



Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200.

Section 1: Product and Company Identification

Product Name: CARBON STEEL MIG / TIG WELDING WIRE
 Product Type: GAS METAL ARC WELDING (GMAW) SOLID WIRE
 AWS Classification: EH12K; EH14; EH14-EW; EL12; EM12K; EM13K; ER70S-2; ER70S-3; ER70S-4; ER70S-6; ER70S-7; R45; R60; R65
 Manufacturer: TECHNIWELD USA
 Physical Address: 6205 BOAT ROCK BLVD
 ATLANTA, GA 30336
 Mailing Address: P.O. Box 44226
 ATLANTA, GA 30336
 Business Phone: 404-699-9900
 Business Fax: 404-699-7800
 E-mail Address: info@TECHNIWELDUSA.COM
 Web Address: www.TECHNIWELDUSA.COM
 Emergency Phone: CHEMTREC (24-Hour) 1-800-424-9300
 Outside of the USA & Canada 1-703-527-3887
 Date of Preparation: June 2, 2015 (Revised November 03, 2015)
 OSHA Regulatory Status: Non-Regulated
 WHMIS Classification: Not a Controlled Product

Section 2: Hazards Identification

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 5. 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 [†]	REGULATORY HAZARD CLASSIFICATION/DESIGNATION 67/548/EEC ^Δ	IARC ^E	NTP ^Z	OSHA ^H	65°
COPPER	7440-50-8	231-159-6	None	---	---	---	---
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	---	---	---	---
SILICON	7440-21-3	231-130-8	None	---	---	---	---
(Amorphous Silica Fume)	69012-64-2	273-761-5	None	3	K	---	X

[†]European Inventory of Existing of Chemical Substances Number ^Δ- European Union Directive 67/548//EEC-ANNEX 1 E – International Agency for Research on cancer (I-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 9K-Known carcinogen) H-OSHA Known Carcinogen List e-California Proposition 65 (X-On Proposition 65 list) --- Dashes indicate the ingredient is not listed with the IARC, NPT, OSHA or 65 \emptyset Carcinogen, Mutagen or Reproductive Category per European Council Directives 67/548/EEC Annex 1 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 European Union Directive 67/548/EEC Annex 1 and EC 1272/2008 Annex VI-Table 3.2:

Xn – Harmful Xi – Irritant

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 ROUTE 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 of oxidation of the materials shown in this section, plus those from the base metal and coating, etc., as noted above. Monitor for the 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, copper and manganese. Other reasonably expected constituents of the fume would also include the complex oxides of iron 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 or worn or in the workers 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: Composition and Information on Ingredients

Ingredient	CAS#	EINECS	% WEIGHT
Copper	7440-50-8	231-159-6	0.1-0.5
Iron	7439-89-6	231-096-4	95
Manganese	7439-96-5	231-105-1	1-5
Molybdenum (2)	7439-98-7	231-107-2	0.1-1
Silicon	7440-21-3	231-130-8	0.5-1.5
(Amorphous silica Fumes)	69012-64-2	273-761-5	

(1)- Copper, if contained in the product, is clearly visible and only present as a surface coating. (2)-Present only in ER80SD-D. ---Dashes indicate the ingredient is present within the group of products.

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 SDS lists the exposure limits and covers methods for protecting yourself and your coworkers.

Section 5: Fire Fighting Measures

Welding consumables applicable to this sheet as shipped are non-reactive, 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 (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 protective equipment while handling. Do not discard in 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 acid and strong bases to prevent possible chemical reactions.

Section 8: Exposure Controls / 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, 15 mg/m³ – Total Dust. The ACGIH TLV for Particles- Not Otherwise Specified (PNOS) is 3 mg/m³ – Respirable Particles, 10 mg/m³ – Inhalation 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. Europe 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
Copper	7440-50-8	231-159-6	0.1 (Fume), 1 (Dust)	0.2 (Fume), 1 (Dust)	0.1 I* (Aerosol); 0.2 I*** (Aerosol)-Germany 0.1; 0.2 *** -Denmark
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 ◆, ◆◆	0.02R* (Aerosol); 0.16 R*** (Aerosol)-Germany 0.2 I* (Aerosol)-Germany 0.2; 0.4*** -Denmark
Molybdenum (2)	7439-98-7	231-107-2	5 R *	3R *; 10 I* (Ele * Insol) 0.5 R* (Sol Cpnds) {A3}	3R* - Spain 4; 10 *** - Poland
Silicon (Amorphous silica Fumes)	7440-21-3 69012-64-2	231-130-8 273-761-5	5 R * 0.8	3R * 3R *	4 R* (Aerosol); 10 I* (Aerosol)-Denmark 2 I*; 4 I***-Denmark

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 of Particulates Not Otherwise Classified” by ACGIH ■-NIOSH REL TWA and STEL ◆-listed under ACGIH Notice of Intended Changes for Mn in 2010 ◆◆Limit of 0.02 mg/mg3 is proposed for Respirable Mn in 2011 by ACGIH Ele-Element Sol-Soluble Insol-Insoluble Inorganic Cpnds-Compounds NOS-Not Otherwise Specified {A3}-Confirmed Animal Carcinogen with unknown Relevance to Humans per ACGIH {A4}-Not classifiable as a Humans carcinogen per ACGIH

