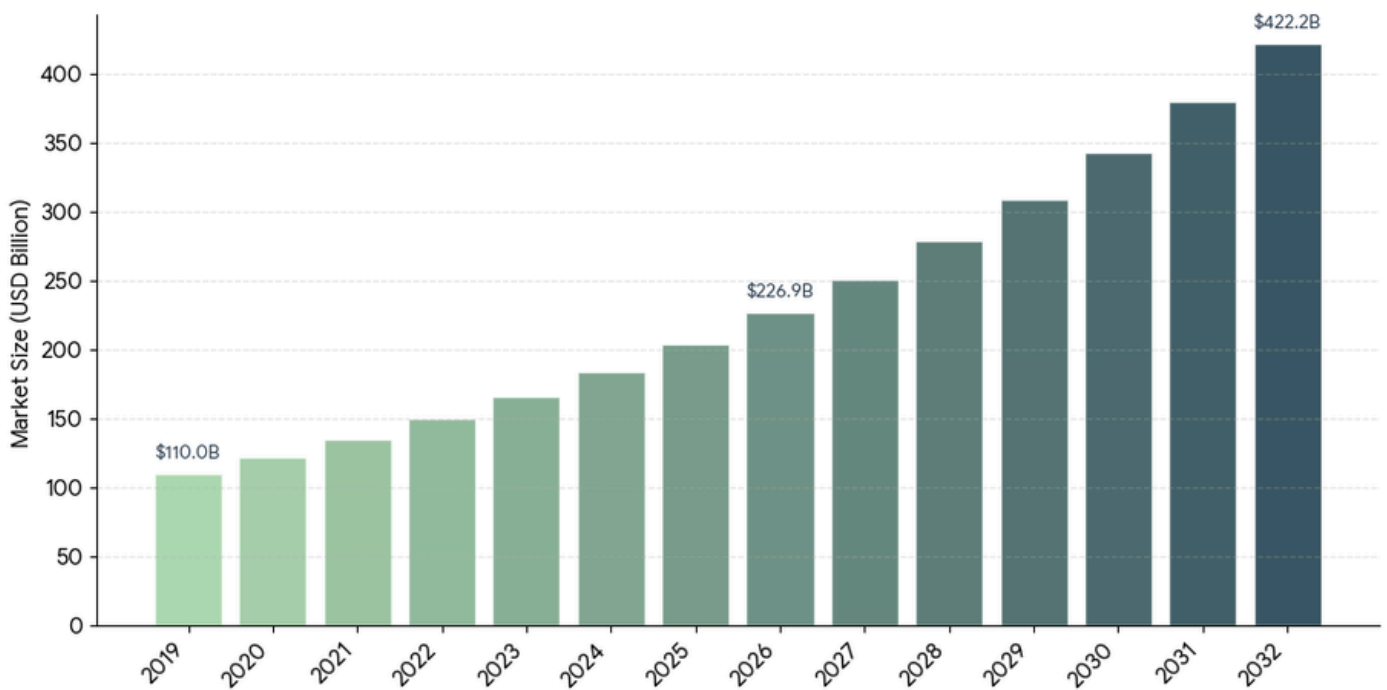




Biomaterials Market Size, Medical Implant Materials Demand, and Industry Growth Outlook

Global Biomaterials Market Size Projection (2019–2032)



Biomaterials Market Overview Analysis By Fortune Business Insights

Market Summary

According to Fortune Business Insights: The global [biomaterials market](#) was valued at USD 110.0 billion in 2019 and is projected to reach USD 420.6 billion by 2032, exhibiting a CAGR of 10.9% during the forecast period. North America dominated the market in 2019, accounting for a 40.75% share with revenues of USD 44.83 billion, reflecting the region's high surgical procedure volumes, robust government R&D funding, and rapid pace of new product approvals.

Biomaterials are natural or synthetic substances — encompassing metals, ceramics, polymers, and even living cells or tissues — designed to enhance, replace, or support damaged tissue or biological function. Their applications span a broad clinical spectrum, including medical implants such as heart valves, stents, artificial joints, dental implants, and ligaments; tissue-healing solutions such as sutures and surgical clips; and advanced drug

delivery systems. The market's sustained growth is underpinned by rising chronic disease prevalence, an aging global population, growing demand for implantable devices, and expanding use in plastic surgery and wound healing applications.

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Key Market Drivers

The rising global incidence of cardiovascular disease is one of the most significant drivers of biomaterials demand. Cardiovascular conditions remain the leading cause of death in the United States, contributing to approximately one in four deaths annually according to CDC estimates. Biomaterials — both natural and synthetic — demonstrate strong potential in cardiac repair and regeneration, with injectable biomaterials shown to reduce left ventricular dilatation, stimulate angiogenesis, and preserve cardiac function. As the global cardiovascular patient population grows, demand for biomaterial-based implants, stents, and grafts expands correspondingly.

