MATERIAL SAFETY DATA SHEET
OSHA HAZARD COMMUNICATION RULE

DATE OF LAST REVISION: 06-05-96

CHEMICAL IDENTITY

LABEL IDENTITY
CHEMICAL NAME/SYNONYMS
FORMULA
CAS REGISTRY NUMBER
HAZARDOUS INGREDIENTS:

<table>
<thead>
<tr>
<th>%:</th>
<th>OSHA(PEL):</th>
<th>ACGIH(TLV):</th>
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<tbody>
<tr>
<td>80-90</td>
<td>1mg/m3</td>
<td>1.0mg/m3</td>
</tr>
<tr>
<td>10-20</td>
<td>1mg/m3</td>
<td>0.5mg/m3</td>
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</tbody>
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CHEMICAL: NICKEL-CHROMIUM ALLOY
SYNONYMS: NICKEL BASED ALLOY
FORMULA: NiCr
CAS REGISTRY NUMBER: Ni: 7440-02-02; Cr: 7440-47-3

PHYSICAL AND CHEMICAL PROPERTIES

COLOR, FORM AND ODOR
BOILING POINT
DENSITY (gm/cc)
VAPOR PRESSURE @ 20°
% VOLATILE BY VOLUME (%)
REACTION WITH WATER
EVAPORATION RATE (H2O=1)
SOLUBILITY IN WATER
MELTING POINT
SPECIFIC GRAVITY (H2O=1)

Silver to gray, odorless
NA
NA
NA
NA
NA
Insoluble
1500 - 1550°C
8.54 - 8.72°C

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT
AUTOIGNITION TEMPERATURE (°C)
FLAMMABILITY
EXTINGUISHING MEDIA
SPECIAL FIRE FIGHTING PROCEDURES
UNUSUAL FIRE & EXPLOSION HAZARDS

NA
NA
% by volume
Class D extinguisher, dry chemicals
Wear a self-contained breathing apparatus
Powder, fines or dust are flammable and may ignite spontaneously in air. Powder ignites & is spontaneously explosive in the atmosphere at CO2.
HEALTH HAZARD INFORMATION

TOXICITY DATA

HMIS RATING:
- HEALTH: na
- FLAMMABILITY: na
- REACTIVITY: na
- PERSONAL PROTECTION: na

Routes of Entry
- INHALATION: Yes
- SKIN: Yes (broken)
- INGESTION: Yes

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: allergies and impaired pulmonary functions.

EFFECTS OF OVEREXPOSURE (acute and chronic):
- INHALATION: chronic respiratory ailments.
- DERMAL/EYE: dermatitis and conjunctivitis
- INGESTION: poison

CARCINOGENICITY:
- Experimental carcinogen, neoplastigen, tumorigen and teratogen.

Symptoms of overexposure: cough, shortness of breath, dermatitis, chills, bronchitis, irritation and fever, and can cause pulmonary asthma.

CARCINOGENICITY: Yes
NTP: No
IARC MONOGRAPHS: No
OSHA REGULATE: No

EMERGENCY FIRST AID PROCEDURES:
- INGESTION: Seek medical attention
- INHALATION: Seek medical attention
- SKIN CONTACT: Wash affected area with soap and water
- EYE CONTACT: Flush eyes with copious amounts of water

REACTIVITY DATA

STABILITY
- Stable

CONDITIONS CONTRIBUTING TO UNSTABILITY
- None

INCOMPATIBILITY (MATERIALS TO AVOID)
- Reacts violently with F2, ammonia, ammonium nitrate, hydrazine, H2+ dioxane, performic acid, P, Se, S, (Ti+KClO3). Under certain conditions exposure to carbon monoxide may produce nickel carbonyl, a highly toxic gas.

HAZARDOUS DECOMPOSITION PRODUCTS
- None

HAZARDOUS POLYMERZATION
- Will Not Occur

CONDITIONS TO AVOID
- None
NICKEL-CHROMIUM ALLOY
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SAFE HANDLING AND USE

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
Pick up powder or dust spills with methods such as vacuuming or wet mopping.

WASTE DISPOSAL METHOD:
Metal may recycled. If disposing of please consult federal, state and local regulations for proper disposal.

SPECIAL PROTECTIVE INFORMATION

RESPIRATORY PROTECTION
NIOSH approved respirators according to CFR 1910.134 in machining processes producing dust or fumes

LOCAL EXHAUST
Recommended

MECHANICAL (general)
NA

OTHER PROTECTIVE GLOVES
Recommended

EYE PROTECTION
Use safety glasses/goggles when working with processes that generate dust, powder, fumes.

OTHER PROTECTIVE EQUIPMENT
Wash hands thoroughly after handling metal alloys. Maintain a clean dust-free environment.

SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING/STORAGE: Avoid dusty conditions, store away from oxidizing agents, mineral acids, and sources of ignition or heat.

TRANSPORTATION REQUIREMENTS
DOT CLASS: Not Classified
UN NUMBER: NC
IMCO CLASS: NC
OTHER: SPC, Corrosive

PRECAUTIONARY LABELING
NONE

OTHER PRECAUTIONS
NONE

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