

REC'D APR 24 2000

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Material Safety Data Sheet

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02/03/98

Silver-Copper-Nickel-Zinc Brazing Alloys

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

ALY00010

Lucas-Milhaupt, Inc.
A Handy & Harman Company
5656 South Pennsylvania Avenue
Cudahy, WI 53110 USA

TELEPHONE NUMBER: (414)769-6000

EMERGENCY TELEPHONE NUMBER

Chemtrec (800)424-9300

PRODUCT NAME: Silver-Copper-Nickel-Zinc Brazing Alloys
CHEMICAL FAMILY: Brazing Filler Metal; Silver Solder
CHEMICAL FORMULA: Alloys of silver, copper, nickel, and zinc

The information in this MSDS is applicable to the following products: Alloy 69-207, Braze 403 (32-403), Braze 404 (32-404), Braze 505 (32-505), and Braze 541 (32-541).

WARNING: These products contain a chemical(s) known to the State of California to cause cancer.

2. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT: Copper

CAS NUMBER: 7440-50-8 PERCENT BY WEIGHT: 19 to 60
OSHA PELs: 0.1 mg/m3 TWA (fume) ACGIH TLVs: 0.2 mg/m3 TWA (fume)
1 mg/m3 TWA (dusts and mists) 1 mg/m3 TWA (dusts and mists)

INGREDIENT: Nickel

CAS NUMBER: 7440-02-0 PERCENT BY WEIGHT: 0.5 to 5
OSHA PEL: 1 mg/m3 TWA ACGIH TLV: 1 mg/m3 TWA

INGREDIENT: Silver

CAS NUMBER: 7440-22-4 PERCENT BY WEIGHT: 1.5 to 55
OSHA PEL: 0.01 mg/m3 TWA ACGIH TLV: 0.1 mg/m3 TWA (metal)

INGREDIENT: Zinc

CAS NUMBER: 7440-66-6 PERCENT BY WEIGHT: 4 to 44
OSHA PEL: 5 mg/m3 TWA (as ZnO fume) ACGIH TLVs (as ZnO fume):
5 mg/m3 TWA; 10 mg/m3 STEL

3. HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTS

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3. HAZARDS IDENTIFICATION - Continued
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EYES

Eye contact with these products in finely-divided form may cause irritation, argyria, conjunctivitis, and/or ulceration of the cornea.

SKIN

Skin contact with these products in finely-divided form may cause irritation, argyria, discoloration, contact dermatitis, and/or allergic sensitization among hypersusceptible individuals.

INGESTION

Ingestion of these products in finely-divided forms may cause nausea, vomiting, and gastrointestinal irritation. Long-term chronic ingestion may damage the liver, kidneys, gastrointestinal system, musculoskeletal system, and nervous system.

INHALATION

Inhalation of the components of these products is not known to present a significant risk to health when used according to instructions and with appropriate protective measures (see Section #8). Inhalation of component elements has been reported to cause one or more of the following symptoms and effects upon excessively high or prolonged exposure:

- » COPPER: Acute exposure may cause respiratory tract irritation, fever, muscle ache, chills, cough, weakness, and a metallic taste. Chronic exposure may damage the liver, kidney, spleen, pancreas, and brain.
- » NICKEL: Acute exposure to nickel may cause headache, nausea, vertigo, asthma, and pulmonary edema. Chronic exposure may increase the risk of cancer to the nasopharynx, lungs, prostate, and kidney.
- » SILVER: Chronic exposure may produce argyria, a permanent blue-gray discoloration of the skin, eyes, mucous membranes, and respiratory tract.
- » ZINC: Acute exposure to zinc oxide fume may cause respiratory tract irritation and "metal fume fever", which is characterized by a metallic taste, cough, dry throat, chills, fever, tightness of chest, headache, nausea, shortness of breath, vomiting, and fatigue.

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4. FIRST AID MEASURES
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EYES

Flush affected areas with water for at least fifteen minutes. Seek medical assistance if necessary.

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4. FIRST AID MEASURES - Continued
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SKIN

Remove contaminated clothing. Wash affected area with large quantities of water for at least five minutes. Seek medical assistance if necessary.

INGESTION

If subject is conscious, induce vomiting. If unconscious or convulsive, seek immediate medical assistance.

INHALATION

If signs and symptoms of toxicity are observed, remove subject from area, administer oxygen, and seek medical attention. Keep the subject warm and at rest. Perform artificial respiration if breathing has stopped.

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5. FIRE FIGHTING MEASURES
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FIRE AND EXPLOSION HAZARDS

These products may react vigorously or ignite when exposed to incompatible materials (see Section #6). If present in a fire or explosion, they will emit fumes of the constituent metals and/or metal oxides.

EXTINGUISHING MEDIA

Use dry chemical. Do not use water.

