

1. PRODUCT AND COMPANY IDENTIFICATION

Date of Issue: April 2013

Product Name: ER70S-6 Solid Wire for Gas Metal Arc Welding

Specification: AWS A5.18 ER70S-6

Responsible Party: Radnor Products, PO Box 6675, Radnor, Pennsylvania 19087 U.S.A.

Customer Service: 866-734-3438

2. COMPOSITION / HAZARDOUS INGREDIENTS

IMPORTANT! This section covers the material from which these products are manufactured. The fumes and gases produced when welding with normal use of these products are covered in Section 5.

Components	CAS No.	PEL. Mg/m ³	TLV. Mg/ m ³	Wt. %
Manganese	7439-96-5	5 (fume) (ceiling)	0.2	<2
Silicon	7440-21-3	5 (respirable)	10	0.5-2.0
Iron	7439-86-6	10 (oxide fume)	5 (oxide fume)	95-98
Copper	7440-50-8	1	0.2 (fume)	<0.5

Subject to reporting requirements of Section 313 of the Emergency Planning & Community Right-to-Know Act of 1986 (SARA) and 40 CFR Part 372.

3. PHYSICAL/CHEMICAL CHARACTERISTICS

Solid copper coated steel wire.

4. FIRE AND EXPLOSION HAZARD DATA

(Nonflammable) 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.

NFPA NUMERICAL CODES: **Health Hazard 1 Fire Hazard 1 Reactivity Hazard 0**

SECTION 5 - 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 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, fluxes, or galvanizing), the number of welders and the volume of 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 and decreasing activities).

When the electrode is consumed, the fume and gas decomposition products generated may be different in percent and form to the ingredients listed in Section 2. Fume and gas decomposition products, 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 in the electrode.

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 2, plus those from the base metal and coating, etc., as noted above. Reasonably expected decomposition products from normal use of these products include a complex of the oxides of the materials listed in Section 2, as well as carbon monoxide, carbon dioxide, ozone and nitrogen oxides. **The fume limit for manganese may be reached before the general limit for welding fumes (5 mg/m³) is reached.** 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. See applicable OSHA guidelines and ANSI/AWS F1.1 **"Method for Sampling Airborne Particles Generated by Welding and Allied Process"** and **"Characterizations of Arc Welding Fume"** available from the American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126.

SECTION 6 - HEALTH HAZARD DATA

Electric arc welding or oxy. fuel welding may create one or more of the following health hazards :

Arc Rays and Heat Rays: Arc rays from the welding process produce intense heat and strong ultraviolet rays that can burn eyes and skin.

Electric Shock: Electric shock can kill. Do not touch live electrical parts

Noise: Can damage hearing.

Carcinogenicity: Chromium, nickel, cobalt, and their compounds are on the IARC and NTP lists as posing a carcinogenic risk to humans

Emergency and First Aid Procedures: Call for medical aid. Employ first aid techniques recommended by the American Red Cross.

Shielding Gases: Such as argon, helium and carbon dioxide are asphyxiants and adequate ventilation must be provided.

Fumes and Gases: Can be hazardous to your health. This product contains/produces elements that may be hazardous during welding.

Short Term (Acute) Overexposure: Short-term overexposure to welding fumes may result in discomfort such as fever, dizziness, nausea, or dryness or irritation of the nose, throat, eyes, and may aggravate pre-existing respiratory conditions.

SECTION 6 - HEALTH HAZARD DATA

Electric arc welding or oxy fuel welding may create one or more of the following health hazards :

Long Term (Chronic) Overexposure: Long-term overexposure to welding fumes may harm your pulmonary and respiratory functions and may lead to siderosis (iron deposits in the lungs).

Manganese in Fumes: Fumes from the normal use of this product contain significant quantities of manganese compounds. The Threshold Limit Value (TLV) for manganese is 0.2 mg/m³ and will be exceeded before reaching the 0.5 mg/m³ maximum exposure guideline for general welding fumes. Common entry is by inhalation. Overexposure in this manner may affect the central nervous system and may result in behavioral changes, changes in handwriting, cramps, flu-like symptoms (metal fume fever), gait impairment, muscle spasms, slowness and tremors similar to Parkinson's disease.

