AURALLOY™ RESEARCH

MATERIAL SAFETY DATA SHEET

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FOR CHEMICAL EMERGENCY
Call Chemtrec day/night:
1-800-424-9300

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Auralloy 800 (High Tensile Strength Brazing Rod)
AURALLOY PART NUMBER: 8755 - 8756
PRODUCT TYPE: Copper Based Brazing Rod, Flux Coated or Bare
CHEMICAL FAMILY: Copper Alloys, Copper, Zinc, Nickel Alloys

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2. COMPOSITION / INFORMATION ON INGREDIENTS

IMPORTANT: This section covers the materials from which the product is manufactured. The fumes and gases produced during normal use of these products are covered in Sections V. The term HAZARDOUS should be interpreted as a term required and defined by Laws, Statures or Regulations, and does not necessarily imply the existence of any hazard when the products are used as directed by the manufacturer.

CHEMICAL NAME	RANGE %	OSHA PEL - 8 hour TWA	ACGIH TLV - 8 hour TWA	CAS #
Borax Glass, Anydrous	0 - 9	10 mg/m^3***	1 mg/m^3	1303-96-4
Boric Acid	0 - 9	10 mg/m^3	10 mg/m^3	10043-35-3
Copper**	44 - 97	0.1 mg/m^3 fume, 1 mg/m^3 dust and mists	0.2 mg/m^3 fume, 1 mg/m^3 dust and mists	7440-50-8
Iron*	0 - 1.5	10 mg/m^3 fume	5 mg/m^3 fume	7439-89-6
Manganese**	0 - 1.5	10 mg/m^3	1 mg/m^3 fume, 5 mg/m^3 dust	7439-96-5
Nickel	0 - 13	1 mg/m^3	1 mg/m^3	7440-02-0
Silicon	0 - 3.5	15 mg/m^3 total dust, 5 mg/m^3 respirable fraction	10 mg/m^3	7440-21-3
Silver	0 - 0.7	0.01 mg/m^3	0.01 mg/m^3	7440-22-4
Tin	0 - 3	2 mg/m^3	2 mg/m^3	7440-31-5
Zinc*	0 - 45	15 mg/m^3 total dust, 5 mg/m^3 respirable fraction	10 mg/m^3 total dust, 5 mg/m^3 respirable fraction	7440-66-6

*Exposure limits are for the metal oxide which may be released during melting operations.
**Indicates a toxic chemical subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 (SARA) and 40 CFR Part 372.
***Indicated that the chemical has a CAS number for OSHA of 1330-43-4.

3. HAZARDS IDENTIFICATION

Brazing may create one or more of the following health or physical hazards. Fumes and gases can be dangerous to health. Arc rays, flame, and molten metal can injure eyes and skin. Noise can damage hearing. Brazing alloys are frequently used with a fluoride-based flux. Flux fumes should be included in the evaluation of hazards.

ROUTE OF OVEREXPOSURE: The primary route is inhalation. Skin contact, eye contact and ingestion are possible. Absorption by skin is normally insignificant. When these products are used as recommended by the manufacturer and when used with proper ventilation, exposure is likely to remain below hazardous levels.

EFFECTS OF ACUTE (SHORT-TERM) OVEREXPOSURE: Effects of overexposure to fumes, gases and dusts may include irritation of the eyes, lungs, nose and throat. Some toxic gases associated with welding may cause pulmonary edema, asphyxiation and death. The exposure level in Section 2 are relevant to fumes and dusts. Consult the latest NIOSH requirements and American National Standard Z49.1 "Safety in Welding and Cutting".

