



AMINES & PLASTICIZERS LTD.



QUALITY POLICY

Our Goal at APL is Customers Total Satisfaction. We will strive, to deliver competitive & Quality products and services and to comply with applicable statutory & Regulatory requirement.

In order to increase our Customer's Competitiveness. We will continuously strive to improve our system and move APL's Long Term Business Plans forward by Improvement, innovation and optimum utilisation of resources.

Amines & Plasticizers will focus on the following Quality Objectives :

1. Continual growth in business over previous year.
2. Development of quality products, new technologies keep pace with the trend of globalisation.
3. Maintenance of safe and healthy work environment in all its plants and offices.
4. Optimum utilisation of physical, material & technological resources

Hemant Kumar Ruia
Chairman & Managing Director

Some of the Industries APL Services



PETROCHEMICALS / REFINERIES



VISCOSE FIBERS



PHARMA



FERTILIZER



OIL & GAS



**COSMETICS, DETERGENTS,
TEXTILE AUXILIARIES**

CORPORATE PROFILE

Amines & Plasticizers Limited (APL), incorporated in 1973, having its Corporate office in Mumbai, India and manufacturing facility in Navi Mumbai, is the pioneer and one of the largest producer of Ethanolamines, Alkyl Alkanolamines and Gas Treating Solvents in India.

APL has also pioneered the manufacture of Morpholine & Alkyl Morpholines in India. **APL** is one of the largest Producers of N-Methyl Morpholine Oxide, the preferred solvent used for the manufacture of speciality Viscose staple fibre by the Solvent spun process. **APL's** range of Alkyl Morpholines includes Methyl, Ethyl, Butyl, Formyl, Acetyl, Hydroxy Ethyl Morpholines. **APL** is also key player in producing various Ethoxylates, Propoxylates, Polyols based on Triols, Tetrols, Amines - Block Polymers of Ethylene Oxide and Propylene Oxide.

APL is a global supplier of organic chemicals used in Oil Refineries, Natural Gas Plants, Ammonia Plants, Petrochemical Plants, Pharmaceuticals, Agrochemicals with regular exports to over 40 countries globally including USA, Canada, Germany, Korea, Japan, Australia, New Zealand, the Middle East, Africa and South America.

APL is one of the leading Technology, Products & Services provider for sour gas treatment requirement of Refineries, Natural Gas Plants, Ammonia Plants, Steel Plants etc. through its team of Engineers / Chemists in India and overseas.

In **APL**, Research and Development is an on-going process which enables to reposition itself in all the fields / spectrum it touches, to be a global player for providing quality products and service excellence.

APL is an ISO-9001-2008, ISO-14001-2004 & OHSAS-18001-2007 Certified company.

Team APL has dedicated professionals with rich experience in all the functional areas of the management and totally committed to customer satisfaction in providing quality products & services of global standards and value for money.



APL's PRODUCT RANGE

Alkyl Alkanol Amines

Methyl Monoethanolamine	(MMEA)
Methyl Diethanolamine	(MDEA)
Di- Methyl Ethanolamine*	(DMEA)
Di- Ethyl Ethanolamine*	(DEEA)
Ethyl Monoethanolamine*	(EMEA)
Ethyl Diethanolamine	(EDEA)
Mono-n-propyl Monoethanolamine	(PMEA)
Mono-n-propyl Diethanolamine	(PDEA)
Mono-n-Butyl Ethanolamine	(BMEA)
Mono-n-Butyl Diethanolamine*	(BDEA)
Di-Butyl Ethanolamine	(DBEA)
Poly Ethanolamine	(PEA)
Tertiary Butyl Monoethanolamine	(TBMEA)
Tertiary Butyl Diethanolamine	(TBDEA)

Alkanolamines

Triisopropanolamine-85 %	(TIPA 85%)
Monoethanolamine *	(MEA)
Diethanolamine	(DEA)
Triethanolamine-Tech	(TEA-85%min)
Triethanolamine-pure*	(TEA-99%)
Diethanolamine LFG	(DEA-85%)

Morpholine & Substituted Morpholines

Morpholine*	
N-Methyl Morpholine *	(NMM)
N-Methyl Morpholine Oxide 50%	(NMMO)
N-Ethyl Morpholine*	(NEM)
N-Formyl Morpholine	(NFM)
Hydroxy Ethyl Morpholine* (2 Morpholino Ethanol)	(HEM)
N-Acetyl Morpholine	(NAM)
N-Butyl Morpholine	(NBM)

Specialty E.O. / P.O. Products

2-Phenoxy Ethanol*
1-Piperidine Ethanol (2-Piperidino Ethanol)*
Diethanol Isopropanolamine 85% (DEIPA 85%)
N-2 Hydroxy Ethyl Pyrrolidine*
N-Benzyl Ethanolamine*(NBzEA)

E.O. / P.O. Derivatives

Polypropylene glycol 200/400/600/800
Polyethylene glycol 425/900/2020/4000
APOL-61/62/64/68
Amine Polyols
Glycerol Polyol
Polyethylene glycol Adipates
Sorbitol mixture Ethoxylates.
Alcohol Ethoxylates

* finds applications in Pharmaceutical Industry also.

