SAFETY DATA SHEET

NICKEL SULPHATE

The safety data sheet is in accordance with Commission Regulation (EU) 2015/830 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

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

Date issued	09.11.2017
Revision date	05.08.2022

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 of the substance / preparation	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. Use of nickel and nickel compounds in tattoo inks or permanent makeup products.

1.3. Details of the supplier of the safety data sheet

Company name	Norilsk Nickel Harjavalta Oy
Postal address	Teollisuuskatu 1
Postcode	29200
City	Harjavalta
Country	Finland
Telephone number	+358 2 537 11
Email	product.safety@nornickel.fi

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 the 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 RE 1; 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)

Signal word	Danger
Hazard statements	H302 Harmful if swallowed. H332 Harmful if inhaled. H315 Causes skin irritation. H317 May cause an allergic skin reaction. 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 H410 Very toxic to aquatic life with long lasting effects.
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. P308+P313 IF exposed or concerned: Get medical advice / attention. P280 Wear protective gloves / protective clothing / eye protection / face protection.

2.3. Other hazards

PBT / vPvB	Not Classified as PBT/vPvB by current EU criteria.

SECTION 3: Composition / information on ingredients

3.1. Substances

Substance	Identification	Classification	Contents	Notes
Nickel sulphate hexahydrate	CAS No.: 10101-97-0 EC No.: 232-104-9	Skin Irrit. 2; H315 Skin Sens. 1; H317 Muta. 2; H341 Acute Tox. 4; H302 Acute Tox. 4; H332 STOT RE 1; H372 Repr. 1B; H360D Carc. 1A; H350i Resp. Sens. 1; H334 Aquatic Acute 1; H400; M-factor 1 Aquatic Chronic 1; H410; M-factor 1	100 %	

Substance comments	Substance, inorganic salt ($NiSO_4 \cdot 6H_2O$)

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	Do not get in eyes, on skin, or on clothing. Avoid generating excess dust. Do not breathe dust. Avoid release to the environment. Provide adequate ventilation.

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

Substance	Identification	Exposure limits	TWA Year
Nickel compounds *		Limit value (8 h) : 0,05 mg/m3 Source: HTP Finland Limit value (8 h) : 0,01 mg/m3 Source: HTP Finland Comments: Ni, Alveolar dust fraction	TWA Year: 2013

DNEL / PNEC

Substance	Nickel sulphate hexahydrate
DNEL	**Group:** Professional **Route of exposure:** Acute inhalation (systemic) **Value:** 104 mg/m³ **Reference:** Ni, inhalable dust **Group:** Professional **Route of exposure:** Acute inhalation (local) **Value:** 1,6 mg/m³ **Reference:** Ni, inhalable dust **Group:** Professional **Route of exposure:** Long-term inhalation (systemic) **Value:** 0,05 mg/m³ **Reference:** Ni, inhalable dust **Group:** Professional **Route of exposure:** Long-term dermal (local) **Value:** 0,00044 mg/cm² **Reference:** Ni, inhalable dust **Group:** Professional **Route of exposure:** Long-term inhalation (local) **Value:** 0,05 mg/m³ **Reference:** Ni, inhalable dust
PNEC	**Route of exposure:** Freshwater **Value:** 7,1 µg/l **Route of exposure:** Saltwater sediments **Value:** 8,6 µg/l **Route of exposure:** Freshwater sediments **Value:** 109 mg/kg

Route of exposure: Saltwater sediments
Value: 109 mg/kg

Route of exposure: Soil
Value: 29,9 mg/kg

Route of exposure: Sewage treatment plant STP
Value: 0,33 mg/l

8.2. Exposure controls

Precautionary measures to prevent exposure

Appropriate engineering controls	Cleaning is conducted using cleaning machines, in particular hovering is applied and the use of compressed air is omitted.
Product related 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. Provide sufficient ventilation for operations causing dust formation. Avoid prolonged and repeated contact. Wear suitable protective clothing. Eye wash facilities and emergency shower must be available when handling this product. Immediately change drenched clothing. Observe good chemical hygiene practices. Do not eat, drink or smoke when using this product. Keep away from food, drink and animal feeding stuffs. Private clothes and working clothes should be kept separately.

Eye / face protection

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

Hand protection

Suitable gloves type	Wear protective gloves.
Suitable materials	Butyl rubber. Neoprene. Polyvinyl chloride (PVC).

Skin protection

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

Respiratory protection

Recommended type of equipment	Use respiratory equipment with particle filter, type P3.

Appropriate environmental exposure control

Environmental exposure controls	The employer shall fulfill requirements of IPPC Directive.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Crystals or crystalline.

