


MATERIAL SAFETY DATA SHEET

| Protective Clothing | NFPA Rating (USA) | EC Classification | WHMIS (Canada) | Transportation |
|-----------------------------|---|-------------------|----------------|----------------|
| Not required for normal use |  | Not Dangerous | Not Controlled | Not Regulated |

Section 1: Product and Company Information

| | |
|---------------------------|---|
| Product Name: | Regular Soldering Flux Paste |
| Product Use: | Soldering flux for copper, brass, galvanized iron, lead, zinc, tin, silver, nickel, mild steel, terne plate and malleable iron. |
| Manufacturer: | LA-CO Industries, Inc. 1201 Pratt Boulevard Elk Grove Village, IL. 60007-5746 |
| Phone Number: | (847) 956-7600 |
| Fax: | (847) 956-9885 |
| 24-hour Emergency: | CHEMTREC: (800) 424-9300 |

Section 2: Composition and Ingredient Information

Hazardous/Dangerous Ingredients:

| <u>Chemical Name</u> | <u>CAS No.</u> | <u>Wt. %</u> | <u>EINECS / ELINCS</u> | <u>Symbol</u> | <u>Risk Phrases</u> |
|----------------------|----------------|--------------|------------------------|---------------|---------------------|
| Hydrochloric acid | 7647-01-0 | 10 – 20 | 231-595-7 | C, Xi | R34, R37 |
| 2-aminoethanol | 141-43-5 | 7 – 13 | 205-483-3 | Xn, C | R20/21/22; R34 |
| Ammonium Chloride | 12125-02-9 | 7 – 13 | 235-186-4 | Xn, Xi | R22, R36 |
| Stearic Acid | 57-11-4 | 1 – 5 | 200-313-4 | None | None |

Note: See Section 8 of this MSDS for exposure limit data for these ingredients.
See Section 16 for the full text of the R-phrases above.

MATERIAL SAFETY DATA SHEET**Section 3: Hazards Identification****Preparation Hazards and Classification:**

Normal use of this product is not expected to cause any harm or irritation to the user.

USA: This product is not a hazardous material as defined by 29 CFR1910.1200, OSHA Hazard Communication Evaluation.

Canada: This is not a controlled product under WHMIS.

European Communities (EC): This preparation is not classified as dangerous according to Directive 1999/45/EC and its amendments.

Appearance, Color and Odor:

White colored paste

Primary Route(s) of Exposure:

Inhalation, Ingestion

Potential Health Effects:

ACUTE (short term): see Section 8 for exposure controls

Inhalation: Inhalation of vapors is not expected with normal use. Over exposure to high vapor concentrations may cause nasal and respiratory irritation, sore throat, coughing and difficulty breathing. High concentrations may also cause dizziness, headache, nausea, vomiting or in extreme cases, unconsciousness or asphyxiation.

Ingestion: Not an expected route of occupational exposure. Low oral toxicity. Ingestion of large quantities may cause abdominal and chest pain, nausea, vomiting, diarrhea or dizziness. Aspiration into the lungs may occur during ingestion of large quantities or vomiting, resulting in lung injury.

Skin: This product has been tested and found to be non-irritating to skin.

Eye: This product has been tested and found to be non-irritating to eyes. May be irritating as a foreign object in the eye.

CHRONIC (long term): see Section 11 for additional toxicological data

Chronic effects are not expected with normal use. Prolonged or repeated over exposure to high vapor concentrations may cause damage to the respiratory tract or lungs.

Medical Conditions

Not available

Aggravated by Exposure:**Section 4: First Aid Measures****Inhalation:**

No health effects expected. If symptoms are experienced remove source of contamination or move victim to fresh air and obtain medical advice.

Eye Contact:

No health effects expected. If material becomes lodged in the eye, do not allow victim to rub eye(s). Let the eye(s) water naturally for a few minutes. Have victim look right and left, then up and down. If particle does not dislodge, flush with lukewarm, gently flowing water for 5 minutes or until removed, while holding eyelid(s) open. If irritation occurs, obtain medical attention. DO NOT attempt to manually remove anything stuck to the eye.