The escalating demand for implantable devices represents an equally compelling growth driver. Increasing prevalence of orthopedic conditions, arthritis, and sports injuries fuels procedural volume across joint replacement and bone fixation categories. Approximately 54.4 million adults in the U.S. were diagnosed with arthritis in 2015, according to CDC estimates, while over 1.6 million arthroplasties were performed in 2017, including more than 966,000 knee replacements alone. These numbers reflect a large and growing patient population dependent on biomaterial-based solutions. Rising geriatric populations worldwide, compounded by sedentary lifestyles and escalating rates of chronic disease, further reinforce this demand trajectory.

Growing adoption of biomaterials in plastic surgery and wound healing applications constitutes another important market trend. Implantable biomaterials serve as effective scaffolds for reconstructing soft and hard tissue defects, promoting tissue formation, preserving volume and shape, and accelerating wound healing timelines. Strategic acquisitions — such as Advanced Medical Solutions' purchase of Biomatlante in December 2019 — illustrate how key players are actively expanding their portfolios to capture this growing application segment.

Increasing funding from governmental and non-governmental organizations for novel biomaterial research also supports market expansion, enabling continued innovation in product formulation, biocompatibility, and clinical performance.

Market Restraints

The primary constraint on biomaterials market growth is the stringent and complex clinical and regulatory approval process governing implantable devices. Because most biomaterial-based

products are designed for internal use, they are subject to rigorous safety, efficacy, and composition-specific requirements before receiving market authorization. These demanding processes extend development timelines and significantly raise the cost and risk of commercialization, deterring some manufacturers — particularly smaller or early-stage players — from entering or scaling within the market. Challenges around biocompatibility validation, sterilization standards, and the complexity of introducing novel injectable or biologically derived materials add further regulatory burden.

Market Segmentation

By Material, metallic biomaterials hold the largest market share, accounting for approximately 30.1% in 2019. Their dominance is driven by superior mechanical properties — particularly stiffness and load-bearing capacity — making them the preferred choice for joint replacements, orthopedic screws, dental implants, and cardiovascular stents. Ceramics, polymers, and natural biomaterials each serve distinct clinical needs, with polymers gaining traction in drug delivery and soft tissue applications, and natural biomaterials valued for their biocompatibility in regenerative medicine.

By Application, the cardiovascular segment leads the market, reflecting the scale of cardiac disease globally and the expanding use of biomaterials in stents, grafts, and cardiac repair. The orthopedic segment ranks among the other major application areas, supported by rising procedural volumes and the ongoing introduction of advanced biomaterial formulations for bone fixation and joint reconstruction. Additional application categories — including dental, plastic surgery, urology, and gastroenterology — contribute to the market's broad clinical footprint and diversified revenue base.

Regional Outlook

North America leads globally, driven by high procedure volumes, strong government R&D investment, and a well-developed regulatory and reimbursement environment. **Europe** holds the second-largest share, with growth supported by rising demand for implantable biomaterials and active new product development by regional manufacturers. **Asia-Pacific** is expected to record the highest growth rate during the forecast period, driven by a rapidly expanding geriatric population, increasing patient volumes for cardiovascular and orthopedic procedures, and growing medical tourism in India, China, and Japan. **Latin America and the Middle East & Africa** are projected to achieve moderate growth, supported by rising awareness, growing adoption of dental prosthetics, increasing medical tourism, and expanding investment in minimally invasive procedures.

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Competitive Landscape

The biomaterials market features active competition among both established multinationals and specialized innovators. Leading companies include Invibio Ltd., Wright Medical Technology, Evonik Industries AG, Zimmer Biomet, DePuy Synthes, DSM Biomedical, and Corbion NV. These players prioritize new product development, strategic acquisitions, and global distribution network expansion to reinforce their market positions. Notable recent activity includes Evonik's acquisition of DURECT Corporation's LACTEL Absorbable Polymers product line to strengthen its drug delivery capabilities, and a multi-year development partnership between Invibio and In2Bones Global targeting orthopedic innovation. DSM's collaboration with PBC Biomed to develop novel bone adhesive materials further exemplifies the industry's focus on next-generation biomaterial solutions.

Outlook

The biomaterials market is positioned for robust long-term expansion, driven by converging forces of demographic aging, rising chronic disease burden, and continuous material science innovation. Advances in bioresorbable materials, smart biomaterials, and tissue engineering scaffolds are expected to unlock new clinical applications beyond traditional implants, further broadening market scope and long-term growth potential.