# Superconductors Market to Garner $17.4 billion by 2032, Driven by R&D in particle Physics and Fusion Electricity

*The U.S. holds a significant market share due to its strong research and development capabilities, advanced technological infrastructure*

WILMINGTON, DELAWARE , UNITED STATES, March 15, 2024 /EINPresswire.com/ -- According to a new report published by Allied Market Research, titled, The superconductors market was valued at $6.8 billion in 2022, and is estimated to reach $17.4 billion by 2032, growing at a CAGR of 10% from 2023 to 2032. A superconductor is a material that can conduct electric current with zero electrical resistance. When cooled below a certain critical temperature, superconductors exhibit remarkable properties, such as the expulsion of magnetic fields (Meissner effect) and perfect diamagnetism. This unique behavior allows superconductors to carry large currents without any energy loss, making them highly efficient for various applications. The superconductors market trends showed a growing interest in high-temperature superconductors, advancements in cryogenic technologies, and increasing applications in renewable energy and power grid infrastructure.

> “The superconductors market is driven by factors such as a surge in demand for medical imaging, advances in quantum computing, and the transmission and distribution of power.”
>
> *Allied Market Research*

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Research and development in particle physics and fusion electricity is a big driving force for the superconductor market. Superconducting materials are critical in scientific studies, mainly in the creation of particle accelerators and fusion reactors. These advanced technologies closely rely on superconducting magnets and wires to generate and control high magnetic fields. For example, projects like the Large Hadron Collider (LHC) and ITER (International Thermonuclear Experimental Reactor) are the main consumers of superconducting substances. As ongoing advancements and investments continue to bolster those fields, the demand for superconducting materials grows, driving the growth of the superconductor market.

However, one of the key restraints in the superconductor market is the inherent limitations and performance variability of superconducting materials. These materials often demonstrate variations in critical current density and stability, making it difficult to achieve consistent and reproducible performance across different samples and batches. Additionally, material limitations such as brittleness and sensitivity to environmental factors can hinder their practicality and reliability in specific applications. These challenges related to material properties and performance can impede the widespread adoption and utilization of superconductors, requiring further research and development to address these limitations and enhance the superconductors market growth potential.

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On the other hand, a significant opportunity in the superconductor market lies in the field of transportation, particularly in the development of magnetic levitation (maglev) systems. Superconductors have the potential to revolutionize transportation by enabling frictionless travel. Maglev trains utilize superconducting magnets to achieve high speeds and energy efficiency. By further enhancing superconducting materials with higher critical temperatures and advancing maglev technologies, there are opportunities for the widespread adoption and expansion of maglev systems globally. These advancements can lead to more efficient and sustainable transportation solutions, offering a promising market opportunity for superconductors in the transportation sector.

The superconductors market is segmented on the basis of type, application, and region.
Based on type, the low temperature segment accounted for more than three-fifths of the total revenue in the global superconductors market in 2022, and it is expected to continue its dominant position throughout the forecast period. This segment's supremacy is attributed to its wide range of commercial applications, higher critical temperatures, and established usage in various industries. However, the high-temperature segment is poised for remarkable growth, projected to achieve a CAGR of 10.48% from 2023 to 2032, driven by increasing demand for practical and accessible superconducting materials and government support for ongoing research. HTS remains a significant driver of innovation in the market.

Based on application, the medical segment emerged as the market leader in the global superconductors market in 2022, holding the highest market share of two-fifths of the revenue. This segment is projected to maintain its leadership status throughout the forecast period. The remarkable growth is fueled by rising demand for advanced medical imaging technology, especially MRI systems, benefiting from superconducting magnets' strong and stable magnetic fields for high-resolution imaging.

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Ongoing research has led to technological advancements and hybrid systems, further boosting the segment's appeal. The electronics segment is expected to experience the fastest CAGR of 11.19% during the forecast period, driven by the increased adoption of superconducting materials in various electronic devices and systems. These materials offer unique properties with significant advantages in applications such as quantum computing and high-speed data transmission.

Based on region, North America dominated the superconductors market revenue in 2022, representing approximately one-third of the global market share, driven by thriving medical and defense industries. Investments in medical infrastructure and military spending in countries like the US and Canada fuel the demand for superconductors in medical devices and defense applications, including power railguns and coil guns.

However, the Asia-Pacific region is projected to witness the fastest CAGR of 11.09% from 2023 to 2032. This is due to robust infrastructure development, high-tech manufacturing industries, and increased investments in medical infrastructure in countries like China, India, and Malaysia. The region's focus on defense advancements, including advanced rail guns, further contributes to its prominence in the global superconductors market.

The superconductors market key players profiled in the report include Bruker Corporation, Furukawa Electric Co. Ltd., American Superconductor Corporation, Sumitomo Electric Industries, Ltd., Hitachi Ltd., Cryomagnetics Inc., Japan Superconductor Technology Inc., LS Cable & System Ltd., Hyper Tech Research, Inc., and Fujikura Ltd. The market players have adopted various strategies, such as product launches, collaborations, and new product developments to expand their foothold in the superconductors industry.

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• In 2022, by type, the low temperature segment was the highest revenue contributor to the market, with $4,281.45 million in 2022, and is estimated to reach $10,674.0 million by 2032, with a CAGR of 9.66%.
• According to the superconductors market analysis by application, the medical segment was the highest revenue contributor to the market, with $2,679.6 million in 2022, and is estimated to reach $7,001.01 million by 2032, with a CAGR of 10.17%.
• By region, North America was the highest revenue contributor, accounting for $2,194.16 million in 2022, and is estimated to reach $5,743.37 million by 2032, with a CAGR of 10.19%.

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