

MATERIAL SAFETY DATA SHEET

This Material Safety Data Sheet (MSDS) is for U.S. manufactured or distributed welding consumable and related products and may be used to comply with OSHA's Hazard Communication standard, 29 CFR 1910.1200, and Superfund Amendments and Reauthorization Act (SARA) of 1986 Public Law 99-499. The OSHA standard must be consulted for specific requirements. This Safety Data Sheet complies with European Commission Directive 89/106/EEC, 91/155/EEC, ISO 11014-1 and ANSI Z400.1.

Date 01/01/2012 MSDS No. 706

SECTION 1: PRODUCT IDENTIFICATION

Manufacturer/Supplier	Welding Material Sales, Inc. 1340 Reed Rd Geneva IL 60134
Phone Number	630-232-6421
Emergency Phone Number	800-424-9300
Product Type	GMAW STAINLESS STEEL WIRE AND GAS TUNGSTEN ARC WELDING (GTAW) STAINLESS WIRE
AWS Classification	ER308, ER308H, ER308L, ER308LSi, ER309, ER309H, ER309L, ER309LSi, ER310, ER316, ER316L, ER316LSi, ER347, ER410, ER410NiMo, ER317L, ER630, ER312, ER2209
AWS Specification	A5.9

SECTION 2: IDENTIFICATION OF HAZARDS

Important- This section covers the hazardous materials from which this product is manufactured. The fumes and gases produced during welding with normal use of this product are also addressed in Section 8. The term "hazardous" in this section should be interpreted as a term required and defined in OSHA Hazard Communication Standard (29 CFR Part 1910.1200).

HAZARDOUS INGREDIENT	CAS	EINECS ¹	REGULATORY HAZARD CLASS/DESIGNATION 67/548/EEC ^A	IARC ^E	NTP ^Z	OSHA ^H	65 ^o
CHROMIUM	7440-47-3	231-157-5	O-R9; Carc 1 ^B -R45; Muta 2-R46; Repr 3-R62; T+-R26; T-R24/25, R48/23; C-R35, R42/43; N-R50, R53 ³³³	1 ²² , 3 ²	K ²²	X ²²	X ²²
IRON	7439-89-6	231-096-4	None	---	---	---	---
MANGANESE	7439-96-5	231-105-1	Xn-R20/22 ^Y	---	---	---	---
MOLYBDENUM	7439-98-7	231-107-2	Xn-R48/20/22; Xi-R36/37 ^X	---	---	---	---
NICKEL	7440-02-0	231-111-4	Carc 3 ^B -R40; T-R43, R48/23	1	K	X	X
SILICON (Amorphous Silica Fume)	7440-21-3 69012-64-2	231-130-8 273-761-5	None None	---	K	---	X

¹ European Inventory of Existing Chemical Substances Number ^Δ -European Union Directive 67/548/EEC-Annex 1 ^E - International Agency for Research on Cancer (1-Human Carcinogen, 2A-Probably Carcinogenic to Humans, 2B-Possibly Carcinogenic to Humans, 3 - Unclassifiable as to Carcinogenicity in Humans, 4 Probably Not Carcinogenic to Humans) ^Z-US National Toxicology Program (K-Known Carcinogen, S-Suspected Carcinogen) ^H-OSHA Known Carcinogen List ^Φ-California Proposition 65 list) ---Dashes indicate the ingredient is not listed with the IARC, NTP, OSHA or 65 ^Φ-Carcinogen, ^{Mutagen} or ^{Reproductive} Category per European Council Directive 67/548/EEC Annex 1 ^Σ - Metal and Chromium III Compounds ^{ΣΣ} - Chromium VI Compounds ^{ΣΣΣ}-Chromium (VI) Trioxide EU 67/548/EEC Classification/Designation
^Y-Manganese Dioxide EU 67/548/EEC Classification /Designation ^X- Molybdenum Trioxide EU 67/548/EEC Classification/Designation

The following symbols correspond with the EU 67/548/EEC column above are in European Union Directive 67/548/EEC Annex 1 and EC 1272/2008 Annex VI-Table 3.2:

Xn - Harmful	Xi - Irritant	O - Oxidizer	C - Corrosive
N - Dangerous for the Environment	T - Toxic	T+ - Extremely Toxic	

WARNING! -Avoid breathing welding fumes and gases; they may be dangerous to your health. Always use adequate ventilation. Always use appropriate personal protective equipment.