Colour	Light green
Odour	odourless
pH	Value: 6.1 Concentration: 200 g/l
Melting point / melting range	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.
Boiling point / boiling range	Comments: Technically not feasible.
Flash point	Comments: Technically not feasible. Not Applicable - Inorganic chemical.
Flammability	The product is not flammable.
Vapour pressure	Comments: Not applicable. Not relevant.
Vapour density	Comments: Not applicable. Not relevant.
Density	Value: 2,07 g/cm³
Auto-ignition temperature	Comments: The product is not flammable.
Decomposition temperature	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.
Explosive properties	Not explosive
Oxidising properties	Not oxidizing.

9.2. Other information

Physical hazards

Particle size	Comments: Granulometry from manufacturer.

Other physical and chemical properties

Physical and chemical properties	Bulk density 1.20-1.25 kg/dm3 Water solubility 625 g/l 0°C; 3407 g/l 100°C

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

Substance	Nickel sulphate hexahydrate
Acute toxicity	**Type of toxicity:** Acute **Effect tested:** LD50 **Route of exposure:** Oral **Value:** 361,9 mg/kg **Animal test species:** Rat **Effect tested:** LC50 **Route of exposure:** Inhalation. **Duration:** 4 hour(s) **Value:** 2480 mg/m³ **Animal test species:** Rat

Other information regarding health hazards

Assessment of acute toxicity, classification	Acute tox. 4 H302 Harmful if swallowed. H332 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 H315 Causes skin irritation.
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.
Mutagenicity	Muta. 2 H341 Suspected of causing genetic defects .
Carcinogenicity, other information	Carc. 1A H350i May cause cancer by inhalation.
Reproductive toxicity	Repr. 1B H360D May damage the unborn child.
Assessment of specific target organ toxicity - repeated exposure, classification	STOT RE 1 H372 Causes damage to organs through prolonged or repeated exposure . NOAEC 0,027 mg Ni/m³ Target Organs Lungs If inhaled
Aspiration hazard, comments	Not Applicable - Inorganic chemical.

11.2 Other information

Endocrine disruption	No information available.

SECTION 12: Ecological information

12.1. Toxicity

Substance	Nickel sulphate hexahydrate
Aquatic toxicity, fish	**Toxicity type:** Acute **Value:** 0,4 - 320 mg/l **Effect dose concentration:** LC50 **Exposure time:** 96 hour(s) **Method:** Fresh water **Test reference:** (Pimephales promelas; Hoang et al., 2004) (Brachydanio rerio; Janssen Pharmaceutica, 1993d **Toxicity type:** Acute **Value:** 24,8 - 350 mg/l **Effect dose concentration:** LC50 **Method:** Sea water **Test reference:** (Fundulus heteroclitus; Bielmyer et al., 2013) (Fundulus heteroclitus; Eisler and Hennekey, 1977)
Substance	Nickel sulphate hexahydrate
Aquatic toxicity, 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) **Toxicity type:** Acute **Value:** 0,23 - 415 mg/l **Effect dose concentration:** LC50 **Exposure time:** 48 hour(s) **Method:** Sea water **Test reference:** (Haliotis refescens; Hunt et al., 2002b) (Penaeus duorarum; Bentley et al.,1975b)
Ecotoxicity	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 Aq. Acute 1 H400 Very toxic to aquatic life. Aq. Chr. 1 H410 Very toxic to aquatic life with long lasting effects.

12.2. Persistence and degradability

Persistence and degradability description/evaluation	Not Applicable - Inorganic chemical.

12.3. Bioaccumulative potential

Bioconcentration factor (BCF)	Value: 270
Bioaccumulation, evaluation	Bioconcentration Terrestrial Compartment BSAF 0.013-1.86

12.4. Mobility in soil

Mobility	Kp-Soil: log Kpsoil 2.86

12.5. Results of PBT and vPvB assessment

Results of PBT and vPvB assessment	Not Classified as PBT/vPvB by current EU criteria.

12.6. Endocrine disrupting properties

Endocrine disrupting properties	No data available.

12.7. Other adverse effects

Additional ecological information	No information.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Appropriate methods of disposal for the chemical	Recover and reclaim or recycle, if practical. Confirm disposal procedures with environmental engineer and local regulations.
Appropriate methods of disposal for the contaminated packaging	Contaminated packaging should be emptied as far as possible.

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 environment

14.6. Special precautions for user

Special safety precautions for user	Tunnel restriction code (-) IMDG code Segregation group: -

14.7. Maritime transport in bulk according to IMO instruments

Transport in bulk (yes/no)	No

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations / legislation specific for the substance or mixture

Substance	Nickel sulphate hexahydrate
Restriction of chemicals according to Annex XVII (REACH)	27 Nickel CAS No 7440-02-0 EC No 231-111-4 and its compounds

15.2. Chemical safety assessment

Substance	Nickel sulphate hexahydrate
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. H410 Very toxic to aquatic life with long lasting effects.
Additional information	Disclaimer 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
Information added, deleted or revised	Relevant changes compared to the previous version of the safety data sheet are indicated with verticle lines in the left margin.
Version	7
Exposure scenario	ENGLISH_20190627_SDS_ES_NICKEL SULPHATE_DU.pdf