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Process Economics Program

Report 192A
Bisphenol A

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July 2014

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Abstract

Bisphenol A (BPA), a key intermediate in the phenol value chain, is produced by the condensation reaction between phenol and acetone. It is primarily consumed during the production of polycarbonates and epoxy resins which are used in construction, the automotive industry, and in a variety of household items. BPA was traditionally produced using strong mineral acid catalysts. However, more demanding applications, along with the need for environmentally benign processes have led to the replacement of nearly all the strong mineral acids with cation exchange resin catalysts. The product is typically isolated and purified from the reactor effluent using one or more crystallization processes. Moreover, the solvents and unreacted acetone are purified using distillation and recycled. A large excess of phenol is used to achieve higher BPA selectivity and hence, it is prevalent throughout the process layout.

In this PEP report, we review the current technologies for producing bisphenol A. The emphasis is on developments made since the publication of our earlier PEP report in 1988, and our review in 2001 on this subject. The process economics are developed for a plant producing 100,000 MT/yr of bisphenol A by commercial processes based on the patents of three companies.

The production economics assessment in this report is based on a US Gulf Coast (USGC) location. However, an iPEP Navigator module is attached with the electronic version of this report to allow a quick conversion of process economics in three other major regions: Germany, Japan and China. With the selection of each competing process, the module also allows production economics to be reported in English or metric units in each region.

While the processes are PEP's independent interpretation of the companies' patent literature and may not reflect in whole or in part the actual plant configuration, we believe that they are sufficiently representative of the processes to estimate the plant economics within the range of accuracy for economic evaluations of the conceptual process designs.

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