



# Home and Personal Care Chemicals Solutions



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# Company Introduction

## PTT Global Chemical Public Company Limited



PTT Global Chemical Public Company Limited, or GC, Thailand's largest integrated petrochemical and refining business and a leading corporation in the Asia-Pacific region, both in size and product variety. GC has a combined olefins and aromatics capacity of 11.28 million tons/year. We committed to creating chemical innovations for a better future. We strongly support technological advances that meet today's lifestyles through products that span several sectors including automobiles, construction, medical products, electric and electronic equipment, agricultural products, environmentally friendly, and safe consumer products that benefit society and improve consumer satisfaction.

[www.pttgcgroup.com](http://www.pttgcgroup.com)

## GC Glycol Company Limited



GC Glycol Company Limited, or GC Glycol is a subsidiary of PTT Global Chemical Public Company Limited (GC), Thailand's largest and Asia's leading integrated petroleum refining and petrochemical company. GC Glycol is a sole producer of ethylene oxide (EO), ethylene glycol (EG) and derivative products of EO in Thailand which committed to offer high quality of products and services to customers on global level.

GC Glycol provides product to various fields of industries. Ethylene glycol is applied as the main raw material for synthetic fibre, PET resin for film and bottle. Ethanolamine (EA) could be applied as intermediate substance included personal and home care, agricultural, manufacturing and construction.

Apart from our current product portfolio, GC Glycol also cooperate with GC's innovation team that dedicatedly work on product development. This to enhance capability on having solution to our customer through exploring more opportunities that can be extended from our existing product.

With GC Glycol's integrated production and strong team in services that establish trust among customers. This makes GC Glycol to be among top producers of EO-Based derivative products in Southeast Asia.

[www.gcglycol.com](http://www.gcglycol.com)



## Global Green Chemicals Public Company Limited

Global Green Chemicals Public Company Limited, or GGC, former Thai Oleochemicals Company Limited, is the pioneer oleochemicals producers in Thailand under GC Group.

Since established, we have been driven by strong vision to be one of the leading companies in global oleochemicals market, together with promoting Thailand's competitiveness in related downstream industry in renewable energy, health & personal care products and surfactants, and thereby sustaining the agricultural sector and natural oil industry of the country.

[www.ggcplc.com](http://www.ggcplc.com)

## Thai Ethoxylate Company Limited



Thai Ethoxylate Company Limited, or TEX, a joint venture between Global Green Chemicals Public Company Limited (a subsidiary company of PTT Global Chemical Public Company Limited) and BASF (Thai) Limited, is Thailand's first producer of fatty alcohol ethoxylate, a substance made from ethylene oxide (EO) and fatty alcohol, which is a key ingredient in manufacturing various personal hygiene products such as shampoo, shower cream, detergent, dish washing liquid and cleaning agent.

TEX's fatty alcohol ethoxylate plant has an installed capacity of 124,148 ton per year with best available technology to ensure both quality and safety of the products. They are also certified by local and global standards such as ISO 9001, ISO 14001, OHSAS 18001, and RSPO in order to ensure the most confidence for our customers before the products will be delivered.

[www.tex.co.th](http://www.tex.co.th)



# Product Introduction

## Business Trends

Rapid urbanization and increasing disposable incomes contribute to Home and Personal Care (HPC) business growth

In addition, consumer concerns over personal health and hygiene around the home. They also embrace more task-specific home care due to home-based activities during the pandemic. Meanwhile, beauty and personal care trend tap into skin health that focuses on skin immunity. With regard to impact on environment concern, many market players are encouraged to offer natural and organic HPC product.

## Value Chain



### Ingredient Producer



### Manufacturer (OEM)

#### Benefit to OEM Manufacturer (Production Perspective) :

Our products including fatty alcohols, glycerine, palm kernel methyl ester, fatty alcohol ethoxylates, ethanolamine, ethylene glycol are well controlled in quality and safety, as well as certified by local and global standards for our customers.

### Brand Owner

#### Benefit to Brand Owner (Marketing Perspective) :

Our strong collaboration with GC's innovation team that dedicatedly work on product development and GC's sales & marketing team that focus on market development can enhance capability on having solution to our customers.

### Consumer

#### Benefit to Consumer (User Experience Perspective) :

Our products are certified by local and global standards for ensuring safety and harmlessness to consumers.

