

Dual and Vacuum Flash Distillation as energy efficient schemes for purification of 2,3-Butanediol

이현희, Junaid Haider^{1,†}, Muhammad Abdul Qyum²,
이문용³

영남대학교; ¹Yeungnam University; ²yeungnam University; ³yeungnam university
(haiderjunaid92@gmail.com[†])

2,3-Butanediol possesses significant chemical and energy related properties. The design alternatives for the purification of 2,3-butanediol from fermentation broth were examined. For the proposed configurations, an economic optimum design based on minimum TAC as an objective function was developed. To carry the process design simulations the binary interaction parameters are regressed and validated using experimental data by NRTL and UNIQUAC thermodynamic models in Aspen Plus® simulator. The energy efficient and heat integrated designs such as dual distillation and vacuum flash distillation obtained savings in terms of energy and TAC by up to 51%, 66.6% and 55%, 61.2% respectively. This work was supported by Basic Science Research Program through the National Research Foundation of Korea funded by the Ministry of Education (2018R1A2B6001566) and by Priority Research Centers Program through the National Research Foundation of Korea (NRF) funded by the Ministry of Education (2014R1A6A1031189).