Material Safety Data Sheet

OCI Company Ltd.

MSDS

Nickel(Ⅱ) Sulfate Hexahydrate

Section 1 - Chemical Product and Company Identification

Substance : Nickel(Ⅱ) Sulfate Hexahydrate

Recommended use : Not available

Restriction of use : Not available

Company Identification

Company : OCI Company Ltd.

Address : 230, Dokbae-ro, Nam-gu, Incheon, KOREA

Tel No. : 82 - 32 - 860 - 6114

Section 2 - Hazards Identification

1) Hazard Classification — Acute toxicity (Oral) : 3
Carcinogenicity : 1A

2) Warning signal

Symbol

Signal word — Danger

Hazard statement
- H301 Toxic if swallowed
- H350 May cause cancer

Prevention precautionary statements
- P201 Obtain special instructions before use
- P202 Do not handle until all safety precautions have been read and understood
- P264 Wash thoroughly after handling
- P270 Do not eat, drink or smoke when using this product
- P280 Wear protective gloves/protective clothing/eye protection/face protection.
- P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
- P308+P313 IF exposed or concerned: Get medical advice/attention
- P321 Specific treatment
- P330 Rinse mouth

P405 Store locked up.
P501 Dispose of contents/container to the related laws.

3) NFPA

Health Rating	2
Flammability Rating	0
Reactivity Rating	0

Section 3 - Composition, Information on Ingredients

COMPONENT : Nickel(Ⅱ) Sulfate Hexahydrate
CAS No. : 10101-97-0
PERCENTAGE : 100

Section 4 - First Aid Measures

General information: Get medical advice/attention if you feel unwell. If medical advice is needed, have product container or label at hand.
Ingestion: Rinse mouth. Call a POISON CENTER or doctor/physician if you feel unwell.
Inhalation: Move to fresh air. Get medical attention if symptoms persist.
Skin Contact: Wash skin thoroughly with soap and water. If skin irritation or an allergic skin reaction develops, get medical attention. Wash contaminated clothing before reuse.
Eye contact: Flush thoroughly with water. If irritation occurs, get medical assistance.
Most important symptoms/effects, acute and delayed

Symptoms: May cause allergic skin reaction. May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Hazards: Irritant. Nickel compounds: Nickel causes sensitization by skin contact. Studies indicate that some forms of nickel are carcinogenic to humans.

Indication of immediate medical attention and special treatment needed

Treatment: Treat symptomatically. Symptoms may be delayed.

Section 5 - Fire Fighting Measures

General Fire Hazards: In case of fire and/or explosion do not breathe fumes.
Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: Use fire-extinguishing media appropriate for surrounding materials.

Unsuitable extinguishing media: None known.

Specific hazards arising from the chemical: During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters

Special fire fighting procedures: Move containers from fire area if you can do so without risk. Use water spray to keep fire-exposed containers cool. Cool containers exposed to flames with water until well after the fire is out.

Special protective equipment for fire-fighters: Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

Section 6 - Accidental Release Measures

Personal precautions, protective equipment and emergency procedures: Keep unauthorized personnel away. Ventilate closed spaces before entering them. Use personal protective equipment. See Section 8 of the SDS for Personal Protective Equipment.

Methods and material for containment and cleaning up: Shovel up and place in a container for salvage or disposal. Clean surface thoroughly to remove residual contamination.

Notification Procedures: Prevent entry into waterways, sewer, basements or confined areas. Inform authorities if large amounts are involved.

Environmental Precautions: Avoid discharge into drains, water courses or onto the ground. Prevent further leakage or spillage if safe to do so.

Section 7 - Handling and Storage

Precautions for safe handling: Use personal protective equipment as required. Avoid inhalation of dust. Avoid contact with eyes, skin, and clothing. Wash hands thoroughly after handling.

Conditions for safe storage, including any incompatibilities: Keep container tightly closed. Store in a well-ventilated place. Store in a cool, dry place.

