photo: NatureWorks PLA

World Bioplastics

Industry Study with Forecasts for **2013 & 2018**

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Growth factors include consumer demand for more environmentally-sustainable products, and increasing restrictions on the use of nondegradable plastic products, particularly plastic bags.

World demand to rise more than fourfold by 2013

Global demand for bioplastics, plastic resins that are biodegradable or derived from plant-based sources, will rise more than fourfold to 900,000 metric tons in 2013, valued at $2.6 billion. Growth will be fueled by a number of factors, including consumer demand for more environmentally-sustainable products, the development of bio-based feed-stocks for commodity plastic resins, and increasing restrictions on the use of nondegradable plastic products, particularly plastic bags. Most important, however, will be the expected continuation of high crude oil and natural gas prices, which will allow bioplastics to become more cost-competitive with petroleum-based resins.

Non-biodegradable types to be fastest growing

Non-biodegradable plant-based plastics will be the primary driver of bioplastics demand, rising from just 23,000 metric tons in 2008 to nearly 600,000 metric tons in 2013. Biodegradable plastics, such as starch-based resins, polylactic acid (PLA) and degradable polyesters, accounted for the vast majority (nearly 90 percent) of bioplastics demand in 2008. Double-digit gains are expected to continue, fueled in part by the emergence on the commercial market of polyhydroxy-alkanoates (PHAs). PLA will also see strong advances in demand as new production capacity comes online, lowering the price of the resin and making it more widely available.

World Bioplastics Demand, 2008
(200,000 metric tons)

Brazil, China to become major bioplastic producers

Western Europe was the largest regional market for bioplastics in 2008, accounting for about 40 percent of world demand. Bioplastics sales in the region benefit from strong consumer demand for biodegradable and plant-based products, a regulatory environment that favors bioplastics over petroleum resins, and an extensive infrastructure for composting. Going forward, however, demand will grow more rapidly in the Asia/Pacific region, which will surpass the West European market by 2013. Gains will be stimulated by strong demand in Japan, which has focused intently on the replacement of petroleum-based plastics. Other regions, such as Latin America and Eastern Europe, will see stellar gains in bioplastics demand from a very small 2008 base.

Currently, world bioplastics production is heavily concentrated in the developed countries of North America, Western Europe and Japan. This will change dramatically by 2013 when Brazil will become the world's leading producer of bioplastics. Furthermore, China plans to open over 100,000 metric tons of new bioplastics capacity by 2013, making that country a major player in the global industry.

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Sample Text, Table & Chart

TABLE VI-4

JAPAN -- BIOPLASTICS DEMAND BY TYPE
(thousand metric tons)

Item	1998	2003	2008	2013	2018
Plastic Resin Demand	11				00
kg bioplastic/m ton plastic					60
Bioplastics Demand					10
Biodegradable:					00
Starch-Based Resins					25
Polylactic Acid					43
Petroleum-Based Resins					13
Other Biodegradable					19
Non-Biodegradable					10

SAMPLE TABLE

ASIA/PACIFIC

Japan: Products

Demand for bioplastics in Japan will rise nearly
metric tons in 2013, outpacing the Asia/Pacific region
making the country the world's largest market for bio
Japan is already one of the largest markets for bioplas
advance at a significantly faster pace than other establ
markets such as the US and Western Europe. Gains w
variety of factors, including falling bioplastic prices c
traditional counterparts, a rising consumer focus on sustainability issues, the ongoing development of certification and labeling systems for bioplastics in Japan, and the increased availability and variety of bioplastic products. Legislative and regulatory action is also expected to play a role, as the Japanese government has set an ambitious goal of replacing 20 percent of petroleum-based plastic consumption with bio-based plastics by 2020. While this goal is unlikely t
promotion of bioplastic use in Japan will cont

The bioplastics market in Japan includes
ucts, with starch-based resins, PLA, petroleum
resins, and non-degradable bioplastics each a
25 percent of 2008 demand. Through 2013, th
degradable plastics are expected for PLA, which will benefit from more widespread availability as production in China begins to come online. Additionally, Japanese compounders are making efforts to improve the performance of PLA-based materials in order to penetrate durable goods markets such as automotive and electronics uses.

The most rapid growth among bioplastic products in Japan, however, will be for non-biodegradable resins such as bio-based polyethylene. While this is true in most countries, it is especially apparent in Japan, due to the willingness of consumers to pay a premium for bio-based materials, as well as achieving the government's goal of bio-based plastic

SAMPLE TEXT

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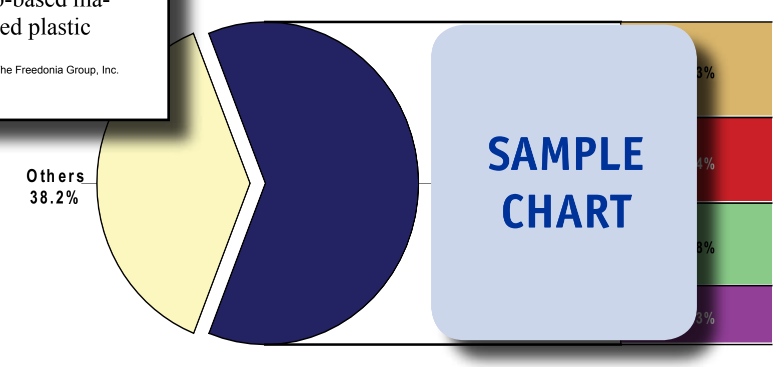
CHART VIII-1

