

MATERIAL SAFETY DATA SHEET

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. STANDARD SHOULD BE CONSULTED FOR SPECIFIC REQUIREMENTS.

SECTION I (IDENTIFICATION)

**MANUFACTURER/
SUPPLIERS NAME:** **MESSER – MG Welding Products** **TELEPHONE NUMBER:**
N94 W14355 Garwin Mace Drive 262-532-4677
Menomonee Falls, WI 53051 USA

PRODUCT NAME: **MG 460 Cadmium Free**

PRODUCT CLASSIFICATION: **Solder**

SECTION II (HAZARDOUS INGREDIENTS/IDENTITY INFORMATION)

IMPORTANT: This section covers the materials from which these products are manufactured. The fumes and gases produced during normal use of these products are covered in Section V. The term "Hazardous" in "Hazardous Ingredients" should not only be interpreted as a term required and defined in OSHA Hazard Communication Standard (29 CFR Part 1910.1200), but also as defined by other regulatory agencies. The chemicals or compounds subject to reporting under Title III, in Section 313, of the Superfund Amendments and Reauthorization Act (SARA) are marked by the symbol #.

WARNING: This product contains or produces a chemical known to the State of California to cause birth defects (or other reproductive harm) and cancer. (California Health & Safety Code 25249.5 et seq.)

INGREDIENTS	CAS	Exposure Limit (mg/m³)		Percent Ingredients (by weight)
	NUMBER	OSHA PEL	ACGIH-TLV	
Tin	7440-31-5	2	2	80 – 90
Zinc #	7440-66-6	5 (as fume)	Not listed	10 – 20

SECTION III (PHYSICAL DATA) – silver metal, odorless solder**SECTION IV (FIRE AND EXPLOSION HAZARD DATA)**

Non-Flammable: Welding arc and sparks can ignite combustibles. Refer to American National Standard Z49.1 for fire prevention during welding. These products as shipped are non-hazardous, nonflammable, non-explosive, and non-reactive. Extinguishing media: CO₂ or dry chemical extinguisher. Do NOT use water on molten metal. Large fires may be flooded with water from a distance. **SPECIAL FIRE FIGHTING PROCEDURES:** Use NIOSH / MSHA – approved self-contained breathing apparatus and full protective clothing if involved in fire. **UNUSAL FIRE AND EXPLOSION HAZARDS:** Finely divided dust may form explosive mixture with air. Never drop water or liquids in molten metal solder. Do not plunge damp or wet solder/pieces into molten metal solder. Rating under National Fire Protection 704: Health, 2; Flammability, 0; Reactivity, 0.

SECTION V (REACTIVITY DATA)

Welding fumes cannot be classified simply. The composition and quantity of both are dependent upon the metal being soldered, the process, procedure, and the solder 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 soldered (such as paint, plating, or galvanizing), the number of welders and the volume of the work area, the quality and the amount of ventilation, 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 activities).

When the solder is consumed, fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section II. Fume and decomposition products, not the ingredients in the wire, are important. Decomposition products include those originating from the volatilization, reaction, or oxidation of materials in Section II, plus those from the base metal, etc., as noted above. These components are virtually always present as complex oxides and not as metals (Characterization of Arc Welding Fume: American Welding Society). Reasonably expected fume constituents of the fume could include complex oxides of zinc and tin. The table on page 2 lists reasonably expected fumes that may be generated:

Stability: stable **Conditions to avoid:** none
Incompatibility (materials to avoid): strong acids, strong alkalis
Hazardous Decomposition Products: none
Hazardous Polymerization will NOT occur.

<u>SUBSTANCE</u>	<u>CAS</u>	<u>Exposure Limit (mg/m³)</u>	
	<u>NUMBER</u>	<u>OSHA PEL</u>	<u>ACGIH-TLV</u>
Zinc oxide # (fume)	1314-13-2	5	Not listed

Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may also be formed by radiation from the arc. **MONITOR FUME LEVELS.** One recommended way to determine the composition and quantity of fumes and gas 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, F1.2, F1.3, F1.4, and F1.5, available from the "American Welding Society," 550 N.W. LeJeune Road, Miami, FL 33126).

SECTION VI (HEALTH HAZARD DATA)

Threshold Limit Value: The ACGIH recommended general limit for welding fume NOS (not otherwise specified) is 5 mg/m³. The ACGIH 1999 preface states: "The TLV-TWA should be used as guides in the control of health hazards and should not be used as firm lines between safe and dangerous concentrations." See Section V for specific fume constituents that may modify the TLV.

