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Product Information

DIETHANOLAMINE

Product Number **D8885**
Storage Temperature RT

CAS #: 111-42-2
Synonyms: bis(2-hydroxyethyl)amine; DEA; 2,2'-iminobisethanol; 2,2'-iminodiethanol; diethylolamine

Product Description

Structure: HO-CH₂-CH₂-NH-CH₂-CH₂-OH
Appearance: Clear to very slightly hazy liquid - colorless to very faint yellow
Molecular formula: C₄H₁₁NO₂
Molecular weight: 105.1
Melting point: 28°C, may be a solid or viscous liquid at room temperature
Water content: Not more than 2% (by Karl Fischer)¹
Specific gravity: (based on water at 4°C) at 30°C is 1.088, and at 60°C is 1.069.² Molarity of the melted liquid is 10.4 M.
pK_a: 8.88 (Water) at 25°C³
ΔpK_a/ΔT: -0.025.⁴ An aqueous solution of 0.1 N has pH approximately 11.²
Purity: ≥97.5% by titration
98.5% by TLC

Diethanolamine is an organic base which has been used as an emulsifying and dispersing agent.⁵ It can also be used as a basic buffer, with optimal pH about pH 9, if titrated with HCl or other acid. Other uses

include: to "scrub" gases, as a chemical intermediate, as humectant or softening agent.²

Preparation Instructions

Sigma tests diethanolamine in water at 50 mg/mL to see a clear colorless solution. It has limited solubility in organic solvents: 4.2% in benzene, 0.8% in ether, <0.1% in CCl₄, and <0.1% in n-heptane.² It is reportedly miscible with alcohol, acetone, chloroform and glycerol.⁵

Storage/Stability

The product should be stored protected from moisture and carbon dioxide, since diethanolamine is hygroscopic and basic. When stored at room temperature, this product has a shelflife of three years.

References

1. Sigma data.
2. *Merck Index*, 11th Ed., #3097 (1989) or 12th Ed., #3156 (1996)
3. *Lange's Handbook of Chemistry*, 13th Ed., p. 5-32.
4. *Fluka Biochemika*, 1989 Ed., p. 429.
5. *Martindale: The Extra Pharmacopoeia*, 30th Ed., p. 1361 (1993).

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