

Ethanolamines/Glycol Ethers In Plant Training (IPT)

Section Number :3
Issue Number :1.3
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Section Test 3 General Knowledge/Service and Utility Lines

Objectives/Answers:

1. **State basically what we put into the reactor on the ethanolamines side and state five products that we get out.**

We react aqua ammonia with ethylene oxide to produce monoethanolamine, diethanolamines, triethanolamines (both TEA-99 and TEA-85), and some higher amines. We also have ammonia and water left over after the reaction.

2. **State basically what we put into the reactor on the glycol ethers side and state eight products that we get out.**

On PM series: We react methanol with propylene oxide and some catalyst to produce: propylene glycol methyl ether, called PM. Dipropylene glycol methyl ether, DPM.

Tripropylene glycol methyl ether, TPM. And polypropylene glycol methyl ether, Dowfroth.

On EB series: We react n-Butanol with ethylene oxide and some catalyst to produce: ethylene glycol butyl ether, EB. Diethylene glycol butyl ether, DB. Triethylene glycol butyl ether, TBH. Tars.

3. **Define the following terms/words associated with Ethanolamines/Glycol Ethers.**

A. Reactor: Vessel used to react raw materials to make our products.

B. Reboiler: An exchanger that receives a process flow from a distillation column that it then vaporizes. These vapors are then returned to the column. The heat source for

the

reboiler is usually steam.

C. Blind flange: A solid disc with bolt holes used for blinding the end of a pipe or valve.

Its

diameter and thickness are determined by the size of the pipe and the pressure rating.

D. Exchanger: A piece of equipment that transfers heat from a hot process to a cool one.

4. **State what 475 and 235 psig steam is used for in Ethanolamines/Glycol Ethers.**

475 and 235 psig steam is used to drive reboilers, heaters and ejectors.

5. **State what process water is used for in Block 55.**
Makeup water to the cooling tower, utility stations, process vent stacks fire water and the ammonia scrubber.
6. **State what cooling tower water is used for in Ethanolamines/Glycol Ethers.**
Cooling tower water is used to remove heat generated by the process.

Revisions:

Revision No. 1:	07-21-93	Yearly Review
Revision No. 2:	04-07-94	Changed #8 to read "state who the contact is for the following concerns: A. Safety - Ron Pepitone B. Training - Les White C. Environmental - Dan Jones 04-07-94 Eliminated engineer from #9
Revision No. 3:	12-11-95	Eliminated #3-11 and renumbered Modified #1