



SECTION 1 - IDENTIFICATION

Manufacturer:

Black Swan Mfg. Co.
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For any Transportation or Medical Chemical Emergencies call:

INFOTRAC(800) 535-5053 **OR** (352) 323-3500

24 hours per day - 7 days a week

Product Name: Liquid-Flux**Recommended Use:** To prepare copper tubing and fittings for soldering.

SECTION 2 – HAZARD(S) IDENTIFICATION

Labels

Corrosive

Signal Word
Warning**HMIS**

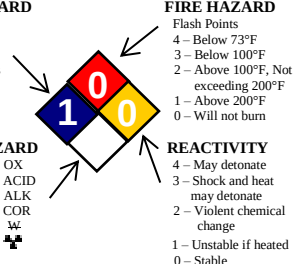
HEALTH	1
FLAMMABILITY	0
REACTIVITY	0

NFPA**HEALTH HAZARD**

4 – Deadly
3 – Extreme Danger
2 – Hazardous
1 – Slight Hazardous
0 – Normal Material

SPECIFIC HAZARD

Oxidizer OX
Acid ACID
Alkali ALK
Corrosive COR
Use NO WATER W
Radioactive

**FIRE HAZARD**

Flash Points
4 – Below 73°F
3 – Below 100°F
2 – Above 100°F, Not exceeding 200°F
1 – Above 200°F
0 – Will not burn

REACTIVITY

4 – May detonate
3 – Shock and heat may detonate
2 – Violent chemical change
1 – Unstable if heated
0 – Stable

GHS Classification**Health**

Acute Toxicity: Cat. 4
Skin Irritation: Cat. 1B
Eye Irritation: Cat. 1
Skin Sensitization: NO

Environmental

Acute Aquatic Toxicity: Not Established
Chronic Aquatic Toxicity: Not Established

Physical
None**Hazardous Statements**

H302: Harmful if swallowed
H315: Causes skin irritation
H319: Causes serious eye irritation

Precautionary Statements

P102: Keep out of reach of children
P262: Do not get in eyes, on skin, or on clothing
P264: Wash thoroughly after handling
P281: Use personal protective equipment as required

SECTION 3 – COMPOSITION / INFORMATION ON INGREDIENTS

Chemicals**CAS#****EINECS#****REACH****Approx %**

			Pre-registration Number	
ZINC CHLORIDE	7646-85-7	231-592-0	N/A	15-17%
AMMONIUM CHLORIDE	12125-02-9	235-186-4	N/A	2-7%

*Unlisted ingredients are not classified as hazardous according to OSHA 1910.1200.

SECTION 4 – FIRST-AID MEASURES

Inhalation: Move into fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen and call physician.
Skin: Remove contaminated clothing and shoes. Wash skin thoroughly with soap and water.
Eyes: Flush with water for 15 minutes. If irritation persists, get medical attention.
Ingestion: Give 1 or 2 glasses of water. DO NOT INDUCE VOMITING. Contact physician immediately.

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SECTION 5 – FIRE-FIGHTING MEASURES

Fire Hazard: May release ZnO and HCl fumes.
Combustion Products: None known.
Extinguishing Media: Any extinguishing media.
Unsuitable Extinguishing Media: None known.
Protective Equipment: Self-contained breathing apparatus {(SCBA), MSHA/NIOSH}. Full protective gear.
Special Fire Fighting Procedures: Evacuate enclosed areas, stay upwind. Closed or confined quarters require self-contained breathing apparatus, positive pressure hose masks or airline masks. Use water spray to cool containers, to flush spills from sources of ignition and to disperse vapors.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Personal Precautions: Prevent contact with skin or eyes. Personnel cleaning up the spill should wear appropriate personal protective equipment, including respirators if vapor concentrations are high.
Protective Equipment: Wear suitable respiratory protective equipment.
Emergency Procedures: Remove all sources of ignition and ventilate area. For leaks, stop leak if it can be done safely. Evacuate area and keep unnecessary and unprotected personnel from entering the spill area.
Environmental Precautions: Avoid runoff into storm sewers, ditches and waterways.
Methods for Cleaning Up: Large Spills may be naturalized with dilute alkaline solutions of soda ash, sodium bicarbonate, or lime. Small spills may be flushed cautiously with water.

SECTION 7 – HANDLING AND STORAGE

Handling

Avoid contact with eyes, skin and clothing. Wash thoroughly after handling to remove all residues. Empty containers may contain residues; treat as if full and observe all product precautions. Do not reuse container.

Storage

Store in a cool, dry, well-ventilated area away from incompatible materials. Keep container closed when not in use. **Incompatible Materials:** Aqueous solution reacts with bases, potassium.

