A Comparison Study of Entrainers for Dehydration of Aqueous IPA in an Extractive Distillation Process

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The convention distillation method of chemical separation process has its own limitation pertaining to certain azeotropic mixtures. The non−ideality that exists between mixtures such as water and IPA presents an azeotropic behavior which requires distinctive approach to separate them. In such a typical situation, azeotropic or extractive distillation is well recommended for separation of such mixtures. One major factor that affects the efficacy of the separation process is the choice of the entrainer employed in the distillation process. Previous studies have shown that the choice of the entrainer goes a long way to affect the feasibility and efficiency of the separation process. In this study, a method employed by one of the renowned authors in the field of distillation will be applied using PROII v9.2 which is a different steady state simulation software package. Extractive distillation simulation was executed for three different entrainers which include DMSO, Ethylene glycol and NMP. The results obtained in these three case studies were compared to ascertain the best entrainer with all other conditions of the simulation held constant.