



MATERIAL SAFETY DATA SHEET (MSDS)
 For Welding Consumables and Related Products
 Conforms to OSHA Hazard Communication Standard 29 CFR 1910.1200
 And Superfund Amendments and Reauthorization Act (SARA) of 1986 Public Law 99-499
 Standard Must Be Consulted for Specific Requirements

REVISED 10-2011

SECTION I – IDENTIFICATION

Manufacturer/Supplier Name: American Filler Metals Company	Telephone No.: 713-649-8785
Address: 6015 Murphy Street, Houston, TX 77033	Emergency No.: Chemtrec: 800-424-9300
Trade Name: AFM E70T-1, AFM E71T-1, AFM E71TGS, AFM E71T-11 AFM E81T1-B2, AFM E81T1-B6, AFM E81T1-B8, AFM E91T1-B3, AFM E91T1-B9, AFM E100T1-K3, AFM E110T1-K3	Classification: AWS A5.20 AWS A5.29

SECTION II – HAZARDOUS MATERIALS*

IMPORTANT: This section covers the materials from which the product is manufactured. The fumes and gases produced during welding with the normal use of this product are covered under Section V.

*The term "HAZARDOUS MATERIALS" should be interpreted as a term required and defined in OSHA HAZARD COMMUNICATION STANDARD 29 CFR 1910.1200 however the use of this term does not necessarily imply the existence of any hazard.

Flux or other ingredients	% Weight	CAS No.	Exposure Limit (mg/m ³)	
			OSHA PEL	ACGIH TLV
Iron (Fe)	75 – 95	7439-89-6	5 (Respirable Fraction)	10
Manganese (Mn)	1 – 4	7439-96-5	5 (Ceiling Limit)	0.2
Titanium Oxide	4 – 10	13463-67-7	5 (Respirable Fraction)	10
Silicon (Si)	0.5 – 3	7440-21-3	5 (Respirable Fraction)	10
Flourspar (F)	0 – 2	7789-75-5	2.5 (as F)	2.5 (as F)
Nickel (Ni)	0 – 4	7440-02-0	1	1.5 (Metal)
Chromium (Cr)	0 – 10	7440-47-3	1	0.5
Molybdenum (Mo)	0 – 2	7439-98-7	5 (Respirable Fraction)	10
Copper (Cu)	0 – 1	7440-50-8	1 (Dust)	1 (Dust)

Occupational Safety and Health Administration 29 CFR 1910.1000 Permissible Exposure Limit (PEL). American Conference of Governmental industrial Hygienists (ACGIH) Threshold Limit Value (TLV[R]). *Ceiling Limit **Short Term Exposure Limit

SECTION III – PHYSICAL DATA

Tubular steel sheath filled with mineral and/or metal powders.

SECTION IV – FIRE AND EXPLOSION HAZARD DATA

Non-Flammable: Welding arc and sparks can ignite combustibles. See Z-49.1 referenced in Section VI

SECTION V – REACTIVITY DATA

Hazardous Decomposition Products

Welding fumes and gases cannot be classified simply. The composition and quantity of these fumes and gases are dependent upon the metal being welded, the procedures followed and the electrodes used.

Workers should be aware that the composition and quantity of fumes and gases to which they may be exposed, are influenced by coatings which may be present on the metal being welded (such as paint, plating, or galvanizing), the number of welders in operation 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 and degreasing procedures). When the electrode is consumed, the fumes and gas decomposition products generated are different in percent and form from the ingredients listed in Section II. The composition of these fumes and gases are the concerning matter and not the composition of the electrode itself. Decomposition products include those originating from the volatilization, reaction, or oxidation of the ingredients shown in Section II, plus those from the base metal, coating and the other factors noted above.

Reasonable expected fume constituents of this product would include: Complex oxides of iron, manganese, silicon and titanium. Fluorides will also be present.

Flux or other ingredients	CAS No.	Exposure Limit (mg/m ³)	
		OSHA PEL	ALGIH TLV
Iron Oxide	1309-37-1	10 (as Fe)	5 (as Fe)
Manganese Compounds (as Mn)	7439-96-5	5 (Ceiling Limit, as Fume)	0.2
Titanium Oxide	13463-67-7	5 (Respirable Fraction)	10
Silica	14808-60-7	0.1	0.025 (Respirable), A1
Fluorides		2.5 (as F)	2.5 (as F)
Nickel Compounds (Soluble)		1 (as Ni)	0.1 (as Ni)
Nickel Compounds (Insoluble)		1 (as Ni)	0.2 (as Ni), A1
Chromium Oxide (as CrII, CrIII)		0.5 (as CrII, CrIII)	0.5 (as CrII, CrIII)
Chromium (insoluble, as Cr VI)		0.005	0.01, A1
Molybdenum Compounds (as Mo)	7439-98-7	5 (Respirable Fraction)	0.5 (Respirable Fraction)
Copper Compounds (as Cu)	7440-50-8	0.1 (Fume)	0.2 (Fume)

*Ceiling Limit **Short Term Exposure Limit

(Continued on back page)

Gaseous reaction products may include carbon monoxide and carbon dioxide.

