SAFETY DATA SHEET

Section 1: Product and Company Identification

Product Name: N-3 Flux

Product Code: 23512 pt., 23513 qt., 23514 gal.

Product Use: Soldering flux for stainless steel, chrome, copper, brass.

Supplier: LA-CO Industries, Inc.
1201 Pratt Boulevard
Elk Grove Village, IL.
60007-5746
E-mail Contact: customer_service@laco.com

Phone Number: (847) 956-7600
Fax: (847) 956-9885

24-hour Emergency: **CHEMTREC: (800) 424-9300**

Section 2: Hazards Identification

Protective Equipment	GHS Classification	WHMIS (Canada)	Transport
		 E D1B	

2.1 Classification of the substance or mixture according to GHS Classifications (UNECE 3rd Revised Edition):

Acute Tox. 4 H302
Skin Corr. 1H314
STOT SE 3 H335
Aquatic Acute 1 H400
Aquatic Chronic 1 H410

2.2 Label elements:

Danger
H302: Harmful if swallowed.
H314: Causes severe skin burns and eye damage.
H335: May cause respiratory irritation.
H410: Very toxic to aquatic life with long lasting effects.
Precautionary Statements

Prevention

P260: Do not breathe dust or fume.
P264: Wash exposed skin thoroughly after handling.
P270: Do no eat, drink or smoke when using this product.
P271: Use only outdoors or in a well-ventilated area.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P273: Avoid release to the environment.

Response

P301+P330+P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P363: Wash contaminated clothing before reuse.
P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P310: Immediately call a POISON CENTER or doctor/physician.
P305 + P351 +P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Storage

P405: Store locked up.

Disposal

P501: Recycle and or dispose of contents/containers to hazardous waste treatment or remove by licensed waste removal company: in accordance with local/regional/national/ international regulations.

SAFETY DATA SHEET

Section 2: Hazards Identification, continued

2.3 Other hazards: Not available

2.4 Other hazard classifications: USA: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Canada: This is a controlled product under WHMIS.

E D1B

European Communities (EC): This product is classified as dangerous according to Directive 1999/45/EC and its amendments. Classifications: Harmful; Corrosive; Dangerous for the environment.

Section 3: Composition / Information on Ingredients

Hazardous/Dangerous Ingredients:

Chemical Name	CAS No.	Wt.%	EINECS / ELINCS	Symbol	Risk Phrases
Zinc Chloride	7646-85-7	15 - 35	231-592-0	Xn; C; N	R22 – R34 -R0/53
Hydrochloric acid	7647-01-0	3 - 7	231-595-7	C; Xi	R34 - R37
Ammonium chloride	12125-02-9	3 - 6	235-186-4	Xn; Xi	R22 - R36
Ethanol	64-17-5	3 - 5	200-578-6	F	R11

See Section 16 for the full text of the R-phrases above.

Section 4: First Aid Measures

4.1 Description of first aid measures:

Inhalation: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. Obtain medical attention immediately. If breathing is difficult, trained personnel should administer emergency oxygen. DO NOT allow victim to move about unnecessarily. Symptoms of pulmonary edema can be delayed up to 48 hours after exposure.

Eye Contact: Avoid direct contact with this chemical. Wear chemical protective gloves, if necessary. Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for at least 20-30 minutes, by the clock, while holding the eyelid(s) open. Neutral saline solution may be used as soon as it is available. DO NOT INTERRUPT FLUSHING. If necessary, keep emergency vehicle waiting. Take care not to rinse contaminated water into the non-affected eye or onto the face. If irritation persists repeat flushing. Quickly transport victim to an emergency care facility.

Skin Contact: Avoid direct contact with this chemical. Wear chemical protective gloves, if necessary. Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower for at least 20-30. If irritation persists, repeat flushing. DO NOT INTERRUPT FLUSHING. If necessary, keep emergency vehicle waiting. Under running water, remove contaminated clothing, shoes, and leather goods (e.g., watchbands, belts). Obtain medical attention immediately or transport victim to an emergency care facility. Completely decontaminate clothing, shoes and leather goods before re-use or discard.

Ingestion: If swallowed, immediately call a POISON CENTER or doctor/physician. Never give anything by mouth if victim is rapidly losing consciousness or is unconscious or convulsing. Have victim rinse mouth thoroughly with water. Do not induce vomiting. If vomiting occurs naturally, have victim lean forward to reduce the risk of aspiration. Quickly transport victim to an emergency care facility.

