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Generalised method for the determination of heterogeneous batch distillation regions

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Abstract

A new, general method for the calculation of residue curves and for the determination of batch distillation regions of heteroazeotropic distillation is suggested. The method proposed, which means the extension of the method of Pham and Doherty, takes into consideration the possibility of the withdrawal of any fraction of either liquid phase from the decanter as distillate. The simplified and rigorous simulation calculations were carried out for the mixtures dichloromethane-acetone (low α*) + water (heavy, selective, heterogeneous entrainer), water-ethylenediamine (maximum azeotrope) + benzene (light, selective, heterogeneous entrainer) and isopropanol-water (minimum azeotrope) + benzene (light, nonselective, heterogeneous entrainer). The new method gives the right sequence of the cuts for all operation modes and strategies of heterogeneous batch distillation.*

Keywords: Batch Distillation, Heterogeneous Entrainer, Separation of Azeotropes, Residue Curves

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