

## MATERIAL SAFETY DATA SHEET

CODE: M/L 1137

This Material Safety Data Sheet complies with  
The U.S. OSHA Hazard Communication  
Standard, 29 CFR 1910.1200

### PRODUCT: SILVER-COPPER-ZINC-TIN BRAZING ALLOY



TRADE NAME PRODUCTS: LENOX® Brazing Wire; BAg-5 45%; BAg-7 56%

NFPA/HMIS HAZARD CODES: HEALTH: 2/2\* FIRE: 0/0 REACTIVITY: 0/0 SPECIAL: N/A

0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

### SECTION I CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**COMMON NAME:** Silver-Copper-Zinc-Tin Brazing Alloy **ISSUE DATE:** October, 2004  
**CHEMICAL NAME:** Silver-Copper-Zinc-Tin Brazing Alloy  
**FORMULA:** Ag-Cu-Zn-Sn  
**PRODUCT CAS NO.:** Chemical Mixture  
**PRODUCT USE:** Welding/Brazing/Soldering  
**SUPPLIER:** LENOX®  
**ADDRESS:** 1690 Lowery Street, Winston-Salem, NC 27101  
**PHONE:** (336) 777-8600

### SECTION II COMPOSITION/INFORMATION ON INGREDIENTS

<u>INGREDIENT</u>	<u>CAS NO.</u>	<u>WEIGHT %</u>
Silver	7440-22-4	20-70
Copper	7440-22-4	3-45
Zinc (as oxide)	7440-66-6	1-35
Tin	7440-31-5	0.5-30

**NOTE:** The percentage by weight values reported for the ingredients in this product represent approximate formulation values.

**NOTE:** See Section VIII for the Exposure Limits and Section XI for the Toxicological Information.

### SECTION III HAZARDOUS INFORMATION

**EMERGENCY OVERVIEW:** Metallic wire, rod or strip. Odorless. Flash point: not applicable. Overexposure may cause kidney and liver damage and blood disorders. May cause skin and eye irritation. May cause severe respiratory tract irritation. Overexposure to freshly formed fumes may cause flu-like illness called "metal fume fever". Harmful if swallowed. Causes gastrointestinal irritation, abdominal pain, nausea, vomiting and diarrhea. Not a fire or explosion hazard in solid form. Finely divided dust may ignite and burn rapidly when mixed with air in the proper proportions. Toxic metal fumes may be released in a fire situation.

#### ROUTES OF ENTRY:

**EYES:** Yes  
**SKIN:** Yes  
**INHALATION:** Yes  
**INGESTION:** Yes

**POTENTIAL HEALTH EFFECTS:** Eye contact may cause irritation. Skin contact may cause irritation. Inhalation causes irritation and may cause systemic toxicity. Ingestion may cause **Copper** poisoning. Short-term overexposure may cause a flu-like illness called "metal fume fever". Typically begins four to twelve hours after sufficient exposure to freshly formed fumes. The first symptoms are a metallic taste, dryness and irritation of the throat. Cough and shortness of breath may occur along with headache, fatigue, nausea, vomiting, muscle and joint pain, fever and chills. The syndrome runs its course in 24-48 hours. Ingestion is harmful, and may cause abdominal pain, nausea, vomiting and diarrhea. **Copper** poisoning can result in hemolytic anemia and kidney, liver and spleen damage. Overexposure to **Copper** poisoning, resulting in hemolytic anemia and liver, kidney and spleen damage. The absorption of **Silver** compounds into the circulation and the subsequent deposition of reduced Silver in various tissues of the body may result in the production of a generalized grayish pigmentation of the skin and mucous membrane (argyria). There are no systemic effects or symptoms and no physical disability. Once deposited, there is no known means by which this silver can be eliminated; the pigmentation is permanent. Excessive **Zinc** intake has been associated with **Copper** deficiency anemia.

**NOTE:** Health effects only apply if dust or fume is formed.

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**CARCINOGENICITY:** Not listed by NTP, IARC or OSHA. Refer to Potential Health Effects.

**MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:**

May adversely affect existing medical conditions, such as eye, skin, respiratory, blood, liver and/or kidney ailments.

Individuals with Wilson's Disease are at increased risk of Copper poisoning.

**NOTE:** See Section VIII for Exposure Limits, Section XI for Toxicological Information and Section XII for Ecological Information.

**SECTION IV FIRST AID MEASURES**

**EYE CONTACT:** Flush eyes with plenty of water. If irritation develops, obtain medical attention.  
**SKIN CONTACT:** Immediately wash skin with soap and plenty of water. If irritation develops, obtain medical attention.  
**INHALATION:** If exposed to excessive levels of metal fumes remove to fresh air and seek immediate medical attention.  
**INGESTION:** If person is conscious and able to swallow, give large amounts of water to dilute. If vomiting occurs, keep head below hips to help prevent aspiration. Get medical attention immediately.

