Material Safety Data Sheet
Ethylenediamine Anhydrous

ACC# 09560

Section 1 - Chemical Product and Company Identification

MSDS Name: Ethylenediamine Anhydrous
Catalog Numbers: S80006, E479-4, E479-500
Synonyms: 1,2-Diaminoethane; B-Aminoethylamine; 1,2-Ethyldiamine; Dimethylenediamine.
Company Identification:
Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410
For information, call: 201-796-7100
Emergency Number: 201-796-7100
For CHEMTREC assistance, call: 800-424-9300
For International CHEMTREC assistance, call: 703-527-3887

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
107-15-3	Ethylenediamine	>98	203-468-6

Hazard Symbols: C
Risk Phrases: 10 21/22 34 42/43

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: clear, colorless liquid. Flash Point: 34 deg C. **Danger! Flammable liquid and vapor.** May cause liver and kidney damage. May cause cardiac disturbances. May cause central nervous system effects. Causes eye and skin burns. Causes digestive and respiratory tract burns. Hygroscopic (absorbs moisture from the air). Lachrymator (substance which increases the flow of tears). May cause allergic skin and respiratory reaction. Harmful if swallowed or absorbed through the skin. May cause lung damage.
Target Organs: Kidneys, central nervous system, liver.

Potential Health Effects
Eye: Causes eye burns. May result in corneal injury. Causes redness and pain. Lachrymator (substance which increases the flow of tears).
Skin: Harmful if absorbed through the skin. May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material. Contact with the skin may cause severe irritation and necrosis.
Ingestion: Harmful if swallowed. May cause severe gastrointestinal tract irritation with nausea, vomiting and possible burns. May cause effects similar to those for inhalation exposure.
Inhalation: Causes respiratory tract irritation. May cause severe allergic respiratory reaction. Irritation may lead to chemical pneumonitis and pulmonary edema. May cause liver and kidney damage. Causes chemical burns to the respiratory tract. May cause heart disturbances, possibly leading to cardiac arrest and death. May cause neurotoxic effects including paresthesia.
Chronic: Prolonged or repeated skin contact may cause defatting and dermatitis. Repeated exposure may cause allergic respiratory reaction (asthma).

Section 4 - First Aid Measures

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately. Do NOT allow victim to rub eyes or keep eyes closed.
Skin: Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists. Wash clothing before reuse. Destroy contaminated shoes.
Ingestion: Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Get medical aid immediately.
Inhalation: Get medical aid immediately. Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.
Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors may form an explosive mixture with air. Vapors can travel to a source of ignition and flash back. Flammable Liquid. Can release vapors that form explosive mixtures at temperatures above the flashpoint. Use water spray to keep fire-exposed containers cool. Containers may explode in the heat of a fire.
Extinguishing Media: For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam. For large fires, use water spray, fog, or alcohol-resistant foam. Use foam, dry chemical, or carbon dioxide.
Flash Point: 34 deg C (93.20 deg F)
Autoignition Temperature: 385 deg C (725.00 deg F)
Explosion Limits, Lower:2.70 vol %
Upper: 16.60 vol %

NFPA Rating: (estimated) Health: 3; Flammability: 3; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Wear a self contained breathing apparatus and appropriate personal protection. (See Exposure Controls, Personal Protection section). Scoop up with a nonsparking tool, then place into a suitable container for disposal. Remove all sources of ignition. Absorb spill using an absorbent, non-combustible material such as earth, sand, or vermiculite. Do not use combustible materials such as sawdust. Use a spark-proof tool.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Use spark-proof tools and explosion proof equipment. Do not breathe dust, vapor, mist, or gas. Do not get in eyes, on skin, or on clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep container tightly closed. Do not ingest or inhale. Use only in a chemical fume hood. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.
Storage: Keep away from sources of ignition. Store in a cool, dry place. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Flammables-area. Store protected from moisture.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.
Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Ethylenediamine	10 ppm TWA; skin - potential for cutaneous absorption	10 ppm TWA; 25 mg/m3 TWA 1000 ppm IDLH	10 ppm TWA; 25 mg/m3 TWA

OSHA Vacated PELs: Ethylenediamine: 10 ppm TWA; 25 mg/m3 TWA
Personal Protective Equipment
Eyes: Wear chemical goggles and face shield.
Skin: Wear appropriate protective gloves to prevent skin exposure.
Clothing: Wear appropriate protective clothing to prevent skin exposure.
Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

Section 9 - Physical and Chemical Properties

Physical State: Liquid
Appearance: clear, colorless
Odor: ammonia-like
pH: 11.9 @ 25 C.
Vapor Pressure: 10.7 mm Hg @ 20
Vapor Density: 2.1 (air=1)
Evaporation Rate:0.91 (butyl acetate=1)
Viscosity: 1.54 mPas 25 deg C
Boiling Point: 118 deg C @ 760 mm Hg
Freezing/Melting Point:8.5 deg C
Decomposition Temperature:> 120 deg C
Solubility: Soluble.
Specific Gravity/Density:.8990g/cm3
Molecular Formula:C2H8N2
Molecular Weight:60.10

Section 10 - Stability and Reactivity

Chemical Stability: Absorbs carbon dioxide from air to form nonvolatile carbonate.
Conditions to Avoid: Ignition sources, exposure to air, excess heat, exposure to moist air or water.
Incompatibilities with Other Materials: Strong oxidizing agents, strong acids.
Hazardous Decomposition Products: Nitrogen oxides, carbon monoxide, carbon dioxide, ammonia and/or derivatives.
Hazardous Polymerization: Will not occur.

