

# Silver-Copper-Zinc-Nickel Alloys

## Safety Data Sheet

### 1. Product and Company Identification

#### Manufacturer

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

#### Emergency Phone Number

CHEMTREC: within USA and Canada 1-800-424-9300  
CHEMTREC: outside USA and Canada 1-703-741-5970

SDS Number: 88

Product: AG-CU-ZN-NI

Product Codes: ESP1A (TRIMET 259), 38-259 (TRIMET 259), ESP2B (TRIMET 201), 38-201 (TRIMET 201), 38-202 (TRIMET 202), 35597 (SILVALOY 299), 32-299 (SILVALOY 299), 2501 (SILVALOY 403), 32-403 (SILVALOY 403), 9704 (SILVALOY 404), 32-404 (SILVALOY 404), 17095 (SILVALOY 505), 32-505 (SILVALOY 505), 6544 (SILVALOY 541), 32-541 (SILVALOY 541), 40-075 (BLA-075), 69-207, 70-005

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

### 2. Hazards Identification

#### Classification(s)

Skin Sensitization: Hazard Category 1B  
Carcinogenicity: Hazard Category 2  
Specific Target Organ Toxicity, Single Exposure:  
Hazard Category 3

Label Symbol(s): Health Hazard, Exclamation Point

Label Signal Word(s): Warning

#### Label Hazard Statement(s)

May cause respiratory irritation.  
May cause an allergic skin reaction.  
Suspected of causing cancer by inhalation.

#### Label Precautionary Statement(s)

Do not handle until all safety precautions have been read and understood.  
Obtain special instructions before use.  
Avoid breathing dust or fumes.  
Use only outdoors or in a well-ventilated area. Store locked up.  
Wear protective gloves and eye/face protection.  
If skin irritation or rash occurs, get medical advice or attention.  
If exposed or concerned, get medical advice/attention.



IF ON SKIN: Wash with plenty of water. Wash contaminated clothing before reuse. Contaminated work clothing must not be allowed out of the workplace.

IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a Poison Control Center or doctor if you feel unwell.

Dispose of contents and container in accordance with applicable regulations. The acute toxicities of 20-90% of the products' ingredients are unknown.

WARNING: These products contain chemicals known to the State of California to cause cancer.

### 3. Composition/Information on Ingredients

Ingredient	CAS Number	%	Impurities
Copper	7440-50-8	15-70	None known
Nickel	7440-02-2	<1-20	None known
Silver	7440-22-4	10-70	None known
Zinc	7440-66-6	5-45	None known

### 4. First Aid Measures

#### Eye

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

#### Skin

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

#### Ingestion

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

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 or Poison Control Center

None of the components are acutely toxic by ingestion, nor are they absorbed through the skin. Skin exposure may cause contact or allergic dermatitis and/or argyria.

### 5. Fire Fighting Measures

#### Fire and Explosion Hazards

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

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.

## 6. Accidental Release Measures

### Methods and Materials

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

Avoid contact with skin, eyes, and mucous membranes, using personal protective equipment as necessary.

## 7. Handling and Storage

### Handling Precautions

No special handling precautions are required.

### Work and Hygiene Practices

As good hygiene practice, 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)

#### Nickel

ACGIH TLV: 1.5 mg/m<sup>3</sup> TWA

OSHA PEL: 1 mg/m<sup>3</sup> TWA

#### 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 (as ZnO): 2 mg/m<sup>3</sup> TWA; 10 mg/m<sup>3</sup> STEL (respirable fractions)

OSHA PEL: 5 mg/m<sup>3</sup> TWA (as respirable fraction of ZnO dust or fume)

## Ingredients - Biological Limits

### Copper

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

### Nickel

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

### Silver

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

### Zinc

No ACGIH BEI(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 injury if the products are used with a flame. Plastic-frame spectacles with side shields are recommended.

## Skin Protection

Wear protective gloves and clothing to prevent skin injuries if the products are used with a flame. 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

Appearance: White or light-yellow metals, various forms

Odor: none

Odor threshold: not applicable

pH: not applicable

Melting Point: approx. 1,207F./653C.

