

Silver-Copper-Cadmium-Zinc Brazing Alloys

Material Safety Data Sheet

1. Product And Company Identification

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Suppliers

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Lucas Milhaupt, Inc. Handy & Harman of Canada, Ltd.  
5656 South Pennsylvania Avenue 290 Carlingview Drive  
Cudahy, WI 53110 USA Rexdale, ON M9W5G1 Canada

Suppliers Emergency Contacts & Phone Number

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Lucas-Milhaupt, Inc.: 414-769-6000  
Handy & Harman of Canada, Ltd.: 416-675-1860

Manufacturer

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Lucas-Milhaupt, Inc.  
5656 South Pennsylvania Avenue  
Cudahy, WI 53110 USA  
Telephone: 414-769-6000  
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Manufacturer Emergency Contacts & Phone Number

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Chemtrec: 800-424-9300

Issue Date: 06/08/2010

Product Name: Silver-Copper-Cadmium Brazing Alloys

MSDS Number: 72

Product Identification Text

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This MSDS is applicable to products with these product codes: 21-846, 31-420, Easy-Flo (31-500), Easy-Flo 25 (31-250), Easy-Flo 25HC (31-257), Easy-Flo 30 (31-300), Easy-Flo 35 (31-350), Easy-Flo 38 (31-380); Easy-Flo 40 (31-400), Easy-Flo 43 (31-430); Easy-Flo 45 (31-450), Braze 200 (32-200), and Trimet 177 (38-177).

WARNING: These products contain a chemical(s) known to the State of California to cause cancer and birth defects or other reproductive harm.

2. Composition/Information On Ingredients

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Ingredient Name	CAS Number	%
Cadmium	7440-43-9	5-25
Copper	7440-50-8	15-64
Silver	7440-22-4	17-50
Zinc	7440-66-6	9-30

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3. Hazards Identification

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Primary Routes(s) Of Entry

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Ingestion; inhalation.

#### Eye Hazards

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Eye contact with these products in finely-divided forms may cause irritation, conjunctivitis, ulceration of the cornea, and/or argyria, a permanent blue-gray discoloration of the eyes, skin, mucous membranes, and respiratory tract.

#### Skin Hazards

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Skin contact with these products in finely-divided forms, may cause irritation, argyria, discoloration, and contact and/or contact dermatitis.

#### Ingestion Hazards

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Ingestion of these products in finely-divided form may cause nausea, vomiting, and gastrointestinal irritation.

#### Inhalation Hazards

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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:

CADMIUM: Acute exposure to cadmium may cause pneumonitis, bronchitis, and pulmonary edema. Chronic exposure may cause gastrointestinal symptoms, anemia, rhinitis, kidney disease, microfractures, and cancer.

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.

SILVER: Chronic exposure via inhalation may cause argyria.

ZINC: Acute exposure to zinc oxide 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.

#### 4. First Aid Measures

##### Eye

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

##### Skin

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Remove contaminated clothing. Wash affected area with large quantities of water for at least five minutes. Seek medical attention if necessary. Launder or dry-clean clothing before reuse.

##### Ingestion

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If subject is conscious, induce vomiting. If unconscious or convulsive,

seek immediate medical assistance.

#### Inhalation

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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.

#### Note To Physician

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No components are acutely toxic by ingestion, nor are they absorbed through the skin. Extensive or prolonged skin contact may cause dermatitis and/or argyria. Inhalation of cadmium fume may cause severe respiratory illness.

#### 5. Fire Fighting Measures

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Flash Point: N/Appl.  
Autoignition Point: N/Appl.  
Flammability Class: N/Appl.  
Lower Explosive Limit: N/Appl.  
Upper Explosive Limit: N/Appl.

#### Fire And Explosion Hazards

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In finely-divided form, these products may ignite when exposed to flame or by reaction with incompatible materials (see Section #10). If present in a fire or explosion, they may emit fumes of the constituent metals or metal oxides.

#### Extinguishing Media

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Use dry chemical. Do not use water.

#### Fire Fighting Instructions

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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.

#### 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.

#### 7. Handling And Storage

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##### Handling Precautions

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No special handling precautions are required.

##### Storage Precautions

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Do not store in proximity to incompatible materials (see Section #10).

##### Work/Hygienic Practices

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

## 8. Exposure Controls/Personal Protection

### Engineering Controls

Use appropriate local exhaust ventilation adequate to maintain concentrations of all components to within their applicable standards.

### Eye/Face Protection

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

### Skin Protection

Wear appropriate protective gloves and clothing to prevent skin injury 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 applicable exposure standard, use a NIOSH-approved respirator having a configuration (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 respirators, consult American National Standard Z88.2 (ANSI, New York, NY 10036 USA).

### Ingredient(s) - Exposure Limits

#### Cadmium

ACGIH TLVs: Inhalable 0.01 mg/m<sup>3</sup> TWA; Respirable 0.002 mg/m<sup>3</sup> TWA  
OSHA PEL: 5 micrograms/m<sup>3</sup> TWA

#### Copper

ACGIH TLVs: 0.2 mg/m<sup>3</sup> TWA (fume); 1 mg/m<sup>3</sup> TWA (dusts and mists)  
OSHA PELs: 0.1 mg/m<sup>3</sup> TWA (fume); 1 mg/m<sup>3</sup> TWA (dusts and mists)

#### Silver

ACGIH TLV: 0.1 mg/m<sup>3</sup> TWA (metal)      OSHA PEL: 0.01 mg/m<sup>3</sup> TWA

#### Zinc

ACGIH TLVs: 5 mg/m<sup>3</sup> TWA; 10 mg/m<sup>3</sup> STEL (as ZnO fume)  
OSHA PEL: 5 mg/m<sup>3</sup> TWA (as ZnO fume)

## 9. Physical And Chemical Properties

### Appearance

Odorless silver-white metals in form of wire, strip, rod, powder, clad alloys, or preformed shapes.

