MSDS Name: Nickel Bare Wire
Revised: May 2009

MATERIAL SAFETY DATA SHEET (MSDS)

For Welding Consumables and Related products
Conforms to OSHA Hazard Communication Standard 29CFR 1910.1200
Standard Must Be Consulted for Specific Requirements

Section I – Identification

Supplier: Oxford Alloys, Inc.	Telephone Number: 225-273-4800
Address: 2632 Tee Dr. Baton Rouge, Louisiana 70814	Emergency Number: 225-273-4800
Classifications*: ERNi-1, ERNiCr-4, ERNiCu-7, ERNiCr-3, ERNiCrFe-5, ERNiCrFe-6, ERNiCrFe-7, ERNiCrFe-11, ERNiFeCr-1, ERNiFeCr-2, ERNiMo-1, ERNiMo-2, ERNiMo-3, ERNiMo-7, ERNiMo-9, ERNiMo-10, ERNiCrMo-1, ERNiCrMo-2, ERNiCrMo-3, ERNiCrMo-4, ERNiCrMo-7, ERNiCrMo-9, ERNiCrMo-10, ERNiCrMo-11, ERNiCrMo-13, ERNiCrMo-14, ERNiCrMo-15, ERNiCrCoMo-1, ERNiCrWMo-1, ERCuNi, ERNiCl	Specifications: AWS A5.14 AWS A5.7 AWS A5.15

Section II – Hazardous Materials*
IMPORTANT: This section covers the materials for which the product was manufactured. The fumes and gases produced during welding with the normal use of this product are covered.
*The term "Hazardous Materials" should be interpreted as a term required and defined in OSHA HAZARD COMMUNICATION STANDARD (29 CFR1910.1200); however, the use of this term does not necessarily imply the existence of any hazard.

Flux or other Ingredients	% Of Weight	CAS No.	Exposure Limit (mg/m^3)	
			OSHA PEL	ACGIH TLV
Chromium (Cr) [a, c]	≤ 46.0	7440-47-3	0.05 (as CR VI)	0.05 (as CR VI)
Nickel (Ni) [a, c]	35.0 – 93.0	7440-02-0	0.1	0.1
Molybdenum (Mo) [c]	≤ 32.0	7439-98-7	5 / 15 T	5 / 10 T
Manganese (Mn) [a, c]	0.03 – 4.0	7439-96-5	5 F	.2 F
Silicon (Si) [a, c]	≤ 4.0	7440-21-3	5 OF	3 OF
Vanadium (V) [a]	≤ 0.60	1314-62-1	.01 F / .05* T (As V_2O_5)	.01 F / .05* T (As V_2O_5)
Iron (Fe)	0.30 – 21.0	7439-89-6	5	10 OF
Tungsten (W)	≤ 15.0	7440-33-7	5	5
Columbium (Cb) plus Tantalum (Ta)	≤ 0.60	7440-03-1	5	5
Copper (Cu)	0.08 – 64.9	7440-50-8	.1	.2
Titanium (Ti)	0.20 – 3.50	7440-32-6	15 (as TiO_2)	10 (as TiO_2)

[a] =Exposure limits for oxides, dust, fume and mists where applicable [c] = "WARNING: This product contains or produces a chemical known to the State of California to cause cancer or birth defects (or other reproductive harm). (California Health and Safety Code § 25249.5 et seq.)" *= Ceiling Limit F=Fume T= Total dust OF= Oxide Fume

Section III – Physical
Welding consumables applicable to this sheet as shipped, consist of odorless, solid rods or wire, which have a metallic luster. As shipped, these products are nonflammable, non-explosive, non-reactive, and non-hazardous.
Threshold Limit Value: The exposure level for welding fume has been established at 5 mg/m3 with OSHA's PEL and ACGIH's TLV. TLV-TWAs should be used as a guide in the control of health hazards and not as fine lines between safe and excessive concentrations.
Effects of Overexposure: Electric arc welding may create one or more of the following health hazards: Fumes and Gases can be dangerous to your health. Common entry is by inhalation. Other possible routes are skin contact and ingestion. Short-Term (Acute) Overexposure to welding fumes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat or eyes. May aggravate pre-existing respiratory problems (e.g. asthma, emphysema). Chromates present in the fume have been known to cause sever irritation of the bronchial tubes and lungs. Asthma has been reported. Exposure to extremely high levels of fluorides can cause abdominal pain, diarrhea, muscular weakness and convulsions.

