SAFETY DATA SHEET (SDS)

Section 1: IDENTIFICATION

TRADE NAME
GEBAUER’S ETHYL CHLORIDE®

MANUFACTURER
Gebauer Company
4444 East 153 Street
Cleveland, Ohio 44128

CHEMICAL NAME
Ethyl Chloride

CONTACT INFORMATION
Toll Free: (800) 321-9348
Phone: (216) 518-3030
Fax: (216) 581-4970

RECOMMENDED USE
Topical Anesthetic

IN CASE OF EMERGENCY
CHEMTREC - (800) 242-9300 or (703) 527-3887

FORMULA
C₂H₅Cl

CHEMICAL FAMILY
Halogenated Hydrocarbon

Section 2: HAZARDS IDENTIFICATION

Health Rating
2 - Moderate

Flammability Rating
4 - Acute

Reactivity Rating
0 - None

Special Rating
None

Lab Protective Equipment
Neoprene or Viton gloves, lab coat, goggles or face shield, vent hood.

Storage Color Code
Red (Flammable)

Hazard Category
Signal Word
Hazard Statement
Pictogram
Precautionary Statement

Flammable Gas (Category 1)
Danger
Extremely flammable gas
Keep away from heat/sparks/open flames/hot surfaces/cautery equipment – No smoking.

Compressed Gas
Warning
Contains gas under pressure; may explode if heated
Store is a well-ventilated place.

Eye Irritation (Category 2B)
Warning
Causes eye irritation
N/A
If product gets into eyes, see the Section 4: First Aid Measures.

Acute Toxicity (Category 4)
Warning
Harmful if inhaled
If inhaled, see the Section 4: First Aid Measures.

Section 3: COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Synonyms</th>
<th>CAS Number</th>
<th>Concentration</th>
<th>OSHA PEL</th>
<th>ACGIH TLV-TWA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl Chloride</td>
<td>Chloroethane, Hydrochloric Ether</td>
<td>75-00-3</td>
<td>&gt;99</td>
<td>1000ppm</td>
<td>100ppm</td>
</tr>
</tbody>
</table>

Section 4: FIRST AID MEASURES

Inhalation
Immediately remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, qualified personnel may give oxygen. Call a physician.

Ingestion
Unlikely route of exposure due to gaseous nature.

Skin Contact
For exposure to liquid, immediately warm frostbite area with warm water not to exceed 105°F (41°C). In case of massive exposure, remove contaminated clothing while showering with warm water. Call a physician.

Eye Contact
For exposure to liquid, check for and remove any contact lenses. Immediately flush eyes thoroughly with warm water for at least 15 minutes. Hold the eyelids open and away from the eyeballs to ensure that all surfaces are flushed thoroughly. See a physician, preferably an ophthalmologist, immediately.
Section 5: FIRE FIGHTING MEASURES

Special Fire Fighting Procedures
DANGER! Flammable liquid and gas. Evacuate all personnel from danger area. Use water spray to cool fire-exposed containers, structures and equipment. Use water spray, carbon dioxide or dry chemicals as extinguishing media. Do not use steam of water because it will scatter and spread the fire. Remove sources of ignition if without risk. Remove all containers from fire area if without risk; continue cooling water spray while moving containers. Do not extinguish any flames emitted from containers, stop flow of material if without risk, or allow flames to burn out. Self contained breathing apparatus may be required by rescue workers.

Unusual Fire and Explosion Hazards
Flammable liquid and gas. Very dangerous fire hazard when exposed to heat, flame or powerful oxidizers. Ethyl chloride is heavier than air and the vapors may hug the ground, making distant ignition and flashback possible. During a fire, toxic gases (hydrogen chloride, chlorine and phosgene) may be produced. Direct exposure to flames may cause container explosion. Static discharge may ignite ethyl chloride.

Section 6: ACCIDENTAL RELEASE MEASURES

Spill and Leak Response
Flammable liquid and Gas. Eliminate all sources of ignition. Allow spilled ethyl chloride to evaporate, ventilate enclosed areas. In case of large spill, evacuate all personnel from area. For Entry Into Unknown Concentrations That Could Be IDLH (≤ 3800 ppm): Full Face Self Contained Breathing Apparatus

Waste Disposal Method
Comply with federal, state and local laws; return unused quantities to Gebauer Company by making appropriate arrangements for pickup and transportation.

Section 7: HANDLING AND STORAGE

Storage Precautions
Store in cool, dry well ventilated area. Protect against physical damage. Do not subject to temperatures above 120°F (50°C). Do not store near high frequency ultrasound equipment or non-explosion proof electrical equipment.

Handling Precautions
Use in well-ventilated areas. Do not use near temperatures above 120°F (50°C). Do not use with cautery or non-explosion proof electrical equipment. Do not use near open flame.

Section 8: EXPOSURE CONTROLS – PERSONAL PROTECTION

Engineering Controls
Use with adequate ventilation.

Respiratory Protection
For clinical setting: minimize inhalation of vapors by patient, especially when applying to head and neck. For large spills (≥1000 ppm twa and ≤3800 ppm instantaneous exposure): full face, positive pressure, self-contained breathing apparatus should be available for emergency use.

Skin Protection
Wear neoprene or viton gloves for exposures ≥1000 ppm TWA and ≤3800 ppm instantaneous exposure.

Eye Protection
Splash goggles or safety glasses.

