### 1 Identification

**Product identifier**

**Product name:** Nickel(II) phosphate hydrate  
Stock number: 39478
CAS Number: 27176-17-6  
EC number: 233-844-5
Index number: 028-032-00-0

**Relevant identified uses of the substance or mixture and uses advised against.**

**Identified use:** SU24  Scientific research and development

**Details of the supplier of the safety data sheet**

**Manufacturer/Supplier:**
Alfa Aesar  
Thermo Fisher Scientific Chemicals, Inc.  
30 Bond Street  
Ward Hill, MA 01835-8099
Tel: 800-343-0660  
Fax: 800-322-4757
Email: tech@alfa.com  
www.alfa.com

**Information Department:** Health, Safety and Environmental Department

**Emergency telephone number:**
During normal business hours (Monday-Friday, 8am-7pm EST), call (800) 343-0660. After normal business hours, call Carechem 24 at (866) 928-0789.

### 2 Hazard(s) identification

**Classification of the substance or mixture in accordance with 29 CFR 1910 (OSHA HCS)**

- **GHS08 Health hazard**
  - Resp. Sens. 1 H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
  - Carc. 1B H350 May cause cancer.
  - STOT RE 1 H372 Causes damage to the lung, the kidneys and the liver through prolonged or repeated exposure. Route of exposure: Inhalative.

- **GHS07 Skin Sens. 1 H317 May cause an allergic skin reaction.**

**Hazards not otherwise classified**
No information known.

**Label elements**

**GHS label elements** The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)

**Hazard pictograms**

- **GHS08 Signal word** Danger

**Hazard statements**
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
H317 May cause an allergic skin reaction.  
H350 May cause cancer.  
H372 Causes damage to the lung, the kidneys and the liver through prolonged or repeated exposure. Route of exposure: Inhalative.

**Precautionary statements**
P280 Do not breathe dust/fume/gas/mist/vapours/spray.  
P284 In case of inadequate ventilation wear respiratory protection.  
P351 Avoid breathing dust/fume/gas/mist/vapours/spray.  
P342+P311 If experiencing respiratory symptoms: Call a POISON CENTER/doctor/…  
P405 Store locked up.  
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

**WHMIS classification**
D2A - Very toxic material causing other toxic effects

**Classification system**

**HMIS ratings (scale 0-4)**

- Health (acute effects) = 1  
- Flammability = 0  
- Physical Hazard = 1

**Other hazards**

### 3 Composition/information on ingredients

**Chemical characterization: Substances**

- **CAS® Description:**  
  - 27176-17-6 Nickel(II) phosphate hydrate
- **Identification number(s):**
  - EC number: 233-844-5

(Contd. on page 2)
4 First-aid measures

Description of first aid measures

After inhalation
Supply fresh air. If required, provide artificial respiration. Keep patient warm. Seek immediate medical advice.

After skin contact
Immediately wash with water and soap and rinse thoroughly. Seek immediate medical advice.

After eye contact
Rinse opened eye for several minutes under running water. Then consult a doctor.

After swallowing
Seek medical treatment.

Information for doctor

Most important symptoms and effects, both acute and delayed: No further relevant information available.

Indication of any immediate medical attention and special treatment needed: No further relevant information available.

5 Fire-fighting measures

Extinguishing media
Product is not flammable. Use fire-fighting measures that suit the surrounding fire.

Suitable extinguishing agents

Special hazards arising from the substance or mixture

If this product is involved in a fire, the following can be released:

Phosphorus oxides
Toxic metal oxide fume

Advice for firefighters

Protective equipment:
Wear self-contained respirator.
Wear fully protective impervious suit.

6 Accidental release measures

Personal precautions, protective equipment and emergency procedures

Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation.

Environmental precautions:
Do not allow material to be released to the environment without proper governmental permits.

Methods and material for containment and cleaning up:
Dispose of contaminated material as waste according to section 13.
Ensure adequate ventilation.

Prevention of secondary hazards: No special measures required.

Reference to other sections
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

Handling

Precautions for safe handling
Keep container tightly sealed.
Store in cool, dry place in tightly closed containers.
Ensure good ventilation at the workplace.
Open and handle container with care.

Information about protection against explosions and fires: The product is not flammable

Conditions for safe storage, including any incompatibilities

Storage

Requirements to be met by storerooms and receptacles: No special requirements.
Information about storage in one common storage facility: Not required.
Further information about storage conditions:
Keep container tightly sealed.
Store in cool, dry conditions in well sealed containers.

Specific end use(s): No further relevant information available.

