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Version 1
1 Identification
Product identifier
Product name: <u>Nickel(II) sulfate hexahydrate</u>
Stock number: 12514 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. No further relevant information available. Identified use: SU24 Scientific research and development
Details of the supplier of the safety data sheet Manufacturer/Supplier:
Alfa Aesar Thermo Fisher Scientific Chemicals, 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 in accordance with 29 CFR 1910 (OSHA HCS)
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, Inhalation.
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. Hazards not otherwise classified No information known.
Label elements GHS label elements The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS) 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, Inhalation. Precautionary statements
P201 Obtain special instructions before use. P273 Avoid release to the environment
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
D1B - Toxic material causing immediate and serious toxic effects D2A - Very toxic material causing other toxic effects
Classification system
Classification System HMIS ratings (scale 0-4) (Hazardous Materials Identification System)
HEALTH 2 Health (acute effects) = 2 FIS = 0 $Fiammability = 0$
FIRE Flammability = 0 REACTIVITY Physical Hazard = 1 (Contd. on page 2)
(Contd. on page 2)

(Contd. on page 2)

Product name: Nickel(II) sulfate hexahydrate

(Contd. of page 1)

(Contd. of page 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(III) sulfate hexahydrate
Concentration: ≤100%
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 Causes skin irritation.
Harmful if swallowed. Harmful if inhaled.
May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction.
May cause cancer. Suspected of causing cancer by inhalation.
May damage fertility or the unborn child. 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,
Inhalation. 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.
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 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.
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. Protective Action Criteria for Chemicals
Protective Action Criteria for Chemicals PAC-1: 1.3 mg/m3 PAC-2: 8.7 mg/m3
PAC-2: 8.7 mg/m3 PAC-3: 52 mg/m3
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.
Keep container tightly sealed. Store in cool, dry conditions in well sealed containers.
Specific end use(s) No further relevant information available.
(Contd. on page 3)

(Contd. on page 3)

Product name: Nickel(II) sulfate hexahydrate

(Contd. of page 2)

		(Conta. of page 2)		
8 Exposure contro	personal protection			
Additional informa	about design of technical systems:			
Properly operating of	nical fume hood designed for hazardous chemicals and having an average face velocity of a	at least 100 feet per minute.		
Control parameter				
	t values that require monitoring at the workplace: ulfate hexahydrate (100.0%)			
	n value: 1 mg/m ³			
` ´ as Ňi				
REL (USA) Long- as Ni	n value: 0.015 mg/m³ e Pocket Guide App. A			
TLV (USA) Long	n value: 0.1 mg/m³			
` ´ as Ňi	as Ňi; inhalable fraction			
EV (Canada) Long- Inhala	n value: 0.1 mg/m³ fraction, as Ni			
Additional informa	· · ·			
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 solled 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	ile rubber, NBR ove material (in minutes) Not determined			
Eye protection: Sa	glasses with side shields / NIOSH (US) or EN 166(EU)			
Body protection: F	ctive work clothing.			
9 Physical and ch	ical properties			
	physical and chemical properties			
General Information Appearance:	· · ·			
Form:	Crystalline or powder			
Odor: Odor threshold:	Odorless Not determined.			
pH-value (100 g/l) a				
Change in conditic Melting point/Me Boiling point/Bo Sublimation tem Flammability (solid Ignition temperatu Decomposition ter Auto igniting:	g range: Not determined g range: Not determined ature / start: Not determined aseous) Not determined. Not determined			
Danger of explosio	Not determined.			
Explosion limits: Lower: Upper: Vapor pressure: Density at 20 °C (6 Relative density Vapor density Evaporation rate Solubility in / Misc Water at 20 °C (6 Partition coefficier Viscosity: dynamic: kinematic:	Not determined Not applicable. Not applicable. 2.07 g/cm³ (17.274 lbs/gal) Not determined. Not applicable. Not applicable. 5: 650 g/l -octanol/water): Not determined. Not applicable. Not applicable. 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:				

