SAFETY DATA SHEET
SUPERIOR NO. 461
DATE REVISED: January 1, 2016

Product Name: Superior No. Superior 461
Manufacturer: Superior Flux & Mfg. Co. 6615 Parkland Blvd. Cleveland, OH 44139
Emergency Phone Number: 1-800-424-9300 (CHEMTREC)
Other Information Calls: (440) 349-3000

To the Purchaser: This MSDS contains important environmental, health, and toxicology information for your employees who have ordered this product. Please be sure this information is given to them. If you resell this product, a copy of the MSDS should be given to the buyer.

H.M.I.S. INFORMATION: HEALTH = 3  FLAMMABILITY = 0  REACTIVITY = 0

SECTION I - IDENTIFICATION

Common Name: Superior 461
Chemical Family: Organic acid, chloride activated flux
CAS Number: NA
Chemical Name: NA
Formula: See below

SECTION II – HAZARDS IDENTIFICATION

Classification of Substance or Mixture:
Classification (CLP): Corrosive
Label Elements (CLP): Corrosive

Risk Phrases: R36/37/38, R34
Safety Phrases: S-26, S-27, S-36/37/39, S-45, S18, S61, S62, S64
See section XVI for full text description of S and R phrases
Other Hazards: None if used properly

SECTION III- COMPOSITION INFORMATION

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS Number</th>
<th>%</th>
<th>OSHA PEL</th>
<th>H Phrases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonium Chloride</td>
<td>12125-02-9</td>
<td>10-20</td>
<td>NA</td>
<td>H302, H319, H401</td>
</tr>
<tr>
<td>Hydrochloric Acid</td>
<td>7647-01-0</td>
<td>1-10</td>
<td>5 mg/m³</td>
<td>H314, H335</td>
</tr>
<tr>
<td>Hydroxyacetic Acid</td>
<td>79-14-1</td>
<td>15-30</td>
<td>NA</td>
<td>H302, H312, H318</td>
</tr>
<tr>
<td>Monoethanolamine</td>
<td>141-43-5</td>
<td>5-10</td>
<td>3 mg/m³</td>
<td>H227, H312, H332, H302, H335, H314</td>
</tr>
</tbody>
</table>

Unlisted percentages are non-hazardous stabilizers, and water. None of the materials in this product are listed in NTP, IARC, or OSHA as carcinogens.
SECTION IV – FIRST AID MEASURES

Inhalation: Remove to fresh air
Skin: Wash thoroughly with soap and water.
Ingestion: If patient is fully conscious, give large amounts of water. Obtain medical attention immediately.

Most Important Symptoms and effects, both acute and delayed
Primary Routes of Entry into Body: Fume inhalation, ingestion, skin, and eyes.
Symptoms of Overexposure: Salivation, coughing, choking, chills, may cause weight loss, brittle bones, anemia, and stiff joints.
Medical Conditions Generally Aggravated by Exposure: Any weakness of the lungs, kidneys or liver will be aggravated.
Chemical Listed as Carcinogen or Potential Carcinogen: None
OSHA Permissible Exposure Limit (PEL): NA
ACGIH Threshold Limit Value (TLV): NA

SECTION V - FIRE AND EXPLOSION HAZARD DATA

Flash Point: NA
Flammable Limits in Air % By Volume: NA
Extinguishing Media: CO₂, dry chemical
Auto Ignition Temperature: None
Unusual Fire and Explosion Hazards: None
Special Fire Fighting Procedures: None

SECTION VI - ACCIDENTAL RELEASE MEASURES

Steps to be taken in case material is spilled: Absorb spill with sawdust or wood shavings and remove in accordance with EPA regulations.

SECTION VII - HANDLING AND STORAGE

Storage Requirements: Plastic containers in a cool dry place when not in use.
Handling Requirements: Safe precautionary use to prevent spills and exposure to skin. Keep away from oxidizing agents.
Other Precautions: None

SECTION VIII - CONTROL MEASURES

Respiratory Protection (TYPE): NIOSH approved respirator.
Ventilation: Yes
Mechanical (General): Yes
Local Exhaust: Yes
Eye Protection: Safety glasses
Protective Gloves: Recommended, NIOSH approved
Other Protective Clothing or Equipment: Rubber gloves and an apron
SECTION IX - PHYSICAL AND CHEMICAL CHARACTERISTICS

