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 1: PRODUCT AND COMPANY IDENTIFICATION

NAME OF PRODUCT: **MG 104, MG 106**

MANUFACTURER/ SUPPLIER
MESSER – MG WELDING PRODUCTS
N94 W14355 GARWIN MACE DRIVE
MENOMONEE FALLS, WI 53051 USA

TELEPHONE NUMBER (262) 532-4677
FAX NUMBER: (262) 255-5542

MG WELDING WEBSITE: **www.messerwelding.com**

PRODUCT CLASSIFICATION: Brazing Alloy

SECTION 2: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Chemically stable and inert. Does not pose a fire hazard as shipped. **Non-Flammable**: Flames used for brazing 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. In case of fire, Use NIOSH/MSHA self contained breathing apparatus.

ROUTES OF ENTRY: Primary route of entry is the respiratory system. Other possible routes are eyes and/or skin contact.

POTENTIAL HEALTH EFFECTS:

EYES:	Inert foreign body hazard only.
SKIN:	Rashes/irritations due to drying of the skin and/or mechanical abrasion related to skin-to-clothing contact or skin-to-skin contact. Spatter and flames from brazing may cause burns.
INGESTION:	Not an expected route of entry, but if ingested product could cause serious injury.
INHALATION:	Danger of serious damage to health by prolonged exposure through inhalation.

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.).

WARNING: avoid breathing welding fumes and gases; they may dangerous to your health. Always use adequate ventilation and use appropriate personal protection equipment.

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

Although this product does not require a hazard warning label in all countries, we recommend that the safety advice should be observed:

Pictograms: GHS07- GHS08


Boric acid
Alkali fluorosilicates

GHS classification
Hazard categories:
Acute toxicity: Acute Tox. 4
Skin corrosion/irritation: Skin Irrit. 2
Serious eye damage/eye irritation: Eye Irrit. 2
Reproductive toxicity: Repr. 1B

Hazard statements
H302 Harmful if swallowed.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H360FD May damage fertility. May damage the unborn child.
Precautionary statements
P285 In case of inadequate ventilation wear respiratory protection.
P314 Get medical advice/attention if you feel unwell.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P202 Do not handle until all safety precautions have been read and understood.
P260 Do not breathe dust/fume/gas/mist/vapors/spray.
P501 Dispose of contents/container to waste treatment facility in accordance with local and national regulations.

NOTE: Before using this product, contact your doctor to determine if exposure to product or use of this product will aggravate your medical conditions. Spatter and flames from brazing may cause burns and start fires.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

IMPORTANT: This section covers the materials from which these products are manufactured. Any of 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 #.

		Exposure Limit (mg/m³)		
INGREDIENTS	**CAS NO.**	**OSHA PEL**	**ACGIH TLV**	**Percent Ingredients (by Weight)**
Silver #	7440-22-4	0.01	0.1	30 – 60
Copper #	7440-50-8	0.1	0.2	10 – 40
Zinc (as oxide) #	7440-66-6	5	2	10 – 35
Tin	7440-31-5	2	2	1 – 7
Boric Acid	10043-35-3	Not Listed	10	7 – 13
Potassium Bifluoride	7789-29-9	2.5 (as F)	2.5 (as F)	7 – 13
Potassium Tetraborate	1332-77-0	Not Listed	1	7 – 13
Potassium Fluoride	7789-23-3	2.5 (as F)	2.5 (as F)	7 – 13
Potassium Fluoborate	14075-53-7	2.5 (as F)	2.5 (as F)	0.5 – 1.5

CAS / EINECS NUMBER / HAZARD CLASSIFICATION FOR ABOVE INGREDIENTS

INGREDIENTS	CAS NUMBER	EINECS Number	Hazard Classification per ECD 67/548/EEC
Silver #	7440-22-4	231-131-3	No
Copper #	7440-50-8	231-159-6	No
Zinc #	7440-66-6	231-175-3	No (Zn in solid article form, not powder form)
Tin	7440-31-5	231-141-8	No
Boric Acid	10043-35-3	233-139-2	Boric acid C ≥ 5,5 % Repr.Cat. 2; R60-61
Potassium Bifluoride	7789-29-9	232-156-2	1 % ≤ C < 10 % Xn; R22
Potassium Tetraborate	1332-77-0	215-575-5	No
Potassium Fluoride	7789-23-3	232-151-5	T R23/24/25 (article component, not powder form)
Potassium Fluoborate	14075-53-7	237-928-2	No

Exposure limits are subject to change. Contact ACGIH and OSHA for current values. See Section 16 for European Council Directive 67/548/EEC R-phrases

SECTION 4: FIRST AID MEASURES

EMERGENCY & FIRST AID PROCEDURES: Call for medical aid and inform them of the ingredients from Section 3. Employ first aid techniques recommended by The American Red Cross.

