

**MSDS 004**  
Revised 12/2005

**MATERIAL SAFETY DATA SHEET**

MWS Wire Industries  
31200 Cedar Valley Drive  
Westlake Village, CA 91362  
(818) 991-8553

Trade Name: See Page 5

Chemical Family: Enamel insulated Nickel and/or Chromium bearing alloys

Chemical Formula: N/A

**HAZARDOUS INGREDIENTS**

<u>Ingredient</u>	<u>CAS No.</u>	<u>TLV</u>	<u>PEL</u>	<u>STEL</u>
Aluminum	7429-90-5	10 (D) / 5 (F)	NS	20
Cadmium	7440-43-9	0.002 (D)	0.005	
Cobalt	7440-48-4	0.1	0.1	NS
Copper	7440-50-8	1 (D) / 0.2 (F)	1 (D) / 0.1 (F)	2
Chromium	7440-47-3	0.5	1	NS
Iron	1309-37-1	5 (F)	10	NS
Manganese	7439-96-5	5* (D) / 1 (F)	5*	3
Molybdenum	7439-98-7	10	15	20
Nickel	7440-02-0	1	1	NS
Silicon	7440-21-3	5 (D)	NS	NS
Titanium	7440-32-6	NS	NS	NS
Enamel Coating	N/A	See Health Hazard Data.		

Note: TLV - American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (mg/m<sup>3</sup>)

PEL - OSHA Permissible Exposure Level (mg/m<sup>3</sup>), 8 Hour Time Weighted Average

STEL - ACGIH Short Term Exposure Limit (mg/m<sup>3</sup>), 15 minutes maximum exposure

\* Ceiling Limit (Do Not Exceed)    D = Dust    F = Fume    NS = Not Specified

### PHYSICAL DATA

Boiling Point: NA      Vapor Pressure: NA      Vapor Density: NA  
 % Volatile: NA      Evaporation Rate: NA      Solubility in H<sub>2</sub>O: Insoluble  
 Specific Gravity & Melting Temperature: See Page 5  
 Appearance & Odor: Solid with no odor to mild phenol odor. Color varies with coating type.  
 Basic colors are red, brown, green and amber.

### FIRE & EXPLOSION DATA

Flash Point: NA    Fire or Explosion Hazard: NA    HMIS Flammability Rating: 1

Note: Alloys are nonflammable, although sparks from welding may ignite nearby flammable or combustible materials. Enamel coatings may produce toxic fumes if exposed to high temperatures. Use extinguishing media suitable for surrounding materials. Fire fighters should use self-contained breathing apparatus as deemed necessary.

### HEALTH HAZARD DATA

#### **This Product Poses No Health Hazard As Shipped.**

HMIS Health Rating: 3 (This rating is based on heating or burning the film insulation which may evolve combustion by-products that are toxic. Refer to the information in this section).

Fine powders, granules and fumes from insulation stripping, welding or other abrasive operations may pose a health hazard. When burned, soldered or hot-staked, insulation coatings may give off hazardous decomposition products that may include isocyanates such as Toluene Diisocyanate. Some individuals can develop sensitivity to isocyanates. Use with adequate local exhaust to prevent irritation and maintain isocyanate concentration below the OSHA ceiling limit of 20 parts per billion.

#### Effects of Overexposure:

Short Term: Dusts and fumes irritate the eyes, nose and throat. Symptoms may include cough, metallic taste in mouth, fever, fatigue and nausea.

Long Term: Watering of the eyes, headaches, difficulty in breathing, coughing, severe chest pains, and in acute cases, lung disease, lung fibrosis, pneumoconiosis or neurological damage. Prolonged skin contact with nickel may sensitize the skin and produce a rash.

### HEALTH HAZARD DATA (cont.)

#### Emergency First Aid Procedure:

In case of fume inhalation, remove from exposure and consult a physician.

In case of eye contact, flush with large amounts of water for at least fifteen minutes. Seek medical attention.

In case of ingestion, seek immediate medical attention.

NICKEL AND CHROMIUM HAVE BEEN LISTED BY EITHER THE INTERNATIONAL AGENCY FOR CANCER RESEARCH (IACR) MONOGRAPH OR THE NATIONAL TOXICOLOGY PROGRAM (NTP) ANNUAL REPORTS AS POTENTIAL CARCINOGENS.

### REACTIVITY DATA

HMIS Reactivity Rating: 0

Stability: Stable. Further processing such as grinding or welding can generate various metallic oxides, complex metallic compounds and gases such as carbon monoxide, ozone and nitrogen.

Hazardous Decomposition Product: When subjected to temperatures in excess of 200° C, toxic fumes may be evolved from insulation coatings. Refer to Health Hazard Data.

### SPILL, LEAK, DISPOSAL PROCEDURES

Scrap metal may have reclamation value. Where this is not practical it may be disposed in accordance with local, state and federal regulations, which may require specific packaging, labeling, transportation and disposal procedures.

In solid form these materials pose no special cleanup problems. If material is in powdered or dust form, clean up should be conducted to minimize generation of airborne powder and dust to avoid contamination of air and water.

If greater than one pound of metal dust or powder is released into the environment, report the spill immediately to the National Response Center at (800) 424-8802.

### SARA TITLE III SECTION 313

Products listed in this material safety data sheet contain toxic chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR Part 372 of the Federal Register. Additional information can be obtained from the Emergency Planning and Community Right-To-Know Hotline, U.S. EPA, at (800) 535-0202.

### CALIFORNIA PROPOSITION 65 WARNING

Nickel and Chromium are known by the State of California to cause cancer, birth defects or other reproductive harm. See preceding data for health hazard information.

