Material Safety Data Sheet
Material Name: Acro-Tin #420 Dry Form Tinning Compound with Pure Tin

*** Section 1 - Chemical Product and Company Identification ***
Manufacturer Information
ACRO Sales & Engineering, Inc.
N57 W13366 Carmen Avenue
Menomonee Falls, WI 53051-6101
Phone: 262-781-8940
Fax: 862-781-8964

*** Section 2 - Hazards Identification ***
Emergency Overview
Fumes may cause irritation of the eyes, skin and respiratory tract.

Potential Health Effects: Eyes
Irritation from contact with smoke from soldering.

Potential Health Effects: Skin
Possible local irritation.

Potential Health Effects: Ingestion
Most of the solder paste will pass through the body unabsorbed.

Potential Health Effects: Inhalation
Flux fumes during soldering may cause irritation and damage of mucous membranes and pulmonary system.

Medical Conditions Aggravated by Exposure
Pre-existing conditions or diseases of the blood and blood-forming organs, kidneys, nerves and possibly reproductive system.

HMIS Ratings: Health: 2 Fire: 1 HMIS Reactivity 0
Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe * = Chronic hazard

*** Section 3 - Composition / Information on Ingredients ***

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Component</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>7440-31-5</td>
<td>Tin</td>
<td>50</td>
</tr>
<tr>
<td>7646-85-7</td>
<td>Zinc chloride</td>
<td>45</td>
</tr>
<tr>
<td>12125-02-9</td>
<td>Ammonium chloride</td>
<td>5</td>
</tr>
</tbody>
</table>

*** Section 4 - First Aid Measures ***

First Aid: Eyes
Flush eyes with plenty of water

First Aid: Skin
Wash thoroughly with soap and water

First Aid: Ingestion
Stomach must be cleared, preferably by pumping. Get prompt medical attention.

First Aid: Inhalation
Remove victim to fresh air

*** Section 5 - Fire Fighting Measures ***

General Fire Hazards
See Section 9 for Flammability Properties.
None

Hazardous Combustion Products
Carbon monoxide, Carbon dioxide, Lead oxide fumes

Extinguishing Media
Carbon Dioxide and Dry Chemical

Fire Fighting Equipment/Instructions
Use NIOSH approved self-contained breathing apparatus in case of toxic lead fumes

NFPA Ratings: Health: 2 Fire: 1 Reactivity: 0
Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe
**Section 6 - Accidental Release Measures**

**Containment Procedures**
No special procedures necessary.

**Clean-Up Procedures**
Scoop up paste and deposit in appropriate containers. Clean up residual with isopropanol or detergent water.

**Evacuation Procedures**
Isolate area. Keep unnecessary personnel away.

**Special Procedures**
Empty containers may contain product residue. Observe all label precautions.

**Section 7 - Handling and Storage**

**Handling Procedures**
Wash hands after handling solder paste and before eating or smoking. Care should be taken to remove solder paste from under fingernails.

**Storage Procedures**
Store at or near 70°F (21°C) in closed containers.

**Section 8 - Exposure Controls / Personal Protection**

**A: Component Exposure Limits**

<table>
<thead>
<tr>
<th>Component</th>
<th>ACGIH:</th>
<th>OSHA:</th>
<th>NIOSH:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tin (7440-31-5)</td>
<td>2 mg/m³ TWA</td>
<td>2 mg/m³ TWA</td>
<td>2 mg/m³ TWA</td>
</tr>
<tr>
<td>Zinc chloride (7646-85-7)</td>
<td>1 mg/m³ TWA (fume)</td>
<td>2 mg/m³ STEL (fume)</td>
<td>1 mg/m³ TWA (fume)</td>
</tr>
<tr>
<td>Ammonium chloride (12125-02-9)</td>
<td>10 mg/m³ TWA (fume)</td>
<td>20 mg/m³ STEL (fume)</td>
<td>10 mg/m³ TWA</td>
</tr>
</tbody>
</table>

**Engineering Controls**
Provide adequate exhaust ventilation (general and/or local) to meet TLV requirements.

**PERSONAL PROTECTIVE EQUIPMENT**

**Personal Protective Equipment: Eyes/face**
Safety glasses especially during soldering

**Personal Protective Equipment: Skin**
Plastic or rubber gloves where necessary to avoid skin contact

**Personal Protective Equipment: Respiratory**
Usually not required. When ventilation is not sufficient to remove smoke from the breathing zone, a cartridge type respirator should be worn.