Our natural products also promote Thailand's competitiveness in related downstream industry, and thereby sustaining the agricultural sector and natural oil industry of the country.

# Solutions

## Product Quality



GGC's quality controls start from feedstock selection through process to the final products control. Our products were certificated by international standard such as Halal, Kosher, RSPO and FSSC 22000. Therefore, it's perfect to be ingredient for HPC products.



GC Glycol provides product to various fields of industries. Ethylene glycol is applied as the main raw material for synthetic fibre, PET resin for film and bottle. Ethanolamine (EA) could be applied as intermediate substance included personal and home care, agricultural, manufacturing and construction. They are also certified by local and global standards such as ISO 9001, ISO 14001, ISO 50001, ISO 45001, TIS 18001, Green Industry Level 5, Carbon Footprint Reduction Label.



TEX's fatty alcohol ethoxylate produced with the best available technology to ensure both quality and safety. They are also certified by local and global standards such as ISO 9001, ISO 14001, OHSAS 18001, HALAL and RSPO in order to ensure the most confidence for our HPC customers before the products will be delivered.

## Service Quality

GFC is the sole producer of fatty alcohol and main producer of glycerine in Thailand with an installed capacity of 100,000 ton per year for fatty alcohol and 51,000 ton per year for glycerine, and TEX is the producer of fatty alcohol ethoxylate with an installed capacity of 124,148 ton per year, as well as GC Glycol is the producer of ethanolamine and ethylene glycol. Our products was stored with good quality management. We are located in the Map Ta Phut Industrial Estate which provides us with key competitive advantages as it puts us in close proximity with a number of our key suppliers and customers.

## How to Handling and Storage

We have high flexibility in product handling and delivery to fit the customer specific needs. In order to optimize in terms of quality, reliability and costs for customers. There are various options including drums, flexi-bags and iso-tanks.

Our product is filled and sealed with good standard to prevent undesired contamination. We recommend customers to keep container tightly closed and in a cool, well-ventilated place, keep away from heat and ignition sources.

## GRADE Selection : Fatty Alcohol

Product Name	Description	Carbon Chain Distribution (%)										Acid Value mg KOH/g	Saponification Value mg KOH/g	Hydroxyl Value mg KOH/g	Iodine Value g I <sub>2</sub> /100g	Water Content (%)	Solidification range (C)	Color Hazen (APHA)	Hydrocarbon Content (%)
		C6	C8	C10	C12	C14	C16	C18	C20	C22	C24								
Thai OL 0690	Hexyl Alcohol	≥ 90	≤ 2									≤ 0.1	≤ 1.0		0.3	≤ 0.5		≤ 10	
Thai OL 0898	Octyl Alcohol	≤ 2	≥ 98	≤ 2								≤ 0.1	≤ 0.5	425-432	0.2	≤ 0.2	ca - 17	≤ 10	≤ 0.5
Thai OL 0810	Octyl-Decyl Alcohol	≤ 5	45-65	35-55	≤ 5							≤ 0.1	≤ 1.5	385-410	0.5	≤ 0.5	ca - 11	≤ 10	≤ 1.5
Thai OL 1098	Decyl Alcohol		≤ 2	≥ 98	≤ 2							≤ 0.1	≤ 0.5	351-356	0.1	≤ 0.3	4-7	≤ 10	≤ 0.5
Thai OL 1214	Lauryl-Myristyl Alcohol			≤ 2	68-70	20-30	≤ 2					≤ 0.1	≤ 0.4	285-295	0.3	≤ 0.1	17-23	≤ 10	≤ 1.0
Thai OL 1216	Lauryl-Cetyl Alcohol			≤ 2	65-71	22-28	4-8	≤ 0.5				≤ 0.1	≤ 0.4	280-290	0.3	≤ 0.1	18-23	≤ 10	≤ 1.0
Thai OL 1218	Lauryl-Stearyl Alcohol		≤ 3		48-58	18-24	8-12	11-15		≤ 1		≤ 0.1	≤ 1.2	265-279	0.5	≤ 0.2	18-23	≤ 10	≤ 0.5
Thai OL 1698	Cetyl Alcohol				≤ 2	≥ 98	≤ 2					≤ 0.1	≤ 0.5	228-233	0.5	≤ 0.3	47-50	≤ 10	≤ 0.5
Thai OL 1618	Cetyl Stearyl Alcohol (50/50)				≤ 0.5	≤ 2	45-55	45-55	≤ 1			≤ 0.1	≤ 1.0	217-222	0.5	≤ 0.3	48-53	≤ 10	≤ 0.5
Thai OL 1618	Cetyl Stearyl Alcohol (30/70)					≤ 3	22-32	66-76	≤ 3			≤ 0.1	≤ 1.0	210-220	0.5	≤ 0.3	50-54	≤ 10	≤ 0.5
Thai OL 1898	Stearyl Alcohol					≤ 2	≥ 98	≤ 2				≤ 0.1	≤ 0.5	206-210	0.7	≤ 0.3	56-58	≤ 10	≤ 0.5

