

Carbon Nanotubes & Advanced Nanocomposites Market Forecasts to 2034 - Global Analysis By Product Type (Single-Walled Carbon Nanotubes (SWCNTs), Multi-Walled Carbon Nanotubes (MWCNTs) and Advanced Nanocomposites), Manufacturing Method, Application, End User and By Geography

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Abstracts

According to Statistics MRC, the Global Carbon Nanotubes & Advanced Nanocomposites Market is accounted for \$6.9 billion in 2026 and is expected to reach \$31.9 billion by 2034 growing at a CAGR of 21.1% during the forecast period. Carbon Nanotubes & Advanced Nanocomposites represent high-performance materials developed by integrating carbon nanotubes with polymeric, metallic, ceramic, and other matrix materials. This combination provides enhanced mechanical strength, rigidity, electrical conductivity, thermal stability, low weight, and improved durability. These materials are increasingly explored for aerospace structures, automotive components, electronic devices, energy technologies, construction materials, and medical applications. Improvements in nanotube functionalization, dispersion techniques, composite fabrication, and production scalability are supporting wider commercialization. Demand for lightweight and multifunctional materials is further encouraging innovation in advanced nanocomposite technologies worldwide.

According to the International Energy Agency (IEA), global battery demand for the energy sector, including electric vehicles and storage applications, reached 1 TWh in 2024, while electric-vehicle battery demand exceeded 950 GWh, increasing 25% from 2023. This supports demand for advanced conductive and lightweight materials relevant to carbon-nanotube-based composites and energy-storage applications.

Market Dynamics:

Driver:

Growing demand for lightweight and high-performance materials

Rising requirements for lightweight materials with superior performance are supporting growth in the Carbon Nanotubes & Advanced Nanocomposites Market. Carbon nanotubes can enhance composite strength, rigidity, conductivity, thermal characteristics, and durability while maintaining relatively low weight. Their potential is attracting interest from aerospace, automotive, electronics, and industrial manufacturers seeking materials with multiple functional advantages. Improvements in nanotube dispersion, surface treatment, and composite manufacturing are facilitating more effective incorporation into different matrices.

Restraint:

High production and processing costs

Elevated manufacturing and processing expenses can constrain expansion of the Carbon Nanotubes & Advanced Nanocomposites Market. Producing nanotubes with consistent characteristics, appropriate purity, and controlled structures often involves specialized equipment and complex processing methods. Expenses can further increase through purification, surface modification, dispersion, and integration with polymer, metal, or ceramic matrices. Consequently, manufacturers may limit large-scale deployment until production efficiencies, process optimization, and economies of scale reduce the cost of nanotube-based composite materials.

Opportunity:

Expansion in energy storage and battery technologies

Growing demand for advanced energy-storage technologies offers significant opportunities for Carbon Nanotubes & Advanced Nanocomposites. Carbon nanotubes can establish conductive pathways and reinforce electrode structures, potentially improving charge transfer, durability, power characteristics, and overall device performance. Their application is being investigated in batteries and supercapacitors used across electric vehicles, renewable-energy systems, consumer electronics, and other technologies. Continued development of nanotube-based electrode materials, processing techniques, and scalable manufacturing methods can support commercialization.

Threat:

Competition from alternative advanced materials

The availability of competing advanced materials can challenge expansion of the Carbon Nanotubes & Advanced Nanocomposites Market. Materials such as graphene, carbon fiber, nanocellulose, and ceramic nanomaterials can provide combinations of strength, conductivity, thermal performance, or low weight for overlapping applications. Ongoing improvements in competing technologies may enhance their manufacturing scalability, performance, and economic attractiveness. Manufacturers can choose among materials according to technical specifications, supply chains, processing requirements, and costs. Wider adoption of alternative materials could consequently restrict the potential expansion of carbon nanotube-based composites in selected applications.

Covid-19 Impact:

COVID-19 affected the Carbon Nanotubes & Advanced Nanocomposites Market by interrupting production, international logistics, workforce availability, and research programs. Factory closures and transportation restrictions created difficulties in obtaining raw materials, equipment, and specialized components, while industrial projects faced postponements. Reduced spending in aerospace, automotive, construction, and electronics temporarily weakened demand for advanced composites. At the same time, interest in healthcare applications, including filtration technologies, protective materials and diagnostic solutions, generated opportunities for nanotube-based materials.

