



555/1 Energy Complex Building A,
4th Floor, Vibhavadi-Rangsit Road,
Chatuchak, Chatuchak,
Bangkok 10900 Thailand

TEL : +66 (0) 2558-7300
FAX : +66 (0) 2558-7301
WEBSITE : www.ggcplc.com



Company
Website

**TO BE
A LEADING
GREEN CHEMICAL
COMPANY**

**By Creating
Sustainable Value**

Global Green Chemicals Public Company Limited or GGC is the leader in the biochemical industry and a leading company in the environmental chemical product industry; moreover, as a Green Flagship company of GC group, GGC strives to continue creating economic sustainability for the agricultural and industrial sectors of Thailand

“ Under the vision of
TO BE A LEADING GREEN CHEMICAL COMPANY
BY CREATING SUSTAINABLE VALUE ”

WHAT WE DO

As the pioneer oleochemicals producers in Thailand, GGC delivers high quality of Methyl Ester, Ethanol, Fatty Alcohols (under trade name “THAIOL”) and Glycerine to our customers. We offer tailored-made product and packaging design which complement with specific applications, production costs and particular process to enhance satisfaction of our customers.

SUSTAINABLE GREEN FUTURE

GGC aims to create sustainable green chemical products and has strong support in Environmental, Social and Governance (ESG) to drive sustainability development which covers Environmental, Social, and Governance.

OUR PRODUCTS

» BIOFUELS

- Methyl Ester
- Ethanol



» BIOCHEMICALS

- Fatty Alcohols
- Refined Glycerine



BIOFUELS



METHYL ESTER

From natural raw materials, which is used as an ingredient in biodiesel as alternative chemicals

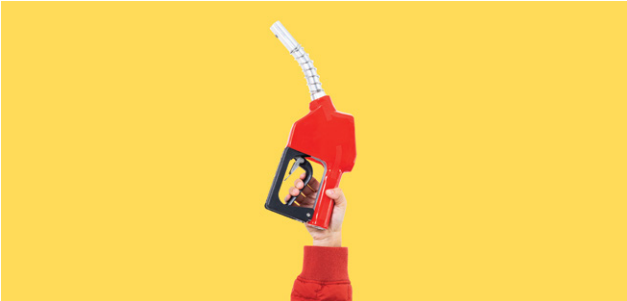
Methyl Ester is defined as mono-alkyl esters of long chain fatty acids derived from vegetable oils or animal fats which conform to specifications prescribed by the Department of Energy Business, the Ministry of Energy.

Methyl Ester is made through a chemical process called trans-esterification which converts oils and fats of natural origin into Methyl Esters.

Methyl Ester, which is commonly known as pure biodiesel fuel or “B100”, is a clean burning renewable fuel made from natural plant oil such as palm oil, rapeseed oil, soy bean oil, etc.



Methyl Ester is intended to be used as a replacement for petroleum diesel or it can be blended with petroleum diesel fuel in any proportion, so called, “Biodiesel” and is generally regarded as being more environmentally friendly.



Product Name	Biodiesel (B100)	Product Name	Biodiesel (B100)
Description	Palm Methyl Ester	Density @ 15 Degree C, kg/m ³	860 – 900
Methyl Ester, %	96.5 min	Copper Strip Corrosion	No.1 max
Monoglyceride, %	0.70 max	Total Contamination, ppm	24 max
Diglyceride, %	0.20 max	Flash Point, °C	120 min
Triglyceride, %	0.20 max	Kinematic Viscosity@ 40°C, cSt	3.50 – 5.00
Free Glycerin, %	0.02 max	Phosphorus, %	0.001 max
Total Glycerin, %	0.25 max	Sulfur Content, ppm	10 max
Linolenic Acid Methyl Ester, %	12 max	Oxidation Stability, hr	10 min
Methanol, %	0.20 max	Cetane Number	51 min
Water Content, ppm	500 max	Cloud Point, °C	16 min
Iodine Value, g I2/100g	120 max	Metal Content (Na+K), ppm	5 max
Acid Value, mg KOH/g	0.5 max	Metal Content (Ca+Mg), ppm	5 max
Sulphate Ash, %	0.02 max		
Carbon Residue, %	0.3 max		



ETHANOL

Ethanol is widely used as the renewable energy because it is derived from agricultural products.

Ethanol is a type of alcohol that is widely used as the renewable energy because it is a clear liquid, flammable, and high octane. Ethanol is derived from agricultural products such as starch and sugar crops, which is more sustainable than traditional petroleum products.

Ethanol can be blended with traditional gasoline at an appropriate amount to produce a clean fuel called “Gasohol” which can reduce air pollution and greenhouse gases, such as carbon monoxide (CO), carbon dioxide (CO2), hydrocarbon and nitrogen oxide.



