



MATERIAL SAFETY DATA SHEET  
COMPLIES WITH 29 CFR 1910.1200.  
OSHA HAZARD COMMUNICATION RULE

DATE OF LAST REVISION: 06-04-96

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## CHEMICAL IDENTITY

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LABEL IDENTITY	<b>NICKEL</b>
CHEMICAL NAME/SYNONYMS	<b>NICKEL METAL</b>
FORMULA	<b>Ni</b>
CHEMICAL FAMILY	<b>METAL</b>
CAS REGISTRY NUMBER	<b>7440-02-0, LISTED IN THE TSCA INVENTORY</b>
HAZARDOUS INGREDIENTS	<b>NICKEL METAL</b>
%: <b>99.9</b>	TLV: <b>1mg/m3</b> OSHA/PEL: <b>1mg/m3</b>

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## PHYSICAL AND CHEMICAL PROPERTIES

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COLOR, FORM AND ODOR	<b>Silvery-white metallic powder, pieces, or pressed parts, odorless</b>
BOILING POINT	<b>2730°</b>
DENSITY (gm/cc)	<b>8.90 @ 25°C</b>
VAPOR PRESSURE @ 20°	<b>1mm Hg at 1810°C</b>
% VOLATILE BY VOLUME (%)	<b>NA</b>
REACTION WITH WATER	<b>None</b>
EVAPORATION RATE (H2O=1)	<b>NA</b>
SOLUBILITY IN WATER	<b>Insoluble</b>
MELTING POINT	<b>1455</b>

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## FIRE AND EXPLOSION HAZARD DATA

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



## NICKEL MATERIAL SAFETY DATA SHEET

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### HEALTH HAZARD INFORMATION

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#### 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\*\***

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CARCINOGENICITY: **Yes**

NTP: **Yes**

IARC MONOGRAPHS: **Yes-animal**

OSHA REGULATE: **Yes**

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#### 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**

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### REACTIVITY DATA

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#### 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**

#### HAZARDOUD POLYMERZATION

**Will Not Occur**



## NICKEL MATERIAL SAFETY DATA SHEET

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### REACTIVITY DATA CONTINUED

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#### 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**

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### SAFE HANDLING AND USE

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**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.**

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### SPECIAL PROTECTIVE INFORMATION

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#### 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.**

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### SPECIAL PRECAUTIONS

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**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 breathe 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**



**NICKEL**  
MATERIAL SAFETY DATA SHEET

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SPECIAL PRECAUTIONS CONTINUED

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PRECAUTIONARY LABELING

**NONE**

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THE ABOVE INFORMATION IS ACCURATE TO THE BEST OF OUR KNOWLEDGE. HOWEVER, SINCE DATA, SAFETY STANDARDS AND GOVERNMENT REGULATIONS ARE SUBJECT TO CHANGE THE CONDITIONS OF HANDLING AND USE, OR MISUSE ARE BEYOND OUR CONTROL, **ANGSTROM SCIENCES** MAKE NO WARRANTY, EITHER EXPRESSED OR IMPLIED, WITH RESPECT TO THE COMPLETENESS OR CONTINUING ACCURACY OF THE INFORMATION CONTAINED HEREIN AND DISCLAIMS ALL LIABILITY FOR THE RELIANCE THEREON. USER SHOULD SATISFY HIMSELF THAT HE HAS ALL CURRENT DATA RELEVANT TO HIS PARTICULAR USE.

**NA= NOT APPLICABLE**

**ND= NO DATA FOUND**

**NR=NOT RECORDED**



## NICKEL (ATTACHED SHEET) MATERIAL SAFETY DATA SHEET

EFFECTS OF OVEREXPOSURE (acute & chronic):

OTHER (Specify): **Nickel constitutes a possible cancer hazard and may also cause allergic reactions. Epidemiological studies have shown an excess risk of cancer of the nasal cavities and lungs in workers at nickel refineries. Ingestion of Nickel may cause nausea, vomiting and abdominal pain. Chronic exposure affects kidneys, lungs, liver, heart and brain.**

### TOXICITY DATA:

otr-ham: emb	5 umol/L	
orl-rat TDLO:	158mg/kg (MGN)	
scu-rat TDLO:	3000mg/kg/6W-I:	ETA
ims-rat TDLO:	1000mg/kg/17W-I:	CAR
ipl-rat TDLO:	1250mg/kg/17W-I:	ETA
par-rat TDLO:	40mg/kg/52W-I:	ETA
imp-rat TDLO:	250mg/kg/ :	CAR
ims-mus TDLO:	165mg/kg/2Y-I:	NEO
imp-rbt TDLO:	15mg/m3/91W-I:	ETA
ihl-gpg TCLO:	200mg/kg/21W-I:	ETA
ims-ham TDLO:	58mg/kg:	ETA
imp-rat TD:	23mg/kg:	ETA
ims-rat TD:	125mg/kg/13W-I:	NEO
ims-mus TD:	800mg/kg/13W-I:	NEO
ims-rat TD:	90mg/kg/18W-I:	ETA
ims-rat TD:	889mg/kg:	ETA
ims-rat TD:	200mg/kg/21W-I:	NEO
itr-rat LDLO:	12mg/kg	
ivn-mus LDLO:	50mg/kg	
ivn-dog LDLO:	10mg/kg	
orl-gpg LDLO:	5mg/kg	
scu-gpg LDLO:	500mg/kg	

### ADDITIONAL NICKEL INCOMPATIBLES:

**Al, AlCl<sub>3</sub>, ethylene, p-dioxin, H<sub>2</sub>, methanol, non-metals, magnesium silicate, ammonia, hydrazine, Ti + KC103.**