

Global Polyhydroxyalkanoate (PHA) Market 2024 by Manufacturers, Regions, Type and Application, Forecast to 2030

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Abstracts

According to our (Global Info Research) latest study, the global Polyhydroxyalkanoate (PHA) market size was valued at USD 176.8 million in 2023 and is forecast to a readjusted size of USD 338.2 million by 2030 with a CAGR of 9.7% during review period.

Polyhydroxyalkanoate (PHA) is a storage material for carbon and energy sources in microorganisms. When carbon sources are abundant and other nutrients (N/P/S, etc.) are insufficient, they will be synthesized in different microorganisms. PHA synthesis the main costs are the substrate cost in the fermentation stage and the cost of downstream extraction and purification.

The diversity of PHA monomer structure is mainly different from the difference in the side chain group on the C-3 position, in which the monomer with 3-5 carbon atoms is short-chain PHA (SCL PHA), and the number of carbon atoms above 6 is medium and long chain. PHA (MCL PHA). In the general structural formula of PHA, R can be an alkenyl group, a benzene ring, an alkyl group, etc., usually m is 1, and n represents the degree of polymerization, which determines the molecular weight of the polymer. Poly-3-hydroxybutyric acid (PHB) with a methyl side chain is the most common. Poly-3-hydroxybutyric acid (PHB) has thermoplasticity like polypropylene and has brittleness and poor thermal stability; polyhydroxybutyric acid-co-hydroxyvaleric acid copolymer (PHBV) has more good strength, hardness, greater elasticity, lower melting point. Short-chain PHA presents a hard crystal; medium- and long-chain PHA is a thermoplastic elastomer with good flexibility, low hardness, slow crystallization rate, and the melting temperature is mostly kept in the range of 39-61 °C; short-chain medium- and long-chain copolymerization The PHA (SCL-MCL PHA), by adjusting the monomer

ratio, obtains a copolymerized PHA material that combines the excellent properties of short-chain and medium-long chains. PHA synthesis methods include microbial fermentation (wild bacteria method, recombinant engineering bacteria method), transgenic plant method, activated sludge method, and microbial fermentation method are the main ways of biosynthesizing PHA at present. The microorganisms that synthesize PHA are mainly divided into three categories: pure bacteria, engineering bacteria and mixed bacteria. In the process of biosynthesizing PHA, there are disadvantages such as high sterilization cost, high consumption of fresh water, and easy contamination by discontinuous fermentation, resulting in lower competitiveness of industrial biotechnology compared with chemical processes.

Global core polyhydroxyalkanoate (PHA) manufacturers include Danimer Scientific, Kaneka etc. The top 1 company hold a share about 65%. Europe is the largest market, with a share about 55%, followed by North America and Asia Pacific with the share about 28% and 10%. In terms of product, PHBHHx is the largest segment, with a share about 80%. And in terms of application, the largest application is food services, followed by packaging.

The Global Info Research report includes an overview of the development of the Polyhydroxyalkanoate (PHA) industry chain, the market status of Packaging (PHB-Poly(3-hydroxybutyrate), PHBV-poly(3-hydroxybutyrate-co-3-hydroxyvalerate)), Biomedical Implant (PHB-Poly(3-hydroxybutyrate), PHBV-poly(3-hydroxybutyrate-co-3-hydroxyvalerate)), and key enterprises in developed and developing market, and analysed the cutting-edge technology, patent, hot applications and market trends of Polyhydroxyalkanoate (PHA).

Regionally, the report analyzes the Polyhydroxyalkanoate (PHA) markets in key regions. North America and Europe are experiencing steady growth, driven by government initiatives and increasing consumer awareness. Asia-Pacific, particularly China, leads the global Polyhydroxyalkanoate (PHA) market, with robust domestic demand, supportive policies, and a strong manufacturing base.

Key Features:

The report presents comprehensive understanding of the Polyhydroxyalkanoate (PHA) market. It provides a holistic view of the industry, as well as detailed insights into individual components and stakeholders. The report analysis market dynamics, trends, challenges, and opportunities within the Polyhydroxyalkanoate (PHA) industry.

The report involves analyzing the market at a macro level:

Market Sizing and Segmentation: Report collect data on the overall market size, including the sales quantity (MT), revenue generated, and market share of different by Type (e.g., PHB-Poly(3-hydroxybutyrate), PHBV-poly(3-hydroxybutyrate-co-3-hydroxyvalerate)).

