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# Industrial Enzymes: United States

January 2018



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# About This Report

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## Scope & Method

This report forecasts to 2021 US industrial enzymes demand and production in nominal US dollars at the manufacturer level. Total demand is segmented by market as follows:

- biofuel production
- food and beverages
- cleaning products
- animal feed
- other markets such as textiles and leather, pulp and paper, and wastewater treatment

To illustrate historical trends, total demand is provided in annual series from 2006 to 2016; total production and the various segments are reported at five-year intervals for 2006, 2011, and 2016.

Industrial enzymes include those that remain in the product at the end user level – such as in animal feed, detergents, or personal care products – as well as enzymes consumed during the manufacturing of other materials, for example in biofuel production, food and beverage processing, starch processing, textile and leather production, and pulp and paper manufacturing. Most industrial enzymes are relatively commoditized products, produced and consumed on a fairly large scale, and hence are much less expensive than specialty enzymes used in research and medicine (not covered in the current report).

This report quantifies trends in various measures of growth and volatility. Growth (or decline) expressed as an average annual growth rate (AAGR) is the least squares growth rate, which takes into account all available datapoints over a period. The volatility of datapoints around a least squares growth trend over time is expressed via the coefficient of determination, or  $r^2$ . The most stable data series relative to the trend carries an  $r^2$  value of 1.0; the most volatile – 0.0. Growth calculated as a compound annual growth rate (CAGR) employs, by definition, only the first and last datapoints over a period. The CAGR is used to describe forecast growth, defined as the expected trend beginning in the base year and ending in the forecast year. Readers are encouraged to consider historical volatility when assessing particular annual values along the forecast trend, including in the forecast year.

Key macroeconomic indicators are also provided with quantified trends. Other various topics, including profiles of pertinent leading suppliers, are covered in this report. A full outline of report items by page is available in the Table of Contents.

## Sources

*Industrial Enzymes: United States* (FF35117) is based on *Global Industrial Enzymes*, a comprehensive industry study published by The Freedonia Group. Reported findings represent the synthesis and analysis of data from various primary, secondary, macroeconomic, and demographic sources including:

- firms participating in the industry, and their suppliers and customers
- government/public agencies
- national, regional, and international non-governmental organizations
- trade associations and their publications
- the business and trade press
- indicator forecasts by The Freedonia Group
- the findings of other reports and studies by The Freedonia Group

Specific sources and additional resources are listed in the Resources section of this publication for reference and to facilitate further research.

## Industry Codes

Table 5 | Industry Codes Related to Industrial Enzymes

NAICS/SCIAN 2007		SIC	
North American Industry Classification System		Standard Industrial Classification	
325199	All other basic organic chemical manufacturing	2869	Industrial organic chemicals, NEC

Source: US Census Bureau

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## Resources

### The Freedonia Group

*Global Industrial Enzymes*, January 2018

### Freedonia Industry Studies

*Global Industrial & Institutional Cleaning Chemicals Market*, October 2017

*Global Water Disinfection Equipment Market*, August 2017

*Food & Beverage Natural Colors Market in the US*, July 2017

*Natural Alternative Sweeteners Market in the US*, July 2017

*Global Water Treatment Chemicals Market*, June 2017

*Drilling Fluids & Chemicals Market in the US*, May 2017

*Food & Beverage Hydrocolloids Market in the US*, May 2017

*Alternative Sweeteners Market in the US*, February 2017

*Biocides Market in the US*, December 2016

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*Drilling Fluids & Chemicals: United States*

*Global Water Disinfection Equipment*

*Grain-Based Foods: United States*

*Industrial & Institutional Cleaning Chemicals: United States*

*Motor Vehicle Biofuels: United States*

*Natural Flavors & Fragrances: United States*

*Paper & Paperboard: United States*

*Renewable Energy: United States*

*Water Disinfection Equipment: United States*

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*Feed & Grain*

*Food Navigator*

*Food Processing*

*ICIS Chemical Business*

*IHS Chemical Week*

### **Agencies & Associations**

Advanced Biofuels Association

American Feed Industry Association

American Cleaning Institute

International Feed Industry Federation

United States Census Bureau

United States Department of Agriculture

United States Environmental Protection Agency

United States Food and Drug Administration

United States International Trade Commission

Worldwide Cleaning Industry Association