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Batch Heteroazeotropic Rectification of a Low α Mixture under Continuous Entrainer Feeding

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The separation of a low-relative-volatility, zeotropic mixture in a batch rectifier with a selective entrainer is studied by means of feasibility and rigorous simulation calculations. The entrainer is the high boiler in the system and it forms a binary heteroazeotrope with the low boiler component. Besides the traditional batch addition the continuous feeding of the entrainer is also investigated. For the assessment of the feasibility of the heteroazeotropic distillation in a batch rectifier a new method is presented extending the former methods published for the batch homoazeotropic distillation. The method is based on the analysis of the map of the possible overall liquid composition profiles containing also the heterogeneous liquid boiling envelope. The results obtained for batch addition and continuous feeding of the entrainer are compared. The influence of the most important operational parameters is also studied. The results are presented for the mixture dichloromethane – acetone by using water as a heterogeneous entrainer.

Topical Heading

Separations

Keywords

Batch heteroazeotropic rectification, continuous entrainer feeding, azeotropic distillation.

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