SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/ UNDERTAKING

1.1 Product identifier

1.1.1 Commercial Product Name

NICKEL SULPHATE

REACH Registration Number

01-2119439361-44-0002

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

1.2.1 Recommended use

Plating agent; Battery manufacturing; Production of nickel salts from nickel sulphate

Uses advised against

do-it-yourself nickel electroplating hobby kits

1.3 Details of the supplier of the safety data sheet

1.3.1 Supplier

	Norilsk Nickel Harjavalta Oy
Street address	Teollisuuskatu 1
Postcode and post office	FIN 29200 Harjavalta
Telephone	+358 (0)2 53711
Telefax	+358 (0)2 5371 2250
Email	product.safety@nornik.fi

1.4 Emergency telephone number

1.4.1 Telephone number, name and address

Norilsk Nickel Harjavalta Oy +358 (0)2 537 11

SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

1272/2008 (CLP)

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

67/548/EEC - 1999/45/EC

Xn, N; R49-61-20/22-38-42/43-48/23-68-50/53

2.2 Label elements

1272/2008 (CLP)

GHS09 - GHS07 - GHS08

Signal word **Danger**

Hazard Statements

H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H341	Suspected of causing genetic defects <state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard>.
H302	Harmful if swallowed.

H332	Harmful if inhaled.
H372	lungs; inhaled
H360D	May damage the unborn child.
H350I	May cause cancer by inhalation.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

Precautionary Statements

P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P270	Do no eat, drink or smoke when using this product.
P362	Take off contaminated clothing and wash 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

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

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous components

CAS/EC and Reg.number	EINECS	Chemical name of the substance	Concentration	Classification
10101-97-0	232-104-9	Nickel sulphate hexahydrate	100	Carc. Cat. 3; R40; Xn; R22; R42/43; N; R50/53

3.3 Other information

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

SECTION 4. FIRST AID MEASURES

4.1 Description of first aid measures

If symptoms persist, call a physician.

4.1.2 Inhalation

Remove affected person from the immediate area. Ensure supply of fresh air. If breathing is irregular or stopped, administer artificial respiration. Consult a physician.

4.1.3 Skin contact

Wash off with soap and plenty of water. Remove soiled or soaked clothing immediately. Wash contaminated clothing before re-use.

4.1.4 Eye contact

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If eye irritation persists, consult a specialist.

4.1.5 Ingestion

Rinse mouth. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

Treat symptomatically.

4.3 Indication of immediate medical attention and special treatment needed

No hazards which require special first aid measures.

SECTION 5. FIREFIGHTING MEASURES

5.1 Extinguishing media

5.1.1 Extinguishing media

The product itself does not burn. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment e.g.: Dry powder; Carbon dioxide (CO_2); Water spray jet;

5.1.2 Extinguishing media which must not be used for safety reasons
Strong water jet;

5.2 Special hazards arising from the substance or mixture
In the event of fire the following can be released: Metal dust; Metallic oxides; Sulphur oxides (SOx);

5.3 Advice for firefighters
Wear self-contained breathing apparatus and protective suit.

5.4 Specific methods
Collect contaminated fire extinguishing water separately. Neutralise with e.g. sodium hydroxide. Do not discharge into the drains/surface waters/groundwater.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Refer to protective measures listed in sections 7 and 8.Avoid contact with skin, eyes and clothing. Avoid dust formation. Ensure adequate ventilation.

6.2 Environmental precautions
Do not discharge into the drains/surface waters/groundwater. Avoid dust formation.

6.3 Methods and materials for containment and cleaning up
Pick up mechanically. Send in suitable containers for recovery or disposal. (Section 13)

6.4 Reference to other sections
See also section 8, 13

SECTION 7. HANDLING AND STORAGE

7.1 Precautions for safe 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.
Safe handling advice
Avoid dust formation. Avoid contact with skin and eyes. If workplace exposure limits are exceeded, respiratory protection approved for this particular job must be worn.
Technical measures/Precautions
Provide good ventilation of working area (local exhaust ventilation if necessary).

7.2 Conditions for safe storage, including any incompatibilities
Council Directive 96/82/EC on the control of major-accident hazards involving dangerous substances (SEVESO II directive)
Technical measures/Storage conditions
Always keep in containers of same material as the original one. Keep containers tightly closed in a dry, cool and well-ventilated place.
Incompatible products
Acids;

7.3 Specific end use(s)
Exposure scenario is attached.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

8.1.1 Threshold limits

10101-97-0	Nickel sulphate hexahydrate	0,1 mg/m^3 (15 min) Ni

8.1.4 DNELs

RISK VALUES: Human Health WORKERS
Exposure pattern
Route / Descriptors [corrected] /DNEL/DMEL/not quantifiable
Acute-systemic effects
Dermal (mg Ni/kg bw/day)/ Not relevant / Not relevant
Inhalation (mg Ni/m3) / NOAEC = 120 / DNEL = 16 (MMAD =3 mm)
Oral (mg Ni/kg bw/day) / Not relevant / Not relevant

