

MATERIAL SAFETY DATA SHEET

To comply with OSHA's Hazard Communication Standard 29CFR 1910.1200

SECTION I – IDENTIFICATION

Supplier: Midwest Alloys & Technology, Inc. (Midalloy) Address: 630 Axminister Drive, St. Louis, Missouri 63026	Emergency Telephone Number: (636) 349-6000 or (800) 776-3300
Trade Names: MIDALLOY ERNi-1, ERNiCr-3, ERNiCrMo-3, ERNiCrMo-4, ERNiCrMo-10, ERNiCu-7, ERCuNi, ERNiCrCoMo-1, ERNi-CI, ERNiFe-CI, ERNiFeMn-CI, ERNiFeCr-2	Classifications: AWS/SFA 5.14, AWS/SFA 5.15, AWS/SFA 5.7

SECTION II – HAZARDOUS INGREDIENTS

Ingredients	CAS No.	Approx. Wt. %	OSHA PEL mg/m3	ACGIH TLV mg/m3	Carcinogenicity
Iron	7439-89-6	0-20	5	10	No
*Chromium	7440-47-3	0-26	.05	.05	Yes
*Nickel	7440-02-0	35-99	1	1	Yes
*Manganese	7439-96-5	.1-4.0	5	1	No
Silicon	7440-21-3	.1-1.25	5	1	No
Molybdenum	7439-98-7	0-30	15	10	No
Columbium	7440-03-1	0-5	5	5	No
Copper	7440-50-8	0-30	.1	.2	No
Titanium	7440-32-6	0-3.5	15	10	No
*Aluminum	7429-90-5	0-2	5	10	No
*Vanadium	7440-62-2	0-.6	.1	.05	No
Tungsten	7440-33-7	0-4.5	Not Registered	1	No

*The ingredients marked with an asterisk are covered under the reporting requirements of Section 313 of the Emergency Planning and Community Right to Know Act of 1986 and of 40 CFR 372.

SECTION III – PHYSICAL DATA (Not applicable)

SECTION IV – FIRE AND EXPLOSION HAZARD DATA

Welding arc and sparks can ignite combustibles and flammables. Refer to American National Standard Z49.1 for fire prevention during the use of welding and allied procedures.

SECTION V – HEALTH HAZARD DATA

Electric arc welding may create one or more of the following health hazards: Fumes and gases can be dangerous to your health. Arc Rays can injure eyes and burn skin. Electric shock can kill. Effects of Overexposure: FUMES AND GASES can be dangerous to your health. SHORT-TERM (ACUTE) EXPOSURE to welding fumes may result in discomfort such as dizziness, nausea, or dryness or irritation of nose, throat, or eyes. LONG-TERM (CHRONIC) OVEREXPOSURE may lead to siderosis (iron deposits in the lung) and is believed by some investigators to affect pulmonary function. Emergency & First Aid Procedures: 1) Call for medical aid. Employ first aid techniques recommended by the American Red Cross.

SECTION VI – REACTIVITY DATA

HAZARDOUS DECOMPOSITION PRODUCTS: Welding fumes cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedures and electrodes used. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded (such as paint, plating, or galvanizing), number of welds and volume of work area, quality and amount of ventilation, position of welder's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities).

When the electrode is consumed, the fume and gas decomposition products are different in percent and form the ingredients listed in Section II. Fume and gas decomposition products, not the ingredients in the electrode, are important. Decomposition products include those originating from the volatilization, reaction, or oxidation of the materials shown in Section II plus those from base metal, coating, etc. as noted above. These components are virtually always present as complex compounds and not as metals (Characterization of Arc Welding Fume; American Welding Society). Reasonable expected fume constituents from these products would include oxides of nickel, fluorides and complex oxides of iron, manganese, silicon, chromium, molybdenum, titanium, aluminum, columbium, and copper. Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc. One recommended way to determine the composition and quantity of fumes and gases to which workers are exposed is to take an air sample inside the welder's helmet, if worn, or in the worker's breathing zone. ANSI/AWS F1.1, available from the American Welding Society, P.O. Box 351040, Miami, FL 33135.

SECTION VII – SPILL OR LEAK PROCEDURES (Not applicable)

Waste Disposal Method: Prevent waste from contaminating surrounding environment. Discard any product residue, disposable container or liner in an environmentally acceptable manner, in full compliance with Federal, State and Local regulations.

SECTION VIII – SPECIAL PROTECTION INFORMATION (See Note)

Read and understand the manufacturer's instructions and the precautionary label on the product. Ventilation – Use enough ventilation, local exhaust at the arc, or both, to keep the fumes and gases from the worker's breathing zone and the general area. Train the welder to keep his head out of the fumes. Respiratory Protection – Use respirable fume respiratory or air supplied respirator when welding in a confined space or where local exhaust or ventilation does not keep exposure below the recommended exposure limit. Eye Protection – Wear helmet or use face shield with filter lens. Provide protective screens and flash goggles, if necessary, to shield others. As a rule of thumb start with a shade that is too dark to see the weld zone. Then go the next lighter shade that gives sufficient view of the weld zone. Protective Clothing – Wear hand, head, and body protection, which help to prevent injury from radiation, sparks, 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 welder not to touch live electrical parts and to insulate himself from work and ground.

SECTION IX – SPECIAL PRECAUTIONS (See Note)

Other Precautions: Use exhaust system to clear welding fumes. Make sure that inhaled air does not contain fume constituents above permissible exposure levels. NOTE: for additional safety information see American Standard Z49.1-1983, Safety in Welding and Cutting, and the Welding Handbook, both available from AWS, Inc., 550 NW LeJeune Rd., P.O. Box 351040, Miami, FL 33135, Phone, 305/443-9353.