CHRONIC EXPOSURE to Copper, Zinc and Maganese may cause metal fume fever. Symptoms of metal fume fever include fever, fatigue, dryness of throat, head and body ache, and chill. Chronic exposures may affect the central nervous system leading to emotional disturbances, gait and balance difficulties and paralysis. Overexposure to copper may result in skin and hair discoloration. Nickel has been identified as a potential cancer causing agent. Prolonged exposure to silver may produce a greyish-blue discoloration of the skin. The product will not irritate the skin or eyes in bulk form. Particulates may cause dermatitis due to mechanical irritation. Xx-rays may reveal chronic exposure, but x-rays must also reflect such non-welding factors as smoking, etc.

PREEXISTING CONDITIONS AGGRAVATED BY OVEREXPOSURE: Individuals with allergies or impaired respiratory function may have symptoms worsened by exposure to brazing fumes. However such reaction cannot be predicted due to varieties of fumes and decomposition products.

EXPOSURE LIMITS: For the ingredients listed in Section II: TLV-TWA's should be used as a guide in the control of health hazards and not a recommendation as to what is safe and what may be excessive. When these products are used as recommended by the manufacturer, and when the preventative and common sense measures indicated in this MSDS are followed, overexposure to hazardous substances will not occur.

4. FIRST AID MEASURES

EMERGENCY FIRST AID PROCEDURES:

INHALATION: Remove from exposure to dust or fume if present. Seek medical help if required.

INGESTION: Ingestion of significant amounts of copper alloy is unlikely. Seek medical help if large quantities of product are ingested.

SKIN CONTACT: Wash thoroughly with soap and water. Burns: apply cold, clean compress and call a physician.

EYE CONTACT: Flush with water for at least 15 minutes. Seek medical help if required.

5. FIRE FIGHTING MEASURES

FLASH POINT (METHOD USE): None **FLAMMABLE LIMITS: LEL** None **UEL** None

EXTINGUISHING MEDIA: Only the packaging is flammable. Welding arcs and flames can ignite combustible materials. This product will not burn unless under high temperature as molten metal. Never use water as an extinguishing agent around molten metal. Water will react violently with any molten metal. The alloy is stable, non-hazardous solid at room temperatures. Material may react with acids, bases or oxidizers. Material does not present a significant health hazard under normal handling and storage conditions. See ANZI Z49.1 "Safety in Welding and Cutting" and "Safe Practices" Code: SP, published by the American Welding Society, PO Box 351040, Miami, FL 33135 and NPFA 512 "Cutting and Welding Processes", published by the National Fire Protection Association, Batterymarch Park, Quincy MA 02269 for additional fire prevention and protection information.

6. ACCIDENTIAL RELEASE MEASURES

SPILLS OR LEAKS: No data available

7. HANDLING AND STORAGE

SPECIAL PRECAUTIONS: Read and understand the manufacturer's instructions and the precautionary label on this product. See American National Standard Z-49.1, "Safety in Welding and Cutting," published by the American Welding Society, P.O. Box 31040, Miami Fl 33135 and OSHA Publication 2206 (29 CFR 1910), U.S. Goverment Printing Office, Washington D.C. 20402 for more details.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

PRECAUTIONS TO BE TAKEN: Read and understand the manufacturer's instructions and the precautionary label on this product. See American National Standard Z-49.1, "Safety in Welding and Cutting," published by the American Welding Society, P.O. Box 31040, Miami Fl 33135 and OSHA Publication 2206 (29 CFR 1910), U.S. Goverment Printing Office, Washington D.C. 20402 for more information on the following:

RESPIRATORY: Use a respirable fume respirator or air supplied respirator when welding in confined spaces or where the local exhaust or ventilation is insufficient.

SKIN PROTECTION: Wear head, hand and body protection which help to prevent injury from radiation, sparks, molten metal and electrical shock. See ANSI Z-49.1. At a minimum, this includes welder's gloves, a protective face shield, a fire retardant apron, arm protectors, hats, shoulder protection. Thick, fire resistant clothing should protect all parts of the body. Train the welder in safety procedures.

