1: Identification

Product identifier

Product name: **Nickel(II) sulfate hexahydrate**

Stock number: 36336
CAS Number:
10101-97-0
EC number:
232-104-9
Index number:
028-009-00-5
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, A Johnson Matthey Company
Johnson Matthey Catalog Company, 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
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	H350	May cause cancer.
Repr. 1B	H360	May damage fertility or the unborn child.
STOT RE 1	H372	Causes damage to the lung, the kidneys, the liver, the heart, the blood and the endocrine system through prolonged or repeated exposure. Route of exposure: Oral, Inhalative.

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.

Classification according to Directive 67/548/EEC or Directive 1999/45/EC

T; Toxic

R49-61-48/23: May cause cancer by inhalation. May cause harm to the unborn child. Toxic: danger of serious damage to health by prolonged exposure through inhalation.

Xn; Harmful

R20/22-68: Harmful by inhalation and if swallowed. Possible risk of irreversible effects.

Xn; Sensitizing

R42/43: May cause sensitization by inhalation and skin contact.

Xi; Irritant

R38: Irritating to skin.

N; Dangerous for the environment

R50/53: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Information concerning particular hazards for human and environment: Not applicable
Hazards not otherwise classified No information known.

Label elements
Labelling according to Regulation (EC) No 1272/2008 The substance is classified and labeled according to the CLP regulation.
Hazard pictograms

GHS07 GHS08

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.
H350 May cause cancer.
H360 May damage fertility or the unborn child.
H372 Causes damage to the lung, the kidneys, the liver, the heart, the blood and the endocrine system through prolonged or repeated exposure. Route of exposure: Oral, Inhalative.

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Precautionary statements
P273 Avoid release to the environment.
P201 Obtain special instructions before use.
P309+P311 IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.
WHMIS classification
D1B - Toxic material causing immediate and serious toxic effects
D2A - Very toxic material causing other toxic effects

Classification system
HMIS ratings (scale 0-4)
(Hazardous Materials Identification System)

Health (acute effects) = 2
Flammability = 0
Physical Hazard = 1

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

3: Composition/information on ingredients

Chemical characterization: Substances
CAS# Description:
10101-97-0 Nickel(II) sulfate hexahydrate
Identification number(s):
EC number: 232-104-9
Index number: 028-009-00-5

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
Suitable extinguishing agents Product is not flammable. Use fire-fighting measures that suit the surrounding fire.
Special hazards arising from the substance or mixture
If this product is involved in a fire, the following can be released:
Sulfur oxides (SOx)
Nickel oxides
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.
Do not allow product to reach sewage system or any water course.
Do not allow to penetrate the ground/soil.
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: Store away from oxidizing agents.
Further information about storage conditions:
Keep container tightly sealed.

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Product name: Nickel(II) sulfate hexahydrate

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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:

10101-97-0 Nickel(II) sulfate hexahydrate (100.0%)

PEL (USA)	Long-term value: 1 mg/m³ as Ni
REL (USA)	Long-term value: 0.015 mg/m³ as Ni; See Pocket Guide App. A
TLV (USA)	Long-term value: 0.1 mg/m³ as Ni; inhalable fraction
EV (Canada)	Long-term value: 0.1 mg/m³ Inhalable fraction, as Ni

Additional information: No data

Exposure controls
Personal protective equipment
General protective and hygienic measures
The usual precautionary measures for handling chemicals should be followed.
Keep away from foodstuffs, beverages and feed.
Remove all soiled and contaminated clothing immediately.
Wash hands before breaks and at the end of work.
Store protective clothing separately.
Avoid contact with the eyes and skin.
Maintain an ergonomically appropriate working environment.
Breathing equipment: Use suitable respirator when high concentrations are present.
Recommended filter device for short term use:
Use a respirator with type P100 (USA) or P3 (EN 143) cartridges as a backup to engineering controls. Risk assessment should be performed to determine if air-purifying respirators are appropriate. Only use equipment tested and approved under appropriate government standards.
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.
Material of gloves Nitrile rubber, NBR
Penetration time of glove material (in minutes) Not determined
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:	Crystalline or powder
Color:	Green
Odor:	Odorless
Odor threshold:	Not determined.
pH-value (100 g/l) at 20 °C (68 °F):	4.3-4.7
Change in condition	
Melting point/Melting range:	Not determined
Boiling point/Boiling range:	Not determined
Sublimation temperature / start:	Not determined
Flammability (solid, gaseous)	Not determined.
Ignition temperature:	Not determined
Decomposition temperature:	Not determined
Auto igniting:	Not determined.
Danger of explosion:	Not determined.
Explosion limits:	
Lower:	Not determined
Upper:	Not determined
Vapor pressure:	Not applicable.
Density at 20 °C (68 °F):	2.07 g/cm³ (17.274 lbs/gal)
Relative density	Not determined.
Vapor density	Not applicable.
Evaporation rate	Not applicable.
Solubility in / Miscibility with	
Water at 20 °C (68 °F):	650 g/l
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 Reacts with strong oxidizing agents
Conditions to avoid No further relevant information available.
Incompatible materials: Oxidizing agents
Hazardous decomposition products:
Sulfur oxides (SOx)
Nickel oxides

