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Material Safety Data Sheet

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Flux-Coated Alloys of Silver, Copper, Nickel and Zinc

RODOO939

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Lucas-Milhaupt, Inc.
A Handy & Harman Company
5656 South Pennsylvania Avenue
Cudahy, WI 53110 USA

TELEPHONE NUMBER: (414)769-6000

EMERGENCY TELEPHONE NUMBER

Chemtrec (800)424-9300

PRODUCT NAME: Flux-Coated Alloys of Silver, Copper, Nickel and Zinc

This MSDS is applicable to the following products: Braze 505, Flux-Coated (39-505).

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

2. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT: Copper
CAS NUMBER: 7440-50-8
OSHA PELs: 0.1 mg/m3 TWA (fume)
1 mg/m3 TWA (dusts and mists)
ACGIH TLVs: 0.2 mg/m3 TWA (fume)
1 mg/m3 TWA (dusts and mists)

INGREDIENT: Nickel
CAS NUMBER: 7440-02-0
OSHA PEL: 1 mg/m3 TWA
ACGIH TLV: 1 mg/m3 TWA

INGREDIENT: Silver
CAS NUMBER: 7440-22-4
OSHA PEL: 0.01 mg/m3 TWA
ACGIH TLV: 0.1 mg/m3 TWA (metal)

INGREDIENT: Zinc
CAS NUMBER: 7440-66-6
OSHA PEL: 5 mg/m3 TWA (as ZnO fume)
ACGIH TLVs (as ZnO fume): 5 mg/m3 TWA; 10 mg/m3 STEL

INGREDIENT: Fluorides (flux component)
OSHA PEL: 2.5 mg/m3 TWA (as F-)
ACGIH TLV: 2.5 mg/m3 TWA (as F-)

INGREDIENT: Boric Acid (flux component)
CAS NUMBER: 10043-35-3
No OSHA PEL(s) or ACGIH TLV(s)

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2. COMPOSITION/INFORMATION ON INGREDIENTS - Continued

INGREDIENT: Methyl Acrylate (flux component)
CAS NUMBER: 96-33-3
OSHA PEL: 10 ppm TWA "Skin" ACGIH TLV: 10 ppm TWA "Skin"

INGREDIENT: Potassium Tetraborate (flux component)
CAS NUMBER: 1822-77-0
No OSHA PEL(s) or ACGIH TLV(s)

3. HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTS

EYES

Except for the potential for physical injury, eye contact with this product as a solid is not a known health hazard.

SKIN

Skin contact with this product for extended periods of time may cause irritation and/or contact dermatitis.

INGESTION

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

INHALATION

Inhalation of the components and decomposition byproducts of this products 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 the components and decomposition byproducts has been reported to cause one or more of the following symptoms and/or effects upon excessively high or prolonged exposure:

- 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.

- FLUORIDES: Inhalation of inorganic fluoride salts may cause abdominal pain, cramps, impaired pulmonary function, and fluorosis (a disease characterized by mottled teeth, osteosclerosis, and pain and loss of mobility in joints).

- INORGANIC BORATE SALTS/BORIC ACID: Inhalation of inorganic borates may irritate the nose, throat, and respiratory system. Chronic health effects have not been established in occupationally-exposed populations.

3. HAZARDS IDENTIFICATION - Continued

INHALATION - Continued

» METHYL ACRYLATE: This substance has a pungent, unpleasant odor, and is an irritant to the eyes, mucous membranes, respiratory tract, and gastrointestinal system. Case studies have also reported allergic reactions.

» NICKEL: Acute exposure to nickel may cause headache, nausea, vertigo, asthma, and pulmonary edema. Chronic exposure may increase the risk of cancer to the nasopharynx, lungs, prostate, and kidney.

» SILVER: Chronic exposure may produce argyria, a permanent blue-gray discoloration of the skin, eyes, mucous membranes, and respiratory tract.

» ZINC: Acute exposure to zinc oxide fume 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

SKIN

Wash affected area with large quantities of water for at least five minutes. Seek medical assistance if necessary.

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.

5. FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARDS

This product may react vigorously or ignite when exposed to incompatible materials (see Section #6). If present in a fire or explosion, it will emit fumes of the constituent metals and/or metal oxides, boron oxide, gaseous and particulate fluorides, acrolein, aldehydes, carbon monoxide, smoke, and irritant combustion byproducts.

EXTINGUISHING MEDIA

Use dry chemical. Do not use water.

FIRE FIGHTING INSTRUCTIONS

If fighting a fire in which this product is present, wear a self-contained

5. FIRE FIGHTING MEASURES - Continued

FIRE FIGHTING INSTRUCTIONS - Continued

breathing apparatus with full facepiece operated in pressure-demand or other positive pressure mode.

