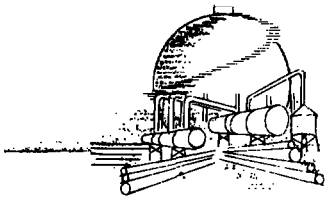

PROCESS ECONOMICS PROGRAM

SRI INTERNATIONAL
Menlo Park, California
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Abstract

Process Economics Program Report No. 86C

Liquid Crystal Polymers

(December 1987)

Liquid crystal copolyesters, recently brought onto the high performance polymer market, are expected to have a growth rate in excess of 20%/yr, because of their outstanding properties and good processability. This report evaluates the manufacture of two liquid crystal copolyesters, one made from p-hydroxybenzoic acid, terephthalic acid, and 4,4'-dihydroxydiphenyl (sometimes called biphenol), similar to the polymer that is manufactured on a commercial scale by Dartco Manufacturing, and the other made from p-hydroxybenzoic acid and 6-hydroxy-2-naphthoic acid, which we believe is similar to the product, base grade, that is made on a semicommercial scale by Hoechst Celanese. The report also evaluates the manufacture of two of the monomers, p-hydroxybenzoic acid and 4,4'-dihydroxydiphenyl. A rough estimate of the cost of manufacturing one of the other monomers, 6-hydroxy-2-naphthoic acid, is also provided.

In addition, the report includes summaries of pertinent patents on liquid crystal polyesters and the monomers mentioned above, with the exception of terephthalic acid. Sections on the industry status of these materials and the basic chemistry of the manufacturing processes are included.

PEP'86 L. Elkin

SRI International

Report No. 86C

LIQUID CRYSTAL POLYMERS

by LLOYD M. ELKIN

December 1987

A private report by the

PROCESS ECONOMICS PROGRAM

Menlo Park, California 94025

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