

Extra Problem 6A

A fermentation broth contains 3200 mg/L of pantothenic acid which is to be extracted with propyl acetate. At the process pH, the following data represent the equilibrium of pantothenic acid between water and propyl acetate.

pantothenic acid in water (mg/L)	pantothenic acid in propyl acetate (mg/L)
150	1650
400	3200
700	4800
1200	7000
2500	11500
3500	14200

- For 1200 L/h of broth fed, what is the minimum amount of propyl acetate you can use to recover 97% of the pantothenic acid? Draw the operating line corresponding to this minimum S.
- For 1200 L/h of broth fed, you decide to use 330 L/h propyl acetate. Draw the Operating Line for the recovery of 95% pantothenic acid.
- How many theoretical stages are required to accomplish this separation?