

# NICKEL HYDROXIDE

NKH

## CAUTIONARY RESPONSE INFORMATION

<b>Common Synonyms</b> Green nickel oxide Nickel dihydroxide Nickelous hydroxide	Solid crystal      Green  Sinks in water.
<p>Keep people away. Wear goggles, self-contained breathing apparatus, and rubber gloves. Shut off ignition sources and call fire department. Notify local health and pollution control agencies. Protect water intakes.</p>	
<b>Fire</b>	COMBUSTIBLE. Ignites in air at approximately 400°C (752°F).
<b>Exposure</b>	CALL FOR MEDICAL AID. DUST OR SOLID Irritating to eyes, nose, and throat. Harmful if swallowed. Move to fresh air. Flush affected areas with plenty of water. IF IN EYES, hold eyelids open and flush with plenty of water. IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk and have victim induce vomiting.
<b>Water Pollution</b>	HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.

<b>1. CORRECTIVE RESPONSE ACTIONS</b> Dilute and disperse Stop discharge Contain Collection Systems: Pump; Dredge	<b>2. CHEMICAL DESIGNATIONS</b> 2.1 CG Compatibility Group: Not listed. 2.2 Formula: Ni(OH) <sub>2</sub> ·H <sub>2</sub> O Ni(OH) <sub>2</sub> 2.3 IMO/UN Designation: Not listed 2.4 DOT ID No.: 9140 2.5 CAS Registry No.: 12054-48-7 2.6 NAERG Guide No.: 154 2.7 Standard Industrial Trade Classification: 52269
<b>3. HEALTH HAZARDS</b>	
<p>3.1 <b>Personal Protective Equipment:</b> NIOSH-approved respiratory protection, side shield safety glasses or goggles, and rubber gloves.</p> <p>3.2 <b>Symptoms Following Exposure:</b> INHALATION: Irritant to mucous membrane of upper respiratory tract. EYES: Irritant to conjunctiva. SKIN: May cause sensitization. Sensation of burning or itching, followed by erythema and nodular eruption-fingers, wrists, and forearms.</p> <p>3.3 <b>Treatment of Exposure:</b> Consult a physician. INHALATION: Remove from source. EYES: Wash with copious amounts of water and get medical attention. SKIN: Wash with soap and water. INGESTION: Give 2 to 3 glasses of water and induce vomiting. Consult physician.</p> <p>3.4 <b>TLV-TWA:</b> Notice of intended change: 1.5 mg Ni/m<sup>3</sup></p> <p>3.5 <b>TLV-STEL:</b> Not listed.</p> <p>3.6 <b>TLV-Ceiling:</b> Not listed.</p> <p>3.7 <b>Toxicity by Ingestion:</b> Grade 2; LD<sub>50</sub> = 0.5 to 5 g/kg (rat).</p> <p>3.8 <b>Toxicity by Inhalation:</b> Currently not available.</p> <p>3.9 <b>Chronic Toxicity:</b> Carcinogen of nasal cavity, paranasal sinuses, and lungs.</p> <p>3.10 <b>Vapor (Gas) Irritant Characteristics:</b> Currently not available</p> <p>3.11 <b>Liquid or Solid Characteristics:</b> Currently not available</p> <p>3.12 <b>Odor Threshold:</b> Currently not available</p> <p>3.13 <b>IDLH Value:</b> 10 mg Ni/m<sup>3</sup></p> <p>3.14 <b>OSHA PEL-TWA:</b> 1 mg/m<sup>3</sup> as nickel</p> <p>3.15 <b>OSHA PEL-STEL:</b> Not listed.</p> <p>3.16 <b>OSHA PEL-Ceiling:</b> Not listed.</p> <p>3.17 <b>EPA AEGL:</b> Not listed</p>	

## 4. FIRE HAZARDS

- 4.1 **Flash Point:** Ignites in air at about 400°C.
- 4.2 **Flammable Limits in Air:** Currently not available
- 4.3 **Fire Extinguishing Agents:** Currently not available
- 4.4 **Fire Extinguishing Agents Not to Be Used:** Currently not available
- 4.5 **Special Hazards of Combustion Products:** None known
- 4.6 **Behavior in Fire:** Converts to black nickelic oxide (Ni<sub>2</sub>O<sub>3</sub>).
- 4.7 **Auto Ignition Temperature:** Ignites in air at 400°C (752°F).
- 4.8 **Electrical Hazards:** Currently not available
- 4.9 **Burning Rate:** Currently not available
- 4.10 **Adiabatic Flame Temperature:** Currently not available
- 4.11 **Stoichiometric Air to Fuel Ratio:** 2.4 (calc.)
- 4.12 **Flame Temperature:** Currently not available
- 4.13 **Combustion Molar Ratio (Reactant to Product):** 2.0 (calc.)
- 4.14 **Minimum Oxygen Concentration for Combustion (MOCC):** Not listed