Boiling Point:  ~112°C/234°F
Specific Gravity (Water = 1):  1.150
pH:  1.1 +/- 0.50 @ 25°C
Vapor Pressure (mmHg):  Nil
Percent Volatile By Volume:  54%
Vapor Density (Air = 1):  NA
Evaporation Rate (Butyl acetate = 1):  NA
Melting Point:  ~ 10°C/50°F
Solubility in Water:  Unlimited
Reactivity in Water:  None
Appearance and Odor:  Clear liquid, slight odor

SECTION X - STABILITY AND REACTIVITY

Stability:  Product is stable
Conditions to Avoid:  None
Hazardous Polymerization:  None
Conditions to Avoid:  Extreme heat
Incompatibility:  Oxidizing agents and metals.
Hazardous Decomposition Products:  Nitrogen products, CO, CO₂ (above 26°C/500°F)

SECTION XI - TOXICOLOGICAL INFORMATION

Acute Toxicity Data
1) Oral:  LD-50 (rat):  Not available
2) Inhalation:  LC-50 (rat):  Not available
3) Dermal:  LD-50 (rabbit):  Not available
4) Skin Irritation:  (rabbit):  Not available

Chronic Toxicity Data
1) Repeated Skin Application:  (rat):  Not available
2) Eye Irritation:  (rabbit):  Not available

SECTION XII - ECOLOGICAL INFORMATION

This material has not been tested for environmental effects.

SECTION XIII - DISPOSAL CONSIDERATIONS

Waste Disposal Method:  Dispose of in accordance with EPA regulations
SECTION XIV - TRANSPORTATION

D.O.T. Proper Shipping Name: Corrosive Liquid, NOS (Contains Hydroxyacetic Acid, Hydrochloric Acid)
Hazard Class: 8
Identification Number: UN1760
Packing Group: III
Type D.O.T Label Required Information: Corrosive
Waste Disposal Method: Dispose in Accordance with EPA Regulations

SECTION XV - REGULATORY INFORMATION

OSHA Hazardous Chemical According to 29 CFR 1910.1200: NA
Carcinogenicity Classification: (Components Present at 0.1% or More)
International Agency for Research on Cancer (IARC): NA
American Conference of Governmental Industrial Hygienists (ACGIH): NA
National Toxicology Program (NTP): NA
Occupational Safety and Health Administration (OSHA): NA
All Components of this Product are Listed on the U.S. Toxic Substances Control Act Inventory or Otherwise Comply with TSCA Pre-manufacture Notification Requirements.
This product is RoHS compliant.

SECTION XVI - OTHER INFORMATION

The labeling of this product is indicated in Section II. The full text of all abbreviations indicated by codes in the MSDS are as follows:

R34 Causes burns
R36 Irritating to eyes
R37 Irritating to respiratory system
R38 Irritating to skin

S-18 Handle and open container with care
S-26 In case of eye contact, rinse thoroughly and get medical attention
S-27 Take off immediately contaminated clothing
S-36/37/39 Wear suitable protective clothing, gloves, and eye/face protection
S-45 In case of accident or if feel unwell call medical advice immediately
S61 Avoid release to the environment. Refer to special instructions/safety data sheet
S62 If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label where possible
S64 If swallowed, rinse mouth with water (only if the person is conscious)

P264 Wash ... thoroughly after handling
P270 Do not eat, drink or smoke when using this product
P280 Wear protective gloves/protective clothing/eye protection/face protection
P301+P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing
P330 Rinse mouth
If eye irritation persists get medical advice/attention

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

IF exposed or you feel unwell: Call a POISON CENTER or doctor/physician

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Causes serious eye irritation

Toxic to aquatic life

Combustible liquid

Harmful if swallowed

Harmful if contact with skin

Causes serious damage to eyes

Harmful if inhaled

Causes severe skin burns and eye damage

May cause respiratory irritation

Further information:
Judgments as to the suitability of information herein or the purchaser's purposes are necessarily the purchaser's responsibility. Reasonable care has been taken in the preparation of this material, but there are NO WARRANTIES, NO REPRESENTATIONS AND NO RESPONSIBILITY AS TO THE ACCURACY OR THE SUITABILITY OF THIS INFORMATION FOR ANY PURCHASER'S USE OR FOR ANY CONSEQUENCE TO USE.