

**1 PRODUCT AND COMPANY IDENTIFICATION****Thio and Fine Chemicals**

Arkema Inc.
2000 Market Street
Philadelphia, PA 19103

EMERGENCY PHONE NUMBERS:

Chemtrec: (800) 424-9300 (24hrs) or (703) 527-3887
Medical: Rocky Mountain Poison Control Center
(866) 767-5089 (24Hrs)

Information Telephone Numbers**Phone Number****Available Hrs**

Customer Service

1-800-628-4453

8:30 to 5:30 EST

Product Name ETHYL MERCAPTAN (ALL GRADES)

Product Synonym(s)
See Section 16 for Applicable Grade Names

Chemical Family Alkyl Mercaptan

Chemical Formula C₂H₅SH

Chemical Name Ethanethiol

EPA Reg Num

Product Use Chemical Intermediate

2 COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient Name	CAS RegistryNumber	Typical %	OSHA
Ethyl mercaptan	75-08-1	99.3%	Y

The substance(s) marked with a "Y" in the OSHA column, are identified as hazardous chemicals according to the criteria of the OSHA Hazard Communication Standard (29 CFR 1910.1200)

This material is classified as hazardous under Federal OSHA regulation.

The components of this product are all on the TSCA Inventory list.

3 HAZARDS IDENTIFICATION**Emergency Overview**

Water white liquid, gassy or mercaptan odor

DANGER!

EXTREMELY FLAMMABLE LIQUID AND VAPOR. VAPOR MAY CAUSE FLASH FIRE.

CAUSES EYE AND SKIN IRRITATION.

CAUSES RESPIRATORY TRACT IRRITATION.

MAY BE HARMFUL IF SWALLOWED.

MAY CAUSE NAUSEA, HEADACHE OR DIZZINESS.

Potential Health Effects

Inhalation and skin contact are expected to be the primary routes of occupational exposure to this material. Based on single exposure animal tests, it is considered to be slightly toxic if swallowed or inhaled, no more than slightly toxic if absorbed through skin, and slightly irritating to eyes and skin. This material has a strong objectionable odor that may cause nausea, headache, or dizziness. The odor threshold is approximately 1 ppb. High vapor concentrations may be irritating to the eyes and respiratory tract, and may result in central nervous system (CNS) effects such as headache, dizziness, nausea, drowsiness and, in severe exposures, loss of consciousness.



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4 FIRST AID MEASURES

IF IN EYES, immediately flush with plenty of water for at least 15 minutes. Get medical attention.

IF ON SKIN, immediately flush with plenty of water. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

IF SWALLOWED, do NOT induce vomiting. Give water to drink. Get medical attention immediately. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

IF INHALED, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

5 FIRE FIGHTING MEASURES

Fire and Explosive Properties

Auto-Ignition Temperature	300 C (572 F)	
Flash Point	-54 C (CC)	Flash Point Method
Flammable Limits- Upper	18	
Lower	2.8	

Extinguishing Media

Use water spray, carbon dioxide, foam or dry chemical.

Fire Fighting Instructions

Use water spray to cool containers exposed to fire. Contain run-off from fire. Fire fighters and others who may be exposed to products of combustion should wear full fire fighting turn out gear (full Bunker Gear) and self-contained breathing apparatus (pressure demand NIOSH approved or equivalent). Fire fighting equipment should be thoroughly decontaminated after use.

Fire and Explosion Hazards

When burned, the following hazardous products of combustion can occur:

Oxides of carbon
Sulfur oxides
Hydrogen sulfide

6 ACCIDENTAL RELEASE MEASURES

In Case of Spill or Leak

Ventilate the area. Contain spill by building a dike using absorbent material. Consult with environmental engineer or professional to determine if neutralization is appropriate and for handling procedures for residual materials. Do not use solid bleach for neutralization, as fire or violent reaction can occur. Collect the liquid and solid absorbent into a drum approved for waste disposal. Flush area with water. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits.

7 HANDLING AND STORAGE

Handling

Keep away from heat, sparks and flame.
Keep container closed.



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7 HANDLING AND STORAGE

Use only with adequate ventilation.
Avoid breathing vapor.
Avoid contact with eyes, skin and clothing.
Do not taste or swallow.

