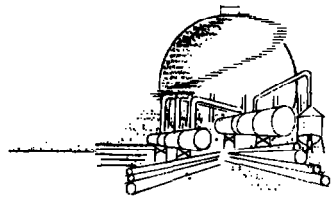

PROCESS ECONOMICS PROGRAM

SRI INTERNATIONAL
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Abstract

Process Economics Program Report No. 41B

CAPROLACTAM AND NYLON 6

(March 1988)

This report reviews the technology for the production of caprolactam and its polymer, nylon 6. A total of three major caprolactam manufacturing and one nylon 6 manufacturing routes are evaluated in detail:

- Caprolactam from cyclohexane via cyclohexanone by oxidation, oximation, and Beckmann rearrangement
- Caprolactam from phenol via cyclohexanone by hydrogenation, oximation, and Beckmann rearrangement
- Caprolactam from toluene via cyclohexanone carboxylic acid by oxidation, hydrogenation, nitrosation, and rearrangement
- Nylon 6 from caprolactam by hydrolysis, poly addition, and polycondensation.

Economics for three alternative processes using the first route, one process each using the second and third routes, and two alternative processes using the forth route are presented.

As of January 1987, the world production capacity for caprolactam was about 7,000 million lb/yr (3.157 thousand metric tons/yr), and that for nylon 6 is more than 4,786 million lb/yr (2,173 thousand metric tons/yr).

PEP'87 Yu-Ren Chin

SRI International

Report No. 41B

NYLON 6 AND CAPROLACTAM

SUPPLEMENT B

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KUN-HO LIU

February 1988

A private report by the

PROCESS ECONOMICS PROGRAM

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