Threshold Limit Value: The ACGIH recommended limit for welding fumes not otherwise classified (NOC) is 5.0 mg/m³. TLV-TWA's may be used and OSHA PEL's must be used as a guide in the control of health hazards. See Section 5 for specific fume constituents which may modify the types of air-borne contaminants.

SECTION 7 - PRECAUTIONS FOR SAFE HANDLING & USE/APPLICABLE CONTROL MEASURES

Read and understand the precautionary warning on this product, the manufacturer's instructions and your employer's safety practices. The precautionary warning, manufacturer's instructions, American National Standard Z49.1, OSHA Safety and Health Standards, CSA Standards, position papers and other resources are available on request.

Avoid Fume: Do not breathe the fume directly. Avoiding the fume can be done by positioning head at an angle away from work or by use of ventilation which captures or directs the fume away from the face.

Use Adequate Ventilation: Ventilation is adequate when exposures to hazardous concentrations of airborne contaminants are maintained below allowable limits. Factors for determining adequate ventilation include the following: the configuration and volume of the space in which operations occur; the number of operations generating contaminants; the concentration of specific toxic or flammable contaminants being generated; the natural air flow; and the location of the welder's and other person's breathing zones in relation to the contaminants or sources. The recommended way to determine adequate ventilation is to

sample the composition and quantity of fumes and gases to which welders are exposed. When welders wear helmets, collect samples from inside the helmet in the welder's breathing zone.

Types of Ventilation: Natural ventilation is acceptable for welding when the above precautions are taken to keep the welder's breathing zone away from the fumes and where sampling from the atmosphere shows that concentrations of contaminants are below the allowable limits. If natural ventilation is not sufficient to maintain contaminants below the allowable limits, use mechanical ventilation, which includes local exhaust. Mechanical ventilation includes roof exhaust fans and wall exhaust fans. Local exhaust includes fixed or moveable exhaust hoods placed as near as practicable to the work and able to maintain a capture velocity sufficient to keep airborne contaminants below the allowable limits.

Use Respirator: Use respiratory protective equipment when adequate ventilation is not achievable or practical, as described above.

Confined Spaces: If welding in confined spaces, use continuous ventilation as described above. Use respiratory protective equipment when adequate ventilation is not achievable. A confined space is a restricted or small space with limited entry or exits, such as a boiler, furnace, tank, pressure vessel or small compartment.

Eye Protection: Wear a welding helmet fitted with a proper shade to protect eyes when welding or watching. Wear approved safety glasses. Side shields are recommended. Use protective screens or barriers to protect others from flash and glare. Warn others not to watch the arc. Wear protective clothing made from durable, flame resistant material (wool and leather) and foot protection.

Protective Clothing: Wear dry, hole-free insulating gloves and body protection to protect from radiation, sparks, and electrical shock. 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. Insulate yourself from the work and ground by using dry insulating mats or covers. Use fully insulated electrode holders. Never dip holder in water to cool it or lay it down on the ground or the work surface. Do not touch holders connected to two welding machines at the same time or touch other people with the holder or electrode.

PROCEDURE FOR CLEANUP OF SPILLS OR LEAKS: 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. The information herein is supplied in good faith, but no warranties are expressed or implied.

SECTION 8 - DEFINITIONS

CAS No. Chemical Abstracts Service Number

TWA Time Weighted Average

OSHA U.S. Department of Labor, Occupational Safety and Health Administration

STEL Short Term Exposure Limit

CLG Ceiling Limit

PEL Permissible Exposure Level

NOC Not Otherwise Classified

ACGIH American Conference of Governmental Industrial Hygienists

IARC International Agency for Research on Cancer

NTP National Toxicology Program

TLV Threshold Limit Value

The opinions expressed in this MSDS are those of qualified experts. We believe that the information contained herein is current as of the date of this MSDS. Since the use of this information and these opinions and the conditions of use of these products are not within the control of the manufacturer, it is the user's obligation to determine the conditions of safe use of these products.