

# Methanol

Liquid chemical with  
the formula CH<sub>3</sub>OH



Methanol is a liquid petrochemical that is predominantly produced from natural gas and is utilized as raw material in a variety of industrial and energy related applications.

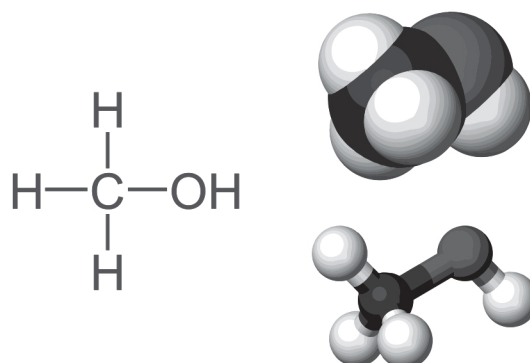
## Methanol Application:

The primary use of methanol is to make other chemicals, with approximately 55% of global methanol demand being used to produce formaldehyde, acetic acid and a variety of other chemicals that form the foundation of a large number of chemical derivatives. These derivatives are used to produce a wide range of products, including adhesives for the lumber industry, plywood, particle board and laminates, resins to treat paper and plastic products, and also paint and varnish removers, solvents for the textile industry and polyester fibers for clothing and carpeting.

Energy related applications consume approximately 32% of methanol. In recent years, there has been a strong demand for methanol in energy applications such as gasoline blending, biodiesel and as a feed-stock in the production of dimethyl ether (DME) and methyl tertiary-butyl ether (MTBE), particularly in China. In different parts of the world, methanol is

used as a direct fuel for automobile engines, a fuel blended with gasoline, and an octane booster in reformulated gasoline.

The remaining 13% of methanol demand is dedicated to Olefin production. The Methanol to Olefins (MTO) process was discovered in 1977. In the MTO process, the methanol is converted to olefins such as Ethylene and Propylene. The olefins can be converted to produce polyolefins which are used to make many plastic materials. It is predicted that by the year 2020, Methanol to Propylene (MTP) technologies will supply 20 Per cent of the world's propylene.



PROPERTIES	PROPERTY	SPECIFICATION	ANALYTICAL TEST METHANOL
1	Purity WT%	Min 99.85	IMPCA 001-14
2	Water (ppm)	Max 1000	ASTM E-1064
3	Ethanol (ppm)	Max 50	IMPCA 001-14
4	Specific Gravity 20/20, °C	Max 0.7928	ASTM D-4052
5	Acetone, (ppm)	Max 30	IMPCA 001-14
6	Permanganate Time Test @ 15°C, Minutes	Min 60	ASTM D-1363
7	Non Volatile Matter, mg/1000 ml	Max 8	ASTM D-1353
8	Distillation Range @ 760 mm-Hg, °C	Max 1	ASTM D-1078
9	Color P CO, APHA	Max 5	ASTM D-1209
10	Carbonizable, APHA	Max 30	ASTM E-346
11	Total Iron, mg/kg	Max 0.10	ASTM E-394
12	Chloride as Cl, mg/kg	Max 0.5	ASTM D-512
13	Appearance	Clear and Free from Suspended Matter	IMPCA 003-98
14	Acidity as CH <sub>3</sub> COOH, WM %	Max 0.0030	ASTM D-1613
15	Hydrocarbons	Passes Test	ASTM D-1722
16	Sulphur, mg/kg	Max 0.5	ASTM D-5623
17	Aromatics, UV Test	Passes Test	IMPCA 004-02

# DEG

## (Diethylene Glycol)

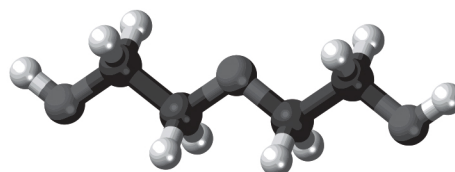
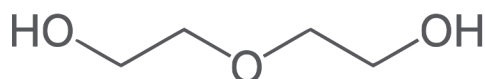
Organic compound with the formula  $(\text{HOCH}_2\text{CH}_2)_2\text{O}$



Diethylene glycol (DEG) is an organic compound with the formula  $(\text{HOCH}_2\text{CH}_2)_2\text{O}$ . It is a colorless, practically odorless, and hygroscopic liquid with a sweetish taste. It is a four carbon dimer of ethylene glycol. It is miscible in water, alcohol, ether, acetone, and ethylene glycol. DEG is a widely used solvent. It can be a contaminant in consumer products.