## Refined Glycerine (USP/EP Grade)

Description	Refined Glycerine 99.7 % min	Refined Glycerine 99.5 % min
Appearance	Clear, Colorless	Clear, Colorless
Assay (%)	99.7 min	99.5 min
Specific Gravity (@25/25C)	1.261 min	1.260 min
Water Content (%)	0.5 max	0.5 max
Residue on Ignition (%)	0.01 max	0.01 max
Chlorides (ppm)	10 max	10 max
Limit of Chlorinated Compounds (ppm of Cl)	30 max	30 max
Organic Volatile Impurities	Pass	Pass
Total Heavy Metal (ppm as Pb)	5 max	5 max
Arsenic (ppm)	1.5 max	1.5 max
Sulfate (ppm)	20 max	20 max
Color Index (APHA)	5 max	5 max
Fatty acid & esters (ml 0.5N NaOH/50g)	1max	1 max
Identification A	Pass	Pass
Identification B	Pass	Pass
Diethylene Glycol (%wt)	0.1 max	0.1 max
Ethylene Glycol (%wt)	0.1 max	0.1 max
Identification C	Pass	Pass
Other Impurity, max (%wt)	0.1 max	0.1 max
Total Impurity (%owt)	1.0 max	1.0 max
Readily Carbonizable Substances	Pass	Pass
Lead (ppm)	1 max	1 max
Sulphated ash (%wt)	0.01 max	0.01 max

## Fatty Alcohol Ethoxylates

Product Name	Chemical description / INCI name	Properties						
		Density (g/cm <sup>3</sup> @70 °C)	Appearance	Active Matter (%)	HLB	Cloud point (°C)	Emulsifier	CAS Number
Dehydol LS 1 TH	"Fatty alcohol C12-14 approx. 1 mole EO/ Laureth-1"	0.837	Liquid	>99.7%	3.6	-	W/O	68439-50-9
Dehydol LS 2 TH	"Fatty alcohol C12-14 approx. 2 moles EO/ Laureth-2"	0.869	Liquid	>99.7%	6.1	-	W/O	68439-50-9
Dehydol LS 3 TH	"Fatty alcohol C12-14 approx. 3 moles EO/ Laureth-3"	0.890	Liquid	>99.7%	7.9	51-53*	O/W	68439-50-9
Dehydol LS 4 TH	"Fatty alcohol C12-14 approx. 4 moles EO / Laureth-4"	0.910	Liquid	>99.7%	9.4	4-25**	O/W	68439-50-9
Dehydol LS 5 TH	"Fatty alcohol C12-14 approx. 5 moles EO/ Laureth-5"	0.924	Liquid	>99.7%	10.3	68-73*	O/W	68439-50-9
Dehydol LS 6 TH	"Fatty alcohol C12-14 approx. 6 moles EO/ Laureth-6"	0.941	Liquid	>99.7%	12	-	O/W	68439-50-9
Dehydol LS 7 TH	"Fatty alcohol C12-14 approx. 7 moles EO/ Laureth-7"	0.949	Liquid	>99.7%	12.1	52-58**	O/W	68539-50-9
Dehydol LT 07 TH	"Fatty alcohol C12-18 approx. 7 moles EO"	0.939	Liquid-Paste	>99.7%	11.8	46-52**	O/W	68213-23-0
Dehydol LS 8 TH	"Fatty alcohol C12-14 approx. 8 moles EO/ Laureth-8"	-	Liquid-Paste	>99.7%	12.6	-	O/W	68439-50-9
Dehydol LS 9 TH	"Fatty alcohol C12-14 approx. 9 moles EO/Laureth-9"	0.966	Liquid-Paste	>99.7%	13.4	72-82**	O/W	68439-50-9
Dehydol LS 10 TH	"Fatty alcohol C12-14 approx. 10 moles EO/Laureth-10"	0.977	Solid	>99.7%	13.8	-	O/W	68439-50-9
Dehydol LS 11 TH	"Fatty alcohol C12-14 approx. 11 moles EO/Laureth-11"	-	Solid	>99.7%	14.3	64-70**	O/W	68439-50-9
Dehydol LS 12 TH	"Fatty alcohol C12-14 approx. 12 moles EO/Laureth-12"	0.988	Solid	>99.7%	14.6	79-83***	O/W	68439-50-9
Dehydol LS 15 TH	"Fatty alcohol C12-14 approx. 15 moles EO/Laureth-15"	-	Solid	>99.7%	15.3	68-78*****	O/W	68439-50-9

