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Quantum Materials Market Forecasts to 2034 – Global Analysis By Material Type (Superconducting Materials, Topological Insulators, 2D Materials, Quantum Dots and Other Material Types), Quantum Property, Application, Material Form, End User and By Geography

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Abstracts

According to Stratistics MRC, the Global Quantum Materials Market is accounted for $3.7 billion in 2026 and is expected to reach $14.7 billion by 2034 growing at a CAGR of 18.5% during the forecast period. Quantum Materials are materials whose properties are governed by quantum mechanical effects, such as superconductivity, quantum entanglement, and topological states. These materials exhibit unique electrical, magnetic, and optical properties that are not observed in conventional materials. They are critical for applications in quantum computing, advanced electronics, and sensing technologies. Research in quantum materials is rapidly advancing, driven by the need for next-generation computing and communication systems. These materials are expected to play a transformative role in future technological innovations.

Market Dynamics:

Driver:

Advancements in condensed matter physics

Breakthroughs in understanding electron correlations, superconductivity, and topological phases have opened pathways for innovative applications. These developments enable the design of materials with unique quantum properties that can

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be harnessed for computing, sensing, and energy technologies. The growing body of research is also accelerating the transition from laboratory concepts to practical devices. As condensed matter physics continues to evolve, it strengthens the scientific basis for quantum materials and expands their commercial potential. This momentum ensures that the field remains a critical driver of market growth.

Restraint:

High research and development complexity

Creating stable quantum states requires precise control of material properties, which is technically challenging and resource-intensive. The need for advanced equipment, specialized expertise, and long development cycles increases costs and slows commercialization. Furthermore, scaling laboratory results into industrial applications often encounters unforeseen obstacles, adding to the difficulty. These complexities limit participation to well-funded institutions and companies, narrowing the competitive landscape. As a result, while progress is steady, the pace of market expansion is constrained by the demanding nature of R&D in quantum materials.

Opportunity:

Applications in next-generation electronics

Quantum materials such as superconductors, topological insulators, and 2D materials are being explored for use in ultra-fast processors, low-power memory, and advanced sensors. Their unique properties allow for breakthroughs in computing efficiency and device miniaturization. Industries ranging from consumer electronics to telecommunications are actively investing in these technologies to gain competitive advantages. The potential to revolutionize data processing and energy consumption makes quantum materials highly attractive for future electronics. As demand for smarter, faster, and more sustainable devices grows, this opportunity is expected to drive substantial market expansion.

Threat:

Uncertain scalability of quantum technologies

A key threat to the quantum materials market is the uncertain scalability of quantum technologies. While laboratory experiments demonstrate remarkable properties,

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replicating these results at industrial scale remains a challenge. Issues such as maintaining quantum coherence, ensuring material stability, and reducing production costs hinder widespread adoption. Competing technologies, including advanced semiconductor solutions, also pose risks by offering more immediate scalability. The lack of standardized processes further complicates commercialization, creating uncertainty for investors and developers. If scalability challenges persist, the market risks slower adoption compared to other emerging technologies.

Covid-19 Impact:

The Covid-19 pandemic had a mixed impact on the quantum materials market. On one hand, disruptions in global supply chains and restricted laboratory access slowed research progress and delayed projects. Many institutions faced funding challenges, reducing the pace of innovation. On the other hand, the pandemic accelerated digital transformation and highlighted the need for advanced computing and sensing technologies. This shift increased interest in quantum materials as enablers of next-generation infrastructure. As economies recover, renewed investments in R&D and government-backed initiatives are expected to offset earlier setbacks.

The superconductivity segment is expected to be the largest during the forecast period

The superconductivity segment is expected to account for the largest market share during the forecast period as superconductors are central to many quantum applications. Their ability to conduct electricity without resistance makes them vital for energy-efficient power transmission and advanced computing systems. Superconductors are also used in medical imaging, particle accelerators, and quantum computing, ensuring broad demand. Ongoing research is improving material performance at higher temperatures, expanding their practical applications. The versatility and proven utility of superconductors reinforce their dominance in the quantum materials market.