EYES: Flush with a large amount of fresh water for at least 15 minutes. Get medical attention.
SKIN: Wash affected area with soap and water to remove dust or particles. If rash develops, see a physician. Get medical attention for irritations that persist.
INGESTION: Seek medical attention immediately.
INHALATION: Remove to fresh air. If breathing is difficult administer oxygen. If breathing has stopped, begin artificial respiration and obtain medical assistance immediately.

GENERAL: Move to fresh air and call for medical aid.

SECTION 5: FIRE FIGHTING MEASURES

Non-Flammable These products as shipped are non-hazardous, nonflammable, non-explosive, and non-reactive. In case of fire, Use NIOSH/MSHA self contained breathing apparatus.

NFPA HAZARD CLASSIFICATION:
Health: 2 Flammability: 0 Reactivity: 0

Other: In case of fire, Use NIOSH/MSHA self contained breathing apparatus.

HMIS HAZARD CLASSIFICATION:
Health: 2 Flammability: 0 Reactivity: 0

Protection: In case of fire, Use NIOSH/MSHA self contained breathing apparatus.

EXTINGUISHING MEDIA: water, dry chemical extinguisher, CO_2

SPECIAL FIRE FIGHTING PROCEDURES: Low pressure extinguisher. In case of fire, Use NIOSH/MSHA self contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

HAZARDOUS DECOMPOSITION PRODUCTS: HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS: Toxic oxides are emitted when heated above the melting point. Emits oxides of boron and potassium when heated to decomposition. HAZARDOUS POLYMERIZATION: Will not occur.

SECTION 6: ACCIDENTAL RELEASE MEASURES

ACCIDENTAL RELEASE MEASURES: Shovel into a suitable container for proper disposal.

PERSONAL PRECAUTIONS: Breathing apparatus (particle filter) if a dust is formed.

ENVIRONMENTAL PRECAUTIONS: See section 12 and 13

SECTION 7: HANDLING AND STORAGE

HANDLING: Avoid exposure to dust, do not ingest and avoid contact with eyes. Some individuals can develop an allergic reaction to certain materials. Do not breathe dust. Do not eat, drink, or smoke when using this product. Wash thoroughly after using this product.

STORAGE: Keep material sealed and dry before use and do not remove product identification label or warning label. After using, keep remaining product sealed and dry and do not remove product identification label or warning label.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION



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

ENGINEERING CONTROLS: Proper ventilation **must** be maintained.

VENTILATION: Use enough ventilation, local exhaust at the work area, or both, to keep the fumes and gases below the TLV's in the workers breathing and the general area. Train the worker to keep his head out of the fumes. Monitor fume levels and do not exceed permissible exposure limits or values.
RESPIRATORY PROTECTION: Do NOT breathe fumes. Use respirable fume respirator or air supplied respirator when brazing in a confined space or where local exhaust or ventilation does not keep exposure below the TLV's.
EYE PROTECTION: Wear appropriate brazing glasses with side shield..
PROTECTIVE CLOTHING: Wear gloves when using or prolonged contact with skin or repeated contact with skin is likely. Wear hand and body protection to prevent injury. See ANSI Z49.1.
OTHER PROTECTIVE EQUIPMENT: Full protective equipment normally used in soldering / brazing operation so as to prevent any contact. Review operations to avoid contact with hazardous gas, liquid, or solid. See also:

29CFR 1910.132 - 29 CFR 1910.140 Personal Protective Equipment
29 CFR 1910.251 - 29 CFR 1910.257 Welding, Cutting and Brazing

WORK HYGIENIC PRACTICES: Professionally wash contaminated clothing before re-use. Food and drink should not be consumed or tobacco products used, nor cosmetics applied in area where metal exposures are possible.

EXPOSURE GUIDELINES: Use industrial hygiene monitoring equipment to ensure that exposure does not exceed applicable national exposure limits.

Brazing fumes cannot be classified simply. The composition and quantity of both are dependent upon the metal being brazed, the process, procedure, and the rod 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 brazed (such as paint, plating, or galvanizing), the volume of the work area, the quality and the amount of ventilation, position of the worker'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 material is consumed, fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section 3. Fume and decomposition products, not the ingredients in the rod, are important. Decomposition products include those originating from the volatilization, reaction, or oxidation of materials in Section 3, 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: complex oxides of copper, silver, and zinc. The table below lists fumes that may be generated:

	CAS	Exposure Limit (mg/m^3)	
SUBSTANCE	**NUMBER**	**OSHA PEL**	**ACGIH-TLV**
Copper # (as Cu)	7440-50-8	0.1 (as fume)	0.2 (as fume)
Silver #	7440-22-4	0.01	0.1
Zinc Oxide fume #	1314-13-2	5	Not listed

Reasonably expected fume constituents would be fluorides (in flux coated brazing rods) and complex oxides of zinc and boron oxide, which are hazardous. Gaseous reaction products may include carbon monoxide and carbon dioxide. **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 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).

