Braze Core Silver, Copper, Zinc, Nickel

Safety Data Sheet

1. Product and Company Identification

Supplier and Manufacturer

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

Emergency Phone Number

Chemtrec: 800-424-9300

SDS Number: 469
Product Codes: 30-298; 30-299; 30-506; 30-507; 30-509; 30-510; 30-511; 30-512
Product Use(s): Brazing alloy with flux core

2. Hazards Identification

Classification(s)

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

Label Symbol(s): Health Hazard, Exclamation Point

Label Signal Word(s): Danger

Label Hazard Statement(s)

May cause respiratory irritation.
May cause an allergic skin reaction.
Suspected of damaging fertility or the unborn child.
Suspected of causing cancer.

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.
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 or 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 doctor/Poison Control Center if you feel unwell.

Store locked up.
Dispose of contents/container in accordance with applicable regulations.

37-45% of the product consists of ingredients with unknown acute toxicity.

WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

3. Composition/Information on Ingredients

Ingredient Name	CAS Number	%	Impurities
Boric acid	10043-35-3	4-5	None known
Copper	7440-50-8	15-19	None known
Nickel	7440-02-0	1-3	None known
Potassium fluoride	7789-23-3	3-4	None known
Potassium fluoborate	14075-53-7	2-3	None known
Silver	7440-22-4	30-48	None known
Zinc	7440-66-6	22-26	None known

4. First Aid Measures

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.

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

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. Prolonged skin contact may product contact or allergic dermatitis. Inhalation of zinc-containing fume may cause respiratory illness.

5. Fire Fighting Measures

Extinguishing Media

Not applicable.

Fire and Explosion Hazards

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

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

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)
Nickel
    ACGIH TLV: 1.5 mg/m3 TWA OSHA PEL: 1 mg/m3 TWA
Potassium fluoride
    ACGIH TLV: 2.5 mg/m3 TWA (as F-) OSHA PEL: 2.5 mg/m3 TWA (as F-)
Potassium fluoborate
    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 OSHA PEL: 0.01 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)
Nickel
    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)
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 and filter lenses (shade #3/#4) are recommended.

Skin Protection

Wear protective gloves and clothing to prevent skin injuries from the hazards of brazing and/or for prolonged contact with the 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 metal wire with a flux core
Odor: no odor
Odor threshold: not applicable
pH: not applicable
Melting point: approx. 1220F./660C.
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 (H2O): 7.5-10.0
Solubility (H2O): insoluble
Oil-water partition coefficient: not applicable
Autoignition Point: not applicable
Decomposition temperature: not determined
Viscosity: not applicable

10. Stability and Reactivity

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

Acetylene; ammonia; azides; nitric acid; ethylene imine; halogens; oxalic acid; chlorine trifluoride; peroxyformic acid; sulfuric acid; inorganic and organic peroxides; tartaric acid; 1-bromo-2-propyne; permonosulfuric acid; bromates, chlorates, and iodates of alkali and alkali earth metals; ammonium nitrate; hydrazine; hydrazoic acid; performic acid; dioxane; phosphorus; selenium; sulfur; titanium plus potassium perchlorate.

Potential Hazardous Decomposition Products

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

11. Toxicological Information

Toxicological testing has not been performed by the manufacturer/supplier.

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
Nickel		
	LD50: >9,000 mg/kg (oral/rat)	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
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, skin absorption is not a plausible mode of exposure. Prolonged contact may cause skin irritation or an allergic reaction.

Ingestion Hazards

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

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

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

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

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

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

Reproductive Effects

In experimental studies, boric acid and other inorganic borates have 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 occupational exposure to borates have been established.

Acute Toxicity Estimates

LD50 (oral): >2,300 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. Ecological data for the components is as follows:

Boric Acid

Prolonged toxicity to fish: 1,020 mg/liter for 3 d. (Freshwater fish)
Prolonged toxicity to fish: 1,260 mg/liter for 5 d. (Freshwater fish)
Prolonged toxicity to fish: 890 mg/liter for 9 d. (Freshwater fish)
EC50: 658-875 mg/liter for 48 hrs. (Daphnia)
Depressed growth rate: 290 mg/liter, exposure period not reported (Algae)
No data available for Toxicity to Terrestrial Organisms, Persistence and Degradability, Bioaccumulation Potential, or Mobility in Soil.

Copper

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

Nickel

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

Potassium Fluoride

Aquatic Toxicity to Fish: LC50 = 64 mg/liter for 240 h. (Trout)
Aquatic Toxicity to Fish: LC50 = 9.3 mg/liter for 96h. (Grass Carp)
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

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

Silver

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

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

Do not discharge waste product into sanitary or storm sewers or allow it to contaminate soil. Disposal of products containing fluorides and/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 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. Copper (CASRN 7440-50-8)
2. Nickel (CASRN 7440-02-0)
3. Silver (CASRN 7440-22-4)

U.S. State Regulations

Nickel - California Proposition 65 listed chemical

Canadian Regulatory Information

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, D2A, D2B
Components on Ingredients Disclosure List:
1. Boric acid (CASRN 10043-35-3)
2. Copper (CASRN 7440-50-8)
3. Fluoride compounds, inorganic, n.o.s.
4. Nickel (CASRN 7440-02-0)
5. Silver (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 for Product (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 for Product

Health - 2 Flammability - 0 Reactivity – 0

Preparation Information

Date of Preparation:
Date of Prior SDS: 14 March 2013

Disclaimer

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Lucas-Milhaupt, Inc.