

Braze Core Silver, Copper, Zinc, Tin

Safety Data Sheet

1. Product and Company Identification

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Manufacturer

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

Emergency Phone Number

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Chemtrec: 800-424-9300

SDS Number: 470

Product Codes: 30-381; 30-382; 30-383; 30-385; 30-387; 30-452; 30-453;  
30-454; 30-561; 30-562; 30-563; 30-565

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

2. Hazards Identification

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Classification(s)

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Toxic to Reproduction: 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)

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

Label Precautionary Statement(s)

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

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

Store locked up.

Dispose of contents/container in accordance with applicable regulations.  
The acute toxicities of 39-49% of the products' ingredients are unknown.

3. Composition/Information on Ingredients

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Ingredient Name                      CAS Number                      %                      Impurities  
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Boric acid	10043-35-3	5-10	None known
Copper	7440-50-8	15-19	None known
Potassium fluoride	7789-23-3	1-2	None known
Potassium fluoborate	14075-53-7	5-10	None known
Silver	7440-22-4	30-48	None known
Tin	7440-31-5	2-5	None known
Zinc	7440-66-6	22-25	None known

#### 4. First Aid Measures

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 Eye

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 Not applicable.

Skin

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 Not applicable.

Ingestion

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 Not applicable.

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 or Poison Control Center

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 The component potassium fluoride is acutely toxic. Inhalation is the only plausible mode of exposure, as the component is within the core of the wire. Treat fluoride intoxication symptomatically. Inhalation of zinc-containing fume may cause respiratory illness.

#### 5. Fire Fighting Measures

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 Extinguishing Media

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 Not applicable.

Fire and Explosion Hazards

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 These products are non-flammable and non-explosive. However, if present in a fire or explosion, they may emit fumes of the constituent metals or metal oxides, fluorides, and boron oxide.

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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 Not applicable.

#### 7. Handling and Storage

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## Handling Precautions

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No special handling precautions are required.

## Work and Hygiene Practices

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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

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

## 8. Exposure Controls and Personal Protection

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### Ingredients - Exposure Limits

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#### Boric acid

ACGIH TLVs: 2 mg/m<sup>3</sup> TWA; 6 mg/m<sup>3</sup> STEL No OSHA PEL(s)

#### Copper

ACGIH TLVs: 0.2 mg/m<sup>3</sup> TWA (fume), 1 mg/m<sup>3</sup> TWA (dust and mist)

OSHA PELs: 0.1 mg/m<sup>3</sup> TWA (fume), 1 mg/m<sup>3</sup> TWA (dust and mist)

#### Potassium fluoride

ACGIH TLV: 2.5 mg/m<sup>3</sup> TWA (as F-) OSHA PEL: 2.5 mg/m<sup>3</sup> TWA (as F-)

#### Potassium fluoborate

ACGIH TLV: 2.5 mg/m<sup>3</sup> TWA (as F-) OSHA PEL: 2.5 mg/m<sup>3</sup> TWA (as F-)

#### Silver

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

#### Tin

ACGIH TLV: 2 mg/m<sup>3</sup> TWA OSHA PEL: 2 mg/m<sup>3</sup> TWA

#### Zinc (as ZnO)

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

OSHA PEL: 5 mg/m<sup>3</sup> TWA

### Ingredients - Biological Limits

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#### 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

#### 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

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

## Eye/Face Protection

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Wear eye protection adequate to prevent injury from the hazards of brazing. Plastic-frame spectacles with side shields are recommended.

## Skin Protection

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Wear protective gloves and clothing to prevent skin injuries from the hazards of brazing. Avoid flammable fabrics.

#### Respiratory Protection

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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: Light yellow metals in the form of flux-cored wire  
Odor: no odor  
Odor threshold: not applicable  
pH: not applicable  
Melting point: approx. 1,145F./620C.  
Freezing point: not applicable  
Boiling point/boiling range: not applicable  
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): 7.5-10.0  
Solubility (H<sub>2</sub>O): insoluble  
Oil-water partition coefficient: not applicable  
Autoignition Point: not applicable  
Decomposition temperature: not determined  
Viscosity: not applicable

#### 10. Stability and Reactivity

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Reactivity: none reasonably foreseeable  
Stability: stable  
Hazardous Polymerization: will not occur  
Possible Hazardous Reactions: 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; hydrazine mononitrate; hydrazoic acid; hydrogen sulfide; bromates, chlorates, and iodates of alkali and alkali earth metals; hydroxylamine; selenium; tellurium; carbon disulfide; cupric nitrate.

#### Potential Hazardous Decomposition Products

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Boron oxide, fluorides, carbon monoxide, smoke, and irritant decomposition byproducts.

#### 11. Toxicological Information

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

## Ingredients - Toxicological Data

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Boric acid		
LD50: 2,660 mg/kg (oral/rat)		LC50: No data available
Copper		
LD50: No data available		LC50: No data available
Potassium fluoride		
LD50: 245 mg/kg (oral/rat)		LC50: No data available
Potassium fluoborate		
LD50: 5,854 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

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Inhalation.

### Eye Hazards

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

### Skin Hazards

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

### Ingestion Hazards

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

### 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).

### Symptoms Related to Overexposure

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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

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Liver and kidney damage, impaired pulmonary function, and/or aggravation of pre-existing diseases of the liver, kidneys, and the skeletal, 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

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These products contain no chemicals classified as potential or demonstrated carcinogens by IARC, NTP, or OSHA.

### Germ Cell Mutagenicity

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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

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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 from exposure to boric acid have been established.

#### 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. Ecological data for the components is as follows:

##### Boric Acid

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Aquatic Toxicity to Fish: LC50 = 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.

##### Copper

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

##### Potassium Fluoride

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

##### Potassium Fluoborate

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

##### Silver

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

##### Tin

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

Zinc

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No data available for Aquatic Toxicity to Fish, Invertebrates, Plants, 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

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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

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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: 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)

Canadian Regulatory Information

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

WHMIS Class(es) and Division(s): D1B, D2B

Components on Ingredients Disclosure List:

1. Boric acid (CASRN 10043-35-3)
2. Copper, elemental (CASRN 7440-50-8)
3. Fluoride compounds, inorganic, n.o.s.
4. Tin, elemental (CASRN 7440-31-5)
5. 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

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HMIS Ratings (Legend)

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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 for Product  
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Health - 2      Flammability - 0      Reactivity - 0

Preparation Information  
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Date of Preparation: 6 January 2015  
Date of Prior SDS: 9 May 2014

Disclaimer  
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Lucas-Milhaupt, Inc.