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PHARMCO-AAPER

AND COMMERCIAL ALCOHOLS

Product Information (203) 740-3471 / Emergency Assistance CHEMTREC 1-800-424-9300

MATERIAL SAFETY DATA SHEETS

Manufacturer: PHARMCO-AAPER
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Ethanolamine n-

1. CHEMICAL PRODUCT IDENTIFICATION

Product Name: Ethanolamine
Synonyms: Monoethanolamine; beta-Aminoethanol, Ethylolamine; Glycinol; 2-Amino ethanol; Aminoethyl alcohol
Molecular Formula: $H_2NCH_2CH_2OH$
Molecular Weight: 61.08

2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient(s)	CAS Number	% (by weight)
Ethanolamine	141-43-5	98.0-100.0

3. HAZARDS IDENTIFICATION

WARNING! CAUSES BURNS. COMBUSTIBLE. HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. AFFECTS CENTRAL NERVOUS SYSTEM.

NFPA Hazard Ratings: Health - 3, Flammability - 2, Reactivity - 0

NOTE: NFPA ratings involve data and interpretations that may vary from company to company. They are intended only for rapid, general identification of the magnitude of the specific hazard. To deal adequately with the safe handling of this material, all the information contained in this MSDS must be considered.

Potential Health Effects

Eye: Can cause permanent eye injury. Symptoms include stinging, tearing, redness, and swelling of eyes. Can injure the cornea and cause blindness.

Skin: Can cause permanent skin damage. Symptoms may include redness, burning, and swelling of skin, burns, and other skin damage. Passage of this material into the body through the skin is possible, and skin contact may be harmful.

Swallowing: Swallowing this material may be harmful or fatal. Symptoms may include severe stomach and intestinal irritation (nausea, vomiting, diarrhea), abdominal pain, and vomiting of blood. Swallowing this material may cause burns and destroy tissue in the mouth, throat, and digestive tract. Low blood pressure and shock may occur as a result of severe tissue injury. This material can get into the lungs during swallowing or vomiting. This results in lung inflammation and other lung injury.

Inhalation: Breathing of vapor or mist is possible. Breathing this material may be harmful or fatal. Symptoms may include severe irritation and burns to the nose, throat, and respiratory tract.

Symptoms of Exposure: Signs and symptoms of exposure to this material through breathing, swallowing, and/or passage of the material through the skin may include: mouth and throat irritation (soreness, dry or scratchy feeling, cough), stomach or intestinal upset (nausea, vomiting, diarrhea), thirst, irritation (nose, throat, airways), cough, central nervous system depression (dizziness, drowsiness, weakness, fatigue, nausea, headache, unconsciousness), difficult breathing, lung edema (fluid buildup in the lung tissue), shock, coma.

Target Organ Effects: Overexposure to this material (or its components) has been suggested as a cause of the following effects in laboratory animals: nervous system damage, lung damage, kidney damage, liver damage, Overexposure to this material (or its components) has been suggested as a cause of the following effects in humans: liver abnormalities, kidney damage

Developmental Information: No data

Cancer Information: No data

Other Health Effects: No data

Primary Route(s) of Entry: Inhalation, Skin absorption, Skin contact.

4. FIRST AID MEASURES

Eyes: If material gets into the eyes, immediately flush eyes gently with water for at least 15 minutes while holding eyelids apart. If symptoms develop as a result of vapor exposure, immediately move individual away from exposure and into fresh air before flushing as recommended above. Seek immediate medical attention.

Skin: Immediately flush skin with water for at least 15 minutes while removing contaminated clothing and shoes. Seek immediate medical attention. Wash clothing before reuse and discard contaminated shoes.

Swallowing: Seek immediate medical attention. Do not induce vomiting. Vomiting will cause further damage to the mouth and throat. If individual is conscious and alert, immediately rinse mouth with water and give milk or water to drink. If possible, do not leave individual unattended.

Inhalation: If symptoms develop, immediately move individual away from exposure and into fresh air. Seek immediate medical attention; keep person warm and quiet. If person is not breathing, begin artificial respiration. If breathing is difficult, administer oxygen.

Note to Physicians: This material is an aspiration hazard. Potential danger from aspiration must be weighed against possible oral toxicity (See Section 3 - Swallowing) when deciding whether to induce vomiting. Preexisting disorders of the following organs (or organ systems) may be aggravated by exposure to this material: skin, lung (for example, asthma-like conditions), liver, kidney, nervous system.

