



PETRONAS



**Ethanolamine**

# Overview of PETRONAS Chemicals Group Berhad

PETRONAS Chemicals Group Berhad (PCG) is the leading integrated chemicals producer in Malaysia and one of the largest in Southeast Asia. It operates **19 world-class manufacturing sites** in Malaysia, Asia-Pacific, Europe and North America. With a total combined production capacity of **15.4 million metric tons per annum (mtpa)**, it is involved primarily in **manufacturing, marketing and selling a diversified range of chemical products**, including olefins, polymers, fertilisers, methanol, other basic chemicals, derivative products and specialty chemicals.

Listed on Bursa Malaysia with more than three decades of experience in the chemicals industry, PCG is established as part of the PETRONAS Group to maximise value from Malaysia's natural gas resources.

PCG is committed to ensuring that its business practices are in line with globally recognised standards for Economic, Environment, Social & Governance (EESG) practices. It is currently listed in the FTSE4Good Bursa Malaysia (F4GBM) Index and the Dow Jones Sustainability™ World Index.

## PETRONAS Chemicals Derivatives Sdn. Bhd. (PC DSB)

Produces Ethanolamine in Kertih, Terengganu.



6 030-05/2013



ISO 9001:2015, ISO 14001:2015



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# Ethanolamine

Used in various applications ranging from personal care, agricultural to industrial uses due to its water solubility and alkalinity that neutralise acids.

PCG produces Monoethanolamine (MEA), Diethanolamine (DEA), and Triethanolamine (TEA) in various grades.

## Characteristics and Benefits

Ethanolamine, containing both amine and alcohol functional characteristics in the same molecule, exhibits a unique capability of undergoing reactions to both groups.

### Alkalinity

As amines, they are mildly alkaline & react mostly with acid to form soaps or salts.

### Water Solubility











As alcohols, they promote solubility in water & can provide active sites for further reaction.

## Ethanolamine Storage Temperature

Proper storage and handling will maintain the product quality.

Products	Freezing point (°C)	Storage temperature (°C)
Monoethanolamine	10.5	18-35
Diethanolamine	28.0	35-48
Triethanolamine 99	21.6	29-43
Triethanolamine commercial	15.8	23-43

# Applications

Industry	Application	Function	MEA	DEA	TEA
 <b>Homecare and Industrial and Institutional</b>	Detergent	Reserve alkalinity		✓	✓
	Detergent	Soil redeposition agent	✓	✓	✓
 <b>Personal care</b>	Production of fatty acid amides	Chemical intermediates		✓	
 <b>Textile</b>	Textile finishing	Fabric dyeability enhancer	✓	✓	✓
	Textile processing	Intermediates for durable press fabric finishes and softeners	✓	✓	✓
	Textile processing	Making rayon dyes		✓	✓
 <b>Metal working</b>	Metal working fluid	Corrosion inhibitors	✓	✓	✓
 <b>Polyurethane</b>	Urethane foam production	Promote catalyst stability		✓	✓
	PU adhesives	Cross-linking agent			✓
 <b>Agriculture</b>	Herbicide, fungicide	Chemical intermediate		✓	✓
 <b>Gas treating</b>	Gas sweetening	Acid gas removal	✓	✓	
 <b>Construction</b>	Cement grinding aids	Enhance strength	✓		
	Cement additives	Grinding additives			✓
 <b>Wood treating</b>	Wood treating	Improve resistance to pest and decay	✓		
 <b>Pharmaceutical</b>	Pharmaceutical	Chemical intermediate	✓	✓	✓

# Product Properties

Components	Unit	MEA	MEA Iron & Chloride Free	MEA LWG	MEA 90% LFG	MEA Plus	DEA	DEA LFG	TEA 99%	TEA 99% LFG	TEA Commercial	TEA 90%
Monoethanolamine	wt%	99.5 min	99.5 min	99.5 min	89.10-91.0	99.5 min	0.5 max	-	0.10 max	-	0.10 max	-
Diethanolamine	wt%	0.2 max	0.2 max	0.2 max	0.2 max	0.2 max	99.0 min	84.0-86.0	0.5 max	-	11.0-15.0	0.9 max
Triethanolamine	wt%	-	-	-	-	-	0.5 max	-	99.0 min	84.0-86.0	85.0-90.0	89.0-91.0
Water	wt%	0.3 max	0.3 max	0.125 max	9.0-11.0	0.3 max	0.15 max	14.0-16.0	0.2 max	14.0-16.0	0.2 max	9.0-11.0
Colour	PtCo	15 max	15 max	15 max	15 max	15 max	15 max	40 max	40 max	40 max	40 max	40 max
Iron	ppm	-	0.5 max	-	-	-	-	-	-	-	-	-
Chlorides	ppm	-	1 max	-	-	-	-	-	-	-	-	-
Specific gravity @ 20/20°C	-	-	-	-	-	-	-	1.092-1.096	1.124-1.127	1.120-1.125	-	-
Specific gravity @ 30/20°C	-	-	-	-	-	-	1.090-1.094	-	-	-	-	-



For more information on PCG products



Connect with the team