Skin Contact:

No health effects expected. If irritation does occur, flush with lukewarm, gently flowing water for 5 minutes or until chemical is removed.

Ingestion:

No health effects expected. If irritation or discomfort occurs, obtain medical advice.

MATERIAL SAFETY DATA SHEET**Section 5: Fire Fighting Measures**

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| <u>Extinguishing Media:</u> | Use water spray, carbon dioxide, dry chemical powder or foam. |
| <u>Unusual Fire and Explosion Hazards:</u> | Sensitivity to mechanical impact: Not sensitive Sensitivity to static discharge: Not sensitive |
| <u>Fire Fighting Instructions:</u> | Self-contained breathing apparatus and protective clothing should be worn. |
| <u>Hazardous Combustion Products:</u> | Carbon dioxide, carbon monoxide, ammonia, hydrochloric acid fumes, smoke and irritating and toxic fumes may be formed. |

Section 6: Accidental Release Measures

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| <u>Personal Precautions:</u> | Wear protective equipment. Keep unauthorized personnel away. |
| <u>Environmental Precautions:</u> | Do not allow product to reach sewage systems or ground water. |
| <u>Methods for Containment:</u> | Stop the spill if it is safe to do so. Contain spilled flux with earth, sand, or absorbent material which does not react with spilled material. |
| <u>Methods for Clean-up:</u> | Scrape or scoop up the spilled material. Put material in suitable, labeled container. Flush area with water. |

Section 7: Handling and Storage

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| <u>Handling</u> | Avoid breathing fumes. Do not ingest. Keep away from children. Use this material with adequate ventilation. Keep container closed when not in use. |
| <u>Storage:</u> | Store in a cool, dry area. Keep containers tightly closed when not in use. Store away from incompatible materials |

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Section 8: Exposure Controls and Personal Protection

Exposure Limits

| <u>Ingredient</u> | <u>ACGIH TLV (8-hr. TWA)</u> | <u>U.S. OSHA PEL (8-hr. TWA)</u> | <u>Ontario (Canada) TWAEV</u> | <u>UK OEL (8-hr. TWA)</u> |
|-------------------|---|--------------------------------------|--|---|
| Hydrochloric acid | 2 ppm CEL | 5 ppm (7 mg/m ³) CEL | 2 ppm CEV | 1 ppm (2 mg/m ³); 5 ppm (8 mg/m ³) STEL |
| 2-aminoethanol | 3 ppm 6 ppm STEL | 3 ppm (6 mg/m ³) | 3 ppm (7.5 mg/m ³); 6 ppm (15 mg/m ³) STEV | 1 ppm (2.5 mg/m ³); 3 ppm (7.6 mg/m ³) STEL |
| Ammonium Chloride | 10 mg/m ³ (fume); 20 mg/m ³ STEL | Not established | 10 mg/m ³ ; 20 mg/m ³ STEV | 10 mg/m ³ (fume); 20 mg/m ³ STEL |
| Stearic Acid | Not established | Not established | Not established | Not established |

CEL = Ceiling Exposure Limit
 CEV = Ceiling Exposure Value
 STEV = Short Term Exposure Value
 STEL = Short Term Exposure Limit

Exposure Controls

Engineering Controls:

Provide adequate ventilation/local exhaust to keep vapor concentrations below the exposure limits listed above.

A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 or Canadian Standards Association (CSA) Standard Z94.4-93 must be followed whenever workplace conditions warrant a respirator's use.

Personal Protection:

Respiratory Protection: Not required for normal use.

Skin Protection: Not required for normal use. Wear appropriate protective gloves and clean, body-covering clothing, when workplace conditions warrant their use.

Eye Protection: Not required for normal use. Wear appropriate safety goggles, when workplace conditions warrant their use.

Other Protective Equipment:

If used during welding, wear appropriate equipment required for welding operations.

Hygiene Measures:

Avoid breathing fumes. Keep container tightly closed when not in use. Wash hands thoroughly after handling this material. Maintain good housekeeping.

