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World Enzymes

Industry Study with Forecasts for **2015 & 2020**

Study #2824 | December 2011 | \$6100 | 376 pages

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Almost all world enzyme markets will achieve growth rates over five percent per year, with the exception of biofuel production and a few other small industrial enzyme markets.

World demand to rise 6.8% annually through 2015

World enzyme demand will rise 6.8 percent per year to \$8.0 billion in 2015, reflecting a continued rebound in the world economy from the 2009 global downturn. Almost all markets will achieve growth rates over five percent per year, with the exception of biofuel production and a few other small industrial enzyme markets. Reflecting the broad-based nature of the growth, demand will be strong for all enzyme types, especially smaller categories.

Diagnostics, research/bio-tech markets to lead gains

Through 2015 growth in world enzyme demand will be led by strong gains in diagnostic and research and biotechnology enzymes, both of which will benefit from the sharp drop in DNA sequencing costs over the previous decade. Additionally, rising diagnostic enzyme demand will be supported by expanded access to medical care in developing countries, and the advent of health care reform in the United States. On the industrial enzyme side, animal feed and food and beverage enzymes will also experience above-average annual increases in demand. Both benefit from the expansion of the middle class in rapidly developing economies, which will help to fuel increased meat consumption and the adoption of more western-style diets.

World Enzyme Demand, 2015 (\$8 billion)



North America
43%

Asia/Pacific
21%

Western Europe
20%

Other Regions
16%

photo: Georgia Tech

Among the other industrial enzyme markets, cleaning products will realize the strongest growth as new enzymes continue to be launched in developed countries, and greater market penetration is achieved in developing countries. Biofuel production enzyme demand, however, will moderate significantly. While the increased use of enzymes in biodiesel and sugar cane-based ethanol production will support growth, the lack of new legislative mandates for grain-based ethanol will limit increases in the near term. Growth in the various other industrial markets will be below average going forward as market maturity in areas such as textile and starch enzymes limits gains.

Developing regions to grow the fastest

The fastest regional growth will be in the smaller markets of Central and South America and the Africa/Mideast region. The Asia/Pacific region will also undergo a rapid increase in enzyme demand due to strength in China and India. A moderating trend in the developed economies of North America and Western Europe will lead to healthy, though below-average, growth. In particular, the pace of North American enzyme demand growth will moderate due to the slow development of biomass-based biofuel production, while enzyme consumption in Western Europe will be restrained by the impact of the European debt crisis.

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Sample Text, Table & Chart

ASIA/PACIFIC

Further aiding enzyme demand growth in China will be concerns over the environment and pollution -- particularly of water areas in which enzyme production technologies have distinct

On a global basis, the enzyme market is the second largest industrial enzyme market. Enzyme demand has increased rapidly over the past decade. Growth in demand with China showing the most robust growth in the world through 2015, just behind the US. Regionally, China has surpassed Japan to become the second largest market, and will retain given the country's nearly world leading growth in demand.

The enzyme market in China is heavily weighted toward food and beverage enzymes, reflecting the country's greater emphasis on manufacturing development over the past decade. In 2010, food and beverage was the largest market for industrial enzymes, reflecting the country's domestic food industry, the increasing consumption of western style diets, and China's growing importance as a producer of processed foods for export. Additionally, the presence of major western enzyme companies such as Novozymes and Danisco (DuPont) has boosted the profile of enzyme technology in food processing. Cleaning product (detergent) enzymes were the second largest industrial enzyme market, due in large part to the rapid growth in soap and detergent production, while the animal feed enzyme market has experienced a jump in demand to become the third largest. The fastest growth, however, has been in biofuel production, as China went from producing limited amounts of fuel ethanol in 2005 to being the third largest producer behind the US and Brazil in 2010. The majority of the other industrial enzyme market is in leather enzyme demand. Growth in this area was robust from 2005 to 2010 as China's rapid dominance of world textile production

