

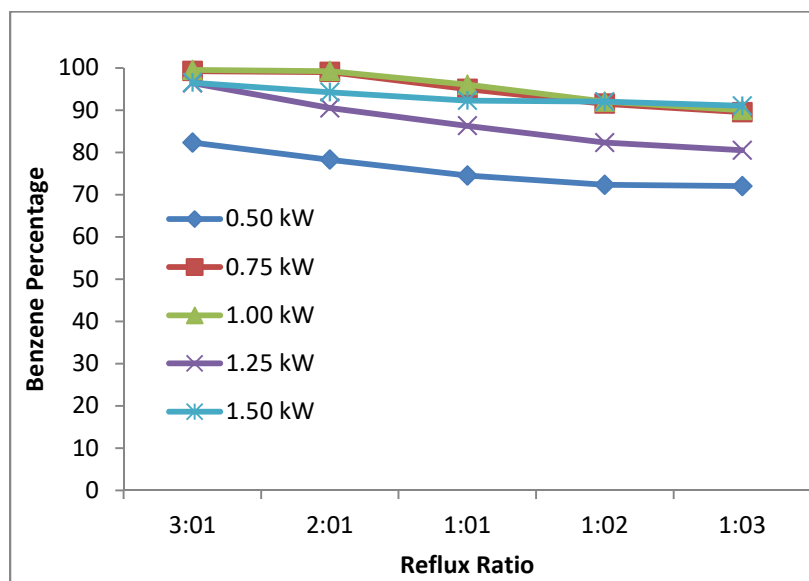
An experimental study of batch distillation of benzene-toluene binary mixture: Study of heat supply and reflux ratio effects on distillate.

Mohammed K. Al Mesfera, Md Mamoon Rashida*, Mudassir Hasana, Mohd Danisha, Y.M.Fahmy a,b

a Chemical Engineering Dept., College of Engineering, King Khalid University, Abha KSA

b Chemical Engineering & Pilot Plant Dept., NRC, Egypt.

*E-mail: mrashid@kku.edu.sa



Abstract:

In this study, an experimental approach was taken for optimizing the heat supply and reflux ratio for benzene – toluene binary mixture by batch distillation. 10 liters of binary mixture of benzene and toluene were taken for batch distillation. The heat supply and reflux ratio are two major and important factors for deciding the distillation process cost. Therefore the experiments were performed at various heat supply and at various reflux ratio. It was observed that heat load 1kW produced best separation of benzene. With the different reflux ratio, the distillate also changes and with decreasing in reflux ratio distillate decrease, 3:1 found the best reflux ratio among all what experimented. The maximum separation was found 0.995 mole fraction of benzene in distillate. The distillation column setup was as a batch setup and containing eight trays. All the experiments were performed at atmospheric pressure.

Keywords: Benzene-toluene mixture, distillation column, heat supply, reflux ratio, batch process.