
**SECTION 1: Identification of the substance / mixture and of the company / undertaking**

**Date issued**
19.06.2017

**1.1. Product identifier**

- **Product name**: NICKEL SULPHATE
- **REACH Reg. No.**: 01-2119439361-44-0002
- **CAS no.**: 10101-97-0
- **EC no.**: 232-104-9
- **Extended SDS with ES incorporated**: Yes

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

- **Use categories nordic (UCN)**: Plating agent; Battery manufacturing; Production of nickel salts; Manufacturing of micro nutrient additives for biogas production; Production of pigments
- **Uses advised against**: Do-it-yourself nickel electroplating hobby kits for plating.

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

- **Manufacturer**
  - **Company name**: Norilsk Nickel Harjavalta Oy
  - **Postal address**: Teollisuuskatu 1
  - **Postcode**: 29200
  - **City**: Harjavalta
  - **Country**: Finland
  - **Tel**: +358 2 537 11
  - **E-mail**: product.safety@nornickel.fi
  - **Enterprise no.**: FI15917284

**1.4. Emergency telephone number**

- **Emergency telephone**: Description: 3E EH&S Mission Control Center: +44 20 35147487 / Access Code: 334656

**SECTION 2: Hazards identification**

**2.1. Classification of substance or mixture**
Classification according to Regulation (EC) No 1272/2008 [CLP / GHS]

- Skin Irrit. 2; H315
- Skin Sens. 1; H317
- Muta. 2; H341
- Acute tox. 4; H302
- Acute tox. 4; H332
- STOT RE1; H372
- Repr. 1B; H360D
- Carc. 1A; H350i
- Resp. Sens. 1; H334
- Aquatic Acute 1; H400
- Aquatic Chronic 1; H410

2.2. Label elements

### Hazard Pictograms (CLP)

<table>
<thead>
<tr>
<th>Signal word</th>
<th>Hazard statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Danger</td>
<td>H302 Harmful if swallowed.</td>
</tr>
<tr>
<td></td>
<td>H332 Harmful if inhaled.</td>
</tr>
<tr>
<td></td>
<td>H315 Causes skin irritation.</td>
</tr>
<tr>
<td></td>
<td>H317 May cause an allergic skin reaction.</td>
</tr>
<tr>
<td></td>
<td>H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.</td>
</tr>
<tr>
<td></td>
<td>H341 Suspected of causing genetic defects</td>
</tr>
<tr>
<td></td>
<td>H350i May cause cancer by inhalation.</td>
</tr>
<tr>
<td></td>
<td>H360D May damage the unborn child.</td>
</tr>
<tr>
<td></td>
<td>H372 Causes damage to organs through prolonged or repeated exposure</td>
</tr>
<tr>
<td></td>
<td>H410 Very toxic to aquatic life with long lasting effects.</td>
</tr>
</tbody>
</table>

### Precautionary statements

- P261 Avoid breathing dust / fume / gas / mist / vapours / spray.
- P270 Do not eat, drink or smoke when using this product.
- P363 Wash contaminated clothing before reuse.
- P273 Avoid release to the environment.
- P281 Use personal protective equipment as required.
- P308+P313 IF exposed or concerned: Get medical advice / attention.

2.3. Other hazards

Other hazards: The PBT and vPvB criteria of Annex XIII to the regulation does not apply to inorganic substances.

SECTION 3: Composition/information on ingredients

### 3.1. Substances

<table>
<thead>
<tr>
<th>Substance</th>
<th>Identification</th>
<th>Classification</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nickel sulphate hexahydrate</td>
<td>CAS no.: 10101-97-0</td>
<td>Skin Irrit. 2; H315</td>
<td>100 %</td>
</tr>
<tr>
<td></td>
<td>EC no.: 232-104-9</td>
<td>Skin Sens. 1; H317</td>
<td></td>
</tr>
</tbody>
</table>

This safety data sheet has been created with Eco Publisher (EcoOnline)
**SECTION 4: First aid measures**

4.1. Description of first aid measures

**Inhalation**
Remove affected person from source of contamination. Ensure supply of fresh air. Serious cases: If not breathing, give artificial respiration. Get medical attention.

**Skin contact**
Wash skin thoroughly with soap and water. Remove/Take off immediately all contaminated clothing. Remove contaminated clothing and launder thoroughly before re-use.

**Eye contact**
Immediately flush with plenty of water or eyewash solution for up to 10 minutes. Contact physician if discomfort continues.

