

CHE 305 – Separation Processes
Spring 2010 – In Class on Distillation II

Reboiler

Use the McCabe-Thiele technique to step off stages in a stripping section for the purification of octane from hexane. It is desired to produce a product 95% pure in octane. The stripping section has a partial condenser, a boil-up ratio of 2, and is operated at a uniform pressure of 1 bar. The feed to the column is 100 mol/hr (all liquid). What is the highest possible vapor composition that can exit the top of the stripping section?

(XY Phase Diagram attached)

$$X_B = 1 - 0.95 = 0.05$$

$$V_B = 2 \Rightarrow \text{Slope} = \frac{V_B + 1}{V_B} = \frac{3}{2}$$

$$P = 1 \text{ bar}$$

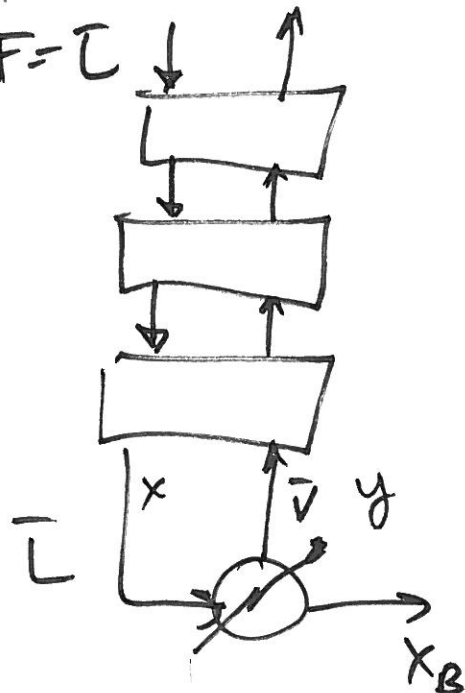
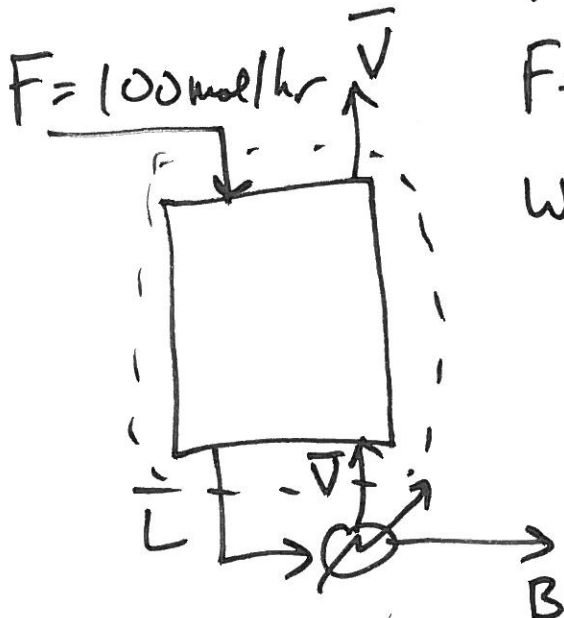
$$F = 100 \text{ mol/hr}$$

What can you say about \bar{L} ?

$$IN = OUT$$

$$F + \bar{V} = \bar{L} + \bar{V}$$

$$F = \bar{L}$$



XY Phase Diagram for n-hexane (1) and n-octane (2) at 1 bar

