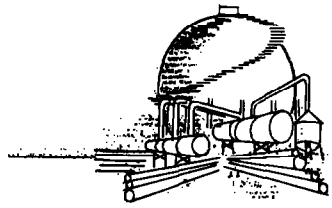

PROCESS ECONOMICS PROGRAM

SRI INTERNATIONAL
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Abstract

Process Economics Program Report No. 11C

METHACRYLIC ACID AND METHACRYLIC ESTERS

(September 1984)

For the last fifteen years, processes have been developed to supplant the established process for making methyl methacrylate from acetone, hydrogen cyanide, and methanol. The acetone cyanohydrin route suffers from production of acidic wastes; the newer processes avoid these wastes and offer lower costs.

Since our most recent previous report on the subject (Report 11B, issued in July 1980), a methyl methacrylate process based on a C_4 feedstock has been commercialized in Japan. This process oxidizes a t-butanol feed to methacrolein and methacrylic acid in two stages, then esterifies the acid to methyl methacrylate.

We have evaluated this process and several variations, including the alternative use of isobutane feed and the supplementary use of isobutyraldehyde (by-product from oxo alcohol plants). We have also evaluated an attractive process based on propylene hydrocarboxylation to isobutyric acid, followed by dehydrogenation to methacrylic acid.

We have updated some of the processes evaluated in Report 11B, including the acetone cyanohydrin process. For a newly constructed plant, and at market prices for HCN and acetone, the acetone cyanohydrin process is more expensive than several of the newer processes.

SRI International

Report No. 11C

METHACRYLIC ACID AND ESTERS

SUPPLEMENT C

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September 1984

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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