

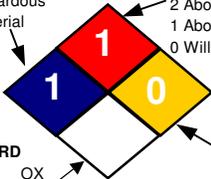


**MATERIAL SAFETY DATA SHEET**

**SECTION 1 - IDENTIFICATION**

<b>Manufacturer:</b> Black Swan Manufacturing Co. 4540 W. Thomas Street Chicago, IL 60651-3318 Telephone: 1-800-252-5796 Fax: 1-773-227-3705 Web Site: <a href="http://www.blackswanmfg.com">www.blackswanmfg.com</a> E-mail: <a href="mailto:info@blackswanmfg.com">info@blackswanmfg.com</a>	<b>For any transportation or medical chemical emergencies call:</b>  <p style="text-align: center;"><u>INFOTRAC</u></p> <p style="text-align: center;">(800) 535-5053 <u>OR</u> (352) 323-3500</p> <p style="text-align: center;">24 hours per day - 7 days a week</p>
<b>Product Name:</b>  <p style="text-align: center;"><b>Tuf-Flux</b></p>	<b>Recommended Use:</b>  <p style="text-align: center;">To prepare copper tubing and fittings for soldering.</p>

**SECTION 2 - HAZARD(S) IDENTIFICATION**

<p style="text-align: center;"><u>Label</u></p>  <p style="text-align: center;"><b>Irritant</b></p>  <p style="text-align: center;"><b>Harmful</b></p>	<p style="text-align: center;"><u>NFPA</u></p> <div style="display: flex; justify-content: space-between;"> <div data-bbox="467 751 625 884"> <p><b>HEALTH HAZARD</b></p> <p>4 Deadly 3 Extreme Danger 2 Hazardous 1 Slightly Hazardous 0 Normal Material</p> </div> <div data-bbox="743 751 1073 909"> <p><b>FIRE HAZARD Flash Points</b></p> <p>4 Below 73°F (Boiling pt. below 100°F) 3 Below 73°F (Boiling pt. at/above 100°F) and/or at/above 73°F - not exceeding 100°F 2 Above 100°F, Not exceeding 200°F 1 Above 200°F 0 Will not burn</p> </div> <div data-bbox="792 947 1027 1073"> <p><b>INSTABILITY</b></p> <p>4 May detonate 3 Shock and heat may detonate 2 Violent chemical changes 1 Unstable if heated 0 Stable</p> </div> </div> <div style="text-align: center; margin: 10px 0;">  </div> <div data-bbox="451 993 625 1077"> <p><b>SPECIFIC HAZARD</b></p> <p>Oxidizer OX Use NO WATER W Simple Asphyxiant SA</p> </div>	<p style="text-align: center;"><u>HMIS</u></p> <table border="1" style="width: 100%;"> <tr> <td style="background-color: #000080; color: white;"><b>HEALTH</b></td> <td style="text-align: center; width: 40px;"><b>1</b></td> <td>0 Minimal Hazard</td> </tr> <tr> <td style="background-color: #FF0000; color: white;"><b>FLAMMABILITY</b></td> <td style="text-align: center;"><b>1</b></td> <td>1 Slight Hazard</td> </tr> <tr> <td style="background-color: #FFD700; color: black;"><b>REACTIVITY</b></td> <td style="text-align: center;"><b>0</b></td> <td>2 Moderate Hazard</td> </tr> <tr> <td></td> <td></td> <td>3 Serious Hazard</td> </tr> <tr> <td></td> <td></td> <td>4 Severe Hazard</td> </tr> </table> <p style="text-align: center; margin-top: 10px;"> <b>PPE</b>    <b>B</b> </p>	<b>HEALTH</b>	<b>1</b>	0 Minimal Hazard	<b>FLAMMABILITY</b>	<b>1</b>	1 Slight Hazard	<b>REACTIVITY</b>	<b>0</b>	2 Moderate Hazard			3 Serious Hazard			4 Severe Hazard
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		3 Serious Hazard															
		4 Severe Hazard															
<p style="text-align: center;"><u>Health</u></p> <p>Acute Toxicity: Cat. 4. Skin Corrosion: N/A Eye Irritation: Cat. 2A Skin Sensitization: Yes</p>	<p style="text-align: center;"><u>Environmental</u></p> <p>Acute Toxicity: N/A Chronic Toxicity: N/A</p>	<p style="text-align: center;"><u>Physical</u></p> <p>Flammability: N/A Other: N/A</p>															
<p style="text-align: center;"><u>Hazardous Statement</u></p> <p><b>Caution Poison!</b> <b>Caution!</b> Contains Zinc Chloride. Harmful if swallowed. Eye Irritant.</p>	<p style="text-align: center;"><u>Precautionary Statement</u></p> <p style="text-align: center;">Keep out of reach of children. Avoid contact with skin, eyes and mucous membranes.</p>																