ALKYL ALKANOL AMINES & SPECIALTY E.O. PRODUCTS

Monomethyl Ethanolamine (MMEA)

Monomethyl Ethanolamine is a clear, colourless liquid, soluble in water. Mainly used for textile chemicals, pharmaceuticals, dyestuffs, Optical brighteners, corrosion inhibitors, Agrochemicals, Refractory Binder.

Methyl Diethanolamine (MDEA)

Methyl Diethanolamine is a colourless liquid soluble in water. It is used as sour gas sweetening solvent to absorb acidic gases (H₂S, CO₂), with considerable energy savings. It is also used in water treatment chemicals, corrosion inhibitors, polyurethane foams, Textile auxiliaries, Coatings, Printing Inks, Paper chemicals, Cleaning Formulations (Electronic Items), Pharma, Paints, Lubrication Oils etc. MDEA based Formulated Gas Treating Solvent are used for specific application in Natural Gas, Ammonia & Hydrogen Plants, LNG facilities with downstream Cryogenic facilities, Refineries etc.

Dimethyl Ethanolamine (DMEA)

Dimethyl Ethanolamine is a clear, mobile liquid, miscible in water, alcohols, ethers, aromatic solvents and finds application in water reducible Coatings formulations, in methacrylate preparations as flocculants, corrosion inhibitor in steam condensates, in wax emulsion floor polishes, pharma, ion exchange, resins, dyes, Pesticides, Hardener for Epoxy resin,

Diethyl Ethanolamine (DEEA)

Diethyl Ethanolamine is a clear, liquid and miscible in water, alcohols, ethers and aromatic solvents. It can be used as boiler feed additive, catalyst for urethane foam, as oil additives, in ion exchange resins, in textile chemicals, in pharmaceuticals, was polishing emulsions floor polishes, in detergents and Photographic chemicals.

Ethyl Monoethanolamine (EMEA)

Ethyl Monoethanolamine is a colourless liquid, miscible with water. It finds application in the field of Coatings, pharmaceuticals, functional fluids, oil additives and surfactants.

Ethyl Diethanolamine (EDEA)

Ethyl Diethanolamine is a light yellow, liquid, miscible in water, it is used as emulsifier, as curing agent, as corrosion inhibitor, Textile auxiliaries.

n-Propyl Monoethanolamine (PMEA)

Propyl Monoethanolamine is a colourless, liquid, and miscible in water, it is used as an intermediate chemical in pharmaceutical and Agro-chemicals such as Fluchloralin & Prochloraz.

n-Propyl Diethanolamine (PDEA)

Propyl Diethanolamine is a pale yellow, viscous, liquid, miscible in water, alcohols, ethers and it is used in Emulsifier Formulations.

n-Butyl Ethanolamine (BMEA)

BMEA is a clear, colourless liquid, miscible with water, Alcohol and Ether. It finds application in Corrosion Inhibitor formulation, oil industry and as stablizer.

n-Butyl Diethanolamine (BDEA)

BDEA is a very faint yellow, clear liquid. It finds applications in pharmaceutical and photographic chemicals.

Piperidine Ethanol

Piperidine Ethanol is a clear colourless liquid, miscible with water. It is used as a intermediate for pharmaceuticals, oil Industry, Cement Admixture.

Pyrrolidine Ethanol

Pyrrolidine Ethanol is a clear, colourless mobile liquid, completely miscible with water, it is used in pharma as intermediate for Ormeloxifene (Centchroman-Oral Contraceptive)

N-Benzyl Ethanolamine (NBZEA)

N-Benzyl Ethanolamine is a clear colourless to light yellow colour liquid and a speciality product. It is a drug intermediate.

Dibutyl Ethanolamine (DBEA)

It is clean, colourless liquid, miscible with water. It finds application in Coatings formulation, emulsifier.

2-Phenoxy ethanol

2-Phenoxy ethanol is a colourless slightly viscous liquid, slightly soluble in water, miscible with acetone, ethanol (96%) and with glycerol and slightly soluble in olive oil. Mainly used as Antimicrobial preservative in cosmetics. Other uses are, in treatment of bacterial infection, as solvent for inks formulations, as coalescent solvent for water based paints.

Also available in three different 'Preservative Grades' of free phenol less than 5, 25, 150 ppm.

MORPHOLINE & ITS DERIVATIVES

MORPHOLINE

Morpholine is a colourless, hygroscopic liquid with a characteristic amine like odour, completely miscible with water and many other organic solvents. It acts as a solvent for organic products like resins, dyes, waxes etc and is used in rubber chemicals, pharmaceuticals, optical brighteners, morpholine derivatives, emulsifiers for waxes and polishes etc.

