Braze Core Silver, Copper, Zinc, Tin

Material Safety Data Sheet

1. Product And Company Identification
-------------------------------------
Supplier
--------
Lucas-Milhaupt, Inc.
A Handy & Harman Company
5656 South Pennsylvania Avenue
Cudahy, WI  53110
Telephone Number: 414-769-6000
FAX Number: 414-769-1093

Supplier Emergency Contacts & Phone Number
------------------------------------------
Chemtrec:  (800) 424-9300

Manufacturer
------------
Lucas-Milhaupt, Inc.
A Handy & Harman Company
5656 South Pennsylvania Avenue
Cudahy, WI  53110
Telephone Number: 414-769-6000
FAX Number: 414-769-1093

Manufacturer Emergency Contacts & Phone Number
----------------------------------------------
Chemtrec:  (800) 424-9300

Issue Date: 10/13/2006
Product Name: Braze Core Silver, Copper, Zinc, Tin
CAS Number: Not Established
MSDS Number: 470

Product Identification Text
---------------------------
This MSDS is applicable to products with the following codes: 30-380; 30-381; 30-382; 30-383; 30-450; 30-451; 30-452; 30-453; 30-454; 30-560; 30-561; 30-562; 30-563; and 30-564.

2. Composition/Information On Ingredients
-----------------------------------------
Ingredient Name - (CAS Number) - %
----------------------------------
Boric acid (10043-35-3)
Copper (7440-50-8)
Potassium fluoborate (14075-53-7)
Potassium fluoride (7789-23-3)
Potassium tetraborate (12045-78-2)
Silver (7440-22-4)
Tin (7440-31-5)
Zinc (7440-66-6)
3. Hazards Identification

Primary Routes(s) Of Entry

Inhalation

Eye Hazards

Except for the potential for physical injury, eye exposure to this product is not a plausible mode of exposure.

Skin Hazards

Except for the potential for physical injury, skin contact with this product is not a plausible mode of exposure.

Ingestion Hazards

Ingestion of this product, as a solid, is not a plausible mode of exposure.

Inhalation Hazards

Inhalation of the components of this product is not known to present a significant risk to health when used according to instructions and with appropriate protective measures (see Section #8). Inhalation of component elements has been reported to cause one or more of the following symptoms and effects upon excessively high or prolonged exposure:

BORIC ACID: Inhalation of boric acid may irritate the nose, throat, and respiratory system. Chronic exposure may cause borism, which is characterized by dry skin, skin eruptions, and gastrointestinal disturbances.

COPPER: Acute exposure may cause respiratory tract irritation, fever, muscle ache, chills, cough, weakness, and a metallic taste. Chronic exposure may damage the liver, kidney, spleen, pancreas, and brain.

BORATES/FLUOBORATES: Inhalation may irritate the eyes, nose, throat, and respiratory tract.

POTASSIUM FLUORIDE: Inhalation may irritate the nose, throat, and respiratory tract, and cause cough, nose bleeds, nausea, vomiting, chest tightness, chills, fever, tearing, pneumonitis, and pulmonary edema. Chronic exposure may cause abdominal pain and cramps, liver and kidney damage, impaired pulmonary function, and fluorosis (a disease characterized by mottled teeth, osteosclerosis, and pain and loss of mobility in joints).

SILVER: Chronic exposure via inhalation may cause argyria, a blue-gray discoloration of the skin, eyes, mucous membranes, and respiratory tract.

TIN: Exposure to tin dust or fume by inhalation can cause stannosis (a benign pneumoconiosis), shortness of breath, and respiratory tract irritation.

ZINC: Acute exposure to zinc oxide may cause respiratory tract irritation and "metal fume fever", which is characterized by a metallic taste, cough, dry throat, chills, fever, tightness of chest, headache, nausea, shortness of
breath, vomiting, and fatigue.

4. First Aid Measures
---------------------
**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.

5. Fire Fighting Measures
-------------------------
**Flash Point:** N/A °F N/A °C
**Autoignition Point:** N/A °F N/A °C
**Lower Explosive Limit:** N/A
**Upper Explosive Limit:** N/A

**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, gaseous and particulate fluorides, and boron oxide.

**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.

**Storage Precautions**

Do not store in proximity to incompatible materials (see Section #10).

**Work/Hygienic Practices**

To minimize ingestion, wash hands and face before eating, drinking, applying cosmetics, or using tobacco.
8. Exposure Controls/Personal Protection

Engineering Controls

Use appropriate ventilation (e.g., dilution, local exhaust) 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 injury from the hazards of brazing. Plastic-frame spectacles with side shields and filter lenses (shade #3 or #4) are recommended.

Skin Protection

Wear appropriate protective gloves and clothing to prevent injuries from brazing. Avoid flammable fabrics.