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**SAMPLE
TEXT**

TABLE VII-4

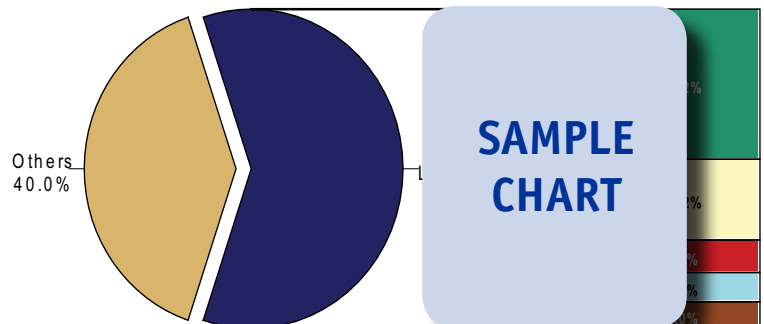
CHINA: ENZYME DEMAND BY TYPE & MARKET
(million dollars)

Item	2000	2005	2010	2015	2020
Enzyme Demand	140	210	310	410	510
By Type:					
Carbohydrases	5	15	25	35	45
Amylases	5	15	25	35	45
Other Carbohydrases	0	0	0	0	0
Proteases	2	7	12	17	22
Polymerases & Nucleases	8	13	18	23	28
Lipases	7	12	17	22	27
Other Enzymes	8	13	18	23	28
By Market:					
Industrial	0	0	0	0	0
Food & Beverage	0	0	0	0	0
Cleaning Product	0	0	0	0	0
Biofuel Production	0	0	0	0	0
Animal Feed	0	0	0	0	0
Other Industrial	0	0	0	0	0
Specialty	0	0	0	0	0
% China	5	10	15	20	25
Asia/Pacific Enzyme Demand	140	210	310	410	510

**SAMPLE
TABLE**

CHART IX-1

WORLD ENZYME MARKET SHARE
(\$5.8 billion, 2010)

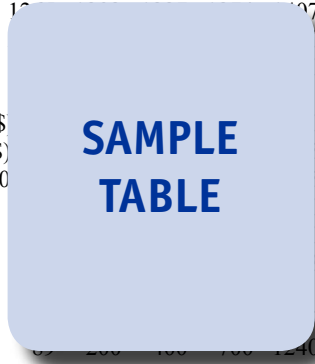


**SAMPLE
CHART**

Sample Profile, Table & Forecast

TABLE VII-3
CHINA: ECONOMIC INDICATORS

Item	2000	2005	2010	2015	2020
Population (mil persons)	1.2	1.3	1.4	1.5	1.6
\$ GDP/capita	1,000	2,000	4,000	8,000	12,000
Gross Domestic Product (bil 2009\$)	10,000	20,000	40,000	80,000	120,000
Manufacturing Value Added (bil 2009\$)	10,000	20,000	40,000	80,000	120,000
Chemical Mfg Value Added (bil 2009\$)	1,000	2,000	4,000	8,000	12,000
Food & Beverage Value Added (bil 2009\$)	1,000	2,000	4,000	8,000	12,000
Soap & Detergent Shipments (bil \$)	1,000	2,000	4,000	8,000	12,000
Animal Feed Shipments (bil \$)	1,000	2,000	4,000	8,000	12,000
Pharmaceutical Shipments (bil \$)	1,000	2,000	4,000	8,000	12,000
\$ enzymes/mil \$ GDP	0.1	0.2	0.4	0.8	1.2
Enzyme Demand (mil \$)	100	200	400	800	1,200



COMPANY PROFILES

Biocatalysts Limited
 Cefn Coed
 Parc Nantgarw
 Cardiff, Wales CF15 7QQ
 United Kingdom
 44-1443-843-7
 http://www.bio

Annual Sales:
 Employment:
 Key Products: supplement
 and diagnostic

SAMPLE PROFILE

Biocatalysts Limited is a privately held manufacturer of enzymes primarily for use in the food processing industry. The Company produces a range of standard enzyme products and is also involved in the design and development of customized enzyme products.

