

Abstract
Process Economics Program Report 9e
TEREPHTHALIC ACID AND DIMETHYL TEREPHTHALATE
(January 1997)

In this study we present designs and economics for industrially important processes for the manufacture of purified terephthalic acid (PTA), purified isophthalic acid (PIA), and dimethyl terephthalate (DMT). Since our last report on this subject in 1990, no new PTA or DMT processes have been commercialized. However, the basic processes have been improved significantly. Although some of the improvements are proprietary, others are illustrated in the patent literature, in some cases as a part of efforts to license a process. As a result, we are able to present new designs and economics for PTA and DMT processes comparable to the ones currently practiced commercially. In a similar vein, we evaluate the economics for a modern PIA facility.

PET resins and fibers do not degrade naturally in the environment at acceptable rates and thus present a litter and disposal problem. To recycle postconsumer PET wastes, industry has significantly expanded PET depolymerization capacity and is exploring ways of adapting processes. We discuss the various methods for depolymerizing PET and evaluate a methanolysis process for depolymerizing PET film waste.

In addition, we review the status of the subject industries, list estimated plant capacities, and discuss the chemistry entailed in the various manufacturing processes. We also discuss patents issued on PTA, DMT, and PET depolymerization since 1990; and on PIA since 1972. This report is of special interest to current and potential producers of PTA and DMT, and to consumers of these chemicals. Process development chemists and catalyst specialists will be interested in the summaries of the recent patents.

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