

NICKEL BASED ALLOY STEEL – MATERIAL SAFETY DATA SHEET

UNIFIEDALLOYS

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Alloys 200, 400, 600, 800 Series



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1. HAZARDOUS INGREDIENTS

Ingredients	CAS Number	TLV (2)
Aluminum (Al)	7429-90-5	10
Chromium (Cr)	7440-47-3	0.5
Cobalt (Co)	7440-48-4	0.1 (dust/fume)
Copper (Cu)	7440-50-8	1 (dust/mist)
Iron (Fe)	1309-37-1	5 (as iron oxide)
Manganese (Mn)	7439-96-5	5 (as dust ceiling)
Molybdenum (Mo)	7439-98-7	10 (insolub. comp.)
Nickel (Ni)	7440-02-0	1
Niobium (Nb)	none	none established
Silicon (Si)	7440-21-3	10 (total dust)
Tantalum (Ta)	7440-25-7	5
Titanium (Ti)	7440-32-6	10 (total dust)
Tungsten (W)	7440-33-7	5
Yttrium (Y)	7440-65-5	1

% Alloying Elements (1)

UNS Numbers	Al	Cr	Co	Cu	Fe	Mn	Mo	Ni	Nb	Si	Ta	Ti	W	Y
N02200 Series (Commercially Pure Ni alloy)		<2			<5			(95-99)				<5	<5	
N04400-N05500 Series (Ni-Cu alloy)	<5	<1		(27-68)	<1	<5		(31-67)		<1	<2			
N06600-N07700 Series (Ni-Cr alloy)	<5	(15-48)	(0-13)		(1-40)	<5	(2-10)	(39-80)	<5		<2	<3	<5	<1
N08800-N09900 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) 1985-1986 ACGIH threshold limit value

2. PREPARATION INFORMATION

Prepared By: **UnifiedAlloys**
 Telephone: (780) 468-5656
 Note: **Contact Supplier (Quality Department) for additional information**

Preparation Date: January 1, 2010

3. PRODUCT / COMPANY INFORMATION

Material Use: The information in this MSDS was obtained from source which we believe are reliable; however, the information is provided without any representation or warranty, expressed or implied regarding the accuracy or correctness.

Importer / Supplier / Distributor:

UnifiedAlloys
 8835 – 50th Avenue
 Edmonton, Alberta CANADA
 T6E 5H4
 Emergency Phone #: (780) 468-5656 (on-call service)

The conditions or methods of handling, storage, use, and disposal of the product are beyond our control and may be beyond knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage, or expense arising out of or in any way connected with the handling, storage, use, or disposal of the product.

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4. PHYSICAL DATA

Physical State: Solid
Odor: N/A
Evaporation Rate: N/A
Boiling Point: N/A
Melting Point: 2300 F
PH: N/A
Solubility in Water: N/A
Vapor Pressure: N/A
Density: 7
Appearance: Grey Black
Odor Threshold: N/A
Specific Gravity: (H₂O = 1) Approximately: 7
Freezing Point: N/A
Coefficient of Water/Oil Distribution: N/A

5. FIRE / EXPLOSION HAZARD

1. Conditions of flammability: Steel products (Copper Metal) does not present fire or explosion hazards under normal conditions. Fine metal particles such as those produced in grinding or sawing can burn. High concentrations of metal filings may present an explosion hazard.
2. Means of extinction: For molten metal use dry powder or sand. Do NOT use water on molten metals.
3. Flashpoint and method of determination: N/A (under normal conditions)
- 4/5. Upper and Lower flammable Limit: N/A (under normal conditions)
6. Auto-ignition temperature: N/A (under normal conditions)
7. Hazardous Combustion Products: N/A (under normal conditions)
8. Explosion Data: sensitivity to mechanical impact: N/A (under normal conditions)
9. Explosion Data: sensitivity to static discharge: N/A (under normal conditions)

6. REACTIVITY DATA

Chemical Stability: STABLE – under normal conditions of use and storage.
Conditions of Reactivity: N/A
Hazardous Decomposition Products: Metallic dust or fumes may be produced during welding, burning, grinding, and possibly machining.
Refer to ANSI Z49.1
Incompatibility to Other Substances: REACTS WITH STRONG ACIDS TO PRODUCE HYDROGEN GAS

7. TOXICOLOGICAL PROPERTIES

Effects of Acute Exposure to Material:

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 influenza – like symptoms. Dermal contact of filings could cause infection / blood poisoning.

Effects of Chronic Exposure to Material:

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 the workers exposed to pulmonary carcinogens.

Carcinogenicity of Material:

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 the 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.

Irritancy of Material: N/A

Sensitization to Material: N/A

Mutagenicity of Material: N/A

Reproductive Effects: N/A

Teratogenicity of Material: N/A

Carcinogenicity of Material: N/A

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8. PREVENTATIVE MEASURES

Personal Protective Equipment: Dependant upon processes being performed on material. Each operator must be addressed for suitable equipment. All protective equipment is recommended during welding, burning and handling.

Gloves: Leather Faced (Protective gloves should be worn during welding, burning or handling operations)

Clothing: As required, dependent on the operations and local safety codes

Safety Glasses: goggles or face shields should be utilized as required by exposure.

Respiratory: NIOSH / MSHA approved dust and fume respirator should be used to avoid excessive inhalation of particles when exposure exceeds TLV's.

Footwear: CSA Z195.02 (Steel toed safety shoes)

Eye: Safety glasses, goggles or face shield should be worn as required by exposure.

Other: N/A

Engineering Controls (e.g. ventilation, enclosures, specify)

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.

Leak and Spill Procedures: Fine turnings and small chips should be swept or vacuumed.

Waste Disposal: Used or unused product should be disposed of in accordance with Federal or Local laws and regulations.

Special Shipping Information: N/A

Handling Procedures: Trained and experienced personnel utilizing appropriate material handling equipment is recommended.

9. FIRST AID MEASURES

Skin: Maintain good personal hygiene, wash with soap and water. Seek medical attention if irritation persists.

Inhalation: Move to fresh air. Seek medical attention if necessary.

Eyes: Flush thoroughly with clean lukewarm water for 15 minutes. Seek medical attention.

Note: Respiratory disorders may be aggravated by exposure to metallic and/or organic/inorganic coating dusts or fumes. Consult a doctor if conditions persist.