4.2 Most important symptoms and effects, both acute and delayed:

Inhalation: Inhalation of mists or fumes generated during use can be severely irritating to the nose, throat and respiratory system and can cause damage to the respiratory system. Symptoms of over-exposure include weakness, dry cough, chest pain, shortness of breath and difficulty breathing. Prolonged or severe exposure may lead to a potentially fatal accumulation of fluid in the lungs (pulmonary edema). Symptoms of pulmonary edema (chest pain and shortness of breath) can be delayed up to 24 or 48 hours after exposure.

SAFETY DATA SHEET

Section 4: First Aid Measures, continued

Eye Contact: Causes eye burns. Can cause permanent eye damage. Mists and fumes can cause severe irritation. The degree of injury depends on duration and extent of contact with the eye.

Skin Contact: Causes burns with direct contact. Symptoms may include ulceration, blistering and permanent scarring.
Ingestion: Causes burns to the mouth, throat and gastro-intestinal system if swallowed. Symptoms are expected to include severe pain, vomiting and bleeding.

4.3 Indication of any immediate medical attention and special treatment needed:
Get medical advice/attention if you feel unwell.

Section 5: Fire Fighting Measures

Flammable Properties:	Not flammable
Suitable extinguishing Media:	Extinguish fire using appropriate extinguishing media for the surrounding fire. Use water spray to cool fire-exposed containers.
Unsuitable extinguishing Media:	Not available
Explosion Data:	
Sensitivity to Mechanical Impact:	Not applicable
Sensitivity to Static Discharge:	Not applicable
Specific Hazards arising from the Chemical:	If involved in a fire, combustion may produce corrosive, toxic and irritating fumes and gases which may include zinc fume, zinc oxide, ammonia and hydrogen chloride gas. Closed containers may rupture violently when exposed to fire or excessive heat for sufficient time.
Protective Equipment and precautions for firefighters:	Self-contained breathing apparatus and protective clothing should be worn. Remove all unprotected personnel.
NFPA	
Health:	3
Flammability:	0
Instability:	1

Section 6: Accidental Release Measures

Personal Precautions:	Wear protective gloves, goggles and clothing. Ventilate the area. Monitor the workplace air for harmful concentrations of vapors and take appropriate precautions if concentrations in air exceed workplace exposure limits.
Environmental Precautions:	Prevent the product from entering sewers or waterways.
Methods for Containment:	Stop the leak if it is safe to do so. Contain the spill with earth, sand, or other suitable inert absorbent which will not react with the spilled material. Do not flush the spill to sewers.
Methods for Clean-up:	Clean up spills immediately. Put material in suitable, covered, labeled chemical waste containers. Contaminated absorbent material may pose the same hazards as the spilled product. Dispose of any contaminated, unusable product as described in Section 13 of this SDS.

Section 7: Handling and Storage

Handling:	This material is corrosive. Prevent the release of mists and vapors of this material into the workplace air. Keep out of reach of children.
Storage:	Store in the tightly closed container in a cool, dry area, out of direct sunlight and away from sources of heat. Product is corrosive to steel; store product in its original container. Empty containers may retain product residue, do not re-use containers for other purposes.

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Section 8: Exposure Controls/Personal Protection

Exposure Guidelines

Consult local authorities for acceptable exposure limits.

Ingredient	ACGIH TLV (8-hr. TWA) (mg/m^3)	U.S. OSHA PEL (8-hr. TWA) (mg/m^3)	Ontario (Canada) TWAEV (mg/m^3)	UK OEL (8-hr. TWA) (mg/m^3)
Zinc Chloride fume	1 2 STEL	1 2 STEL	Not available	1 2 STEL
Hydrogen chloride	2 ppm Ceiling	7 (5 ppm) Ceiling	Not available	2 (1 ppm) 8 (5 ppm) STEL
Ammonium chloride fume	10 20 STEL	10 20 STEL	Not available	10 20 STEL
Ethanol	1 000 ppm STEL	1 900 (1 000 ppm)	Not available	1 920 (1 000 ppm)

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

Exposure Controls

Engineering Controls: Provide adequate ventilation/local exhaust to keep exposure levels below the exposure limits listed above.

Personal Protection:

Eye/Face Protection: Wear chemical splash goggles and a full faceshield.

Skin Protection: Wear impervious protective gloves made of rubber. Wear clean body-covering clothing to prevent skin contact. Wear an impervious apron as needed to prevent skin contact.

