

# School Material Safety Data Sheet

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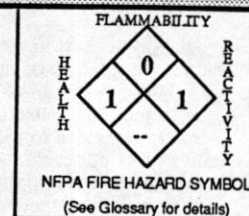
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NICKEL NITRATE

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## SECTION 1. INTRODUCTORY INFORMATION

**MATERIAL NAME AND FORMULA:** NICKEL NITRATE;  $\text{Ni}(\text{NO}_3)_2 \cdot 6(\text{H}_2\text{O})$   
**SYNONYMS:** Nickalous Nitrate; Nickalous Nitrate Hexahydrate; Nickel (II) Nitrate Hexahydrate  
**CAS NUMBER:** 13478-00-7  
**INGREDIENTS:** Nickalous Nitrate (CAS #13138-45-9) and water of crystallization, >98.5%  
**DOT CLASSIFICATION:** Oxidizer  
**EPA CLASSIFICATION:** Hazardous Substance  
**MANUFACTURERS INCLUDE:** Always request Material Safety Data Sheets from your chemical supplier. These should indicate the manufacturer of the substance and include an emergency phone number to call. The Manufacturers section of this book contains a listing of some of the larger manufacturers and available emergency numbers.  
**DESCRIPTION:** Bright green, odorless, deliquescent crystals.



**INTRODUCTORY INFORMATION:** This material is a strong oxidizing agent and a dangerous fire risk. Nickel compounds can be irritating to the skin, eyes, and respiratory membranes. Possible carcinogenic hazard (see sect. 4). Most common area of use would be in the chemistry lab.

## SECTION 2. USE AND STORAGE INFORMATION

### -- PRELIMINARY PLANNING CONSIDERATIONS --

- Safety glasses or goggles and protective clothing (rubberized apron, etc.) should be worn for all experiments.
- Be sure eyewash station and safety shower are in good working order and readily available.
- Always provide for safe disposal of all chemical waste generated in the lab. Check applicable regulations prior to use.
- Eliminate all possible sources of ignition. Nearby electrical service and equipment should be explosion proof (no spark-generation potential).
- This material increases the flammability of any combustible substance with which it is in contact. This compound contains both oxidant and reducing agent and, hence, it can be unstable when heated or shocked.

### -- USAGE PRECAUTIONS AND PROCEDURES --

- READ THE LABEL and follow all precautions.
- Maintain good housekeeping practices to avoid unintentional mixing with incompatible materials.
- Avoid creating airborne dust or misting conditions.

### -- ADDITIONAL INFORMATION --

- Contact lens wearers: soft lenses may absorb and all lenses may concentrate irritants. For safety, contact lenses should not be worn in the laboratory.
- Persons with history of asthma, allergies, or sensitization to nickel compounds are at increased risk.
- After working with this material, always wash hands and face before eating, drinking or smoking.
- Incompatible with aluminum, boron phosphide, cyanides, esters, and other combustibles, phosphorus, sodium hypophosphite, stannous chloride, and thiocyanates.
- This compound contains both an oxidant and a reducing agent, and hence it can be unstable when heated or shocked and is a fire or explosion hazard when mixed with combustibles or readily oxidizable materials.

### -- PREFERRED STORAGE LOCATION AND METHODS --

- Storage area should be cool and well ventilated. Containers should be tightly closed.
- Do not store chemicals alphabetically by name; store by chemical family, instead, to keep compatibles together.
- All chemical containers should be protected from physical damage and kept out of direct sunlight.
- Purchase only amounts equivalent to one year's needs.
- Store with compatible materials on sturdy shelving away from combustible or oxidizable materials.
- Smoking should not be permitted in storage or use areas.

## SECTION 3. SPILLS & DISPOSAL PROCEDURES

### IF MATERIAL IS SPILLED:

- Remove combustibles and sources of heat or ignition. Provide maximum ventilation.
- Remove spills promptly by careful sweeping or vacuuming and place in appropriate container for disposal or reclaiming. Cover spill with water as necessary to prevent fire or explosion hazard from contact with organic material. Mop up remaining residue with water for treatment.
- Cleanup personnel should have protection against inhalation of vapors, mist, or skin contact.

