

Flux-Coated Silver, Copper, Zinc and Tin Alloys

Safety Data Sheet

1. Product and Company Identification

Manufacturer

Lucas-Milhaupt, Inc.
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Emergency Phone Number

CHEMTREC within the USA and Canada: 1-800-424-9300
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SDS Number: 297
Product: Flux Coated AG-CU-ZN-SN Alloys

Product Codes: 39-452 (SILVALOY 452 Flux Coated/Silvacoat 452), 35701 (SILVALOY 452 Flux Coated), A00000198 (SILVALOY 452 Flux Coated), 39-560 (SILVALOY 560 Flux Coated), 35702 (SILVALOY 560 Flux Coated), A00000199 (SILVALOY 560 Flux Coated), 39-561 (32-560 33% Flux Coat), 39-562 (32-560 24% Flux Coat)

Product Use(s): Brazing alloys with a flux coating

2. Hazards Identification

Classification(s)

Specific Target Organ Toxicity,
Single Exposure: Hazard Category 3
Reproductive Toxicity: Hazard Category 2

Label Symbol(s): Health Hazard, Exclamation Point

Label Signal Word(s): Warning

Label Hazard Statement(s)

May cause respiratory irritation.
Suspected of damaging fertility or the unborn child.

Label Precautionary Statement(s)

Do not handle until all safety precautions have been read and understood.
Obtain special instructions before using. Store locked up.
Avoid breathing dust or fumes.
Use only outdoors or in a well-ventilated area.
Wear protective gloves and eye/face protection.
Wash hands thoroughly after handling.
Do not eat, drink, or smoke when using this product.

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



If exposed or concerned, or if you feel unwell, get medical advice/attention.
Dispose of contents/container in accordance with applicable regulations.
The acute toxicities of 5-82% of the product's ingredients are unknown.

3. Composition/Information on Ingredients

Ingredient	CAS Number	%	Impurities
Boric acid	10043-35-3	1-2	None known
Copper	7440-50-8	3-37	None known
Potassium fluoborate	14075-53-7	1-2	None known
Potassium fluoride	7789-23-3	1-2	None known
Silver	7440-22-4	22-73	None known
Tin	7440-31-5	1-23	None known
Zinc	7440-66-6	1-32	None known

4. First Aid Measures

Eye

Not applicable.

Skin

Not applicable.

Ingestion

Not applicable.

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

The component potassium fluoride is acutely toxic. Its concentration in the product is <20 gm/kg. Inhalation is the only plausible mode of exposure, as the component is within the flux coating of the alloy. Treat fluoride intoxication symptomatically. Inhalation of zinc-containing fume may cause respiratory illness.

5. Fire Fighting Measures

Extinguishing Media

Not applicable.

Fire and Explosion Hazards

This product is non-flammable and non-explosive. However, if present in a fire or explosion, it may emit fumes of the constituent metals or metal oxides, fluorides, and boron oxide.

5. Fire Fighting Measures (Continued)

Fire Fighting Instructions

If fighting a fire in which this product is present, wear a self-contained breathing apparatus with full facepiece operated in pressure-demand or other positive pressure mode.

6. Accidental Release Measures

Not applicable.

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

Store away from incompatible materials (see Section #10).

8. Exposure Controls and Personal Protection

Ingredients - Exposure Limits

Boric acid

ACGIH TLVs: 2 mg/m³ TWA; 6 mg/m³ STEL No OSHA PEL(s)

Copper

ACGIH TLVs: 0.2 mg/m³ TWA (fume), 1 mg/m³ TWA (dust and mist)

OSHA PELs: 0.1 mg/m³ TWA (fume), 1 mg/m³ TWA (dust and mist)

Potassium fluoborate

ACGIH TLV: 2.5 mg/m³ TWA (as F-) OSHA PEL: 2.5 mg/m³ TWA (as F-)

Potassium fluoride

ACGIH TLV: 2.5 mg/m³ TWA (as F-) OSHA PEL: 2.5 mg/m³ TWA (as F-)

Silver

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

Tin

ACGIH TLV: 2 mg/m³ TWA OSHA PEL: 2 mg/m³ TWA

Zinc (as ZnO)

ACGIH TLVs: 2 mg/m³ TWA; 10 mg/m³ STEL (as respirable fractions)

OSHA PEL: 5 mg/m³ TWA

Ingredients - Biological Limits

Boric acid

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

Copper

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

Potassium fluoride and potassium fluoborate

ACGIH BEIs for fluoride in urine: 2 mg/l. prior to shift

3 mg/l. end of shift

Ingredients - Biological Limits (Continued)

Silver

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

Tin

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 injury from the hazards of brazing. Plastic-frame spectacles with side shields are recommended.

