Part # 94000

TEC Flux

Material Safety Data Sheet

1. Product and Company Identification

Suppliers and Manufacturers

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Emergency Phone Number

Chemtrec: 800-424-9300

Issue Date: 07/10/2012
Product Name: TEC Flux
MSDS Number: 196
Product Codes: 36-100; 36-200; 36-300; 36-301; 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

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, particularly on abraded skin. Prolonged exposure may cause corrosion and possible skin burns.

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 or acute effects upon very high or prolonged exposure: irritation to the nose, throat, and respiratory tract; nausea, chills, chest tightness, fever, shortness of breath, 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 large quantities of liquids. 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 acutely toxic and corrosive. There is no specific antidote. Treat ingestion symptomatically. The component hydrochloric acid is also corrosive to skin and mucous membranes. No components are absorbed through the skin, although the skin contact can cause irritation or burns.

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, 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 personal Protective equipment as 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/#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 respirators, consult American National Standard Z88.2 (ANSI, New York, NY 10036 USA).

Ingredient(s) - Exposure Limits

Ammonium chloride	
ACGIH TLVs: 10 mg/m3 TWA; 20 mg/m3 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/m3 TWA; 2 mg/m3 STEL	OSHA PEL: 1 mg/m3 TWA

9. Physical and Chemical Properties

Appearance: red liquid
Odor: mildly acidic
Chemical Type: mixture
Physical State: liquid
Boiling Point: approx. 229F./109C.
Specific Gravity: approx. 1.55
Solution pH: <7
Solubility (H2O): 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 this product.

10. Stability and Reactivity

Stability: stable
Hazardous Polymerization: will not occur

Conditions to Avoid

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

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 reduced litter size and fetal death in females, adverse effects on sperm in males, and developmental abnormalities in offspring. The relevance of these findings to human health risks is unknown.

Mutagenicity

Zinc chloride has caused an increase in chromosomal aberrations in mouse bone marrow. The relevance 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. Overexposure by inhalation or ingestion may aggravate pre-existing diseases of the liver, kidneys, and the skeletal, cardiovascular, central nervous, and gastrointestinal systems.

Ingredient(s) - Toxicological Data

Ammonium chloride		
	LD50: 1,650 mg/kg (oral/rat)	LC50: No data available
Hydrochloric acid		
	LD50: 700 mg/kg (oral/rat)	LC50: 4,500 mg/m3 for 30 min. (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

TSCA Information

All components of this product are listed on the EPA's TSCA inventory.

SARA Hazard Classes

Acute Health Hazard; Chronic Health Hazard

Ingredient(s) - U.S. Regulatory Information

SARA Section 313 Notification: This product contains these ingredient(s) 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.
Hydrogen chloride (CASRN 7647-01-0)

Canadian Regulatory Information

All components of this product are listed on either the Domestic Substances List (DSL) or the Nondomestic Substances List (NDSL).
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

HMIS Ratings

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

Note: Lucas-Milhaupt, Inc. and Lucas-Milhaupt Toronto 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 07/13/2009.

Disclaimer

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Lucas Milhaupt, Inc. Lucas-Milhaupt Toronto