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Product name: Nickel(II) sulfate hexahydrate

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11: Toxicological information

Information on toxicological effects
Acute toxicity:
Harmful if inhaled.
Harmful if swallowed.
The following RTECS statement/statements refer to the anhydrous compound:
The Registry of Toxic Effects of Chemical Substances (RTECS) contains acute toxicity data for this substance.

LD/LC50 values that are relevant for classification:

Oral	LD50	264 mg/kg (rat)

Skin irritation or corrosion: Causes skin 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:
Suspected of causing genetic defects.
The following RTECS statement/statements refer to the anhydrous compound:
The Registry of Toxic Effects of Chemical Substances (RTECS) contains mutation data for this substance.
Carcinogenicity:
May cause cancer.
The following cancer warning/warnings refer to the anhydrous compound:
IARC-1: Carcinogenic to humans: sufficient evidence of carcinogenicity.
NTP-K: Known to be carcinogenic: sufficient evidence from human studies.
The following RTECS statement/statements refer to the anhydrous compound:
Reproductive toxicity:
May damage fertility or the unborn child.
The following RTECS statement/statements refer to the anhydrous compound:
The Registry of Toxic Effects of Chemical Substances (RTECS) contains reproductive data for this substance.
Specific target organ system toxicity - repeated exposure:
Causes damage to the lung, the kidneys, the liver, the heart, the blood and the endocrine system through prolonged or repeated exposure. Route of exposure: Oral, Inhalative.
Specific target organ system toxicity - single exposure: No effects known.
Aspiration hazard: No effects known.
Subacute to chronic toxicity:
The following RTECS statement/statements refer to the anhydrous compound:
The Registry of Toxic Effects of Chemical Substances (RTECS) contains multiple dose toxicity data for this substance.
Additional toxicological information: To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

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.
Ecotoxical 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, 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.
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.

14: Transport information

UN-Number	
DOT, IMDG, IATA	UN3288
UN proper shipping name	
DOT	Toxic solid, inorganic, n.o.s. (Nickel(II) sulfate hexahydrate)
IMDG	TOXIC SOLID, INORGANIC, N.O.S. (Nickel(II) sulfate hexahydrate), MARINE POLLUTANT
IATA	TOXIC SOLID, INORGANIC, N.O.S. (Nickel(II) sulfate hexahydrate)
Transport hazard class(es)	
DOT	

Class	6.1 Toxic substances.
Label	6.1
Class	6.1 (T5) Toxic substances

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Product name: Nickel(II) sulfate hexahydrate

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Label	6.1
IMDG	
	
Class	6.1 Toxic substances.
Label	6.1
IATA	
	
Class	6.1 Toxic substances.
Label	6.1
Packing group	
DOT, IMDG, IATA	III
Environmental hazards:	Environmentally hazardous substance, solid; Marine Pollutant
Marine pollutant (IMDG):	Yes (P) Symbol (fish and tree)
Special precautions for user	Warning: Toxic substances
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":	UN3288, Toxic solid, inorganic, n.o.s. (Nickel(II) sulfate hexahydrate), 6.1, III

15: Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture
National regulations
All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.
All components of this product are listed on the Canadian Domestic Substances List (DSL).

SARA Section 313 (specific toxic chemical listings)

10101-97-0	Nickel(II) sulfate hexahydrate

California Proposition 65

Prop 65 - Chemicals known to cause cancer

10101-97-0	Nickel(II) sulfate hexahydrate

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 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.
REACH - Pre-registered substances 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
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
DOT: US Department of Transportation
IATA: International Air Transport Association
P: Marine Pollutant
GHS: Globally Harmonized 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)
HMIS: Hazardous Materials Identification System (USA)
WHMIS: Workplace Hazardous Materials Information System (Canada)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 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)