Section IV – Fire and Explosion Hazard
These items are not reactive, flammable, or explosive and essentially not hazardous at ambient temperatures. Welding arcs and sparks can ignite combustibles and flammable products. If involved in a fire, these products may generate irritating aluminum fumes and a variety of metal oxides. Emergency responders must wear personal protection equipment suitable for the situation. Use the extinguishing media recommended for the burning materials and fire situation. See ANSI Z49.1 "*Safety in Welding and Cutting*" and "*Safe Practices*" Code: SP, published by the American Welding Society, P.O.

Section V – Health Hazard Data
Welding fumes and gases can be dangerous to your health. Electric shock can kill you. Arc rays can injure eyes and burn skin. Noise can damage hearing.
Route of overexposure: The primary route of entry of the decomposition products is by inhalation. Skin contact, eye contact, and ingestion are possible.
Effects of Acute (Short-Term) Overexposure: Short-term (acute) overexposure to the gases, fumes, and dusts may include irritation of the eyes, lungs, nose, and throat. Some toxic gases associated with welding may cause pulmonary edema, asphyxiation, and death. Acute overexposure may include signs and symptoms such as watery eyes, nose and throat irritation, headache, dizziness, difficulty in breathing, frequent coughing, or chest pain. The presence of chromium/chromate in fume can cause irritation of nasal membranes and skin. The presence of nickel compounds in fume can cause metallic taste, nausea, tightness of chest, fever, and allergic reaction.
Excessive inhalation or ingestion of manganese can produce manganese poisoning. Overexposure to manganese compounds may affect the central nervous system, symptoms of which are languor, sleepiness, muscular weakness, emotional disturbances, and spastic gait resembling Parkinsonism. These symptoms can become progressive and permanent if not treated. Excessive inhalation of fumes may cause "Metal Fume Fever" with Flu-like symptoms such as chills, fever, body aches, vomiting, sweating, etc.
Pre-existing Medical Conditions Aggravated by Overexposure: Individuals with allergies or impaired respiratory function may have symptoms worsened by exposure to welding fumes.
Effects of Chronic (Long-Term) Overexposure: Long-tem (Chronic) overexposure to air contaminants may lead to their accumulation in the lungs, a condition which may be seen as dense areas on chest X-rays. The severity of the change is proportional to the length of exposure. The changes seen are not necessarily associated with symptoms or signs of reduced lung function or disease. In addition, the changes on X-rays may be caused by non-work factors such as smoking, etc. Nickel and chromium are considered carcinogenic. Long term overexposure to nickel fumes may also cause pulmonary fibrosis and edema. Overexposure to manganese compounds may affect the central nervous system, symptoms of which are languor, sleepiness, muscular weakness, emotional disturbances, and spastic gait.
Excessive inhalation or ingestion of manganese can produce manganese poisoning. Overexposure to manganese compounds may affect the central nervous system, symptoms of which are languor, sleepiness, muscular weakness, emotional disturbances, and spastic gait resembling Parkinsonism. These symptoms can become progressive and permanent if not treated. Excessive inhalation of fumes may cause "Metal Fume Fever" with Flu-like symptoms such as chills, fever, body aches, vomiting, sweating, etc.
CARCINOGENICITY: Certain hexavalent chromium compounds, nickel metal and compounds and respirable crystalline silica are listed in the National Toxicology Program (NTP) Annual Report on Carcinogens, found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs, or listed by OSHA/ACGIH as potential
California proposition 65: This product contains or produces a chemical known to the State of California to cause cancer and birth defects (or other reproductive harm). (California Health and Safety Code § 25249.5 et seq.)
EU RoHS: Welding wire and electrodes contain Chromium. When welded Welding Products will produce Cr VI (hexavalent chrome), however, the weld deposit does not contain Cr VI as it will all be in the zero valent state or as Cr III as an oxide. Finished products manufactured using welding wire and electrodes will not contain Cr VI.