FIRE FIGHTING INSTRUCTIONS

If fighting a fire in which these products are present, wear a self-contained breathing apparatus with full facepiece operated in pressure-demand or other positive pressure mode.

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6. ACCIDENTAL RELEASE MEASURES
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If a finely-divided form of product is spilled, clean up spillage so as to minimize dispersion of dust. Wet sweeping or vacuuming using HEPA filtration are recommended.

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7. HANDLING AND STORAGE
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HANDLING AND STORAGE PRECAUTIONS

Do not store in proximity to incompatible materials (see Section #6).

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7. HANDLING AND STORAGE - Continued

WORK/HYGIENIC PRACTICES

To avoid ingestion, wash hands and face before eating, drinking, or using cosmetics or tobacco.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS

Use appropriate ventilation (e.g., dilution, local exhaust) adequate to maintain concentrations of all components and their decomposition byproducts to within their respective OSHA PELs or other applicable standards.

EYE/FACE PROTECTION

Wear eye protection (safety glasses, goggles) adequate to prevent eye contact with finely-divided forms of product and eye injury from the hazards of brazing. Plastic-frame spectacles with side shields and filter lenses (shade #3 or #4) are recommended.

SKIN PROTECTION

Wear appropriate protective gloves and clothing to prevent skin injuries from the hazards of brazing and/or for prolonged or repeated contact with finely-divided forms of product. Avoid flammable fabrics.

RESPIRATORY PROTECTION

If an exposure level exceeds an OSHA PEL(s) or other applicable standard, use a NIOSH-approved respirator having a configuration (class, type of facepiece, filter media, assigned protection factor, etc.) appropriate to the concentration of the contaminant(s) generated. For guidance on selection and use of respiratory protection, consult American National Standard Z88.2 (ANSI, New York, NY 10036 USA).

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Odorless white to light yellow metals in form of wire, rod, strip, powder, grain, or preformed shapes.

BASIC PHYSICAL PROPERTIES

MELTING POINT: >1220 F >660 C
VAPOR PRESSURE: Not Applicable (N/A)
VAPOR DENSITY (AIR=1): N/A
SOLUBILITY (H2O): Insoluble

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9. PHYSICAL AND CHEMICAL PROPERTIES - Continued

PERCENT VOLATILES: N/A

10. STABILITY AND REACTIVITY

CONDITIONS TO AVOID (STABILITY)

Stable at room temperature. Silver and copper can form unstable acetylides upon contact with acetylene gas.

INCOMPATIBLE MATERIALS

Strong oxidizers; Se; Te; Mg; chlorates; NH₃; HNO₃; azides, ethanol, ethylene imine; ClF₃; inorganic and organic peroxides; peroxyformic acid; chlorine and fluorine; permonosulfuric acid; CrO₃; Mn and Ca chlorides; CS₂; hydrazine mononitrate; nitrobenzene; Fe(CO)₅; seleninyl bromide.

HAZARDOUS DECOMPOSITION PRODUCTS

Heating to elevated temperatures may liberate metal/metal oxide fumes. Hazardous polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

MISCELLANEOUS TOXICOLOGICAL INFORMATION

Carcinogenicity: Nickel is classified as a potential human carcinogen by the following organizations (with respective subclassifications): (1) IARC (Group 2B); (2) NTP (Group 2B). None of the other components of these products are classified as potential or demonstrated carcinogens by IARC, NTP, or OSHA.

Genetic/Reproductive Effects: Nickel has produced fetotoxic and teratogenic effects in animal studies, and mutagenic responses in mammalian cell cultures.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

Pre-existing pulmonary diseases (e.g., bronchitis, asthma) may be aggravated by inhalation exposure, particularly as fume. Chronic exposure by inhalation and/or ingestion may aggravate pre-existing diseases of the liver, kidneys, gastrointestinal system, musculoskeletal system, and nervous system.

12. ECOLOGICAL INFORMATION

NO DATA GIVEN

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13. DISPOSAL CONSIDERATIONS

Consult the manufacturer for disposition of unused or unusable product.

14. TRANSPORT INFORMATION

HAZARD CLASS: Shipment not controlled by USDOT/IATA/ICAO/IMO regulations.

15. REGULATORY INFORMATION

SARA TITLE III NOTIFICATIONS AND INFORMATION

SARA TITLE III - HAZARD CLASSES: Acute Health Hazard
Chronic Health Hazard

SARA TITLE III - SECTION 313 SUPPLIER NOTIFICATION

This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and of 40 CFR 372:

CAS NUMBER	INGREDIENT NAME	PERCENT BY WEIGHT
7440-50-8	Copper	19 to 60
7440-02-0	Nickel	0.5 to 5
7440-22-4	Silver	1.5 to 55
7440-66-6	Zinc	4 to 44

This information must be included on all MSDSs that are copied and distributed for this material.

16. OTHER INFORMATION

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained therein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).