

# Binary Distillation with the McCabe-Thiele Method

Binary fractional distillation is a method of separating two liquid components via a distillation column (which contains a number of trays, or stages). It's a concept encountered by virtually every Chemical & Process Engineering student. This application calculates the required number of theoretical stages for a set of specified operating parameters via the McCabe-Thiele method. It plots the classic McCabe-Thiele diagram and evaluates the minimum and actual reflux ratio, and the thermodynamic state of the feed.

This application also highlights several Maple concepts.

- The ability to instantly observe the effect of changes in operating parameters.
- Text boxes for the input of operating parameters
- Maple's programming language to calculate the number of theoretical stages required for the distillation process and error-checking of unrealistic operating parameters (i.e. try making the fraction of light component in the feed greater than in the distillate)
- The precise control over the appearance of a plot for presenting engineering information.

## Operating Parameters

Mole Fraction of Light Component in Feed

Mole Fraction of Light Component in Distillate

Mole Fraction of Light Component in Bottoms

Reflux Ratio as a Multiple of Minimum Reflux Ratio

Thermodynamic State of Feed (q-value)

Draw McCabe-Thiele Plot

