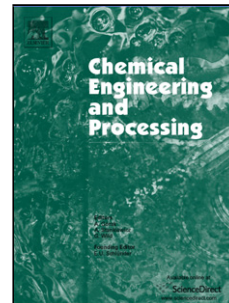


Accepted Manuscript

Title: Simulated Moving Bed Reactor for Butyl Acrylate
Synthesis: from Pilot to Industrial Scale

Author: Dânia S.M. Constantino Carla S.M. Pereira Rui P.V.
Faria José M. Loureiro Alírio E. Rodrigues



PII: S0255-2701(15)30082-9
DOI: <http://dx.doi.org/doi:10.1016/j.cep.2015.08.003>
Reference: CEP 6652

To appear in: *Chemical Engineering and Processing*

Received date: 14-5-2015
Revised date: 13-8-2015
Accepted date: 14-8-2015

Please cite this article as: Dânia S.M.Constantino, Carla S.M.Pereira, Rui P.V.Faria, José M.Loureiro, Alírio E.Rodrigues, Simulated Moving Bed Reactor for Butyl Acrylate Synthesis: from Pilot to Industrial Scale, Chemical Engineering and Processing <http://dx.doi.org/10.1016/j.cep.2015.08.003>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Simulated Moving Bed Reactor for Butyl Acrylate Synthesis: from Pilot to Industrial Scale

Dânia S.M. Constantino, Carla S.M. Pereira, Rui P. V. Faria, José M. Loureiro and Alírio E. Rodrigues*

Laboratory of Separation and Reaction Engineering (LSRE), Faculdade de Engenharia, Universidade do Porto, Rua Dr. Roberto Frias, 4200-465 Porto, Portugal

*Corresponding author. Tel.: +351225081671; fax: +351225081674. E-mail address: arodrig@fe.up.pt (A.E. Rodrigues).

Graphical abstract

Highlights

- A SMBR unit was sized at IS and the ideal design and operating parameters were found.
- Increasing the temperature improved the separation process.
- Separation unities to treat raffinate and extract streams were sized.
- Almost all the n-butanol used as eluent was recycled.
- The final global process showed a very competitive production capacity.

Abstract

The feasibility of butyl acrylate synthesis process in a simulated moving bed reactor packed with Amberlyst 15 resin was studied at different temperatures (323 and 363 K). For that, a mathematical model was developed to describe the dynamic behaviour of the simulated moving bed reactor considering internal and external mass-transfer resistances and velocity variations due to changes in the bulk composition. The effect of operating conditions, as the SMBR configuration (columns arrangement) and switching time, on the performance parameters was studied at isothermal operation. It was determined the reactive separation region for the

Download English Version:

<https://daneshyari.com/en/article/7089973>

Download Persian Version:

<https://daneshyari.com/article/7089973>

[Daneshyari.com](https://daneshyari.com)