

# Silver-Copper-Indium Alloys

## Safety Data Sheet

### 1. Product and Company Identification

#### Suppliers and Manufacturers

Lucas Milhaupt, Inc.  
5656 South Pennsylvania Avenue  
Cudahy, WI 53110 USA  
Telephone: 414-769-6000  
www.lucasmilhaupt.com

#### Emergency Phone Number

CHEMTREC Within the USA and Canada: 1-800-424-9300  
CHEMTREC Outside USA and Canada: +1 703-741-5970

SDS Number: 94

Product Codes: 14-834, 18-616, 18-631, 27-616

Product Use(s): Alloys for brazing and other metallurgical processes

### 2. Hazards Identification

#### Classification(s)

Specific Target Organ Toxicity, Repeated Exposure: Hazard  
Category 2

Label Symbol(s): Health Hazard

Label Signal Word(s): Warning

#### Label Hazard Statement(s)

May cause damage to the respiratory system through prolonged or repeated exposure via inhalation.

#### Label Precautionary Statement(s)

Do not breathe dust or fume.  
Get medical advice/attention if you feel unwell.  
Dispose of contents and container in accordance with applicable regulations.  
7-40% of the products consist of ingredients of unknown acute toxicity.



### 3. Composition/Information on Ingredients

Ingredient	CAS Number	%	Impurities
Copper	7440-50-8	5-27	None known
Indium	7440-74-6	2-13	None known
Silver	7440-22-4	60-93	None known

### 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. Do not give anything by mouth to an unconscious or convulsive person.

#### 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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None of the components are acutely toxic by ingestion, nor are they absorbed through the skin. Long-term chronic exposure may cause argyria.

### 5. Fire Fighting Measures

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#### Fire and Explosion Hazards

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These products are non-flammable and non-explosive. If present in a fire or explosion, they may emit fumes of the constituent metals or their 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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#### Methods and Materials

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If a finely-divided form of product is spilled, clean up spillage so as to minimize dispersion of dust. Either wet sweeping or vacuuming using HEPA filtration is recommended.

#### Personal Precautions

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Avoid contact with skin, eyes, and mucous membranes.

#### Environmental Precautions

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Prevent spills from entering sewers or contaminating soil.

## 7. Handling and Storage

### Handling Precautions

No special handling precautions are required.

### Work and Hygiene Practices

To prevent ingestion following use of the product, wash hands and face before eating, drinking, applying cosmetics, or using tobacco. Remove contaminated clothing or protective equipment before entering eating/drinking areas.

### Storage Precautions

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

## 8. Exposure Controls and Personal Protection

### Ingredients - Exposure Limits

#### 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)

#### Indium

ACGIH TLV: 0.1 mg/m<sup>3</sup> TWA                      No OSHA PEL(s)

#### Silver

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

### Ingredients - Biological Limits

#### Copper

No ACGIH BEI(s) or other biological limit(s)

#### Indium

No ACGIH BEI(s) or other biological limit(s)

#### Silver

No ACGIH BIE(s) or other biological limit(s)

### Engineering Controls

Use dilution or local exhaust ventilation adequate to maintain concentrations of all components and their byproducts to within their applicable standards.

### Eye/Face Protection

Wear eye protection adequate to prevent eye contact with the product and injury if the products are used with a flame. Plastic-frame spectacles with side shields and filter lenses (shade #3/#4) are recommended.

### Skin Protection

Wear protective gloves and clothing to prevent skin injuries if the products are used with a flame and/or for prolonged or repeated contact with finely-divided forms of product. Avoid flammable fabrics.

### Respiratory Protection

If an exposure level to a component(s) exceeds an applicable standard, use a NIOSH-approved respirator having a configuration (facepiece, filter media, assigned protection factor, etc.) effective for the concentration of the component(s) generated. For guidance on selection and use of respirators, consult American National Standard Z88.2 (ANSI, New York, NY 10036, USA).

## 9. Physical and Chemical Properties

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Appearance: Yellow-white metals, various forms  
Odor: none  
Odor threshold: not applicable  
pH: not applicable  
Melting Point: approx. 1155F./620C.  
Freezing point: not applicable  
Boiling point/boiling range: not determined  
Flash Point: not applicable  
Evaporation Rate: not applicable  
Flammability Class: not applicable  
Lower Explosive Limit: not applicable  
Upper Explosive Limit: not applicable  
Vapor pressure: not applicable  
Vapor density: not applicable  
Relative density (H2O): approx. 9.9  
Solubility (H2O): insoluble  
Oil-water partition coefficient: not applicable  
Autoignition Point: not applicable  
Decomposition temperature: not applicable  
Viscosity: not applicable

## 10. Stability and Reactivity

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Reactivity: none reasonably foreseeable  
Stability: stable  
Hazardous Polymerization: will not occur  
Risk of Dangerous Reactions: see "Conditions to Avoid"

### Conditions to Avoid

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

### Incompatible Materials

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Acetylene; ammonia; azides; nitric acid; halogens; ethylene imine; ethylene oxide; chlorine trifluoride; sulfuric acid; peroxides; peroxyformic acid; oxalic acid; tartaric acid; 1-bromo-2-propyne; permonosulfuric acid; sulfur; hydrazine mononitrate; hydrazoic acid; hydrogen sulfide; bromates, chlorates, and iodates of alkali and alkali earth metals.

