

TEC Flux

Safety Data Sheet

1. Product and Company Identification

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Suppliers and Manufacturers  
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Lucas Milhaupt, Inc.  
5656 South Pennsylvania Avenue  
Cudahy, WI 53110 USA  
Telephone: 414-769-6000  
www.lucasmilhaupt.com

Emergency Phone Number  
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CHEMTREC Within the USA and Canada: 1-800-424-9300  
CHEMTREC Outside USA and Canada: +1 703-741-5970

SDS Number: 196  
Product: Flux

Product Codes: 36-100 (TEC FLUX), 36-200 (TEC FLUX), 36-300 (TEC FLUX), 36-301 (TEC FLUX), 36-304 (TEC FLUX), 82-059 (TEC FLUX), 40017 (TEC FLUX), A00000225 (TEC FLUX)

Product Use(s): Flux for metal soldering

2. Hazards Identification

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Classification(s)  
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Acute Toxicity, Oral: Hazard Category 4  
Acute Toxicity, Inhalation: Hazard Category 4  
Skin Corrosion: Hazard Category 1B  
Severe Eye Damage: Hazard Category 1



Label Symbol(s): Corrosive, Exclamation Point

Label Signal Word(s): Danger

Label Hazard Statement(s)  
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Harmful if swallowed or inhaled.  
Causes severe skin burns and eye damage.



Label Precautionary Statement(s)  
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Do not breathe vapors or mist.  
Use only outdoors or in a well-ventilated area.  
Wear protective gloves and eye/face protection.  
Wash hands thoroughly after handling. Store locked up.  
Do not eat, drink, or smoke when using this product.

IF SWALLOWED: Rinse mouth. DO NOT induce vomiting. Immediately call a doctor or Poison Control Center, or also if you feel unwell.

IF ON SKIN: Take off immediately all contaminated clothing. Rinse skin with water. Wash contaminated clothing before reuse.

IF IN EYES: Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if easy to do. Continue rinsing. Immediately call a doctor or Poison Control Center.

IF INHALED: Remove person to fresh air and keep comfortable for breathing.

Dispose of contents/container in accordance with applicable regulations.

### 3. Composition/Information on Ingredients

Ingredient	CAS Number	%	Impurities
Ammonium chloride	12125-02-9	3-6	None known
Hydrochloric acid	7647-01-0	1-3	None known
Lithium chloride	7447-41-8	<4	None known
Zinc chloride	7646-85-7	40-50	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. If the subject is conscious, give large quantities of liquids. 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

The components zinc chloride and hydrogen chloride are harmful and corrosive to tissues. There is no specific antidote. Treat ingestion symptomatically. No components are absorbed through skin, although skin contact can cause irritation or burns.

### 5. Fire Fighting Measures

#### Extinguishing Media

Not applicable.

## Fire and Explosion Hazards

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This product is non-flammable and non-explosive. If it is present in a fire or explosion, potential decomposition byproducts may include hydrogen chloride, ammonium chloride, zinc chloride, lithium oxide, and/or zinc oxide.

## Fire Fighting Instructions

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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

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### Methods and Materials

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Isolate spilled product and transfer to impervious containers.

### Personal Precautions

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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

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### Handling Precautions

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

### Work and Hygiene Practices

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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

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Store in a cool location away from incompatible materials (see Section #10).

## 8. Exposure Controls and Personal Protection

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### Ingredients - Exposure Limits

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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: 2 ppm "Ceiling"	OSHA PEL: 5 ppm "Ceiling"
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

## Ingredients - Biological Limits

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### Ammonium chloride

No ACGIH BEI(s) or other biological limit(s)

### Hydrochloric acid

No ACGIH BEI(s) or other biological limit(s)

### Lithium chloride

No ACGIH BEI(s) or other biological limit(s)

### Zinc chloride

No ACGIH BEI(s) or other biological limit(s)

## Engineering Controls

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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 soldering. 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 soldering and/or for prolonged contact with the product. Avoid flammable fabrics.

## Respiratory Protection

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If an exposure level to a component(s) 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 1003, USA).

## 9. Physical and Chemical Properties

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Appearance: red liquid

Odor: mildly acidic

Odor threshold: not applicable

pH: <7

Melting point: not applicable

Freezing point: <32F./0C.