**Ingestion**
Rinse mouth. Do not give victim anything to drink if he is unconscious. Get medical attention.

4.2. Most important symptoms and effects, both acute and delayed

**General symptoms and effects**
Treat Symptomatically.

4.3. Indication of any immediate medical attention and special treatment needed

**Medical treatment**
None.

**SECTION 5: Firefighting measures**

5.1. Extinguishing media

**Suitable extinguishing media**
The product is non-combustible.
Powder. Carbon dioxide (CO2). Water spray.

**Improper extinguishing media**
None.

5.2. Special hazards arising from the substance or mixture

**Hazardous combustion products**
Sulphurous gases (SOx). Metallic oxides;

5.3. Advice for firefighters

**Personal protective equipment**
Use personal protective equipment as required.

**Other Information**
Collect contaminated fire extinguishing water separately. Do not discharge into the drains/surface waters/groundwater.

**SECTION 6: Accidental release measures**

6.1. Personal precautions, protective equipment and emergency procedures
General measures
Avoid contact with skin, eyes and clothing. Ensure adequate ventilation. Avoid dust formation. Avoid breathing dust.

6.2. Environmental precautions
Environmental precautionary measures
Do not discharge into drains, water courses or onto the ground.

6.3. Methods and material for containment and cleaning up
Other information
Recover the product and place in a suitable container for reuse.

6.4. Reference to other sections
Other instructions
See also section 8,13

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Handling
Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work.
Avoid inhalation of dust and contact with skin and eyes. Use mechanical ventilation in case of handling which causes formation of dust. Avoid generating excess dust.

Protective Safety Measures
Advice on general occupational hygiene
Private clothes and working clothes should be kept separately.

7.2. Conditions for safe storage, including any incompatibilities
Storage
Store in tightly closed original container in a dry and cool place.
Conditions to avoid
Acids

7.3. Specific end use(s)
Specific use(s)
Exposure scenario is attached. Generic exposure scenario available from:
http://www.nickelconsortia.org/exposure-scenario-library.html

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

<table>
<thead>
<tr>
<th>Substance</th>
<th>Identification</th>
<th>Value</th>
<th>TWA Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nickel compounds *</td>
<td></td>
<td>TWA (8h): 0,05 mg/m3</td>
<td>TWA Year: 2013</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Source: HTP Finland</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA (8h): 0,01 mg/m3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Source: HTP Finland</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Comments: Alveolar dust fraction</td>
<td></td>
</tr>
</tbody>
</table>

DNEL / PNEC

<table>
<thead>
<tr>
<th>Substance</th>
<th>DNEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nickel sulphate hexahydrate</td>
<td></td>
</tr>
</tbody>
</table>

Group: Professional
Route of exposure: Acute inhalation (systemic)
Value: 104
Remarks: mg Ni/m3

This safety data sheet has been created with Eco Publisher (EcoOnline)
8.2. Exposure controls

Precautionary measures to prevent exposure

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work. Avoid contact with skin and eyes. Do not breathe dust. Avoid repeated exposure. When using, do not eat, drink or smoke. Ensure that eyewash stations and safety showers are close to the workstation location. Remove soiled or soaked clothing immediately. Clean skin thoroughly after work. Keep away from food, drink and animal feeding stuffs. Wear suitable protective equipment. Keep working clothes separately.

Eye / face protection

Use eye protection. Wear full-face visor or shield.

Hand protection

Suitable gloves type: Wear protective gloves.

Skin protection

Wear appropriate clothing to prevent reasonably probable skin contact. Wear special protective clothing.

Respiratory protection

Use respiratory equipment with particle filter, type P3.

Appropriate environmental exposure control

The employer shall fulfill requirements of IPPC Directive.
**SECTION 9: Physical and chemical properties**