Respiratory Protection: When concentrations in air exceed the occupational exposure guidelines, wear a self-contained breathing apparatus. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.

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 Z94.4-02 must be followed whenever workplace conditions warrant a respirator's use.

NIOSH Recommendations for Zinc chloride fume concentrations in air:
Up to 10 mg/m^3: Dust, mist, and fume respirator or Supplied-air respirator (SAR).
Up to 25 mg/m^3: Powered air-purifying respirator with dust, mist, and fume filter(s) or SAR operated in a continuous-flow mode.
Up to 50 mg/m^3: Full-facepiece respirator with high-efficiency particulate filter(s) or powered air-purifying respirator with tight-fitting facepiece and high-efficiency particulate filter(s) or full-facepiece self-contained breathing apparatus (SCBA) or full-facepiece SAR.
Emergency or planned entry into unknown concentrations or IDLH conditions: Positive pressure, full-facepiece SCBA or positive pressure, full-facepiece SAR with an auxiliary positive pressure SCBA.
Escape: Full-facepiece respirator with high-efficiency particulate filter(s) or escape-type SCBA.
The IDLH concentration for zinc chloride fume is 50 mg/m^3.

General Hygiene Measures: Prevent all skin and eye contact. Avoid breathing fumes of this material. Do not ingest. Use this material with adequate ventilation. Keep container closed when not in use. Wash thoroughly after handling this product. Do not eat, drink, smoke while handling this product. Remove contaminated clothing immediately.
Provide eyewash and safety shower stations in workplaces where this flux is handled.

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Section 9: Physical and Chemical Properties

Physical State:	Liquid	**Flash Point & method:**	Not available
Appearance, Color and Odor:	Clear, yellow	**Autoignition Temperature:**	Not applicable
Odor Threshold:	Not applicable	**Flammability Limits in Air:**	Not applicable
pH:	<1	**Vapor Pressure:**	Not available
Specific Gravity:	1.35 – 1.4	**Vapor Density:**	Heavier than air
Partition coefficient:	Not available	**Evaporation Rate:**	Not available
Solubility in water:	Soluble	**Boiling Point/Range:**	Not available
Viscosity:	Water thin	**Melting Point:**	Not available
Decomposition Temperature:	Not available	**VOC Content:**	Not available

Section 10: Stability and Reactivity

Chemical Stability: Stable at normal room temperature.

Conditions to Avoid: Do not use in conditions of extreme heat.

Incompatible Materials: Potassium - a mixture of potassium and zinc chloride is sensitive to mechanical shock and produces a strong explosion on impact.
Strong bases (e.g. alkali hydroxides) - react vigorously or violently, with the evolution of heat.
Nitrites and Nitrates - reacts violently at high temperatures, liberating chlorine.
Material is corrosive to carbon steel and may attack some plastics such as nylon.

Hazardous Decomposition Products: Thermal decomposition may generate corrosive, toxic and irritating fumes and gases which may include zinc fume, zinc oxide, ammonia and hydrogen chloride.

Possibility of Hazardous Reactions: Contact with some metals may release hydrogen gas.

Section 11: Toxicological Information

Acute Toxicity Data Acute toxicity data is not available for the mixture.

Ingredient	LD_{50} Oral (mg/kg)	LD_{50} Dermal (mg/kg)	LC_{50} Inhalation (4 hrs.)
Zinc Chloride	200 (guinea pig) 350 (rat)	Not available	2 000 mg/m^3 (rat) 10 minute exposure
Hydrogen chloride	238 – 700 (rat)	> 5 010 (rabbit)	400 aerosol (mouse)
Ammonium chloride	1 410 (rat)	Not available	Not available
Ethanol	3 450 (mouse)	Not available	21 000 (mouse)

Other Toxicity Data

Carcinogenicity: This mixture does not contain any component that is considered a human carcinogen by IARC (International Agency for Research on Cancer), ACGIH (American Conference of Governmental Industrial Hygienists, OSHA or NTP (National Toxicology Program).

Irritation: Severely irritating or corrosive when in contact with skin and eyes. Over-exposure to mists and vapors can be severely irritating to the nose, throat and respiratory tract.
Harmful if swallowed; zinc chloride can cause lesions in the digestive system.
Prolonged or repeated over-exposure by skin contact may cause skin burns, ulcerations or dermatitis.

Corrosivity: Causes burns to eyes and skin.