The Company participates in the world enzymes industry via the production of enzymes for such food processing end uses as fruit and vegetable processing, egg processing, dairy processing and baking, among others. For fruit and vegetable processing applications, Biocatalysts manufactures a number of cellulase, pectinase, beta-glucanase and esterase enzymes that are used in juice production, citrus fruit peeling, wine making, beer brewing and other processes. These enzymes are engineered to increase yield, enhance flavor development, reduce filtration problems and improve final product characteristics. Biocatalysts markets its fruit and vegetable processing enzymes under such brand names as DEPOL, MACER8 and PROMOD.

Among the egg processing enzymes made by Biocatalysts are LIPOMOD types for the removal of yolk lipid contamination from egg

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“Demand for enzymes in China will rise nearly twelve percent annually to \$700 million in 2015, with rapid growth occurring in almost all markets, though in the case of industrial enzymes the pace will moderate from historical levels. Growth in specialty enzymes will outpace industrial enzymes, albeit from a much smaller base, as rising per capita GDP and government initiatives to support advances in biotechnology help drive demand.”

--Section VII, pg. 198

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OTHER STUDIES

Alternative Sweeteners

US demand for alternative sweeteners is expected to advance 3.3 percent annually through 2015 to \$1.4 billion. Gains will be led by relatively new entrants such as the stevia extract reb-A. The more mature products -- high intensity sweeteners (such as aspartame) and polyols (including sorbitol) -- will see more restrained, though still healthy, growth. This study analyzes the \$1.2 billion US alternative sweetener industry, with forecasts for 2015 and 2020 by product and market. The study also evaluates company market share and profiles industry players.

#2819December 2011 \$4900

Biologics

US demand for biologics is expected to grow 6.5 percent annually through 2015, driven by dramatic shifts in production technology and more targeted diseases such as cancer, diabetes and other serious medical conditions. Monoclonal antibodies will remain the largest category and be one of the fastest growing segments, outpaced only by hormones. This study analyzes the \$74.3 billion US biologics industry, with forecasts for 2015 and 2020 by product and application. The study also evaluates company market share and profiles industry competitors.

#2792September 2011..... \$4900

World In Vitro Diagnostic Products

Global demand for *in vitro* diagnostic (IVD) products will increase 7.1 percent annually through 2015. The US, Western Europe and Japan will remain the dominant markets, while developing world demand grows the fastest. Molecular diagnostics, cellular analysis and pathology products will be the fastest growing technologies. This study analyzes the \$43.8 billion world IVD product industry, with forecasts for 2015 and 2020 by product, application, world region and for 14 countries. The study also evaluates company market share and profiles 25 industry participants.

#2724March 2011..... \$6100

Enzymes

US demand for enzymes will rise 4.8 percent annually through 2014. Gains will be driven by continued expansion of higher-value specialty enzymes in pharmaceuticals, diagnostics, research and biotechnology, and biocatalysts. In the biofuels segment, growth will moderate as the industry transitions to cellulases for producing biomass ethanol. This study analyzes the \$2.2 billion US enzymes industry, with forecasts for 2014 and 2019 by market and product. It also evaluates company market share and profiles industry competitors.

#2670September 2010..... \$4900

World Biofuels

Global biofuel demand will grow 10.3 percent annually through 2014. Bioethanol will see the greatest gains, driven by the large North American market as well as the faster growing markets in the Asia/Pacific region and Europe. The smaller biodiesel market will be the more rapidly growing segment. This study analyzes the 74.1 million metric ton global biofuel industry, with forecasts for 2014 and 2019 by product, world region and for 28 countries. It also evaluates company market share and profiles industry participants.

#2668September 2010..... \$5900

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