OCI Company Ltd.

Material Safety Data Sheet

MSDS

Nickel(II) Oxide

Section 1 - Chemical Product and Company Identification

TRADE NAMES : Nickel(II) Oxide

Recommended use : Laboratory chemicals, Testing, Research and Industrial use

Restriction of use : Not for use other than for non-drinking, testing, research and industrial purposes

Company Identification

Company : OCI Company Ltd.

Address : 94, Sogong-ro, Jung-gu, Seoul, KOREA

Tel No. : 82 - 2 - 727 - 9494

Section 2 - Hazards Identification

1) Hazard Classification

Skin sensitizer : 1
Carcinogenicity: 1A
Specific target organ toxicity – : 1
repeated exposure (Inhalation)
Chronic hazards to the aquatic environment: 4

2) Warning signal

Symbol

Signal word Danger

Hazard statement
H350 May cause cancer
H372 Causes damage to organs through prolonged or repeated exposure
H317 May cause an allergic skin reaction
H413 May cause long lasting harmful effects to aquatic life

Prevention precautionary statements
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P260 Do not breathe dust/fume/gas/mist/vapours/spray
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P264 Wash thoroughly after handling
P270 Do not eat, drink or smoke when using this product.
P272 Contaminated work clothing should not be allowed out of the workplace.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352 IF ON SKIN: Wash with plenty of soap and water.P330 Rinse mouth.
P308+P313 IF exposed or concerned: Get medical advice/attention.
P314 Get medical advice/attention if you feel unwell.
P321 Specific treatment (see .Section 4 on this label).
P333+P313 If skin irritation or rash occurs: Get medical advice/attention.

P362+P364 Take off contaminated clothing and wash before reuse.
P405 Store locked up.
P501 Dispose of contents/container to the related laws.

3) NFPA

Health Rating	2
Flammability Rating	Not available
Reactivity Rating	Not available

Section 3 - Composition, Information on Ingredients

COMPONENT: Nickel(II) Oxide
CAS No.: 1313-99-1
PERCENTAGE: 100%

Section 4 - First Aid Measures

General information: Get medical advice/attention if you feel unwell. Show this safety data sheet to the doctor in attendance.
Ingestion: Rinse mouth thoroughly. 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. Get medical attention if irritation persists after washing. Wash contaminated clothing before reuse.
Eye contact: Flush thoroughly with water. If irritation occurs, get medical assistance.
Most important symptoms/effects, acute and delayed
May cause irritation to skin, eyes, and respiratory tract.
Indication of immediate medical attention and special treatment needed
Treat symptomatically. Symptoms may be delayed.

Section 5 - Fire Fighting Measures

Suitable extinguishing media
Use fire-extinguishing media appropriate for surrounding materials.
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:
NFirefighters 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. Keep upwind. Avoid inhalation of dust. Use personal protective equipment. Ventilate closed spaces before entering them. See Section 8 of the MSDS for Personal Protective Equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
Environmental precautions
Prevent entry into waterways, sewer, basements or confined areas. Inform authorities if large amounts are involved.
Methods and material for containment and cleaning up: Avoid dust formation. Sweep up and place in a clearly labeled container for chemical waste. 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.

Section 7 - Handling and Storage

Precautions for safe handling: Use personal protective equipment as required. Avoid contact with eyes, skin, and clothing. Avoid inhalation of dust. Wash thoroughly after handling. Use only with adequate ventilation.
Conditions for safe storage, including any incompatibilities: Keep containers tightly closed. Store in cool, dry place. Store in a well-ventilated place.