5. FIRE FIGHTING MEASURES

Flash Point: 185.0 F (85.0 C) TCC

Explosive Limit: (for product) Lower 3.0 Upper 23.5 %

Autoignition Temperature: 770.0 F (410.0 C)

Hazardous Products of Combustion May form: carbon dioxide and carbon monoxide, nitrogen oxides.

Fire and Explosion Hazards: Vapors are heavier than air and may travel along the ground or be moved by ventilation and ignited by heat, pilot lights, other flames and ignition sources at locations distant from material handling point. Never use welding or cutting torch on or near drum (even empty) because product (even just residue) can ignite explosively.

Extinguishing Media: alcohol foam, carbon dioxide, dry chemical.

Fire Fighting Instructions: Wear a self-contained breathing apparatus with a full face piece operated in the positive pressure demand mode with appropriate turn-out gear and chemical resistant personal protective equipment. Refer to the personal protective equipment section of this MSDS.

6. ACCIDENTAL RELEASE MEASURES

Small Spill: Absorb liquid on vermiculite, floor absorbent or other absorbent material. Persons not wearing proper personal protective equipment should be excluded from area of spill.

Large Spill: Eliminate all ignition sources (flares, flames including pilot lights, electrical sparks). Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed. Stop spill at source. Prevent from entering drains, sewers, streams or other bodies of water. Prevent from spreading. If runoff occurs, notify authorities as required. Pump or vacuum transfer spilled product to clean containers for recovery. Absorb unrecoverable product. Transfer contaminated absorbent, soil and other materials to containers for disposal. Prevent run-off to sewers, streams or other bodies of water. If run-off occurs, notify proper authorities as required, that a spill has occurred.

7. HANDLING AND STORAGE

Handling: Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid, and/or solid), all hazard precautions given in the data sheet must be observed. All five-gallon pails and larger metal containers, including tank cars and tank trucks, should be grounded and/or bonded when material is transferred. Do not use sodium nitrite or other nitrosating agents in formulations containing this product. Suspected cancer-causing nitrosamines could be formed. Warning. Sudden release of hot organic chemical vapors or mists from process equipment operating at elevated temperature and pressure, or sudden ingress of air into vacuum equipment, may result in ignitions without the presence of obvious ignition sources. Published autoignition" or "ignition" temperature values cannot be treated as safe operating temperatures in chemical processes without

analysis of the actual process conditions. Any use of this product in elevated temperature processes should be thoroughly evaluated to establish and maintain safe operating conditions.

Storage: Monoethanolamine (MEA) and iron form a complex molecule, trisethanolamino-iron. This material can spontaneously decompose at temperatures between 130 and 160 degrees C, and has been suspected of causing a fire in a nearly empty storage tank containing a 'heel' of MEA in contact with carbon steel steam coils. If steam coil heating is used, low pressure steam in stainless steel is preferred.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Eye Protection Chemical splash goggles and face shield (8" min.) in compliance with OSHA regulations are advised; however, OSHA regulations also permit other type safety glasses. (Consult your industrial hygienist.)

Skin Protection: Wear impervious gloves (consult your safety equipment supplier). To prevent skin contact, wear impervious clothing and boots.

Respiratory Protections: If workplace exposure limit(s) of product or any component is exceeded (see exposure guidelines), a NIOSH/MSHA approved air supplied respirator is advised in absence of proper environmental control. OSHA regulations also permit other NIOSH/MSHA respirators (negative pressure type) under specified conditions (see your industrial hygienist). Engineering or administrative controls should be implemented to reduce exposure.

Engineering Controls: Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below TLV(s).

