

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

· **1.1 Product identifier**

· Trade name: Nickel sulfate hexahydrate

· CAS Number:

10101-97-0

· EC number:

232-104-9

· Index number:

028-009-00-5

· Registration number 01-2119439361-44-0004, CAS: 7786-81-4 (primary)

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

· **Sector of Use**

SU1 Agriculture, forestry, fishery

SU8 Manufacture of bulk, large scale chemicals (including petroleum products)

SU9 Manufacture of fine chemicals

SU15 Manufacture of fabricated metal products, except machinery and equipment

SU16 Manufacture of computer, electronic and optical products, electrical equipment

SU17 General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment

· **Product category** PC14 Metal surface treatment products

· **Process category**

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

PROC4 Chemical production where opportunity for exposure arises

PROC5 Mixing or blending in batch processes

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

PROC10 Roller application or brushing

PROC13 Treatment of articles by dipping and pouring

PROC15 Use as laboratory reagent

PROC22 Manufacturing and processing of minerals and/or metals at substantially elevated temperature

PROC26 Handling of solid inorganic substances at ambient temperature

PROC28 Manual maintenance (cleaning and repair) of machinery

· **Environmental release category**

ERC2 Formulation into mixture

ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)

ERC5 Use at industrial site leading to inclusion into/onto article

ERC6a Use of intermediate

ERC8b Widespread use of reactive processing aid (no inclusion into or onto article, indoor)

· **Technical function**

Intermediate (precursor)

Plating agent

Conductive agent

Other

· **Application of the substance / the mixture**

Chemical intermediate

Preparation of catalysts

Metal surface treatment

Galvanic bath

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

· **Manufacturer/Supplier:**

Montanwerke Brixlegg AG

Werkstraße 1

A-6230 Brixlegg

Tel: +43-5337-6151-0

Fax: +43-5337-6151-2102

MSDS@Montanwerke-Brixlegg.com

Weitere Informationen unter: [www.montanwerke-brixlegg.com](http://www.montanwerke-brixlegg.com)

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- **Further information obtainable from:** Montanwerke Brixlegg AG, Tel: +43-5337-6151-0
- **1.4 Emergency telephone number:** 112 (european emergency number)

**SECTION 2: Hazards identification**

- **2.1 Classification of the substance or mixture**
- **Classification according to Regulation (EC) No 1272/2008**



GHS08 health hazard

- |               |       |                                                                            |
|---------------|-------|----------------------------------------------------------------------------|
| Resp. Sens. 1 | H334  | May cause allergy or asthma symptoms or breathing difficulties if inhaled. |
| Muta. 2       | H341  | Suspected of causing genetic defects.                                      |
| Carc. 1A      | H350i | May cause cancer by inhalation.                                            |
| Repr. 1B      | H360D | May damage the unborn child.                                               |
| STOT RE 1     | H372  | Causes damage to organs through prolonged or repeated exposure.            |



GHS09 environment

- |                   |      |                                                       |
|-------------------|------|-------------------------------------------------------|
| Aquatic Acute 1   | H400 | Very toxic to aquatic life.                           |
| Aquatic Chronic 1 | H410 | Very toxic to aquatic life with long lasting effects. |



GHS07

- |               |      |                                      |
|---------------|------|--------------------------------------|
| Acute Tox. 4  | H302 | Harmful if swallowed.                |
| Acute Tox. 4  | H332 | Harmful if inhaled.                  |
| Skin Irrit. 2 | H315 | Causes skin irritation.              |
| Skin Sens. 1  | H317 | May cause an allergic skin reaction. |

- **2.2 Label elements**

- **Labelling according to Regulation (EC) No 1272/2008**

The substance is classified and labelled according to the CLP regulation.

- **Hazard pictograms**



GHS07



GHS08



GHS09

- **Signal word** Danger

- **Hazard statements**

- |           |                                                                            |
|-----------|----------------------------------------------------------------------------|
| H302+H332 | Harmful if swallowed or if inhaled.                                        |
| H315      | Causes skin irritation.                                                    |
| H334      | May cause allergy or asthma symptoms or breathing difficulties if inhaled. |
| H317      | May cause an allergic skin reaction.                                       |
| 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**

- |      |                                                                                               |
|------|-----------------------------------------------------------------------------------------------|
| P260 | Do not breathe dust/fume/gas/mist/vapours/spray.                                              |
| P280 | Wear protective gloves/protective clothing/eye protection/face protection/hearing protection. |

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- P284 [In case of inadequate ventilation] wear respiratory protection.
- 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.

- **2.3 Other hazards**
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.

