

Silver-Copper-Zinc-Cadmium-Nickel Brazing Alloys

Safety Data Sheet

1. Product and Company Identification

Manufacturer

Lucas-Milhaupt, Inc.
235 Kilvert Street
Warwick, RI 02886 USA
Telephone: 401-739-9550
www.lucasmilhaupt.com

Emergency Phone Number

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

Product Code(s): AG-CU-ZN-CD-NI

Product(s): ESP1, TRIMET 258 (PLYMETAL 5031), 38-258 (TRIMET 258), 1735 (EASY-FLO 3), 31-503 (EASY-FLO 3), 1735 (SILVALOY 50N),

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

2. Hazards Identification

Classification(s)

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

Label Symbol(s): Skull & Crossbones, Health Hazard,
Exclamation Point

Label Signal Word(s): Danger

Label Hazard Statement(s)

Toxic if inhaled.
May cause an allergic skin reaction.
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. Store locked up.
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 ON SKIN: Wash with plenty of water. Wash contaminated clothing before reuse. Contaminated work clothing must not be allowed out of the workplace.



If skin irritation or rash occurs, or if exposed or concerned, get medical advice or attention.

Dispose of contents and container in accordance with applicable regulations. The acute toxicities of 15-90% of the products' ingredients are unknown.

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	5-30	None known
Copper	7440-50-8	10-60	None known
Nickel	7440-02-0	1-5	None known
Silver	7440-22-4	20-60	None known
Zinc	7440-66-6	5-30	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 or Poison Control Center

None of the components are acutely toxic by ingestion, nor are they absorbed through the skin. Skin contact may cause dermatitis, sensitization, 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)

Nickel

ACGIH TLV: 1.5 mg/m³ TWA

OSHA PEL: 1 mg/m³ TWA

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)

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 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 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: >1,157F./625C.

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): 8.1-9.65

Solubility (H₂O): 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; 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 tested for toxicology by the 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

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 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 dermatitis.

Ingestion Hazards

Ingestion of these products 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, respiratory system, and nervous system.

Carcinogenicity

Cadmium is classified as a potential human carcinogen by OSHA, by IARC ("1", carcinogenic to humans), by NTP ("K", known to be a human carcinogen), and by ACGIH ("A2", suspected human carcinogen).

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

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, Invertebrates, Plants, or Microorganisms, Toxicity to Terrestrial Organisms, Persistence and Degradability, Bioaccumulation Potential, or Mobility in Soil.

Copper

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.

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.

Silver

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.

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: 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 >1% (>0.1% for carcinogens) regulated under Section 313 of the Emergency Planning Community Right-To-Know Act of 1986 or 40 CFR 372.

1. Cadmium (CASRN 7440-43-9)
2. Copper (CASRN 7440-50-8)
3. Nickel (CASRN 7440-02-0)
4. Silver (CASRN 7440-22-4)

Ingredient(s) - State Regulations

Cadmium (CASRN 7440-43-9): California Proposition 65 listed chemical
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).

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. Nickel, elemental (CASRN 7440-02-0)
4. 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 (Legend)

Health - 3* (serious chronic hazard)
Flammability - 1 (slight hazard)
Physical Hazard - 0 (minimal hazard)
PPE - see Note

Note: Lucas-Milhaupt Warwick, LLC 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: 11 December 2014
Date of Prior SDS: 1 January 2013

Disclaimer

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Lucas-Milhaupt, Inc.