HMIS RATING	HMIS SCALE	NFPA RATING	NFPA SCALE
Health = 2	4 = Severe Hazard	Health = 1	4 = Severe Hazard
Flammability = 0	3 = Serious Hazard	Flammability = 0	3 = Serious Hazard
Physical Hazard = 0	2 = Moderate Hazard	Physical Hazard = 0	2 = Moderate Hazard
	1 = Slight Hazard	Other = 0	1 = Slight Hazard
	0 = Minimal Hazard		0 = Minimal Hazard

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on MSDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used only in conjunction with a fully implemented HMIS® program by workers who have received appropriate HMIS® training. HMIS® is a registered trade and service mark of the NPCA.

Section VI – Reactivity Data
Hazardous Decomposition Products: Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedure and welding consumables used. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coating on the metal being welded (i.e. paint, painting, galvanizing), the number of welders, the volume of the work area, the quality and the amount of ventilation, the position of the welders head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from the cleaning and degreasing activities).
When an electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section II. Fume and gas decomposition, and not the ingredients in the electrode, are important. The concentration of a given fume or gas component may decrease or increase by many times the original concentration. Also, new compounds not in the electrodes may form. Decomposition products of normal operation include those originating from the volatilization, reaction or oxidation of the materials shown in Section II, plus those from the base metal coating, etc., as noted above.
Reasonable expected fume constituents of this product would include: Complex oxides of iron, manganese, silicon, chromium, nickel, columbium, molybdenum, copper, carbon dioxide, carbon monoxide, ozone and nitrogen oxides. Some products will also contain antimony, barium, molybdenum, aluminum, columbium, magnesium, strontium, tungsten, and or zirconium. Fume limit for chromium, nickel and or manganese may be reached before limit of 5 mg/m^3 of general welding fumes is reached.
Keep exposure as low as possible. Indoors, use local exhaust; outdoors, a respirator may be required.
Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc.
Determine the composition and quantity of fumes and gases to which workers are exposed by taking an air sample from inside the welder's helmet if worn or in the worker's breathing zone. Improve ventilation if exposures are not below limits. See ANSI/AWS F1.1, F1.3 and F1.5, available from the American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126.

Section VII – Spill or Leak Procedures
This product is not hazardous per 49 CFR 172.101 by the U.S. Department of Transportation.

Section VIII –Special Protection Information
Ventilation: Use enough ventilation, local exhaust at the arc (or flame), or both, to keep the fumes and gases below the PEL's, TLV's and STEL's in the workers breathing zone and general area. Train the employee to keep his head out of the fumes. See ANSI/ASC Z49.1 Section 5.
Respirator Protection: Use respirable fume respirator or air-supplied respirator when welding in confined area, or where local exhaust or ventilation does not keep exposure below TLV/PEL. Respirator selection and use should be based on contaminant type, form and concentration. Follow OSHA 1910.134, OSHA 1910.1026, ANSI Z88.2 and good industrial Hygiene practice.
IMPORTANT: SPECIAL VENTILATION AND/OR EXHAUST REQUIRED: Overexposure to manganese can irreversibly affect the central nervous system resulting in impaired speech and movement. Fumes from the normal use of this product contain manganese compounds. The TLV (Threshold Limit Value) for manganese exposure, 0.2 mg/m^3, may be exceeded. Use enough ventilation, local exhaust and respirators to keep the worker's breathing zone and general area below the TLV for exposure to manganese.
Eye Protection: Arc Rays can injure your eyes. Wear helmet or face shield with filter lens of appropriate shade number. See ANSI/ASC Z49.1 Section 4.2. Provide protective screens and flash goggles, if necessary, to shield others.
Protective Clothing: Wear head and body protection, which help to prevent injury form radiation, sparks, flame and electrical shock. See ANSI Z49.1. At a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing. Train the employee not to touch live electrical parts and to insulate him/herself from work and ground. Welders should not wear short sleeve shirts or short pants.
Waste Disposal Method: Prevent waste for contamination surrounding environment. Discard any product or residue in a disposable container or liner in an environmentally approved manner under full compliance with federal, state and local regulations.
Emergency First Aid: Remove from dust or fume exposure immediately and seek medical attention. If breathing has stopped perform artificial respiration and summon emergency medical aid.
For other precautions or additional safety information on welding and cutting, see American Standard Z49.1-1980, *Safety in Welding and Cutting,* and the *Welding Handbook*, Volume 1, Chapter 9, Safe Practices in Welding and Cutting. Both available from the American Welding Society, Inc. 550 N.W. Le Jeune Road, P.O. Box 351040, Miami, FL 33135.

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