PRIMARY ROUTES OF ENTRY: Respiratory System, Eyes and/or skin.

ARC RAYS: The welding arc can injure eyes and burn skin.

ELECTRIC SHOCK: Arc welding and associated processes can kill See Section 8.

FUMES AND GASES: Can be dangerous to your health.

Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedures and electrodes used. Most fume ingredients are present as complex oxides and compounds and not as pure metals. When the electrode is consumed, the fume and gas decomposition products generated are different and form from the ingredients listed in Section 3. Decomposition products of normal operation include those originating from the volatilization, reaction or oxidation of the materials shown in this section, plus those from the base metal and coating, etc., as noted above. Monitor for the materials identified in the list within this section.

Fumes from the use of this product may contain complex oxides or compounds of the following elements and molecules: amorphous silica fume, chromium, manganese, and nickel. Other reasonably expected constituents of the fume would also include complex oxides of iron, silicon and molybdenum. Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc. 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), the number of welders and the volume of the work area, the quality and amount of ventilation, the position of the 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 a degreasing activities). One recommended way to determine the composition and quality 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. See ANSI/AWS F1.1, available from the "American Welding Society", P.O. Box 351040, Miami, FL 33135. Also, from AWS is F1.3 "Evaluating Contaminants in the Welding Environment-A Sampling Strategy Guide", which gives additional advice on sampling.

SECTION 3: HAZARDOUS INGREDIENTS

CONTENT PERCENTAGE BY INGREDIENTS

INGREDIENT	CAS	EINECS	%WEIGHT
CHROMIUM	7440-47-3	231-157-5	5-35
IRON	7439-89-6	231-096-4	40-90
MANGANESE	7439-96-5	231-105-1	0-5
MOLYBDENUM	7439-98-7	231-107-2	0-4

INGREDIENT	CAS	EINECS	%WEIGHT
NICKEL	7440-02-2	231-111-4	0-40
SILICON (Amorphous Silica Fume)	7440-21-3 69012-64-2	231-130-8 273-761-5	0-1

SECTION 4: FIRST AID MEASURES

INHALATION: If breathing is difficult provide fresh air and contact physician.

EYE/SKIN INJURIES: For radiation burns, see physician.

Section 11 of this MSDS covers the acute effects of overexposure to the various ingredients within the welding consumable. Section 8 of this MSDS lists the exposure limits and covers methods for protecting yourself and your co-workers.

SECTION 5: FIRE AND EXPLOSION HAZARD

Welding consumables applicable to this sheet as shipped are nonreactive, nonflammable, non-explosive and essentially non hazardous until welded. Welding arcs and sparks can ignite combustibles and flammable products. Unused welding consumables may remain hot for a period of time after completion of a welding process. See American National Standard (ANSI) Z49.1 for further general safety information on the use and handling of welding consumables and associated procedures.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Solid objects can be picked up and placed into a container. Wear proper personal protective equipment while handling. Do not discard as general trash.

SECTION 7: HANDLING AND STORAGE

HANDLING: No specific requirements in the form supplied. Handle with care to avoid cuts. Wear gloves when handling welding consumables. Avoid exposure to dust. Do not ingest. Some individuals can develop an allergic reaction to certain materials. Retain all warning and product labels.

STORAGE: Keep separate from acids and strong bases to prevent possible chemical reactions.