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.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance: solid flux coated rod, no odor.
Melting Temperature > 1000 °F (538 °C)
Flash point: n.a.
pH-Value: n.a.
Boiling point: n.a.

SECTION 10: STABILITY AND REACTIVITY

GENERAL: These items are only intended for brazing application.

STABILITY: Product is chemically stable and non-reactive.

INCOMPATIBILITY / CONDITIONS TO AVOID: Temperatures above 225 °C (435 °F). Keep product away from heat and moisture.

MATERIALS TO AVOID: ammonia, nitric acid, ethylene amine, chlorine trifluoride, sulfuric acid, inorganic and organic peroxides, peroxyformic acid, oxalic acid, tartaric acid, 1-bromo-2-propyne, permonosulfuric acid, bromates, chlorates, bromine trifluoride, cupric nitrate, and sulfur.

HAZARDOUS POLYMERIZATION: Will not occur.

REACTIVITY: None.

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS: Thermal decomposition may produce smoke and fumes of: ZnO (zinc) and CuO (copper). Fumes can be dangerous to your health. See Section 11.
In other countries the exposure limits listed in Section 3 may be different and the appropriate country standards should be used.

SECTION 11: TOXICOLOGICAL INFORMATION

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 8 for specific fume constituents that may modify the **TLV**. Brazing/welding vapours and fumes from brazing/welding may cause metal fume fever. Symptoms can appear 4 to 12 hours after. (headache, dizziness, dryness, cough, nausea and fever).

EFFECTS OF OVEREXPOSURE - brazing 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 and/or skin contact.
PREEXISTING respiratory or allergic conditions may be aggravated in some individuals (i.e. asthma, emphysema).

ACUTE TOXICITY: Very toxic by inhalation.
SHORT TERM (ACUTE) OVEREXPOSURE: FUMES AND GASES can be dangerous to your health. Primary routes of entry are the respiratory system, eyes, ingestion, and/or skin. Preexisting respiratory or allergic conditions may be aggravated in some individuals. Individuals with Wilson's Disease are at increased risk of COPPER poisoning. Overexposure to fumes may result in discomfort such as dizziness, nausea, or dryness or irritation of nose, throat, or eyes. **EYE CONTACT** causes irritation and may cause burns. **SKIN CONTACT** may cause irritation and possibly fluoride burns which may not be immediately painful or evident, especially on prolonged contact. This material may be absorbed through the skin resulting in systemic poisoning. Symptoms of poisoning are similar to those that occur with ingestion. **INHALATION** may cause respiratory tract and mucous membrane irritation. Copper and zinc fumes produce **METAL FUME FEVER** which may result in severe tracheobronchitis, pneumonitis, pulmonary edema (throat dryness, cough, headache, vomiting, chest pains, and chills). 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. Copper poisoning can result in hemolytic anemia and kidney, liver, and spleen damage. Excessive inhalation of zinc fumes may produce symptoms known as **ZINC SHAKES**; an acute self limiting condition without recognized complications. Symptoms usually disappear within 24 hours. Symptomatic treatment such as bed rest, possibly aspirin or aspirin-free pain reliever to afford relief from fever and chills. Severe and prolonged overexposure to zinc oxide may cause pulmonary edema and pneumonia. Fumes 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. **FLUORIDES** - Fluoride compounds produced may cause eye and skin burns, and pulmonary edema bronchitis. 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. **SILVER:** Overexposure to silver dusts or fumes may cause a permanent grayish pigmentation of the skin and can cause irritation of the skin and mucous membranes.

LONG TERM (CHRONIC) OVEREXPOSURE is believed by some investigators to affect pulmonary functions. Target organs are eyes, skin, and respiratory system. Excessive **ZINC** intake has been associated with copper deficiency anemia. Prolonged or excessive exposures may result in argyria, a permanent localized blue-grey discoloration of the eye, skin, or mucous membranes. Primary route of entry is the respiratory system. FUMES AND GASES can be dangerous to your health. Primary route of entry is inhalation of fumes. Preexisting respiratory or allergic conditions may be aggravated in some individuals. Overexposure to **FLUORIDES** over years may produce mottling of teeth, embrittlement, and decalcification of bones, and increased calcification of ligaments and vertebrae resulting in spinal stiffness (fluorosis). Prolonged absorption of **BORON COMPOUNDS** may cause mild gastrointestinal irritation, loss of appetite, nausea, and erythematous rash. Dryness of skin and mucous membranes, loss of hair, conjunctivitis, and kidney injury have also been observed. Reproductive effects have been observed in laboratory animals. Primary route of entry is the respiratory system. **SILVER:** Chronic exposure via inhalation may cause argyria.

