

Biopolymers in Electrical & Electronics Market – Global Industry Size, Share, Trends, Opportunity, & Forecast, Segmented By Type (Biodegradable, Non-biodegradable), By Application (Rechargeable Batteries, Wires & Cables, Electrical Insulator, Panel Displays, Electronic Device Casings, and Others), By Region & Competition, 2020-2030F

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Abstracts

The global market for biopolymers in the electrical and electronics sector was valued at USD 82.85 million in 2024 and is projected to experience significant growth with a compound annual growth rate (CAGR) of 8.95% through 2030. This transformation is largely driven by an increased focus on sustainability, regulatory measures, and the rising demand for eco-friendly materials.

The adoption of biopolymers within the electrical and electronics industry has accelerated due to the urgent need for sustainable alternatives. Growing environmental concerns related to conventional plastics have triggered a shift toward biodegradable and renewable materials. Biopolymers, which are sourced from renewable resources like plants and microorganisms, are becoming viable alternatives to traditional fossil fuel-based polymers.

Key Market Drivers

Growing Demand for Printed Circuit Boards (PCBs)

The global market for biopolymers in the electrical and electronics (E&E) sector is expanding significantly, propelled by the demand for sustainable, high-performance

materials. A primary driver of this growth is the increasing need for printed circuit boards (PCBs), which are essential for virtually all electronic devices. Biopolymers derived from renewable resources are increasingly being integrated into PCB manufacturing due to their environmental benefits, functional properties, and alignment with global sustainability initiatives.

PCBs are integral to modern electronics, providing the foundation for mounting and interconnecting electronic components. They are widely used in consumer electronics, automotive electronics, industrial equipment, and telecommunications. As electronic devices become more complex and miniaturized, the demand for advanced PCBs has grown, creating opportunities for biopolymer-based materials. The global PCB market is worth billions, driven by the proliferation of smartphones, IoT devices, and renewable energy systems. Additionally, the adoption of 5G technology and electric vehicles (EVs) is further boosting PCB production.

The electronics industry faces mounting pressure to adopt sustainable practices, given environmental concerns and stringent regulations. Traditional PCB materials, such as epoxy resins and fiberglass, are derived from petrochemicals and are non-biodegradable, contributing to the growing issue of electronic waste (e-waste). Biopolymers, sourced from renewable inputs like corn starch, sugarcane, and cellulose, offer a sustainable alternative. E-waste is one of the fastest-growing segments of global solid waste, with around 62 million tonnes generated in 2022, though only 22.3% of this waste was effectively recycled.

There is a noticeable shift toward flexible and biodegradable PCBs, driven by the demand for lightweight, compact, and environmentally friendly devices. Biopolymers are ideal for these applications due to their flexibility, biodegradability, and ability to be processed into thin films. Flexible PCBs are increasingly used in wearable devices, foldable smartphones, and medical equipment. The global flexible electronics market is expected to see significant growth, creating further opportunities for biopolymer-based materials. Consumer and regulatory demands for greener electronics are pushing manufacturers to adopt eco-friendly materials like biopolymers. European regulations, such as RoHS and WEEE, are accelerating the adoption of sustainable materials in PCB production, with the European Union's goal of a circular economy by 2050 further promoting the use of renewable resources.

Key Market Challenges

High Production Costs of Biopolymers

The high cost of biopolymers remains a significant challenge to the growth of the global biopolymers market in the electrical and electronics sector. Despite their eco-friendly advantages, the production costs of biopolymers are relatively high, making widespread adoption difficult, particularly in price-sensitive industries like electronics. The cost issues stem from the complex processes involved in sourcing bio-based feedstocks, refining, and manufacturing biopolymers to meet industry standards. The price disparity between biopolymers and conventional polymers is a key deterrent, limiting market expansion. Overcoming this challenge will require focused efforts in research and development to streamline production processes, find cost-effective sourcing methods, and scale manufacturing capabilities.

Key Market Trends

Increasing Use of Biopolymers in Packaging

The global biopolymers market in the electrical and electronics industry is undergoing a notable shift, with an increasing use of biopolymers in packaging. This trend is a response to growing environmental awareness and the demand for eco-friendly packaging solutions. Biopolymers, derived from renewable resources like plants and microorganisms, offer a sustainable alternative to traditional petroleum-based plastics. For example, companies are incorporating biopolymer-based films and foams from sources like corn starch and sugarcane into the packaging of electronic devices. These materials not only offer effective protection for sensitive electronic components but also help reduce the overall environmental impact of electronic products.

The growing emphasis on sustainable, recyclable packaging materials aligns with consumer preferences and is driving demand for biopolymers in the electrical and electronics sector. Additionally, biopolymers often exhibit beneficial properties such as biodegradability, flexibility, and light weight, making them suitable for various industry applications. As consumer electronics manufacturers increasingly highlight the eco-friendliness of their products, the use of biopolymers in packaging is expected to become a key factor propelling the growth of the global market for biopolymers in electrical and electronics. This trend not only reflects a commitment to sustainable practices but also positions biopolymers as a crucial element in the evolution of packaging solutions in the industry.

Key Market Players

Toyota Tsusho Corporation

Saudi Basic Industries Corporation (SABIC)

BASF SE

Trinseo PLC

Braskem SA

TEIJIN Limited

NatureWorks LLC

TotalEnergies Corbion bv

Solvay

Futero

Report Scope:

In this report, the Global Biopolymers in Electrical & Electronics Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

Biopolymers in Electrical & Electronics Market, By Type:

Biodegradable

Non-biodegradable

Biopolymers in Electrical & Electronics Market, By Application:

Rechargeable Batteries

Wires & Cables

Electrical Insulator

Panel Displays

Electronic Device Casings

Others

Biopolymers in Electrical & Electronics Market, By Region:

North America

United States

Canada

Mexico

Europe

France

United Kingdom

Italy

Germany

Spain

Asia-Pacific

China

India

Japan

Australia

South Korea

South America

Brazil

Argentina

Colombia

Middle East & Africa

South Africa

Saudi Arabia

UAE

Kuwait

Turkey

Egypt

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the Global Biopolymers in Electrical & Electronics Market.

Available Customizations:

Global Biopolymers in Electrical & Electronics market report with the given market data, TechSci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

Detailed analysis and profiling of additional market players (up to five).

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