RLD BIOPLASTICS MARKET SHARE, 2008
($793 million)



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Sample Profile, Table & Forecast

TABLE VI-5

JAPAN -- BIOPLASTICS DEMAND BY MARKET
(thousand metric tons)

Item	1998	2003	2008	2013	2018
Population (million persons)					
kg bioplastic/capita					
Bioplastics Demand					
Packaging:					
Packaging Film					
Loose-Fill					
Containers & Other					
Nonpackaging:					
Bags					
Automotive & Electronics					
Agricultural Films					
Foodservice Disposables					
Other Nonpackaging					
% Japan					
Asia/Pacific Bioplastics Demand					

SAMPLE TABLE

COMPANY PROFILES

Ningbo Tianan Biologic Material Company Limited
68 Dagang Road, Number 6
Beilun, Ningbo, Zhejiang
China
86-574-86895240
http://www.tian...

Annual Sales...
Employment:...

Key Products...

SAMPLE PROFILE

Ningbo ... ates as Tianan, is among the ... butyrate-valerate (PHBV), a ... The Company is privately held.

The Company's PHBV, which is marketed under the ENMAT brand name, is produced via the fermentation of natural sugars and is 100-percent biodegradable under standard composting conditions. ENMAT PHBV is capable of withstanding temperatures up to 170 degrees Celsius and offers moisture, gas and aroma barrier properties. This product is intended for use as an alternative to petroleum-based plastics in injection molding, paper coating, cast film and sheet, blown film, thermoforming and other processes. ENMAT PHBV can be employed in such applications as the production of films, pens, tableware, packaging, home and office goods, electronic parts, automotive components, and medical products. Specific products from Tianan include ENMAT-Y1000, a pure powder; ENMAT Y1010, a powder blended with a nucleant and antioxident; and ENMAT Y1000P, a pelletized form of ENMAT Y1010. In addition, the Company offers ENMAT501 and

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"Bioplastics demand in Japan will advance nearly sixfold to 178,000 metric tons in 2013. Like the range of bioplastic products in Japan, markets for bioplastics in the country show a substantial degree of diversity, with a significant amount of demand in most major market categories. Nonpackaging markets accounted for the largest portion of demand in 2008. However, more rapid gains through 2013 are expected in packaging markets, fueled by ..."
--Section VI, pg. 154

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Other Studies

Extruded Plastics

This study analyzes the US extruded plastic industry. It presents historical demand data for the years 1998, 2003 and 2008, and forecasts for 2013 and 2018 by extruded plastic resin (e.g., polyvinyl chloride, low density polyethylene, high density polyethylene, polystyrene, polypropylene, polyester) and market (e.g., construction, packaging, consumer goods). The study also considers market environment factors, details industry structure, evaluates company market share and profiles industry players.

#2566 .... 11/2009..................... $4700

World Thermoplastic Elastomers

Global TPE demand will rise 6% yearly through 2013, with China making up 42% of new demand. Excluding China, TPE sales will remain concentrated in the developed markets of the US, Western Europe and Japan, especially for higher performance materials such as TPVs and copolyester elastomers (COPEs). This study analyzes the 3.1 million metric ton world TPE industry, with forecasts for 2013 and 2018 by market, type, world region and for 13 countries. It also evaluates market share and profiles industry players.

#2551 .... 10/2009..................... $5800

Foamed Plastics

US foamed plastics demand will reach 8.4 billion pounds in 2013 as key construction and motor vehicle markets recover. Foamed urethane will remain the largest segment while foamed LDPE grow the fastest. Construction will provide the best opportunities based on growth in insulation and carpet underlay applications. This study analyzes the $22.5 billion US foamed plastics industry, with forecasts for 2013 and 2018 by market and product. It also evaluates market share and profiles industry players.

#2532 .... 07/2009..................... $4700

Natural Polymers

US demand for natural polymers will grow 7.1% annually through 2012. Best opportunities are anticipated in packaging uses based on the increased availability and cost competitiveness of novel polymers such as polylactic acid (PLA). Cellulose ether will remain the largest segment while starch and fermentation products jump at double-digit rates. This study analyzes the $2.9 billion US natural polymer industry, with forecasts for 2012 and 2017 by market and product. It also evaluates company market share and profiles industry players.

#2422 .... 11/2008..................... $4600

Biodegradable Plastic

US demand for biodegradable plastic will grow 15.5% yearly through 2012. Gains will be driven by escalating costs for petroleum-based resins and growing initiatives that favor renewable resources. Polyester-based and polylactic acid resins will grow the fastest, while starch-based types remain the largest segment. This study analyzes the 350 million pound US biodegradable plastic industry, with forecasts for 2012 and 2017 by type and market. It also details market share and profiles industry players.

#2387 .... 08/2008..................... $4600

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