Handy Flux Type A-1

Safety Data Sheet

## 1. Product and Company Identification

### 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: 15

Product Codes: 73-283 (1/2 Lb Handy Flux Type A1), 73-284 (1 Lb Handy Flux Type A1)

Product Use(s): Flux for metal brazing

## 2. Hazards Identification

Classification(s): Acute Toxicity, Oral: Hazard Category 4

Label Symbol(s): Exclamation Point

Label Signal Word(s): Warning

### Label Hazard Statement(s)

Harmful if swallowed.

### Label Precautionary Statement(s)

Wash hands thoroughly after handling.
Do not eat, drink, or smoke when using this product.
If swallowed, rinse mouth. Do not induce vomiting unless so instructed by medical personnel.
Call a Poison Control Center/doctor if you feel unwell.
Dispose of contents/container in accordance with applicable regulations.

## 3. Composition/Information on Ingredients

| Ingredient | CAS Number | % | Impurities |
|---|---|---|---|
| Aluminum fluoride | 7784-18-1 | 1-5 | None known |
| Lithium chloride | 7447-41-8 | 3-6 | None known |
| Potassium fluoborate | 14075-53-7 | 25-35 | None known |
| Potassium fluoride | 7789-23-3 | 1-5 | None known |
| Potassium pentaborate | 11128-29-3 | 25-35 | None known |
| Zinc chloride | 7046-85-7 | 4-8 | None known |

## 4. First Aid Measures

### Eyes

Flush affected areas with water for at least 15 minutes. Seek medical assistance if necessary.

### 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.

### Ingestion

Do not induce vomiting unless so instructed by medical authority. If the subject is conscious, give 2-4 cups of milk or water. Seek immediate medical assistance. Do not attempt to give anything by mouth to an unconscious or convulsive person.

### 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

Depending upon the dose, ingestion of the component potassium fluoride may be harmful. Its concentration in the product is <50 gm/kg. Treat fluoride intoxication symptomatically. No components are readily absorbed through the skin, although contact may cause skin irritation.

## 5. Fire Fighting Measures

### Extinguishing Media

Not applicable.

### Fire and Explosion Hazards

This product is non-flammable and non-explosive. If it is present in a fire or explosion, potential decomposition byproducts may include oxides of boron, potassium, lithium, and zinc and/or fluorides.

### 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

### Methods and Materials

Isolate spilled product and transfer to impervious containers.

### Personal Precautions

Avoid contact with skin, eyes, and mucous membranes. Wear appropriate protective equipment (e.g., gloves, chemical goggles) during cleanup.

### Environmental Precautions

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Prevent spills from entering sewers or contaminating soil.

## 7. Handling and Storage

### Handling Precautions

Avoid contact with skin and clothing, using protective equipment as needed.

### Work and Hygiene Practices

To prevent ingestion following use of the product, 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

Aluminum fluoride
    ACGIH TLV(s): 2 mg/m3 TWA (as Al); 2.5 mg/m3 TWA (as F-)
    OSHA PEL: 2.5 mg/m3 TWA (as F-)
Lithium chloride
    No ACGIH TLV(s)  No OSHA PEL(s)
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 pentaborate
    No ACGIH TLV(s)  No OSHA PEL(s)
Zinc chloride
    ACGIH TLVs: 1 mg/m3 TWA; 2 mg/m3 STEL  OSHA PEL: 1 mg/m3 TWA

### Ingredients – Biological Limits

Aluminum fluoride
    ACGIH BEIs for fluoride in urine: 2 mg/l. prior to shift
                                      3 mg/l. end of shift
Lithium chloride
    No ACGIH BEI(s) or other biological limit(s)
Potassium fluoborate
    ACGIH BEIs for fluoride in urine: 2 mg/l. prior to shift
                                      3 mg/l. end of shift
Potassium fluoride
    ACGIH BEIs for fluoride in urine: 2 mg/l. prior to shift
                                      3 mg/l. end of shift
Potassium pentaborate
    No ACGIH BEI(s) or other biological limit(s)
Zinc chloride
    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

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Wear eye protection adequate to prevent eye contact with the product and injury from the hazards of brazing. Plastic-frame spectacles with side shields and filter lenses (shade #3/#4) are recommended.

Skin Protection
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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
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If an exposure level 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: white paste
Odor: no odor
Odor threshold: not applicable
pH: approx. 4.5
Melting point: not applicable
Freezing point: not applicable
Boiling point/boiling range: >212F./100C.
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): approx. 1.7
Solubility (H2O): soluble
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: Some components may decompose at elevated temperatures.

Incompatible Materials
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Acetic anhydride; alkali and alkali earth metals; zirconium; platinum; bromine trifluoride.

Potential Hazardous Decomposition Products
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Oxides of boron, potassium, lithium, and zinc and/or fluorides.

## 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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Aluminum fluoride
    LD50: 1,800 mg/kg (oral/rat)  LC50: No data available
Lithium chloride
    LD50: 526 mg/kg (oral/rat)  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
Potassium pentaborate
    LD50: 2,800 mg/kg (oral/rat)  LC50: No data available
Zinc chloride
    LD50: 350 mg/kg (oral/rat)  LC50: No data available

Primary Routes(s) of Entry
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Ingestion; inhalation.

Eye Hazards
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This product may cause eye irritation or injury.

Skin Hazards
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This product can produce irritation, particularly on abraded skin. Prolonged exposure can cause dermatitis.

Ingestion Hazards
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Ingestion of this product may cause one or more of the following symptoms and effects: nausea, vomiting, cramps, gastrointestinal irritation, abdominal pain, convulsions, and tachycardia. Chronic ingestion may cause fluorosis (a disease characterized by mottled teeth, osteosclerosis, and pain and loss of mobility in joints).

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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Irritation to the nose, throat, and respiratory tract; 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, fluorosis, and/or aggravation of pre-existing diseases of the liver, kidneys, and the skeletal, nervous, and gastrointestinal systems.

Carcinogenicity
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This product contains 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 genetic effects in humans from occupational exposure to potassium fluoride or potassium fluoborate have been established.

Reproductive Effects
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The product contains no chemicals determined to be damaging to fertility or the unborn child.

Acute Toxicity Estimates
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LD50 (oral): >1,300 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:

Aluminum Fluoride
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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.

Lithium Chloride
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No data available for Aquatic Toxicity to Fish and Invertebrates, Aquatic Toxicity to Plants and Microorganisms, Toxicity to Terrestrial Organisms, Persistence and Degradability, Bioaccumulation Potential, 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.

Potassium Fluoride
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Aquatic Toxicity to Fish: LC50 = 64 mg/liter for 240 h. (Trout)
Aquatic Toxicity to Fish: LC50 = 9.3 mg/liter for 96 h. (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 Pentaborate
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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 Chloride
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Aquatic Toxicity to Fish: LC50 = 18.18 mg/l. for 4d. (Freshwater fish)
Aquatic Toxicity to Invertebrates: EC50 = 0.16 mg/l. for 48h. (Daphnia)

Aquatic Toxicity to Plants: NOEC = 0.05 mg/l. for 4d. (Algae)
Toxicity to Microorganisms: EC50 = 30.45 mg/l., time not reported (Bacteria)
No data available for 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 no 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.

### 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, E
Components on Ingredients Disclosure List:
1. Fluoride compounds, inorganic, n.o.s.
2. Zinc chloride (CASRN 7646-85-7)

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 (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
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Health - 2  Flammability - 0  Reactivity – 0

Preparation Information
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Date of Preparation: 7 July 2014
Date of Prior SDS: 5 September 2012

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Lucas-Milhaupt, Inc.