

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name	Nickel Oxide
Chemical Formula	NiO
Molecular Weight	74.69 g/mol
CAS No.	1313-99-1
EC No.	215-215-7
Supplier Address*	ISO FLEX USA PO Box 29475 San Francisco CA 94129 United States
Telephone	+1 415-440-4433
Fax	+1 415-563-4433
Emergency Phone Number (both supplier and manufacturer)	Infotrac/ +1 800-535-5053 *May include subsidiaries or affiliate companies/divisions
Email	iusa@isoflex.com
Website	www.isoflex.com
Preparation Information	ISO FLEX USA Product Safety +1 415-440-4433

2. HAZARDS IDENTIFICATION

Emergency Overview:

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
 Skin Sensitization (Category 1), H317
 Carcinogenicity (Category 1A), H350
 Specific Target Organ Toxicity - Repeated Exposure, Inhalation (Category 1), Lungs, H372
 Chronic Aquatic Toxicity (Category 4), H413
 For the full text of the H-Statements mentioned in this Section, see Section 16.

GHS Label Elements, Including Precautionary Statements

Pictogram



Signal Word

Danger

Hazard Statement(s)

H317	May cause an allergic skin reaction.
H350	May cause cancer.
H372	Causes damage to organs (lungs) through prolonged or repeated exposure if inhaled.
H413	May cause long-lasting harmful effects to aquatic life.

Precautionary Statement(s)

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/vapor/spray.
P264	Wash skin 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.
P273	Avoid release to the environment.
P280	Wear protective gloves.
P281	Use personal protective equipment as required.
P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
P308 + P313	If exposed or concerned: Get medical advice/attention.
P333 + P313	If skin irritation or rash occurs: Get medical advice/attention.
P363	Wash contaminated clothing before reuse.
P405	Store locked up.
P501	Dispose of contents/container to an approved waste disposal plant.

Hazards not otherwise classified (HNOC) or not covered by GHS - None

NFPA Ratings: (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

Health Hazard = 2 Flammability = 0 Reactivity = 0



HMIS Ratings: (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

Health Hazard = 3 Flammability = 2 Physical Hazard = 1

HEALTH HAZARD	2
FLAMMABILITY	0
PHYSICAL HAZARD	0

For additional information on toxicity, please refer to Section 10.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name:	Nickel Oxide
Chemical Formula:	NiO
Molecular Weight:	74.69 g/mol
CAS No.:	1313-99-1
EC No.:	215-215-7

Hazardous Components

Component	Classification	Concentration
Nickel Monoxide		
	Skin Sensitivity 1; Carcinogen 1A; STOT RE 1; Aquatic Chronic 4; H317, H350, H372, H413	≤100%

For the full text of the H-Statements mentioned in this section, see section 16.

4. FIRST AID MEASURES

<i>General Advice</i>	Consult a physician. Show this safety data sheet to the physician in attendance. Move out of dangerous area.
<i>Oral Exposure</i>	Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.
<i>Inhalation</i>	If inhaled, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
<i>Dermal Exposure</i>	In case of contact, immediately wash skin with soap and copious amounts of water. Take victim immediately to hospital. Consult a physician.
<i>Eye Exposure</i>	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.

5. FIREFIGHTING MEASURES

<i>Suitable Extinguishing Media</i>	Use water spray, alcohol-resistant foam, dry chemical powder or carbon dioxide.
<i>Specific Hazards</i>	Nickel/nickel oxides.
<i>Advice for Firefighters</i>	Wear self-contained breathing apparatus for firefighting if necessary.

6. ACCIDENTAL RELEASE MEASURES

<i>Personal Precautions</i>	Use personal protective equipment. Avoid dust formation. Avoid breathing dust, vapor, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.
<i>Environmental Precautions</i>	Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.
<i>Methods for Cleaning Up</i>	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.