Section 8 - Exposure Controls, Personal Protection

Control Parameters

Occupational Exposure Limits

Chemical Identity	type	Exposure Limit Values	Source
NICKEL SULFATE, HEXAHYDRATE - Inhalable fraction. - as Ni	TWA	0.1 mg/m3	US. ACGIH Threshold Limit Values (2011)
NICKEL SULFATE, HEXAHYDRATE - as Ni	RE	0.015 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2010)
	PEL	1 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	PEL	1 mg/m3	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	TWA	1 mg/m3	US. OSHA Table Z-1-A (29 CFR 1910.1000) (1989)
	TWA	0.1 mg/m3	US. OSHA Table Z-1-A (29 CFR 1910.1000) (1989)

Appropriate Engineering Controls No data available.

Individual protection measures, such as personal protective equipment

General information:

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. An eye wash and safety shower must be available in the immediate work area.

Eye/face protection: Use tight fitting goggles if dust is generated.

Skin Protection

Hand Protection: Wear protective gloves.

Other: Wear suitable protective clothing and gloves.

Respiratory Protection: In case of inadequate ventilation use suitable respirator.

Hygiene measures: Provide eyewash station and safety shower. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing to remove contaminants. Discard contaminated footwear that cannot be cleaned.

Section 9 - Physical and Chemical Properties

Appearance

Physical state: Solid

Form: Crystals

Color: Green ~ Blue

Odor: Odorless

Odor threshold: No data available.

pH: 4.5 (Solution)

Melting point/freezing point: 53 ℃

Initial boiling point and boiling range: 103 ℃

Flash Point: No data available.

Evaporation rate: No data available.

Flammability (solid, gas): No data available.

Upper/lower limit on flammability or explosive limits

Flammability limit - upper (%): No data available.

Flammability limit - lower (%): No data available.

Explosive limit - upper (%): No data available.

Explosive limit - lower (%): No data available.

Vapor pressure: No data available.

Vapor density: Not applicable

Relative density: 2.07 (Water=1).

Solubility(ies)

Solubility in water: 66% (at 0℃)

Solubility (other): Soluble in ethanol, methanol, ammonium hydroxide

Partition coefficient (n-octanol/water): No data available.

Auto-ignition temperature: No data available.

Decomposition temperature: > 800℃

Viscosity: No data available.

Molecular weight: 262.84

Section 10 - Stability and Reactivity

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

Chemical Stability: Material is stable under normal conditions.

Possibility of hazardous reactions: Hazardous polymerization does not occur.

Conditions to avoid: Contact with strong acids.

Incompatible Materials: Strong acids.

Hazardous Decomposition Products: Thermal decomposition may produce oxides of sulfur.

Section 11 - Toxicological Information

Information on likely routes of exposure

Ingestion: May irritate and cause stomach pain, vomiting and diarrhoea.

Inhalation: May cause respiratory allergy.

Skin Contact: May cause an allergic skin reaction. May cause irritation.

Eye contact: May irritate eyes.

Information on toxicological effects

Acute toxicity (list all possible routes of exposure)

Oral Product: LD50 264 mg/kg Rat

Dermal Product: No data available.

Inhalation Product: No data available.

Repeated dose toxicity Product: No data available.

Skin Corrosion/Irritation Product: May cause allergic skin reaction. May cause skin irritation.

Serious Eye Damage/Eye Irritation Product: May irritate eyes.

Respiratory or Skin Sensitization Product: May cause an allergic skin reaction. May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Carcinogenicity Product: May cause cancer.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:

NICKEL SULFATE Overall evaluation: 1. Carcinogenic to humans.

US. National Toxicology Program (NTP) Report on Carcinogens:

NICKEL SULFATE Known To Be Human Carcinogen.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):

No carcinogenic components identified

Germ Cell Mutagenicity

In vitro Product: Not known.

In vivo Product: Not known.

Reproductive toxicity Product: May damage the unborn child.