Exposure Guidelines Component

Ethanolamine (141-43-5)
OSHA VPEL 3.000 ppm - TWA
OSHA VPEL 6.000 ppm - STEL
ACGIH TLV 3.000 ppm - TWA
ACGIH TLV 6.000 ppm - STEL

9. PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point: (for product) 338.7 F (170.3 C) @ 760 mmHg
Vapor Pressure: (for product) < 1.000 mmHg @ 68.00 F
Specific Vapor Density: 2.110 @ AIR=1
Specific Gravity: 1.018 @ 68.00 F
Liquid Density: 8.480 lbs/gal @ 68.00 F; 1.018 kg/l @ 20.00 C
Percent Volatiles: 100.0 %
Volatile Organic Compounds (VOC)
100.000 %
> 999.000 g/l
8.480 lbs/gall
Evaporation Rate: < .10 (N-BUTYL ACETATE)
Appearance: CLEAR LIQUID
State: LIQUID
Physical Form: HOMOGENEOUS SOLUTION
Color: CLEAR, PT-CO COLOR 15 MAX
Odor: SLIGHTLY AMMONIACAL
pH: 11.5 - 12.2

Viscosity: 19.0 cps @ 25.00 C; 5.0 cps @ 60.00 C
Freezing Point: 50.5 F (10.2 C)
Molecular Weight: 61.1
Solubility in Water: COMPLETE
Octanol/Water Partition Coefficient : < .000
Bulk Density: 1.130 lbs/ft³

10. STABILITY AND REACTIVITY

Hazardous Polymerization: Product will not undergo hazardous polymerization.

Hazardous Decomposition May form: carbon dioxide and carbon monoxide, nitrogen oxides.

Chemical Stability: Stable.

Incompatibility: Avoid contact with: acrylates, brass, copper, halogenated hydrocarbons, ketones, organic anhydrides, strong acids, strong alkalies, strong oxidizing agents.

11. TOXICOLOGICAL INFORMATION

Oral rat LD50: 1720 mg/kg; Inhalation mouse LC50: 2420 mg/m³/2hr; Skin rabbit LD50: 1000 mg/kg Irritation data: Skin rabbit - 505 mg moderate; Eye rabbit - 0.250 mg severe. Investigated as a mutagen and reproductive effector.

-----\Cancer Lists\-----

---NTP Carcinogen---

Ingredient	Known	Anticipated	IARC Category
Ethanolamine (141-43-5)	No	No	None

12. ECOLOGICAL INFORMATION

Environmental Fate: When released into the soil, this material may biodegrade to a moderate extent. When released into the soil, this material may leach into groundwater. When released into water, this material may biodegrade to a moderate extent. This material has an estimated bioconcentration factor (BCF) of less than 100. This material is not expected to significantly bioaccumulate. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material is expected to have a half-life of less than 1 day. When released into the air, this material may be removed from the atmosphere to a moderate extent by wet deposition.

Environmental Toxicity: No information found.

13. DISPOSAL CONSIDERATION

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Although not a listed RCRA hazardous waste, this material may exhibit one or more characteristics of a hazardous waste and require appropriate analysis to determine specific disposal requirements. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. TRANSPORT INFORMATION

Domestic (Land, D.O.T.)
Proper Shipping Name: Ethanolamine
Hazard Class: 8
UN/NA: UN2491
Packing Group: III

International (Water, I.M.O.)
Proper Shipping Name: Ethanolamine
Hazard Class: 8
UN/NA: UN2491
Packing Group: III

15. REGULATORY INFORMATION

US Federal Regulations
TSCA (Toxic Substances Control Act) Status
TSCA (UNITED STATES) The intentional ingredients of this product are listed.

CERCLA RQ - 40 CFR 302.4(a)
None listed

CERCLA RQ - 40 CFR 302.4(b)
Materials without a "listed" RQ may be reportable as an "unlisted hazardous substance". See 40 CFR 302.5 (b).

SARA 302 Components - 40 CFR 355 Appendix A: None

Section 311/312 Hazard Class - 40 CFR 370.2
Immediate(X) Delayed(X) Fire(X) Reactive() Sudden
Release of Pressure()

SARA 313 Components - 40 CFR 372.65
None

International Regulations
Inventory Status
ACQIN (AUSTRALIA) The intentional ingredients of this product are listed.
DSL (CANADA) The intentional ingredients of this product are listed.
EINECS (EUROPE) The intentional ingredients of this product are listed.

State and Local Regulations
New Jersey RTK Label Information
ETHANOLAMINE 141-43-5

Pennsylvania RTK Label Information
ETHANOL, 2-AMINO- 141-43-5

16. OTHER INFORMATION

The information contained herein is based on current knowledge and experience; no responsibility is accepted that the information is sufficient or correct in all cases. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers and the protection of the environment.