Respiratory Protection

If an exposure level exceeds an applicable exposure standard, use a NIOSH-approved respirator having a configuration (type of facepiece, filter media, assigned protection factor, etc.) appropriate to the concentration of the contaminant(s) generated. For guidance on selection and use of respiratory protection, consult American National Standard Z88.2 (ANSI, New York, NY 10036 USA).

Ingredient(s) - 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 (dusts and mists)
  OSHA PELs: 0.1 mg/m3 TWA (fume); 1 mg/m3 TWA (dusts and mists)
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-)
Potassium tetraborate
  No ACGIH TLV(s)
  No OSHA PEL(s)
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
  ACGIH TLVs (as ZnO fume): 5 mg/m3 TWA; 10 mg/m3 STEL
  OSHA PEL (as ZnO fume): 5 mg/m3 TWA

9. Physical And Chemical Properties

Appearance

Odorless light yellow metal in the form of flux-cored wire.
Chemical Type: Mixture  
Physical State: Solid  
Melting Point: ca. 1145 °F ca. 620 °C  
Percent Volatiles: Not Applicable (N/A)  
Solubility: Insoluble  

10. Stability And Reactivity  
--------------------------------
Stability: stable  
Hazardous Polymerization: will not occur

Conditions To Avoid (Stability)  
-------------------------------
Silver and copper can form unstable acetylides if in contact with acetylene gas.

Incompatible Materials  
----------------------
Strong acids; ammonia; azides; nitric acid; ethylene imine; chlorine trifluoride; sulfuric acid; inorganic and organic peroxides; peroxyformic acid; oxalic acid; tartaric acid; 1-bromo-2-propyne; permonosulfuric acid; bromates, chlorates, and iodates of alkali and alkali earth metals; bromine trifluoride.

Hazardous Decomposition Products  
--------------------------------
Heating to elevated temperatures may liberate fumes of the constituent metals or their oxides, gaseous and particulate fluorides, and boron oxide.

11. Toxicological Information  
-----------------------------
Chronic/Carcinogenicity  
-----------------------
The product contains no chemicals classified as potential or demonstrated carcinogens by IARC, NTP, or OSHA.

Reproductive Effects  
---------------------
In experimental studies, inorganic borate compounds and boric acid have been found to cause decreased sperm production and testicular effects in male rats, and developmental effects in fetuses of female mice. No human reproductive effects attributable to occupational exposure to borates or boric acid have been established.

Mutagenicity (Genetic Effects)  
-------------------------------
Inorganic fluoride compounds have been demonstrated to induce mutagenic changes in mammalian cell in culture. The significance of these findings to human health risks is unknown.

Conditions Aggravated By Overexposure  
-------------------------------------
Pre-existing pulmonary diseases (e.g., bronchitis, asthma) may be aggravated by inhalation overexposure, particularly as fume. Chronic overexposure by inhalation and/or ingestion may aggravate pre-existing diseases of the liver, kidneys, gastrointestinal system, and nervous system.

Ingredient(s) - Toxicological Data
Boric acid
   LD50: 2660 mg/kg (oral/rat)        LC50: No data available
Copper
   LD50: No data available        LC50: No data available
Potassium fluoborate
   LD50: 5854 mg/kg (oral/rat)        LC50: No data available
Potassium fluoride
   LD50: 245 mg/kg (oral/rat)        LC50: No data available
Potassium tetraborate
   LD50: No data available        LC50: No data available
Silver
   LD50: >5 gm/kg (oral/guinea pig)        LC50: No data available
Tin
   LD50: No data available        LC50: No data available
Zinc
   LD50: No data available        LC50: No data available

12. Ecological Information
----------------------------------
In its intended manner of use, this product should not be released into the
environment, and adverse effects on ecosystems are not anticipated under
recommended conditions of use, storage, and disposal.

13. Disposal Considerations
----------------------------
Dispose of unused or unusable product in accordance with applicable Federal,
State/Provincial, and local regulations.

14. Transport Information
-------------------------
This product is not classifiable as a Hazardous Substance or Dangerous Goods per
USDOT, TDG (Canada), IATA, or IMO regulations.

15. Regulatory Information
----------------------------
SARA Hazard Classes
---------------------
Acute Health Hazard; Chronic Health Hazard

Ingredient(s) - U.S. Regulatory Information
---------------------------------------------
Copper
   SARA Title III - Section 313 Form "R"/TRI Reportable Chemical
Silver
   SARA Title III - Section 313 Form "R"/TRI Reportable Chemical

Canadian Regulatory Information
-------------------------------
WHMIS Class(es) and Division(s): D1B
Component(s) 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. Silver, elemental (CASRN 7440-22-4)
5. Tin, elemental (CASRN 7440-31-5)

16. Other Information

Revision/Preparer Information

This MSDS Supersedes A Previous MSDS Dated: 11/09/2004

Disclaimer

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained therein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).

Lucas-Milhaupt, Inc.