MATERIAL SAFETY DATA SHEET

Section 9: Physical and Chemical Properties

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|--|-----------------------|--|--------------------------------|
| <u>Physical State:</u> | Paste | <u>Vapor Pressure:</u> <u>(mm Hg @ 25°C)</u> | Not available |
| <u>Appearance:</u> | White | <u>Vapor Density:</u> <u>(Air = 1)</u> | Not available |
| <u>pH:</u> | 6.5 – 7 | <u>Solubility in Water:</u> | Water soluble Fat insoluble |
| <u>Relative Density:</u> <u>(water = 1)</u> | 1.1 | <u>Water / Oil distribution</u> <u>coefficient:</u> | Not available |
| <u>Boiling Point:</u> | Not available | <u>Odor Type:</u> | Low odor |
| <u>Freezing Point:</u> | Not available | <u>Odor Threshold:</u> | Not available |
| <u>Viscosity:</u> | Not available | <u>Evaporation Rate:</u> <u>(n-Butyl Acetate = 1)</u> | Not available |
| <u>Oxidizing Properties:</u> | Not available | <u>Auto Ignition Temperature</u> <u>(°C):</u> | Not available |
| <u>Flash Point and Method:</u> | >204°C (400°F) TOC | <u>Flammability Limits (%):</u> | Not available |

Section 10: Stability and Reactivity

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| <u>Stability:</u> | Stable at normal temperature |
| <u>Conditions to Avoid:</u> | No known conditions to avoid. |
| <u>Incompatible Materials:</u> | Incompatible with strong oxidizing agents, strong acids, bases, amines, carbonates, aldehydes, acid chlorides and anhydrides, aluminum, cellulose nitrate, cyanides, sulfides, and potassium chlorate. |
| <u>Hazardous Decomposition Products:</u> | Products of incomplete combustion may include ammonia, carbon dioxide and dense smoke. Heat can cause evolution of gaseous hydrogen chloride. |
| <u>Possibility of Hazardous Reactions:</u> | Not available |
| <u>Other Reactivity Concerns:</u> | Not available |

MATERIAL SAFETY DATA SHEET

Section 11: Toxicological Information

Acute Toxicity Data

| <u>Ingredient</u> | <u>LD₅₀ Oral</u> (mg/kg) | <u>LD₅₀ Dermal</u> (mg/kg) | <u>LC₅₀ Inhalation</u> (4 hrs.) |
|-------------------|--|--|---|
| Hydrochloric acid | 238 - 277 (female rat) 700 (rat) | > 5 010 (rabbit) | 544 ppm (mouse) 1 562 ppm (rat) |
| 2-aminoethanol | 1 720 (rat) | 1 000 (rabbit) | 1 210 mg/m ³ (mouse) |
| Ammonium Chloride | 1 300 (mouse) 1 650 (rat) | Not available | Not available |
| Stearic Acid | > 5 000 (rat) | > 5 000 (rabbit) | Not available |

Chronic Toxicity Data

Carcinogenicity:

The table below indicates whether each agency has listed any ingredient as a carcinogen.

| <u>Ingredient</u> | <u>ACGIH</u> | <u>IARC</u> | <u>NTP</u> |
|-------------------|--------------|-------------|------------|
| Hydrochloric acid | A4 | Group 3 | Not listed |
| 2-aminoethanol | Not listed | Not listed | Not listed |
| Ammonium Chloride | Not listed | Not listed | Not listed |
| Stearic Acid | Not listed | Not listed | Not listed |

ACGIH: (American Conference of Governmental Industrial Hygienists)

A4 – Not Classifiable as a Human Carcinogen.

IARC: (International Agency for Research on Cancer)

Group 3 – The agent is not classifiable as to its carcinogenicity in humans.

