

# Production of 10 TPD of Propylene Glycol Methyl Ether Acetate

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## A. Background

Propylene Glycol Methyl Ether Acetate (PGMEA) is a colourless, fruity smelling compound with many applications. It is predominantly used as a solvent for many commonly used coating polymers, including cellulose acetate butyrate, nitrocellulose etc. It is also used in the electronic industry for the manufacture of various electronic products. PGMEA is produced by transesterification of Methyl Acetate with Propylene Glycol Methyl Ether (PGME). This process is preferred to other means of synthesis since it also gives a useful by-product that is Methanol.

## B. Flowsheet description

An equimolar feed stream containing Methyl Acetate and PGME at 25°C and 1 atm pressure is heated to 326.85°C. The mass flow rate is 900 kg/h. The heated feed is then sent into a conversion reactor. The conversion is fixed at 60%. The vapour stream obtained from the reactor is then cooled to 81°C. The cooled feed is then passed through a gas liquid separator to obtain a product stream with 10 TPD of PGMEA.

## C. Results and Discussions

The results obtained using DWSIM v5.6 are tabulated below.

Property Table				
Object	Preheated Feed	Cooled Stream	PGMEA Product	
Temperature	25	81	80.7453	C
Pressure	1.01325	1.00325	1.00325	bar
Mass Flow	900	900	892.722	kg/h
Molar Flow	10.9623	10.9622	10.8211	kmol/h
Molar Flow (Mixture) / PGMEA	0	3.28866	3.28839	kmol/h
Mass Flow (Mixture) / PGMEA	0	434.63	434.594	kg/h
Molar Flow (Mixture) / 1-Methoxy-2-Propanol	5.48117	2.19244	2.18901	kmol/h
Mass Flow (Mixture) / 1-Methoxy-2-Propanol	493.963	197.583	197.273	kg/h