

Bio-Butadiene Market Forecasts to 2032 – Global Analysis By Product Type (Styrene-Butadiene Rubber (SBR), Nitrile Butadiene Rubber (NBR), Styrene-Butadiene Latex (SBL), Styrene-Butadiene Block Copolymers (SBS, SEBS), Polybutadiene (PB), Acrylonitrile-Butadiene-Styrene (ABS), and Other Product Types), Grade, Source, Application, End User and By Geography

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Abstracts

According to Statistics MRC, the Global Bio-Butadiene Market is accounted for \$2.65 billion in 2025 and is expected to reach \$5.24 billion by 2032 growing at a CAGR of 10.2% during the forecast period. Bio-Butadiene is a sustainable substitute for conventional butadiene, derived from renewable biomass such as corn, sugarcane, or plant oils through processes like fermentation or catalytic transformation. It plays a vital role in producing synthetic rubber, plastics, and elastomers for applications including tires, adhesives, and footwear. While it helps cut down fossil fuel use and carbon footprint, scaling up production and achieving cost efficiency remain ongoing hurdles.

According to the U.S. Department of Energy (DOE), the U.S. produces over 100,000 metric tons of bio-based butadiene annually.

Market Dynamics:

Driver:

Rising demand for sustainable rubber

Bio-butadiene, derived from renewable feedstocks like ethanol or biomass, offers a lower carbon footprint compared to petrochemical-derived butadiene. As industries seek to reduce environmental impact, sustainable rubber solutions are gaining traction across automotive, footwear, and industrial applications. Regulatory pressures and corporate sustainability goals are accelerating the shift toward greener supply chains. Additionally, innovations in fermentation and catalytic conversion technologies are improving the yield and scalability of bio-butadiene production. This rising demand is fostering investment and partnerships aimed at commercializing sustainable rubber solutions.

Restraint:

Limited commercial scale

Most current technologies are still in pilot or early-stage deployment, lacking the capacity to meet large-scale industrial demand. High capital costs, complex processing requirements, and feedstock variability pose challenges to scaling operations. Moreover, the absence of standardized production protocols and supply chain integration slows down market adoption. Investors remain cautious due to uncertain returns and long development timelines. Without significant breakthroughs in process efficiency and cost reduction, bio-butadiene may struggle to compete with its petrochemical counterpart on volume and price.

Opportunity:

Growing automotive demand

As electric vehicles and low-emission transport gain momentum, manufacturers are seeking greener alternatives for tires, seals, and interior components. Bio-butadiene's compatibility with existing rubber formulations makes it a viable substitute without compromising performance. OEMs and Tier 1 suppliers are increasingly incorporating bio-based inputs to meet ESG targets and consumer expectations. Government incentives and green procurement policies further support adoption in automotive supply chains. This trend is expected to drive demand for bio-butadiene across both passenger and commercial vehicle segments.

Threat:

Competition from petrochemical butadiene

Large-scale production facilities benefit from economies of scale, making synthetic butadiene significantly cheaper than bio-based alternatives. Additionally, fluctuations in crude oil prices can temporarily enhance the competitiveness of petrochemical derivatives. The entrenched position of synthetic rubber in industrial applications creates resistance to change among manufacturers. Without clear performance or cost benefits, bio-butadiene may face difficulty displacing conventional materials. This competitive pressure could slow down the transition to sustainable rubber unless supported by policy or technological breakthroughs.

Covid-19 Impact:

The COVID-19 pandemic disrupted global supply chains, affecting both petrochemical and bio-based rubber production. Lockdowns and labor shortages led to delays in pilot projects and slowed down R&D efforts in bio-butadiene technologies. However, the crisis also highlighted the need for resilient and localized supply chains, prompting renewed interest in renewable feedstocks. As industries recover, sustainability has emerged as a key priority, accelerating investment in bio-based materials. Overall, while short-term setbacks occurred, the pandemic reinforced the long-term value proposition of bio-butadiene.

The styrene-butadiene rubber (SBR) segment is expected to be the largest during the forecast period

The styrene-butadiene rubber (SBR) segment is expected to account for the largest market share during the forecast period, due to the push for eco-friendly materials. Innovations in fermentation and catalytic processing are improving the feasibility of bio-butadiene at scale. Notable trends include the development of bio-SBR compounds with improved performance and reduced environmental impact. Industry collaborations between rubber producers and chemical companies are advancing commercialization. Supportive regulations and sustainability goals are reinforcing this shift, making bio-based SBR a competitive substitute for traditional petrochemical rubber.