EYE PROTECTION: Wear helmet or use face shield with filter lens. As a rule of thumb, start with a shade which is too dark to see the weld zone. Then go to a next lighter shade which gives sufficient view of the weld zone. Provide protective screens and flash goggles to protect others in the work area.

VENTILATION: Use enough ventilation; local exhaust of the welding area, or both to keep the fumes and gases below the TLV's in the worker's breathing zone and the general area. Train the welder to keep his head away from the fumes.

9. PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT: N/A
VAPOR DENSITY (AIR = 1): N/A
SOLUBILITY IN WATER: Slightly soluble
PERCENT VOLATILE BY VOLUME: N/A **VOLATILE WEIGHT:** N/A
APPEARANCE & ODOR: Bare or flux coated roads, no odor

PRODUCT WEIGHT: N/D
SPECIFIC GRAVITY (H_2O = 1): N/D
MELTING POINT: N/D **pH:** N/A
EVAPORATION RATE: N/A
FORM: Solid **VOLATILE COMPONENTS:** N/A

10. STABILITY AND REACTIVITY

STABILITY: Stable. Polymerization will not occur **INCOMPATIBILITY PRODUCTS:** None currently known.

HAZARDOUS DECOMPOSITION PRODUCTS: Brazing fumes and gases are diverse. The composition and quantity of these fumes and gases are dependent on the material being worked, the process, procedures, and consumables used. Other factors influencing the fumes and gases are coatings on the material being worked (paint, galvanizing, plating), the number of operations and the volume of the work area, the ventilation, the position of the worker's head with regard to the fume plume, the presence of contaminants in the atmosphere (chlorinated hydrocarbon vapors from cleaning or painting activities). When the materials are consumed, the fume and gas decomposition products are different from the chemicals listed in Section II. Decomposition products of normal operations include products of the volatilization of the ingredients, plus the other items noted above.

REASONABLY EXPECTED DECOMPOSITION PRODUCTS from normal use include a complex of oxides and fluorides of the materials listed in Section II as well as carbon monoxide, carbon dioxide, and nitrogen oxides. (Refer to "Characterization of Arc Welding Fume" available for the American Welding Society). The TLV limit for manganese (0.2 mg/m^3) may be reached before the general limit for welding fumes of 5 mg/m^3 is reached. Monitor fumes for manganese levels. The only way to truly identify the decomposition products is by sampling and analysis. An appropriate sample may be obtained from inside the worker's helmet, if worn, or from the worker's breathing zone. See ANSI/AWS F1.1 "Method for Sampling Airborne Particles Generated by Welding and Allied Processes," available from the American Welding Society.

11. TOXICOLOGICAL INFORMATION

EYE: No data available. **SKIN:** No data available. **INGESTION:** No data available. **INHALATION:** No data available.
CARCINOGENIC ASSESSMENT: **NTP:** Not Listed **IARC MONOGRAPHS:** Not Listed **OSHA REGULATED:** Not Regulated
TERATOLOGY: No data available. **REPRODUCTION:** No data available. **MUTAGENICITY:** No data available.

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION: No data available. **CHEMICAL FATE INFORMATION:** No data available.

13. DISPOSAL CONSIDERATIONS

RCRA HAZARD CLASS: No data available

WASTE DISPOSAL METHOD: Prevent waste from contaminating surrounding environment. Discard any product, residue, disposable container or liner in an environmentally acceptable manner, in full compliance with Federal, State and Local regulations.

SPECIAL PRECAUTIONS AND COMMENTS: Wet material should never be charged into a molten bath. Wash hands thoroughly after use, especially before eating.

14. TRANSPORT INFORMATION

TRANSPORTATION REQUIREMENTS (49CFR172-101) **D.O.T. CLASSIFICATION:** Not regulated **D.O.T. SHIPPING NAME:** Not regulated

15. REGULATORY INFORMATION

EXPOSURE LIMITS: No data available.

16. OTHER INFORMATION

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in this MSDS. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in his use of the material.