

## LIQUID-LIQUID EQUILIBRIUM FOR THE DESIGN OF EXTRACTION COLUMN

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### ABSTRACT

Liquid-Liquid Extraction is a mass transfer operation in which a liquid solution (the feed) is contacted with an immiscible or nearly immiscible liquid (solvent) that exhibits preferential affinity or selectivity towards one or more of the components in the feed. The construction of the tie –line on the binodal curve to determine the number of theoretical stages, has to be made graphically using the relevant correlations. This requires experimental determination of the mutual solubility and tie-line data. Treybal even prior to Hand and other workers introduced a method of construction without using tie-lines data of binodal curves to determine the number of theoretical stages. This method is investigated and proved to be correct, rapid and does not require experimental determination of tie-line data. Treybal method is used in the present work and proved to be accurate and easy to apply. The number of stages is determined using this method and all other design parameters of a sieve tray extraction column are obtained. A complete design by hand calculation procedure is realized and Outlined. The number of theoretical stages is calculated using ASPEN PLUS SOFTWARE.

**Keywords:** Liquid-Liquid Extraction. The tie –line. binodal curves.