

**Section 1: Identification of the Substance/Mixture and of the Company/Undertaking****Product Identifier:****Identification as on the label/Trade name:** Nickel Oxide.**Molecular weight:** 74.69**Chemical formula:** NiO**Synonyms:** None.**Details of the supplier of the Safety Data Sheet:**Neonest AB  
Storgatan 70C, Solna  
SE-17152  
Sweden**Contact details:**

+46-76-219-9731

**24-hour Emergency Contact:**Swedish Poisons Centre  
Phone: 112 - Ask for Poisons Information, 112 – begär Giftinformation.**Other International Contacts:**CHEMTREC 24-hour: +1-703-741-5500 (US + Worldwide)  
NHS: 111 (UK)  
Charite: +49 30 450 531 000 (Netherlands)  
INTCF: +34 917689800 (Spain)  
CapTv: +33 1 40 05 48 48 (France)**Section 2: Hazards Identification****Classification of the substances or mixture:****The mixture is classified according to:** Regulation EC 1272/2008 [EU-GHS/CLP]**Hazard classes/Hazard categories:**

Skin Sensitizer (Category 1)

Carcinogenicity (Category 1A)

STOT RE (Category 1)

Aquatic Chronic (Category 4)

**Hazard statement:**

H317

H350

H372

H413

**Label elements:****Hazard pictograms:**



**Signal Words:** Danger.

H317 May cause an allergic reaction.

H350 May cause cancer by inhalation.

H372 Causes damage to organs through prolonged or repeated exposure.

H413 May cause long lasting effects to aquatic life.

**Precautionary Statements:**

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P270 Do not eat, drink or smoke when using this product.

P273 Avoid release to the environment.

P280 Wear protective gloves/protective clothing.

P308 + P313 IF exposed or concerned: Get medical advice/attention.

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

P405 Store locked up.

P501 Dispose of contents/container in accordance with local and national regulations.

**Other hazards:** None known.

### Section 3: Composition/Information on Ingredients

**Substance/Mixture:** Substance.

**Ingredients:**

Substance name (IUPAC/EC)	CAS-No.	Molecular weight	Concentration % by weight	Classification EC1272/2008
	EC-No.			
Nickel monoxide	1313-99-1	74.69	>99%	Skin Sens. 1 H317
	215-215-7			STOT RE 1 H372 Aquatic Chronic 4H413 Carc. 1A H350

For explanation of abbreviations see Section 16.

### Section 4: First-Aid Measures

**Description of first aid measures:**

**In case of inhalation:** If inhaled, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

**In case of skin contact:** In case of contact, immediately wash skin with soap and copious amounts of water. Take victim immediately to hospital. Consult a physician.

**In case of eye contact:** In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Consult a physician.

**In case of ingestion:** Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

**Most important symptoms and effects, both acute and delayed:**

**Skin contact:** May cause an allergic skin reaction.

**Indication of any immediate medical attention and special treatment needed:** Treat symptomatically. Show this safety data sheet to a physician or emergency room.

## Section 5: Fire-Fighting Measures

**Extinguisher media:**

**Suitable extinguisher media:** Water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

**Unsuitable extinguishing media:** None known.

**Special hazards arising from the mixture:** Nickel/nickel oxides.

**Advice for fire-fighters:** Wear self-contained breathing apparatus and protective clothing for firefighting.

**Further information:** Standard procedure for chemical fires. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

## Section 6: Accidental Release Measures

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

**Personal precautions:** Use personal protective equipment. Avoid dust formation. Avoid breathing dust, vapor, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.

**Environmental precautions:** Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. Local authorities should be advised if significant spillages cannot be contained.

**Methods for containment and cleaning up:**

**Methods for cleaning up:** Sweep up, place in a suitable closed container and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.

**Reference to other sections:**

Treat recovered material as described in the section "Disposal considerations".

## Section 7: Handling and Storage

**Precautions for safe handling:**

**Advice on safe handling:** Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs.

**Hygiene measures:** Do not eat, drink or smoke when using this product.

**Conditions for safe storage, including incompatibilities:**

**Requirements for storage areas and containers:** Keep container tightly closed in a dry, well-ventilated place. Storage class (TRGS 510): Non-combustible, acute toxic Category 3 / toxic hazardous materials or hazardous materials causing chronic effects.

