

TEC Flux

Material Safety Data Sheet

1. Product And Company Identification

-----  
Supplier

-----  
Lucas Milhaupt, Inc.            Handy & Harman of Canada, Ltd.  
5656 South  
Pennsylvania Ave.            290 Carlingview Drive  
Cudahy, WI 53110            Rexdale, ON M9W 5G1

Supplier Emergency Contacts & Phone Number

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

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

-----  
800-424-9300 (Chemtrec):

Issue Date: 06/18/2004  
Product Name: TEC Flux  
CAS Number: Not Established  
Chemical Family: Aqueous slurry of inorganic salts  
MSDS Number: 196  
Product Code: 36-100, 36-200, 36-300, 36-301 and 36-304

2. Composition/Information On Ingredients

-----  
Ingredient Name - (CAS Number) - %

-----  
Ammonium chloride (12125-02-9) 3 - 6  
Hydrochloric acid (7647-01-0) 1 - 3  
Lithium chloride (7447-41-8) < 4  
Zinc chloride (7646-85-7) 40 - 50

No Data Available...

3. Hazards Identification

-----  
Primary Routes(s) Of Entry

-----  
Ingestion; inhalation

#### Eye Hazards

Eye contact may cause severe irritation and/or corneal injury.

#### Skin Hazards

Skin contact with this product may cause irritation and/or skin burns, particularly on abraded skin. Prolonged exposure may cause skin ulceration.

#### Ingestion Hazards

Some components of this product are potentially toxic if ingested, causing one or more of the following symptoms and effects: nausea, vomiting, cramps, diarrhea, abdominal pain, gastrointestinal irritation, convulsions, and kidney damage.

#### 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 components and/or decomposition byproducts has been reported to cause one or more of the following symptoms and/or acute effects upon very high or prolonged exposure:

ACUTE EFFECTS: inhalation may irritate the nose, throat, and respiratory tract, and cause nausea, chest tightness, fever, and shortness of breath.

CHRONIC EFFECTS: Long-term inhalation exposure may cause ulceration of mucous membranes, pneumonitis, and pulmonary edema.

### 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

Do not induce vomiting. If the subject is conscious, give plenty of milk or water. Seek immediate medical assistance. Do not attempt to give anything by mouth to an unconscious 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

-----  
The component zinc chloride is corrosive to tissues and, depending upon ingested dose, may be toxic. There is no specific antidote. Treat ingestion symptomatically. The component hydrochloric acid is also corrosive to tissues. No components are absorbed through the skin, although the skin contact can cause irritation or burns.

## 5. Fire Fighting Measures

-----

Flash Point: N/A °F N/A °C  
Autoignition Point: N/A °F N/A °C  
Flammability Class: N/A  
Lower Explosive Limit: N/A  
Upper Explosive Limit: N/A  
Fire And Explosion Hazards

-----

This product is non-flammable and non-explosive. If it is present in a fire or explosion, potentially hazardous emissions may include zinc chloride, zinc oxide, lithium oxide, ammonium chloride, and hydrogen chloride.

## 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 material 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, eyes, and mucous membranes, using protective equipments necessary.

### 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 eye injury from the hazards of soldering. 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 soldering or skin 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 respiratory protection, consult American National Standard Z88.2 (ANSI, New York, NY 10036 USA).

#### Ingredient(s) - Exposure Limits

-----

##### Ammonium chloride

ACGIH TLVs: 10 mg/m<sup>3</sup> TWA; 20 mg/m<sup>3</sup> STEL

No OSHA PEL(s)

##### Hydrochloric acid

ACGIH TLV: 5 ppm "Ceiling" (as HCl)

OSHA PEL: 5 ppm "Ceiling" (as HCl)

##### Lithium chloride

No ACGIH TLV(s)

No OSHA PEL(s)

##### Zinc chloride

ACGIH TLVs: 1 mg/m<sup>3</sup> TWA; 2 mg/m<sup>3</sup> STEL

OSHA PEL: 1 mg/m<sup>3</sup> TWA

### 9. Physical And Chemical Properties

-----

#### Appearance

-----

Red liquid with a mild odor

Chemical Type: Mixture

Physical State: Liquid

Boiling Point: ca. 229 °F ca. 109 °C

Specific Gravity: ca. 1.55

Percent Volatiles: Not Applicable (N/A)

Vapor Pressure: N/A

Vapor Density: N/A

pH Factor: <7

Solubility: soluble

### 10. Stability And Reactivity

-----

Stability: stable  
Hazardous Polymerization: will not occur  
Conditions To Avoid (Stability)

-----  
Some components of the product will decompose and/or off gas at elevated temperatures.

Incompatible Materials

-----  
Strong bases; potassium plus aluminum bromide; potassium chlorate; ammonium nitrate; iodine pentafluoride; bromine trifluoride.

Hazardous Decomposition Products

-----  
Zinc chloride, zinc oxide, ammonium chloride, lithium chloride, and/or hydrogen chloride.

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 animal studies, ingestion or injection of lithium chloride has been found to cause various reproductive problems, including reduced litter size and fetal death in females, adverse effects on sperm in males, and developmental abnormalities in offspring. These are not plausible routes of potential human exposure in occupational settings, and the relevance of these findings to human health is unknown. Intraperitoneal injection of zinc chloride in fetal mice has produced skeletal abnormalities and delayed development. The significance of such findings with respect to adverse reproductive effects in humans is unknown.

Mutagenicity (Genetic Effects)

-----  
Zinc chloride has been associated with an increase in chromosomal aberrations in mouse bone marrow.

Conditions Aggravated By Overexposure

-----  
Pre-existing pulmonary diseases (e.g., bronchitis, asthma) may be aggravated by inhalation overexposure to the components or decomposition byproducts of this product. Overexposure by inhalation or ingestion may aggravate diseases of the liver, kidneys, and skeletal, cardiovascular, central nervous, and gastrointestinal systems.

Ingredient(s) - Toxicological Data

-----  
Ammonium chloride  
LD50: 1650 mg/kg (oral/rat)                      LC50: No data available  
Hydrochloric acid  
LD50: 900 mg/kg (oral/rabbit)                      LC50: 3124 ppm/1H (inhalation/rat)  
Lithium chloride  
LD50: 526 mg/kg (oral/rat)                      LC50: No data available

Zinc chloride

LD50: 350 mg/kg (oral/rat)

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

-----  
Proper Shipping Name

-----  
Corrosive liquid, n.o.s. (contains zinc chloride and hydrochloric acid)

Hazard Class

-----  
8 (Packing Group II)

DOT Identification Number

-----  
UN1760

DOT Shipping Label

-----  
CORROSIVE

Packaging Exceptions

-----  
49CFR Part 173.154

15. Regulatory Information

-----  
SARA Hazard Classes

-----  
Acute Health Hazard; Chronic Health Hazard

Ingredient(s) - U.S. Regulatory Information

-----  
Hydrochloric acid

SARA Title III - Section 313 Form "R"/TRI Reportable Chemical

Canadian Regulatory Information

-----  
WHMIS Hazard Class(es) and Division(s): D1B, D2A, D2B, E  
Components on Ingredients Disclosure List:

1. Ammonium chloride (CASRN 12125-02-9)
2. Hydrogen chloride (CASRN 7647-01-0)
3. Zinc chloride (CASRN 7646-85-7)

16. Other Information

-----  
Revision/Preparer Information  
-----

This MSDS Supercedes A Previous MSDS Dated: 07/18/2002

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.