6. ACCIDENTAL RELEASE MEASURES

NO DATA GIVEN

7. HANDLING AND STORAGE

HANDLING AND STORAGE PRECAUTIONS

Do not store in proximity to incompatible materials (see Section #6).

WORK/HYGIENIC PRACTICES

To avoid ingestion, wash hands and face before eating, drinking, or using cosmetics or 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 decomposition byproducts to within their respective OSHA PELs or other applicable standards.

EYE/FACE PROTECTION

Wear eye protection (safety glasses, goggles) adequate to prevent eye contact and 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 skin injuries from the hazards of brazing. Avoid flammable fabrics.

RESPIRATORY PROTECTION

If an exposure level exceeds an OSHA PEL(s) or other applicable standard, use a NIOSH-approved respirator having a configuration (class, 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).

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9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Color will vary with different alloys.

BASIC PHYSICAL PROPERTIES

VAPOR PRESSURE: Not Applicable (N/A)
VAPOR DENSITY (AIR=1): N/A
SOLUBILITY (H2O): Insoluble
PERCENT VOLATILES: N/A

10. STABILITY AND REACTIVITY

CONDITIONS TO AVOID (STABILITY)

Stable at room temperature. Silver and copper can form unstable acetylides upon contact with acetylene gas.

INCOMPATIBLE MATERIALS

Strong oxidizers; Se; Te; Mg; chlorates; NH3; HNO3; azides, ethanol, ethylene imine; ClF3; inorganic and organic peroxides; peroxyformic acid; chlorine and fluorine; permonosulfuric acid; CrO3; Mn and Ca chlorides; CS2; hydrazine mononitrate; nitrobenzene; Fe(CO)5; seleninyl bromide.

HAZARDOUS DECOMPOSITION PRODUCTS

Heating to elevated temperatures may liberate metal/metal oxide fume and/or thermal decomposition products of flux components. The latter may include boron oxide, fluorides, carbon monoxide, acrolein, and other aldehydes. Hazardous polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

MISCELLANEOUS TOXICOLOGICAL INFORMATION

Carcinogenicity: Nickel is classified as a potential human carcinogen by the following organizations (with respective subclassifications): (1) IARC (Group 2B); (2) NTP (Group 2B). None of the other components of this product are classified as potential or demonstrated carcinogens by IARC, NTP, or OSHA.

Genetic/Reproductive Effects: Nickel has produced fetotoxic and teratogenic effects in animal studies, and mutagenic effects in mammalian cell cultures. Fluorides have been demonstrated to induce mutagenic changes in human and animal cell cultures in vitro. In animal studies, borate compounds have caused decreased sperm production and reproductive organ damage in males, and developmental effects in fetuses of exposed females. No human reproductive effects attributable to borate compounds have been established.

11. TOXICOLOGICAL INFORMATION - Continued

MISCELLANEOUS TOXICOLOGICAL INFORMATION - Continued

Biological Monitoring: The American Conference of Governmental Industrial Hygienists has established Biological Exposure Indices (BEIs) of 3mg fluoride per gram of creatinine in pre-workshift urine and 10mg fluoride per gram of creatinine in post-workshift urine (ACGIH, Cincinnati, OH, USA 1991).

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

Pre-existing pulmonary diseases (e.g., bronchitis, asthma) may be aggravated by inhalation exposure, particularly as fume. Chronic exposure by inhalation may aggravate pre-existing diseases of the liver, kidneys, gastrointestinal system, musculoskeletal system, and nervous system.

12. ECOLOGICAL INFORMATION

NO DATA GIVEN

13. DISPOSAL CONSIDERATIONS

Consult the manufacturer for disposition of unused or unusable product.

14. TRANSPORT INFORMATION

HAZARD CLASS: Shipment not controlled by USDOT/IATA/ICAO/IMO regulations.

15. REGULATORY INFORMATION

SARA TITLE III NOTIFICATIONS AND INFORMATION

SARA TITLE III - HAZARD CLASSES: Acute Health Hazard
Chronic Health Hazard

SARA TITLE III - SECTION 313 SUPPLIER NOTIFICATION

This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and of 40 CFR 372:

CAS NUMBER	INGREDIENT NAME	PERCENT BY WEIGHT

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15. REGULATORY INFORMATION - Continued

CAS NUMBER	INGREDIENT NAME	PERCENT BY WEIGHT
7440-50-8	Copper	Unknown
7440-02-0	Nickel	Unknown
7440-22-4	Silver	Unknown
7440-66-6	Zinc	Unknown

This information must be included on all MSDSs that are copied and distributed for this material.

16. OTHER INFORMATION

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

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).