



PROCESS ECONOMICS PROGRAM

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Abstract

Process Economics Program Report No. 86E HIGH TEMPERATURE POLYMERS (December 1990)

This report, Process Economics Program Report 86E, is the sixth in a series of reports on high temperature polymers. The report provides preliminary process designs and estimated capital and production costs for three polymers: polyarylate, polybenzimidazole, and polyphenylene sulfide.

The polyarylate route includes the preparation of a bisphenol A diacetate intermediate, which is reacted with iso- and terephthalic acid to form the polymer. A significant amount of diphenyl ether is included in the reaction mixture and the polymerization can be considered to be either a solution polymerization or a modified melt polymerization. In the process for polybenzimidazole, 3,3',4,4'-tetraaminodiphenyl, an intermediate, is made, purified, and reacted with diphenyl isophthalate to form the polymer. The polyphenylene sulfide process in this report is similar to the process evaluated in PEP Report 86A except that the design in this report is for a process that is mainly batch, instead of continuous, and is based on more recent patents.

The report also includes reviews of the pertinent patents, a section on the industry status of the three polymers, and a section that briefly presents and discusses the basic chemistry entailed in the evaluated processes.

Report No. 86E

**HIGH TEMPERATURE
POLYMERS**

SUPPLEMENT E

by **LLOYD M. ELKIN**

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For detailed marketing data and information, the reader is referred to one of the SRI programs specializing in marketing research. The *CHEMICAL ECONOMICS HANDBOOK* Program covers most major chemicals and chemical products produced in the United States and the *WORLD PETROCHEMICALS* Program covers major hydrocarbons and their derivatives on a worldwide basis. In addition, the SRI *DIRECTORY OF CHEMICAL PRODUCERS* services provide detailed lists of chemical producers by company, product, and plant for the United States and Western Europe

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