8 Exposure controls/personal protection

Additional information about design of technical systems:

Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

Control parameters

Components with limit values that require monitoring at the workplace:

Nickel and inorganic compounds, as Ni

<table>
<thead>
<tr>
<th>Country</th>
<th>Limit Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH TLV</td>
<td>1.5, A5-inhalable particulate (metal)</td>
</tr>
<tr>
<td>ACGIH TLV</td>
<td>0.2, A1-inhalable particulate (insoluble compounds)</td>
</tr>
<tr>
<td>ACGIH TLV</td>
<td>0.1, A4-inhalable particulate (soluble compounds)</td>
</tr>
<tr>
<td>Austria</td>
<td>Carcinogen</td>
</tr>
<tr>
<td>Denmark TWA</td>
<td>0.5</td>
</tr>
<tr>
<td>Finland TWA</td>
<td>0.1 (skin) Carcinogen</td>
</tr>
<tr>
<td>France VME</td>
<td>1; C3-Carcinogen</td>
</tr>
<tr>
<td>Germany</td>
<td>Carcinogen</td>
</tr>
<tr>
<td>Hungary</td>
<td>0.005-STEL; Carcinogen (insoluble compounds)</td>
</tr>
<tr>
<td>Japan</td>
<td>1; 2B-Carcinogen</td>
</tr>
<tr>
<td>Korea TLV</td>
<td>1.5</td>
</tr>
<tr>
<td>Netherlands MAC-TGG</td>
<td>1; Carcinogen</td>
</tr>
<tr>
<td>Norway TWA</td>
<td>1 (insoluble compounds)</td>
</tr>
<tr>
<td>Poland TWA</td>
<td>0.25</td>
</tr>
<tr>
<td>Russia</td>
<td>0.05-STEL</td>
</tr>
<tr>
<td>Sweden NGV</td>
<td>0.5 (dust)</td>
</tr>
<tr>
<td>Switzerland MAK-W</td>
<td>0.5; Carcinogen</td>
</tr>
<tr>
<td>United Kingdom TWA</td>
<td>0.1</td>
</tr>
<tr>
<td>USA PEL</td>
<td>1</td>
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</tbody>
</table>

Additional information: No data
Exposure controls

Personal protective equipment

General protective and hygienic measures

The usual precautionary measures for handling chemicals should be followed.

Remove all soiled and contaminated clothing immediately.

Keep away from foodstuffs, beverages and feed.

Wash hands before breaks and at the end of work.

Store protective clothing separately.

Maintain an ergonomically appropriate working environment.

Breathing equipment: Use suitable respirator when high concentrations are present.

Protection of hands:

Impervious gloves

Check protective gloves prior to each use for their proper condition.

The selection of suitable gloves not only depends on the material, but also on quality. Quality will vary from manufacturer to manufacturer.

Eye protection: Safety glasses

Body protection: Protective work clothing.

9 Physical and chemical properties

Information on basic physical and chemical properties

General Information

Appearance:

Form: Powder

Color: Green

Odor: Odorless

Odor threshold: Not determined.

pH-value: Not applicable.

Change in condition

Melting point/Melting range: Not determined

Boiling point/Boiling range: Not determined

Sublimation temperature / start: Not determined

Flash point: Not applicable.

Flammability (solid, gaseous): Not determined.

Ignition temperature: Not determined

Decomposition temperature: Not determined

Auto igniting: Not determined.

Danger of explosion: Product does not present an explosion hazard.

Explosion limits:

Lower: Not determined

Upper: Not determined

Vapor pressure: Not applicable.

Density: Not determined.

Relative density: Not determined.

Vapor density: Not applicable.

Evaporation rate: Not applicable.

Solubility in / Miscibility with

Water: Soluble

Partition coefficient (n-octanol/water): Not determined.

Viscosity:

Dynamic: Not applicable.

Kinematic: Not applicable.

Other information: No further relevant information available.

10 Stability and reactivity

Reactivity: No information known.

Chemical stability: Stable under recommended storage conditions.

Thermal decomposition / conditions to be avoided: Decomposition will not occur if used and stored according to specifications.

Possibility of hazardous reactions: No dangerous reactions known.

Conditions to avoid: No further relevant information available.

Incompatible materials:

Bases

Alkali metals

Alkaline earth metals

Hazardous decomposition products:

Phosphorus oxides (e.g. P2O5)

Toxic metal oxide fume

11 Toxicological information

Information on toxicological effects

Acute toxicity: No effects known.

LD/LC50 values that are relevant for classification: No data

Skin irritation or corrosion: May cause irritation

Eye irritation or corrosion: May cause irritation

Sensitization:

May cause allergy or asthma symptoms or breathing difficulties if inhaled.

May cause an allergic skin reaction.

Germ cell mutagenicity: No effects known.

Carcinogenicity:

May cause cancer.

IARC Group 1: Carcinogenic to humans: sufficient evidence of carcinogenicity.

ACGIH A1: Confirmed human carcinogen: Agent is carcinogenic to humans based on epidemiologic studies of, or convincing clinical evidence in, exposed humans.

Reproductive toxicity: No effects known.

Specific target organ system toxicity - repeated exposure:

Causes damage to the lung, the kidneys and the liver through prolonged or repeated exposure. Route of exposure: Inhalative.

Specific target organ system toxicity - single exposure: No effects known.

Aspiration hazard: No effects known.

