



Metal Mfg. Company, Inc.

3314 Carr Street – PO Box 21198

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Phone – 713.225.9141 Fax – 713.225.5316

Material Safety Data Sheet

Identification

Product Type: Coated Composite Electrodes for shielded metal arc welding
Product Name: A & B Electric Tube Metal
Specification: AWS Specification A5.21-80
Manufacturer: A&B Metal Manufacturing Company, Inc.

Section II – Hazardous Ingredients

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

Hazardous Compounds	CAS No.	OSHA PEL (mg/m3)	ACGIH TLV (mg/m3)	Carcinogenicity	Weight Percent
Manganese	7439-96-5	5 CLG	5 CLG	0	0-2
Silicon	7440-21-3	None	5 CLG	0	0-1
Tungsten	7440-33-7	None	5 CLG	0	35-60
Iron	7439-89-6	5 CLG	5 CLG	0	35-61
Graphite	7782-42-5	None	15 mppcf	0	0-1.5

CLG: Ceiling Limit

Section III – Physical/Chemical Characteristics

Not Applicable

Section IV – 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 applied procedures.

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Section V – Reactivity Data

Hazardous Decomposition Products

Exposure Limit: 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, 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 atmospheres (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities).

When the electrode is consumed, the fume and gas decomposition products are different in percent and form from the ingredients listed in Section II. Fume and gas decomposition products, and not the ingredients in the electrode, are important. The concentration of a given time 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 II, plus those from the base metal and coating, ETC. as noted above.

Reasonable expected fume constituents of these products would include: primarily complex oxides of iron and silicon; secondarily complex oxides of manganese and tungsten.

Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc.

One recommended way to determine the composition and quantity of fumes and gases to which workers are exposed is to take an air sample from inside the welder's helmet if worn or in the worker's breathing zone. See AWS F1.1 and AWS F 1.2-1985, available from the American Welding Society, P.O. Box 351040, Miami, FL 33135.

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Section VI – Health Hazard Data

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

- **Fumes and gases** – can be dangerous to your health. Common entry is by inhalation.
- **Short Term (Acute)** – over exposure to welding fumes may result in discomfort such as dizziness, nausea, or dryness or irritation of the nose, throat, or eyes.
- **Long Term (Chronic)** – Over exposure to welding fumes can lead to Siderosis (iron deposits in the lung) and affect pulmonary function.

Long term over exposure to manganese compounds may affect the central nervous system. Symptoms include muscular weakness and tremors similar to Parkinson's disease. Behavioral changes and changes in handwriting may appear. Employees exposed to manganese compounds should get quarterly medical examinations for early detection of manganism.

Shielding gases such as: argon, helium, and carbon dioxide are asphyxiates and adequate ventilation must be provided.

- **Threshold Limit Values** – The ACGIH 1985-86 recommended limit for welding fume not otherwise classified (NOC) is 5 mg/m³. TLV-TWA's should be used as a guide in the control of health hazards and not as fine lines between safe and dangerous concentrations. See Section V for specific fume constituents which may modify this TLV-TWA.
- **Arc Rays** – can injure eyes and burn skin.
- **Heat Rays** – (Infrared radiation from flame or hot metal) can injure eyes.
- **Electrical Shock** – can kill.
- **Noise** – can damage hearing.
- **Carcinogenicity** – Not Applicable
- **Emergency and First Aid procedures** – call for medical aid. Employ first aid techniques recommended by the American Red Cross.

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Section VII – Precautions for Safe Handling and Use / Application Control Measures

Read and understand the manufacturer's instructions and the precautionary label on the product. See American National Standard Z49.1, Safety in Welding and Cutting published by the American Welding Society, PO Box 351010, Miami, FL 33135 and OSHA Publication 2206 (29CFR1910), US Government Printing Office, Washington, D.C., 20402 for more details on the following:

Ventilation – Use enough ventilation, local exhaust at the arc, or both, to keep the fumes and gases below TLV's in the worker's breathing zone and general area. Train the welder to keep his head out of the fumes.

Respiratory Protection – Use respirable fume respirator or air supplied respirator when welding in confined space or where local exhaust or ventilation does not keep exposure below TLV.

Eye Protection – Wear helmet or use face shield with filter lens. As a rule of thumb, start with a shade that is too dark to see the weld zone. Provide protective screens and flash goggles, if necessary to shield others.

Protective Clothing – Wear head, hand and body protection which help to prevent injury from radiation and heat. (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 substantial clothing.

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.

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