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 460 LF (FORMERLY MG 840)**

PRODUCT CLASSIFICATION: **Aluminum Brazing Flux**

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.)

	CAS	Exposure Limit (mg/m^3)		
INGREDIENTS	**NUMBER**	**OSHA PEL**	**ACGIH-TLV**	**HAZARD**
Triethanolamine	102-71-6	Not listed	5	ACGIH
Aminoethylethanolamine	111-41-1	Not listed	Not listed	ORM-B
Ammonia Fluoborate	13826-83-0	2.5 (as F)	2.5 (as F), 10 as B_2O_3	ORM-B
Zinc Oxide # < 10%	1314-13-2	5	2	ACGIH
Tin < 5%	7440-31-5	2	2	ACGIH
Zinc as Zn < 5%	7440-66-6	Not listed	Not listed	ACGIH

CAUSES SKIN AND EYE BURNS! HARMFUL IF INHALED OR ABSORBED THROUGH THE SKIN! SEE SECTION VI.

Remaining ingredients are classified and claimed as trade secret status.

SECTION III (PHYSICAL DATA)

Specific Gravity: 1.38 Solubility in Water: 100% Appearance & Odor: Viscous amber liquid with a strong ammonia odor.

SECTION IV (FIRE AND EXPLOSION HAZARD DATA)

Flash Point TCC F: 275 **Flammable Limits in Air (% by volume-estimated)**: Lower: 1.6 Upper 10.0
Extinguishing Media: Water spray, alcohol foam, CO_2.
Special Fire Fighting Procedures: Addition of water will reduce burning rate.
Unusual Fire and Explosion Hazards: Use NIOSH approved apparatus. Thermal decomposition may produce NO_2 fumes. Refer to American National Standard Z49.1 for fire prevention during welding.
Rating under National Fire Protection 704: Health - 2; Flammability - 0; Reactivity - 1.

SECTION V (REACTIVITY DATA)

STABILITY: Stable **CONDITIONS TO AVOID**: None
INCOMPATIBILITY (conditions to avoid): cyanides, sulfides, strong oxidants.
HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS: Ammonia, hydrogen fluoride, and boron triffluoride gases.
HAZARDOUS POLYMERIZATION: Will not occur.
Soldering fumes cannot be classified simply. The composition and quantity of both are dependent upon the metal being soldered, the process, procedure, and filler material 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 workers and volume of the work area, the quality and amount of ventilation, position of workers' head with respect to the fume plume, and the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities).

When the material is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section II. Fume and gas decomposition products, not the ingredients in the flux, are important. Decomposition products include those originating from the volatilization, reaction, or oxidation of the materials shown in Section II plus those from the base metal, 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 complex oxides of Boron Oxide, which are hazardous. Fluorides and oxides of zinc and tin, may also be present.

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: OSHA PEL has not been established for this mixture (15 mg/m³ for B_2O_3) and 1.8mg fluoride fumes per cu/m when heated. 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**. **TARGET ORGAN STATEMENT:** Causes skin and eye burns. Harmful if inhaled or absorbed through the skin.

Effects of Overexposure: FUMES AND GASES can be dangerous to your health. **PRIMARY ROUTES OF ENTRY** are the respiratory system, eyes, and/or skin. PREEXISTING respiratory or allergic conditions may be aggravated in some individuals. **SHORT TERM (ACUTE) OVEREXPOSURE** to fumes may result in discomfort such as dizziness, nausea, or dryness or irritation of nose, throat, or eyes. **SWALLOWING:** May be fatal. Can cause damage to the digestive system. Shock, vasomotor depression, and poisoning. **SKIN** ABSORPTION: None currently known. **INHALATION:** Irritation to respiratory system. Ammonia vapors may damage lungs. **EYE CONTACT:** Irritation to eyes, tearing, and burn of eye surfaces. **FLUORIDES:** Overexposure to fluorides can cause serious bone erosion, osseous fluorosis, increased radiographic density of the bones, and mottling of teeth. Exposure to extremely high levels of fluorides can cause abdominal pain, diarrhea, muscular weakness, and convulsions. In extreme cases it can cause loss of consciousness and death. See Section VII.
Emergency & First Aid Procedures: Call for medical aid. Employ first aid techniques recommended by American Red Cross. **SWALLOWING** - call a physician or your poison control center at once. Advise of Section II. **SKIN** - wash thoroughly with water to remove all residue. If a rash develops, call a physician. **INHALATION** - remove to fresh air. If fumes or vapors are inhaled, call a physician. **EYES** - flush with water for at least 15 minutes to remove all residue. Get medical attention immediately.

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 the 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 worker to keep his head out of the fumes. Maintain air flow away from user to exhaust all dusts and fumes so that the TLV is never exceeded. Keep exposure as low as possible.
Respiratory Protection: Use respirable fume respirator or air supplied respirator when soldering in confined space or where local exhaust or ventilation does not keep exposure below TLV.
Eye Protection: Wear helmet or use face shield and chemical safety goggles.
Protective Clothing: Wear head, hand, and body protection which help to prevent injury from flux (see ANSI Z-49.1). At a minimum, this includes chemical impervious gloves and a protective face shield and may include arm protectors, aprons, hats, shoulder protection, and any other equipment used in soldering operations to protect any contact.
Waste: Dispose of any grinding dust or waste residue in accordance with all federal, state, and local regulations. If material is spilled or released, contain spillage, absorb, sweep up, dispose. Flush area with water to a chemical sewer. EPA WASTE: D002, CORROSIVE.
Storage: Keep material sealed before use. Store at ambient temperature.

SPECIAL PRECAUTIONS: Store flux in dry area at ambient temperature. Do not breathe fumes or vapors. Wash thoroughly after handling to remove all residue. Remove and professionally wash contaminated clothing before reuse.

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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