**SECTION 3 - COMPOSITION / INFORMATION ON INGREDIENTS**

<u>Hazardous Chemicals</u>	<u>CAS #</u>	<u>EINECS#</u>	<u>Approx %</u>
Zinc Chloride	7646-85-7	231-592-0	10-25 %
Ammonium Chloride	12125-02-9	235-186-4	10-25 %

\*Title III Section 313 Supplier Notification: This product contains toxic chemicals subject to the reporting requirement of Section 313 of the Emergency planning and community Right-to-Know Act of 1986 and of 40CFR372. This information must be included in all MSDS's that are copied and distributed for this material.

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## SECTION 4 - FIRST-AID MEASURES

**Inhalation:** If overcome by exposure, remove victim to fresh air immediately. Give oxygen or artificial respiration as needed. Obtain emergency medical attention. Prompt action is essential.

**Skin:** Immediately wash skin with plenty of soap and water. Remove and wash any contaminated clothing.

**Eyes:** Flush eyes with large amounts of water for 15 minutes. Get medical attention if irritation persists.

**Ingestion:** If ingested, call a physician immediately. Only induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person.

## SECTION 5 - FIRE-FIGHTING MEASURES

<u>Extinguishing Media</u>		<u>Specific Hazards</u>	<u>Protective Equipment</u>
<u>Suitable</u>	<u>Unsuitable</u>	May release ZnO and HCl fumes.	Wear self-contained full face piece breathing apparatus and other protective equipment.
Carbon Dioxide			
Dry Chemical	-----		
Foam or Water Fog			

### Special Firefighting Procedures

Evacuate area of unprotected personnel. Heat may build up pressure and rupture closed containers. Hazardous decomposition possible.

## SECTION 6 - ACCIDENTAL RELEASE MEASURES

**Personal Precautions:** None.

**Protective Equipment:** Wear protective clothing during clean up.

**Emergency Procedures:** None.

**Environmental Precautions:** Avoid flushing into sewers, drains waterways and soil.

**Methods for Cleaning-Up:** Wipe up spills to prevent footing hazard.

**Other Precautions:** None.

## SECTION 7 - HANDLING AND STORAGE

<u>Handling</u>	<u>Storage</u>
Wash thoroughly after handling to remove all residue. Avoid prolonged or repeated contact with skin or clothing. Empty containers may contain residues; treat as if full and observe all product precautions. Do NOT reuse empty containers.	Keep container closed and upright when not in use. Store flux at ambient conditions.

## SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

<u>Hazardous Components</u>	<u>OSHA Exposure Limits</u>		
	<u>ACGIH-TLV</u>	<u>OSHA-PEL</u>	
Zinc Chloride	1 mg/m <sup>3</sup>	1 mg/m <sup>3</sup>	
Ammonium Chloride	10 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	
<u>Personal Protective Equipment</u>			
<b>Respiratory Protection:</b>	In confined, poorly ventilated areas, use NIOSH/MSHA approved air purifying or supplied air respirators during soldering operations until fumes have dissipated.		
<b>Ventilation:</b>	Local exhaust.		
<b>Other Protective Equipment:</b>	<u>Protective Gloves</u> Rubber Gloves.	<u>Eyes and Face Protection</u> Safety Glasses.	<u>Other Protective Equipment</u> Coveralls recommended.
<b>Other Precautions:</b>	Where use can result in skin contact, wash exposed areas thoroughly before eating, drinking, smoking, or leaving work area.		
<u>Engineering Controls</u>			
None.			

