

**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**  
N94 W14355 Garwin Mace Drive  
Menomonee Falls, WI 53051 USA

**TELEPHONE NUMBER:**

262-532-4677

**PRODUCT NAME:****MG 400 and MG 405****PRODUCT CLASSIFICATION:****Covered Electrode for Shielded Metal Arc Welding (SMAW)****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.)

<b>INGREDIENTS</b>	<b>CAS NUMBER</b>	<b>Exposure Limit (mg/m<sup>3</sup>)</b>		<b>Percent Ingredients (by weight)</b>	
		<b>OSHA PEL</b>	<b>ACGIH-TLV</b>	<b>MG 400</b>	<b>MG 405</b>
Aluminum #	7429-90-5	5	5	40 – 70	40 – 70
Potassium Chloride	7447-40-7	Not listed	Not listed	10 – 30	10 – 30
Sodium Chloride	7647-14-5	Not listed	Not listed	10 – 30	10 – 30
Lithium Hexafluoroaluminate	13821-20-0	2.5 (as F)	2.5 (as F)	5 – 10	5 – 10
Silicon	7440-21-3	5	10	3 – 7	7 – 13
Aluminum Fluoride	7784-18-1	2.5 (as F)	2.5 (as F)	1 – 5	1 – 5
Lithium Fluoride	7789-24-4	2.5 (as F)	2.5 (as F)	1 – 5	1 – 5
Potassium Hexafluoroaluminate	13775-52-5	2.5 (as F)	2.5 (as F)	1 – 5	1 – 5
Sodium Hexafluoroaluminate	15096-52-3	2.5 (as F)	2.5 (as F)	1 – 5	1 – 5

**SECTION III (PHYSICAL DATA) - Wire with a flux coating.****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.

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 welded, the process, procedure, and the 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 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 electrode 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 electrode, are important. Decomposition products include those originating from the volatilization, reaction, or oxidation of materials in Section II, plus those from the base metal and coating, 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 fluorides and complex oxides of aluminum.

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).

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#### SECTION VI (HEALTH HAZARD DATA)

**Threshold Limit Value:** The ACGIH recommended general limit for welding fume NOS (not otherwise specified) is 5 mg/m<sup>3</sup>. 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** - Electric arc welding 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 dizziness, nausea, or dryness or irritation of nose, throat, or eyes. **FLUORIDES** - Fluoride compounds produced may cause eye and skin burns, pulmonary edema bronchitis.

**LONG TERM (CHRONIC) OVEREXPOSURE** - **PRIMARY ROUTE OF ENTRY** is the respiratory system. **FLUORIDES** - Overexposure to fluorides can cause serious bone erosion. **WELDING FUMES** - Welding fumes (not otherwise classified) are considered to be carcinogenic defined with no further categorization by NIOSH. **ARC RAYS** can injure eyes. **ELECTRIC SHOCK** can kill. See Section VII.

**ARC RAYS** can injure eyes and burn skin. *SKIN CANCER HAS BEEN REPORTED.*

**ELECTRIC SHOCK** can kill! **IN CASE OF ELECTRICAL SHOCK:** turn off power and follow recommended treatment. Call a physician. 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:** Seek medical attention.

#### **CARCINOGENICITY**

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

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#### 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 respirable fume respirator or air supplied respirator when welding in a confined space or where local exhaust or ventilation does not keep exposure below the TLV's.

**Eye Protection:** Wear a helmet or face shield with a filter lens of shade 12 or darker. Provide screens and flash goggles to shield others.

**Protective Clothing:** Wear head, hand, and body protection which help to prevent injury from radiation, sparks, and electrical shock. See ANSI Z49.1. At a minimum, this includes welders' gloves and a protective face shield and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing. Train the welder not to touch live electrical parts and to insulate himself (or herself) from work and ground, especially if clothing and gloves are wet.

**Waste:** Dispose of any grinding dust and waste residues in accordance with EPA or local regulations. Plastic containers and cardboard packaging can be recycled.

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

**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

All ingredients are listed on the TSCA Inventory List.

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

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