CONTAINER HAZARDOUS WHEN EMPTY. Emptied container retains vapor and product residue. Follow labeled warnings even after container is emptied. RESIDUAL VAPORS MAY EXPLODE ON IGNITION. DO NOT CUT, DRILL GRIND OR WELD ON OR NEAR THIS CONTAINER. Improper disposal or reuse of this container may be dangerous and/or illegal.

Storage

Store in well ventilated area away from heat and sources of ignition such as flame, sparks and static electricity. Ensure that all storage and handling equipment is properly rated, grounded and installed to satisfy electrical classification requirements. Static electricity may accumulate and create a fire hazard. All storage containers, including containers such as drums, cylinders and IBC's, must be bonded and grounded during filling and emptying operations. Store away from oxidizers and reactive materials. Keep container tightly closed. Observe all federal, state and local regulations and National Fire Protection Association (NFPA) Codes which pertain to the specific local conditions of storage and use, including OSHA 29 CFR 1910.106 and NFPA 30, 70, 77, and 497.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls

Investigate engineering techniques to reduce exposures below airborne exposure limits. Provide ventilation if necessary to control exposure levels below airborne exposure limits (see below). If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment. Consult ACGIH ventilation manual or NFPA Standard 91 for design of exhaust systems.

Eye / Face Protection

Where there is potential for eye contact, wear chemical goggles and have eye flushing equipment available.

Skin Protection

Wear appropriate chemical resistant protective clothing and chemical resistant gloves to prevent skin contact. Consult glove manufacturer to determine appropriate type glove material for given application. Wear chemical goggles, a face shield, and chemical resistant clothing such as a rubber apron when splashing may occur. Rinse immediately if skin is contaminated. Remove contaminated clothing promptly and wash before reuse. Clean protective equipment before reuse. Provide a safety shower at any location where skin contact can occur. Wash skin thoroughly after handling.

Respiratory Protection

Avoid breathing vapor or mist. When airborne exposure limits are exceeded (see below), use NIOSH approved respiratory protection equipment appropriate to the material and/or its components. Full facepiece equipment is recommended and, if used, replaces need for face shield and chemical goggles. Consult respirator manufacturer to determine appropriate type equipment for given application. Observe respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where exposure limit may be significantly exceeded, use an approved full face positive-pressure, self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. Respiratory protection programs must comply with 29 CFR § 1910.134.



Airborne Exposure Guidelines for Ingredients

Exposure Limit

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Value

Ethyl mercaptan

ACGIH TWA	-	0.5 ppm 1.3 mg/m3
OSHA Ceiling PEL	-	10 ppm 25 mg/m3

-Only those components with exposure limits are printed in this section.

-Skin contact limits designated with a "Y" above have skin contact effect. Air sampling alone is insufficient to accurately quantitate exposure. Measures to prevent significant cutaneous absorption may be required.

-ACGIH Sensitizer designator with a value of "Y" above means that exposure to this material may cause allergic reactions.

-WEEL-AIHA Sensitizer designator with a value of "Y" above means that exposure to this material may cause allergic skin reactions.

9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance/Odor	Water white liquid, gassy or mercaptan odor
pH	
Specific Gravity	0.839 @ 20 C
Vapor Pressure	535 hPa @ 20 C Calculated
Vapor Density	2.1
Melting Point	-148 C
Freezing Point	-148 C
Boiling Point	35 C
Solubility In Water	6.8 g/l @ 20 C
Solubility in Other Materials	Alcohols, hydrocarbons
Evaporation Rate	NE
Percent Volatile	100
Viscosity	0.29 cP @ 20 C
Molecular Weight	62.13
n-Octanol/Water Partition Coefficient	1.26 @ C Calculated
Other Physical Data	Odor threshold: 0.4 ppb (approximately) Henry's constant: 455.8 Pa m3/mole Refractive index: 1.431 @ 20 C Critical pressure: Pc = 54.2 bar Critical temperature: Tc = 225.5 C

10 STABILITY AND REACTIVITY

Stability

This material is chemically stable under normal and anticipated storage and handling conditions.

Incompatibility

Avoid contact with strong oxidizing agents (hydrogen peroxide, nitric acid, hypochlorites) as a violent reaction may occur.

