



Material Safety Data Sheet

Product: NiMH Batteries

Applicable: All models and sizes for the Series 888

<http://www.cobasys.com/>

Material Safety Data Sheet

Important Note: As a solid, manufactured article, exposure to hazardous ingredients is not expected with normal use. This battery is an article pursuant to 29 CFR 1910.1200 and, as such, is not subject to the OSHA Hazard Communication Standard requirement.

The information contained in this Material Safety Data Sheet contains valuable information critical to the safe handling and proper use of the product. This MSDS should be retained and available for employees and other users of this product.

Common Name: (Used on Label) NiMH Battery

SECTION I

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Orion, MI 48359

COBASYS
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Springboro, Ohio 45066

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SECTION II - HAZARD IDENTIFICATION

The nickel metal hydride battery pack -electrochemical device used to store electrical energy; capable of storing a substantial amount of electrical energy.

WARNING

This is an electrical energy storage device. The device may cause electrical shock, fire or injury.

Potential Health Effects: No health effects or exposure unless both the pack and cell (module) casings have been breached or the pack is subjected to thermal decomposition (fire). In the event that a breach or fire occurs; the potential health effects are as follow (Also see Section 11 for more information):

Likely Routes of Exposure: Eye contact, Skin contact, Inhalation, Ingestion

Eye: Contact with caustic, alkali electrolyte causes severe burns and may cause *Irreversible damage*. Contact can also cause ulceration of the conjunctiva and cornea. Damage may be



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delayed.

Skin: Contact with caustic, alkali electrolyte causes severe burns. It can also cause deep penetrating ulcers. Exposure to battery particulate may cause dermatitis.

Inhalation: Irritation from mist or liquid droplets may lead to chemical pneumonitis and pulmonary edema. Also, possible are severe irritation of upper respiratory tract with coughing, burns, breathing difficulty and coma. Toxic smoke may come from thermal decomposition of plastic. Exposure to particulate can cause upper respiratory tract irritation.

Ingestion: Can cause burns to mouth and perforation of digestive tract. Severe digestive tract burns will be accompanied by abdominal pain, vomiting and possible death.

Pre-existing Medical Conditions Aggravated By Exposure: People with pre-existing eye, skin or respiratory conditions may be more susceptible to the potential effects of this product.

This product contains both Nickel and Cobalt compounds which have been classified as carcinogens or potential carcinogens as listed by OSHA, IARC or NTP. This product contains material considered hazardous by the OSHA Hazard Communication Standard (29 CFR 191 0.1200). Potential Environmental Effects: See Section 12 for more information (Not listed).

Section III: COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS #	% by Wt.
Cobalt Additives	7440-48-4	1 - 4
Nickel Hydroxide	12054-48-7	9 - 25
Nickel Metal Hydride		10 - 22
Potassium Hydroxide	1310-58-3	5 - 13
Plastic Blend		8 - 15
Polyphenylene Ether	25134-01-4	
Polypropylene and Polyphenylene Ether	9003-07-0 25134-01-4	90:10
Other Non-hazardous		30 - 67



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Section IV: FIRST AID MEASURES

Eye Contact: Immediately flush eyes with water for at least 15 minutes. Get medical attention.

Skin Contact: Remove contaminated clothing and wash before reuse. Immediately rinse contact area with copious quantities of clean water. Provide first aid to burned area to prevent infection. Get medical attention.

Inhalation: In case of thermal decomposition or inhalation of electrolyte mist or metal dust, remove from exposure to fresh air. If necessary give oxygen. Get medical attention.

Ingestion: In case of ingestion of electrolyte DO NOT induce vomiting. If victim is conscious and alert give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

In case of ingestion of metal particulate attempt to wipe the particulate from the victim's mouth or rinse with clean water. If particulate has been swallowed and victim is conscious induce vomiting. Get medical attention.

Section V: FIRE FIGHTING MEASURES

Suitable Extinguishing Media:

Pack not breached: Water spray and foam.