Hazardous decomposition products: Sulfur oxides (SOx) Nickel oxides

- USA -(Contd. on page 4)

Information on toxicological effects Acute oxic/by: Hardhull inhaled. How prices the substance of the substance of the anhydrous compound: The following PTICS statement/statements refer to the anhydrous compound: The following recorrection: Constitution of constants and the substance of the substance of the substance. LDLCSO values that are elevant for classification: Constitution of constants and the substance of the substance		(Contd. of page 3)
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LDLCB values float are relevant for classification: Oral LDDS 24 mode (stal) She intration or corroson: Causes skin inteloc: She intration of corroson: Causes skin inteloc: May cause an always skin raction: Carroson: Causes an always skin inteloc: May cause and where skin inteloces corroson: May cause and where skin inteloces corroson: May cause cause: May cause cause: She clife target organ system toxicly - repeated exposure: Causes and may be carroson: Subacts to chronic toxicly - repeated exposure: Cause and may be caused where, the Way the bas althouse and protone system toxicly - sepated exposure: Cause and may be caused where, the Way the bas althouse compound: May cause to chronic toxicly: May cause to chronic toxicly - repeated exposure: Specific target organ system toxicly - repeated exposure: Cause and may be caused where, the Way the bas althouse compound: Subacts to chronic toxicly: May cause to chronic toxic	The following RTECS statement/statements refer to the anhydrous compound.	a taviaitu data far this substance
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Transmission T	Suspected of causing genetic defects. The following RTECS statement/statements refer to the anhydrous compound.	
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Persistence and degradability No further relevant information available. Bioaccumulative potential No further relevant information available. Mobility in soil No further relevant information available. Mobility in soil No further relevant information available. Report: New Toxic. General notes: Do not allow material to be released to the environment without proper governmental permits. Do not allow material to be released to the environment without proper governmental permits. Do not allow material to be released to the environment without proper governmental permits. Do not allow material to be released to the environment without proper governmental permits. Do not allow material to be released to the environment without proper governmental permits. Denoted by product to reach ground water, water course or sewage system, even in small quantities. Denot allow material to be released to the quantities leak into the ground. May cause long leasting hardhul effects to aquatic organisms Results of PBT and VPVB assessment PBT, Not applicable. Other adverse effects No further relevant information available. 13 Disposal considerations Waste treatment methods Waste treatment methods Waste treatment methods Mode in the environment. UN-Nimber Dot, MIDG, IATA UN3288 UN proper shipping name Dot, MIDG, IATA UN3288 Dot MIDG MADC MIDG Transport information Transport information Transport nazard class(es) DOT MIDG Class Class Class Class Class	Aquatic toxicity: No further relevant information available	
Mobility in soll No further relevant information: Ecotoxical effects: Remark: Very toxic for equatic organisms Additional ecological information: General allows: Do not allow product to reach ground water, water course or sewage system, even in small quantities. Danager to drinking water if even extremely small quantities leak into the ground. Also poisonus for fish and plankton in water bodies. May cause long lasting harmful effects to equatic life. Avoid transfer into the environment. Very toxic for equatic organisms Results of PB1 and VPM2 assessment VPM2: Not applicable. Other adverse effects No further relevant information available. 13 Disposal considerations Wast treatment methods Recommendation Consult state, local or national regulations to ensure proper disposal. Uncleaned packagings: Number DOT, MiDG, LATA UN-Number DoT, MiDG, KATA UN proper shipping name Contra adverse (class(es) DOT Additional Class 6.1 Toxic substances	Persistence and degradability No further relevant information available.	
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 material to be released to the environment without proper governmental permits. Do not allow material to be released to the environment without proper governmental permits. Do not allow material to be released to the environment without proper governmental permits. Danger to drinking water if even extremely small quantities leak into the ground. Also coissonus for fish and planthon in water bodies. May cause for gautic to eave the bodies. May cause for BT and vPB assessment PFBT: Not applicable. Other adverse effects No further relevant information available. 13 Disposal considerations Waste treatment methods Recommendation: Disposal must be made according to official regulations. 14 Transport information UN-Number DoT, MDG, IATA UN proper shipping name QR MDG MDG MDG MDG MDG MDG MDG MDG MDG	Mobility in soil No further relevant information available.	
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DOT Class 6.1 Toxic substances		
	\bigvee	
(Conta. on page 3) USA	Class	
		USA