Subacute to chronic toxicity:

Nickel and nickel compounds may cause a form of dermatitis known as nickel itch. They may also cause intestinal disorders, convulsions and asphyxia. Airborne nickel contaminated dusts are regarded as carcinogenic to the respiratory tract.
Product name: Nickel(II) phosphate hydtrate

(Contd. of page 3)

12 Ecological information

Toxicity
Aquatic toxicity: No further relevant information available.
Persistence and degradability: No further relevant information available.
Bioaccumulative potential: No further relevant information available.
Mobility in soil: No further relevant information available.
Ecotoxicological effects:
Remark: Very toxic for aquatic organisms
Additional ecological information:
General notes:
Do not allow material to be released to the environment without proper governmental permits.
Do not allow product to reach ground water, water course or sewage system.
Danger to drinking water if even small quantities leak into the ground.
Also poisonous for fish and plankton in water bodies.
May cause long lasting harmful effects to aquatic life.
Avoid transfer into the environment.
Very toxic for aquatic organisms
Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.
Other adverse effects: No further relevant information available.

13 Disposal considerations

Waste treatment methods
Recommendation: Consult state, local or national regulations to ensure proper disposal.
Uncleaned packagings:
Recommendation: Disposal must be made according to official regulations.
Recommended cleansing agent: Water, if necessary with cleansing agents.

14 Transport information

UN-Number
DOT, IMDG, IATA: UN3077

UN proper shipping name
DOT: Environmentally hazardous substances, solid, n.o.s. (Nickel(II) phosphate hydtrate)
IMDG: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Nickel(II) phosphate hydtrate), MARINE POLLUTANT
IATA: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Nickel(II) phosphate hydtrate)

Transport hazard class(es)
DOT, IMDG, IATA

<table>
<thead>
<tr>
<th>Class</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>9 (M7) Miscellaneous dangerous substances and articles</td>
</tr>
</tbody>
</table>

Packing group
DOT, IMDG, IATA: III

Environmental hazards:
Marine pollutant (IMDG): Symbol (fish and tree)
Special marking (ADR): Symbol (fish and tree)
Special marking (IATA): Symbol (fish and tree)
Special precautions for user: Warning: Miscellaneous dangerous substances and articles
EMS Number: F-A,S-F

Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: Not applicable.

Transport/Additional information:
DOT
Marine Pollutant (DOT): No
Remarks: Special marking with the symbol (fish and tree).

UN "Model Regulation": UN3077, Environmentally hazardous substances, solid, n.o.s. (Nickel(II) phosphate hydtrate), 9, III

15 Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture
GHS label elements: The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)
Hazard pictograms
GHS08

Signal word: Danger
Hazard statements:
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317 May cause an allergic skin reaction.
H350 May cause cancer.
H372 Causes damage to the lung, the kidneys and the liver through prolonged or repeated exposure. Route of exposure: Inhalative.
Precautionary statements:
P260: Do not breathe dust/ffume/gas/mist/vapours/spray.
Product name: Nickel(II) phosphate hydrate

38. In case of inadequate ventilation wear respiratory protection.
P284

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P342+P311 If experiencing respiratory symptoms: Call a POISON CENTER/doctor/…
P405

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.
P420

National regulations
All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.

SARA Section 313 (specific toxic chemical listings)
27176-17-6 Nickel(II) phosphate hydrate

California Proposition 65
Prop 65 - Chemicals known to cause cancer
27176-17-6 Nickel(II) phosphate hydrate

Prop 65 - Developmental toxicity
Substance is not listed.
Prop 65 - Developmental toxicity, female
Substance is not listed.
Prop 65 - Developmental toxicity, male
Substance is not listed.

Information about limitation of use:
For use only by technically qualified individuals.
This product contains nickel and is subject to the reporting requirements of section 313 of the Emergency Planning and Community Right to Know act of 1986 and 40CFR372.

Other regulations, limitations and prohibitive regulations
Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006. Substance is not listed.

The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed.
Substance is not listed.

Annex XIV of the REACH Regulations (requiring Authorisation for use) Substance is not listed.

Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information
Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

Department issuing SDS: Global Marketing Department
Date of preparation / last revision 11/24/2015 / -

Abbreviations and acronyms:

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

IATA-DGR: Dangerous Goods Regulations by the “International Air Transport Association” (IATA)

ICAO: International Civil Aviation Organization

ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

GV: US Department of Transportation

IATA: International Air Transport Association

ENEC: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

HMIS: Hazardous Materials Identification System (USA)

WHMIS: Workplace Hazardous Materials Information System (Canada)

LD50: Lethal dose, 50 percent

LC50: Lethal concentration, 50 percent

vPvB: very Persistent and very Bioaccumulative

ACGIH: American Conference of Governmental Industrial Hygienists (USA)

OSHA: Occupational Safety and Health Administration (USA)

NTP: National Toxicology Program (USA)

IARC: International Agency for Research on Cancer

EPA: Environmental Protection Agency (USA)