Boiling point/boiling range: approx. 229F./109C.

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 (H<sub>2</sub>O): approx. 1.5

Solubility (H<sub>2</sub>O): soluble

Oil-water partition coefficient: not determined

Autoignition Point: not applicable

Decomposition temperature: not determined

Viscosity: not determined

## 10. Stability and Reactivity

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Reactivity: none reasonably foreseeable

Stability: stable

Hazardous Polymerization: will not occur

Risk of Dangerous Reactions: some components may decompose at elevated temperatures.

### Incompatible Materials

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

### Hazardous Decomposition Products

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Hydrogen chloride, zinc chloride, zinc oxide, lithium chloride, and ammonium chloride.

## 11. Toxicological Information

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This product has not been subject to toxicological testing by the supplier/manufacturer.

### Ingredients - Toxicological Data

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#### Ammonium chloride

LD50: 1,650 mg/kg (oral/rat)

LC50: No data available

#### Hydrochloric acid

LD50: No data available

LC50: 4,500 mg/m<sup>3</sup> for 0.5h. (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

### Primary Routes(s) of Entry

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Ingestion; inhalation.

### Eye Hazards

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This product may cause serious eye damage or corneal injury.

### Skin Hazards

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This product may cause skin corrosion or irritation.

### Ingestion Hazards

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

### 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). If the aqueous phase of the product is boiled away, inhalation of components may cause irritation to the nose, throat, and respiratory tract; chest tightness, nausea, chills, fever, shortness of breath, pneumonitis, and pulmonary edema.

#### Symptoms Related to Overexposure

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Irritation to the nose, throat, and respiratory tract; chest tightness, nausea, chills, fever, shortness of breath, pneumonitis, and pulmonary edema.

#### Delayed Effects from Long Term Overexposure

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Chronic overexposure by ingestion can aggravate pre-existing diseases of the gastrointestinal and cardiovascular systems.

#### Carcinogenicity

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The product contains no chemicals classified as potential or demonstrated carcinogens by IARC, NTP, or OSHA.

#### Germ Cell Mutagenicity

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The product contains no chemicals determined to be germ cell mutagens.

#### 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): >350 mg/kg  
LD50 (dermal): no data available  
LC50: 4,500 mg/m<sup>3</sup>

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:

##### Ammonium Chloride

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Aquatic Toxicity to Fish: LC50 >123.8 mg/l. for 4d. (Freshwater fish)  
Aquatic Toxicity to Invertebrates: LC50 = 0.39 mg/l. for 48h. (Daphnia)  
Aquatic Toxicity to Plants: EC40 = 21.3 mg/l. for 2d. (Algae)  
No data available for Toxicity to Microorganisms, Terrestrial Organisms, Persistence and Degradability, Bioaccumulation Potential, Mobility in Soil.

##### Hydrochloric Acid

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Aquatic Toxicity to Fish: LC50 = 282 mg/l. for 4d. (Freshwater fish)  
Aquatic Toxicity to Invertebrates: LC80 = 56 mg/l. for 72h. (Daphnia)  
No data available for Aquatic Toxicity to Plants, Toxicity to 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.

## 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

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Do not discharge waste product into sanitary or storm sewers or allow it to  
contaminate soil. Consult applicable Federal, State/Provincial, and local  
regulations.

### 14. Transport Information

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UN Number: 3264  
Proper Shipping Name: Corrosive liquid, acidic, inorganic  
(contains hydrochloric acid and zinc chloride)  
Hazard Class(es): 8  
Packing Group: II  
Environmental Hazards: not applicable  
Transport in Bulk: not applicable  
Special Precautions: not applicable

### 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 these ingredient(s) 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.

1. Hydrochloric acid (CASRN 7647-85-7)

#### 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, D2B, E

Components on Ingredients Disclosure List:

1. Ammonium chloride (CASRN 12125-02-9)
2. Hydrochloric acid (CASRN 7647-85-7)
3. 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

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HMIS Ratings (Legend)  
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Health - 3 (serious 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 for Product  
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Health - 3      Flammability - 0      Reactivity - 0

Preparation Information  
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Date of Preparation: 9 June 2016  
Date of Prior SDS: 3 July 2014

Disclaimer  
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Lucas-Milhaupt, Inc.