Section 8 - Exposure Controls, Personal Protection

Control Parameters

Occupational Exposure Limits

Chemical identity	Type	Exposure Limit values	Source
NICKEL OXIDE - Inhalable fraction. - as Ni	TWA	0.1 mg/m3	US. ACGIH Threshold Limit Values (2011)
	TWA	0.2 mg/m3	US. ACGIH Threshold Limit Values (2011)
NICKEL OXIDE - as Ni	REL	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)

Appropriate Engineering Controls Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks andat the end of workday.
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.
Eye Protection: Use tight fitting goggles if dust is generated.
Hand Protection: Protective gloves
Skin and body protection: Wear protective gloves and Wear suitable protective clothing.
Respiratory Protection: In case of inadequate ventilation use suitable respirator
Hygiene Measures Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Provide eyewash station and safety shower.

Section 9 - Physical and Chemical Properties

Physical state: Solid
Form: Crystals or powder.
Color: Green
Odor: Odorless

pH: No data available
Melting point/freezing point: 1984°C
Initial boiling point and boiling range: 2730°C

Flash Point: Not applicable

Evaporation rate: Not applicable

Flammability (solid, gas): Not applicable

Upper/lower limit on flammability or explosive limits: No data available

Vapor pressure: No data available

Vapor density:No data available

Relative density: 6.7

Solubility: Insoluble(as Water)

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

Auto-ignition temperature: No data available

Decomposition temperature: No data available

Viscosity: No data available

Molecular weight: 74.7g/mol(NiO)

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: Excessive heat.
Incompatible Materials: Strong oxidizing agents. Hydrogen peroxide (H2O2) Aluminum. Hydrogen
Hazardous Decomposition Products: In a fire, nickel may form nickel carbonyl, a highly toxic substance and known carcinogen ..

Section 11 - Toxicological Information

Information on likely routes of exposure
Ingestion: May cause irritation of the gastrointestinal tract.
Inhalation: May cause irritation to the respiratory system.
Skin contact: May cause allergic skin reaction based on human experience.
Eye contact: May cause temporary eye irritation.
Information on toxicological effects
Acute toxicity
LD50 Oral - Rat - female - 〉840 mg/kg(Nickel monoxide)
(OECD Test Guideline 425)
LD50 Subcutaneous - Mouse - 50 mg/kg(Nickel monoxide)
Skin corrosion/irritation
No data available
Serious eye damage/eye irritation
No data available
Respiratory or skin sensitization
No data available
Germ cell mutagenicity
No data available
Carcinogenicity
This is or contains a component that has been reported to be carcinogenic classification.(Nickel monoxide)
Human carcinogen.(Nickel monoxide)
(Nickel monoxide)
IARC: 1 - Group 1: Carcinogenic to humans (Nickel monoxide)
Reproductive toxicity
No data available
Specific target organ toxicity - single exposure
No data available
Specific target organ toxicity - repeated exposure
No data available.
Aspiration hazard
No data available
Other Effects: None known.

Section 12 - Ecological Information

Toxicity
No data available
Persistence and degradability
No data available
Bioaccumulative potential
Bioaccumulation Fucus vesiculosus - 21 d
- 0.00001 mg/l(Nickel monoxide)
Bioconcentration factor (BCF): 675
(Tested according to Annex V of Directive 67/548/EEC.)
Remarks: The product may be accumulated in organisms.

Mobility in soil
No data available
Results of PBT and vPvB assessment
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.
Other adverse effects
No data available

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.

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Section 14 - Transport Information

DOT: Not regulated

IMDG: Not regulated

IATA: Not regulated

Section 15 - Regulatory Information

Safety, health and environmental regulations/legislation specific for the substance or mixture
This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.
Chemical safety assessment

For this product a chemical safety assessment was not carried out
Legend
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
PICCS - Philippines Inventory of Chemicals and Chemical Substances
ENCS - Japan Existing and New Chemical Substances
CHINA - China Inventory of Existing Chemical Substances
AICS - Inventory of Chemical Substances

KECL - Existing and Evaluated Chemical Substances

Section 16 - Other Information

Sources : KOSHA, National Emergency Management Agency

Issue date : 11/20/2018

Last updated date : 11/20/2018

Revision number : 0