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# Isopropyl Alcohol (IPA) from Acetone

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## Abstract

Isopropyl alcohol (isopropanol or IPA) is the first synthetic alcohol to be commercially produced and it is considered the first petrochemical. Widely used as a direct solvent in industrial applications, it is also used as a chemical intermediate in the production of other specialty chemicals. Recently, IPA has been at the forefront of the battle against COVID-19 as the major component of hand sanitizers, medical wipes, and surface cleaners, which are effective disinfectants.

While traditionally, the feedstock for producing IPA has been propylene, recently whenever certain market scenarios lead to lower acetone prices, (such as increasing phenol demand in a region) the acetone hydrogenation route to produce IPA has been adopted world-wide.

In this review, the Process Economics Program (PEP) team discusses the industry status of IPA, its properties, and uses. Relevant patents to produce IPA from acetone are reviewed. Based on the information obtained from public domain, a design is presented for a generic process to produce commercial-grade IPA industrially via acetone hydrogenation. The production economics assessment in this report is for a plant based at a US Gulf Coast (USGC) location, with a capacity of 111.2 million lb/yr (50 kt/yr) of IPA.

An Excel®-based tool, iPEP Navigator® is provided for easy economic analysis in different regions of the world. The technological and economic assessment of the process is the PEP's independent interpretation of a potential commercial process, which is based on information presented in open literature, such as patents or technical articles, and it may not reflect in whole or in part the actual plant configuration. We do believe that these sources are sufficient to represent the process and process economics within the range of accuracy necessary for the economic evaluations of the conceptual process designs.

 

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