7. HANDLING AND STORAGE

<i>Handling</i>	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. Provide appropriate exhaust ventilation at places where dust is formed.
<i>Storage</i>	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.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control Parameters

Component	CAS No.	Value	Control Parameters	Basis
Nickel monoxide	1313-99-1	TWA	1.000000 mg/m ³	USA. Occupational Exposure Limits (OSHA) – Table Z-1 Limits for Air Contaminants
		TWA	0.015000 mg/m ³	USA. NIOSH Recommended Exposure Limits
	Remarks	Potential Occupational Carcinogen. See Appendix A.		
		TWA	0.200000 mg/m ³	USA. ACGIH Threshold Limit Values (TLV)
		Lung cancer. Confirmed human carcinogen. Varies.		
		TWA	1 mg/m ³	USA. Occupational Exposure Limits (OSHA) – Table Z-1 Limits for Air Contaminants
		TWA	0.2 mg/m ³	USA. ACGIH Threshold Limit Values (TLV)
		Lung cancer. Confirmed human carcinogen. Varies.		
		TWA	0.015 mg/m ³	USA. NIOSH Recommended Exposure Limits
		Potential Occupational Carcinogen. See Appendix A.		

Exposure Controls

Engineering Controls

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

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).

Skin 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. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of Environmental Exposure

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Color	Dark grey
Form	Powder

Safety Data

Molecular Weight:	74.69 g/mol
Relative Density:	6.67 g/mL at 25 °C (77 °F)
Autoignition Temperature:	> 400 °C (> 752 °F)
Water Solubility:	0.00003 g/l at 20 °C (68 °F) – OECD Test Guideline 105 – practically insoluble

10. STABILITY AND REACTIVITY

<i>Reactivity</i>	No data available
<i>Chemical Stability</i>	Stable under recommended storage conditions
<i>Hazardous Reactions</i>	No data available
<i>Conditions to Avoid</i>	No data available
<i>Incompatible Materials</i>	Strong acids
<i>Hazardous Decomposition Products</i>	No data available. In the event of fire, see section 5.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

LD50 Oral – Rat – Female - >11,000 mg/kg (OECD Test Guideline 425)

Inhalation No data available

Dermal No data available

LD50 Subcutaneous – Mouse – 50 mg/kg

Skin Corrosion/Irritation No data available

Serious Eye Damage/Irritation No data available

Respiratory/Skin Sensitization No data available

Germ Cell Mutagenicity No data available

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 No data available

Specific Organ Toxicity No data available for either single or repeated exposure

Aspiration Hazard No data available

Additional Information

RTECS: QR8400000

Stomach – Irregularities – Based on Human Evidence

12. ECOLOGICAL INFORMATION

<i>Toxicity</i>	No data available
<i>Persistence and Degradability</i>	No data available
<i>Bioaccumulative Potential</i>	<i>Bioaccumulation: Fucus vesiculosus</i> – 21 d – 0.00001 mg/l <i>Bioconcentration factor (BCF):</i> 675 (Tested according to Annex V of Directive 67/548/EEC) <i>Remarks:</i> The product may be accumulated in organisms.
<i>Mobility in Soil</i>	No data available
<i>PBT and vPvB Assessment</i>	PBT/vPvB assessment not available, as chemical safety assessment not required/not conducted.
<i>Other Adverse Effects</i>	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

13. DISPOSAL CONSIDERATIONS

<i>Products</i>	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.
<i>Contaminated Packaging</i>	Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)	Not dangerous goods
IMDG	Not dangerous goods
IATA	Not dangerous goods

15. REGULATORY INFORMATION

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.

16. OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3

Aquatic Chronic	Chronic aquatic toxicity
Carc.	Carcinogenicity
H317	May cause an allergic skin reaction.
H350	May cause cancer.
H372	Causes damage to organs through prolonged or repeated exposure if inhaled.
H413	May cause long-lasting harmful effects to aquatic life.
Skin Sens.	Skin sensitization
STOT RE	Specific target organ toxicity - repeated exposure

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ISOFLEX USA's Commonly Used Abbreviations and Acronyms*

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

*One or more of the above-listed items may not appear in this document.

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