VENTILATION: Use enough ventilation; local exhaust at the arc or both to keep the fume and gases below the PEL/TLV/IELs in the worker's breathing zone and the general area. Train the welder to keep his hand out 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 #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 include welders gloves and 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 himself 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 the material does not create exposures which exceeds PEL/TLV/OEL. Always use exhaust ventilation. Refer to the following sources for important additional information. American National Standards (ANZI) Z49.1; Safety in Welding and cutting published by the American Welding Society, P.O. Box 351040, Miami, FL 33135 and OSHA Publication 2206 (29CFR 1910). U.S. Government Printing Office, Washington DC 20402.

Section 9: Physical and Chemical Properties

Welding consumable applicable to this sheet as shipped are non-reactive, nonflammable, non-explosive and essentially nonhazardous until welded.

PHYSICAL STATE: Cored wire

ODOR: N/A

COLOR: Gray

FORM: Round

Section 10: Stability and Reactivity

GENERAL: Welding consumables applicable to this sheet as shipped are non-solid and non-volatile 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 generations 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. **Copper**-Metal fume fever characterized by metallic taste, tightness of chest and fever. Symptoms may last 24-48 hours following overexposure. **Iron, Iron Oxide**-None are known. Treat as nuisance dust or fume. **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 overexposure. **Molybdenum**-Irritation of the eyes, nose and throat. **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" **Copper**-Copper poisoning has been reported in the literature from exposure to high levels of copper. Liver damage can occur due to copper accumulating in the liver characterized by cell destruction and cirrhosis. High levels of copper may cause anemia and jaundice. High levels of copper may cause nervous system damage characterized by never fiber separation and cerebral degeneration. **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 over exposure may result in loss of appetite, weight loss, loss of muscle coordination, difficulty in breathing and anemia. **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 – designed physician.

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

CARCINOGENICITY: 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: Transportation Information

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

Section 15: Regulatory Information

Read and understand the manufacturer's instructions, your employer's safety practices and the health and safety instructions on the label and the material safety data sheet. Observe all federal and local rules and regulations. Take all necessary precautions to protect yourself and others.

United States EPA Toxic Substance Control Act: All constituents of these products are on the TSCA inventory list or are excluded from listing.

CERCLA/SARA TITLE III: Reportable Quantities (RQs) and /or Threshold Planning Quantities (TPQs):

Ingredient Name	RQ(lb)	TPQ(lb)
Products on this MSDS are a solid solution in the form of a solid article.	--	--

Spills or releases resulting in the loss of any ingredient at or above its RQ require immediate notification to the national response Center and to our local Emergency Planning Committee.

Section 311 Hazard Class

As shipped: Immediate

In Use: Immediate delayed

EPCRA/SARA TITLE III 313 TOXIC CHEMICALS: The following metallic components are listed as SARA 313 "Toxic Chemicals" and potentially subject to annual SARA 312 reporting: Manganese. See Section 3 for weight percentage.

CANADIAN WHMIS CLASSIFICATION: Class D; Division 2, Subdivision A

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA): All constituents of these products are on the Domestic Substance List (DSL)

Section 16: Other Information

The following Risk and Safety Phrase Texts and Hazard Statements correspond with the columns labeled-EU 67/548/EEC within Section 2 of this material safety data sheet. Take appropriate precautions and protective measures to eliminate or limit the associated hazard.

EU DIRECTIVE 67/548/EEC-RISK PHRASE TEXTS

R20/22-harmful by inhalation and if swallowed

R48/20/22-Harmful: danger of serious damage to health by prolonged exposure through inhalation and if swallowed.

R36/37-Irritating to eyes and respiratory system

For additional information please refer to the following sources:

USA: **American National Standard (ANSI) Z49.1** "Safety in Welding and Cutting", **ANSI/American Welding Society (AWS) F1.5** "Methods for Sampling and Analyzing Gases from Welding and Allied Processes", **ANSI/AWS F1.1** "Method for Sampling Airborne Particles Generated by Welding and Allied Processes", **AWSF3.2/F3.2** "Ventilation Guide for Weld Fume", American Welding Society, 550 North le Jeune Road, Miami, Florida, 33135. Safety and Health Fact Sheets available from AWS at www.aws.org. **OSHA Publication 2206 (29 C.F.R. 1910)**, U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954. **Threshold Limit Values and Biological Exposure Indices**, American Conference of Governmental Hygienists (ACGIH), 6500 Glenway Ave., Cincinnati, Ohio 45211, USA. **NFPA51B** "Standard for Fire Prevention During Welding, Cutting and Other Hot Work" published by the National Fire Protection Association, 1 Battery march Park, Quincy, MA 02169

UK: **WMA Publication 236 and 237**, "Hazards from Welding Fume", The arc welder at work, some general aspects of health and safety".

CANADA: **CSA Standard CAN/CSA-W117.2-01** "Safety in Welding, Cutting and Allied Processes".