N-METHYL MORPHOLINE (NMM)

N-Methyl Morpholine is a colourless liquid miscible with water and benzene and has a characteristic ammoniacal odour. It is used as a catalyst in polyurethane foams, corrosion inhibitors, pharmaceuticals and as a stabilising agent for chlorinated hydrocarbons etc.

HYDROXY ETHYL MORPHOLINE (HEM)

Hydroxy Ethyl Morpholine is a clear liquid, with amine like odour, completely miscible with water and many other organic solvents. It is used in Pharmaceuticals, in the field of textiles, optical brighteners.

N-ETHYL MORPHOLINE (NEM)

N-Ethyl Morpholine is a clear water white, liquid having ammoniacal odour. It is used as a solubilizer in printing inks,

corrosion inhibitors for lubricating oils, N-EthylMorpholine is commonly used as an extraction solvent, also as catalysts in urethane field and pharmaceuticals.

N-FORMYL MORPHOLINE (NFM)

N-Formyl Morpholine is clear colourless liquid, miscible with water and all organic solvents. It is used as an intermediate for the chemical industry. Solvent for extractive distillation of aromatics.

N-ACETYL MORPHOLINE (NAM)

N-Acetyl Morpholine is a colourless liquid with faint acetic odour, completely miscible with water and many other organic solvents. It is used in the extraction of aromatic hydrocarbons, additive for improved combustion of natural gas burner, in acid gas treating, agro chemicals, photographic chemicals, selective acetylation of amines etc.

N-METHYL MORPHOLINE OXIDE (NMMO)-50%

N-Methyl Morpholine Oxide (50%) is a colourless to pale yellow liquid with faint amine like odour, completely miscible with water and an aprotic solvent. It is used as a solvent in the production of new generation viscose fibers such as Lyocell / Tencel fibres, pharmaceutical intermediates.

ETHANOLAMINES

MONOETHANOLAMINE (MEA)

Monoethanolamine is a colourless, moderately viscous, hygroscopic liquid miscible in water and soluble in alcohol, chloroform etc. It is mainly used for scrubbing acidic gases (H_2S , CO_2) and is also used as surface active agents, emulsifiers, polishes, pharmaceuticals, corrosion inhibitors, chemical intermediates, wood chemicals etc.

DIETHANOLAMINE (DEA)

Diethanolamine is a colourless, hygroscopic liquid, soluble in water, alcohol but insoluble in ether, benzene etc. It is used as an absorbent for acidic gases (H_2S , CO_2) in inks, refinery streams and is also used in optical whiteners, textiles specialities, emulsifiers, cosmetics, inks, cleaners, polishes, construction chemicals etc.

TRIETHANOLAMINE (TEA)

Triethanolamine (85%/99%) is a colourless to pale yellow, viscous, hygroscopic liquid miscible with water, alcohol etc. and slightly soluble in benzene and ether. It is used as intermediate for manufacture of fatty acid soaps used in drycleaning, cosmetics, household detergents etc. Also used as an emulsifier, chelating agent, pharmaceutical alkalizing agent.

TRISOPROPANOLAMINE 85% (TIPA-85)

Clear to light yellow liquid, finds application in Cement Industry, Herbicides, Fungicides and Pesticides, and as lubricants which is based on tall oil amides, for water based metal working fluids, Paper and paper board and Urethanes.

EO & PO DERIVATIVES

POLYPROPYLENEGLYCOLS (PPG-425, 900, 2020, 4000)

Clear liquids, non-volatile, non corrosive, with varying molecular weights, hydroxyl contents, comparable to Polyethylene glycols, but more oil-soluble and substantially less water-soluble. Only lower molecular weight member, such as PPG-425, is soluble in water. They are ideal solvents for vegetable oils, waxes and resins and preferred for their low toxicity. These products are used as lubricants, antifoaming agents, parting agents in resin, rubber, elastic latex, besides polyurethane industry.

AMINE & GLYCEROL BASED POLYOLS

High molecular weight, clear, light brown liquids with varying hydroxyl contents, viscosity, are important raw materials in Polyurethanes systems. They also find application as Mold Releasing agents in Rubber related Automobile auxiliaries industries.

APOL - 61/62/64/68

Clear to slightly hazy liquids at room temperature with varying cloud points, hydroxyl values and surface tensions. These products find application as Fiber Finish Oil, as Emulsifiers in Pharmaceutical preparation, in Leather Auxiliaries, in Electroplating baths, in Sugar Refining, as low foaming surfactant in textile & oil-field formulations and in Dye auxiliaries.

POLYETHYLENEGLYCOLS (PEG-200, 400, 600 & 800)

Where as low molecular weights PEG 200, 400 are clear viscous liquids, the others are waxy solids, soluble or miscible with water and for the most part with alcohol and other organic solvents. They are heat stable, inert to many chemical agents and do not easily hydrolyze or deteriorate because of their low vapour pressure nature and being non toxic, they find wide application in Plasticizers, softeners and humectants, lubricants, bases for cosmetic and pharmaceuticals and as solvents, binders, metal and rubber processing. They are also permissible additives to foods and animal feed.