Product name: Nickel(II) sulfate hexahydrate

Product name: NICKEI(II) SUITATE NEXANYORATE				
	(Contd.	. of page 4)		
Label ADR	6.1			
Class	6.1 (T5) Toxic substances			
Label	6.1			
IMDG				
$\langle \mathcal{H} \rangle \langle \mathcal{H}_2 \rangle$				
\vee \vee				
Class Label	6.1 Toxic substances 6.1			
IATA	0.7			
Class	6.1 Toxic substances			
Label Packing group	6.1			
Packing group DOT, ADR, IMDG, IATA	III			
Environmental hazards:				
Marine pollutant (IMDG):	Yes (DOT) Symbol (fish and tree)			
Special precautions for user	Warning: Toxic substances			
Stowage Category	A Nationalizable			
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Co Transport/Additional information:	de Not applicable.			
DOT				
Quantity limitations	On passenger aircraft/rail: 100 kg			
Marine Pollutant (DOT):	On cargo aircraft only: 200 kg No			
Remarks:	Special marking with the symbol (fish and tree).			
IMDG Limited quantities (LQ)	5 kg			
Excepted quantities (ÉQ)	Code: E1			
	Maximum net quantity per inner packaging: 30 g Maximum net quantity per outer packaging: 1000 g			
UN "Model Regulation":	UN 3288 TOXIC SOLID. INORGANIC. N.O.S. (NICKEL(II) SULFATE			
	HEXAHYDRATE), 6.1, III			
15 Regulatory information				
	substance or mixture			
Safety, health and environmental regulations/legislation specific for the GHS label elements The product is classified and labeled in accordance with Hazard pictograms	n 29 CFR 1910 (OSHA HCS)			
GHS07 GHS08				
Signal word Danger				
Hazard statements				
H302+H332 Harmful if swallowed or if inhaled. H315 Causes skin irritation.				
H334 May cause an allergy or asthma symptoms or breathing difficulties if inhaled. H317 May cause an allergic skin reaction. H341 Suspected of causing genetic defects.				
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, Inhalation.				
Precautionary statements				
P201 Obtain special instructions before use. P273 Avoid release to the environment.				
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.				
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, remaie Substance is not listed. Prop 65 - Developmental toxicity, male 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. Other regulations, limitations and prohibitive regulations				
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.				

Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006. Substance is not listed.

(Contd. on page 6) USA

Product name: Nickel(II) sulfate hexahydrate

(Contd. of page 5) 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. 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 Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user. Information to ensure proper use and protect the health and salety or employees. This information is furnished without warranty, and conformance with this Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

Department issuing SDS: Global Marketing Department
Date of preparation/Revision: Print date, revision date and version number are in the header of each page.

Abreviations and acronyms:
ABR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods
DOT: US Department of Transportation
IMDE: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IMDE: International Altr Transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDE: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IMDE: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IMDE: International Maritime Code for Dangerous Goods
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IMDE: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IMDE: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IMDE: Hazardous Materials Information System (USA)
IMDE: Hazardous Materials Information System (USA)
USA)
CS: Chemical Abstracts Service (Martine State)
VPWE: very Persistent and very Bioaccumulative
POT: Extensional Transportation
IMDE: International Agency for Research on Cancer
EPA: Environmental Protection Agency (USA)
Acute Tox. 4: Acute toxicity – Category 1
IMDE: Skin normal State) code gory 2
Resp. Sens. 1: Respra

USA