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Biodegradable Polymers: Global Markets and Technologies Through 2022

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Abstracts

REPORT SCOPE

Although the term biodegradable polymers is well known, the controversy within the industry as to which materials should be considered biodegradable continues unabated. These resins currently include polyolefin-based compositions containing starch and polymers containing aromatic groups that microorganisms have difficulty utilizing in their metabolism.

Furthermore, there are additives said to convert petroleum-based resins to biodegradable versions. These resultant resins are said to be oxo-biodegradable.

Part of the current debate revolves around defining an acceptable period for biodegradation to be completed. Almost all carbon-based materials are biodegradable, if given an acceptable period.

This report includes polymers that producers market as fully biodegradable. Most define a fully biodegradable polymer as a polymer that is completely converted by microorganisms to carbon dioxide, water and humus.

In the case of anaerobic biodegradation, carbon dioxide, methane and humus are the degradation products. However, many within the industry insist on a period for degradation such that the terms biodegradable and compostable are not synonymous.

The issue concerning biodegradable versus compostable resins is a very important issue that is discussed in detail. Polymers derived from renewable resources (non-petroleum-based) are not covered unless they are considered biodegradable since

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many polymers derived from renewable resources are not biodegradable. These materials are often termed as bio-based. Some polymers are both bio-based and biodegradable.

The scope of the report covers the overview and clear understanding of the global market scenario of biodegradable polymers and analysis of global market trends, with market data from 2016, considering 2016 as the base year and estimates for 2017 to 2022 with projection of the compound annual growth rate (CAGR) in the forecast period.

This report covers the chemical types of biodegradable polymers along with their properties, production, producers and applications. Definitions and standards, market drivers, biodegradation testing, environmental issues, composting and relevant technologies will also be discussed.

The different chemical type of biodegradable polymers is considered in the report which include: polylactic acid (PLA), starch based and polyhydroxyalkanoates (PHA). Qualitative analysis of protein based products, biodegradable polymers from soybeans, genetically modified (GM) biodegradable polymers and oxo-biodegradable polymers are also covered in the report. The report further includes a discussion of the application of biodegradable polymers such as packaging, fibers/fabrics, agriculture, medical, food service, electrical and electronics and automotive, among others.

The report concludes with a special focus on the competitive landscape which includes the key strategies adopted by the manufacturers and detailed profiles of the major manufacturers, their product offerings, strategies, including trade names and their impact on the market.

REPORT INCLUDES

47 data tables and 50 additional tables

An overview of the global markets for biodegradable polymers

Analyses of global market trends, with data from 2016 and 2017, and projections of compound annual growth rates (CAGRs) through 2022

Discussion of chemical types of biodegradable polymers along with their properties and production processes

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Evaluation of current and potential applications

Comprehensive company profiles of major Players in the Market including Basf, Biomer, Cereplast, Danimer Scientific, Earthshell Container Corp., Mitsui Chemicals, Toray Industries, Inc., and Toyobo Co., Ltd.

SUMMARY

The term “polymer” is derived from the Greek words polu, meaning “many, much” and meros meaning “parts” which refer to a molecule’s structure that is composed of multiple repeating units. Biodegradable polymers are compromised of monomers that are linked to another functional group and have unstable links behind the functional group. Biodegradable polymers break down into carbon dioxide, nitrogen, water, biomass and inorganic salts. Biodegradable polymers are decomposed under both aerobic and anaerobic conditions by enzymes and the presence of microorganisms.

The global market for biodegradable polymers is expected to grow because of its high demand in a broad range of end-user industries across globe. Although biodegradable polymers have been commercially available for 20 years, they are still considered very early in their product life cycle. This market faces several major problems; most importantly are relatively high prices and the lack of an infrastructure for effective composting, an extremely critical aspect for biodegradable polymers market success.

The biodegradable polymers market is expected to continue its high growth over the next five years dominated by packaging and followed by fibers/fabrics. The packaging segment accounted 78.5% of the total value in 2017. Most of the remaining applications of biodegradable polymers will experience considerable growth rates partly because of the low market numbers.

The fibers/fabrics market will experience a substantial growth, especially from the hygiene and agricultural end-uses that includes mulching films. The medical application segment of biodegradable polymers is anticipated to experience the highest growth rate among all the biodegradable polymers applications in coming years.

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Biodegradable Polymers for Use with Implantable Medical Devices
Advanced Cardiovascular Systems Inc. (Santa Clara, Calif.) - No. 7,875,283 (January 25, 2011)
Biaxially Oriented Polylactic Acid Film with High Barrier
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Use of Selection Pressures to Enable Microbial Biosynthesis of Polyhydroxyalkanoates from Anaerobic Degradation Products
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Polylactic Acid Composition
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Medical Articles Containing Biodegradable Polymers and Acid-Neutralizing Cationic Species
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BIOMATERA
BIOME BIOPLASTICS LTD
BIOMER
BIOPOLYMER TECHNOLOGIES AG (BIOP)
CEREPLAST
CORBION
DANIMER SCIENTIFIC
EARTHSHELL CONTAINER CORP.
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FUTERRO
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Novamont S.P.A.
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TIANAN BIOLOGIC MATERIAL CO. LTD.
TIANJIN GUOYUN BIOLOGICAL MATERIALS CO. LTD.
TORAY INDUSTRIES, INC.
TOYOBO CO., LTD.

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