## 5. CHEMICAL REACTIVITY

- 5.1 **Reactivity with Water:** No reaction
- 5.2 **Reactivity with Common Materials:** Currently not available
- 5.3 **Stability During Transport:** Stable
- 5.4 **Neutralizing Agents for Acids and Caustics:** Currently not available
- 5.5 **Polymerization:** Will not occur.
- 5.6 **Inhibitor of Polymerization:** Not pertinent

## 6. WATER POLLUTION

- 6.1 **Aquatic Toxicity:**  
96-hour TL<sub>50</sub> (Ni in soft water) varied from 4.6 to 9.8 mg/l for four species of warm water fishes.  
96-hour TL<sub>50</sub> (Ni in hard water), 27 and 32 mg/l for fathead minnow.  
48-hour LC<sub>50</sub> for Daphnia magna was 0.51 mg Ni/l.
- 6.2 **Waterfowl Toxicity:** Currently not available
- 6.3 **Biological Oxygen Demand (BOD):** Currently not available
- 6.4 **Food Chain Concentration Potential:** Currently not available
- 6.5 **GESAMP Hazard Profile:** Not listed

## 7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** Currently not available
- 7.2 **Storage Temperature:** Ambient
- 7.3 **Inert Atmosphere:** Currently not available
- 7.4 **Venting:** Currently not available
- 7.5 **IMO Pollution Category:** Currently not available
- 7.6 **Ship Type:** Currently not available
- 7.7 **Barge Hull Type:** Currently not available

## 8. HAZARD CLASSIFICATIONS

- 8.1 **49 CFR Category:** Not listed.
- 8.2 **49 CFR Class:** Not pertinent
- 8.3 **49 CFR Package Group:** Not listed.
- 8.4 **Marine Pollutant:** No
- 8.5 **NFPA Hazard Classification:** Not listed
- 8.6 **EPA Reportable Quantity:** 10 pounds
- 8.7 **EPA Pollution Category:** A
- 8.8 **RCRA Waste Number:** Not listed
- 8.9 **EPA FWPCA List:** Yes

## 9. PHYSICAL & CHEMICAL PROPERTIES

- 9.1 **Physical State at 15° C and 1 atm:** Solid
- 9.2 **Molecular Weight:** 92.72
- 9.3 **Boiling Point at 1 atm:** Decomposes
- 9.4 **Freezing Point:** 446°F = 230°C = 503.2°K
- 9.5 **Critical Temperature:** Currently not available
- 9.6 **Critical Pressure:** Currently not available
- 9.7 **Specific Gravity:** 4.1 at room temperature
- 9.8 **Liquid Surface Tension:** Not pertinent
- 9.9 **Liquid Water Interfacial Tension:** Not pertinent
- 9.10 **Vapor (Gas) Specific Gravity:** 3.2 (calculated)
- 9.11 **Ratio of Specific Heats of Vapor (Gas):** Currently not available
- 9.12 **Latent Heat of Vaporization:** Currently not available
- 9.13 **Heat of Combustion:** Currently not available
- 9.14 **Heat of Decomposition:** Currently not available
- 9.15 **Heat of Solution:** Currently not available
- 9.16 **Heat of Polymerization:** Currently not available
- 9.17 **Heat of Fusion:** Currently not available
- 9.18 **Limiting Value:** Currently not available
- 9.19 **Reid Vapor Pressure:** Currently not available

## NOTES

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9.20 SATURATED LIQUID DENSITY		9.21 LIQUID HEAT CAPACITY		9.22 LIQUID THERMAL CONDUCTIVITY		9.23 LIQUID VISCOSITY	
Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F	Temperature (degrees F)	British thermal unit inch per hour-square foot-F	Temperature (degrees F)	Centipoise
	NOT PERTINENT		NOT PERTINENT		NOT PERTINENT		NOT PERTINENT

9.24 SOLUBILITY IN WATER		9.25 SATURATED VAPOR PRESSURE		9.26 SATURATED VAPOR DENSITY		9.27 IDEAL GAS HEAT CAPACITY	
Temperature (degrees F)	Pounds per 100 pounds of water	Temperature (degrees F)	Pounds per square inch	Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F
	S L I G H T Y  S O L U B L E		C U R R E N T L Y  N O T  A V A I L A B L E		C U R R E N T L Y  N O T  A V A I L A B L E		C U R R E N T L Y  N O T  A V A I L A B L E