Skin Protection

Wear protective gloves and clothing to prevent skin injuries from the hazards of brazing. 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: Alloy wire or rod coated with an off-white flux

Odor: no odor

Odor threshold: not applicable

pH: not applicable

Melting point: not determined

Freezing point: not applicable

Boiling point/boiling range: not applicable

Flash Point: not applicable

Autoignition Point: not applicable

Flammability Class: not applicable

Lower Explosive Limit: not applicable

Upper Explosive Limit: not applicable

Vapor pressure: not applicable

Vapor density: not applicable

Evaporation Rate: not applicable

Relative density (H₂O): not determined

Solubility (H₂O): insoluble

Oil-water partition coefficient: not applicable

Decomposition temperature: not determined

Viscosity: not applicable

10. Stability and Reactivity

Reactivity: none reasonably foreseeable

Stability: stable

Hazardous Polymerization: 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; hydrazoic acid; hydrazine mononitrate; bromates, chlorates, and iodates of alkali and alkali earth metals; hydroxylamine; tellurium; carbon disulfide; selenium; cupric nitrate.

Potential Hazardous Decomposition Products

Boron oxide, fluorides, and metal/metal oxide fumes.

11. Toxicological Information

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

Ingredients - Toxicological Data

Boric acid

LD50: 2,660 mg/kg (oral/rat)

LC50: No data available

Copper

LD50: No data available

LC50: No data available

Potassium fluoborate

LD50: 5,854 mg/kg (oral/rat)

LC50: No data available

Potassium fluoride

LD50: 245 mg/kg (oral/rat)

LC50: No data available

Silver

LD50: >2,000 mg/kg (oral/rat)

LC50: No data available

Tin

LD50: No data available

LC50: No data available

Zinc

LD50: No data available

LC50: No data available

Primary Routes(s) of Entry

Inhalation.

Eye Hazards

As a solid, eye contact is not a plausible mode of exposure.

Skin Hazards

As a solid, eye contact is not a plausible mode of exposure.

Ingestion Hazards

As a solid, ingestion is not a plausible mode of exposure.

11. Toxicological Information (Continued)

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). Overexposure to zinc-containing fume by inhalation may cause respiratory illness.

Symptoms Related to Overexposure

Overexposure by inhalation may cause irritation to the nose, throat, and respiratory tract and/or cough, nose bleeds, nausea, vomiting, chest tightness, chills, fever, pneumonitis, tearing, and pulmonary edema.

Delayed Effects from Long Term Overexposure

Aggravation of pre-existing diseases of the liver, kidneys, and the nervous and gastrointestinal systems. Long-term overexposure via inhalation may also cause fluorosis (a disease characterized by mottled teeth, osteosclerosis, and pain and loss of mobility in joints).

Carcinogenicity

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

Germ Cell Mutagenicity

Some inorganic fluorides have been demonstrated to induce mutagenic changes in mammalian cells in culture. No such effects in humans from occupational exposure to potassium fluoride or potassium fluoborate have been established.

Reproductive Effects

In experimental studies, boric acid has been found to cause decreased sperm production and testicular effects in male rats, and developmental effects in fetuses of exposed female mice. No reproductive effects in humans have been established from occupational exposure to boric acid.

Acute Toxicity Estimates

LD50 (oral): no data available
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. Ecological data for the components is as follows:

Boric Acid

Aquatic Toxicity To Fish: 1,020 mg/l. for 3 d. (Freshwater fish)
Aquatic Toxicity to Invertebrates: EC50 = 658-875 mg/l. for 48 h. (Daphnia)
Aquatic Toxicity to Plants, depressed growth rate: 290 mg/l. (Algae)
No data available for Aquatic Toxicity to Microorganisms, Toxicity to Terrestrial Organisms, Persistence and Degradability, Bioaccumulation Potential, or Mobility in Soil.

Potassium Fluoride

Aquatic Toxicity to Fish: LC50 = 64 mg/l. for 240 h. (Trout)
Aquatic Toxicity to Invertebrates: EC50 = 270 mg/l. (Daphnia)
Aquatic Toxicity to Plants: EC50 = 95 mg/l. for 96 h. (Algae)
Aquatic Toxicity to Microorganisms: EC50 = 101 mg/l. (Protozoa)
No data available for Toxicity to Terrestrial Organisms, Persistence and Degradability, Bioaccumulation Potential, or Mobility in Soil.

Copper, Potassium Fluoborate, Silver, Tin, 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: 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. Disposal of products containing fluorides or borates may be subject to restrictions. 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: This product contains these ingredients in concentrations >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. Copper (CASRN 7440-50-8)
2. Silver (CASRN 7440-22-4)

15. Regulatory Information (Continued)

Canadian Regulatory Information

All components of this product 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 - 0 (minimal 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 - 2 Flammability - 0 Reactivity - 0

Preparation Information

Date of Preparation: 3 February 2016
Date of Prior SDS: 13 March 2015

Disclaimer

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Lucas-Milhaupt, Inc.