### EC RoHS DIRECTIVE COMPLIANCE

The products listed on pages 4 and 5 of this MSDS are in compliance with Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment. Chromium contained in these products is chromium metal, not hexavalent chromium. There may be trace lead content ranging from zero to 200 ppm, below the RoHS threshold of 1000 ppm for lead.

### SPECIAL PROTECTION

Wear safety glasses when the risk of eye injury is present, particularly during machining, grinding, welding, powder handling, etc. Gloves and other protective equipment may be required during handling operations as appropriate to the circumstances of exposure.

Use with adequate ventilation to meet the exposure limits, to prevent irritation and to maintain isocyanate exposure below 20 parts per billion. If these limits are exceeded, use NIOSH approved respiratory protection based on airborne contaminants present.

Burning, soldering or hot staking should be done under a fume hood with adequate exhaust that pulls fumes away from the individual.

### SPECIAL PRECAUTIONS

When welding, melting, casting, grinding, sanding or otherwise abrading the surface of nickel chromium alloys in a manner which generates finely divided particles, an exposure to airborne nickel or chromium in excess of the occupational standard can occur. Use with adequate ventilation to meet listed exposure limits. Processes generating airborne nickel or chromium must be air sampled to determine exposure levels. Where exposure data indicate, medical surveillance should be conducted.

D.O.T. Shipping Name: Not regulated

Hazard Class: NA

MWS has attempted to provide current, accurate information in this data sheet, however MWS makes no representations regarding the accuracy or completeness of the information and assumes no liability for any loss, damage or injury of any kind which may arise out of the use or reliance on the information by any person. Contact person: Ken Goss, (818) 991-8553.

<u>ALLOY NAME</u>	<u>COMPOSITION</u>	<u>SPECIFIC GRAVITY</u>	<u>MELTING TEMP °C</u>
MWS 875	22.5 Cr, 5.5 Al, .5 Si, .1 C, bal Fe	7.10	1520
MWS 800	75 Ni, 20 Cr, 2.5 Al, 2.5 Cu	8.10	1350
MWS 675	61 Ni, 15 Cr, balance Fe	8.247	1350
MWS 650	80 Ni, 20 Cr	8.412	1400
Stainless Steel 302	18 Cr, 9 Ni, bal Fe	7.90	1421
Stainless Steel 304	18.5 Cr, 9.5 Ni,	7.90	1454
Stainless Steel 316	17 Cr, 12 Ni, 2.3 Mo, bal Fe	7.90	1399
Stainless Steel 17-7 PH	17 Cr, 7 Ni, 1.1 Al, bal Fe	7.81	No data
Stainless Steel 321	18 Cr, 11 Ni, .4 Ti, bal Fe	7.90	1427
Alloy 42	42 Ni, bal Fe	8.10	1425
Alloy 52	50 Ni, bal Fe	8.25	1425
MWS 294	55 Cu, 45 Ni	8.90	1210
MWS 294R	29 Ni, 17 Co, bal Cu	8.36	1450
Manganin	13 Mn, 4 Ni, bal Cu	8.192	1020
MWS 180	22 Ni, bal Cu	8.90	1100
MWS 120	70 Ni, bal Fe	8.46	1425
MWS 90	12 Ni, bal Fe	8.90	1100
MWS 60	6 Ni, bal Cu	8.90	1100
MWS 30	2 Ni, bal Cu	8.90	1100
Nickel 200	99.5 Ni	8.90	1446
Nickel 205	99.5 Ni	8.90	1446
Nickel 270	99.98 Ni	8.90	1454

<u>ALLOY NAME</u>	<u>COMPOSITION</u>	<u>SPECIFIC GRAVITY</u>	<u>MELTING TEMP °C</u>
Nickel Plated Copper	90-96 Cu, 4-10 Ni	8.90	1083
Nickel Clad Copper	73 Cu, 27 Ni	8.90	1440
Monel <sup>®</sup> 400	70 Ni, 30 Cu	8.90	1350
Inconel <sup>®</sup> 600	76 Ni, 15 Cr, 8 Fe,.5 Mn	8.43	1413
Inconel <sup>®</sup> X 750	73 Ni, 15.5 Cr, 7 Fe, 2.5 Ti, 1 Cb, .7 Al	8.25	1427
Nickel Silver	55-72 Cu, 12-18 Ni, bal Zn	8.70	1100
Dumet	42 Ni, 1 Mn, 32-37 Fe, bal Cu (cladding)	No data	No data
Chromel P <sup>®</sup>	90 Ni, 10 Cr	8.73	1430
Alumel <sup>®</sup>	2 Al, 2 Mn, bal Ni	8.60	1400
Cu Alloy 135 (CDA 18135)	99.2 Cu, .4 Cr, .4 Cd	8.94	1080

### INSULATION GLOSSARY

Name	NEMA Temperature Class	Description
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**Insulation coatings constitute 1-8% of total product weight.**

Formvar <sup>a</sup>	105 C	Polyvinyl Formal
Polyurethane	155 / 180 C	Modified Polyurethane
Polyurethane Nylon	155 / 180 C	Modified Polyurethane with Polyamide overcoat
Solderable Polyesterimide	180 C	Polyesterimide
Polyester 200	180 C	Modified Polyester
Armored Polyester	200 C	Modified Polyester or Polyesterimide with Amide-Imide overcoat
ML <sup>b</sup>	240 C	Polyimide

All insulations may be supplied with a bondable overcoat.

Butvar Bond	Polyvinyl Butyral
Polyester Bond	Polyester
Epoxy Bond	Epoxy
Modified Polyester Bond	Modified Polyester Bond
Polyamide Bond	Polyamide

<sup>a</sup> Chisso Corp. Registered Trademark

<sup>b</sup> IST (USA) Corp. Registered Trademark