## Monoethanolamine

Monoethanolamine (MEA)							
Property	Unit	MEA	MEA LCI	MEA Low water	MEA 99.9	MEALFG85%	Test Method
Monoethanolamine	%wt	99.5 min	99.5 min	99.5 min	99.9 min	83 - 87	ST-35.180, ST-35.183
Diethanolamine	%wt	0.1 max	0.1 max	0.1 max	-	0.3 max	ST-35.180, ST-35.183
Colour, Pt-Co units	mg Pt/L	10 max	10 max	10 max	10 max	15 max	ASTM D5386
Water Content	ppm	0.2 max	0.2 max	0.100/0.125 max	0.1 max	13 - 17	ASTM E203
Iron	ppm	-	1 max	-	1 max	-	ASTM E394
Chloride	ppm	-	1 max	-	1 max	-	ST-5.50
Appearance	-	-	-	Clear, None of Suspended matter	Clear, None of Suspended matter	Clear, None of Suspended matter	Visual Inspection
Identification	-	-	-	-	Pass	-	USP
Refractive Index (20°C)	-	-	-	-	1.453-1.455	-	ASTM D1218
Residue on Ignition	%wt	-	-	-	0.005 max	-	USP
Specific Gravity (20/20°C)	-	-	-	-	1.014-1.021	-	ASTM D4052-18a

## Diethanolamine

Diethanolamine (DEA)				
Property	Unit	DEA	DEA LFG85%	Test Method
Diethanolamine	%wt	99.0 min	83-87	ST-35.213
Monoethanolamine	%wt	0.5 max	1 max	ST-35.213
Triethanolamine	%wt	0.5 max	1 max	ST-35.213
Water Content	%wt	0.15 max	13-17	ASTM E203
Colour, Pt-Co units	mg Pt/L	15 Max	50 max	ASTM D5386
Equivalent weight	g/equiv	104 - 106	-	ST-5.5
Appearance	-	-	Clear, None of Suspended matter	Visual Inspection

## Triethanolamine

Triethanolamine (TEA)						
Property	Unit	TEA99	TEA85	TEA low Iron	TEA LFG90%	Test Method
Triethanolamine	%wt	99.0 min	85.0 min	99.0 min	88-92	ST-35.99
Diethanolamine	%wt	-	15 max	-	-	ST-35.99
Monoethanolamine	%wt	-	0.2 max	-	-	ST-35.99
Water Content	%wt	0.2 max	0.2 max	0.2 max	8-12	ASTM E203
Colour, Pt-Co units	mg Pt/L	40 max	40 max	40 max	50 max	ASTM D5386
Equivalent weight	g/equiv	148 - 150	140 -144	148 - 150	-	ST-5.5
Iron	ppm	10 max	-	5 max	-	ASTM E394
Appearance	-	-	-	-	Clear, None of Suspended matter	Visual Inspection

## Triethylene Glycol

Triethylene Glycol (TEG)			
Property	Unit	Specification	Test Method
Appearance	-	Clear	Visual Inspection
Suspended matter	-	None	Visual Inspection
Specific Gravity @ 20/20°C	-	1.124 -1.126	ASTM D4052-2015
TEG Content	%wt	99.0 min	By Difference
DEG Content	%wt	1.0 max	Based on ASTM E2409
Tetra & Heavier EG content	%wt	0.5 max	Based on ASTM E2409
Water content	%wt	0.05 max	ASTM E1064
Distillation Range @760 mmHg 5 - 95 vol.%	deg C	280-295	ASTM D1078
Color PtCounits	mg Pt/L	25 max	ASTM D5386
Ash content	ppm wt	50 max	ASTM D482