### Hazardous Decomposition Products

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

## 11. Toxicological Information

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This product has not been subject to toxicological testing by the supplier/manufacturer.

### Ingredients - Toxicological Data

#### Copper

LD50: No data available LC50: No data available

#### Indium

LD50: No data available LC50: No data available

#### Silver

LD50: >2,000 mg/kg (oral/rat) LC50: No data available

#### 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 gray discoloration of the eyes, skin, mucous membranes, and respiratory tract.

#### Skin Hazards

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

#### Ingestion Hazards

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

#### Inhalation Hazards

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Inhalation of toxicologically-significant quantities of the components is unlikely when the product is used in accordance with instructions and specified protective measures (see Section #8). If the products are heated to very high temperatures, inhalation of indium fume may cause alveolar edema, respiratory insufficiency, pneumonitis, and respiratory infections.

#### Symptoms Related to Overexposure

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Pre-existing pulmonary diseases (e.g., bronchitis, asthma) may be aggravated by inhalation overexposure, particularly as fume.

#### Delayed Effects from Long Term Overexposure

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Chronic overexposure by inhalation and/or ingestion may aggravate pre-existing diseases of the liver, kidneys, and gastrointestinal system.

#### Carcinogenicity

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The product contains no chemicals classified as potential or demonstrated carcinogens by IARC, NTP, or OSHA.

#### Germ Cell Mutagenicity

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The product contains no components determined to be germ cell mutagens.

#### Reproductive Effects

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The product contains no components determined to be damaging to fertility of the unborn child.

#### Acute Toxicity Estimates

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LD50 (oral): >2,000 mg/kg  
LD50 (dermal): no data available  
LC50: no data available

Interactive Effects of Components: no data available

#### 12. Ecological Information

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No ecological data is available for the product. Available ecological data for the components is as follows:

#### Copper

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No data available for Aquatic Toxicity to Fish and Invertebrates, Aquatic Toxicity to Plants and Microorganisms, Toxicity to Terrestrial Organisms, Persistence and Degradability, Bioaccumulation Potential, Mobility in Soil.

#### Indium

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No data available for Aquatic Toxicity to Fish and Invertebrates, Aquatic Toxicity to Plants and Microorganisms, Toxicity to Terrestrial Organisms, Persistence and Degradability, Bioaccumulation Potential, Mobility in Soil.

#### Silver

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No data available for Aquatic Toxicity to Fish and Invertebrates, Aquatic Toxicity to Plants and Microorganisms, Toxicity to Terrestrial Organisms, Persistence and Degradability, Bioaccumulation Potential, Mobility in Soil.

Ozone Depletion Potential: This product contains no ingredients listed in the Annexes to the Montréal Protocol on Substances that Deplete the Ozone Layer.

### 13. Disposal Considerations

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Do not discharge waste product into sanitary or storm sewers or allow it to contaminate soil. Consult applicable Federal, State/ Provincial, and local regulations.

### 14. Transport Information

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Transport is not regulated by USDOT, TDG (Canada), IATA, or IMO.

### 15. Regulatory Information

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#### United States Regulatory Information

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All components of this product are listed on the EPA's TSCA inventory.

SARA Hazard Classes: Acute Health Hazard; Chronic Health Hazard

#### SARA Section 313 Notification

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These products contain these components subject to the requirements of Section 313 of the Emergency Preparedness and Community Right-to-Know Act (EPCRA) of 1986 and of 40CFR, Part 372:

1. Copper (CASRN 7440-50-8)
2. Silver (CASRN 7440-22-4)

#### Canadian Regulatory Information

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All components of these products are listed on either the Domestic Substances List (DSL) or the Nondomestic Substances List (NDSL).

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

Components on Ingredients Disclosure List:

1. Copper, elemental (CASRN 7440-50-8)
2. Indium, elemental (CASRN 7440-74-6)
3. Silver, elemental (CASRN 7440-22-4)

This product has been classified according to the hazard criteria of the CPR and this SDS contains all of the information required by the CPR.

## 16. Other Information

### HMIS Ratings

Health - 2\* (moderate chronic hazard)  
Flammability - 1 (slight hazard)  
Physical Hazard - 1 (slight hazard)  
PPE - see Note

Note: Lucas-Milhaupt, Inc. recommends use of protective eyewear and 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

Health - 2      Flammability - 1      Reactivity - 1

### Preparation Information

Date of Preparation: 2 July 2014  
Date of Prior SDS: 9 May 2007

### Disclaimer

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Lucas-Milhaupt, Inc.