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 Z401.4.

Date: 01/01/2012 MSDS No. 726

SECTION 1: IDENTIFICATION

Manufacturer/Supplier: Welding Material Sales Inc.

Welding Material Sales Inc.
1340 Reed RD
Geneva IL 60134

Telephone Number: 630-252-6421

Emergency Number: 800-424-9500

Product Type: GAS METAL ARC WELDING (GMAW) SOLID WIRE

AWS Classification: EH11K, EH14, EH14-EW, EL12, EM12K1, EM13K1, ER70S-2; ER70S-3; ER70S-5; ER70S-6; ER70S-7; E45; E60; E65

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).

Fumes from the use of this product may contain complex oxides or compounds of the following ingredients: amorphous silica fume, copper and manganese. Other reasonably expected constituents of the fume would also include complex oxides of iron and molybdenum. Gaseous reaction products may include carbon monoxide and carbon dioxide. Oxide and nitrogen oxides may be formed by the radiation from the arc. Other conditions which also low elements and molecules: amorphous silica fume, manganese, copper and silica fume. Fumes and gases produced during welding may have a lower concentration on the use and handling of welding consumables than the concentration shown in this section, plus those from the base metal and coating, etc., as noted above. Monitor for the materials identified in this section.


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

X - 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 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.

Fumes and gases produced during welding may have a lower concentration on the use and handling of welding consumables than the concentration shown in this section, plus those from the base metal and coating, etc., as noted above. Monitor for the materials identified in 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 complex oxides of iron and molybdenum. Gaseous reaction products may include carbon monoxide and carbon dioxide. Oxide 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 an degreasing activities). One recommended way to determine the composition of fumes and gases and fumes 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

<table>
<thead>
<tr>
<th>INGREDIENT</th>
<th>CAS</th>
<th>EINECS</th>
<th>S-WEIGHT</th>
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<tbody>
<tr>
<td>COPPER (1)</td>
<td>7440-50-8</td>
<td>231-159-6</td>
<td>0.1-0.3</td>
</tr>
<tr>
<td>IRON</td>
<td>7439-89-6</td>
<td>231-096-4</td>
<td>95</td>
</tr>
<tr>
<td>MANGANESE#</td>
<td>7439-96-5</td>
<td>231-107-7</td>
<td>1.5</td>
</tr>
</tbody>
</table>

(1)-Copper, if contained in the product, is clearly visible and only present as a surface coating.

(2)-Present only in ER80S-D2.

Dashes indicate the ingredient is not present within the group of products.

SECTION 4: FIRST AID MEASURES

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

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 combustible and flammable materials. 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 (PNOS) 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-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 (PNOS) 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).

<table>
<thead>
<tr>
<th>INGREDIENT</th>
<th>CAS</th>
<th>EINECS</th>
<th>OSHA PEL</th>
<th>ACGIH TLV</th>
<th>EU OEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>COPPER</td>
<td>7440-50-8</td>
<td>231-159-6</td>
<td>0.1 (Fume), 1 (Dust)</td>
<td>0.2 (Fume), 1 (Dust)</td>
<td>0.1 8(Aerosol); 0.2 8(Aerosol); Germany 0.1; 0.2**; Denmark</td>
</tr>
<tr>
<td>IRON</td>
<td>7439-89-6</td>
<td>231-096-4</td>
<td>5 R*</td>
<td>5 R* (Fe2O3) [A]</td>
<td>3 R* (Aerosol); 7 **<em>; 4 I</em> (Fe2O3); Switzerland 7 *<em><em>; 4 I</em>; 4 I</em>; Denmark</td>
</tr>
<tr>
<td>MANGANESE#</td>
<td>7439-96-5</td>
<td>231-105-1</td>
<td>5 CL* (Fume) 1.3 STEL**</td>
<td>0.2 F [A] <em>; 0.02 R</em>; 0.02 R*; [A]; 0.02 R* (Aerosol); Germany 0.2 F (Aerosol); Denmark 0.2; 4 I*; Denmark</td>
<td></td>
</tr>
<tr>
<td>MOLYBDENUM</td>
<td>7439-98-7</td>
<td>231-107-2</td>
<td>5 R*</td>
<td>3 R*; 10 F* (Et and Insol) 0.5 R* (Sol Cystis) [A3]</td>
<td>3 R*; Spain; 4; 10***; Poland</td>
</tr>
<tr>
<td>SILICON#</td>
<td>7440-21-3</td>
<td>231-130-5</td>
<td>5 R*</td>
<td>3 R*</td>
<td>4 R* (Aerosol); 10 F* (Aerosol); Denmark 2 F*; 4 I*; Denmark</td>
</tr>
</tbody>
</table>

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PHYSICAL AND CHEMICAL PROPERTIES
Welding consumables applicable to this sheet are nonreactive, nonflammable, non-explosive and essentially non-irritating until welded.

PHYSICAL STATE: Cored Wire
OCA: NOA
COLOR: Gray
FORM: Round Wire

STABILITY AND REACTIVITY
GENERAL: Welding consumables applicable to this sheet are non solid and non volatile as shipped. This product is only intended for use with the welding parameters it was designed for. 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 the 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 1: TOXICOLOGICAL PROPERTIES
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 “silicosis.” Copper-Copper poisoning has been reported in the literature from exposure to high levels of copper. Liver damage can occur due to copper accumulation 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 nerve fiber separation and cerebral degeneration. Iron, Iron Oxide Fumes-Can cause siderosis (deposits of iron in lungs) which some researchers may believe 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 neural 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-Long-term overexposure 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 fibrogenic potential.

MATERIAL CONDITIONS AGGRAVATING 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. Respiration are to be worn only after being medically cleared by your company-designated physician.

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

CARCINOGENICITY: Welding fumes must be considered as carcinogenic under OSHA (29 CFR 1910.1280).

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, groundwater, and surface water. residents and wildlife. The processes used in welding and cutting affect the environment in a number of ways. The processes used in welding and cutting affect the environment in a number of ways.

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 national 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 local and federal rules and regulations. Take all necessary precautions to protect yourself and others.

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

ERCASARA TITLE III: Reportable Quantities (RQ’s) and/or Threshold Planning Quantities (TPQ’s):

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 above its RQ require immediate notification to the National Response Center and to your local Emergency Planning Committee.

SECTION 31 Hazard Class
As shipped: Immediate

In use: Immediate delayed

EPCASARA TITLE III 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/ECC 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
R65-Irritating to eyes and respiratory system

For additional information please refer to the following sources:


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-W177-2.01 “Safety in Welding, Cutting and Allied Processes” WELDING MATERIAL SALES, Inc. strongly recommends the users of this product study this MSDS, the product label information and become aware of all hazards associated with welding. WELDING MATERIAL SALES, Inc. believes this data to be accurate and to reflect qualified expert opinion regarding current research. However, WELDING MATERIAL SALES, Inc. cannot make any expressed or implied warranty as to this information.