ALCOHOL ETHOXYLATES PROPOXYLATES

Clear liquids APEO (Alkyl Phenol Ethoxylates) free. Offering low foam performance at low temperatures and good detergency and wetting, also Used as Solubilizer and Thickener in various fields. The other application include metal cleaners and other hard surface cleaners, spray cleaners rinse aids, auto-dish detergents, and textile processing auxiliaries.

Polyethylene glycol Adipates and Sorbitol mixture Ethoxylates

Clear brownish liquid with different viscosities, hydroxyl content, Mostly find applications as Mold Releasing agents in Rubber related Automobile auxiliaries industries.

SPECIFICATION	TESTING PROCEDURES	UNIT	MEA	DEA
COLOUR	ASTM D1209	APHA	25 MAX	25 MAX
ODOUR			MILDLY AMMONICAL	FAINT AMMONICAL
CRYSTALLISING POINT		deg C	9 Min	25 Min
Sp. Gr. at 20/20 C	ASTM D 4052		1.015-1.02	1.090-1.096 (at 30/20)
WATER CONTENT	ASTM E 203	% By wt	0.6 Max	0.5 Max
MEA	BY GC		99.0 Min	
DEA	BY GC			99.0 Min
TEA	IS-7901-1975 / GC			
MMEA	BY GC			
MDEA	BY GC			
MORPHOLINE	BY GC			
N METHYL MORPHOLINE	BY GC			
ASSAY	Acid-Base Titration	% By wt	99.0 Min	99.0 Min
MEAN MOELCULAR WEIGHT	IS-7901-1975	g/mol	61 Min	104 Min
DISTILLATION RANGE	Method A4 ASTM D1078	g/mol	62.5 Max	107 Max
		IBP degC	166	
		95% degC	-	
		DP deg C	178	
SUSPENDED MATTER	Visual		CLEAR LIQ.	CLEAR LIQ.
WATER MISCIBILITY 10cc in 90cc Water			COMPLETE	COMPLETE
PHYSICAL PROPERTIES OF PURE PRODUCT				
APPEARANCE			Clear Hygroscopic Liquid	Clear Hygroscopic Liquid
MOLECULAR WEIGHT		g/mol	61.08	105.14
BOILING POINT <small>AT 760 mm Hg</small>		deg C	172	269.1 (decomposes)
VAPOUR PRESS. <small>AT 20 deg C</small>		mm Hg	0.4	<0.01
FREEZING POINT		deg C	10.3	27.5
FLASH POINT		deg C / deg F	93/200	138/280
IGNITION POINT		deg C	420	370
REFRACTIVE INDEX <small>n_{20d}</small>			1.4548	1.4775
DYNAMIC VISCOSITY <small>20 deg C</small>		m Pas	24	
DYNAMIC VISCOSITY <small>40 deg C</small>		m Pas	10	196
pH OF <small>0.1N Aq. Soln.</small>			12.05	11
VAPOUR DENSITY <small>AIR=1</small>			2.1	3.6
SPECIFIC HEAT <small>at 50°C</small>		KJ/Kg K	2.74	2.47
THERMAL CONDUCTIVITY <small>at 50°C</small>		W/mK	0.216	0.175
PACKING			Available In Road Tanker & M.S / HM HDPE DRUMS Nett Wt:210/230 Kgs.	Available In Road Tanker & M.S/HM HDPE DRUMS Nett Wt:210/230 Kgs.
CAS.REG.NO.			141-43-5	111-42-2