Acute-local effects
Dermal (mg Ni/cm2) / Not relevant / Not relevant
Inhalation (mg Ni/m3) /LOAEC =0.7 (from 16 d study) / DNEL= 0.7 (MMAD <4 mm)

Long term-systemic effects
Dermal (mg Ni/kg bw/day)/ Not relevant / Not relevant
Inhalation (mg Ni/m3) / SCOEL proposed nickel OEL = 0.01 "inhalable" / OEL = 0.05 (inhalable fraction)
Oral (mg Ni/kg bw/day) / Not relevant / Not relevant

Long term -local effects
Dermal (mg Ni/cm2) /NOAEL= 0.00044 / DNEL = 0.00044
Inhalation (mg Ni/m3) / SCOEL proposed nickel OEL = 0.01 "inhalable" / OEL = 0.05 (inhalable fraction)

RISK VALUES: Human Health consumer - MvE
Exposure pattern
Route / Descriptors [corrected] /DNEL/DMEL/not quantifiable
Acute-systemic effects
Dermal (mg Ni/kg bw/day)/ Not relevant / Not relevant
Inhalation (mg Ni/m3) / relevant- compliance with more conservative acute-local effects DNEL is also protective against acute systemic effects
Oral (mg Ni/kg bw/day) / LOAEL = 0.012 DNEL= 0.012

Acute-local effects
Dermal (mg Ni/cm2) / Not relevant / Not relevant
Inhalation (mg Ni/m3) / LOAEC =0.7 (from 16 d study) / DNEL = 0.4

Long term-systemic effects
Dermal (mg Ni/kg bw/day)/ Not relevant / Not relevant
Inhalation (mg Ni/m3) / Other: CSTEE (ambient air guidelines for Ni) = 0.00002 / DNEL = 0.00002
Oral (mg Ni/kg bw/day) / NOAEL =1.1 / DNEL = 0.02

Long term -local effects
Dermal (mg Ni/cm2) /Not relevant / Not relevant
Inhalation (mg Ni/m3) /Other: CSTEE (ambient air guidelines for Ni) = 0.00002 / DNEL = 0.00002

8.1.5 PNECs

RISK VALUES: Environment
Compartment
Category/ Threshold Value/ Relative Absorption Factor (RAF)/ Assessment Factor (AF)/ PNEC Value/ Comment
Aquatic
Freshwater /7.2 ug Ni/L (HC5) /Not relevant/ 2/ 3.6 ug Ni/L/ Bioavailability correction available
Marine /17.2 ug Ni/L (HC5) /Not relevant/2/ 8.6 ug Ni/L /No bioavailability correction available

Sediment
Freshwater /Pending outcome of testing program /Not relevant/ Pending outcome of testing program / Pending outcome of testing program
Marine/Pending outcome of testing program/ Not relevant /Pending outcome of testing program/ Pending outcome of testing program

Terrestrial /Soil /59.8 mg Ni/kg (HC5) /Not relevant/ 2/ 29.9 mg Ni/kg/ Based on 10th percentile of abiotic soil parameters in EU. Bioavailability correction available

Sewage Treatment Plant (STP)/Microbial activity/ 33 mg Ni/L (Lowest NOEC)/ Not relevant/ 100/ 0.33 mg Ni/L

Secondary Poisoning: Terrestrial/
Oystercatcher (aquatic bird) /123 mg Ni/kg/ 1/ 10/ 12.3 mg Ni/kg
European otter (freshwater mammalian)/ 23 mg Ni/kg/ 0,025/ 10/ 2.3 mg Ni/kg
Harbor seal (marine mammalian) 46 mg Ni/kg/ 0,025/ 10/ 4.6 mg Ni/kg

Secondary Poisoning: Aquatic
Earthworm eating bird /85 mg Ni/kg/ 1/ 10/ 8.5 mg Ni/kg
Shrew (terrestrial mammalian)/ 1.2 mg Ni/kg/ 0.036 (100% worms) 0.025 (30% worms, 70% isopods) /10/ 0.12 mg Ni/kg

8.2 Exposure controls

8.2.1 Occupational exposure controls

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. Skin protection Ensure that eyewash stations and safety showers are close to the workstation location. Remove soiled or soaked clothing immediately. Clean skin thoroughly after work. At work do not eat, drink, smoke or take drugs. Keep away from food, drink and animal feedingstuffs. Keep working clothes separately.

8.2.2.1 Respiratory protection

Use a respirator with filter model P3 (DIN 3181).

8.2.2.2 Hand protection

Protective gloves:Rubber; Butyl-rubber; Neoprene; PVC;

8.2.2.3 Eye/face protection

Goggles; Face-shield;

8.2.2.4 Skin protection

Clothing as usual in the chemical industry.

8.2.3 Environmental exposure controls

The employer shall fulfill requirements of IPPC Directive.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Important Health Safety and Environmental Information

9.1.1 Appearance

Appearance: Crystalline
Colour: Light green

9.1.2	**Odour**	odourless
9.1.3	**Odour threshold**	Not applicable.