The automotive & transportation segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the automotive & transportation segment is predicted to witness the highest growth rate, fuelled by rising demand for sustainable mobility solutions. Bio-butadiene is increasingly used in tire compounds, seals, and vibration-

dampening components for electric and hybrid vehicles. Regulatory mandates on emissions and material sourcing are encouraging OEMs to adopt bio-based inputs. Innovations in lightweight and durable rubber formulations are enhancing vehicle efficiency and performance. Strategic collaborations between automakers and chemical companies are accelerating product development and commercialization.

Region with largest share:

During the forecast period, the Asia Pacific region is expected to hold the largest market share, driven by rising industrial demand, strong manufacturing capabilities, and growing environmental regulations. Countries like China, India, and Japan are investing in renewable chemical technologies such as biomass fermentation and ethanol-based catalytic conversion. Emerging trends include bio-based rubber integration in automotive and footwear sectors. Key developments feature government-backed green initiatives, pilot-scale production facilities, and strategic partnerships between local firms and global innovators. These factors collectively position Asia Pacific as a leading hub for sustainable butadiene innovation and commercialization.

Region with highest CAGR:

Over the forecast period, the North America region is anticipated to exhibit the highest CAGR, owing to rising sustainability mandates, and robust R&D investment. Advanced technologies such as gas fermentation, bioethanol conversion, and engineered microbial pathways are gaining traction. Emerging trends include bio-based rubber adoption in electric vehicles and green construction materials. Key developments involve strategic collaborations between biotech start-ups and chemical giants, expansion of pilot plants, and favourable government incentives. These dynamics are positioning North America as a frontrunner in scaling and commercializing renewable butadiene solutions.

Key players in the market

Some of the key players in Bio-Butadiene Market include SABIC, Asahi Kasei Corporation, Michelin, Axens, Zeon Corporation, Evonik Industries, Biokemik, Global Bioenergies, ETB Catalytic Technologies, IFPEN, Trinseo, LanzaTech, Genomatica, INVISTA, Braskem, Lummus Technology, Synthos, and Versalis.

Key Developments:

In April 2025, Lummus Technology and Neste announced the companies have signed an agreement in which Lummus Technology will acquire the intellectual property and certain assets of NAPCON, Neste's proprietary digital technology solutions provider. The agreement also includes the transfer of key NAPCON personnel to ensure continuity and leverage critical expertise. In addition, Lummus and Neste have entered into a Strategic Collaboration Agreement to provide continuous NAPCON services to Neste and its subsidiaries.

In February 2025, SABIC announced the company's collaboration with Branch Technology to develop lightweight panels to restore the exterior of the Pathfinder, an early test article for the National Aeronautics & Space Administration (NASA) space shuttle orbiter. Branch Technology used its extraordinary cellular fabrication process and SABIC's advanced LNP™ THERMOCOMP™ compound to robotically 3D-print a matrix structure that forms the core of its BranchClad® composite panels.

Product Types Covered:

Styrene-Butadiene Rubber (SBR)

Nitrile Butadiene Rubber (NBR)

Styrene-Butadiene Latex (SBL)

Styrene-Butadiene Block Copolymers (SBS, SEBS)

Polybutadiene (PB)

Acrylonitrile-Butadiene-Styrene (ABS)

Other Product Types

Grades Covered:

Industrial Grade

Laboratory Grade

Sources Covered:

Biomass-based

Waste-based

Applications Covered:

Synthetic Rubber Production

Fine Chemicals

Coatings & Sealants

Plastics & Polymers

Medical Adhesives & Wound Care

Other Applications

End Users Covered:

Automotive & Transportation

Consumer Goods

Healthcare & Medical Devices

Chemical Processing

Construction

Other End Users

Regions Covered:

North America

US

Canada

Mexico

Europe

Germany

UK

Italy

France

Spain

Rest of Europe

Asia Pacific

Japan

China

India

Australia

New Zealand

South Korea

Rest of Asia Pacific

South America

Argentina

Brazil

Chile

Rest of South America

Middle East & Africa

Saudi Arabia

UAE

Qatar

South Africa

Rest of Middle East & Africa

What our report offers:

- Market share assessments for the regional and country-level segments
- Strategic recommendations for the new entrants
- Covers Market data for the years 2024, 2025, 2026, 2028, and 2032
- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)
- Strategic recommendations in key business segments based on the market estimations
- Competitive landscaping mapping the key common trends
- Company profiling with detailed strategies, financials, and recent developments
- Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

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Note: Tables for North America, Europe, APAC, South America, and Middle East & Africa Regions are also represented in the same manner as above.

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