



# NICKEL NITRATE

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## 1. Product Identification

**Synonyms:** Nickel (II) nitrate, hexahydrate (1:2:6); nickelous nitrate; nitric acid, nickel (2+) salt, hexahydrate; Nickelous nitrate, 6- Hydrate

**CAS No.:** 13138-45-9 Anhydrous; (13478-00-7 Hexahydrate)

**Molecular Weight:** 290.83

**Chemical Formula:** Ni(NO<sub>3</sub>)<sub>2</sub> 6H<sub>2</sub>O

## 2. Composition/Information on Ingredients

| Ingredient     | CAS No     | Percent   |
|----------------|------------|-----------|
| Hazardous      |            |           |
| -----          | -----      | -----     |
| Nickel Nitrate | 13138-45-9 | 90 - 100% |
| Yes            |            |           |

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## 3. Hazards Identification

### Emergency Overview

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**DANGER! STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE. HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. MAY CAUSE**

**ALLERGIC SKIN OR RESPIRATORY REACTION. CANCER HAZARD. CAN CAUSE CANCER. Risk of cancer depends on duration and level of exposure. Very toxic to aquatic organisms; may cause long term adverse effects in the aquatic environment.**

**SAF-T-DATA**<sup>(tm)</sup> Ratings (Provided here for your convenience)

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Health Rating: 3 - Severe (Cancer Causing)

Flammability Rating: 0 - None

Reactivity Rating: 3 - Severe (Oxidizer)

Contact Rating: 3 - Severe (Life)

Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES

Storage Color Code: Yellow (Reactive)

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### **Potential Health Effects**

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#### **Inhalation:**

Causes irritation to the respiratory tract. Symptoms may include coughing, sore throat, and shortness of breath. Lung damage may result from a single high exposure or lower repeated exposures. Lung allergy occasionally occurs, with asthma type symptoms.

#### **Ingestion:**

Toxic. Symptoms may include abdominal pain, diarrhea, nausea, and vomiting. Absorption is poor, but should it occur, symptoms may include giddiness, capillary damage, myocardial weakness, central nervous system depression, and kidney and liver damage.

#### **Skin Contact:**

Causes irritation. May cause skin allergy with itching, redness or rash. Some individuals may become sensitized to the substance and suffer "nickel itch", a form of dermatitis.

#### **Eye Contact:**

Causes irritation, redness, and pain.

#### **Chronic Exposure:**

Prolonged or repeated exposure to excessive concentrations may affect lungs, liver and kidneys. Chronic exposure to nickel and nickel compounds is associated with cancer.

#### **Aggravation of Pre-existing Conditions:**

Persons with pre-existing skin disorders, impaired respiratory or pulmonary function, or with a history of asthma, allergies, or sensitization to nickel compounds may be at an increased risk upon exposure to this substance.

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## **4. First Aid Measures**

#### **Inhalation:**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult,

give oxygen. Get medical attention.

**Ingestion:**

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.

**Skin Contact:**

Wipe off excess material from skin then immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention.

Wash clothing before reuse. Thoroughly clean shoes before reuse.

**Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

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## 5. Fire Fighting Measures

**Fire:**

Not combustible, but substance is a strong oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition. Increases the flammability of any combustible material.

**Explosion:**

Contact with oxidizable substances may cause extremely violent combustion. Strong oxidants may explode when shocked, or if exposed to heat, flame, or friction. Also may act as initiation source for dust or vapor explosions.

**Fire Extinguishing Media:**

Water or water spray in early stages of fire. Foam or dry chemical may also be used.

**Special Information:**

Wear full protective clothing and breathing equipment for high-intensity fire or potential explosion conditions.

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## 6. Accidental Release Measures

Remove all sources of ignition. Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Clean up spills in a manner that does not disperse dust into the air. Use non-sparking tools and equipment. Reduce airborne dust and prevent scattering by moistening with water. Pick up spill for recovery or disposal and place in a closed container.

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## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage and moisture. Isolate from any source of heat or ignition. Avoid storage

on wood floors. Separate from incompatibles, combustibles, organic or other readily oxidizable materials. Areas in which exposure to nickel metal or soluble nickel compounds may occur should be identified by signs or appropriate means, and access to the area should be limited to authorized persons. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

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## 8. Exposure Controls/Personal Protection

### **Airborne Exposure Limits:**

-OSHA Permissible Exposure Limit (PEL):

soluble Nickel compounds as Ni: 1 mg/m<sup>3</sup> (TWA)

-ACGIH Threshold Limit Value (TLV):

soluble Nickel compounds as Ni: 0.1 mg/m<sup>3</sup> (TWA), A4 - Not classifiable as a human carcinogen

### **Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

### **Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded and engineering controls are not feasible, a full facepiece particulate respirator (NIOSH type N100 filters) may be worn for up to 50 times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

### **Skin Protection:**

Rubber or neoprene gloves and additional protection including impervious boots, apron, or coveralls, as needed in areas of unusual exposure.

