Abstract
Process Economics Program Report 115C
BIODEGRADABLE POLYMERS
(October 1998)

Biodegradable polymers constitute a loosely defined family of polymers that are designed to degrade through the action of living organisms. First-generation biodegradable polymers, which were largely commercialized in the 1980s, did not satisfy the public’s view of complete degradation. Subsequently, new polymer products have been introduced and promoted as fully biodegradable by the industry. These new polymers, however, are much higher priced than the commodity polymers typically used in packaging applications. The industry is currently working toward bringing down the cost of manufacturing biodegradable polymers by increasing production capacity, improving process technology, and using low-cost feedstocks.

This supplementary report reviews the market conditions and important technical progress made in biodegradable polymers since PEP Report 115B was issued in December 1994. The process economics developed in this report address the four major biodegradable polymers that are commercially available:

• Starch-based polymers
• Poly(lactic acid)
• Polyhydroxyalkanoates
• Aliphatic/aromatic copolyesters.

For those in the biodegradable polymers business, this report will be useful for the comparative economics it provides, as well as for its extensive review of recently published literature. The report reviews and analyzes more than 170 biodegradable polymer patents. The report's discussion of the underlying principles of biodegradation will also be useful for those developing applications in this field.
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