SECTION 8 – EXPOSURE CONTROLS / PERSONAL PROTECTION

<u>Hazardous Chemicals</u>	<u>Exposure Limits</u>		
	<u>ACGIH-TLV</u>	<u>ACGIH-STEL</u>	<u>OSHA-PEL</u>
ZINC CHLORIDE	1 mg/m3	N/A	1 mg/m3
AMMONIUM CHLORIDE	10 mg/m3	N/A	10 mg/m3
HYDROCHLORIC ACID	5 ppm	N/A	5 ppm

Engineering Controls: A source of running water to flush or wash the eyes and skin in case of contact. Use local exhaust as needed.
Ventilation: Local ventilation adequate.
Personal Protective Equipment – Respiratory: If confined, poorly ventilated areas, use NIOSH/MSHA approved air purifying or supplied air respirators during soldering operations until fumes have dissipated.
Personal Protective Equipment – Skin: Rubber Gloves, Chemical resistant coveralls.
Personal Protective Equipment – Eyes: Safety glasses.

SECTION 9 – PHYSICAL & CHEMICAL PROPERTIES

Appearance:	Clear Liquid	Flash Point:	Not Established	Vapor Pressure:	<0.01 @68°F (20°C)
Odor:	Odorless	Specific Gravity:	1.23	Flammability:	Not Established
pH:	4	Solubility (H2O):	Soluble	Flammability Limits:	LEL – Not Established
Melting Point:	Not Established	Evaporation Rate:	Not Established		UEL – Not Established
Freezing Point:	Not Established	Vapor Density:	Not Established		
Boiling Point:	220°F (104°C) @ 760mm Hg	VOC:	0 g/l		

SECTION 10 – STABILITY AND REACTIVITY

Stability: Stable.
Hazardous polymerization: Will not occur.
Conditions to avoid: None known.
Incompatible materials: Aqueous solution reacts with bases, potassium.
Hazardous decomposition products: Toxic fumes of zinc, chloride, and HCl may be evolved during soldering.

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SECTION 11 – TOXICOLOGICAL INFORMATION

Hazardous Chemicals

ZINC CHLORIDE
AMMONIUM CHLORIDE
HYDROCHLORIC ACID

Toxicity

LD₅₀

Oral – 350 mg/kg (rat)
Oral – 1650 mg/kg (rat)
Oral – 900 mg/kg (rabbit)

LC₅₀

Inhalation – 1960 mg/m³/10M (rat)
Inhalation – N/A
Inhalation – 5666 ppm – 30 minutes (rat)
Inhalation – 31008 ppm – 5 minutes (rat)

Likely Routes of Exposure: Inhalation, Skin Contact, Eye Contact and Ingestion.

Symptoms and Effect - Inhalation: Irritation to respiratory system from fumes evolved during soldering. **Skin Contact:** May cause skin irritation. **Eye Contact:** Eye contact may cause intense irritation and injury. **Ingestion:** Nausea, vomiting, irritation to digestive system.

Short-term Effect: Short-term effects to liver and kidneys can occur. Chemical irritation from continued skin contact can occur. Continuous inhalation may result in sufficient inhalation of solder and flux fumes; which can cause lung damage and irritation of respiratory tract. **Long-Term Effects:** Not determined.

Pre-Existing Conditions: Individuals with pre-existing or chronic diseases of the eyes, skin, respiratory system, cardiovascular system, gastrointestinal system, liver, or kidneys may have increased susceptibility to excessive exposure.

SECTION 12 – ECOLOGICAL INFORMATION

Ecotoxicity: Zinc Chloride- 7.2 ppm/96hrs/medium bluegrill/TLm
Ammonium Chloride – 6 ppm/96hrs/sunfish TLm

Persistence & Degradability: None known.

Bioaccumulative Potential: None known.

Mobility in soil: In normal use, emission of Volatile Organic Compounds (VOC's) to the air takes place, typically at a rate of 0 g/l.

SECTION 13 – DISPOSAL CONSIDERATION

Dispose of product or container in accordance with federal, state or local regulations.

SECTION 14 – TRANSPORTATION INFORMATION

D.O.T. (U.S.): Not Regulated.

SECTION 15 – REGULATORY INFORMATION

Precautionary Label Information: Corrosive and Health Hazard

Risk Phrases: **R22**-Harmful if swallowed. **R34:** Causes burns. **R36/37/38:** Irritating to the eyes, respiratory system and skin. **R41**-Risk of serious damage to eyes.

Safety Phrases: **S2**-Keep out of reach of children. **S9**-Keep container in a well-ventilated place. **S16**-Keep away from sources of ignition-No smoking. **S25**-Avoid contact with eyes. **S26**-In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

SECTION 16 – OTHER INFORMATION

Information on this form is furnished solely for the purpose of compliance with the Occupational Safety and Health Act and shall not be used for any other purpose. Black Swan Mfg. Co. urges the customers receiving this Material Safety Data Sheet to study it carefully to become aware of the hazards, if any, of the product involved. In the interest of safety, you should notify your employees, agents and contractors of the information on the sheets.

DATE: 01/01/2026