### **Eye Protection:**

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

### **Other Control Measures:**

Eating, drinking, and smoking should not be permitted in areas where solids or liquids containing soluble nickel compounds are handled, processed, or stored. NIOSH recommends pre-placement and periodic medical exams, with maintaining of records for all employees exposed to nickel in the workplace.

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## 9. Physical and Chemical Properties

**Appearance:**

Green, transparent crystals.

**Odor:**

Odorless.

**Solubility:**

238.5g/100cc water @ 0C

**Specific Gravity:**

2.05

**pH:**

3.5 - 5.5 (5% solution @ 25C (77F).

**% Volatiles by volume @ 21C (70F):**

0

**Boiling Point:**

137C (279F)

**Melting Point:**

56.7C (135F)

**Vapor Density (Air=1):**

No information found.

**Vapor Pressure (mm Hg):**

0 @ 20C (68F)

**Evaporation Rate (BuAc=1):**

No information found.

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## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage. Substance has both oxidant and reducing characteristics, and is unstable when heated or shocked.

**Hazardous Decomposition Products:**

Emits toxic fumes of nickel and nitrogen oxides when heated to decomposition.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Aluminum, boron phosphide, cyanides, esters, combustible material, phospham, phosphorus, sodium hypophosphite, stannous chloride, thiocyanates, strong reducing agents, and organic materials.

**Conditions to Avoid:**

Heat, shock, friction, incompatibles.

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## 11. Toxicological Information

Nickelous Nitrate Hexahydrate; Oral rat LD50: 1620 mg/kg. Investigated as a tumorigen.

| Ingredient<br>Category      | ---NTP Carcinogen--- |             | IARC |
|-----------------------------|----------------------|-------------|------|
|                             | Known                | Anticipated |      |
| Nickel Nitrate (13138-45-9) | Yes                  | No          | 1    |

## 12. Ecological Information

### Environmental Fate:

When released into water, this material is not expected to evaporate significantly. This material is not expected to significantly bioaccumulate.

### Environmental Toxicity:

Dangerous to the environment. Very toxic to aquatic organisms; may cause long term adverse effects in the aquatic environment.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

### Domestic (Land, D.O.T.)

**Proper Shipping Name:** NICKEL NITRATE

**Hazard Class:** 5.1

**UN/NA:** UN2725

**Packing Group:** III

**Information reported for product/size:** 4X25LB

### International (Water, I.M.O.)

**Proper Shipping Name:** NICKEL NITRATE

**Hazard Class:** 5.1

**UN/NA:** UN2725

Packing Group: III  
**Information reported for product/size: 4X25LB**

## 15. Regulatory Information

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-----\Chemical Inventory Status - Part 1\-----
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Ingredient                                TSCA  EC   Japan
Australia
-----
Nickel Nitrate (13138-45-9)              Yes  Yes  Yes
Yes

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-----\Chemical Inventory Status - Part 2\-----
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Ingredient                                Korea  DSL  --Canada--
Phil.                                     NDSL
-----
Nickel Nitrate (13138-45-9)              Yes   Yes  No
Yes

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-----\Federal, State & International Regulations - Part 1\-----
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313-----
Ingredient                                -SARA 302-  -----SARA
Chemical Catg.                            RQ      TPQ      List
-----
Nickel Nitrate (13138-45-9)              No      No       No      Nickel
cmpd/

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-----\Federal, State & International Regulations - Part 2\-----
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TSCA-
Ingredient                                CERCLA  261.33  8(d)
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Nickel Nitrate (13138-45-9)              No      No       No

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Chemical Weapons Convention: No      TSCA 12(b): No      CDTA: No  
SARA 311/312: Acute: Yes      Chronic: Yes      Fire: No      Pressure: No  
Reactivity: Yes      (Pure / Solid)

**WARNING:**  
**THIS PRODUCT CONTAINS A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.**

**Australian Hazchem Code:** 1Y  
**Poison Schedule:** None allocated.

**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

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## 16. Other Information

**NFPA Ratings:** Health: 1 Flammability: 0 Reactivity: 0 Other: **Oxidizer**

**Label Hazard Warning:**

DANGER! STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE. HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. MAY CAUSE ALLERGIC SKIN OR RESPIRATORY REACTION. CANCER HAZARD. CAN CAUSE CANCER. Risk of cancer depends on duration and level of exposure. Very toxic to aquatic organisms; may cause long term adverse effects in the aquatic environment.

**Label Precautions:**

- Do not store near combustible materials.
- Do not get in eyes, on skin, or on clothing.
- Remove and wash contaminated clothing promptly.
- Wash thoroughly after handling.
- Do not breathe dust.
- Keep container closed.
- Use only with adequate ventilation.
- Avoid release to the environment.

**Label First Aid:**

If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, wipe off excess material from skin then immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. In all cases, get medical attention.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

MSDS Section(s) changed since last revision of document include: 3, 11, 12, 16.

**Disclaimer:**

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