### SECTION 3: Composition/information on ingredients

- **3.1 Chemical characterisation: Substances**
- **CAS No. Description**  
10101-97-0 Nickel sulfate hexahydrate
- **Identification number(s)**
- **EC number:** 232-104-9
- **Index number:** 028-009-00-5
- **Additional information:** NiSO<sub>4</sub> · 6H<sub>2</sub>O

### SECTION 4: First aid measures

- **4.1 Description of first aid measures**
- **General information:**  
Personal protection for the First Aider.  
Immediately remove any clothing soiled by the product.  
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
- **After inhalation:**  
Do not use mouth to mouth or mouth to nose resuscitation.  
Use a respiratory bag or breathing device.  
Supply fresh air and to be sure call for a doctor.  
In case of unconsciousness place patient stably in side position for transportation.
- **After skin contact:**  
Immediately wash with water and soap and rinse thoroughly.  
Seek medical treatment.
- **After eye contact:** Rinse opened eye for several minutes under running water.
- **After swallowing:**  
Rinse out mouth and then drink plenty of water.  
Call for a doctor immediately.
- **4.2 Most important symptoms and effects, both acute and delayed**  
No further relevant information available.
- **4.3 Indication of any immediate medical attention and special treatment needed**  
No further relevant information available.

### SECTION 5: Firefighting measures

- **5.1 Extinguishing media**
- **Suitable extinguishing agents:** Use fire extinguishing methods suitable to surrounding conditions.
- **5.2 Special hazards arising from the substance or mixture**  
In case of fire, the following can be released:  
Sulphur dioxide (SO<sub>2</sub>)
- **5.3 Advice for firefighters**
- **Protective equipment:**  
Wear fully protective suit.

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Mouth respiratory protective device.

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**SECTION 6: Accidental release measures**

**6.1 Personal precautions, protective equipment and emergency procedures**

- Wear protective clothing.
- Avoid formation of dust.
- Use respiratory protective device against the effects of fumes/dust/aerosol.

**6.2 Environmental precautions:**

- Do not allow to enter sewers/ surface or ground water.
- Do not allow to penetrate the ground/soil.
- Inform respective authorities in case of seepage into water course or sewage system.

**6.3 Methods and material for containment and cleaning up:**

- Pick up mechanically.
- Ensure adequate ventilation.
- Dispose contaminated material as waste according to item 13.

**6.4 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.

**SECTION 7: Handling and storage**

**7.1 Precautions for safe handling**

- Keep receptacles tightly sealed.
- Prevent formation of dust.
- Ensure good ventilation/exhaustion at the workplace.
- Information about fire - and explosion protection:** No special measures required.

**7.2 Conditions for safe storage, including any incompatibilities**

- Storage:**
- Requirements to be met by storerooms and receptacles:** Prevent any seepage into the ground.
- Information about storage in one common storage facility:** Store away from foodstuffs.
- Further information about storage conditions:** Keep container tightly sealed.
- Storage class:** 6.1 B
- 7.3 Specific end use(s)** No further relevant information available.

**SECTION 8: Exposure controls/personal protection**

- Additional information about design of technical facilities:** No further data; see item 7.

**8.1 Control parameters**

**Ingredients with limit values that require monitoring at the workplace:**

**10101-97-0 Nickel sulfate hexahydrate**

EV (Canada)	Long-term value: 0.1 mg/m <sup>3</sup> Inhalable fraction, as Ni
PEL (USA)	Long-term value: 1 mg/m <sup>3</sup> as Ni
REL (USA)	Long-term value: 0.015 mg/m <sup>3</sup> as Ni; See Pocket Guide App. A
TLV (USA)	Long-term value: 0.1 mg/m <sup>3</sup> as Ni; inhalable fraction

**DNELs**

Dermal	DNEL Long term - local effects	0.00044 (Ni) mg/cm <sup>2</sup> (worker(s))
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Inhalative	DNEL Acute - local effects	1.6 (Ni) mg/m <sup>3</sup> (worker(s))
	DNEL Acute - systemic effects	104 (Ni) mg/kg/d (worker(s))
	DNEL Long term - local effects	0.05 (Ni) mg/m <sup>3</sup> (worker(s))
	DNEL Long term - systemic effects	0.05 (Ni) mg/kg/d (worker(s))

· **Additional information:** The lists valid during the making were used as basis.

· **8.2 Exposure controls**

· **Personal protective equipment:**

· **General protective and hygienic measures:**

Keep away from foodstuffs, beverages and feed.

Do not eat, drink, smoke or sniff while working.

Avoid contact with the eyes and skin.

Be sure to clean skin thoroughly after work and before breaks.

Vacuum clean contaminated clothing. Do not blow or brush off contamination.

Store protective clothing separately.

Immediately remove all soiled and contaminated clothing

Wash hands before breaks and at the end of work.

· **Respiratory protection:**

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.