SAFETY DATA SHEET

Section 11: Toxicological Information, continued

Sensitization: In rare cases, people repeatedly exposed to solder fluxes containing ammonium chloride and zinc chloride have developed occupational asthma. Repeated exposure to fumes may cause respiratory sensitization reactions.

Neurological Effects: Not available

Genetic Effects: Not available

Reproductive Effects: Not available

Developmental Effects: Not available

Target Organ Effects: Eyes, skin, respiratory system, cardiovascular system.
Harmful if swallowed; zinc chloride can cause toxic effects to the spleen and pancreas and lesions in the digestive system.
Preexisting respiratory and skin disorders may be aggravated by exposures to fumes and liquid.
May aggravate existing cardiac (heart) disorders.

Section 12: Ecological Information

Ecotoxicity: Very toxic to aquatic life with long lasting effects. Based on environmental hazard classification for Zinc Chloride in Annex VI to Regulation (EC) No 1272/2008, Aquatic Acute ; 1Aquatic Chronic 1.

Persistence/Degradability: Not available

Bioaccumulation/Accumulation: Not available

Mobility: Not available

Section 13: Disposal Considerations

Waste Disposal Method: 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.
The conditions of use, storage and disposal of this product are beyond our control and may be beyond our knowledge. For this and other reasons, LA-CO Industries, Inc. does not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

USA: Dispose of in accordance with local, state and federal laws and regulations.

Canada: Dispose of in accordance with local, provincial and federal laws and regulations.

EC: 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:

U.S. Hazardous Materials Regulation (DOT 49CFR): UN 1840, ZINC CHLORIDE SOLUTION, Class 8, PG III

Canadian Transportation of Dangerous Goods (TDG): UN 1840, ZINC CHLORIDE SOLUTION, Class 8, PG III

ADR/RID: UN 1840, ZINC CHLORIDE SOLUTION, Class 8, PG III

IMDG: UN 1840, ZINC CHLORIDE SOLUTION, Class 8, PG III

Marine Pollutants: Not listed as a marine pollutant by IMDG Code

ICAO/IATA: UN 1840, ZINC CHLORIDE SOLUTION, Class 8, PG III

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Section 15: Regulatory Information

USA

TSCA Status: All component substances are listed on the TSCA inventory.

SARA Title III
Sec. 302/304: Hydrogen chloride
Sec: 311/312: Acute health; Corrosive
Sec. 313: Zinc chloride; Ammonium chloride; Hydrogen chloride
CERCLA RQ: Zinc chloride 1000 lbs (454 kg) RQ; Ammonium chloride 5000 lbs (2270 kg) RQ; Hydrogen chloride 5000 lbs (2270 kg).

California Prop 65: Not applicable

State Right-to-Know Lists : Zinc chloride; Hydrogen chloride listed by Massachusetts, New Jersey, Pennsylvania

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: (for workplace exposures) E – Corrosive
D1B – Immediate and serious toxic effects.

New Substance Notification Regulations: All component substances are listed on Canada's Domestic Substances List (DSL).

NPRI Substances: Ammonia; Zinc and its compounds; Hydrochloric acid

EC Classification for the Substance/Preparation

European Inventories: All component substances are listed in EINECS.

Symbol:


Corrosive


Harmful


Dangerous for the environment.

Risk Phrases:
R22: Harmful if swallowed.
R34: Causes burns.
R50/53: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety Phrases:
1/2: Keep locked up and out of the reach of children.
9: Keep in a well-ventilated place.
26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
36/37/39: Wear suitable protective clothing, gloves and eye/face protection.
45: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
60: This material and its container must be disposed of as hazardous waste
61: Avoid release to the environment. Refer to special instructions/safety data sheet.

SAFETY DATA SHEET

Section 16: Other Information

Full Text of R-phrases appearing in Section 2:

R11: Highly flammable
R22: Harmful if swallowed.
R34: Causes burns.
R37: Irritating to respiratory system.
R36: Irritating to eyes.
R50/53: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Preparation Information:

Revision Date: April 30, 2012

Manufacturer Disclaimer: The information contained herein is based on data available to us and is accurate and reliable to the best of our knowledge and belief. However, LA-CO Industries, Inc. makes no representations as to its completeness or accuracy. Information is supplied on condition that persons receiving such information will make their own determination as to its suitability for their purposes prior to use. In no event will LA-CO Industries, Inc. be responsible for damages of any nature whatsoever resulting from the use of or reliance upon the information contained herein.

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