

PREPARED BY DISTRIBUTOR:



**Castle Metals®**

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3400 N. Wolf Road  
Franklin Park, IL 60131

# MATERIAL SAFETY DATA SHEET

(This product contains one or more toxic chemicals subject to the reporting requirements of section 313 of the EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT of 1986 and of 40CFR72).

ISSUE DATE

November 25, 1985

REVISED

May 1, 2010

For Information or In An Emergency  
Call: (847) 455-7111

## Section 1 - Product Identification

Manufacturer's Name

Various

Product Name / Trade Name

Nickel Based Alloy Steel

Common Name / Grade

Nickel 2XX, Monel Alloy 4XX, Inconel Alloy 6XX & 7XX  
Incoloy Alloy 8XX

## Section 2 - Hazardous Ingredients

NOTE: Products Under Normal Conditions Do Not Represent An Inhalation, Ingestion or Contact Health Hazard.

Base Metal, Alloying Elements  
And Metallic Coatings

CAS#

WT % (1) OSHA PEL (mg/g)<sup>(3)</sup> ACGIH TLV TWA (Unless Noted Otherwise) (mg/m<sup>3</sup>) (2)

Base and Alloying Elements				Base and Alloying Elements			
Ingredients	CAS #	PEL	TLV (2)	Ingredients	CAS #	PEL	TLV (2)
Aluminum (Al)	7429-90-5	15	10 (Total Dust)	Nickel (Ni)	7440-02-0	1	0.5
Chromium (Cr)	7440-47-3	0.5	5	Niobium (Nb)	7440-03-1	N.E.	N.E.
Cobalt (Co)	7440-48-4	0.1	0.02 (Dust & Fume)	Silicon (Si)	7740-21-3	15	10 (Total Dust)
Copper (Cu)	7440-50-8	1	1 (Dust & Mist)	Tantalum (Ta)	7440-25-7	5	5
Iron (Fe)	7439-89-6	10	5 (As Iron Oxide)	Titanium (Ti)	7440-32-6	15	10 (As TiO <sub>2</sub> )
Manganese (Mn)	7439-98-5	5	0.2	Tungsten (W)	7440-37-7	N.E.	5
Molybdenum (Mo)	7439-98-7	15	10 (Insoluble Compound)	Yttrium (Y)	7440-65-5	1	1

% Alloying Elements (1)

UNS Numbers	Al	Cr	Co	Cu	Fe	Mn	Mo	Ni	Nb	Si	Ta	Ti	W	Y
No 2200 Series (Commercially Pure Ni Alloy)		<2				<5		95-99				<5	<5	
No 4400 - No 5500 Series (Ni-Cu Alloy)	<5	<1		27-68	<1	<5		31-67		<1		<2		
No 6600 - No 7700 Series (Ni-Cr Alloy)	<5	15-48	0-13		1-40	<5	2-10	39-80	<5	<2		<3	<5	<1
No 8800 - No 9900 Series (Ni-Fe-Cr Alloy)	<5	.1-30	0-15	<2	30-84	<1	<5	.1-42	<5			<3		<1

(1) % Of Alloying Material Varies With Grade Of Material.

(2) 1996 ACGIH Threshold Limit Value.

(3) 1993 OSHA Permissible Exposure Limit.

## Section 3 - Physical Data

Material Is (At Normal Conditions)

Solid

Appearance and Odor

Gray-Black, Odorless

Melting Point (Base Metal)

>2300° F

Specific Gravity

Approximately 7

## Section 4 - Fire And Explosion

Extinguishing Media

NA

Special Firefighting Procedures

Steel products in the solid state present no fire or explosion hazard.

Unusual Fire and Explosion Hazards

NA

## Section 5 - Reactivity Data

Stability

Stable

Incompatibility (Materials to Avoid)

Reacts with strong acids to produce hydrogen gas.

Conditions to Avoid

NA

Hazardous Decomposition Products

Metallic dust or fumes may be produced during welding, burning, grinding and possibly machining.  
Refer to ANSI Z49.1

Product  
Nickel

**Section 6 - Health Hazard Data**

NOTE: STEEL PRODUCTS IN THE NATURAL STATE DO NOT PRESENT AN INHALATION, INGESTION OR CONTACT HAZARD. HOWEVER, OPERATIONS SUCH AS BURNING, WELDING, SAWING, BRAZING AND GRINDING MAY RELEASE FUMES AND/OR DUSTS WHICH MAY PRESENT HEALTH HAZARDS IF TLV'S ARE EXCEEDED

**MAJOR EXPOSURE HAZARD**

Inhalation       Skin Contact       Skin Absorption       Eye Contact       Ingestion

**Effects of Overexposure**

Short term exposure to fumes/dust may produce irritation of eyes and respiratory system. Inhalation of high concentrations of freshly formed oxide fumes of iron, manganese and copper may cause metal fume fever characterized by a metallic taste in the mouth, dryness and irritation of the throat and influenzalike symptoms.

Chronic inhalation of high concentrations of iron oxide fumes or dust may lead to a benign pneumoconiosis (siderosis). Inhalation of high concentrations of ferric oxide may possibly enhance the risk of lung cancer development in workers exposed to pulmonary carcinogens.

Chromium and nickel and their compounds are listed in the 3rd Annual Report on Carcinogens, as prepared by the National Toxicology Program (NTP). Exposure to high concentrations of dust and fumes can cause sensitization dermatitis, inflammation and/or ulceration of upper respiratory tract and possibly cancer of nasal passages and lungs.

Recent epidemiological studies of workers melting and working alloys containing nickel/chromium have found no increased risk of cancer.

Suspected Cancer Agent?  NO: This product's ingredients are not found in the lists below.  
 YES     Federal OSHA     NTP     IARC

**Emergency and First Aid Procedures**

If exposed to excessive levels of metal fumes, remove to fresh air, seek medical aid immediately.  
Eyes - Flush with water for at least 15 minutes.

**Section 7 - Spill or Leak Procedures**

Spill or Leak Procedures  
NA

**Waste Disposal Methods**

According to local, state and federal regulations

**Section 8 - Special Protection**

**Respiratory**

NIOSH/MSHA - Approved dust and fume, respirator should be used to avoid excessive inhalation of particulates when exposure exceeds TLV's.

**Ventilation**

Local exhaust ventilation should be utilized when welding, burning, sawing, brazing, grinding or machining when exposure exceeds TLV's.

**Eye Protection and Protective Clothing**

Safety glasses or goggles should be utilized as required by exposure. Other protective equipment should be utilized as required by the welding standards.

**Section 9 - Special Precautions**

In welding, precautions should be taken for airborne contaminants which may originate from components of the welding rod.  
Arc or spark generated when welding or burning could be a source of ignition for combustible and flammable materials.

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Data sheets of individual manufacturers may be obtained by contacting A. M. Castle & Co., 3400 N. Wolf Road, Franklin Park, IL 60131 Attn: Corp. Safety Mgr.