SECTION 8: EXPOSURE CONTROL AND PERSONAL PROTECTION

Read and understand the instructions and the labels on the packaging. Welding fumes do not have a specific OSHA PEL or ACGIH TLV. The OSHA PEL for Particulate-Not Otherwise Classified (PNOC) is 5 mg/m³ –Respirable Fraction, 15mg/m³-Total Dust. The ACGIH TLV for Particles-Not Otherwise Specified (PNOS) is 3 mg/m³-Respirable Particles, 10 mg/m³-Inhalable Particles. The individual complex compounds within the fume may have a lower OSHA PEL or ACGIH TLV than the OSHA Particulate-Not Otherwise Classified (PNOC) and ACGIH Particles-Not Otherwise Specified (PNOS). An Industrial Hygienist, the OSHA Permissible Exposure Limits for Air Contaminants (29 CFR 1910.1000), and the ACGIH Threshold Limit Values should be consulted to determine the specific fume constituents present and their respective exposure limits. European Union Occupational Exposure Limits (EU OEL) are listed with the most stringent limit among the EU member nations. All exposure limits are in milligrams per cubic meter (mg/m³).

INGREDIENT	CAS	EINECS	OSHA PEL	ACGIH TLV	EU OEL
CHROMIUM#	7440-47-3	231-157-5	1 (Metal) 0.5 (Cr II & Cr III Cpnds) 0.005 (Cr VI Cpnds)	0.5 (Metal) {A4} 0.5 (Cr III Cpnds) {A4} 0.05 (Cr VI Sol Cpnds) {A1} 0.01 (Cr VI Insol Cpnds) {A1}	0.1 I* (Aerosol)-Switzerland 0.005; 0.01***-Denmark 0.005 (Total Aerosol); 0.015*** (Total Aerosol)-Sweden
IRON +	7439-89-6	231-096-4	5 R*	5 R* (Fe ₂ O ₃) {A4}	3 R* (Aerosol as Fe ₂ O ₃)-Switzerland 7*** (as Fe ₂ O ₃)-Denmark
MANGANESE#	7439-96-5	231-105-1	5 CL**(Fume) 1, 3 STEL ***■	0.2 I* {A4} ♦ 0.02 R* ♦, ♦♦	0.02 R* (Aerosol); 0.16R*** (Aerosol)-Germany 0.2 I* (Aerosol)-Germany 0.2; 0.4*** - Denmark
MOLYBDENUM	7439-98-7	231-107-2	5 R*	3 R*; 10 I* (Ele and Insol) 0.5 R* (Sol Cpnds) {A3}	3 R*-Spain; 4; 10***-Poland
NICKEL#	7440-02-0	231-111-4	1 (Metal) 1 (Sol Cpnds) 1 (Insol Cpnds)	1.5 I* (Ele) {A5} 0.1 I* (Sol Cpnds) {A4} 0.2 I* (Insol Cpnds) {A1}	0.05; 0.1*** -Denmark
SILICON+ (Amorphous Silica Fume)	7440-21-3 69012-64-2	231-130-8 273-761-5	5 R* 0.8	3 R* 3 R*	4 R* (Aerosol); 10 I* (Aerosol)-Denmark 2 I*; 4 I***-Denmark
SODIUM OXIDE	7681-49-5	215-208-9	5 R*	3 R*	1.5 R* (Dust NOS-Aerosol)-Germany
STRONTIUM CARBONATE+	1633-05-2	216-643-7	5 R*	3 R*	1.5 R* (as Dust-NOS)-Germany
TITANIUM DIOXIDE	13463-67-7	236-675-5	15 (Dust)	10 {A4}	1.5 R*-Germany

