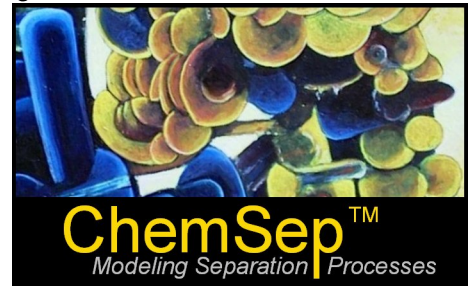


# Extractive Distillation of MethylCycloHexane / Toluene

## with Phenol



We need to separate an equimolar mixture of methylcyclohexane (MCH) and toluene (T), and do so by extractive distillation with phenol (P) as the solvent. The flowsheet is shown in.

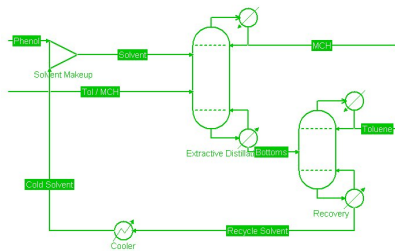


Figure 1: Flowsheet of the extractive distillation process with solvent recovery.

It will be seen that the process involves two distillation columns, a heat exchanger, and a make-up stream. Valve trays are used for both the columns using the design mode nonequilibrium model. The phenol recycle is cooled to  $100^{\circ}\text{C}$ . For a high purity of the products the solvent feed to MCH/toluene feed ratio as well as the reflux ratio needs to be sufficiently high (for the extractive column). We need the make-up unit to regulate the amount of phenol in the feed to the first column.