Filter P3

· **Protection of hands:**



Protective gloves

Impervious gloves

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

· **Material of gloves**

Nitrile rubber, NBR

PVC gloves

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

· **Penetration time of glove material**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

· **Eye protection:**



Tightly sealed goggles

· **Body protection:** Protective work clothing

**SECTION 9: Physical and chemical properties**

· **9.1 Information on basic physical and chemical properties**

· **General Information**

· **Appearance:**

· **Form:**

Crystalline

· **Colour:**

Green

· **Odour:**

Nearly odourless

· **Odour threshold:**

Not determined.

· **pH-value:**

Not applicable.

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**Trade name: Nickel sulfate hexahydrate**

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- **Change in condition**
- **Melting point/freezing point:** Undetermined.
- **Initial boiling point and boiling range:** Undetermined.
- **Flash point:** Not applicable.
- **Flammability (solid, gas):** Not determined.
- **Decomposition temperature:** Not determined.
- **Auto-ignition temperature:** Product is not selfigniting.  
Not determined.
- **Explosive properties:** Product does not present an explosion hazard.
- **Explosion limits:**
- **Lower:** Not determined.
- **Upper:** Not determined.
- **Vapour pressure:** 0 hPa
- **Density at 20 °C:** 2.07 g/cm<sup>3</sup>
- **Relative density** Not determined.
- **Vapour density** Not applicable.
- **Evaporation rate** Not applicable.
- **Solubility in / Miscibility with**
- **water at 0 °C:** 625 g/l
- **Partition coefficient: n-octanol/water:** Not determined.
- **Viscosity:**
- **Dynamic:** Not applicable.
- **Kinematic:** Not applicable.
- **9.2 Other information** No further relevant information available.

## SECTION 10: Stability and reactivity

- **10.1 Reactivity** No further relevant information available.
- **10.2 Chemical stability**
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **10.3 Possibility of hazardous reactions** No dangerous reactions known.
- **10.4 Conditions to avoid** No further relevant information available.
- **10.5 Incompatible materials:** No further relevant information available.
- **10.6 Hazardous decomposition products:** No dangerous decomposition products known.

## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

- **Acute toxicity**  
Harmful if swallowed or if inhaled.

#### LD/LC50 values relevant for classification:

Oral	LD50	361 mg/kg (rat)
Inhalative	LC50/4 h	2.48 mg/l (rat)

- **Primary irritant effect:**
- **Skin corrosion/irritation**  
Causes skin irritation.
- **Serious eye damage/irritation** Based on available data, the classification criteria are not met.

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**Trade name: Nickel sulfate hexahydrate**

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- **Respiratory or skin sensitisation**  
 May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
 May cause an allergic skin reaction.
- **CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)**
- **Germ cell mutagenicity**  
 Suspected of causing genetic defects.
- **Carcinogenicity**  
 May cause cancer by inhalation.
- **Reproductive toxicity**  
 May damage the unborn child.
- **STOT-single exposure** Based on available data, the classification criteria are not met.
- **STOT-repeated exposure**  
 Causes damage to organs through prolonged or repeated exposure.
- **Aspiration hazard** Based on available data, the classification criteria are not met.

## SECTION 12: Ecological information

### · 12.1 Toxicity

#### · Aquatic toxicity:

PNEC Compartment aquatic	7.1 (Ni) µg/l (freshwater)
	8.6 (Ni) µg/l (marine)

- **12.2 Persistence and degradability** No further relevant information available.
- **12.3 Bioaccumulative potential** No further relevant information available.
- **12.4 Mobility in soil** No further relevant information available.

#### · Ecotoxicological effects:

PNEC Compartment Sediment	109 (Ni) mg/kg (freshwater)
	109 (Ni) mg/kg (marine)
PNEC Compartment Terrestrial	29.9 (Ni) mg/kg (soil)
PNEC Compartment Sewage Treatment Plant	0.33 (Ni) mg/l (Microbial activity)

- **Remark:** Very toxic for fish
- **Additional ecological information:**
- **General notes:**  
 Water hazard class 3 (German Regulation) (Self-assessment): extremely hazardous for water  
 Do not allow product to reach ground water, water course or sewage system, even in small quantities.  
 Danger to drinking water if even extremely small quantities leak into the ground.  
 Also poisonous for fish and plankton in water bodies.  
 Very toxic for aquatic organisms
- **12.5 Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **12.6 Other adverse effects** No further relevant information available.

## SECTION 13: Disposal considerations

### · 13.1 Waste treatment methods

#### · Recommendation

Must not be disposed together with household garbage. Do not allow product to reach sewage system.

