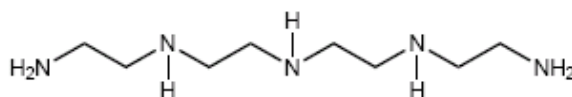


Technical Bulletin**TETRAETHYLENEPENTAMINE (TEPA)**

TETRAETHYLENEPENTAMINE (TEPA) is principally a mixture of four TEPA ethyleneamines with close boiling points including linear, branched, and two cyclic TEPA products, and higher molecular weight products.

These compounds are:

- TEPA (CAS #000112-57-2, N-(2-aminoethyl)-N'-(2-((2-aminoethyl)amino)ethyl)-1,2-ethanediamine)
- AETETA (CAS #031295-46-2, 4-(2-aminoethyl)-N-(2-aminoethyl)-N'-(2-((2-aminoethyl)amino)ethyl)-1,2-ethanediamine)
- APEEDA (CAS #031295-54-2, 1-(2-aminoethyl)-4-((2-aminoethyl)amino)ethyl]-piperazine)
- PEDETA (CAS #031295-49-5, 1-[2-[[2-((2-aminoethyl)amino)ethyl]-amino]ethyl]-piperazine)

**APPLICATIONS**

- Asphalt additives
- Corrosion inhibitors
- Epoxy curing agents
- Hydrocarbon purification
- Lube oil and fuel additives
- Mineral processing aids
- Polyamide resins
- Surfactants
- Textile additives

SALES SPECIFICATIONS

<u>Property</u>	<u>Specifications</u>	<u>Test Method*</u>
Amines, mol wt < TEPA, wt%	3.0 max.	ST-35.225
Amines, mol wt > TEPA, wt%	3.0 max.	ST-35.225
Appearance	Clear amber liquid	ST-30.1
Assay, TEPA, wt%	95.0 min.	ST-35.225
Color, Gardner	4 max.	ST-30.13
Total piperazines, area %	38 max.	ST-35.225
Water, wt%	0.5 max.	ST-31.53, 6

*Methods of Test are available from Huntsman Corporation upon request.

ADDITIONAL INFORMATION**Regulatory Information**

See SDS for all regulatory information.

Typical Properties

Amine value, mg KOH/g	1343	Ionization constants, K_b 2, 25°C	6.5E-6
Boiling point, 760 mm Hg, °C	332	Kinematic viscosity, cSt, 25°C	54.1
Coefficient of expansion, 1/°C, 20°C	0.000681	Kinematic viscosity, cSt, 40°C	24.6
Density, g/ml, 20°C	0.991	Molecular weight, Linear component	189.30
Dielectric constant, 25°C and 1 kHz	12.0	Molecular weight, Typical product	200
Electrical conductivity, μ mhos/cm, 24°C	0.0065	Nitrogen content, %	35.1
Freezing point, °C	- 30	pH of 1 wt% solution	11.5
Heat of formation, kcal/mol	- 19.7	Refractive index, 25°C	1.534
Heat of vaporization, BTU/lb	131.5	Specific gravity, 20/20°C	0.993
Heat of combustion, BTU/lb	14437	Specific heat, cal/g °C, 20°C	0.451
Ionization constants, K_b 1	6.5E-5	Surface tension, dynes/cm, 20°C	39.3
		Thermal conductivity, cal/cm-sec-°C, 20°C	0.000435
		Vapor pressure, mm Hg, 20°C	< 0.01
		Viscosity, cP, 20°C	23.4

TOXICITY AND SAFETY

For additional information on the toxicity and safe handling of this product, consult the Safety Data Sheet prior to use of the product.

HANDLING AND STORAGE

In order to maintain the high degree of purity with which tetraethylenepentamine (TEPA) is manufactured and shipped, the following storage and handling considerations are recommended:

Dry Inert Gas Blanket

This product should be stored under a dry inert gas blanket, such as nitrogen, to minimize contamination resulting from contact with air and water.

Materials of Construction

If slight coloration of the ethyleneamine is acceptable, storage tanks may be made of carbon steel or black iron, provided they are free of rust and mill scale. However, if the amine is stored in such tanks, color may develop due to iron contamination. If iron contamination cannot be tolerated, tanks constructed of types 304 or 316 stainless steel should be used. (Note: Because they are quickly corroded by amines, do not use copper, copper alloys, brass, or bronze in tanks or lines.) Recommended storage construction for TEPA is stainless steel or carbon steel.

Storage Temperature

Tetraethylenepentamine (TEPA) has a pour point of -30°C. To avoid freezing, the product should be maintained above this temperature.

AVAILABILITY

Tetraethylenepentamine (TEPA) is available in bulk and in 55-gallon drums of 452 pounds (205 kilograms) net weight. Samples are available in the Americas region by contacting our sample department at 1-800-662-0924. In other regions, samples can be obtained by contacting a Huntsman Performance Products sales office.

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