Industry Analysis: Report analyse the broader industry trends, such as government policies and regulations, technological advancements, consumer preferences, and market dynamics. This analysis helps in understanding the key drivers and challenges influencing the Polyhydroxyalkanoate (PHA) market.

Regional Analysis: The report involves examining the Polyhydroxyalkanoate (PHA) market at a regional or national level. Report analyses regional factors such as government incentives, infrastructure development, economic conditions, and consumer behaviour to identify variations and opportunities within different markets.

Market Projections: Report covers the gathered data and analysis to make future projections and forecasts for the Polyhydroxyalkanoate (PHA) market. This may include estimating market growth rates, predicting market demand, and identifying emerging trends.

The report also involves a more granular approach to Polyhydroxyalkanoate (PHA):

Company Analysis: Report covers individual Polyhydroxyalkanoate (PHA) manufacturers, suppliers, and other relevant industry players. This analysis includes studying their financial performance, market positioning, product portfolios, partnerships, and strategies.

Consumer Analysis: Report covers data on consumer behaviour, preferences, and attitudes towards Polyhydroxyalkanoate (PHA) This may involve surveys, interviews, and analysis of consumer reviews and feedback from different by Application (Packaging, Biomedical Implant).

Technology Analysis: Report covers specific technologies relevant to Polyhydroxyalkanoate (PHA). It assesses the current state, advancements, and potential future developments in Polyhydroxyalkanoate (PHA) areas.

Competitive Landscape: By analyzing individual companies, suppliers, and consumers,

the report present insights into the competitive landscape of the Polyhydroxyalkanoate (PHA) market. This analysis helps understand market share, competitive advantages, and potential areas for differentiation among industry players.

Market Validation: The report involves validating findings and projections through primary research, such as surveys, interviews, and focus groups.

Market Segmentation

Polyhydroxyalkanoate (PHA) market is split by Type and by Application. For the period 2019-2030, the growth among segments provides accurate calculations and forecasts for consumption value by Type, and by Application in terms of volume and value.

Market segment by Type

PHB-Poly(3-hydroxybutyrate)

PHBV-poly(3-hydroxybutyrate-co-3-hydroxyvalerate)

P34HB-poly(3-hydroxybutyrate-co-4-hydroxybutyrate)

PHBHHxpoly(3-hydroxybutyrate-co-3-hydroxyhexanoate)

Market segment by Application

Packaging

Biomedical Implant

Agricultural

Food Services

Others

Major players covered

Danimer Scientific

Kaneka

Navigate Corporation

Tian'an Biopolymer

Biomer

Shenzhen Ecomann Technology

RWDC Industries

Newlight Technologies

CJ CheilJedang

PHB Industrial S.A.

Mango Materials

Market segment by region, regional analysis covers

North America (United States, Canada and Mexico)

Europe (Germany, France, United Kingdom, Russia, Italy, and Rest of Europe)

Asia-Pacific (China, Japan, Korea, India, Southeast Asia, and Australia)

South America (Brazil, Argentina, Colombia, and Rest of South America)

Middle East & Africa (Saudi Arabia, UAE, Egypt, South Africa, and Rest of Middle East & Africa)

The content of the study subjects, includes a total of 15 chapters:

Chapter 1, to describe Polyhydroxyalkanoate (PHA) product scope, market overview, market estimation caveats and base year.

Chapter 2, to profile the top manufacturers of Polyhydroxyalkanoate (PHA), with price, sales, revenue and global market share of Polyhydroxyalkanoate (PHA) from 2019 to 2024.

Chapter 3, the Polyhydroxyalkanoate (PHA) competitive situation, sales quantity, revenue and global market share of top manufacturers are analyzed emphatically by landscape contrast.

Chapter 4, the Polyhydroxyalkanoate (PHA) breakdown data are shown at the regional level, to show the sales quantity, consumption value and growth by regions, from 2019 to 2030.

Chapter 5 and 6, to segment the sales by Type and application, with sales market share and growth rate by type, application, from 2019 to 2030.

Chapter 7, 8, 9, 10 and 11, to break the sales data at the country level, with sales quantity, consumption value and market share for key countries in the world, from 2017 to 2023. and Polyhydroxyalkanoate (PHA) market forecast, by regions, type and application, with sales and revenue, from 2025 to 2030.

Chapter 12, market dynamics, drivers, restraints, trends and Porters Five Forces analysis.

Chapter 13, the key raw materials and key suppliers, and industry chain of Polyhydroxyalkanoate (PHA).

Chapter 14 and 15, to describe Polyhydroxyalkanoate (PHA) sales channel, distributors, customers, research findings and conclusion.

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