

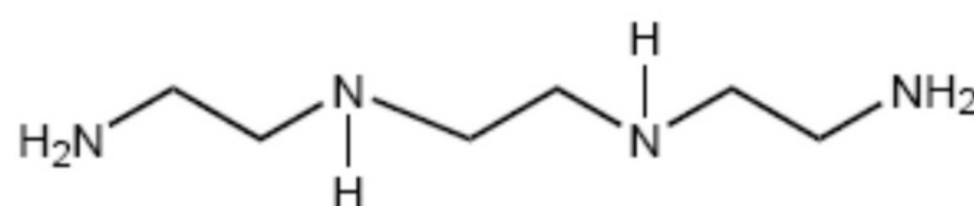
Technical Bulletin

TRIETHYLENETETRAMINE (TETA)

TRIETHYLENETETRAMINE is a mixture of four TETA ethyleneamines with close boiling points including linear, branched and two cyclic molecules.

These compounds are:

- TETA (CAS #000112-24-3, N,N'-bis (2-aminoethyl)-1,2-ethanediamine)
- Bis AEP (CAS #006531-38-0, N,N'-bis-(2-aminoethyl)piperazine)
- PEEDA (CAS #024028-46-4, N-[(2-aminoethyl)2-aminoethyl]piperazine)
- Branched TETA (CAS #004097-89-6, tris-(2-aminoethyl)amine)



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

Property	Specifications	Test Method*
Amines, mol wt < TETA, wt. %	2.0 max.	ST-35.219
Assay, TETA, wt. %	97.0 min.	ST-35.219
Color, Pt-Co	50 max.	ST-30.12
Water, wt. %	0.50 max.	ST-31.53, 6

ADDITIONAL INFORMATION

Regulatory Information			
DOT/TDG Classification	Triethylenetetramine	Heat of vaporization, BTU/lb	160.2
HMIS Code	3-1-0	Heat of combustion, BTU/lb	14297
WHMIS Classification	D1B, D2A, D2B, E	Ionization constants, K _b 1	6.7E-5
		Ionization constants, K _b 2, 25°C	7.0E-6
		Kinematic viscosity, cSt, 25°C	21.4
		Kinematic viscosity, cSt, 40°C	10.3
Chemical Control Laws		Molecular weight, Linear component	146.24
Canada, DSL	Listed	Molecular weight, Typical product	151
United States, TSCA	Listed	Nitrogen content, %	37.0
Typical Physical Properties		pH (1 wt. % solution)	10
Amine value, mg KOH/g	1443	Refractive index, n _D ²⁰	1.496
Boiling point, °C (°F)	260 (500)	Specific gravity, 25/25°C	0.983
Coefficient of expansion, 1/°C, 20°C	0.00075	Specific heat, cal/g °C, 20°C	0.482
Density, g/ml, 20°C	0.981	Surface tension, dynes/cm, 20°C	22.2
Dielectric constant, 25°C and 1 kHz	11.4	Thermal conductivity, cal/cm-sec-°C, 20°C	0.000450
Electrical conductivity, μmhos/cm, 24°C	0.038	Vapor pressure, mm Hg, 20°C (68°F)	<0.1
Flash point, PMCC, °C (°F)	118 (245)	Viscosity, cP, 20°C	13.9
Freezing point, °C (°F)	- 35 (-31)	Water solubility (%)	>10
Heat of formation, kcal/mol	- 17.6		