

Distillation of a Pressure Sensitive Azeotrope

Methanol and acetone form a minimum temperature azeotrope but the composition of this azeotrope is sensitive to the pressure. We can make use of this to separate the two components into pure products by operating two columns at different pressures. The separation of an equimolar feed of methanol and acetone is shown in.

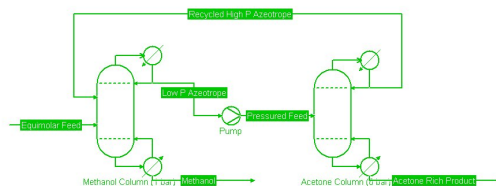


Figure 1: Flowsheet of the pressure sensitive azeotropic distillation process with recycle.

This type of azeotropic distillation is rare as the azeotrope composition needs to be quite sensitive to the pressure in order to obtain a recycle stream that is not unreasonably large, and that the pressures are such that no special equipment is required. For the methanol – acetone system, having the first column operating at 1 *bar* and the second operating at 6 *bar* achieves the desired separation with a reasonable recycle flow that is 59% of the feed flowrate. Note that the feed coming from the second column at higher pressure is directly put into the first column.