

Handy Flux and Handy Flux SLS

Material Safety Data Sheet

1. Product And Company Identification

Suppliers

Lucas Milhaupt, Inc.
5656 South Pennsylvania Avenue
Cudahy, WI 53110 USA

Handy & Harman of Canada, Ltd.
290 Carlingview Drive
Rexdale, ON M9W 5G1 Canada

Suppliers Emergency Contacts & Phone Number

Lucas-Milhaupt, Inc.: 414-769-6000
Handy & Harman of Canada, Ltd.: 416-675-1860

Manufacturer

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

Manufacturer Emergency Contacts & Phone Number

Chemtrec: 800-424-9300

Issue Date: 06/01/2010

Product Name: Handy Flux and Handy Flux SLS

MSDS Number: 1

Product Codes: 73-100, 73-101, 73-103, 73-104, 73-105, 73-106, 73-107,
73-108, 73-110, 73-111, 73-117, 73-407, 73-408, 82-045, 82-096, and 83-107.

2. Composition/Information On Ingredients

Ingredient Name	CAS Number	%
Boric acid	10043-35-3	15-30
Potassium fluoride	7789-23-3	15-30
Potassium tetraborate tetrahydrate	12045-78-2	15-30

Potassium Tetraborate Tetrahydrate is listed on the USEPA TSCA Inventory and Canadian DSL as its anhydrous form, Potassium Tetraborate, CASRN 1332-77-0.

3. Hazards Identification

Primary Routes(s) Of Entry

Ingestion; inhalation.

Eye Hazards

This product can cause eye irritation, or eye injury upon prolonged contact.

Skin Hazards

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

Ingestion Hazards

Some components of this product are potentially toxic if ingested, and may cause one or more of these symptoms and effects: nausea, vomiting, diarrhea, abdominal pain, gastrointestinal irritation, convulsions, tachycardia, cramps, and central nervous system depression.

Inhalation Hazards

Inhalation of the components and decomposition products of this product does not pose a significant risk to health when the product is used in accordance with instructions and appropriate protective measures (see Section #8). The components/decomposition products may cause one or more of the following symptoms and effects if exposure is excessively high and/or prolonged.

Acute exposure: Irritation to the nose, throat, and respiratory tract; cough, nose bleeds, nausea, vomiting, chest tightness, chills, fever, tearing, pneumonitis, and pulmonary edema.

Chronic exposure: 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).

4. First Aid Measures

Eye

Flush affected areas with water for at least fifteen 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

If subject is conscious, induce vomiting. Seek immediate medical assistance. Never 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

Depending upon the dose, the component potassium fluoride may be toxic. Its concentration in the product is <300 gm/kg. Treat fluoride intoxication symptomatically. Intoxication may occur by ingestion and/or inhalation.

No components are absorbed through the skin, although irritation or dermatitis may occur.

5. Fire Fighting Measures

Flash Point: Not Applicable (N/Appl.)

Autoignition Point: N/Appl.

Flammability Class: N/Appl.

Lower Explosive Limit: N/Appl.

Upper Explosive Limit: N/Appl.

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 boron oxide, boron trifluoride, and hydrogen fluoride.

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

Isolate spilled product and transfer to impervious containers. Avoid contact with skin, eyes, and mucous membranes. Wear appropriate protective equipment (e.g., gloves, chemical goggles) during cleanup and disposal.

7. Handling And Storage

Handling Precautions

Avoid contact with skin and clothing.

Storage Precautions

Store in a cool place away from 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 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

Wear appropriate protective gloves and clothing to prevent skin injuries from the hazards of brazing and/or for prolonged or repeated contact with the product. 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 respirators, 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)

Potassium fluoride

ACGIH TLV: 2.5 mg/m³ TWA (as F-) OSHA PEL: 2.5 mg/m³ TWA (as F-)

Potassium tetraborate tetrahydrate

No ACGIH TLV(s) No OSHA PEL(s)

9. Physical And Chemical Properties

Appearance

Odorless white pastes.

Chemical type: mixture

Physical state: solid

Boiling point: >212F./100C.

Specific gravity: approx. 1.67

pH factor: approx. 8.0

Solubility: soluble

Other commonly-reported physical properties (odor threshold, evaporation rate, vapor pressure, vapor density, freezing point, viscosity, oil-water partition coefficient, percent volatiles, percent VOCs) are not applicable to these products.

10. Stability And Reactivity

Stability: stable

Hazardous Polymerization: will not occur

Conditions To Avoid (Stability)

Some components of the product may decompose at elevated temperatures.

Incompatible Materials

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

Hazardous Decomposition Products

Boron oxide, boron trifluoride, and/or hydrogen fluoride.

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 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 human reproductive effects attributable to borates have been reported.

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. Chronic overexposure by ingestion or inhalation may aggravate diseases of the liver, kidneys, and the skeletal, nervous, and gastrointestinal systems.

Ingredient(s) - Toxicological Data

Boric acid
LD50: 2,660 mg/kg (oral/rat) LC50: No data available
Potassium fluoride
LD50: 245 mg/kg (oral/rat) LC50: No data available
Potassium tetraborate tetrahydrate
LD50: No data available LC50: No data available

12. Ecological Information

In their intended manner of use, these products 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

These products are not Hazardous Substances or Dangerous Goods per USDOT, TDG (Canada), IATA, or IMO regulations.

15. Regulatory Information

TSCA Information

All components of these products are listed in 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 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.

Canadian Regulatory Information

All components of these products are listed on the Domestic Substances List.

WHMIS Class(es) and Division(s): D1B, D2A, D2B

Component(s) on Ingredients Disclosure List:

1. Boric acid (CASRN 10043-35-3)
2. Fluoride compounds, inorganic, n.o.s.

16. Other Information

HMIS Ratings

Health - 3* Flammability - 0 Physical Hazard - 0 PPE - see Note

Note: Lucas-Milhaupt, Inc. and Handy & Harman of Canada, Ltd. recommend use of safety glasses and protective 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

Health - 3 Flammability - 0 Reactivity - 0

Revision Information

This MSDS supersedes a previous MSDS dated 07/25/2007.

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.

Handy & Harman of Canada, Ltd.