## Section 8: Exposure Controls/Personal Protection

### Control parameters:

Component	CAS No.	Value	Control Parameters	Basis
Nickel	1313-99-1	TWA	1.000000 mg/m <sup>3</sup>	USA. Occupational Exposure Limits (OSHA)
		TWA	0.015000 mg/m	USA. NIOSH Recommended Exposure Limits
		TWA	0.200000 mg/m <sup>3</sup>	USA. ACGIH Threshold Limit Values (TLV)
		TWA	1 mg/m <sup>3</sup>	USA. Occupational Exposure Limits (OSHA)
		TWA	0.2 mg/m <sup>3</sup>	USA. ACGIH Threshold Limit Values (TLV)
		TWA	0.015 mg/m <sup>3</sup>	USA. NIOSH Recommended Exposure Limits

### Exposure controls:

**Appropriate engineering controls:** Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of the workday.

### Individual protection measures, such as personal protective equipment:

**Eye/face protection:** Face shield and safety glasses. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

**Hand protection:** Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

**Body protection:** Complete suit protecting against chemicals. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**Respiratory protection:** Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

## Section 9: Physical and Chemical Properties

### Information on basic physical and chemical properties

**Appearance (form):** Solid (powder).

**Colour:** Dark grey.

**Odour:** No data available.

**Odour threshold:** No data available.

**Molecular Weight:** 74.69

**pH (concentration):** No data available.

**Melting point/range (°C):** 1 955 - 2 090 °C

**Boiling point/range (°C):** No data available.

**Freezing point (°C):** No data available.

**Flash point (°C):** No data available.

**Evaporation rate:** No data available.

**Flammability (solid, gas):** No data available.

**Ignition temperature (°C):** No data available.

**Upper/lower flammability/explosive limits:** No data available.

**Vapour pressure (20 °C):** No data available.

**Vapour density:** No data available.

**Relative density (25 °C):** 6.67 g/mL at 25 °C

**Water solubility (g/L) at 20 °C:** 0.00003 g/l at 20 °C (68 °F) – OECD Test Guideline 105 – practically insoluble.

**n-Octanol/Water partition coefficient:** No data available.

**Auto-ignition temperature:** > 400 °C

**Decomposition temperature:** No data available.

**Viscosity, dynamic (mPa s):** No data available.

**Explosive properties:** The substance or mixture is not classified as explosive.

**Oxidising properties:** The substance or mixture is not classified as oxidizing.

## Section 10: Stability and Reactivity

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

**Chemical stability:** Stable under normal conditions.

**Possibility of hazardous reactions:** No dangerous reaction known under conditions of normal use.

**Conditions to avoid:** None known.

**Incompatible materials:** Strong acids.

**Hazardous decomposition products:** None known.

## Section 11: Toxicological Information

### Information on toxicological effects:

Acute Toxicity

LD<sub>50</sub> Oral – Rat – Female - >11,000 mg/kg (OECD Test Guideline 425)

Inhalation: No data available

Dermal: No data available

LD<sub>50</sub> Subcutaneous – Mouse – 50 mg/kg

### Classification according to GHS (1272/2008/EG, CLP)

#### **Skin corrosion/irritation:**

Not classified based on available information.

#### **Serious eye damage/eye irritation:**

Not classified based on available information.

#### **Respiratory or skin sensitisation:**

May cause an allergic skin reaction.

#### **Germ cell mutagenicity:**

Not classified based on available information.

#### **Carcinogenicity:**

Carcinogenicity – Rat – Male and Female – Inhalation

Lungs, Thorax or Respiration: Bronchiogenic carcinoma

This product is or contains a component that has been reported to be carcinogenic based on its IARC, OSHA, ACGIH, NTP or EPA classification.

Human carcinogen.

IARC: 1 – Group 1: Carcinogenic to humans (Nickel monoxide)

NTP: Known to be a human carcinogen (Nickel monoxide)

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

#### **Reproductive toxicity:**

Not classified based on available information.

