Product Safety Assessment

2-Amino-2-Ethyl-1,3-Propanediol

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Names
- CAS No. 115-70-8
- AEP™ 2-Amino-2-ethyl-1,3-propanediol
- AEPD 85 2-Amino-2-ethyl-1,3-propanediol
- 2-Amino-2-ethyl-1,3-propanediol
- AEPD VOX 1000 Neutralizing Amine
- AEPD Anhydrous Low NA

Product Overview
- ANGUS Chemical Company, a subsidiary of The Dow Chemical Company ("Dow"), markets 2-amino-2-ethyl-1,3-propanediol using the trade name AEP™ amine. These materials are marketed in various grades with approximately 3-15 weight % water and at different purities. It is a viscous, pale-yellow to light brown liquid with a slight amine odor. AEPD VOX 1000 grade is designed to meet the VOC (volatile organic compound) free criteria established by several European regulations. For further details, see Product Description.
- 2-Amino-2-ethyl-1,3-propanediol is mainly used as a dispersant for pigments and as an additive to control alkalinity and the release of excess formaldehyde in certain industrial processes such as in paint formulations and in metalworking fluids. It is also used as a chemical intermediate in the formation of emulsifiers and oxazoline and oxazolidine chemicals. For further details, see Product Uses.
- 2-Amino-2-ethyl-1,3-propanediol is not sold for direct consumer use, but it is used in industrial situations. Those working with this material in manufacturing operations could be exposed during maintenance, sampling, testing, or other procedures. For further details, see Exposure Potential.
- Eye contact with 2-amino-2-ethyl-1,3-propanediol may result in severe irritation or chemical burns with corneal injury, which could result in permanent vision impairment, even blindness. Brief skin contact may cause slight skin irritation with local redness. Prolonged contact may cause burns with pain, redness, swelling, or tissue damage. This material has low toxicity if swallowed. For further details, see Health Information.
- 2-Amino-2-ethyl-1,3-propanediol is stable at the recommended storage and use conditions specified on the Technical Data Sheet. Avoid contact with strong acids, strong oxidizers, and metals such as aluminum, zinc, copper, copper alloys, and galvanized metals. For further details, see Physical Hazard Information.
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Manufacture of Product
- **Locations** – 2-Amino-2-ethyl-1,3-propanediol is manufactured and marketed by ANGUS, a subsidiary of The Dow Chemical Company (Dow), with production plants located in Sterlington, Louisiana, and Ibbenbüren, Germany.
- **Process** – 2-Amino-2-ethyl-1,3-propanediol is a derivative of nitroalkane chemistry.

Product Description
2-Amino-2-ethyl-1,3-propanediol is a primary amino alcohol that is multifunctional, which allows for improved properties in many applications. It is marketed in various grades with approximately 3-15 weight % water and different purities. AEPD™ 85 2-amino-2-ethyl-1,3-propanediol solution product dominates the current market. It is a viscous, pale-yellow to light brown liquid with a slight amine odor.

In response to efforts to reduce volatile organic compounds (VOC), ANGUS developed AEPD™ VOX 1000 grade, which meets the VOC-free criteria established by several European regulations. 1,2

Product Uses
2-Amino-2-ethyl-1,3-propanediol is useful in a variety of applications, such as:
- **Paints** – as a dispersant for pigments, offering improved flow characteristics, stable pH values, low odor, and improved color
- **Additives** – to control alkalinity and the release of excess formaldehyde in certain industrial situations, such as metal-working fluids
- **A chemical intermediate** – to produce fatty acid emulsifiers (several industrial applications), oxazoline chemicals (surface-active compounds) and oxazolidine (cross-linkers in thermoset resins).

Exposure Potential
2-Amino-2-ethyl-1,3-propanediol is used in industrial products and processes. Based on the uses for this material, the public could be exposed through:
- **Workplace exposure** – Exposure can occur either in a 2-amino-2-ethyl-1,3-propanediol manufacturing facility or in the various industrial or manufacturing facilities that use this material. Those working with 2-amino-2-ethyl-1,3-propanediol in manufacturing operations could be exposed during maintenance, sampling, testing, or other procedures. Each manufacturing facility should have a thorough training program for employees and appropriate work processes and safety equipment in place to limit unnecessary exposure. See Health Information.
- **Consumer exposure to products containing 2-amino-2-ethyl-1,3-propanediol** – This material is not sold for direct consumer use. Consumer exposure to significant quantities is unlikely. See Health Information.
- **Environmental releases** – In the event of a spill, the focus is on containing the spill to prevent contamination of soil and surface or ground water. Evacuate the area. This material is considered practically nontoxic to fish on an acute basis, although the high pH (alkalinity) could injure other aquatic organisms. See Environmental, Health, and Physical Hazard Information.
- **Large release** – Industrial spills or releases are infrequent and generally contained. If a large spill does occur, the material should be captured, collected, and reprocessed or disposed of according to applicable governmental requirements. Only trained and properly protected
personnel should be involved in clean-up operations. See Environment, Health, and Physical Hazard Information.