**Personal Protective Equipment: General**
Do not wear contaminated clothing or shoes home

**Section 9 - Physical & Chemical Properties**
Material Safety Data Sheet
Material Name: Acro-Tin #420 Dry Form Tinning Compound with Pure Tin

Appearance: Gray metallic
Physical State: Powder
Vapor Pressure: NA
Boiling Point: NA
Solubility (H2O): <5
Evaporation Rate: <0.1
Octanol/H2O Coeff.: ND
Flash Point Method: TOC

Odor: Mild
pH: NA
Vapor Density: NA
Melting Point: NA
Specific Gravity: >1
VOC: 70 g/l
Flash Point: >450°F (>232 °C)

Boiling Point: NA
Melting Point: NA
Solubility (H2O): <5
Specific Gravity: >1
Evaporation Rate: <0.1
Octanol/H2O Coeff.: ND
Flash Point Method: TOC

Vapor Density: NA
Melting Point: NA
Specific Gravity: >1
VOC: 70 g/l
Flash Point: >450°F (>232 °C)

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Odor: Mild
pH: NA
Vapor Density: NA
Melting Point: NA
Specific Gravity: >1
VOC: 70 g/l
Flash Point: >450°F (>232 °C)

Boiling Point: NA
Melting Point: NA
Solubility (H2O): <5
Specific Gravity: >1
Evaporation Rate: <0.1
Octanol/H2O Coeff.: ND
Flash Point Method: TOC

*** Section 10 - Chemical Stability & Reactivity Information ***

Chemical Stability
This is a stable material.

Chemical Stability: Conditions to Avoid
None

Incompatibility
Strong acid, strong oxidizers

Hazardous Decomposition
When heated to soldering temperatures, the solvents are evaporated and thermal degradation products may include aliphatic aldehydes and acids. No lead is detected in fumes from soldering below 1000 °F (537 °C)

Possibility of Hazardous Reactions
Will not occur.

*** Section 11 - Toxicological Information ***

Acute Dose Effects

Component Analysis - LD50/LC50
Zinc chloride (7646-85-7)
Oral LD50 Rat: 350 mg/kg

Ammonium chloride (12125-02-9)
Oral LD50 Rat: 1410 mg/kg

Repeted Dose Effects
Repeated contact with skin can cause a rash. Breathing fumes during soldering may cause pulmonary irritation, headache and irritation of mucous membranes.

Carcinogenicity

Component Carcinogenicity
None of this product's components are listed by ACGIH, IARC, OSHA, NIOSH, or NTP.

*** Section 12 - Ecological Information ***

Ecotoxicity

Component Analysis - Ecotoxicity - Aquatic Toxicity
Ammonium chloride (12125-02-9)

Test & Species | Conditions
--- | ---
24 Hr LC50 Lepomis macrochirus | 725 mg/L
96 Hr LC50 Cyprinus carpio | 209 mg/L [static]
24 Hr EC50 water flea | 202 mg/L
*** Section 13 - Disposal Considerations ***

US EPA Waste Number & Descriptions
A: General Product Information
Solder powder can be melted to reclaim the solder metal. Containers and extracted flux are hazardous waste.

B: Component Waste Numbers
No EPA Waste Numbers are applicable for this product's components.

Disposal Instructions
Dispose of waste material according to Local, State, Federal, and Provincial Environmental Regulations. See Section 7 for Handling Procedures. See Section 8 for Personal Protective Equipment recommendations.

*** Section 14 - Transportation Information ***

US DOT Information
Shipping Name: Zinc Chloride Anhydrous
UN/NA #: 2331
Hazard Class: 8
Packing Group: III

*** Section 15 - Regulatory Information ***

US Federal Regulations
Component Analysis
This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4).

Zinc chloride (7646-85-7)
CERCLA: 1000 lb final RQ; 454 kg final RQ

Ammonium chloride (12125-02-9)
CERCLA: 5000 lb final RQ; 2270 kg final RQ

State Regulations
Component Analysis - State
The following components appear on one or more of the following state hazardous substances lists:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS</th>
<th>CA</th>
<th>MA</th>
<th>MN</th>
<th>NJ</th>
<th>PA</th>
<th>RI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tin</td>
<td>7440-31-5</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Zinc chloride</td>
<td>7646-85-7</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Ammonium chloride</td>
<td>12125-02-9</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Component Analysis - WHMIS IDL
The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS #</th>
<th>Minimum Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tin</td>
<td>7440-31-5</td>
<td>1 %</td>
</tr>
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<td>1 %</td>
</tr>
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<td>Ammonium chloride</td>
<td>12125-02-9</td>
<td>1 %</td>
</tr>
</tbody>
</table>

Additional Regulatory Information
Material Safety Data Sheet
Material Name: Acro-Tin #420 Dry Form Tinning Compound with Pure Tin

Component Analysis - Inventory

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS #</th>
<th>TSCA</th>
<th>CAN</th>
<th>EEC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tin</td>
<td>7440-31-5</td>
<td>Yes</td>
<td>DSL</td>
<td>EINECS</td>
</tr>
<tr>
<td>Zinc chloride</td>
<td>7646-85-7</td>
<td>Yes</td>
<td>DSL</td>
<td>EINECS</td>
</tr>
<tr>
<td>Ammonium chloride</td>
<td>12125-02-9</td>
<td>Yes</td>
<td>DSL</td>
<td>EINECS</td>
</tr>
</tbody>
</table>

*** Section 16 - Other Information ***

Other Information
The information herein is presented in good faith and believed to be accurate as of the effective date given. However, no warranty, expressed or implied, is given. It is the buyer's responsibility to ensure that its activities comply with Federal, State or provincial, and local laws.

Key/Legend
NA - Not Applicable
ND - Not Determined
ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
TLV - Threshold Limit Value
PEL - Permissible Exposure Limit
TWA - Time Weighted Average
STEL - Short Term Exposure Limit
NTP - National Toxicology Program
IARC - International Agency for Research on Cancer