Exposed Limits
OSHA – 1000ppm PELACGLIH – 100 ppm TLV, A3 IDHL – 3800 ppm LEL ACGIH – 100 ppm TLV

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point: 54.1°F (12.3°C)
Freezing Point: -213.5°F (-136.4°C)
Evaporation Rate (Butyl Acetate = 1): Greater than 1
Vapor Density (Air = 1 @ 70°F): 2.23
Vapor Pressure (@ 68°F): 20.1 psia (5.4 psig)
Flash Point: -58°F (-50°C) TCC; -45°F (-43°C) TOC
Autoignition Temperature: 966°F (519°C)
Specific Gravity (@ 68°F): 0.8939
pH: Essentially neutral
Solubility in Water: Slight by slow hydrolysis
Odor: Ethereal
Appearance: Clear and colorless liquid or gas
Flammable Limits in Air (% by volume): Lower: 3.8% Upper: 15.4%
MOLECULAR WEIGHT 64.52

Section 10: STABILITY AND REACTIVITY

Stability
Normally stable in air. In presence of moisture, slowly hydrolyses forming hydrochloric acid.

Hazardous Decomposition Products
Carbon monoxide, hydrogen chloride gas, phosgene gas, and carbon dioxide.

Incompatible Materials
Alkali metals such as sodium, and potassium, powdered metals such as aluminum, zinc and magnesium and strong oxidizers.

Hazardous Polymerization
Not expected to occur.

Conditions to Avoid
Contact with incompatible materials and exposure to heat, sparks and other sources of ignition and exposure to high heat.

Section 11: TOXICOLOGICAL INFORMATION

Routes of Exposure:
Acute Inhalation LC50 60,632 ppm (rat) (2 hr.) Anesthetic effects. Produces frostbite. Produces frostbite. Not listed as a carcinogen or suspected carcinogen by NTP or OSHA. Listed under IARC in Group 3: Not classifiable.

Effects of overexposure:
Acute Inhalation: Can produce varying degrees of intoxication; i.e. loss of coordination, drunkenness, possible convulsions, abdominal cramps, nausea and coma. It has been reported that concentrated vapors can produce narcotic and anesthetic effects in humans and may produce deep or even fatal anesthesia. Inhalation may also be irritating to the respiratory tract. Eye/Skin: Liquid spilled on skin may cause possible frostbite. For eye contact, there are no specific known effects, but the effects may be the same as contact with skin. Increased liver weights were observed in rats and mice after exposure to 2500, 5000, 10,000 and 19,000 ppm for 6 hours/day, 5 days/week for 13 weeks. No other effects were observed in the study.

Sub Chronic
Carcinomas of the uterus were observed in female mice exposed to 15,000 ppm during the course of a 2-year inhalation study.
Section 11: TOXICOLOGICAL INFORMATION (Continued)

| Mutagenesis | Has been shown to be mutagenic in bacteria, with and without activation. A 2-year study in mice did not yield increases in bone marrow micronuclei. |
| Reproductive/Developmental | No teratogenic effects were observed in mice exposed to 500, 1500 or 5000 ppm during organogenesis. No effects on reproductive organs were observed after 13 weeks exposure to vapors. |

Section 12: ECOLOGICAL INFORMATION

| Environmental Stability | Gas is dissipated rapidly in a ventilated area. |
| Effect on Plants and Animals | Suspected to have toxic effects with long term exposure to: central nervous system depression, liver and kidney. No information on adverse effects to plant life except for frost produced upon evaporation. |
| Effect on Aquatic Life | No evidence currently available. |

Section 13: DISPOSAL CONSIDERATIONS

Waste disposal must be in accordance with appropriate Federal, State and local regulations.

Section 14: TRANSPORT INFORMATION

| Proper Shipping Name | Ethyl Chloride |
| Hazard Class | 2.1 (Flammable Gas) |
| Identification Number | UN 1037 |
| Packing Group | I (49 CFR 173.322) |
| Reportable Quantity | 100 LBS./45.4 Kg |
| DOT Label(s) Required | Flammable Gas |
| Canada TDG Description | Ethyl Chloride, Class 2.1, UN1037 **Special Commodity** |

Section 15: REGULATORY INFORMATION

| USA TSCA: | Listed |
| Europe EINECS: | Listed |
| Canada DSL: | Listed |
| Australia AICS: | Listed |
| Korea ECL: | Listed |
| Japan MITI (ENCS): | Listed |

| SARA Title III | Section 302: Not listed. Sections 311, 312: Acute health hazard. Section 313: Listed. |
| CERCLA | Listed with a reportable quantity of 100 lbs. |

State Regulatory Information:

- Ethyl Chloride is covered under the specific State regulations listed.
- Alaska
- California
- Florida
- Massachusetts
- Michigan
- Minnesota
- Missouri
- New Jersey
- New York
- Pennsylvania
- Rhode Island
- Texas
- West Virginia
- Wisconsin
- Designated Toxic and Hazardous Substances
- Permissible Exposure Limits for Chemical Contaminants
- Substance List
- Substance List
- Critical Materials Register
- List of Hazardous Substances
- Employer Information/Toxic Substance List
- Right to Know Hazardous Substance List
- Hazardous Substance List
- Regulated Substance List
- Hazardous Substance
- Hazardous Substance List
- Hazardous Substance List
- Toxic and Hazardous Substances

California Proposition 65:

Ethyl Chloride is on the California Proposition 65 lists. This product contains a chemical known to the State of California to cause cancer.

Section 16: OTHER INFORMATION

This MSDS was revised and updated as of 04/23/2013 by Gebauer Company.

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