

# NICKEL SULFATE

NKS

## CAUTIONARY RESPONSE INFORMATION

<b>Common Synonyms</b> Nickelous sulfate	Solid crystals Pale green Odorless
Sinks and mixes slowly with water.	
<p>Avoid inhalation. Avoid contact with solid and dust. Notify local health and pollution control agencies. Protect water intakes.</p>	
<b>Fire</b>	Not flammable.
<b>Exposure</b>	CALL FOR MEDICAL AID.  SOLID Irritating to skin and eyes. Remove contaminated clothing and shoes. Flush affected areas with plenty of water. IF IN EYES, hold eyelids open and flush with plenty of water.
<b>Water Pollution</b>	Dangerous to aquatic life in high concentrations. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.

### 1. CORRECTIVE RESPONSE ACTIONS

Dilute and disperse  
Stop discharge  
Collection Systems: Dredge

### 2. CHEMICAL DESIGNATIONS

2.1 **CG Compatibility Group:** Not listed.  
2.2 **Formula:** NiSO<sub>4</sub>  
2.3 **IMO/UN Designation:** Not listed  
2.4 **DOT ID No.:** 9141  
2.5 **CAS Registry No.:** 7786-81-4  
2.6 **NAERG Guide No.:** 154  
2.7 **Standard Industrial Trade Classification:** 52349

### 3. HEALTH HAZARDS

3.1 **Personal Protective Equipment:** Goggles; gloves.  
3.2 **Symptoms Following Exposure:** Dermatitis.  
3.3 **Treatment of Exposure:** Wash all affected parts with plenty of water.  
3.4 **TLV-TWA:** Notice of intended change: 1.5 mg Ni/m<sup>3</sup>  
3.5 **TLV-STEL:** Not listed.  
3.6 **TLV-Ceiling:** Not listed.  
3.7 **Toxicity by Ingestion:** Currently not available  
3.8 **Toxicity by Inhalation:** Currently not available.  
3.9 **Chronic Toxicity:** Nose and lung cancer.  
3.10 **Vapor (Gas) Irritant Characteristics:** None  
3.11 **Liquid or Solid Characteristics:** Repeated contact can cause dermatitis.  
3.12 **Odor Threshold:** Odorless  
3.13 **IDLH Value:** 10 mg Ni/m<sup>3</sup>  
3.14 **OSHA PEL-TWA:** 1 mg/m<sup>3</sup> as nickel  
3.15 **OSHA PEL-STEL:** Not listed.  
3.16 **OSHA PEL-Ceiling:** Not listed.  
3.17 **EPA AEGL:** Not listed

### 4. FIRE HAZARDS

4.1 **Flash Point:**  
Not flammable  
4.2 **Flammable Limits in Air:** Not flammable  
4.3 **Fire Extinguishing Agents:** Not pertinent  
4.4 **Fire Extinguishing Agents Not to Be Used:** Not pertinent  
4.5 **Special Hazards of Combustion Products:** Not pertinent  
4.6 **Behavior in Fire:** Not pertinent  
4.7 **Auto Ignition Temperature:** Not flammable  
4.8 **Electrical Hazards:** Not pertinent  
4.9 **Burning Rate:** Not flammable  
4.10 **Adiabatic Flame Temperature:** Currently not available  
4.11 **Stoichiometric Air to Fuel Ratio:** Not pertinent.  
4.12 **Flame Temperature:** Currently not available  
4.13 **Combustion Molar Ratio (Reactant to Product):** Not pertinent.  
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:** No reaction  
5.3 **Stability During Transport:** Stable  
5.4 **Neutralizing Agents for Acids and Caustics:** Not pertinent  
5.5 **Polymerization:** Not pertinent  
5.6 **Inhibitor of Polymerization:** Not pertinent

### 6. WATER POLLUTION

6.1 **Aquatic Toxicity:**  
160 ppm/48 hr/rainbow trout/TLW/fresh water  
13.9 ppm/48 hr/prawn/LC<sub>50</sub>/salt water  
6.2 **Waterfowl Toxicity:** Currently not available  
6.3 **Biological Oxygen Demand (BOD):** None  
6.4 **Food Chain Concentration Potential:** None  
6.5 **GESAMP Hazard Profile:** Not listed

### 7. SHIPPING INFORMATION

7.1 **Grades of Purity:** Technical; reagent  
7.2 **Storage Temperature:** Ambient  
7.3 **Inert Atmosphere:** No requirement  
7.4 **Venting:** Open  
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:** 100 pounds  
8.7 **EPA Pollution Category:** B  
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:** 154.78  
9.3 **Boiling Point at 1 atm:** Decomposes  
9.4 **Freezing Point:** Not pertinent  
9.5 **Critical Temperature:** Not pertinent  
9.6 **Critical Pressure:** Not pertinent  
9.7 **Specific Gravity:** 3.68 at 20°C (solid)  
9.8 **Liquid Surface Tension:** Not pertinent  
9.9 **Liquid Water Interfacial Tension:** Not pertinent  
9.10 **Vapor (Gas) Specific Gravity:** Not pertinent  
9.11 **Ratio of Specific Heats of Vapor (Gas):** Not pertinent  
9.12 **Latent Heat of Vaporization:** Not pertinent  
9.13 **Heat of Combustion:** Not pertinent  
9.14 **Heat of Decomposition:** Not pertinent  
9.15 **Heat of Solution:** Not pertinent  
9.16 **Heat of Polymerization:** Not pertinent  
9.17 **Heat of Fusion:** Currently not available  
9.18 **Limiting Value:** Currently not available  
9.19 **Reid Vapor Pressure:** Currently not available

### NOTES

# NICKEL SULFATE

NKS

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
	N O T  P E R T I N E N T		N O T  P E R T I N E N T		N O T  P E R T I N E N T		N O T  P E R T I N E N T

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
34	28.190		N O T		N O T		N O T
36	28.790		P E R T I N E N T		P E R T I N E N T		P E R T I N E N T
38	29.390						
40	29.990						
42	30.590						
44	31.190						
46	31.790						
48	32.390						
50	32.990						
52	33.590						
54	34.190						
56	34.790						
58	35.390						
60	35.990						
62	36.590						
64	37.190						
66	37.790						
68	38.390						
70	38.990						
72	39.590						
74	40.190						
76	40.790						
78	41.390						
80	41.990						
82	42.590						
84	43.190						