EFFECTS OF OVEREXPOSURE - soldering may create one or more of the following health hazards:

FUMES AND GASES can be dangerous to your health.

PRIMARY ROUTES OF ENTRY are the respiratory system. Other possible routes are eyes, ingestion, and/or skin contact.

PREEXISTING respiratory or allergic conditions may be aggravated in some individuals (i.e. asthma, emphysema).

SHORT TERM (ACUTE) OVEREXPOSURE to welding fumes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes. **PRIMARY ROUTE OF ENTRY** is the respiratory system. **INHALATION** may cause respiratory tract and mucous membrane irritation. Symptoms include nasal discharge and nosebleeds, coughing, sore throat and labored breathing. Severe exposure may cause bronchospasm and pulmonary edema. Absorption may cause systemic poisoning similar to that which occurs with ingestion. Excessive inhalations of zinc oxide fumes may cause a flu-like illness called 'metal fume fever' / and may produce symptoms known as "zinc shakes". Typically metal fume fever begins four to twelve hours after sufficient exposure to freshly formed fumes. First symptoms are a metallic taste, dryness, and irritation of the throat. Cough and shortness of breath may occur along with a headache, fatigue, nausea, vomiting, diarrhea, and painful spasms of the limbs. These flu like symptoms usually cease when the individual is removed from the source.

See Section VII for precautions.

EMERGENCY & FIRST AID PROCEDURES: Call for medical aid. Employ first aid techniques recommended by The American Red Cross.

INHALATION: Remove to fresh air. If breathing is difficult, administer oxygen. If not breathing, begin artificial respiration.

If no detectable pulse, begin Cardiopulmonary Resuscitation. (CPR). Call for medical aid.

SKIN: Wash affected area with soap and water. If rash develops, see a physician.

EYES: Flush with a large amount of fresh water for at least 15 minutes. Get medical attention.

INGESTION: Drink large quantities of water – induce vomiting. Seek medical attention.

CARCINOGENICITY

WELDING FUMES (not otherwise specified) are considered to be carcinogenic defined with no further categorization by NIOSH and IARC.

SECTION VII (PRECAUTION FOR SAFE HANDLING AND USE/APPLICABLE CONTROL MEASURES)

Read and understand the manufacturer's instructions and precautionary label on this product.

See American National Standard Z49.1, Safety in Welding and Cutting, published by the "American Welding Society," 550 N.W. LeJeune Road, Miami, FL 33126 and OSHA Publication 2206 (29CFR 1910), U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954 for more detail on the following:

Ventilation: Use enough ventilation, local exhaust at the arc, or both, to keep the fumes and gases below the TLV's in the workers breathing zone and the general area. Train the welder to keep his head out of the fumes. Monitor fume levels and do not exceed permissible exposure limits or values. Keep exposure as low as possible.

Respiratory Protection: Use NIOSH approved breathing apparatus or air supplied respirator when soldering in a confined space or where local exhaust or ventilation does not keep exposure below the TLV's.

Eye Protection: Wear approved safety glasses or welding goggles appropriate to the procedure.

Protective Clothing: Wear head, hand, and body protection which help to prevent injury from sparks and flames. See ANSI Z49.1. At a minimum, this includes gloves and a protective safety goggles or glasses.

Waste: Dispose of any grinding dust and waste residues in accordance with EPA or local regulations. Plastic containers and cardboard packaging can be recycled. Solder can be recycled. Vacuuming is recommended for accumulated metal dust from saw and grind operations.

Storage: Keep material sealed and dry before use. Keep remaining product sealed and dry.

Other precaution / special handling: wet or moist ingot(s) WILL present an explosion hazard when submerged in molten solder. Avoid fire risks – ALWAYS preheat ingot before charging into furnace.

SUPPLEMENTAL INFORMATION

IARC: International Agency for the Research on Cancer

ACGIH: American Conference of Governmental Industrial Hygienists

NIOSH: National Institute for Occupational Safety and Health

NTP: National Toxicology Program

PEL: Permissible Exposure Limit

OSHA: U.S. Occupational Safety and Health Administration

OSHA TLV: Threshold Limit Value

CAS: Chemical Abstracts Service Registry Number

Exposure limits are subject to change. Contact ACGIH, OSHA, NIOSH, and IARC for current values.

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