- **In case of fire** – Isolate the fire and deny unnecessary entry into the area. Fire fighters should wear positive-pressure, self-contained breathing apparatus (SCBA) and protective fire-fighting clothing. If contact is likely, wear full chemical-resistant fire-fighting clothing. Use water fog or fine spray, dry-chemical or carbon-dioxide extinguishers, or foam to extinguish the fire. Alcohol-resistant foams are preferred. Use of a direct water stream may spread the fire. Follow emergency procedures carefully. See Environment, Health, and Physical Hazard Information.

For more information, see the relevant Safety Data Sheet.

**Health Information**

**Eye and Skin Contact** – Eye contact with 2-amino-2-ethyl-1,3-propanediol may result in severe irritation or chemical burns with corneal injury, which could result in permanent vision impairment, even blindness. Brief skin contact may cause slight skin irritation with local redness. A more severe response may result if the skin is scratched or cut. Prolonged contact may cause burns with symptoms of pain, redness, swelling or tissue damage. However, prolonged skin contact is unlikely to result in absorption of harmful amounts of this material. No allergic skin reaction resulted from animal testing.

**Inhalation** – Since the vapor pressure of this material is low, inhalation exposure is only an issue when exposed to heated material or in misty operations. Repeated inhalation of vapors from heated material or mists could be hazardous.

**Ingestion** – This material has low toxicity if swallowed. However, swallowing may result in irritation or burns to the mouth, throat, and gastrointestinal tract. Repeated dose studies and other toxicology testing for this chemical show no evidence of developmental or reproductive toxicity.5

**Mutagenicity/Chromosomal Effects** – Laboratory testing in bacterial and mammalian cells has shown that 2-amino-2-ethyl-1,3-propanediol does not alter genetic material.6,7

For more information, see the relevant Safety Data Sheet.

**Environmental Information**

2-Amino-2-ethyl-1,3-propanediol has a low potential to bioconcentrate (accumulate in the food chain) and very high soil mobility. This material will degrade, but is not considered readily biodegradable. Although high levels of this material may increase the pH of water to levels that may be toxic to some aquatic organisms, it is practically nontoxic to fish on an acute basis.

For more information, see the relevant Safety Data Sheet.

**Physical Hazard Information**

2-Amino-2-ethyl-1,3-propanediol is stable at recommended storage and use conditions. However, exposure to elevated temperatures can result in decomposition. Avoid contact with strong acids, strong oxidizers, and metals such as aluminum, zinc, copper, copper alloys, and galvanized metals. Containers should be kept tightly closed when not in use.

For more information, see the relevant Safety Data Sheet.
Regulatory Information

Regulations may exist that govern the manufacture, sale, transportation, use, and/or disposal of 2-amino-2-ethyl-1,3-propanediol. These regulations may vary by city, state, country, or geographic region. Information may be found by consulting the relevant Safety Data Sheet, Technical Data Sheet, or Contact Us.

Additional Information

- Safety Data Sheet (http://www.dow.com/angus/sds/)
- Contact Us (http://www.dow.com/angus/contact/)
- AEPD VOX 1000 Neutralizing Amine, Technical Bulletin, ANGUS Chemical Company, Form No. 319-00923 (Contact Us to request a copy)

For more business information about 2-amino-2-ethyl-1,3-propanediol, visit the ANGUS Chemical web site at: www.angus.com.

References

1 AEPD 85 2-Amino-2-Ethyl-1,3-Propanediol, Safety Data Sheet, ANGUS Chemical Company
2 AEPD VOX 1000 Neutralizing Amine, Technical Bulletin, ANGUS Chemical Company, Form No. 319-00923
3 AEPD (Amine), Technical Data Sheet 10B, ANGUS Chemical Company, Form No. 319-00017
4 AEPD-85 (Amine), Technical Bulletin 70, ANGUS Chemical Company, Form No. 319-00043
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