The aerospace & defense segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the aerospace & defense segment is predicted to witness the highest growth rate due to its reliance on advanced sensing and communication technologies. Quantum materials enable highly sensitive detectors, secure communication systems, and enhanced navigation tools, all critical for defense applications. Governments are investing heavily in quantum research to strengthen

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national security capabilities. The aerospace industry also benefits from quantum materials in areas such as lightweight superconducting components and advanced propulsion systems. Rising geopolitical tensions and defense modernization programs further accelerate adoption.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share owing to its strong research ecosystem and significant government funding. The presence of leading universities, national laboratories, and technology companies drives innovation in quantum materials. Robust investments in quantum computing, superconductivity, and advanced electronics reinforce regional dominance. The region also benefits from established industrial infrastructure and strong collaborations between academia and industry. Growing demand for energy-efficient technologies and secure communication systems further supports market expansion.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR driven by rapid industrialization and strong government support for quantum research. Countries such as China, Japan, and South Korea are investing heavily in quantum technologies to strengthen their global competitiveness. The region’s expanding semiconductor and electronics industries provide fertile ground for quantum material applications. Collaborative initiatives between universities and corporations are accelerating innovation and commercialization. Rising demand for advanced consumer electronics and communication systems further boosts growth prospects.

Key players in the market

Some of the key players in Quantum Materials Market include IBM Corporation, Intel Corporation, Microsoft Corporation, Google LLC, Rigetti Computing, D-Wave Quantum Inc., Infineon Technologies AG, NVIDIA Corporation, Quantum Brilliance, Oxford Instruments plc, Bruker Corporation, Quantum Solutions Inc., Infleqtion, Zapata Computing, Northrop Grumman Corporation, Lockheed Martin Corporation and Thales Group.

Key Developments:

In April 2026, Intel finalized a definitive agreement to repurchase a 49% equity interest

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in its Fab 34 joint venture in Ireland from Apollo for $14.2 billion. This capital acquisition strengthens Intel's balance sheet and ensures full control over the advanced manufacturing facilities required to produce next-generation quantum and AI-optimized processors in Europe.

In March 2026, IBM and Lam Research announced a major collaboration to develop novel materials and advanced processes for sub-1nm logic scaling. This partnership integrates High-NA EUV lithography techniques and new material science to support the future of semiconductor nanofabrication and quantum-centric supercomputing.

Material Types Covered:

- Superconducting Materials
- Topological Insulators
- 2D Materials
- Quantum Dots
- Other Material Types

Quantum Properties Covered:

- Superconductivity
- Quantum Confinement
- Topological States
- Spin States
- Other Quantum Properties

Applications Covered:

- Quantum Computing

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- Quantum Communication
- Quantum Sensing
- Photonics
- Research & Laboratory Use
- Other Applications

Material Forms Covered:

- Thin Films
- Nanostructures
- Bulk Crystals
- Quantum Devices
- Other Material Forms

End Users Covered:

- IT & Telecommunications
- Healthcare & Life Sciences
- Aerospace & Defense
- Energy
- Other End Users

Regions Covered:

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North America

United States

Canada

Mexico

Europe

United Kingdom

Germany

France

Italy

Spain

Netherlands

Belgium

Sweden

Switzerland

Poland

Rest of Europe

Asia Pacific

China

Japan

India

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- South Korea
- Australia
- Indonesia
- Thailand
- Malaysia
- Singapore
- Vietnam
- Rest of Asia Pacific

South America

- Brazil
- Argentina
- Colombia
- Chile
- Peru
- Rest of South America

Rest of the World (RoW)

- Middle East
  - Saudi Arabia
  - United Arab Emirates

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Qatar

Israel

Rest of Middle East

Africa

South Africa

Egypt

Morocco

Rest of 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 2023, 2024, 2025, 2026, 2027, 2028, 2030, 2032 and 2034
- 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)

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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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Contents

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10 GLOBAL QUANTUM MATERIALS MARKET, BY GEOGRAPHY

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List Of Tables

LIST OF TABLES

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Note: Tables for North America, Europe, APAC, South America, and Rest of the World (RoW) are also represented in the same manner as above.

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