

PROCESS ECONOMICS PROGRAM

SRI INTERNATIONAL
Menlo Park, California
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Abstract

Process Economics Program Report No. 138

ALKYL AMINES

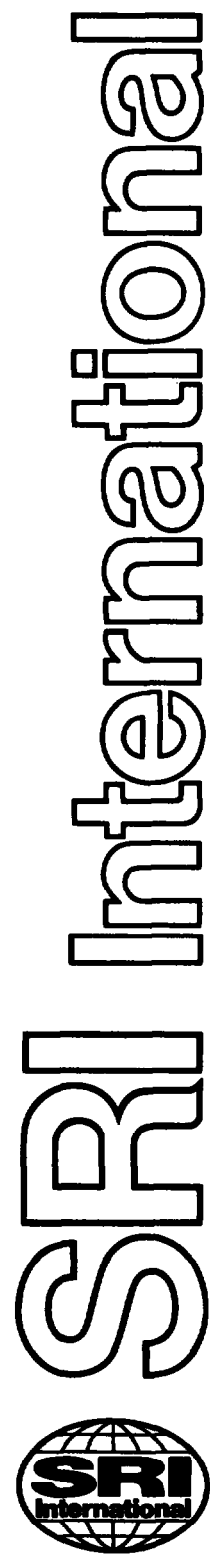
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This report covers the technology and costs of manufacturing two groups of alkyl amines: the methylamines and the ethyleneamines. These products are chemical intermediates having a wide range of end uses, ranging from solvents and surfactants to insecticides and explosives. Three processes are presented: one for the manufacture of methylamines and two for the manufacture of ethyleneamines.

The methylamines (monomethylamine, dimethylamine, and trimethylamine) are produced by reaction of methanol with ammonia over a fixed bed silica-alumina catalyst. Two cases with different product mixes are examined.

The dominant method for producing ethyleneamines is by the reaction of ammonia with ethylene dichloride to give ethylenediamine and its higher homologues diethylenetriamine, triethylenetetramine, and tetraethylenepentamine. In this report cases are examined for EDA-to-polyamines product ratios of 50:50 and 90:10 (by wt).

An alternative means for making ethylenediamine is by the high pressure reaction of ammonia with monoethanolamine. The process economics for this recent and emerging technology are discussed.



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by MICHAEL ARNÉ

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PROCESS ECONOMICS PROGRAM

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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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