

Abstract
Process Economics Program Report 285
CO₂-BASED POLYMERS
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Using carbon dioxide as a feedstock instead of conventional petroleum-derived raw materials is an attractive scenario to produce polymers. Developing processes and products that are “sustainable” and have reduced “carbon footprint” have been important goals. CO₂ is abundant, renewable, and inexpensive. During the last several years, the polymer industry has been exploring renewable feedstocks such as CO₂ for producing polymers.

Development in carbon dioxide-based polymers has been in the production of polycarbonates. Aliphatic polycarbonates can be directly produced by reacting epoxides with carbon dioxide. In addition, aromatic polycarbonates based on bisphenol A (BPA) can be produced by reacting an epoxide with carbon dioxide to produce an intermediate. CO₂-based polymers containing up to 50% carbon dioxide are produced. This report examines the production of CO₂-based polymers, specifically poly(propylene carbonate), poly(propylene carbonate) polyol, and BPA polycarbonate. This report will be of value to those companies engaged in the production of CO₂-based polymers and the conventional petroleum-derived feedstock-based polymers.



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CO₂-BASED POLYMERS

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