**SECTION V FIRE-FIGHTING MEASURES**

**FLASH POINT:** Not applicable  
**AUTO-IGNITION:** Not applicable  
**LEL:** Not applicable  
**UEL:** Not applicable

<u>HAZARD CLASSIFICATION</u>	<u>HEALTH</u>	<u>FLAMMABLE</u>	<u>REACTIVITY</u>
NFPA	2	0	0
HMS	2*	0	0

\*Indicates the possibility of chronic health effects. See Chronic Health Effects Hazards in Section III for more information.

**EXTINGUISHING MEDIA:**

Use carbon dioxide, chemical foam or dry chemical. Use any means for extinguishing surrounding fire. Do not use water on metal fires.

**SPECIAL FIRE FIGHTING PROCEDURES:**

Wear NIOSH/MSHA approved positive-pressure self-contained breathing apparatus and protective clothing gas specified in 29 CFR 1910.156.

**UNUSUAL FIRE AND EXPLOSION HAZARDS:**

Not a fire or explosion hazard in solid form. Finely divided dust may ignite and burn rapidly when mixed with air in the proper proportions. Toxic metal fumes may be released in a fire situation.

**SECTION VI ACCIDENTAL RELEASE MEASURES**

Contain spillage and scoop up or vacuum. Notification of the National Response Center (800-424-8802) may be required. Refer to EPA, DOT and applicable state and local regulations for current response information.

It is recommended that each user establish a spill prevention, control and countermeasure plan (SPCC). Such plan should include procedures applicable to proper storage, control and cleanup of spills, including reuse or disposal as appropriate (See Section XI: Disposal Considerations).

**NOTE:** In the event of an accidental release of this material, the above procedures should be followed. Additionally proper exposure controls and personal protection equipment should be used (see Section VIII: Exposure Controls/Personal Protection) and disposal of the material should be in accordance with Section XI: Disposal Considerations.

**SECTION VII HANDLING AND STORAGE**

Wash thoroughly after handling. Store in cool, dry location away from incompatible materials. Avoid contact with any dusts, mists or fumes resulting from the use of this product. Do not eat, drink or smoke in work area. Use only with adequate ventilation.

**SECTION VIII EXPOSURE CONTROLS & PERSONAL PROTECTION**

<u>INGREDIENTS</u>	<u>CAS NO.</u>	<u>PEL-OSHA</u>	<u>TLV-ACGIH</u>
Silver	7440-22-4	0.1/MG/M3	0.1/MG/M3
Copper	7440-50-8	0.1 MG.M3 (Fume) 1 MG.M3 (Dust)	0.2 MG.M3 (Fume) 1 MG M3 (Dust)
Zinc as Oxide	7440-66-6	15 MG M3 Total Dust 5 MG M3	5 MG/M3 Fume STEL
Tin	7440-31-5	5 MG M3 (Fume) 2 MG M3	10 MG M3 Total Dust 2 MG M3

**NOTE:** Both OSHA and the ACGIH list welding fumes as having an exposure limit of 5 MG/M3 (total particulate not otherwise classified). However, the ACGIH states that welding fumes must be tested frequently for individual components which are likely to be present to determine whether specific exposure limits are exceeded.

**NOTE:** The Permissible Exposure Limits (PEL's), Threshold Limit Values (TLV's), potential health effects statements and SARA hazard categories may not be applicable as the hazardous ingredients listed are in the solid form. If dust, powder, or fume is generated then these statements will be applicable.

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Unless otherwise noted, all values are reported as 8 hour Time-Weighted Averages (TWA's) and total dust (particulates only). All ACGIH TLV's refer to 29 CFR Part 1910 Air Contaminants: Final Rule, January 19, 1989.

**RESPIRATORY PROTECTION:** A NIOSH/MSHA-approved respirator is recommended if dust is generated.

**VENTILATION:** General or local exhaust ventilation as necessary to control any air contaminants to within their PEL's or TLV's during the use this product.

**PROTECTION EQUIPMENT:** Refer to the ANSI/ASC Z49.1-88 (Safety in Welding and Cutting) published by The American Welding Society for further information of the selection of personal protective equipment. Safety glasses with side shields; gloves; body protection as necessary to prevent skin contact.

**PERSONNEL SAMPLING PROCEDURE:**

- For Silver:** Refer to NIOSH Manual of Analytical Methods (NMAM), 4<sup>th</sup> Edition, Method 7300.
- For Copper (dust & fume):** Refer to NIOSH Manual of Analytical Methods (NMAM), 4<sup>th</sup> Edition, Method 7029.
- For Zinc Oxide:** Refer to NIOSH Manual of Analytical Methods (NMAM), 4<sup>th</sup> Edition, Method 7502.
- For Zinc Compounds:** Refer to NIOSH Manual of Analytical Methods (NMAM), 4<sup>th</sup> Edition, Method 7030.
- For Tin:** Refer to NIOSH Manual of Analytical Methods (NMAM), 4<sup>th</sup> Edition, Method 7300.