The multi-walled carbon nanotubes (MWCNTs) segment is expected to be the largest during the forecast period

The multi-walled carbon nanotubes (MWCNTs) segment is expected to account for the largest market share during the forecast period because of their versatility, industrial suitability, and manufacturing practicality. They offer valuable mechanical, electrical, thermal, and reinforcement properties for integration into polymers, coatings, electronics, energy-storage systems, automotive parts, and aerospace components. Their ability to function effectively with various matrix materials facilitates broader industrial applications. Established processing approaches and demand for lightweight, durable, and multifunctional materials continue to encourage the incorporation of MWCNTs across numerous commercial and advanced technology applications

worldwide.

The healthcare & medical devices segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the healthcare & medical devices segment is predicted to witness the highest growth rate as research expands into biosensors, diagnostics, drug delivery, tissue engineering, and advanced medical components. Carbon nanotubes provide conductivity, high surface area, strength, and adaptable surface chemistry, enabling their investigation across emerging biomedical technologies. Continued development of nanotube-based healthcare applications and sophisticated diagnostic and therapeutic equipment is encouraging commercialization. Progress in biocompatibility, functionalization, and nanocomposite engineering can further increase their suitability for innovative medical applications and support sustained segment growth.

Region with largest share:

During the forecast period, the Asia Pacific region is expected to hold the largest market share, driven by developed manufacturing ecosystems, expanding electronics industries, automotive applications, energy-storage technologies, and nanomaterials research. China, Japan, and South Korea contribute substantially through their established industrial infrastructure and demand for nanotubes in batteries, electronic components, polymers, and advanced composites. Increasing technological investment and development of high-performance materials further strengthen regional activity. Close connections among nanotube producers, technology developers, manufacturers, and end-use industries are supporting broader utilization throughout the region.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR, supported by expanding industrial activity, electronics production, electric mobility, energy-storage technologies, and nanotechnology research. Countries including China, Japan, South Korea, and India are contributing through applications in batteries, automobiles, aerospace, semiconductors, and advanced composites. Strong manufacturing infrastructure and increasing research initiatives provide additional momentum. Growing regional production capabilities and wider use of carbon nanotubes in high-performance applications are expected to sustain market expansion throughout the forecast period.

Key players in the market

Some of the key players in Carbon Nanotubes & Advanced Nanocomposites Market include LG Chem, Cabot Corporation, Arkema, Nanocyl SA, OCSiAl, Jiangsu Cnano Technology, Resonac Corporation, Toray Industries, Evonik Industries AG, RTP Company, Carbon Solutions, Cheap Tubes, Hanwha Chemical, Kumho Petrochemical, Nanophase Technologies Corporation, Inframat Corporation, Nanoshel and Thomas Swan.

Key Developments:

In January 2026, Cabot Corporation has announced the signing of a multi-year supply agreement with PowerCo SE, a prominent European original equipment manufacturer specializing in electric vehicle (EV) battery production. PowerCo SE operates as a dedicated battery manufacturing subsidiary of the Volkswagen Group, one of the world's largest automotive companies.

In September 2025, LG Chem announced that Toyota Tsusho Corporation had acquired a 25% stake in LG-HY BCM, the company's cathode materials plant in Gumi, thereby joining as the second-largest shareholder. Toyota Tsusho, the general trading company of the Toyota Group, plays a vital role in Toyota Motor's raw material procurement.

Product Types Covered:

Single-Walled Carbon Nanotubes (SWCNTs)

Multi-Walled Carbon Nanotubes (MWCNTs)

Advanced Nanocomposites

Manufacturing Methods Covered:

Chemical Vapor Deposition (CVD)

Arc Discharge

Laser Ablation

Other Emerging Techniques

Applications Covered:

Electronics & Semiconductors

Energy Storage & Conversion

Aerospace & Defense

Automotive & Transportation

Healthcare & Biotechnology

Construction & Infrastructure

Packaging & Coatings

End Users Covered:

Electrical Equipment & Electronics Manufacturing

Energy & Power Utilities

Aerospace Industry

Automotive Industry

Healthcare & Medical Devices

Industrial Manufacturing

Construction Sector

Regions Covered:

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

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

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)

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

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