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 (H<sub>2</sub>O): 8.35-9.70

Solubility (H<sub>2</sub>O): insoluble

Oil-water partition coefficient: not applicable

Autoignition Point: not applicable

Decomposition temperature: not applicable

Viscosity: not applicable

## 10. Stability and Reactivity

Reactivity: none reasonably foreseeable

Stability: stable

Hazardous Polymerization: will not occur

Risk of Dangerous Reactions: Silver and copper can form unstable acetylides in contact with acetylene gas.

### Incompatible Materials

Acetylene; ammonia; ammonium nitrate; azides; nitric acid; halogens; ethylene imine; ethylene oxide; chlorine trifluoride; sulfuric acid; peroxides; peroxyformic acid; oxalic acid; tartaric acid; 1-bromo-2-propyne; hydrazine mononitrate; hydrazine; hydrazoic acid; permonosulfuric acid; hydroxylamine; hydrogen sulfide; bromates, chlorates, and iodates of alkali and alkali earth metals; selenium; tellurium; carbon disulfide; performic acid; phosphorus; sulfur; dioxane; titanium plus potassium chlorate.

### Hazardous Decomposition Products

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

## 11. Toxicological Information

This product has not been tested for toxicology by the manufacturer.

### Ingredients - Toxicological Data

#### Copper

LD50: No data available

LC50: No data available

#### Nickel

LD50: >5,000 mg/kg (oral/rat)

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

### Primary Routes(s) of Entry

Ingestion; inhalation.

### Eye Hazards

Eye contact with this product 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

Skin contact with this product in finely-divided forms may cause irritation and/or argyria.

### Ingestion Hazards

Ingestion of finely-divided forms of product may cause nausea, vomiting, and gastrointestinal irritation.

### Inhalation Hazards

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).

#### Symptoms Related to Overexposure

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

#### Delayed Effects from Long Term Overexposure

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

#### Carcinogenicity

Nickel is classified as a potential human carcinogen by IARC ("2b", possibly carcinogenic to humans) and NTP ("K", known to be a human carcinogen). Exposure to some compounds of nickel has been shown to increase the risk of various cancers, although these effects have not been demonstrated among individuals occupationally exposed only to nickel metal. ACGIH classifies nickel metal as "A5" (not suspected as a human carcinogen).

#### Germ Cell Mutagenicity

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

#### Reproductive Effects

The product contains no chemicals determined to be damaging to fertility or to the unborn child.

#### Acute Toxicity Estimates

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

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

#### Nickel

Aquatic Toxicity to Fish: LC50 >100 mg/l. for 4 d. (Freshwater fish)  
Aquatic Toxicity to Invertebrates: EC50 >100 mg/l. for 48 h. (Daphnia)  
Aquatic Toxicity to Plants: EC50 = 0.18 mg/l. for 3 d. (Algae)  
No data available for Aquatic Toxicity to Microorganisms, Toxicity to Terrestrial Organisms, Persistence and Degradability, Bioaccumulation Potential, or Mobility in Soil.

#### Copper, Silver, and Zinc

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

Ozone Depletion Potential: The products contain no ingredients listed in the Annexes to the Montréal Protocol on Substances that Deplete the Ozone Layer.

### 13. Disposal Considerations

Do not allow the product to contaminate soil. Consult applicable Federal, State/Provincial, and local regulations.

### 14. Transport Information

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

### 15. Regulatory Information

#### United States Regulatory Information

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

SARA Hazard Classes: Acute Health Hazard; Chronic Health Hazard

#### SARA Section 313 Notification

These products contain these components in concentrations >1% (>0.1% for carcinogens) subject to 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. Nickel (CASRN 7440-02-0)
3. Silver (CASRN 7440-22-4)

#### U.S. State Regulations

Nickel (CASRN 7440-02-0) - California Proposition 65 listed chemical

#### Canadian Regulatory Information

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

This product has been classified in accordance with Canada's Hazardous Products Regulations (SOR/DORS/2015-17).

### 16. Other Information

#### HMIS Ratings (Legend)

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: 18 December 2015  
Date of Prior SDS: 12 December 2014

#### Disclaimer

-----  
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).

Lucas-Milhaupt, Inc.