



# PROCESS ECONOMICS PROGRAM

SRI INTERNATIONAL  
Menlo Park, California  
94025

## 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 fourth 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).

Report No. 41B

# **NYLON 6 AND CAPROLACTAM**

**SUPPLEMENT B**

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**February 1988**

A private report by the  
**PROCESS ECONOMICS PROGRAM**

Menlo Park, California 94025

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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