### DISPOSAL OF SMALL QUANTITIES:

- Treat with soda ash and water to precipitate. Filter and bury insoluble basic nickel compounds in an approved landfill. Follow applicable regulations.

**DISPOSAL OF LARGER AMOUNTS OF UNWANTED CHEMICALS:** Contact a licensed disposal company.

\*\*\* FOLLOW ALL APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS FOR ALL WASTE DISPOSAL \*\*\*

**SECTION 4: HEALTH HAZARDS**

- Current (1985-86) ACGIH TLV: 8 hr. TWA: 0.1 mg/m<sup>3</sup> as nickel soluble compounds.
- Current OSHA PEL 1.0 mg/m<sup>3</sup> as Ni metal and soluble compounds.
- NIOSH has recommended 8-hr TWA 0.015 mg/m<sup>3</sup> (as Ni) and control as a possible carcinogen for all inorganic nickel compounds (controversial).
- Rat, Oral, LD<sub>50</sub>: 1620 mg/kg (hexahydrate)
- Inhalation of dust may cause upper respiratory tract irritation. Individuals who are hypersensitive to nickel may develop asthma, dyspnea, bronchitis, and wheezing from a minute exposure.
- Eye contact with particles or mist is irritating.
- Skin contact can cause irritation and sensitization reactions which may be accentuated by heat and humidity. "Nickel itch" is a dermatitis due to nickel sensitization. Initial symptoms are pruritis followed after several days by primary skin eruptions or eczema.
- Ingestion can cause gastrointestinal disorders.
- Certain nickel compounds are known to be carcinogenic (CAS 7440-02-0). Nickel nitrate has not been shown to be directly carcinogenic, but current recommendations are that all airborne nickel dusts be regarded as potential carcinogens.

**SECTION 5: FIRST AID PROCEDURES****Eye contact:**

- Flush eyes promptly with plenty of running water for at least 15 minutes, including under the eyelids.
- Get prompt medical attention.\*

**Skin contact:**

- Flush affected area with large amounts of water.
- Wash exposed areas of skin with soap and water.
- Get medical help when area of skin exposure is large or if irritation persists.\*

**Inhalation:**

- Remove patient to fresh air; restore and/or support breathing as necessary.
- Get medical help for coughing or breathing difficulty.\*

**Ingestion:**

- Get prompt medical attention.\* Gastric lavage may be indicated.

\* Get medical help (in school, paramedic, community) for further treatment, observation, and support after first aid.

**SECTION 6: FIRE PROCEDURES AND DATA**

- Dangerous fire risk: Strong oxidizing agent.
- Fire or explosion hazard when mixed with combustibles or readily oxidizable materials.
- Increases fire hazard of combustible materials with which it makes contact.
- Extinguishing media: Use media appropriate to surrounding fire conditions.
- For major fires, for fires involving a number of chemicals, or if large quantities of this material are involved, fire fighters should wear appropriate protective clothing and use respiratory protection. Self-contained breathing apparatus is recommended.
- Use of a direct water stream may scatter fire.
- A water spray may be used to cool fire-exposed containers and disperse vapors.

**THERMAL DEGRADATION PRODUCTS:** May include toxic oxides of nitrogen and nickel-containing fumes.

**SECTION 7: PHYSICAL DATA**

BOILING POINT (@ 1 atm.) (-H<sub>2</sub>O = 1) ... 136.7  
SOLUBILITY IN WATER (@ 0°C) ... 238.5 g/100g  
pH OF AQUEOUS SOLUTION ... 4.0

SPECIFIC GRAVITY (H<sub>2</sub>O = 1) ... 2.06  
MELTING POINT ... 56.7°C  
MOLECULAR WEIGHT ... 290.85

DATA SOURCES: Genium's Industrial MSDS #20 (5/84) and references 1-7, 9-12, 14, 27, 31, 38, 501, 502, 503, 505, 512.  
(see glossary for titles)

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Medical Review