Production of Methyl Tertiary-Butyl Ether

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Background:

Methyl tertiary butyl ether (MTBE) is a chemical compound with the molecular formula C5H12O. It is a volatile, flammable, and colorless liquid that is used as a fuel additive since 1987 to increase the octane rating of gasoline. It is said to have a very distinct taste and smell. It is also been used as an oxygenate that blends with the gasoline that induces formation of carbon dioxide over carbon monoxide. MTBE is produced by the reaction of methanol and isobutylene. The overall reaction can be represented as follows:

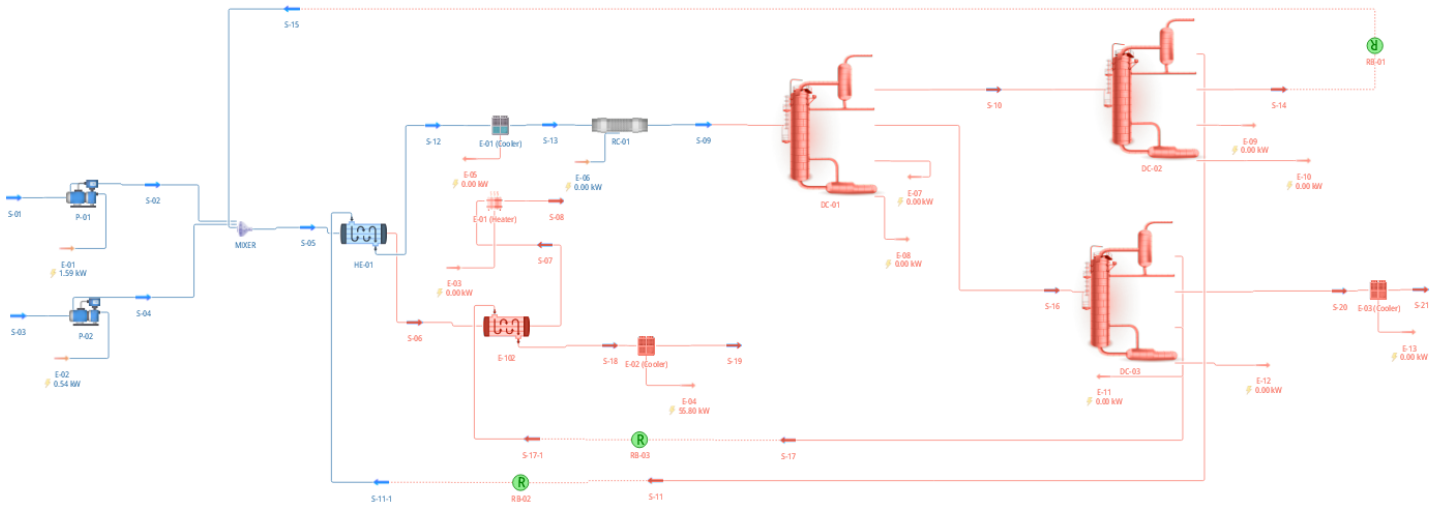
CH3OH (Methanol) + (CH3)3CCH=CH2 (Isobutylene) → (CH3)3COCH3 (MTBE)

This is a reversible reaction.

Description:

Methanol and mixed butylene (isobutylene, 1-butene, trans-2-butene) that are heated are fed using a pump to a reactor where the conversion takes place. After all the distillation processes (The process that is simulated here is the reactive distillation process), the Methyl tertiary butyl ether is collected as the bottom product. Unreacted methanol is constantly recycled back to the mixer.

Flowsheet:



Results:

No results due to error.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