Silver-Copper-Cadmium-Zinc Alloys

Safety Data Sheet

1. Product and Company Identification

Suppliers and Manufacturers

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

Emergency Phone Number

Chemtrec: 800-424-9300

SDS Number: 72
Product Codes: 21-846, 31-250, 31-257, 31-300, 31-350, 31-380; 31-400, 31-420, 31-430, 31-450, 31-500, 32-200, 38-177

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

2. Hazards Identification

Classification(s)

Acute Toxicity, Inhalation: Hazard Category 3
Carcinogenicity: Hazard Category 1
Reproductive Toxicity: Hazard Category 2
Germ Cell Mutagenicity: Hazard Category 2

Label Symbol(s): Skull & Crossbones; Health Hazard

Label Signal Word(s): Danger

Label Hazard Statement(s)

Toxic if inhaled.
May cause cancer.
Suspected of damaging fertility or the unborn child.
Suspected of causing genetic defects.

Label Precautionary Statement(s)

Do not handle until all safety precautions have been read and understood.
Obtain special instructions before use.
Wear protective gloves and eye/face protection.
Avoid breathing dust or fume.
Use only outdoors or in a well-ventilated area.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Call a Poison Control Center or doctor if you feel unwell.
If exposed or concerned, get medical advice/attention.
Store locked up.
Dispose of contents and container in accordance with applicable regulations.
24-94% of the products consist of ingredient(s) of unknown acute toxicity.

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

3. Composition/Information on Ingredients

Ingredient	CAS Number	%	Impurities
Cadmium	7440-43-9	5-25	None known
Copper	7440-50-8	15-64	None known
Silver	7440-22-4	17-50	None known
Zinc	7440-66-6	9-30	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 area 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

None of the 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

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.

Environmental Precautions

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

Cadmium
- ACGIH TLVs: 0.01 mg/m3 TWA; 0.002 mg/m3 TWA (respirable fraction)
- OSHA PEL: 5 micrograms/m3 TWA

Copper
- ACGIH TLVs: 0.2 mg/m3 TWA (fume); 1 mg/m3 TWA (dusts and mists)
- OSHA PELs: 0.1 mg/m3 TWA (fume); 1 mg/m3 TWA (dusts and mists)

Silver
- ACGIH TLV: 0.1 mg/m3 TWA (metal) OSHA PEL: 0.01 mg/m3 TWA

Zinc
- ACGIH TLVs (as ZnO): 2 mg/m3 TWA; 10 mg/m3 STEL (respirable fractions)
- OSHA PEL: 5 mg/m3 TWA (as respirable fraction of ZnO dust or fume)

Ingredients – Biological Limits

Cadmium
- ACGIH BEIs: 5 mcg/gm creatinine (in urine); 5 mcg/liter (in blood)

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

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

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

Engineering Controls

Use appropriate 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 finely-divided product and eye 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 appropriate protective gloves and clothing to prevent skin injury 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

Appearance: light yellow metals, various forms
Odor: none
Odor threshold: not applicable
pH: not applicable
Melting Point: 1125-1500F./600-815C.
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_2O): approx. 9.0
Solubility (H_2O): 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: see “Conditions to Avoid”

Conditions to Avoid

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

Incompatible Materials

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; hydrogen sulfide; hydrazine mononitrate; hydrazoic acid; bromates, chlorates, and iodates of alkali and alkali earth metals; hydroxylamine; selenium; carbon disulfide; ammonium nitrate; hydrazoic acid; tellurium.

Hazardous Decomposition Products

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

11. Toxicological Information

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

Ingredients - Toxicological Data

Cadmium
LD50: 2,330 mg/kg (oral/rat) LC50: 25-1300 mg/m3/30 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

Primary Routes(s) of Entry

Ingestion; inhalation.

Eye Hazards

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

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

Ingestion Hazards

Ingestion of these products in finely-divided forms 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). If the product is heated to elevated temperatures, inhalation of cadmium fume may cause severe respiratory illness.

Symptoms Related to Overexposure

Acute overexposure to cadmium fume by inhalation may cause pneumonitis, bronchitis, and pulmonary edema.

Delayed Effects from Long Term Overexposure

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

Carcinogenicity

Cadmium

- OSHA Regulated Carcinogen
- NTP - Listed on the National Toxicology Program
- Listed in the IARC Monographs

Germ Cell Mutagenicity

Cadmium has produced mutagenic responses in mammalian cell cultures.

Reproductive Effects

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.

Acute Toxicity Estimates

LD50 (oral): >2,000 mg/kg
LD50 (dermal): no data available
LC50: 25-1300 mg/m3

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:

Cadmium

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.

Copper

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

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.

Zinc

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

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

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

15. Regulatory Information

United States Regulatory Information

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

These products contain these ingredients in concentrations greater than 1% (for carcinogens 0.1%) regulated under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 or 40 CFR 372.

1. Cadmium (CASRN 7440-43-9)
2. Copper (CASRN 7440-50-8)
3. Silver (CASRN 7440-22-4)

Ingredient(s) - State Regulations

Cadmium: 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).

WHMIS Class(es) and Division(s): D1A, 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)

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 – 3* (serious chronic hazard)
Flammability – 1 (slight hazard)
Physical Hazard – 0 (minimal 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 - 3 Flammability - 1 Reactivity - 0

Preparation Information

Date of Preparation:
Date of Prior SDS: 1 June 2013

Disclaimer

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Lucas-Milhaupt, Inc.