Description	Specification
Ethanol plus higher saturated alcohol, %	99.5 Min
Higher saturated (C3–C5) mono alcohols, %	2.0 Max
Methanol, %	0.5 Max
Solvent Washed Gum, mg/100ml	0.5 Max
Water content, %	0.3 Max
Inorganic chloride, mg/L	20 Max
Copper, mg/kg	0.07 Max
Acidity as acetic acid, mg/L	30 Max
pH	6.5–9.0
Electrical conductivity, µs/m	500 Max
Appearance	Clear and Bright

BIOCHEMICALS

INDUSTRIES & APPLICATIONS

Product	Product Spec.	Applications													
		Food & Beverage	Fragrances	Cosmetics	Hair Care	Home Care	Oral Care	Skin Care	Paint & Coating	Pharma ceutical	Plastic antioxidant	Plasticizer	Agro Products	Car Care	I&I Products
Fatty Alcohols	ThaiOL 0898		✔			✔			✔			✔	✔		✔
	ThaiOL 0810					✔			✔			✔	✔		✔
	ThaiOL 1098		✔			✔			✔			✔	✔		✔
	ThaiOL 1214				✔	✔									✔
	ThaiOL 1216					✔									✔
	ThaiOL 1218					✔									✔
	ThaiOL 1698			✔	✔	✔		✔						✔	✔
	ThaiOL 1618			✔	✔	✔		✔						✔	✔
	ThaiOL 1898			✔	✔	✔		✔			✔			✔	✔
Glycerine	Glycerine 99.5% (USP/EP Grade)	✔		✔	✔	✔	✔	✔	✔	✔			✔	✔	✔
	Glycerine 99.7% (USP/EP Grade)	✔		✔	✔	✔	✔	✔	✔	✔			✔	✔	✔





FATTY ALCOHOLS

Natural Fatty Alcohols are derived from vegetable oils and have a chemical composition featuring an even number of carbon atoms per molecule, whereas Synthetic Fatty Alcohols, derived from petroleum products, may have an odd number of carbon atoms per molecule.

Synthetic Fatty Alcohols can generally be substituted by Natural Fatty Alcohols in the manufacture of certain downstream products. A substantial majority of Fatty Alcohols worldwide are converted into surfactants or “surface active agents” which are the basic materials used in the production of laundry detergent, dishwashing detergent and other household cleaning products.

Apart of surfactants, Fatty Alcohols are commonly used in a range of goods, including plasticizers, solvents, flavorings, fragrances, detergents, foam stabilizers, lubricant, cosmetics, plastic intermediates, shampoo, paints and coatings, textile and leather auxiliaries and printing inks.



Fatty Alcohols	Description	Carbon Chain Distribution (%)										Acid Value mg KOH/g	Saponification Value mg	Hydroxyl Value mg KOH/g	Iodine Value g I ₂ /100g	Water Content (%)	Solidification range (°C)	Color Hazen (APHA)	Hydrocarbon Content (%)
		C6	C8	C10	C12	C14	C16	C18	C20	C22	C24								
ThaiOL 0898	Octyl Alcohol	≤ 2	≥ 98	≤ 2								≤ 0.1	≤ 0.5	425-432	0.2	≤ 0.2	ca -17	≤ 10	≤ 0.5
ThaiOL 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
ThaiOL 1098	Decyl Alcohol		≤ 2	≥ 98	≤ 2							≤ 0.1	≤ 0.5	351-356	0.1	≤ 0.3	4-7	≤ 10	≤ 0.5
ThaiOL 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
ThaiOL 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
ThaiOL 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
ThaiOL 1698	Cetyl Alcohol				≤ 2	≥ 98	≤ 2					≤ 0.1	≤ 0.5	228-233	0.5	≤ 0.3	47-50	≤ 10	≤ 0.5
ThaiOL 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
ThaiOL 1898	Stearyl Alcohol				≤ 2	≥ 98	≤ 2					≤ 0.1	≤ 0.5	206-210	0.7	≤ 0.3	56-58	≤ 10	≤ 0.5



BIOCHEMICALS



GLYCERINE

Used in many applications since it is non toxic to human health and environment; for example - food, personal care, cosmetics, pharmaceuticals or even foams.

Refined Glycerine is a co-product of our Methyl Ester and Fatty Alcohols production process. It is a sweet tasting liquid that is colorless and odorless, virtually non-toxic, absorbs moisture and has solvent properties.

It is used for pharmaceutical and medical products, creams and lotions, oral cares, resins, plastics, and tobacco. It is normally used as a means of emollient to provide lubrication and moisture for personal care products as well as used as emulsifier for other industrial applications.



Product Name	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 (%)	0.3 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)	1 max	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 (%wt)	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