R* - Respirable Fraction R*** - Respirable Fraction-Short Term Exposure Limit I* - Inhalable Fraction I*** - Inhalable Fraction-Short Term Exposure Limit ** - Ceiling Limit *** - Short Term Exposure Limit + - As a nuisance particulate covered under "Particulates Not Otherwise Regulated" by OSHA or "Particulates Not Otherwise Classified" per ACGIH ++ - Crystalline silica is bound within the product as it exists in the package. However, research indicates silica is present in welding fume in the amorphous (non-crystalline) form # - Reportable material under Section 313 of SARA ## - Reportable material under Section 313 of SARA only in fibrous form ■ - NIOSH REL TWA and STEL ♦ - Listed under ACGIH Notice of Intended Changes for Mn in 2010 ♦♦ - Limit of 0.02 mg/m³ is proposed for Respirable Mn in 2011 by ACGIH Ele - Element Sol - Soluble Insol - Insoluble Inorg - Inorganic Cpnds - Compounds NOS - Not Otherwise Specified {A1}-Confirmed Human Carcinogen per ACGIH {A2} - Suspected Human Carcinogen per ACGIH {A3} - Confirmed Animal Carcinogen with Unknown Relevance to Humans per ACGIH {A4} - Not classifiable as a Human Carcinogen per ACGIH {A5} - Not Suspected as a Human Carcinogen per ACGIH (non-crystalline) form.

VENTILATION: Use enough ventilation, local exhaust at the arc or both to keep the fumes and gases below PEL/TLV/OELs in the worker's breathing zone and the general area. Train the welder to keep his head out of the fumes.
RESPIRATORY PROTECTION: Use NIOSH approved or equivalent fume respirator or air supplied respirator when welding in confined space or where local exhaust or ventilation does not keep exposure below the regulatory limits.
EYE PROTECTION: Wear helmet or use face shield with filter lens. As a rule of thumb begin with Shade Number 14. Adjust if needed by selecting the next lighter and/or darker shade number. Provide protective screens and flash goggles, if necessary, to shield others from the weld arc flash.
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 non-synthetic clothing. Train the welder not to touch live electrical parts and to insulate from work and ground.
PROCEDURE FOR CLEANUP OF SPILLS OR LEAKS: Not applicable
SPECIAL PRECAUTIONS (IMPORTANT): Maintain exposure below the PEL/TLV/OEL. Use industrial hygiene monitoring to ensure that your use of this material does not create exposures which exceed PEL/TLV/OEL. Always use exhaust ventilation. Refer to the following sources for important additional information: American National Standard (ANSI) Z49.1; Safety in Welding and Cutting published by the American Welding Society, P.O. Box 351040, Miami, FL 33135 and OSHA Publication 2206 (29 CFR 1910) from the U.S. Government Printing Office Washington, D.C. 20402.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Welding consumables applicable to this sheet as shipped are nonreactive, non-flammable, non-explosive and essentially nonhazardous until welded.

PHYSICAL STATE: Cored Wire

COLOR: Gray

ODOR: N/A

FORM: Coated Rod

SECTION 10: STABILITY AND REACTIVITY

GENERAL: Welding consumables applicable to this sheet are solid and nonvolatile as shipped. This product is only intended for use per the welding parameters it was designed for. When this product is used for welding, hazardous fumes may be created. Other factors to consider include the base metal, base metal preparation and base metal coatings. All of these factors can contribute to the fume and gases generated during welding. The amount of fume varies with the welding parameters.

STABILITY: This product is stable under normal conditions

REACTIVITY: Contact with acids or strong bases may cause generation of gas.

SECTION 11: TOXICOLOGICAL INFORMATION

SHORT TERM (ACUTE) OVEREXPOSURE EFFECTS: **Welding fumes** - May result in discomfort such as dizziness, nausea, or dryness or irritation of nose, throat or eyes. **Chromium** - Inhalation of fume with chromium (VI) compounds can cause irritation of the respiratory tract, lung damage and asthma-like symptoms. Swallowing chromium (VI) salts can cause severe injury or death. Dust on skin can form ulcers. Eyes may be burned by chromium (VI) compounds. Allergic reactions may occur in some people. **Iron, Iron Oxide** - None are known. Treat as nuisance dust or fume. **Magnesium** - Overexposure to the oxide may cause metal fume fever characterized by metallic taste, tightness of chest and fever. Symptoms may last 24 to 48 hours following overexposure. **Manganese** - Metal fume fever characterized by chills, fever, upset stomach, vomiting, irritation of the throat and aching of body. Recovery is generally complete within 48 hours of the overexposure. **Molybdenum** -Irritation of the eyes, nose and throat. **Nickel, Nickel Compounds** - Metallic taste, nausea, tightness in chest, metal fume fever, allergic reaction. **Silica (Amorphous)** - Dust and fumes may cause irritation of the respiratory system, skin and eyes.