TEA (PURE)	TEA (TECH)	MMEA	MDEA	MORPHOLINE	N METHYL MORPHOLINE
100 MAX	100 MAX	20 MAX	50 MAX	15 MAX	25 MAX
FAINT AMMONICAL	FAINT AMMONICAL	MILDLY AMMONICAL	MILDLY AMMONICAL	MILDLY AMMONICAL	MILDLY AMMONICAL
1.123-1.127	1.120-1.130	0.936-0.942	1.038 - 1.044	1.001-1.004	0.914-0.920
0.5 Max	0.5 Max	0.5 Max	0.5 Max	0.5 Max	0.5 Max
1.0 Max	15.0 Max				
99.0 Min	85.0 Min				
		99.0 Min			
			99.0 Min		
				99.0 Min	
					99.0 Min
		99.0 Min	99.0 Min	99.0 Min	99.0 Min
147 Min	140 Min				
150 Max	146.9 Max				
		152	235	126	112
		162	-	-	-
		-	260	131	118
CLEAR LIQ.	CLEAR LIQ.	CLEAR LIQ.	CLEAR LIQ.	CLEAR LIQ.	CLEAR LIQ.
COMPLETE	COMPLETE	COMPLETE	COMPLETE	COMPLETE	COMPLETE
Clear Hygroscopic Liquid	Clear Hygroscopic Liquid	Clear Hygroscopic Liquid	Clear Hygroscopic Liquid	Clear Hygroscopic Liquid	Clear Hygroscopic Liquid
149.19		75.1	119.2	87.12	101.15
360 (decomposes)	360	159	247.2	128.9	113.9
<0.01		0.5	<0.01	7	11
20.4	17.9	-4.5	-21	-4.9	-65.9
196/385	185/365	71/159.8	135/275	37.8/100	22.2/72
330		350	265	310	above 190
1.485		1.4385	1.4694	1.4545	1.4352
950		13	101	2.23	0.94
208				1.52	
10.5		>10	>10	11.2	>10
5.14		2.6		3	3.5
2.34		2.55	1.72 AT 30°C	0.486	1.75 at 20°C
0.154					0.12 at 25°C
Available In Road Tanker & M.S/HM HDPE DRUMS	Available In Road Tanker & M.S/HM HDPE DRUMS	Available In Road Tanker & M.S/HM HDPE DRUMS	Available In Road Tanker & M.S/HM HDPE DRUMS	Available In Road Tanker & M.S/HM HDPE DRUMS	Available In Road Tanker & M.S/HM HDPE DRUMS
Nett Wt:210/230 Kgs.	Nett Wt:210/230 Kgs.	Nett Wt:195 Kgs.	Nett Wt:210/230 Kgs.	Nett Wt:205 Kgs.	Nett Wt:180 Kgs.
102-71-6	102-71-6	109-83-1	105-59-9	110-91-8	109-02-4

SPECIFICATION	TESTING PROCEDURES	UNIT	EMEA	EDEA
COLOUR	ASTM D1209	APHA	25 MAX	200 MAX
ODOUR		MILDLY AMMONICAL	MILDLY AMMONICAL	MILDLY AMMONICAL
Sp. Gr. at 20/20 C	ASTM D 4052		0.90-0.95	1.0 - 1.10
WATER CONTENT	ASTM E 203	% By wt	0.5 MAX	0.5 MAX
EMEA	BY GC		99.0 MIN	
EDEA	BY GC			98.0 MIN
PMEA	BY GC			
PDEA	BY GC			
DMEA	BY GC			
DEEA	BY GC			
1-PIPERIDINEETHANOL	BY GC			
1-PYRROLIDINEETHANOL	BYGC			
ASSAY	Acid-Base Titration	% By wt	99.0 MIN	95.0 MIN
DISTILLATION RANGE	ASTM D1078	IBP degC 95% degC DP deg C	160 - 170	230 - 270
SUSPENDED MATTER	Visual		CLEAR LIQ.	CLEAR LIQ.
WATER MISCIBILITY 10cc in 90cc Water			COMPLETE	COMPLETE
PHYSICAL PROPERTIES OF PURE PRODUCT				
APPEARANCE			CLEAR HYGROSCOPIC LIQUID	CLEAR HYGROSCOPIC LIQUID
MOLECULAR WEIGHT		g/mol	89.14	133.19
BOILING POINT AT 760 mm Hg		deg C	169 - 170	248
VAPOUR PRESS. AT 20 deg C		mm Hg	< 0.1	3
FREEZING POINT		deg C	-9	-44
FLASH POINT (COC)		deg C /deg F	71/160	123/255
IGNITION POINT		deg C		
REFRACTIVE INDEX n _{20d}			1.441 - 1.444	1.4665
DYNAMIC VISCOSITY 20 deg C		m Pas	12	
DYNAMIC VISCOSITY 40 deg C				
pH OF 0.1N Aq. Soln.			11	10
VAPOUR DENSITY AIR=1			3	
PACKING			Available In Road Tanker & M.S/HM HDPE DRUMS Nett Wt:210 Kgs.	Available In Road Tanker & M.S/HM HDPE DRUMS Nett Wt:210 Kgs.
CAS.REG.NO.			110-73-6	139-87-7