Section 11 - Toxicological Information

RTECS#:
CAS# 107-15-3: KH8575000
LD50/LC50:
CAS# 107-15-3:
Draize test, rabbit, eye: 750 ug Severe;
Draize test, rabbit, eye: 750 ug/24H Severe;

Inhalation, mouse: LC50 = 300 mg/m3;
Oral, mouse: LD50 = 1 gm/kg;
Oral, rat: LD50 = 1200 mg/kg;
Skin, rabbit: LD50 = 730 uL/kg;

Carcinogenicity:
CAS# 107-15-3: Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.
Epidemiology: Edema of the epithelium of the cornea, generally without pa in, has been produced by amine vapors, causing colored hal oes to be seen around lights, usually in the evening, after industrial exposure to the vapors of various amines.
Teratogenicity: No known effects.
Reproductive Effects: Has caused some adverse fetal effects in animals.
Neurotoxicity: Substance may cause neurotoxic effects. Please refer to Sect ion 3 for specific information.
Mutagenicity: Not known to be a mutagen.
Other Studies: None.

Section 12 - Ecological Information

Ecotoxicity: Fish: Fathead Minnow: LC50 = 115.7 mg/L; 96 Hr.; Static ConditionFish: Rainbow trout: LC50 = 230.0 mg/L; 96 Hr.; Static ConditionWater flea EC50 = 0.88 mg/L; 48 Hr.; UnspecifiedBacteria: Phytobacterium phosphoreum: EC50 = 20.0 mg/L; 15 Minutes; Microtox test Chub (fresh water) 60ppm/24H (lethal)Fathead minnow LC50=115.7 mg/L/96H @ 22C. Rainbow trout LC50=230 mg/L/48H
Environmental: On soil, substance will leach and volatilize. In water, substance will form alkaline solution and will biodegrade. Bioconcentration is not predicted. In air, substance will react with hydroxyl radicals and carbon dioxide. Biological Oxygen Demand (BOD): 75% (theor.), 5 days.
Physical: No information available.
Other: No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	IATA	RID/ADR	IMO	Canada TDG
Shipping Name:	ETHYLENEDIAMINE				No information available.
Hazard Class:	8				
UN Number:	UN1604				
Packing Group:	II				

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 107-15-3 is listed on the TSCA inventory.
Health & Safety Reporting List
None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
SARA

CERCLA Hazardous Substances and corresponding RQs
CAS# 107-15-3: 5000 lb final RQ; 2270 kg final RQ
SARA Section 302 Extremely Hazardous Substances
CAS# 107-15-3: 10000 lb TPQ
SARA Codes
CAS # 107-15-3: acute, chronic, flammable.
Section 313
No chemicals are reportable under Section 313.
Clean Air Act:
This material does not contain any hazardous air pollutants. This material does not contain any Class 1 Ozone depletors. This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
CAS# 107-15-3 is listed as a Hazardous Substance under the CWA. None of the chemicals in this product are listed as Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.
OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.
STATE
CAS# 107-15-3 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives
Hazard Symbols:
C
Risk Phrases:
R 10 Flammable.
R 21/22 Harmful in contact with skin and if swallowed.
R 34 Causes burns.
R 42/43 May cause sensitization by inhalation and skin contact.

Safety Phrases:
S 23 Do not inhale gas/fumes/vapour/spray.
S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

WGK (Water Danger/Protection)
CAS# 107-15-3: 2
Canada - DSL/NDSL
CAS# 107-15-3 is listed on Canada's DSL List.
Canada - WHMIS
This product has a WHMIS classification of B2, D1B, E.
Canadian Ingredient Disclosure List
CAS# 107-15-3 is listed on the Canadian Ingredient Disclosure List.
Exposure Limits
CAS# 107-15-3: OEL-AUSTRALIA:TWA 10 ppm (25 mg/m3) OEL-BELGIUM:TWA 10 ppm (25 mg/m3) OEL-DENMARK:TWA 10 ppm (25 mg/m3) OEL-FINLAND:TWA 10 ppm (25 mg/m3);STEL 20 ppm (50 mg/m3) OEL-FRANCE:TWA 10 ppm (25 mg/m3);STEL 15 ppm (35 mg/m3) OEL-GERMANY:TWA 10 ppm (25 mg/m3) OEL-JAPAN:TWA 10 ppm (25 mg/m3) OEL-THE NETHERLANDS:TWA 10 ppm (25 mg/m3) OEL-THE PHILIPPINES:TWA 10 ppm (25 mg/m3) OEL-POLAND:TWA 2 mg/m3 OEL-RUSSIA:TWA 10 ppm;STEL 2 mg/m3 OEL-SWEDEN:TWA 10 ppm (25 mg/m3);STEL 15 ppm (35 mg/m3) OEL-SWITZERLAND:TWA 10 ppm (25 mg/m3);STEL 20 ppm (50 mg/m3) OEL-TURKEY:TWA 10 ppm (25 mg/m3) OEL-UNITED KINGDOM:TWA 10 ppm (25 mg/m3) OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV OEL IN NEW ZEALAND, SINGAPORE, VIETNAM check ACGI TLV

Section 16 - Additional Information

MSDS Creation Date: 5/10/1999
Revision #3 Date: 10/18/2002