygen or artificial respiration, if needed. Get immediate medical attention. |

### **NICKEL HYDROXIDE**

**Skin Contact** Wash with cold water and soap.

## **PRECAUTIONS FOR SAFE HANDLING AND USE**

### **SPILL MANAGEMENT PROCEDURES - ELECTROLYTE SOLUTION SPILLS**

**Small: (up to 5 gallons) -** Flush with water and neutralize with dilute acid.

**Large:** Contain material in suitable containers or holding area. DO NOT allow material to enter sewers, streams, or storm conduits. Recover material with vacuum truck and dispose of properly. Reportable Quantity: 1000 pounds. 40 CFR 117.13.

### **DISPOSAL INFORMATION**

The storage battery is a hazardous waste under RCRA. Battery is EP Toxic. Battery and electrolyte solution are corrosive. Dispose of battery in discharged condition. Dispose of in accordance with all federal, state and local regulations.

**HANDLING AND STORING:** Never short-circuit the cells. If short-circuited, injuries or burns may result.

### **PRECAUTIONS AND COMMENTS**

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

Do not transport activated batteries without vent cap in place.

When removing battery from service visually inspect for leakage prior to handling. If leakage has occurred, follow Spill Management Procedures.

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



## **CONTROL MEASURES**

**Respiration Protection:** Use NIOSH approved mist respirator, if necessary during activation and actual usage.

**Other Precautions:** Perform activation procedures in a well ventilated area. Battery operating areas must be well ventilated to remove normal gases generated.

**Eye Protection:** Use splash goggles or face shields whenever handling a battery.

**Hand Protection:** If exposed to electrolyte solution or dried salts, use any water-insoluble, non-permeable glove, i.e. synthetic rubber, i.e. DO NOT use leather or wool

**Other Protective Equipment:** Rubber Boots, rubber aprons or rainwear or equivalent if exposed to electrolyte solution: eye goggles and face shield.

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