PMEA	PDEA	DMEA	DEEA	1-PIPERIDINE-ETHANOL	1-PYRROLIDINE-ETHANOL
25 MAX	200 MAX	50 MAX	50 MAX	50 MAX	50 MAX
MILDLY AMMONICAL	MILDLY AMMONICAL	MILDLY AMMONICAL	MILDLY AMMONICAL	MILDLY AMMONICAL	MILDLY AMMONICAL
0.895-0.905	0.977-0.988	0.883-0.888	0.884-0.888	0.972-0.976	0.980-0.985
0.5 MAX	0.5 MAX	0.5 MAX	0.5 MAX	0.5 MAX	0.5 MAX
99.0 MIN					
	98.0 MIN				
		99.0 MIN			
			99.0 MIN		
				99.0 MIN	
					99.0 MIN
99.0 MIN	98.0 MIN	99.0 MIN	99.0 MIN	99.0 MIN	99.0 MIN
173	252	130	158	199	
-	-	-	-	-	
182	270	136	163	203	
CLEAR LIQ.	CLEAR LIQ.	CLEAR LIQ.	CLEAR LIQ.	CLEAR LIQ.	CLEAR LIQ.
COMPLETE	COMPLETE	COMPLETE	COMPLETE	COMPLETE	COMPLETE
CLEAR HYGROSCOPIC LIQUID	CLEAR HYGROSCOPIC LIQUID	CLEAR HYGROSCOPIC LIQUID	CLEAR HYGROSCOPIC LIQUID	CLEAR HYGROSCOPIC LIQUID	CLEAR HYGROSCOPIC LIQUID
103.2	147.2	89.14	117.19	129.2	115.18
182	260	134.4	162.1	199	79-81 AT 13 MM HG
<0.1		4.4	1.3		
-10		-58.6	-78		
88/190	143/289	35/103	49/120	68/154	56/133
		245	260		
1.443		1.4296	1.4417	1.4804	1.4713
		3.8	5.1		
		2.2	2.2		
10.5	10	10.2	10.5	10.5	10.7
3.6		3.03	4.04	4.16	3.97
Available In Road Tanker & M.S/HM HDPE DRUMS Nett Wt:180 Kgs.	Available In Road Tanker & M.S/HM HDPE DRUMS Nett Wt:210 Kgs.	Available In M.S/HM HDPE DRUMS Nett Wt:180 Kgs.	Available In Road Tanker & M.S/HM HDPE DRUMS Nett Wt:180 Kgs.	Available In Road Tanker & M.S/HM HDPE DRUMS Nett Wt:210 Kgs.	Available In Road Tanker & M.S/HM HDPE DRUMS Nett Wt:210 Kgs.
16369-21-4	6735-35-9	108-01-0	100-37-8	3040-44-6	2955-88-6

SPECIFICATION	TESTING PROCEDURES	UNIT	HEM
COLOUR	ASTM D1209	APHA	50
ODOUR			MILDLY AMMONICAL
CRYSTALLISING POINT		deg C	
Sp. Gr. at 20/20 C	ASTM D 4052		1.05 - 1.07
WATER CONTENT	ASTM E 203	% By wt	0.5
HYDROXY ETHYL MORPHOLINE	BY GC		99.0 min
N - ETHYL MORPHOLINE	BY GC		
N - ACETYL MORPHOLINE	BY GC		
N - FORMYL MORPHOLINE	BY GC		
N - METHYL MORPHOLINE	By Titration	wt. %	
ASSAY	Acid-Base Titration	% By wt.	99.0 min
TOTAL FREE AMINES		% By wt. Max	
H202		ppm Max	
CONDUCTIVITY		μs/cm Max	
MEAN MOELCULAR WEIGHT	IS-7901-1975	g/mol	
	Method A4	g/mol	
DISTILLATION RANGE	ASTM D1078	IBP degC 95% degC DP deg C	221 - 228
SUSPENDED MATTER	Visual		clear liquid
WATER MISCIBILITY 10cc in 90cc Water			complete
PHYSICAL PROPERTIES OF PURE PRODUCT			
APPEARANCE			Clear Hygroscopic Liquid
MOLECULAR WEIGHT		g/mol	131.2
BOILING POINT	AT 760 mm Hg	deg C	227
VAPOUR PRESS.	AT 20 deg C	mm Hg	<0.1
FREEZING POINT / RANGE		deg C	1 - 2
FLASH POINT	COC	deg C / deg F	107 / 224.6
IGNITION POINT		deg C	205
REFRACTIVE INDEX	n20d		1.476
DYNAMIC VISCOSITY	20 deg C	m Pas	26.6
DYNAMIC VISCOSITY	40 deg C	m Pas	10.6
pH OF	0.1N Aq. Soln.		10.7
VAPOUR DENSITY	AIR=1		
SPECIFIC HEAT at 40 °C		KJ/Kg K	2.01
THERMAL CONDUCTIVITY at 50 °C		W/mK	
PACKING			Available In Road Tanker & M.S/HM HDPE DRUMS Nett Wt:210/230 Kgs.
CAS.REG.NO.			622-40-2