Ozone and nitrogen oxides may be formed by the radiation from the arc.

One method of determining the composition and quantity of the fumes and gases to which the workers are exposed is to take an air sample from inside the welder's helmet while worn or within the worker's breathing zone. See ANSI/AWS F1.1 publication available from the American Welding Society 550 N.W. LeJeune Road, Miami, Florida 33126.

SECTION VI – HEALTH HAZARD DATA

Threshold Limit Value: The ACGIH recommended general limit for welding fume NOC (not otherwise classified) is 5 mg/m³. ACGIH-1985 preface states: "The TLV-TWA should be used as guides in the control of health hazards and should not be used as fine lines between safe and dangerous concentrations." See section V for specific fume constituents which may modify this TLV.

Common Entry is by Inhalation or Through the Eyes and Skin.

Effects of Overexposure: Inhalation of welding fumes and gases can be dangerous to your health. Short-term (acute) overexposure to welding fumes may result in discomfort such as dizziness, nausea, or dryness or irritation of nose, throat, or eyes. Inhalation of extremely high levels of fluorides may cause abdominal pain, diarrhea, muscular weakness and convulsions. Continued inhalation could cause loss of consciousness and death.

Manganese – Manganese dioxide (MnO₂): Short-term overexposure should be treated by removal from exposure and applying artificial respiration if needed. Wash eyes and/or skin with water to remove any dust particles.

Fluorides evolved may cause skin and eye burns: pulmonary edema bronchitis.

Long-term (chronic) overexposure to welding fumes can lead to siderosis (iron deposits in lung) and is believed to affect pulmonary function.

Manganese – Manganese dioxide (MnO₂): Long-term overexposure to manganese compounds may have an effect upon the central nervous system. Symptoms such as muscular weakness, body tremors and behavioral changes may appear. Employees exposed to manganese compounds should get medical examinations several times annually for early detection of manganese poisoning.

Fluorides: Repetitive exposure to fluoride fumes and/or gases may cause excessive calcification of the bones and ligaments of the ribs, pelvis, and spinal column.

Arc Rays can injure eyes and burn skin.

Electric shock can kill.

See Section VII.

Emergency and First Aid Procedures: Call for medical assistance. Use first aid procedures recommended by the American Red Cross. If breathing is difficult-give oxygen. If not breathing-use CPR (cardiopulmonary resuscitation). Consult a physician if irritation of the eyes and skin or flesh burns develop after exposure.

Carcinogenicity

These products do not contain ingredients that are defined as carcinogenic per 29 CFR 1910.1200 – Hazard Communication Standard.

SECTION VII – CONTROL MEASURES AND PRECAUTIONS FOR SAFE HANDLING AND USE

Read and understand the manufacturer's instructions and precautionary label on this product. See American Standard Z-49.1 Safety in Welding and Cutting published by the AMERICAN WELDING SOCIETY, 550 N.W. LeJeune Road, Miami, Florida 33126 and OSHA Publication 2206 (29 CFR 1910). U.S. Government Printing Office, Washington D.C. 20402 for more details on the following topics.

Ventilation: Use plenty of ventilation and/or local exhaust at the arc, to keep the fumes and gases below the threshold limit value within the worker's breathing zone and the general work area. Welders should be advised to keep their head out of the fumes.

Respiratory Protection: Use respirable fume respirator or air supplied respirator when welding in a confined space or general work area where local exhaust and/or ventilation does not keep exposure below the threshold limit value.

Eye Protection: Wear a helmet or face shield with a filter lens shade number 12-14 or darker. Shield other workers by providing screens and flash goggles.

Protective Clothing: Wear approved head, hand and body protection which help to prevent injury from radiation, sparks, and electrical shock. See ANSI Z-49.1. This would include wearing welder's gloves and a protective face shield and may include arm protectors, apron, hats, shoulder protection, as well as dark substantial clothing. Welders should be trained not to allow electrically live parts to contact the skin or wet clothing and gloves. The welders should insulate themselves from the work and ground.

Waste Disposal Method: Discard any product, residue, disposal container, or liner in an environmentally acceptable manner approved by Federal, State and Local regulations.

American Filler Metals Co. believes that the information contained in this (MSDS) Material Safety Data Sheet is accurate. However, American Filler Metals Co. cannot make any express or implied warranty as to this information.