**Specific target organ toxicity – single exposure (STOT):**

Not classified based on available information.

**Specific target organ toxicity (STOT) – repeated exposure:**

Causes damage to organs through prolonged or repeated exposure.

**Aspiration toxicity:**

Not classified based on available information.

## Section 12: Ecological Information

**Toxicity:**

Toxicity to fish:

NOEC (32 days) 35 - 431 000 µg/L

NOEC (30 days) 108.9 µg/L

NOEC (8 days) 40 - 80 µg/L

LOEC (32 days) 35 - 3 730 µg/L

LOEC (30 days) 433.5 µg/L

Toxicity to daphnia and other aquatic invertebrates:

NOEC (8 months) 66 µg/L

NOEC (4.233 months) 713 µg/L

NOEC (56 days) 40 - 120 µg/L

NOEC (42 days) 40 µg/L

NOEC (36 days) 61 µg/L

**Persistence and degradability:** No data available.

**Bioaccumulative potential:** Bioaccumulation: *Fucus vesiculosus* – 21 days – 0.00001 mg/l

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& vPvB assessment:** Not relevant.

**Other adverse effects:** An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

## Section 13: Disposal Considerations

**Waste treatment methods:** Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Offer surplus and non-recyclable solutions to a licensed disposal company.

## Section 14: Transport Information

**UN number:** Not regulated as a dangerous good.

**UN proper shipping name:** Not regulated as a dangerous good.

**Transport hazard class(es):** Not regulated as a dangerous good.

**Packing group:** Not regulated as a dangerous good.

**Environmental hazards:** Not regulated as a dangerous good.

**Special precautions for user:** Not dangerous goods in the meaning of ADR/RID, ADN, IMDG-Code, ICAO/IATA-DGR.

**Transport in bulk according to Annex II of Marpol and the IBC Code:** Not applicable.

## Section 15: Regulatory Information

### EU regulations:

**Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I and II, as amended**

Not listed.

**Regulation (EC) No. 850/2004 on persistent organic pollutants, Annex I**

Not listed.

**Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 1 as amended**

Not listed.

**Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 2 as amended**

Not listed.

**Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 3 as amended**

Not listed.

**Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex V as amended**

Not listed.

**Regulation (EC) No. 166/2006 Annex II Pollutant Release and Transfer Registry**

Not listed.

**Regulation (EC) No. 1907/2006, REACH Article 59(10) Candidate List as currently published by ECHA**

Not listed.

### Authorisations:

**Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorization, as amended**

Not listed.

### Restrictions on use:

**Regulation (EC) No. 1907/2006 Annex XVII Substances subject to restriction on marketing and use**

Not regulated.

**Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use as amended**

Not listed.

**Directive 2004/37/EC on the protection of workers from the risks related to exposure to carcinogens and mutagens at work**

Not regulated.

**Directive 92/85/EEC: on the safety and health of pregnant workers and workers who have recently given birth or are breastfeeding.**

Not regulated.

### Other EU regulations:

**Directive 2012/18/EU on major accident hazards involving dangerous substances**

Not listed.

**Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work.**

Always applicable.



**Directive 94/33/EC on the protection of young people at work**

Not listed.

**Other regulations:** The product is classified and labelled in accordance with EC directives or respective national laws. This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006, as amended.

**SARA 302 Components:** No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

**SARA 313 Components:** The following components are subject to reporting levels established by SARA Title III, Section 313: Nickel monoxide, CAS No. 1313-99-1, Revision Date 1993-04-24.

**SARA 311/312 Hazards:** Acute Health Hazard, Chronic Health Hazard.

**Massachusetts Right To Know Components:** Nickel monoxide, CAS No. 1313-99-1, Revision Date 1993-04-24.

**Pennsylvania Right To Know Components:** Nickel monoxide, CAS No. 1313-99-1, Revision Date 1993-04-24.

**New Jersey Right To Know Components:** Nickel monoxide, CAS No. 1313-99-1, Revision Date 1993-04-24.

**California Prop. 65 Components:** WARNING! This product contains a chemical known to the state of California to cause cancer: Nickel monoxide, CAS No. 1313-99-1, Revision Date 2007-09-28.