9.1.5	**Melting point/freezing point**	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.
9.1.6	**Initial boiling point and boiling range**	Not applicable.
9.1.7	**Flash point**	Not applicable. inorganic
9.1.9	**Flammability (solid, gas)**	does not ignite
9.1.10	**Explosive properties**	
9.1.10.1	**Lower explosion limit**	Not explosive
9.1.10.2	**Upper explosion limit**	Not explosive
9.1.11	**Vapour pressure**	Not applicable.
9.1.12	**Vapour density**	Not applicable.
9.1.13	**Relative density**	3,68 g/cm3
9.1.14	**Solubility(ies)**	
9.1.14.1	**Water solubility**	625 g/l 0°C; 3407 g/l 100°C
9.1.15	**Partition coefficient: n-octanol/water**	Not applicable.
9.1.16	**Auto-ignition temperature**	does not ignite
9.1.17	**Decomposition temperature**	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.
9.1.18	**Viscosity**	Not applicable. Solid
9.1.19	**Explosive properties**	Not explosive
9.1.20	**Oxidising properties**	no oxidizing

9.2 Other information
Melting Point / range: 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.

SECTION 10. STABILITY AND REACTIVITY

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

10.2 Chemical stability
Stable under recommended storage conditions.

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

10.4 Conditions to avoid
Avoid dust formation.

10.5 Incompatible materials
Acids;

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

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

11.1.1 Acute toxicity
LD50/oral/rat = 361.9 mg/kg
LC50/inhalation/4h/rat = 2.48 mg/l
LD50/dermal/rat = No studies have been found.

Acute tox. 4 Harmful if swallowed. Harmful if inhaled.

11.1.2 Irritation and corrosion
Skin irrit. 2 Causes skin irritation.
According to the classification criteria of the European Union, the product is not considered as being an eye irritant.
Not Rated as corrosive

11.1.3 Sensitisation
Skin sens. 1 May cause an allergic skin reaction.
Resp. sens. 1 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

11.1.4 Subacute, subchronic and prolonged toxicity
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>.

11.1.6 STOT-repeated exposure
STOT RE 1 Causes damage to organs <or state all organs affected, if known> through prolonged or repeated exposure <state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard>.
Target Organs: Lungs; If inhaled

11.1.7 Aspiration hazard
Not applicable.

11.1.8 Other information on acute toxicity
No studies have been found.

SECTION 12. ECOLOGICAL INFORMATION

12.1 Toxicity

12.1.1 Aquatic toxicity
EC50/48h/Salmo gairdneri: 0,26 mg/l
EC50/48h/Asellus aquaticus: 435 mg/l

12.2 Persistence and degradability

12.2.1 Biodegradation
Not applicable.

12.2.2 Chemical degradation
Not applicable.

12.3 Bioaccumulative potential
Bioconcentration factor (BCF) 270

12.4 Mobility in soil

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

12.6 Other adverse effects
No studies have been found.

SECTION 13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods
Contaminated packaging should be emptied as far as possible. Packaging that cannot be cleaned should be disposed as special waste in compliance with local and national regulations.

13.2 Waste from residues / unused products
Contact manufacturer. Dispose of as special waste in compliance with local and national regulations.

SECTION 14. TRANSPORT INFORMATION

14.1 UN number UN3077

14.2	**UN proper shipping name**	Environmentally hazardous substance, solid, n.o.s (nickel sulphate)
14.3	**Transport hazard class(es)**	9
14.4	**Packing group**	III
14.5	**Environmental hazards** Environmentally hazardous substance	
14.6	**Special precautions for users** None.	
	Further information None.	
14.7	**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** Not relevant	

SECTION 15. REGULATORY INFORMATION

15.1 **Safety, health and environmental regulations/legislation specific for the substance or mixture**
94/27/EC ; 2007/96/EC ; Reach 1907/2006 Annex XVII

15.2 **Chemical safety assessment**
A Chemical Safety Assessment has been carried out for this substance.

SECTION 16. OTHER INFORMATION

16.1 **Additions, Deletions, Revisions**
SDS sections updated according to Regulation (EC) No. 1907/2006

16.3 **Key literature references and sources for data**
Finnish Environment Institute: Environmental Properties of Chemicals Lewis, R. J. : Sax's Dangerous Properties of Industrial Materials

16.5 **List of relevant R phrases, hazard statements, safety phrases and/or precautionary statements**

R20/22	Harmful by inhalation and if swallowed.
R22	Harmful if swallowed.
R38	Irritating to skin.
R40	Limited evidence of a carcinogenic effect.
R42/43	May cause sensitization by inhalation and skin contact.
R48/23	Toxic: danger of serious damage to health by prolonged exposure through inhalation.
R49	May cause cancer by inhalation.
R50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R61	May cause harm to the unborn child.
R68	Possible risk of irreversible effects.
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 <state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard>.
H350I	May cause cancer by inhalation.
H360D	May damage the unborn child.
H372	Causes damage to organs <or state all organs affected, if known> through prolonged or repeated exposure <state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard>. lungs; inhaled
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

16.8 Additional information available from:

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