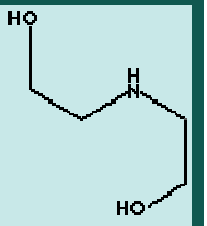
DIETHANOL AMINE

PRODUCT IDENTIFICATION



CAS NO.	111-42-2
EINECS NO.	203-868-0
FORMULA	$(CH_2CH_2OH)_2NH$
MOL WT.	105.14
H.S. CODE	2922.12
TOXICITY	Oral rat LD50: 710 mg/kg
SYNONYMS	2,2'-Iminobisethanol; Diethylolamine; DEA; Diolamine; Bis(2-hydroxyethyl)amine; N,N-Diethanolamine; Bis(hydroxyethyl)amine; 2,2'-Dihydroxydiethylamine; iminodiethanol; Diaethanolamin (German); Diethanolamin (Czech); 2,2'-iminobis-Ethanol; Di(2-hydroxyethyl)amine; Iminodiethanol; 2-[(2-Hydroxyethyl)amino]ethanol; 2,2'-Dihydroxydiethylamine; 2,2'-Iminobis[ethanol]; 2,2'-Iminodi-1-ethanol; 2,2'-Iminodiethanol; N,N-Bis(2-hydroxyethyl)amine; Bis(hydroxyethyl)amine;
DERIVATION	
CLASSIFICATION	

PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE	clear liquid
MELTING POINT	28 C
BOILING POINT	268 - 267 C
SPECIFIC GRAVITY	1.09
SOLUBILITY IN WATER	miscible
pH	11.0 (0.1N aq sol.)
VAPOR DENSITY	
AUTOIGNITION	662 C
NFPA RATINGS	Health: 1 ; Flammability: 1; Reactivity: 0
REFRACTIVE INDEX	1.4770
FLASH POINT	130 C
STABILITY	Stable under ordinary conditions

GENERAL DESCRIPTION & APPLICATIONS

There are three ethanolamines called mono, di and tri-ethanolamine with formula$(CH_2CH_2OH)NH_2$, $(CH_2CH_2OH)_2NH$, and $(CH_2CH_2OH)_3N$ respectively. They are hygroscopic viscous liquid or semi-solid at room temperature. They are soluble in water, in alcohol and acetone, insoluble in ether and benzene;

		Monoethanolamine (CAS #: 141-43-5	Diethanolamine (CAS #: 111-42-2)	Triethanolamine (CAS #: 102-71-6)
Formula		$(CH_2CH_2OH)NH_2$ (61.08)	$(CH_2CH_2OH)_2NH$ (105.14)	$(CH_2CH_2OH)_3N$ (149.19)
Specific Gravity		1.018	1.0919	1.126
Freezing Point C		10 - 11	28	21 - 22
Flash Point C		91.0	166	210
Viscosity cP	at 20 C	24	crystalline	crystalline
	at 30 C		387	404

They are corrosive with a characteristic ammonia-like odor. their colors range from almost colorless to amber depending on purity. These substances decompose on heating and produce toxic and

corrosive gases including nitrogen oxides. They are medium strongly basic and react with cellulose nitrate resulting in causing fire and explosion hazard. They react violently with strong acids and strong oxidants. Ethanolamines are produced from ethylene oxide reacted with ammonia. The principle product is monoethanolamine and secondary products of diethanolamine and triethanolamine are produced since ethylene oxide is reactive. They are the simplest members of the alkanolamine compounds. They have the physical and chemical characteristics of both alcohols and amines in one molecule. Ethanolamines stuctures are widely found in antihistamine drugs. In industrial field, monoethanolamine is an important raw material in the production of ethylenediamine. Ethanolamines are used as gas-scrubber in refinery and natural gas operations. They are widely used in the field of:

- Gas-scrubber
  - Natural and refinery gas operations
  - Hydrogen sulfide (H_2S) and CO_2 gas removal
- Textile Operation
  - Softeners
  - Lubricants
  - Dye Leveling Agents
  - Dispersants
  - Durable Press
  - Optical Brighteners
- Surfactants and Metalworking fluids
  - Impart alkalinity
  - Detergents
  - Cosmetic formulations
  - Acid neutralization
  - Fatty acid soaps
  - Emulsifiers
  - Corrosion Inhibitors
- Others
  - Concrete additives
  - Cement admixtrue
  - Urethane foams
  - Agricultural products
  - Photographic chemicals
  - Biocides
  - Oil well chemicals
  - Rubber vulcanization accelerators
  - Plasticizers

SALES SPECIFICATION	
APPEARANCE	clear liquid
ASSAY	99.0% min
COLOR, APHA	20 max
MOISTURE	0.1% max
TRANSPORTATION	
PACKING	220kgs in drum
HAZARD CLASS	8 (Packing group: III)
UN NO.	1719
OTHER INFORMATION	
Hazard Symbols: XN, Risk Phrases: 22-38-41-48/22, Safety Phrases: 26-36/37/39-46	