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MATERIAL SAFETY DATA SHEET

GEBAUER'S ETHYL CHLORIDE®

I. PRODUCT IDENTIFICATION

TRADE NAME SYNONYM	**GEBAUER'S ETHYL CHLORIDE®**	REVISION DATE July 28, 2008	
CHEMICAL NAME SYNONYMS	ETHYL CHLORIDE, CHLOROETHANE, HYDROCHLORIC ETHER	**Chemical Family.**	Halogenated Hydrocarbon
FORMULA	C_2H_5Cl	MOLECULAR WEIGHT	64.52

II. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS NO.	Concentration	OSHA PEL	ACGIH TLV-TWA
Ethyl Chloride	**75-00-3**	>99	1000ppm	100ppm

III. HAZARDS IDENTIFICATION

Health Rating	**2 - Moderate**
Flammability Rating	**4 - Acute**
Reactivity Rating	**0 - None**
Special Rating	**None**
Lab Protective Equipment	**Neoprene or Viton gloves, labcoat, goggles or face shield, vent hood.**
Storage Color Code	**Red (Flammable)**

Inhalation	**Headache, dizziness, nausea, vomiting, loss of coordination and disorientation may produce narcotic and anesthetic effects. May produce central nervous system depression, respiratory paralysis, or fatal coma with respiratory or cardiac arrest. May sensitize the**myocardium to endogenous epinephrine, causing dangerous dysrhythmias. Although absorbed through lungs and skin, it also is rapidly given off through the lungs.
Ingestion	Unlikely route of exposure due to gaseous nature.
Skin Contact	**Rapid evaporation of liquid may cause frostbite. Symptoms of frostbite are blanching of the skin, cold feeling numbness. Cutaneous sensitization may occur, but is extremely rare. Freezing can occasional alter pigmentation. A single prolonged skin exposure is not likely to result in absorption of harmful amounts**
Eye Contact	**Is a slight irritant to mucosal tissues**
Chronic Exposure	**Long term Exposure to high levels may produce the following: loss of muscle coordination, involuntary eye movements, tremors, speech disturbance, sluggish reflexes and hallucinations. These symptoms are alleviated when the overexposure is ended.**
Aggravation of Preexisting Conditions	**The defatting properties of Ethyl Chloride may aggravate existing dermatitis.**

IV. 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 105ºF (41ºC). In case of massive exposure, remove contaminated clothing while showering with warm water. Call a physician.**
Eye Contact	**For contact with the liquid, 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.**

V. FIRE FIGHTING MEASURES

Flash point - -58ºF (-50ºC) TCC, -45ºF (-43ºC) TOC	**Autoignition temperature - 966ºF (519ºC)**	**FLAMMABLE LIMITS IN AIR (%by volume) - lower 3.8%** **Upper 15.4%**

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. 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.

VI. 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. <u>For Entry Into Unknown Concentrations That Could Be IDLH (≥ 3800 ppm):</u> Full Face Self Contained Breathing Apparatus

Waste Disposal Method

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

VII. HANDLING AND STORAGE

Storage Precautions

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

Usage and Handling Precautions

Use in well-ventilated areas. Do not use near temperatures above 120ºF (50ºC). Do not use with cautery or non-explosion proof electrical equipment. Do not use near open flame.

VIII. EXPOSURE CONTROLS – PERSONAL PROTECTION

Ventilation/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 ppmTWA and ≤3800 ppm instantaneous exposure.**
Eye Protection	**Splash goggles or safety glasses.**
Exposure Limits	**OSHA – 1000ppm, PELACGLIH – 100 ppm TLV, A3 IDHL, – 3800 ppm LEL,**

IX. PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point	54.1ºF (12.3ºC)	Specific Gravity (@ 68ºF)	0.8939
Freezing Point	-213.5ºF (-136.4ºC)	pH	Essentially neutral
Evaporation Rate (Butyl Acetate = 1)	Greater than 1	Solubility in Water	Slight by slow hydrolysis
Vapor Density (Air = 1 @ 70ºF))	2.23	Odor	Ethereal
Vapor Pressure (@ 68ºF)	20.1 psia (5.4 psig)	Appearance	Clear and colorless liquid or gas

X. 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.

XI. TOXICOLOGICAL INFORMATION

Acute Inhalation LC50	60,632 ppm (rat) (2 hr.) Anesthetic effects.
Skin Irritation	Produces frostbite.
Eye Irritation	Produces frostbite.
Chronic Effects:	Is not listed as a carcinogen or suspected carcinogen by NTP or OSHA. Listed under IARC as a 3.

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.
Subchronic	Increased liver weights were observed in rats and mice after exposure to 2500, 5000, 10,000 and 19,000 ppm for 6 hrs/day, 5 dys/week for 13 weeks. No other effects were observed in the study.
Carcinogenicity:	Carcinomas of the uterus were observed in female mice exposed to 15,000 pppm during the course of a 2-year inhalation study.
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.

XII. 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.

XIII. DISPOSAL CONSIDERATIONS

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

XIV. 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****

XV. REGULATORY INFORMATION

USA TSCA: Listed	**Canada DSL: Listed**	**Korea ECL: Listed**
Europe EINECS: Listed	**Australia AICS: 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	Designated Toxic and Hazardous Substances
California	Permissible Exposure Limits for Chemical Contaminants
Florida	Substance List
Illinois	Toxic Substance List
Massachusetts	Substance List
Michigan	Critical Materials Register
Minnesota	List of Hazardous Substances
Missouri	Employer Information/Toxic Substance List
New Jersey	Right to Know Hazardous Substance List
Rhode Island	Hazardous Substance
Texas	Hazardous Substance List
West Virginia	Hazardous Substance List
Wisconsin	Toxic and Hazardous Substances

CANADA Regulations (WHMIS):
Class A – Compressed Gas
Class B1 – Flammable Gas
Class D2A – Other Toxic Effects

EUROPEAN UNION CLASSIFICATION:
Hazard Symbol: F+;Xn
Risk Phrases: R12-40-52/53
Safety Phrases: S(2-) 9-16-33-36/37-61

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.

XVI. OTHER INFORMATOIN

This MSDS was revised and updated as of May 19, 2005 by Gebauer Company. The MSDS was revised to update format only.