NEM	NAM	NFM	50% NMMO
50	50	50	300
MILDLY AMMONICAL	FAINT ACETIC	MILDLY AMMONICAL	MILDLY AMMONICAL
0.912 - 0.915			1.122 - 1.130
0.5	0.5	0.5	
99.0 min			
	99.0 min		
		99.0 min	
			49 - 51
			0.5 max
			100
			175
133	238	235 (5ml)	
-	-	-	
141	246	240 (95ml)	
clear liquid complete	clear liquid complete	clear liquid complete	clear liquid complete
Clear Hygroscopic Liquid	Clear Hygroscopic Liquid	Clear Hygroscopic Liquid	Clear Liquid
115.18	129.16	115.13	117.15
139	245.5	237	118.5
5.03			<0.01
(-) 63	9 - 10	23	(-) 20
37.77 / 100	122 / 251.6	113 / 235	Non Flammable
			Not Applicable
1.4417	1.483	1.485	1.4201
	10.6		
			7.6
9	9.5	9	8.5
	4.45		
Available In Road Tanker & M.S/HM HDPE DRUMS Nett Wt:195 Kgs.	Available In Road Tanker & M.S/HM HDPE DRUMS Nett Wt:210/230 Kgs.	Available In Road Tanker & M.S/HM HDPE DRUMS Nett Wt:210/230 Kgs.	Available In Road Tanker & M.S/HM HDPE DRUMS Nett Wt:210/230 Kgs
100-74-3	1696-20-4	4394-85-8	7529-22-8

SPECIFICATION	TESTING PROCEDURES	UNIT	BMEA	BDEA	NBzEA	DBEA	2 Phenoxy Ethanol
Colour	ASTM D 1209	APHA	50 Max	200 Max	100 Max	50 Max	50 Max
Odour	Mildly Ammonical	Mildly Ammonical	Mildly Ammonical	Mildly Ammonical	Mildly Ammonical	Mildly Ammonical	Faint, Aromatic Characteristic
Sp. Gr. at 20/20 C	ASTM D 4052		0.880-0.910	0.965-0.976	1.040-1.070	0.855-0.865	1.105-1.110
Water Content	ASTM E 203	% By wt	0.5 Max	0.5 Max	0.5 Max	0.2 Max	0.3 Max
Butyl Monoethanolamine (BMEA)	By GC		99.0 MIN				
Butyl Diethanolamine (BDEA)	By GC			98.0 Min			
N-Benzyl Ethanolamine (NBzEA)	By GC				98.0 Min		
Dibutyl Ethanolamine (DBEA)						99.3 Min	
2-Phenoxy Ethanol	By GC						99.5 Min
Assay			99.0 Min	98.0 Min	98.0 Min	99.3 Min	
Distillation Range		IBP deg C 5% deg C 95% deg C DP deg C	- 190 (5 ml) 200 (95 ml) -	- 265 (5 ml) 297 (95 ml) -		220 - - 235	
PHYSICAL PROPERTIES OF PURE PRODUCT							
Appearance			Clear Hygroscopic Liquid	Clear Hygroscopic Liquid	Clear Hygroscopic Liquid	Clear Hygroscopic Liquid	Clear, Slightly Viscous
Molecular Weight		g/mol	117.2	161.3	151.2	173.3	138.2
Boiling Point at 760mm Hg		Deg C	199	264	134.4 12mm Hg	229	245.2
Vapour Press. At 20 deg C		Mm hg	<0.1	<0.1	<0.1	<0.1	<0.1
Freezing point		Deg C	-2	-70	-75	-75	14
Flash point (COC)		Deg C/deg F	85/185	143/289	130/266	90/194	121-250
Ignition point		Deg C	265	260	245	260	
Refractive index n _{20d}			1.444	1.464	1.543	1.444	1.537-1.539
Dynamic viscosity 20 deg C		m pas	20	76		8	18 at 25°C
Dynamic viscosity 40 deg C							
pH of 0.1 N Aq. Soln.			>9.0	>9.0	>10.0	>10.0	5.5 to 7.0 (1 % soln.)
Vapour Density AIR=1.							4.76
Packing			Available in Road Tanker / ISO Tank & M.S./HM HDPE DRUMS Nett Wt: 180 kgs.	Available in Road Tanker / ISO Tank & M.S. / HM HDPE DRUMS Nett Wt: 200 kgs.	Available in Road Tanker / ISO Tank & M.S./HM HDPE DRUMS Nett Wt: 180 kgs.	Available in Road Tanker / ISO Tank & M.S./HM HDPE DRUMS Nett Wt: 180 kgs.	Available in Road Tanker & M.S./HM HDPE DRUMS Nett Wt: 210/230 kgs.
CAS REG. NO.			111-75-1	102-79-4	104-63-2	102-81-8	122-99-6

Low Cost AMINE Treating Solvents From AMINES & PLASTICIZERS LTD.

Amines & Plasticizers Limited manufactures Methyl Diethanolamine (MDEA), MDEA based Speciality Solvents, Ethanolamines and other Alkyl Alkanolamines using a modern "Continuous Process" plant situated near port city of Mumbai having an annual production capacity of well over 10,000 Metric Tons.

APL manufactures and exports MDEA & MDEA based speciality solvents to more than 30 countries globally and its customers include :

**OIL REFINERIES, NATURAL GAS PLANTS, AMMONIA PLANTS, CO/ CO₂
MANUFACTURING PLANTS, HYDROGEN PLANTS, ETHYLENE PLANTS, ETC.**

APL works with End-Users and Engineering companies alike meeting their product and "service support needs", for both first fill as well as top up requirements and has a dedicated team of engineers & chemists who provide on line assistance to customers.