NTP: (National Toxicology Program)

Other Toxicity Data:

Regular Soldering Flux Paste Toxicity Data: LD₅₀ Oral: > 5 gm/kg (rat)

(Tested by Rosner-Hixson Laboratories; August 30, 1962)

Irritation:

The product is essentially non-irritating to the eyes and skin. Application of the product to areas of intact and abraded rabbit skin produced no signs of skin irritation (Rosner-Hixson Laboratories; Aug 30, 1962).

Sensitization:

Not applicable

Neurological Effects:

Not applicable for normal use.

Teratogenicity:

Not applicable

Reproductive Toxicity:

Not applicable

Mutagenicity (Genetic Effects):

Not applicable

Toxicologically Synergistic Materials:

Not applicable

MATERIAL SAFETY DATA SHEET**Section 12: Ecological Information**

| | |
|--|---------------|
| <u>Ecotoxicity:</u> | Not available |
| <u>Mobility:</u> | Not available |
| <u>Persistence and degradability:</u> | Not available |
| <u>Bioaccumulative potential:</u> | Not available |
| <u>Other adverse effects:</u> | Not available |

Section 13: Disposal Considerations

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|--------------------------------------|--|
| <u>Waste Disposal Method:</u> | Do NOT dump into any sewers, on the ground or into any body of water. Store material for disposal as indicated in Section 7 Handling and Storage. |
| <u>USA:</u> | Dispose of in accordance with local, state and federal laws and regulations. |
| <u>Canada:</u> | Dispose of in accordance with local, provincial and federal laws and regulations. |
| <u>EC:</u> | Waste must be disposed of in accordance with relevant EC Directives and national, regional and local environmental control regulations. For disposal within the EC, the appropriate code according to the European Waste Catalogue (EWC) should be used. |

Section 14: Transport Information:

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|--|----------------|
| <u>U.S. Hazardous Materials Regulation (DOT 49CFR)</u> | Not regulated |
| <u>Canadian Transportation of Dangerous Goods (TDG)</u> | Not regulated |
| <u>ADR/RID:</u> | Not regulated |
| <u>IMDG:</u> | Not regulated |
| <u>Marine Pollutants:</u> | Not applicable |
| <u>ICAO/IATA :</u> | Not regulated |

MATERIAL SAFETY DATA SHEET**Section 15: Regulatory Information****NFPA Hazard Rating**

| Category | NFPA |
|--------------|------|
| Acute Health | 0 |
| Flammability | 0 |
| Instability | 0 |

USA

TSCA Status: All ingredients in the product are listed on the TSCA inventory.

SARA Title III:

Sec. 302/304: None

Sec. 311/312: None

Sec. 313: None

CERCLA RQ Hydrochloric acid 5 000 lbs (2 270 kg); Ammonium Chloride 5 000 lbs (2 270 kg)

California Prop 65 : This product does not contain chemicals known to the State of California to cause cancer or reproductive toxicity.

State Right-to-Know Lists : Hydrochloric acid, 2-aminoethanol and Ammonium chloride can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

Canada

This product has been classified in accordance with the hazard criteria of the *Controlled Products Regulations* and the MSDS contains all the information required by the *Controlled Products Regulations*.

WHMIS Classification: Not Controlled

NSNR Status (New Substance Notification Regulations):

All ingredients in the product are listed, as required, on Canada's Domestic Substances List (DSL).

NPRI Substances (National Pollutant Release Inventory):

Hydrochloric acid is an NPRI reportable substance.

EC Classification for the Substance/Preparation:

Symbol: Not Dangerous

Risk Phrases: None

Safety Phrases: S1/2: Keep locked up and out of the reach of children.

MATERIAL SAFETY DATA SHEET**Section 16: Other Information****Full Text of R-phrases
appearing in Section 2:**

R20/21/22: Harmful by inhalation, in contact with skin, and if swallowed
R22: Harmful if swallowed
R34: Causes burns
R36: Irritating to eyes
R37: Irritating to respiratory system

Preparation Information:

Preparation Date: August 11, 2005

Revision Date: March 4, 2008

Revision Summary: August 11, 2005: Preparation Date
March 4, 2008: Updated Exposure Limits (Section 8) and Toxicological Information (Section 11).

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