### Commercial Uses:

- Polyurethanes
- Polyesters
- Softeners (Cork, glue, casein and paper)
- Plasticizers
- Gas drying
- Solvents
- De-icing of aircraft and runways.



PROPERTIES	TEST		UNIT	TEST METHOD	RESULT	SPEC.
1	Purity		wt %	SMS-2886	99.93	99.8 Min
2	MEG		wt %	SMS-2886	0.04	0.08 Max
3	TEG		wt %	SMS-2886	0.02	0.05 Max
4	Water		mg/kg	ASTM E-203	0.01	0.05 Max
5	Acidity		mg/kg	ASTM D-1613	6.7	50 Max
6	Sp.Gr. (20/20 C°)		-	ASTM D-4052	1.1183	1.1175 - 1.1195
7	Color (in pt-co)		Pt - Co - Scale	ASTM D-1209	2	10 Max
8	Ash		mg/kg	ASTM D-482	13	50 Max
9	Distillation (at 0.1013 Mpa)	5%Vol.	°C	ASTM D-1078	244.1	242 Min
10		95%Vol.	°C	ASTM D-1078	244.9	250 Max
11	Appearance		-	ASTM D-4176, VISUAL	CCL	Colorless, Clear

# MEG

## (Ethylene Glycol)

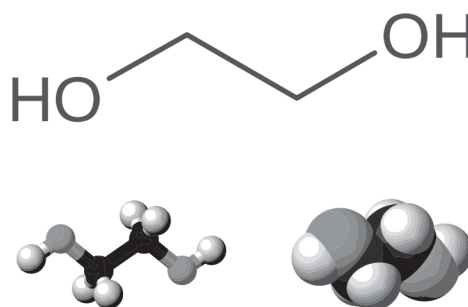
Organic compound with the formula  $(CH_2OH)_2$



Ethylene glycol (MEG) is an organic compound with the formula  $(CH_2OH)_2$ . It is mainly used for two purposes, as a raw material in the manufacture of polyester fibers and for antifreeze formulations. It is an odorless, colorless, flammable, viscous liquid. Ethylene glycol has a sweet taste, but it is toxic in high concentrations

### Commercial Uses:

- Antifreeze engines
- production of polyethylene terephthalate (polyester fibers, film, and bottles)
- heat transfer liquids



PROPERTIES	TEST	UNIT	TEST METHOD	RESULT	SPEC.
1	Purity	wt %	SMS-2886	99.94	99.8 Min
2	DEG	wt %	SMS-2886	0.05	0.08 Max
3	Water	wt %	ASTM E-203	0.01	0.08 Max
4	Aldehyde (as formaldehyde)	mg/kg	SMS-1996	2.4	8 Max
5	Acidity	mg/kg	ASTM D-1613	6.5	10 Max
6	Iron (as Fe inorganic)	mg/kg	ASTM E-394	0.04	0.1 Max
7	Inorganic chloride	mg/kg	SMS-1677	0.01	0.05 Max
8	Sp.Gr. (20/20 C°)	-	ASTM D-4052	1.1154	1.1151 - 1.1156
9	Color (in pt - co)	Pt-Co-Scale	ASTM D-1209	1	5 Max
10	Ash	mg/kg	ASTM D-482	11.0	50 Max
11	UV Trans @220 nm	%	SMS-1997	95.9	80 Min
12	UV Trans @275 nm	%	SMS-1997	99.7	95 Min
13	UV Trans @350 nm	%	SMS-1997	99.9	99 Min
14	Distillation	5%Vol.	ASTM D-1078	196.9	196 Min
15	(at 0.1013 Mpa)	95%Vol.	ASTM D-1078	197.3	199 Max
16	Appearance	-	ASTM D-4176, VISUAL	C.C.L	Colorless, Clear