LONG TERM (CHRONIC) OVEREXPOSURE EFFECTS: **Welding fumes** - Excess levels may cause bronchial asthma, lung fibrosis, pneumoconiosis or "siderosis". **Chromium** - Ulceration and perforation of nasal septum. Respiratory irritation may occur with symptoms resembling asthma. Studies have shown that chromate production workers exposed to hexavalent chromium compounds have an excess of lung cancers. Chromium (VI) compounds are more readily absorbed through the skin than chromium (III) compounds. Good practice requires the reduction of employee exposure to chromium (III) and (VI) compounds. **Iron, Iron Oxide Fumes** - Can cause siderosis (deposits of iron in lungs) which some researchers believe may affect pulmonary function. Lungs will clear in time when exposure to iron and its compounds ceases. Iron and magnetite (Fe₃O₄) are not regarded as fibrogenic materials. **Manganese** - Long-term overexposure to manganese compounds may affect the central nervous system. Symptoms may be similar to Parkinson's disease and can include slowness, changes in handwriting, gait impairment, muscle spasms and cramps and less commonly, tremor and behavioral changes. Employees who are overexposed to manganese compounds should be seen by a physician for early detection of neurologic problems. Overexposure to manganese and manganese compounds above safe exposure limits can cause irreversible damage to the central nervous system, including the brain, symptoms of which may include slurred speech, lethargy, tremor, muscular weakness, psychological disturbances and spastic gait. **Molybdenum** -Prolonged overexposure may result in loss of appetite, weight loss, loss of muscle coordination difficulty in breathing and anemia. **Nickel, Nickel Compounds** - Lung fibrosis or pneumoconiosis. Studies of nickel refinery workers indicated a higher incidence of lung and nasal cancers. **Silica (Amorphous)** - Research indicates that silica is present in welding fume in the amorphous form. Long term overexposure may cause pneumoconiosis. Non-crystalline forms of silica (amorphous silica) are considered to have little fibrotic potential.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Persons with pre-existing impaired lung functions (asthma-like conditions). Persons with a pacemaker should not go near welding and cutting operations until they have consulted their doctor and obtained information from the manufacturer of the device. Respirators are to be worn only after being medically cleared by your company-designated physician.

EMERGENCY AND FIRST AID PROCEDURES: Call for medical aid. Employ first aid techniques recommended by the American Red Cross. If irritation or flash burns develop after exposure, consult a physician.

CARCINOGENICITY: Chromium VI compounds and nickel compounds are classified as IARC Group 1 and NTP Group K carcinogens. Chromium VI, nickel compounds and welding fumes must be considered as carcinogens under OSHA (29 CFR 1910.1200).

CALIFORNIA PROPOSITION 65: WARNING: These products contain or produce a chemical known to the State of California to cause cancer and birth defects (or other reproductive harm). (California Health & Safety Code Section 25249.5 et seq)

SECTION 12: ECOLOGICAL INFORMATION

Welding processes can release fumes directly to the environment. Welding wire can degrade if left outside and unprotected. Residues from welding consumables and processes could degrade and accumulate in the soil and groundwater.

SECTION 13: DISPOSAL CONSIDERATIONS

Use recycling procedures if available. Discard any product, residue, packaging, disposable container or liner in an environmentally acceptable manner, in full compliance with federal, state and local regulations.

SECTION 14: TRANSPORT INFORMATION

No international regulations or restrictions are applicable. No special precautions are necessary.

