Nickel tetracarbonyl

3.13 IDLH Value: 3.9
3.16 OSHA PEL-Ceiling:
3.15 OSHA PEL-STEL:
3.7 TLV-Ceiling:
3.3 TLV-STEL:
3.4 TLV-TWA:
3.17 EPA AEGL: Not listed

3.1 Chronic Toxicity: May produce cancer
3.2 Symptoms Following Exposure: Inhalation causes giddiness, headache, shortness of breath, vomiting; if victim is removed from exposure, symptoms may disappear but recur 12-36 hours later, along with blue taint of skin, liver, and cough, death may occur. Inhalation or contact with skin may also produce these symptoms. Abnormal nickel content of urine and blood is a measure of the severity of exposure. Contact of liquid with eyes causes severe irritation.
3.3 Treatment of Exposure: Medical help must be obtained following all exposure to vapor or liquid INHALATION; oral administration of sodium diethyldithiocarbamate trihydrate (Dithiocarb); complete bed rest and positive-pressure oxygen is indicated for pulmonary edema; treatment otherwise is symptomatic; EYES: flush with water for at least 15 min. SKIN: wipe off, wash with soap and water. INGESTION: do not induce vomiting.
3.4 TLV-TWA: 0.05 ppm
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 Fire Extinguishing Agents Not to Be Used: Currently not available.
3.10 Vapor (Gas) Irritant Characteristics: Vapors cause severe irritation of eyes and throat and can cause eye and nasal irritation. They cannot be tolerated even at low concentrations.
3.11 Liquid or Solid Characteristics: Severe skin irritant. Causes second- and third-degree burns on short contact and is very injurious to the eyes.
3.12 Odor Threshold: 1 ppm
3.13 IDLH Value: 2 ppm
3.14 OSHA PEL-TWA: 0.001 ppm
3.15 OSHA PEL-STEL: Not listed.
3.16 OSHA PEL-Ceiling: Not listed.
3.17 EPA AEGL: Not listed

5.4 Neutralizing Agents for Acids and Bases: Carbon dioxide
9.3 Heat of Solution: 5
9.15 Heat of Solution: 5
9.19 Heat of Solution: 5
9.2 Heat of Solution: 5
9.8 Heat of Solution: 5
9.7 Heat of Solution: 5
9.5 Heat of Solution: 5
9.4 Heat of Solution: 5
9.3 Heat of Solution: 5
9.2 Heat of Solution: 5
9.1 Heat of Solution: 5
5.1 Reactivity with Water: No reaction
5.2 Reactivity with Common Materials: No reaction
5.3 Stability During Transport: Stable below 100°C
5.4 Neutralizing Agents for Acids and Bases: Caustic: Not pertinent
5.5 Polymerization: Not pertinent
5.6 Inhibitor of Polymerization: Not pertinent
5.7 Health Hazards:
3.1 Personal Protective Equipment: Self-contained breathing apparatus; complete protective clothing
3.2 Symptoms Following Exposure: Inhalation causes giddiness, headache, shortness of breath, vomiting; if victim is removed from exposure, symptoms may disappear but recur 12-36 hours later, along with blue taint of skin, liver, and cough, death may occur. Inhalation or contact with skin may also produce these symptoms. Abnormal nickel content of urine and blood is a measure of the severity of exposure. Contact of liquid with eyes causes severe irritation.
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3.15 OSHA PEL-STEL: Not listed.
3.16 OSHA PEL-Ceiling: Not listed.
3.17 EPA AEGL: Not listed

1. CORRECTIVE RESPONSE ACTIONS
Stop discharge
Collection Systems: Pump; Dredge
Do not burn

2. CHEMICAL DESIGNATIONS
2.1 Compatibility Group: Not listed.
2.2 Formula: Ni(CO)\(_4\)
2.3 MO/UN Designation: 3.1/1259
2.4 DOT ID No.: 1259
2.5 CAS Registry No.: 13463-39-3
2.6 NAEHS Guide No.: 131
2.7 Standard Industrial Trade Classification: 52499

4. FIRE HAZARDS
4.1 Flash Point: –4°F C.C.
4.2 Flammable Limits in Air: 2% (LEL)
4.3 Fire Extinguishing Agents: Water
4.4 Fire Extinguishing Agents Not to Be Used: Currently not available
4.5 Special Hazards of Combustion Products: Unusual toxic gases formed by incomplete combustion.
4.6 Behavior in Fire: Containers may explode when heated.
4.7 Auto Ignition Temperature: <200°F (vap.)
4.8 Electrical Hazards: Currently not available
4.9 Burning Rate: 2.7 mm/min.
4.10 Adiabatic Flame Temperature: Currently not available
4.11 Stoichiometric Air to Fuel Ratio: 11.9 (kcal.)
4.12 Flame Temperature: Currently not available
4.13 Combustion Molar Ratio (Reactant to Product): 5.0 (kcal.)
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 below 100°C
5.4 Neutralizing Agents for Acids and Bases: Caustic: Not pertinent
5.5 Polymerization: Not pertinent
5.6 Inhibitor of Polymerization: Not pertinent

6. WATER POLLUTION
6.1 Aquatic Toxicity: Currently not available
6.2 Waterfront Toxicity: Currently not available
6.3 Biological Oxygen Demand (BOD): Currently not available
6.4 Food Chain Concentration Potential: Currently not available
6.5 SESAMP Hazard Profile: Bioaccumulation: Damage to living resources: 4 Human Oral hazard: 3 Human Contact hazard: II Reduction of amenities: XXX

7. SHIPPING INFORMATION
7.1 Grades of Purity: 99.9+%.
7.2 Storage Temperature: Cool ambient
7.3 Inert Atmosphere: Carbon monoxide at 15 psi
7.4 Venting: Cylinders must be stored in a well-ventilated area.
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: Poison
8.2 49 CFR Class: 6.1
8.3 49 CFR Package Group: I
8.4 Marine Pollutant: Yes
8.5 NPPA Hazard Classification:
Category Classification
Health Hazard (Blue): 4
Flammability (Red): 3
Instability (Yellow): 3

9. PHYSICAL & CHEMICAL PROPERTIES
9.1 Physical State at 15°C and 1 atm: Liquid
9.1.2 Molecular Weight: 170.7
9.2 Boiling Point at 1 atm: 109°F = 43°C = 316°K
9.4 Critical Temperature: Not pertinent
9.5 Critical Pressure: Not pertinent
9.6 Specific Gravity: Not pertinent
9.7 Specific Gravity: 1.320 at 17°C (liquid)
9.8 Liquid Surface Tension: 15.9 dynes/cm = 0.0159 N/m at 20°C
9.9 Liquid Water Interfacial Tension: Currently not available
9.10 Vapor (Gas) Specific Gravity: 5.9
9.11 Ratio of Specific Heats of Vapor (Gas): Currently not available
9.12 Latent Heat of Vaporization: 72 Btu/lb = 40 cal/g = 1.7 X 10^3 J/kg
9.13 Heat of Combustion: –2,970 Btu/lb = –1,650 cal/g = –69.0 X 10^3 J/kg
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 Values: Currently not available
9.19 Reid Vapor Pressure: Currently not available

NOTES
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