**SECTION IX PHYSICAL AND CHEMICAL PROPERTIES**

**BOILING POINT:** Not determined  
**SPECIFIC GRAVITY:** (H<sub>2</sub>O=1):8.70 to 8.50  
**MELTING POINT:** 646.1 °C  
**VAPOR PRESSURE:** (mm Hg) Not applicable  
**VAPOR DENSITY:** (air=1) Not applicable  
**EVAPORATION RATE:** Not applicable  
**% SOLUBILITY IN WATER:** Insoluble  
**APPEARANCE:** Metallic wire, rod or strip  
**ODOR:** Odorless  
**PH:** Not available

**SECTION X STABILITY AND REACTIVITY**

**STABILITY:** Generally considered stable  
**AVOID:** None expected  
**INCOMPATIBILITY:** Strong acids and bases, oxidizing agents, acetylene, ammonia, hydrogen peroxide, chlorine, bismine, iodine, turpentine, magnesium metal, ammonium nitrate, hydrogen sulfide.  
**HAZARDOUS DECOMPOSITION OR BY-PRODUCTS:** Toxic metal oxides are emitted when heated above the melting point. The amount of fume evolved increases as the temperature rises.  
**POLYMERIZATION:** Is not expected to occur.  
**AVOID:** Not applicable

**SECTION XI TOXICOLOGICAL INFORMATION**

<u>CHEMICAL NAME</u>	<u>CAS NO.</u>	<u>WEIGHT %</u>	<u>LC50</u>
Silver	7440-22-4	20-70 (Not available)	Not available
Copper	7440-50-8	3-45 (3.5 mg/kg MOUSE, intraperitoneal)	Not available
Zinc	7440-66-6	1-35 (7,950 mg/kg MOUSE, oral)	2,500 mg/kg MOUSE
Tin	7440-31-5	0.5-30 (Not applicable)	Not applicable

**NOTE:** See Section III, VIII and XII for additional information.

**SECTION XII ECOLOGICAL INFORMATION**

**ECOTOXICITY:** No data available  
**ENVIRONMENTAL FATE:** No data available

**SECTION XIII DISPOSAL CONSIDERATIONS**

US EPA Waste Number: D011

This product contains Silver or Silver compounds and disposal may be regulated under the EPA hazardous waste regulations, waste number D011. Before disposal, this product or mixtures containing this product should be tested for the toxicity characteristics (TC) under the current EPA Waste

Regulations TCLP testing procedures, 40 CFR Part 261 et seq. Disposal/recycling/reclamation requirements will vary by location and type of disposal selected. Consult with state and local regulatory authorities.

**NOTE:** Chemical additions, processing or otherwise altering this material may make the waste management information presented above incomplete, inaccurate or otherwise inappropriate.

As local regulations may vary, all waste must be disposed/recycled/reclaimed in accordance with federal, state, and local environmental control regulations.

#### SECTION XIV TRANSPORT INFORMATION

**INTERNATIONAL:** Not regulated  
**UNITED STATES:** Not regulated  
**EPA WASTE NUMBER:** D011  
**DOT CLASSIFICATION:** Not regulated  
**CANADA:** Not regulated  
**PIN NUMBER:** Not regulated  
**TDG CLASS:** Not regulated  
**EC:**  
**DGL:** Not determined

#### SECTION XV REGULATORY INFORMATION

##### US FEDERAL REGULATIONS:

**TSCA:** Listed in TSCA

##### SARA 311 AND 312 HAZARD CATEGORIES:

Immediate (Acute) Health Hazard: Yes  
Delayed (Chronic) Health Hazard: Yes  
Fire Hazard: No  
Reactivity Hazard: No  
Sudden Release of Pressure: No

##### SARA SECTION 313 NOTIFICATION:

This product contains a toxic chemical (or chemicals) subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

<u>INGREDIENT</u>	<u>CAS NO.</u>	<u>WEIGHT %</u>
Silver	7440-22-4	20-70
Copper	7440-50-8	3-45
Zinc (as oxide)	7440-66-6	1-35

##### OZONE DEPLETING SUBSTANCES (ODs):

This product neither contains nor is manufactured with an ozone depleting substance subject to the labeling requirements of the Clean Air Act Amendments 1190 and 40 CFR Part 82.

**VOLATILE ORGANIC COMPOUNDS (CARB):** Not determined  
**CANADIAN REGULATIONS: DSL/NDSL:** Not determined  
**WHMIS CLASSIFICATION:** Class D Division 2 Subdivision B  
**EUROPEAN REGULATIONS:** Not determined  
**OTHER REGULATIONS:** Not determined  
**EINECS:** Yes  
**MITI:** Yes  
**AICS:** Yes

#### SECTION XVI OTHER INFORMATION

**VOC CONTENT:** None

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