APL provides following services.

1. Product Supplies as per Customer requirements.
2. On Line Technical Service Support.
3. Complete Analytical Service Support along with Product supplies.
4. Other support services such as :
 - a) Assisting, Planning & Preparing system start up,
 - b) Optimization of system performance
 - c) Providing on-going simulation service support, and
 - d) Being available when needed.

APL is completely geared up to meet all the requirements for Acid Gas Treating solutions. For any requirement of product, technical or analytical support, do call on us.

HIGH PERFORMANCE ACID GAS TREATING SOLVENTS

AMINOSOL – CST™ – Series

APPLICATIONS

Natural Gas
Synthesis Gas
Cryogenic Applications
Fertilizer Plants
LNG / LPG, Steel - Plants

ADVANTAGE

H₂S and Maximum CO₂ Removal
Easier to Regenerate
Can be Operated at Higher Lean Loading
No Degradation Products from Reaction with CO₂,
Solvent Selection Depends upon the CO₂ Partial
Pressure in the Feed Gas & Final CO₂ Specification.

AMINOSOL - SP™ / AMINOSOL - G™ / ACTISOLV™ – Series

APPLICATIONS

Natural Gas
Synthesis Gas
Cryogenic Applications
Fertilizer Plants
LNG / LPG, Steel - Plants

ADVANTAGE

Less Corrosive than MEA & DEA
Provide Maximum CO₂ Removal
Reduced Solvent Loss due to Low Foaming Tendency
& Lower Solvent Vapour Pressure.

AMINOSOL™ / AMINOSOL-HST™ – Series

APPLICATIONS

Main Amine System
Tail Gas Treaters
SRUs

ADVANTAGE

Less Corrosive Lower Energy Requirements
High CO₂ Slip, Better Selectivity
Performance Superior than Generic Amines
Excellent Chemical Stability.

AMINOSOL - Specialty range of solvents can be specifically designed to suit customer requirement.
METHYL DIETHANOLAMINE - a Generic Amine

AMINE RECLAMATION / PURIFICATION UNIT

In addition to supply of above products and services, APL also carries out Amine Reclamation / Purification studies and based on this study, offers its clients cleaning of the current degraded/contaminated solvents. To cater to this requirement APL provides Fixed as well as Mobile skid mounted HSS Removal Unit for online treating at client's site.



TECHNICAL SERVICES

Simulation Services

Our process simulator has been proven to predict accurately the performance of our solvents in numerous process schemes, De-bottlenecking and revamps, including solvent swaps.

We offer the following Technical & Analytical Services along - with Specialty Solvent supplies:-

We provide ongoing simulation service support to all users of our products. Free simulation support is provided for one year after initial / make-up solvent purchases.

On-going Technical Support

We provide ongoing support to all users of our products. On-line consultation and technical services and visits by our Engineers [at our standard services charges offered along with Product purchases.]

Analytical Laboratory Services

AMINES & PLASTICIZERS LTD.	
Title : Lean Amine Solution Analysis Report	
Sample : Gas Treating Unit	

ANALYSIS REPORT OF LEAN AMINE SOLUTIONS

Client : M/s Sample Received

Sample Type	
Appearance	
Amine Concentration	
Amine Strength wt%	
Metals by ICP	
Chromium (Cr) (PPM)	
Copper (Cu) (PPM)	
Iron (Fe) (PPM)	
Potassium (K) (PPM)	
Sodium (Na) (PPM)	
Nickel (Ni) (PPM)	
Calcium (Ca) (PPM)	
Silica (SiO ₂) (PPM)	
Acid Gas Loading	
H ₂ S (wt %)	
H ₂ S Mole/Mole	
CO ₂ (wt %)	
CO ₂ Mole/Mole	
Total Acid Gas Loading (H ₂ S + CO ₂) Mole/Mole	

AMINES & PLASTICIZERS LTD.	
Title : Lean Amine Solution Analysis Report	
Sample : Gas Treating Unit	

Heat Stable Salt	
Heat Stable Amine Salts, Wt % Amine	
Inorganic Heat Stable Salts, Wt% Amine	
Total Heat Stable Salts, Wt % Amine	
pH of Amine Solution	
Foam Test	
Foam Height	
Break Time	
Corrosion Test	
Corrosion Rate (mpy),(CS)	
Anions by IC	
Formate	
Acetate	
Oxalate	
Chloride	
Sulphate	
Thiosulphate	
Thiocyanate	

Analytical Frequency

- Free sample analysis, once per quarter, for one year after initial purchase.
- Free sample analysis, once per quarter, in each year for which make-up Solvent is purchased.



AMINES & PLASTICIZERS LTD.



**An ISO-9001:2008 ,
ISO-14001-2004 & OHSAS-18001-2007
Certified Company.**