### 9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value/Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Crystals or crystalline.</td>
</tr>
<tr>
<td>Colour</td>
<td>Light green</td>
</tr>
<tr>
<td>Odour</td>
<td>odourless</td>
</tr>
<tr>
<td>Odour limit</td>
<td>Comments: Ei määritettävissä.</td>
</tr>
<tr>
<td>pH</td>
<td>Value: 6.1, Concentration: 200 g/l</td>
</tr>
<tr>
<td>Melting point / melting range</td>
<td>Comments: Nickel sulphate hexahydrate changes its crystal form at 53 °C and looses all crystal water at 280 °C. At 848 °C it decomposes to nickel oxide and sulphuric trioxide. Nikkelisulfaattiheksahydraatin hilarakenne muuttuu 53 °C ja ja 280 °C se menettää kidevetensä. Aine hajoaa 848 °C nikkeliossidiksi ja rikkitrioksidiksi.</td>
</tr>
<tr>
<td>Boiling point / boiling range</td>
<td>Comments: Ei määritettävissä. Technically not feasible.</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>The product is not flammable.</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>Comments: Not applicable. Not relevant.</td>
</tr>
<tr>
<td>Vapour density</td>
<td>Comments: Not applicable. Not relevant.</td>
</tr>
<tr>
<td>Density</td>
<td>Value: 2,07 g/cm³</td>
</tr>
<tr>
<td>Spontaneous combustability</td>
<td>Comments: The product is not flammable. does not ignite</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>Comments: Nickel sulphate hexahydrate changes its crystal form at 53 °C and looses all crystal water at 280 °C. At 848 °C it decomposes to nickel oxide and sulphuric trioxide.</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>Not explosive</td>
</tr>
<tr>
<td>Oxidising properties</td>
<td>Not oxidizing</td>
</tr>
</tbody>
</table>

### 9.2. Other information

**Other physical and chemical properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value/Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical and chemical properties</td>
<td>Bulk density 1.20-1.25 kg/dm³, Water solubility 625 g/l 0°C; 3407 g/l 100°C</td>
</tr>
</tbody>
</table>

**SECTION 10: Stability and reactivity**

### 10.1. Reactivity

Reactivity: No dangerous reaction known under conditions of normal use.

### 10.2. Chemical stability

Stability: Stable under recommended storage conditions.

### 10.3. Possibility of hazardous reactions

Possibility of hazardous reactions: No dangerous reaction known under conditions of normal use.

### 10.4. Conditions to avoid

Conditions to avoid: Avoid dust formation.
10.5. Incompatible materials

Materials to avoid: Acids;

10.6. Hazardous decomposition products

Hazardous decomposition products: Metallic oxides; Sulphur oxides (SOx);

SECTION 11: Toxicological information

11.1. Information on toxicological effects

<table>
<thead>
<tr>
<th>Substance</th>
<th>Nickel sulphate hexahydrate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity</td>
<td>Type of toxicity: Acute</td>
</tr>
<tr>
<td>Effect Tested:</td>
<td>LD50</td>
</tr>
<tr>
<td>Route of exposure:</td>
<td>Oral</td>
</tr>
<tr>
<td>Value:</td>
<td>361,9 mg/kg</td>
</tr>
<tr>
<td>Animal test species:</td>
<td>Rat</td>
</tr>
<tr>
<td>Effect Tested:</td>
<td>LC50</td>
</tr>
<tr>
<td>Route of exposure:</td>
<td>Inhalation.</td>
</tr>
<tr>
<td>Duration:</td>
<td>4 Tunti</td>
</tr>
<tr>
<td>Value:</td>
<td>2480 mg/m³</td>
</tr>
<tr>
<td>Animal test species:</td>
<td>Rat</td>
</tr>
</tbody>
</table>

Other information regarding health hazards

Assessment of acute toxicity classification: Acute tox. 4 Harmful if swallowed. Harmful if inhaled.

Assessment of skin corrosion / irritation, classification: According to the classification criteria of the European Union, the product is not considered as being an eye irritant. Skin irrit. 2 Irritating to skin.

General respiratory or skin sensitisation: Skin sens. 1 H317 – May cause an allergic skin reaction. Resp. sens. 1 H334 – May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Assessment carcinogenicity classification: Carc 1A May cause cancer by inhalation. Repr. 1B May damage the unborn child. Muta 2 Suspected of causing genetic defects <state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard>.

Assessment specific target organ SE, classification: STOT RE 1 Causes damage to organs [Value] through prolonged or repeated exposure [Value]. NOAEC 0,027 mg Ni/m³ Target Organs Lungs If inhaled

Aspiration hazard, comments: Not Applicable – Inorganic chemical.