#### · European waste catalogue

HP4	Irritant - skin irritation and eye damage
HP5	Specific Target Organ Toxicity (STOT)/Aspiration Toxicity
HP6	Acute Toxicity
HP7	Carcinogenic

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**Trade name: Nickel sulfate hexahydrate**

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HP10	Toxic for reproduction
HP11	Mutagenic
HP13	Sensitising
HP14	Ecotoxic

- **Uncleaned packaging:**
- **Recommendation:** Disposal must be made according to official regulations.

**SECTION 14: Transport information**

- **14.1 UN-Number**  
 · **ADR, IMDG, IATA** UN3077
- **14.2 UN proper shipping name**  
 · **ADR** 3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Nickel sulfate hexahydrate)  
 · **IMDG, IATA** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Nickel sulfate hexahydrate)
- **14.3 Transport hazard class(es)**  
 · **ADR, IATA**  
  
 · **Class** 9 Miscellaneous dangerous substances and articles.  
 · **Label** 9
- **IMDG**  
  
 · **Class** 9 Miscellaneous dangerous substances and articles.  
 · **Label** 9
- **14.4 Packing group**  
 · **ADR, IMDG, IATA** III
- **14.5 Environmental hazards:**  
 · **Special marking (ADR):** Symbol (fish and tree)  
 · **Special marking (IATA):** Symbol (fish and tree)
- **14.6 Special precautions for user** Warning: Miscellaneous dangerous substances and articles.  
 · **Hazard identification number (Kemler code):** 90  
 · **EMS Number:** F-A,S-F  
 · **Stowage Category** A  
 · **Stowage Code** SW23 When transported in BK3 bulk container, see 7.6.2.12 and 7.7.3.9.
- **14.7 Transport in bulk according to Annex II of Marpol and the IBC Code** Not applicable.

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**Trade name: Nickel sulfate hexahydrate**

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· **Transport/Additional information:**

· **ADR**

- **Limited quantities (LQ)** 5 kg
- **Excepted quantities (EQ)** Code: E1  
 Maximum net quantity per inner packaging: 30 g  
 Maximum net quantity per outer packaging: 1000 g
- **Transport category** 3
- **Tunnel restriction code** -

· **IMDG**

- **Limited quantities (LQ)** 5 kg
- **Excepted quantities (EQ)** Code: E1  
 Maximum net quantity per inner packaging: 30 g  
 Maximum net quantity per outer packaging: 1000 g

- **UN "Model Regulation":** UN 3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (NICKEL SULFATE HEXAHYDRATE), 9, III

**SECTION 15: Regulatory information**

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

- **Directive 2012/18/EU**
- **Named dangerous substances - ANNEX I** Substance is not listed.
- **Seveso category E1** Hazardous to the Aquatic Environment
- **Qualifying quantity (tonnes) for the application of lower-tier requirements** 100 t
- **Qualifying quantity (tonnes) for the application of upper-tier requirements** 200 t
- **REGULATION (EC) No 1907/2006 ANNEX XVII** Conditions of restriction: 27, 28, 30
- **DIRECTIVE 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment – Annex II**  
 Substance is not listed.
- **National regulations:**
- **Information about limitation of use:**  
 Workers are not allowed to be exposed to this hazardous material. Exceptions can be made by the authorities in certain cases.
- **15.2 Chemical safety assessment:** A Chemical Safety Assessment has been carried out.

**SECTION 16: Other information**

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Abbreviations and acronyms:**

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  
 IATA: International Air Transport Association  
 GHS: Globally Harmonised System of Classification and Labelling of Chemicals  
 EINECS: European Inventory of Existing Commercial Chemical Substances  
 CAS: Chemical Abstracts Service (division of the American Chemical Society)  
 DNEL: Derived No-Effect Level (REACH)  
 LC50: Lethal concentration, 50 percent  
 LD50: Lethal dose, 50 percent  
 PBT: Persistent, Bioaccumulative and Toxic  
 vPvB: very Persistent and very Bioaccumulative  
 Acute Tox. 4: Acute toxicity - oral – Category 4  
 Skin Irrit. 2: Skin corrosion/irritation – Category 2  
 Resp. Sens. 1: Respiratory sensitisation – Category 1

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**Trade name: Nickel sulfate hexahydrate**

Skin Sens. 1: Skin sensitisation – Category 1  
Muta. 2: Germ cell mutagenicity – Category 2  
Carc. 1A: Carcinogenicity – Category 1A  
Repr. 1B: Reproductive toxicity – Category 1B  
STOT RE 1: Specific target organ toxicity (repeated exposure) – Category 1  
Aquatic Acute 1: Hazardous to the aquatic environment - acute aquatic hazard – Category 1  
Aquatic Chronic 1: Hazardous to the aquatic environment - long-term aquatic hazard – Category 1  
· \* **Data compared to the previous version altered.**

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