Chemical Type: alloys

Physical State: solid

Solubility: insoluble

Melting Point: 1125-1500F./600-815C.

Specific Gravity: ca. 9.0

Other physical properties (odor threshold, evaporation rate, vapor pressure, vapor density, evaporation rate, boiling point, freezing point, pH, oil-water distribution coefficient, percent volatiles, percent VOCs) are not applicable to these products.

## 10. Stability And Reactivity

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Stability: stable

Hazardous Polymerization: will not occur

Conditions To Avoid (Stability)

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Silver and copper can form unstable acetylides in contact with acetylene gas.

Incompatible Materials

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Strong oxidizers; ammonia; azides; nitric acid; ethylene imine; peroxyformic acid; chlorine trifluoride; sulfuric acid; peroxides; oxalic acid; tartaric acid; 1-bromo-2-propyne; permonosulfuric acid; ammonium nitrate; hydrazoic acid; chlorates, barium dioxide; carbon disulfide; halogens; hydroxylamine; hydrazine mononitrate; manganese chloride; performic acid; tellurium.

Hazardous Decomposition Products

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Heating to elevated temperatures may liberate metal/metal oxide fumes.

## 11. Toxicological Information

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Reproductive Effects

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In experimental studies, cadmium has been found to cause reproductive abnormalities, including reduced birth weights, reduced viability, and behavioral alterations, among offspring of female rodents. Male rodents exposed to cadmium have been found to have testicular damage, reduction in sperm counts, and reduced fertility.

Mutagenicity (Genetic Effects)

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Cadmium has produced mutagenic responses in mammalian cell cultures.

Conditions Aggravated By Overexposure

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

Ingredient(s) - Carcinogenicity

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Cadmium

OSHA Regulated Carcinogen

NTP - Listed On The National Toxicology Program

Listed In The IARC Monographs

Ingredient(s) - Toxicological Data

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Cadmium

LD50: 2,330 mg/kg (oral/rat)	LC50: 25 mg/m3 for 30 min. (rat)
Copper	
LD50: No data available	LC50: No data available
Silver	
LD50: >2,000 mg/kg (oral/rat)	LC50: No data available
Zinc	
LD50: No data available	LC50: No data available

## 12. Ecological Information

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In their intended manner of use, these products should not be released into the environment, and adverse effects on ecosystems are not anticipated under recommended conditions of use, storage, and disposal.

## 13. Disposal Considerations

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Dispose of unused or unusable product in accordance with applicable Federal, State/Provincial, and local regulations.

## 14. Transport Information

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These products are not Hazardous Substances or Dangerous Goods per USDOT, TDG (Canada), IATA, or IMO regulations.

## 15. Regulatory Information

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### TSCA Information

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All components of these products are on the EPA's TSCA registry.

### SARA Hazard Classes

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Acute Health Hazard; Chronic Health Hazard

### Ingredient(s) - U.S. Regulatory Information

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#### Cadmium

SARA Title III - Section 313 Form "R"/TRI Reportable Chemical

#### Copper

SARA Title III - Section 313 Form "R"/TRI Reportable Chemical

#### Silver

SARA Title III - Section 313 Form "R"/TRI Reportable Chemical

### Ingredient(s) - State Regulations

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#### Cadmium

California - Proposition 65

### Canadian Regulatory Information

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All components of these products are on the Domestic Substances List.

WHMIS Class(es) and Division(s): D2A, D2B

Component(s) on Ingredients Disclosure List:

1. Cadmium, elemental (CASRN 7440-43-9)
2. Copper, elemental (CASRN 7440-50-8)

3. Silver, elemental (CASRN 7440-22-4)

16. Other Information

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OSHA Precautionary Label  
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DANGER  
CONTAINS CADMIUM  
CANCER HAZARD  
AVOID CREATING DUST  
CAN CAUSE LUNG AND KIDNEY DISEASE

HMIS Ratings  
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Health - 3\*      Flammability - 1      Physical Hazard - 0      PPE - see Note

Note: Lucas-Milhaupt, Inc. and Handy & Harman of Canada, Ltd. recommend use of safety glasses and protective gloves (Personal Protection Index "B") as standard PPE. HMIS recommends that its ratings be used only in conjunction with a fully implemented HMIS program, and that specific PPE codes be created by the user, who is familiar with the actual conditions under which the product is used. We cannot anticipate every condition of the product's use, and it is the user's responsibility to evaluate the hazards pertinent to its specific operations, and to determine the specific PPE required.

NFPA Ratings  
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Health - 3      Flammability - 1      Reactivity - 0

Revision Information  
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This MSDS supersedes a previous MSDS dated 10/31/2007.

Disclaimer  
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Lucas Milhaupt, Inc.

Handy & Harman of Canada, Ltd.