Hazardous Decomposition Products

None known.

11 TOXICOLOGICAL INFORMATION

Toxicological Information

Data on this material and/or its components are summarized below.

11 TOXICOLOGICAL INFORMATION

Single exposure (acute) studies indicate:

Oral - Slightly Toxic to Rats (LD50 682 mg/kg)

Dermal - No More than Slightly Toxic to Rabbits (LD50 >2,000 mg/kg)

Inhalation - Slightly Toxic to Rats (4-hr LC50 4,420 ppm)

Eye Irritation - Slightly Irritating to Rabbits

Skin Irritation - Slightly Irritating to Rabbits (4-hr exposure)

Acute inhalation by laboratory animals produces restlessness, irritation, increased respiration, loss of coordination, muscular weakness progressing to paralysis, cyanosis (blue color due to low oxygen levels), convulsions and death due to respiratory depression. Repeated inhalation exposure was reported to cause minor cardiovascular disorders in rabbits and an increase in nervous excitability in rats, but no morphological organ changes at study termination. Long-term repeated inhalation exposures in rats and rabbits was reported to cause cardiovascular effects, a decrease in the number of red blood cells, decreased gas exchange and increased nervous excitability. No genetic changes were observed in tests using bacteria. Both positive and equivocal responses have been reported in tests using animal cells.

12 ECOLOGICAL INFORMATION**Ecotoxicological Information**

Data on this material and/or its components are summarized below.

This material is highly toxic to *Daphnia magna* (24-hr EC50 0.38 mg/l). A concentration of 20 ppm produced death in fish (*Kuhlia*) within 2-3 minutes. It did not repel sunfish at a dose of 20 mg/l.

Chemical Fate Information

Data on this material and/or its components are summarized below.

The estimated threshold level in water that can cause tainting of fish flesh and other aquatic organisms was 240 ug/l. This material is not readily biodegradable (27.1% after 28-days, OECD 301D). It is slightly adsorptive (log Koc 1.53) and has a half-life in air of 4.8 hours. The half-life for evaporation was 2.5 hours (river) to 29 hours (pond). The log Pow is 1.2

13 DISPOSAL CONSIDERATIONS**Waste Disposal**

Incineration is the recommended method for disposal observing all local, state and federal regulations. Note: Chemical additions to, processing of, or otherwise altering this material may make this waste management information incomplete, inaccurate, or otherwise inappropriate. Furthermore, state and local waste disposal requirements may be more restrictive or otherwise different from federal laws and regulations. Take appropriate measures to prevent release to the environment.

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14 TRANSPORT INFORMATION

DOT Name	Ethyl Mercaptan
DOT Technical Name	
DOT Hazard Class	3
UN Number	2363
DOT Packing Group	PG I
RQ	No
Marine Pollutant	Yes

15 REGULATORY INFORMATION**Hazard Categories Under Criteria of SARA Title III Rules (40 CFR Part 370)**

Immediate (Acute) Health	Y	Fire	Y
Delayed (Chronic) Health	N	Reactive	N
		Sudden Release of Pressure	N

The components of this product are all on the TSCA Inventory list.

Ingredient Related Regulatory Information:**SARA Reportable Quantities**

CERCLA RQ

SARA TPQ

Ethyl mercaptan

100 LBS

Massachusetts Right to Know

This product does contain the following chemical(s), as indicated below, currently on the Massachusetts Right to Know Substance List.

Ethyl mercaptan

New Jersey Right to Know

This product does contain the following chemical(s), as indicated below, currently on the New Jersey Right-to-Know Substances List.

Ethyl mercaptan

Pennsylvania Right to Know

This product does contain the following chemical(s), as indicated below, currently on the Pennsylvania Hazardous Substance List.

Ethyl mercaptan

16 OTHER INFORMATION**Revision Information**

Revision Date	07 AUG 2007
Supersedes Revision Dated	30-DEC-2005

Revision Number 9

Revision Summary

Added Grade name to section 16.

Key

NE= Not Established NA= Not Applicable (R) = Registered Trademark



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Miscellaneous

This MSDS covers the following grades:

Ethyl Mercaptan Synthesis Grade

Odorant Grade

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