SECTION 12: Ecological information

12.1. Toxicity

<table>
<thead>
<tr>
<th>Substance</th>
<th>Nickel sulphate hexahydrate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute aquatic, fish</td>
<td>Toxicity type: Acute</td>
</tr>
<tr>
<td>Value:</td>
<td>0,4 – 320 mg/l</td>
</tr>
<tr>
<td>Effect dose concentration:</td>
<td>LC50</td>
</tr>
<tr>
<td>Exposure time:</td>
<td>96 hour(s)</td>
</tr>
<tr>
<td>Method:</td>
<td>Fresh water</td>
</tr>
<tr>
<td>Test reference:</td>
<td>(Pimephales promelas; Hoang et al., 2004) (Brachydanio rerio; Janssen Pharmaceutica, 1993d)</td>
</tr>
<tr>
<td>Substance</td>
<td>Nickel sulphate hexahydrate</td>
</tr>
<tr>
<td>-----------</td>
<td>-----------------------------</td>
</tr>
</tbody>
</table>
| Acute aquatic, algae | **Toxicity type:** Acute  
**Value:** 0.013 – 4970 mg/l  
**Effect dose concentration:** LC50  
**Exposure time:** 48 hour(s)  
**Method:** Fresh water  
**Test reference:** (Ceriodaphnia dubia; Schubauer-Berigan et al., 1993) (Daphnia magna; Chapman and Recht, 1980) |
| Ecotoxicity | Aquatic acute 1  
Aquatic chronic 1  
Ecotoxicity Reference Value (ERV) Nickel compounds  
-acute 120 μg Ni/L (pH 6), 68 μg Ni/L (pH 8)  
-chronic = 2.4 μg Ni/L |

**12.2. Persistence and degradability**
Persistence and degradability: Not Applicable – Inorganic chemical.

**12.3. Bioaccumulative potential**

<table>
<thead>
<tr>
<th>Bioaccumulative potential</th>
<th>Bioconcentration Terrestrial Compartment BSAF 0.013-1.86</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bioconcentration factor (BCF)</td>
<td>Value: 270</td>
</tr>
</tbody>
</table>

**12.4. Mobility in soil**

<table>
<thead>
<tr>
<th>Mobility</th>
<th>Kp-Soil: log Kpsoil 2.86</th>
</tr>
</thead>
</table>

**12.5. Results of PBT and vPvB assessment**
PBT assessment results: The PBT and vPvB criteria of Annex XIII to the regulation does not apply to inorganic substances.

**12.6. Other adverse effects**

<table>
<thead>
<tr>
<th>Other adverse effects</th>
<th>No studies have been found.</th>
</tr>
</thead>
</table>

**SECTION 13: Disposal considerations**

**13.1. Waste treatment methods**
Specify the appropriate methods of disposal: Recover and reclaim or recycle, if practical. Treat the disposal of solids as hazardous waste.
SECTION 14: Transport information

14.1. UN number
Comments
UN3077

14.2. UN proper shipping name
Comments
ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (nickel sulphate)

14.3. Transport hazard class(es)
Comments
9

14.4. Packing group
Comments
III

14.5. Environmental hazards
Comments
Dangerous for the environment

14.6. Special precautions for user
Special safety precautions for user
None. Tunnel restriction code (-)

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Transport In Bulk Value
No

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture
Assessed restrictions
Reach 1907/2006 Annex XVII (27 Nickel and its compounds)
Legislation and regulations
94/27/EC ; 2007/96/EC

15.2. Chemical safety assessment
Chemical safety assessment performed
Yes

SECTION 16: Other information

List of relevant H-phrases (Section 2 and 3).
H302 Harmful if swallowed.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H332 Harmful if inhaled.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H341 Suspected of causing genetic defects
H350i May cause cancer by inhalation.
H360D May damage the unborn child.
H372 Causes damage to organs through prolonged or repeated exposure
H400 Very toxic to aquatic life.
**Classification according to Regulation (EC) No 1272/2008 [CLP / GHS]**

- Skin Irrit. 2; H315
- Skin Sens. 1; H317
- Muta. 2; H341
- Acute tox. 4; H302
- Acute tox. 4; H332
- STOT RE1; H372
- Repr. 1B; H360D
- Carc. 1A; H350i
- Resp. Sens. 1; H334
- Aquatic Acute 1; H400
- Aquatic Chronic 1; H410

**Additional information**

The information in this document is believed to be correct as of the date issued. However, no warranty of merchantability, fitness for any particular purpose, or any other warranty is expressed or is to be implied regarding the accuracy or completeness of this information, the results to be obtained from the use of this information or the product, the safety of this product, or the hazards related to its use. This information and product are furnished on the condition that the person receiving them shall make his own determination as to the suitability of the product for his particular purpose and on the condition that he assume the risk of his use thereof.

**Key literature references and sources for data**

- Chemical Safety Report

**Exposure scenario**

- [NickelSulphate_SDSDS_ES_DU.pdf](#)