A regular column featuring excerpts from BCC Research reports on industry sectors involving the ceramic and glass industry.



Medical device coatings: Materials and markets

By BCC Publishing Staff

The global market for medical device coatings was valued at \$5.8 billion in 2022 and is expected to grow at a compound annual growth rate (CAGR) of 10.9% to reach \$9.7 billion by 2027.

Coatings are used to improve the biocompatibility of medical devices with the human body, reduce the risk of infection, prevent blood clotting, and improve the device's durability and longevity. Types of medical device coatings, which are used in various applications (Table 1), include

- Antimicrobial: Contains compounds that can kill or inhibit the growth of microorganisms, thus reducing the risk of infections caused by bacteria, viruses, and fungi.
- **Hydrophilic**: Designed to reduce the surface tension of water, thus improving the flow of liquids over various surfaces and helping prevent the build-up of biofilm and bacterial adhesion.
- **Drug-eluting**: Designed to release a specific drug or medication over time, thus providing controlled and sustained treatment at the affected site.
- Antithrombogenic: Used to deliver drugs or other agents that inhibit the formation of blood clots, thus reducing the formation of blood clots and preventing the potential complications associated with them.

Various types of materials are used for medical device coatings, but the polymers segment dominated the market with 43.6% in 2021, followed by metals and ceramics with 27.6% and 18.7%, respectively. Ceramics commonly used as medical device coatings include

- Alumina: Exhibits excellent corrosion resistance, good biocompatibility, high strength, and high wear resistance. Aluminas are prized for their protective capabilities.
- Hydroxyapatite: Helps with osseointegration, i.e., improves the bond between the implant and the surrounding bone. It also promotes bone growth.

Bioactive glasses are also used as medical device coatings. Patented bioactive glasses, marketed as Bioglass 45S5 and Ceravital, have been observed to promote bone ingrowth within one hour following implantation.

North America dominates the global medical device coatings market with a market share of 35.9% in 2021. The growing geriatric population, rise in hospital-acquired infections, and increase in healthcare expenditures are major factors contributing to the growth and development of medical device coatings in this region.

About the author

BCC Publishing Staff provides comprehensive analyses of global market sizing, forecasting, and industry intelligence, covering markets where advances in science and technology are improving the quality, standard, and sustainability of businesses, economies, and lives. Contact the staff at Helia.Jalili@ bccresearch.com.

Resource

BCC Publishing Staff, "Medical device coatings: Global markets," BCC Research Report HLC049F, March 2023. https://bit.ly/BCC-March-2023-coatings

Further readings

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K. Kottapenta, "The market for minimally invasive medical devices," BCC Research Report HLC051J, August 2023. https://bit.ly/BCC-August-2023-minimally-invasive-devices

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Table 1. Global market for medical device coatings, by application, through 2027 (\$ millions)				
Applications	2021	2022	2027	CAGR % (2022–2027)
General surgery	1,742.6	1,917.0	3,353.6	11.8
Cardiovascular devices	1,182.0	1,302.2	2,326.2	12.3
Orthopedics	874.2	954.9	1,636.9	11.4
Radiology	437.1	471.7	760.6	10.0
Dentistry	376.7	403.8	628.6	9.3
Neurology	286.2	301.2	428.3	7.3
Gynecology	228.7	237.9	318.2	6.0
Others	178.1	183.8	235.5	5.1
Total	5,305.6	5,772.5	9,687.9	10.9