# MATERIAL SAFETY DATA SHEET

**COMPLIES WITH 29 CFR 1910.1200.**
**OSHA HAZARD COMMUNICATION RULE**

**DATE OF LAST REVISION: 03-22-96**

## CHEMICAL IDENTITY

<table>
<thead>
<tr>
<th>LABEL IDENTITY</th>
<th>NICKEL OXIDE</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEMICAL NAME/SYNONYMS</td>
<td>NICKEL MONOXIDE, GREEN NICKEL OXIDE</td>
</tr>
<tr>
<td></td>
<td>NICKELOUS OXIDE, NICKEL PROTOXIDE</td>
</tr>
<tr>
<td>FORMULA</td>
<td>NiO</td>
</tr>
<tr>
<td>CHEMICAL FAMILY</td>
<td>METAL OXIDE</td>
</tr>
<tr>
<td>CAS REGISTRY NUMBER</td>
<td>1313-99-1</td>
</tr>
<tr>
<td>HAZARDOUS INGREDIENTS</td>
<td>NICKEL METAL</td>
</tr>
<tr>
<td>%:</td>
<td>100</td>
</tr>
<tr>
<td>TLV:</td>
<td>0.05 mg Ni/m³</td>
</tr>
<tr>
<td>OSHA/PEL:</td>
<td>1mg/Ni/m³</td>
</tr>
</tbody>
</table>

## PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>COLOR, FORM AND ODOR</th>
<th>Green crystals, becomes yellow on heating; odor not known.</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOILING POINT</td>
<td>ND</td>
</tr>
<tr>
<td>DENSITY (gm/cc)</td>
<td>NA</td>
</tr>
<tr>
<td>VAPOR PRESSURE @ 20°</td>
<td>Essentially zero</td>
</tr>
<tr>
<td>% VOLATILE BY VOLUME (%)</td>
<td>0</td>
</tr>
<tr>
<td>EVAPORATION RATE (H₂O=1)</td>
<td>0</td>
</tr>
<tr>
<td>SOLUBILITY IN WATER</td>
<td>Insoluble</td>
</tr>
<tr>
<td>MELTING POINT</td>
<td>1984° C</td>
</tr>
</tbody>
</table>

## FIRE AND EXPLOSION HAZARD DATA

| FLASH POINT | NA |
| AUTOIGNITION TEMPERATURE (°C) | ND |
| FLAMMABILITY | NA |
| EXTINGUISHING MEDIA | Use agents for metal fires such as dry graphite, MET-L-X, or TEC; odorless. |
| SPECIAL FIRE FIGHTING PROCEDURES | Wear a self-contained breathing apparatus and full protective clothing to prevent contact with skin and eyes. |
| UNUSUAL FIRE & EXPLOSION HAZARDS | Nickel powder or dust will support combustion and may from explosive mixtures in air. In a fire, nickel may form Nickel-Carbonyl, a highly toxic substance and known carcinogen. |
NICKEL OXIDE
MATERIAL SAFETY DATA SHEET

HEALTH HAZARD INFORMATION

TOXICITY DATA

*SEE ATTACHED SHEET*

HMIS RATING:

HEALTH: 3* FLAMMABILITY: 1 REACTIVITY: 0 PERSONAL PROTECTION: X

ROUTES OF ENTRY

INHALATION: Yes (primary)
SKIN: Yes
INGESTION: Yes

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: Asthma, emphysema, etc.

EFFECTS OF OVEREXPOSURE (acute and chronic):

INHALATION: irritation of the mucous membrane and possibly irritation of the respiratory tract may be caused by either dust or nickel fumes. Severe overexposure may result in transient pneumonitis or asthma-like symptoms. Other symptoms include coughing, headache, nausea.

DERMAL/EYE: a rash may develop which may be accompanied by redness, itching and swelling. May cause sensitization dermatitis “nickel-itch” and may be accompanied, up to 7 days later, with superficial skin ulcers which may discharge and become crusted. Eye exposure may result in watering and inflammation.

**Continued on attached sheet**

Carcinogenicity: Yes
IARC Monographs: Yes-animal

EMERGENCY FIRST AID PROCEDURES:

INGESTION: if nickel is ingested, contact a physician and induce vomiting
INHALATION: remove from exposure, if breathing is difficult, contact a physician, perform artificial respiration as needed
SKIN CONTACT: if irritation develops, wash affected area with soap and water, if irritation persists, contact a physician
EYE CONTACT: if irritation develops, irrigate eyes for at least 15 minutes with water, if irritation persists, contact a physician

REACTIVITY DATA

STABILITY

Stable

CONDITIONS CONTRIBUTING TO UNSTABILITY

None

INCOMPATIBILITY (MATERIALS TO AVOID)

Mineral acids, strong oxidizers, also see attached sheet***

HAZARDOUS DECOMPOSITION PRODUCTS

Contact with mineral acids liberated gas which may form explosive mixtures in air

HAZARDOUS POLYMERIZATION

Will Not Occur
NICKEL OXIDE
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REACTIVITY DATA CONTINUED

CONDITIONS TO AVOID

Nickel (usually in powdered form) is reported to be incompatible with the following: Ammonium Nitrate, Fluorine, performic acid, phosphorus, selenium, and sulfur compounds.

SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: NIOSH-approved respiratory equipment should be worn during the clean-up of powder spills. Also wear protective equipment such as gloves and coveralls to prevent skin contact. Collect spills by: 1) wet sweeping, 2) dry sweeping using sweeping compound, or 3) by vacuuming, using a vacuum cleaner equipment with HEPA filter (High Efficiency Particulate air filter). Take care not to raise dust.

WASTE DISPOSAL METHOD:
Consult federal, state and local regulations for proper disposal.

SPECIAL PROTECTIVE INFORMATION

RESPIRATORY PROTECTION

NIOSH approved dust respirators where the airborne nickel levels exceed exposure limits.

LOCAL EXHAUST

Maintain below TLV

MECHANICAL (general)

Maintain adequate ventilation

PROTECTIVE GLOVES

ND

EYE PROTECTION

Safety glasses

OTHER PROTECTIVE EQUIPMENT

Wear appropriate coveralls to prevent skin contact. Safety showers and eye-wash stations should be present in work areas.

SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING/STORAGE: Keep material in closed containers. Do not store near mineral acids. Use good housecleaning practices to prevent accumulation of dust. Do not breath dust. Use approved dust respirators. Avoid prolonged or repeated skin contact. Wash or shower thoroughly after handling and before eating. Clean work clothing should be provided daily.

TRANSPORTATION REQUIREMENTS

DOT CLASS: Not Classified
UN NUMBER: NC
IMCO CLASS: NC
OTHER: ND
SPECIAL PRECAUTIONS CONTINUED

PRECAUTIONARY LABELING
NONE

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NA= NOT APPLICABLE  ND= NO DATA FOUND  NR= NOT RECORDED