Pack breached, no exposed plates: Water spray and foam.

Pack breached, exposed plates: Class D fire extinguisher, METL-X.

Unsuitable Extinguishing Media:

Pack breached, exposed plates: Water, Carbon Dioxide.

Products of Combustion: Oxides of carbon, metal; dense, toxic smoke; intense heat.

Protection of Firefighters: Do not enter fire area without proper protection including self-contained breathing apparatus and full protective equipment. Fight fire from a safe distance and a protected location due to the potential of hazardous vapors and decomposition products.

Special Fire Fighting Procedures: If the battery pack is being charged turn off electric power. In the event that the pack has been breached exposing electrode plates, monitor the area for a reoccurrence of the fire until all components have cooled to ambient temperature. Immediately cover the exposed components in a water bath to prevent spontaneous combustion of the plate materials.



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Section VI: ACCIDENTAL RELEASE MEASURES

Spill or Leak: Modules inside the battery pack are sealed against electrolyte loss. Under normal handling spillage of alkali electrolyte will not occur. Battery may emit electrolyte or hydrogen gas if charging or discharging rates exceed manufacturer's recommendations or if pack has been breached.

Personal Precautions: Use personal protection recommended in Section 8.

Methods for Containment: Move battery pack to well ventilated area to prevent hydrogen gas accumulation, if electrolyte leaks or spills, neutralize with a weak acid such as vinegar or citric acid before proper disposal. In the event of accumulated electrolyte contain and neutralize spill. Dispose in accordance with applicable local, state and federal regulations.

Section VII: HANDLING AND STORAGE

Handling:

The battery stores electrical energy and is capable of rapid energy discharge. Battery cell contents are under pressure. Handle battery carefully to avoid puncturing case or electrically shorting terminals.

Storage: Store in a cool dry place. Do not stack battery directly on another battery. Protect from physical damage and short circuits. Do not store batteries on electrically conductive surfaces.

Section VIII: EXPOSURE CONTROL/PERSONAL PROTECTION

Exposure Guidelines:

Cobalt Additives	TWA: 0.02 mg/rn ³ (ACGIH), TWA: 0.01 mg/rm ³ (OSHA)
Nickel Hydroxide	TWA: 0.2 mg/m ³ (ACGIH), TWA: 1 mg/m ³ (OSHA)
Nickel Metal Hydride	Not Established
Potassium Hydroxide	Ceiling: 2 mg/m ³ (ACGIH)
Plastic Blend:	Not Established
Polyphenylene Ether	
High Impact Polystyrene	
Polystyrene	



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Engineering Controls: Avoid charging batteries in areas where hydrogen gas can accumulate. Use local exhaust ventilation to maintain concentrations of hydrogen below the Lower Explosive Limit (L.E.L.). Consult a qualified ventilation professional regarding the proper methods to collect and transport flammable gases in ventilation systems. Insure proper ventilation is present during battery disassembly to control occupational exposure to battery component particulate and electrolyte mist and vapors.

Eye/Face Protection: Wear ANSI approved safety glasses with side shields during normal use. Wear NIOSH approved face shield with safety glasses and H.V protection during intentional disassembly.

Skin Protection: Wear nitrile butyl rubber, neoprene, or PVC gloves and protective clothing during battery component disassembly. Discard contaminated work clothing after one work day.

Respiratory Protection: None required during normal use. Use appropriate NIOSH approved respirator if airborne dust or mist concentrations exceed the PEL or TLV during intentional disassembly.

General Hygiene Considerations: Practice good housekeeping and personal hygiene procedures. Do not smoke in the area where batteries are being charged, stored or tested. Wear proper personal protective equipment during battery charging and disassembly operations.

Other Equipment: Safety showers and eyewash stations should be present in work area.

Section IX: PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Solid

Odor: Odorless

pH: Not Applicable

Freezing Point: Not Applicable

Boiling Point: Not Applicable

Evaporation Rate: Not Applicable

Vapor Pressure: Not Applicable

Vapor Density: Not Applicable

Solubility (water): Electrolyte is soluble. Remainder of pack is insoluble.