Avoid direct inhalation of fumes during heating and use. Monitor fume levels.

SECTION 12: ECOLOGICAL INFORMATION

MATERIAL: Welding consumables and materials can degrade into the components used to manufacture the product. Avoid exposure to conditions that could lead to accumulation in soils and groundwater.

CONTAMINATED PACKAGING: Empty containers should be taken for local recycling, recovery, or waste disposal. Metals may be recycled.

SECTION 13: DISPOSAL CONSIDERATION

WASTE DISPOSAL METHOD: Dispose of any rod and waste residues in accordance with EPA or local regulations.

Review U.S. Federal Hazardous Waste Regulations §40 CFR261 to determine if this is hazardous in USA. Please be advised that state and local requirements, or other country requirements, for waste disposal may be more restrictive or otherwise different than U.S. Federal regulations. It is not possible to give this product a waste code number according to the European waste catalogue because only the intended use of the user consents the assignment of a specific code number.

SECTION 14: TRANSPORTATION INFORMATION

DOMESTIC TRANSPORT REGULATIONS (USA): DOT - not regulated.

DOMESTIC TRANSPORT REGULATIONS (CANADA): TDG - not regulated.

DOMESTIC TRANSPORT REGULATIONS (MEXICO): MEX - not regulated.

INTERNATIONAL TRANSPORT REGULATIONS:
ICAO – not regulated
IATA – not regulated
IMDG / IMO – not regulated

OTHER AGENCIES: No international regulations or restrictions are applicable.

Handle with care to avoid damaging the product. Do not remove product identification label or warning label. Keep material away from heat.

SECTION 15: REGULATORY INFORMATION

Read and understand the manufacturer's Safety Data Sheet before handling or disposing of 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 information. Before using this product, understand and your employer's safety practices.

U.S. EPA TSCA (TOXIC SUBSTANCE CONTROL ACT): All constituents of these products are on the TSCA inventory list or are excluded from listing.

Spills or releases resulting in the loss of any ingredient at or above its RQ require immediate notification to the National Response Center and to our Local Emergency Planning Committee.

EPCRA/SARA TITLE III 313 TOXIC CHEMICALS:
The following metallic components are listed as SARA 313 "TOXIC CHEMICALS" and are potentially subject to annual SARA 313 reporting. See Section 3 if the ingredient is present and for percent.

INGREDIENT NAME	CAS NUMBER	DISCLOSURE THRESHOLD
Chromium & chromium compounds	7440-47-3	1.0 % de minimis concentration
Chromium VI	Not listed	0.1 % de minimis concentration
Barium compounds	Not listed	1.0 % de minimis concentration
Cobalt	7440-48-4	0.1 % de minimis concentration
Copper	7440-50-8	1.0 % de minimis concentration
Manganese	7439-96-5	1.0 % de minimis concentration
Nickel	7440-02-0	0.1 % de minimis concentration
Aluminum (fume or dust)	7429-90-5	1.0 % de minimis concentration
Silver	7440-22-4	1.0 % de minimis concentration

Package Labeling:
Additional advice on labeling
As a finished article the product does not need to be labeled in accordance with EC-directives or respective national laws.

International rules may vary and the appropriate regulations should be followed as defined by the country where the product is used.

SECTION 16: OTHER INFORMATION

This Safety Data Sheet has been revised due to modifications to several paragraphs and/or new format.
Prepared by MG Welding Products, USA.

R-phrases
Boric acid C ≥ 5,5 %
R60 : May impair fertility.
R61 : May cause harm to the unborn child.
S53 : Avoid exposure - obtain special instructions before use.
S45 : In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

Potassium Fluoride
R22 : Harmful if swallowed.

SUPPLEMENTAL INFORMATION – DEFINITIONS:

IARC: International Agency for the Research on Cancer
NIOSH: National Institute for Occupational Safety and Health
OSHA: U.S. Occupational Safety and Health Administration
ACGIH: American Conference of Governmental Industrial Hygienists
CAS: Chemical Abstracts Service Registry Number
EINECS: European Inventory of Existing Chemical Substances
PEL: Permissible Exposure Limit
NTP: National Toxicology Program
TLV: Threshold Limit Value
ECD: European Council Directive
GHS: Globally Harmonized System

The information in this SDS was obtained from sources we believe are reliable. However, this information is provided without any representation or warranty, expressed or implied, regarding accuracy or correctness. The conditions or methods of handling, storage, use, and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons we do not assume responsibility and expressly disclaim liability of loss, damage, or expense arising from it or any way connected with the handling, storage, use, or disposal of the product.