

Pure Ethyl Acetate Production in Reactive Distillation

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The pure products recovery and the full reaction conversion of ethyl acetate production system are achieved by introducing a proper entrainer in a single reactive extractive distillation column. The behaviors of the integrated reaction and distillation are analyzed and visualized in a composition space. From this visualization, a thermodynamic infeasible region, so called a critical composition region, is determined by the constraint of reaction and phase equilibria. Another infeasible region is determined by the upper and lower reflux boundary calculated from the constraints of the material balances. From these concepts of the critical composition region and the infeasible region imposed by the reflux boundaries, the feasibility of the reactive extractive distillation is evaluated with a quick paper-and-pencil-based approach.