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Section X: STABILITY AND REACTIVITY

Stability Stable at ambient temperature.

Conditions to Avoid: Do not exceed manufacturer's recommendations for charging or use battery for an application for which it was not specifically designed. Do not electrically short.

Incompatible Materials: Avoid contact with acids and oxidizers.

Hazardous Decomposition Products: None under normal conditions. See Section 5 for decomposition products from thermal decomposition.

Possibility of Hazardous Reactions: Will not occur under normal conditions. See Section 5 for reaction products if pack is breached.

Section XI: TOXICOLOGY INFORMATION

ACUTE EFFECTS

Under normal conditions of use, the risk of exposure to hazardous components is minimal. If the cells become damaged due to mechanical failure or fire, contact with hazardous materials is possible.

CHRONIC EFFECTS

Under normal conditions of use, the risk of long-term exposure to hazardous components is minimal. Prolonged inhalation of metal dusts or electrolyte mists may cause serious respiratory illness. The chronic effects of long-term exposure to nickel bearing alloys (nickel metal hydride) are currently unknown. According to the national toxicology program (NTP) insoluble nickel compounds (nickel hydroxide) may reasonably be anticipated to be carcinogens, and an assessment by International Agency for Research on Cancer (IARC) concluded there was sufficient evidence that nickel and nickel compounds, as a group, but not necessarily as individual chemicals, were carcinogenic to humans. Cobalt compounds have been classified as carcinogens or potential carcinogens by OSHA and IARC.



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Section XII: ECOLOGICAL INFORMATION

General: This product is not expected to be harmful to the ecology.

Section XIII: DISPOSAL CONSIDERATIONS

Disposal: Always dispose of in discharged condition. Nickel-containing waste or scrap is normally collected to recover nickel content. Contact battery manufacturer for recycling options. Properly dispose of other waste in accordance with all applicable federal, state and local regulations.

Section XIV: TRANSPORTATION INFORMATION

US DOT (ground)

Proper Shipping Name: Batteries, Wet, Non-Spillable, {electric storage}, Class 8, UN 2800, PGIII

ICAO: Proper Shipping Name: Batteries, Wet, Non-Spillable, {electric storage}, Class 8, UN 2800, PGIII

IMDG: Proper Shipping Name: Batteries, Wet, Non-Spillable, {electric storage}, Class 8, UN 2800, PGIII

Please consult the applicable regulatory requirements before shipping this product.

Section XV: REGULATORY INFORMATION

RCRA: Cobasys spent Nickel Metal Hydride batteries are regulated as non-hazardous waste by the federal authorities and are safe for disposal in the normal municipal waste stream.

Exception: California, which requires non-households to dispose of these batteries in accordance with the California Universal Waste Rules. These batteries do contain recyclable materials and may be accepted for reclamation by local facilities. Contact the Rechargeable Battery Recycling Corporation's (RBRC) Battery Recycling program for additional information at their website www.rbrc.org for additional information.

SARA 313 Information: As an article, this battery and its contents under normal use are not subject to the requirements of Section 313 of the Emergency Planning & Community Right-to-Know Act of 1986.



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Section XVI: OTHER INFORMATION

The data in this Material Safety Data Sheet/ Product Safety Data Sheet relate to only specific material designated herein and do not relate to use in combination with any other material or in any process. The information set forth herein is based on technical data that COBASYS, LLC believes are reliable. It is intended for use by persons having technical skill and at their own discretion and risk. COBASYS makes no warranties, expressed or implied, and assumes no liability in connection with any use of this information. Nothing herein is to be taken as a license to operate under or a recommendation to infringe any patents. Any use of this data or information must be determined by the user to be in accordance with federal, state, and local laws and regulations. COBASYS assumes no responsibility and makes no warranty, expressed or implied, representation, promise or statement as to the completeness, accuracy, or currency of any data so provided.