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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:** Alcam, Inc
 501-G La Mesa Dr
 Mount Pleasant, SC 29464

EMERGENCY PHONE:
 (843) 884-9330

PRODUCT NAME: ALCAM 15 TIG
PRODUCT CLASSIFICATION: Tig Rod / Brazing Rod

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 be interpreted as a term required and defined in OSHA Hazard Communication Standard (29 CFR Part 1910.1200). 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.)

<u>INGREDIENTS</u>	<u>CAS NUMBER</u>	<u>EXPOSURE LIMIT (mg/m³)</u>		<u>PERCENT INGREDIENTS (BY WEIGHT)</u>
		<u>OSHA PEL</u>	<u>ACGIH-TLV</u>	
Copper #	7440-50-8	0.1	0.2	94.0 min.
Silicon	7440-21-3	5	10	4.0 max.
Zinc # (as oxide)	7440-66-6	5	2	1.5 max.
Tin	7440-31-5	2	2	1.5 max.
Manganese #	7439-96-5	5 (ceiling)	0.2	1.5 max.
Iron	7439-89-6	10 (as Fe)	5 (as Fe)	0.5 max.

SECTION III (PHYSICAL DATA) - Solid rod for brazing

SECTION IV (FIRE AND EXPLOSION HAZARD DATA)

Nonflammable: Brazing flames can ignite combustibles. Refer to American National Standard Z49.1 for fire prevention during brazing/welding. Rating under National Fire Protection 704: Health - 1; Flammability - 0; Reactivity - 0.

SECTION V (REACTIVITY DATA)

Welding fumes cannot be classified simply. The composition and quantity are dependent upon the metal being brazed, 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 brazed (such as paint, plating or galvanizing), the number of workers and volume of the work area, the quality and amount of ventilation, position of 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 rod 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, 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 and rod, 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 would include fluorides (in flux coated brazing rods) and complex oxides of zinc and boron oxide, which is 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,



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F1.3, F1.4, and F1.5, available from the "American Welding Society," 550 N.W. LeJeune Road, Miami, FL 33126). The table on page two lists reasonably expected fumes that may be generated:

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<u>Substance</u>	<u>CAS No.</u>	<u>EXPOSURE LIMIT (mg/m³)</u>	
		<u>OSHA PEL</u>	<u>ACGIH TLV</u>
Iron Oxide	1309-37-1	5 (as Fe)	10 (as Fe)
Nitric Oxide	10102-43-9	30	31
Manganese fume #	7439-96-5	0.2 (NIC 0.03)	5

NIC = notice of intended change

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.

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).

Effects of Overexposure:

SHORT-TERM (ACUTE) OVEREXPOSURE to fumes may result in discomfort such as dizziness, nausea, or dryness or irritation of nose, throat, or eyes. **IRON, IRON OXIDE, MANGANESE** - Remove from overexposure and apply artificial respiration if needed.

COPPER: Individuals with Wilson's Disease are at increased risk of COPPER poisoning. Acute (short-term) exposure may cause respiratory tract irritation, fever, muscle ache, chills, weakness, cough, and a metallic taste. **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. Inhalations of fumes may cause a flu-like illness called 'metal fume fever'. 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.

LONG-TERM (CHRONIC) OVEREXPOSURE - Prolonged or excessive exposures may result in argyria, a permanent localized blue-gray discoloration of the eye, skin, or mucous membranes. Primary route of entry is the 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.

IRON, IRON OXIDE - Long term overexposure to iron fumes can cause deposits of iron in the lungs (siderosis). Lungs will clear in time when exposure to iron and its compounds cease. **MANGANESE** - Long term exposure may lead to "Manganism." Central nervous system is affected and symptoms include muscular weakness, impaired speech, impaired movement, and tremors. Exposed workers should get quarterly medical examinations for manganism. Bronchitis and some lung fibrosis have been reported. Chronic (long-term) exposure to **COPPER** may damage the liver, kidney, spleen, pancreas, and brain. Copper poisoning can result in hemolytic anemia and kidney, liver, and spleen damage. Ingestion of large amounts may be fatal.

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:

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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. Keep exposure as low as possible.

Respiratory Protection: Use respirable fume respirator or air supplied respirator when brazing/welding 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 when brazing. Wear a helmet or face shield with a filter lens of shade 12 or darker when welding. Provide screens and flash goggles to shield others.

Protective Clothing: Wear head, hand, and body protection which help to prevent injury. When welding, 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 or waste residue in accordance with all federal, state, and local regulations. Plastic containers and cardboard packaging can be recycled. Metals may 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

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

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