Specific Target Organ Toxicity - Single Exposure Product: None known.

Specific Target Organ Toxicity - Repeated Exposure Product: Causes damage to organs through prolonged or repeated exposure.

Aspiration Hazard Product: Not classified

Other effects: None known.

Section 12 - Ecological Information

Ecotoxicity:

Acute hazards to the aquatic environment:

Fish Product: No data available.

Aquatic Invertebrates Product: No data available.

Chronic hazards to the aquatic environment:

Fish Product: No data available.

Aquatic Invertebrates Product: No data available.

Toxicity to Aquatic Plants Product: No data available.

Persistence and Degradability

Biodegradation Product: There are no data on the degradability of this product.

BOD/COD Ratio Product: No data available.

Bioaccumulative Potential

Bioconcentration Factor (BCF) Product: No data available on bioaccumulation.

Partition Coefficient n-octanol / water (log Kow) Product: No data available.

Mobility in Soil: The product is water soluble and may spread in water systems.

Other Adverse Effects: Toxic to aquatic life with long lasting effects.

Section 13 - Disposal Considerations

Disposal instructions: Discharge, treatment, or disposal may be subject to national, state, or local laws.

Contaminated Packaging: Since emptied containers retain product residue, follow label warnings even after container is emptied.

Section 14 - Transport Information

UN Number: 3288

Proper Shipping Name: TOXIC SOLID,ORGANIC,N.O.S.

Hazard Class: 6.1

Packing Group: III

Marine Pollutant: No data available.

Safety measures : Fire F-A, Flow out S-A

Section 15 - Regulatory Information

US Federal Regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

None present or none present in regulated quantities.

CERCLA Hazardous Substance List (40 CFR 302.4):

Chemical Identity	Reportable quantity
NICKEL SULFATE	100 lbs.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Acute (Immediate)

Chronic (Delayed)

SARA 302 Extremely Hazardous Substance

None present or none present in regulated quantities.

SARA 304 Emergency Release Notification

Chemical Identity	Reportable quantity
NICKEL SULFATE	100 lbs.

SARA 311/312 Hazardous Chemical

Chemical Identity	Threshold Planning Quantity
NICKEL SULFATE	10000 lbs

SARA 313 (TRI Reporting)

Chemical Identity	Reporting threshold for other users	Reporting threshold for manufacturing and processing

NICKEL SULFATE	10000 lbs	25000 lbs.

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)

Chemical Identity	Reportable quantity
NICKEL SULFATE	Reportable quantity: 100 lbs.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):

None present or none present in regulated quantities.

US State Regulations

US. California Proposition 65

NICKEL SULFATE	Carcinogenic.

US. New Jersey Worker and Community Right-to-Know Act

Chemical Identity

NICKEL SULFATE

US. Massachusetts RTK - Substance List

Chemical Identity

NICKEL SULFATE

US. Pennsylvania RTK - Hazardous Substances

Chemical Identity

NICKEL SULFATE

US. Rhode Island RTK

Chemical Identity

NICKEL SULFATE

Inventory Status:

US TSCA Inventory:	On or in compliance with the inventory
Australia AICS:	On or in compliance with the inventory
Canada DSL Inventory List:	On or in compliance with the inventory
EINECS, ELINCS or NLP:	On or in compliance with the inventory
Japan (ENCS) List:	Not in compliance with the inventory.
China Inv. Existing Chemical Substances:	On or in compliance with the inventory
Korea Existing Chemicals Inv. (KECI):	On or in compliance with the inventory
Canada NDSL Inventory:	Not in compliance with the inventory.
Philippines PICCS:	On or in compliance with the inventory
New Zealand Inventory of Chemicals:	Not in compliance with the inventory.
Japan ISHL Listing:	Not in compliance with the inventory.
Japan Pharmacopoeia Listing:	Not in compliance with the inventory.

Section 16 - Other Information

Sources : KOSHA, National Emergency Management Agency
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