**National regulations:** Follow national regulation for work with chemical agents.

**Chemical safety assessment:** No Chemical Safety Assessment has been carried out.

**Section 16: Other Information****List of abbreviations:**

ACGIH American Conference of Governmental Industrial Hygienists  
ADR European Agreement Concerning the International Carriage of Dangerous Goods by Road  
ALARA As Low As Is Reasonably Achievable  
AMU Atomic Mass Unit  
ANSI American National Standards Institute  
BLS Basic Life Support  
CAM Continuous Air Monitor  
CAS Chemical Abstracts Service (division of the American Chemical Society)  
CEN European Committee for Standardization  
CERCLA Comprehensive Environmental Response Compensation and Liability Act  
CLP Classification, Labelling and Packaging (European Union)  
CPR Controlled Products Regulations (Canada)  
CWA Clean Water Act (USA)  
DAC Derived Air Concentration (USA)  
DOE United States Department of Energy (USA)  
DOT United States Department of Transportation (USA)  
DSL Domestic Substances List (Canada)  
EC50 Half Maximal Effective Concentration  
EINECS European Inventory of Existing Commercial Chemical Substances  
EHS Environmentally Hazardous Substance  
ELINCS European List of Notified Chemical Substances  
EMS Emergency Response Procedures for Ships Carrying Dangerous Goods  
EPA Environmental Protection Agency (USA)  
EPCRA Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986  
GHS Globally Harmonized System  
HMIS Hazardous Materials Identification System (USA)



IARC International Agency for Research on Cancer  
IATA International Air Transport Association  
IBC Intermediate Bulk Containers  
ICAO International Civil Aviation Organization  
IDLH Immediately Dangerous to Life or Health  
IMDG International Maritime Code for Dangerous Goods  
LC50 Lethal concentration, 50 percent  
LD50 Lethal dose, 50 percent  
LDLO Lethal Dose Low  
LOEC Lowest-Observed-Effective Concentration  
MARPOL International Convention for the Prevention of Pollution from Ships  
MSHA Mine Safety and Health Administration (USA)  
NCRP National Council on Radiation Protection & Measurements (USA)  
NDSL Non-Domestic Substances List (Canada)  
NFPA National Fire Protection Association (USA)  
NIOSH National Institute for Occupational Safety and Health (USA)  
NOEC No Observed Effect Concentration  
N.O.S. Not Otherwise Specified  
NRC Nuclear Regulatory Commission (USA)  
NTP National Toxicology Program (USA)  
OSHA Occupational Safety and Health Administration (USA)  
PBT Persistent Bioaccumulative and Toxic Chemical  
PEL Permissible Exposure Limit  
PIH Poisonous by Inhalation Hazard  
RCRA Resource Conservation and Recovery Act (USA)  
RCT Radiation Control Technician  
REACH Registration, Evaluation, Authorisation and Restriction of Chemicals (Europe)  
RID Regulations Concerning the International Transport of Dangerous Goods by Rail  
RTECS Registry of Toxic Effects of Chemical Substances  
SARA Superfund Amendments and Reauthorization Act (USA)  
TDG Transportation of Dangerous Goods (Canada)  
TIH Toxic by Inhalation Hazard  
TLV Threshold Limit Value  
TPQ Threshold Planning Quantity  
TSCA Toxic Substances Control Act  
TWA Time Weighted Average  
UN United Nations (Number)  
VOC Volatile Organic Compound  
vPvB Very Persistent Very Bioaccumulative Chemical  
WGK Wassergefährdungsklassen (Germany: Water Hazard Classes)  
WHMIS Workplace Hazardous Materials Information System

**References:**

Not available.

**Full text of any H-statements not written out in full under Sections 2 to 15:**

H317 May cause an allergic reaction.

H351 Suspected of causing cancer.

H372 Causes damage to organs through prolonged or repeated exposure.

H413 May cause long lasting effects to aquatic life.

**Revision information:**

None.

**Training information:**

Follow training instructions when handling this material.

**Further Information:**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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