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## SECTION 9 - PHYSICAL & CHEMICAL PROPERTIES

<b>Appearance:</b>	Tan/Gold	<b>Volatile by Volume:</b>	N/A
<b>Odor:</b>	Petroleum	<b>Vapor Pressure:</b>	< 0.01 @ 68 F (20 C)
<b>Odor Threshold:</b>	N/A	<b>Vapor Density:</b>	N/A
<b>pH:</b>	N/A	<b>Relative Density:</b>	N/A
<b>Melting/Freezing Point:</b>	120-150 F (52-66 C)	<b>Solubility:</b>	Insoluble
<b>Boiling Point:</b>	N/A	<b>Partition Coefficient: n-octanol/water:</b>	N/A
<b>Boiling Range:</b>	N/A	<b>Auto-ignition Temperature:</b>	N/A
<b>Flash Point:</b>	>400 °F (204 °C)	<b>Specific Gravity (H2O=1):</b>	1.06
<b>Evaporation Rate:</b>	N/A	<b>Viscosity:</b>	N/A
<b>Flammability:</b>	N/A	<b>VOC:</b>	0 g/l
<b>Flammability Limits:</b>	LEL:N/A ; UEL:N/A		

## SECTION 10 - STABILITY AND REACTIVITY

<b>Stability</b>	<b>Hazardous Polymerization</b>	<b>Conditions To Avoid</b>
Stable    Unstable	May Occur    Will Not Occur	None
<input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input checked="" type="checkbox"/>	
<b>Incompatible Materials</b>		<b>Hazardous Decomposition Products</b>
None known.		None.

## SECTION 11 - TOXICOLOGICAL INFORMATION

<b>Likely Routes of Exposure</b>	<b>Symptoms/Effects</b>
Inhalation <input checked="" type="checkbox"/>	Irritation to respiratory system from fumes evolved during soldering. May cause skin irritation. Contact may cause intense irritation and injury. Nausea, vomiting, irritation to digestive system.
Skin Contact <input checked="" type="checkbox"/>	
Eye Contact <input checked="" type="checkbox"/>	
Ingestion <input checked="" type="checkbox"/>	
<b>Short-Term Effects:</b>	Short-term effects to liver and kidneys can occur. Chemical irritation from continued skin contact can occur. Continuous industrial use in small unventilated areas may result in sufficient inhalation of solder and flux fumes to cause lung damage and irritation of respiratory tract.
<b>Pre-Existing Conditions:</b>	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.
<b>Hazardous Components</b>	<b>Toxicity</b>
Zinc Chloride	<b>LD<sub>50</sub></b>
Ammonium Chloride	Oral - 350 mg/kg (rat). Oral - 1650 mg/kg (rat).
	<b>LC<sub>50</sub></b>
	Inhalation - 1960 mg/m <sup>3</sup> /10M (rat). Inhalation - N/D

## SECTION 12 - ECOLOGICAL INFORMATION

<b>Ecotoxicity:</b>	<b>Hazardous Components</b>	<b>Aquatic Toxicity</b>
	Zinc Chloride	7.2 ppm/96 hr/medium bluegrill/TLM
	Ammonium Chloride	6 ppm/96 hr/ sunfish TLM
<b>Persistence &amp; Degradability:</b>	None.	
<b>Bioaccumulative Potential:</b>	None.	
<b>Mobility in Soil:</b>	None.	
<b>Other Adverse Effects:</b>	None.	

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## SECTION 13 - DISPOSAL CONSIDERATIONS

Disposal should be made in accordance with federal, state and local regulations.

## SECTION 14 - TRANSPORTATION INFORMATION

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

## SECTION 15 - REGULATORY INFORMATION

Meets Federal Specification O-F-506.

## SECTION 16 - OTHER INFORMATION

**Disclaimer:**

**Revision Date:**

JULY 2010

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 Manufacturing 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.