+357 96 030922
info@marketpublishers.com

Carbon Nanotubes Market Forecasts to 2032 – Global Analysis By Type (Single-Walled Carbon Nanotubes (SWCNTs) and Multi-Walled Carbon Nanotubes (MWCNTs)), Production Method, Application, End User and By Geography

https://marketpublishers.com/r/C6EA4FBD787CEN.html
Date: April 2025
Pages: 150
Price: US$ 4,150.00 (Single User License)
ID: C6EA4FBD787CEN

Abstracts

According to Stratistics MRC, the Global Carbon Nanotubes Market is accounted for $1.42 billion in 2025 and is expected to reach $2.87 billion by 2032 growing at a CAGR of 16.5% during the forecast period. Carbon Nanotubes (CNTs) are cylindrical nanostructures composed of carbon atoms arranged in a hexagonal lattice. They exist in single-walled (SWCNT) and multi-walled (MWCNT) forms, differing in the number of concentric tubes. CNTs exhibit exceptional mechanical strength, thermal conductivity, and electrical properties, making them valuable in electronics, nanotechnology, and materials science. Their high aspect ratio and lightweight nature contribute to applications in drug delivery, energy storage, and composite materials.

Market Dynamics:

Driver:

Rising demand in electronics & semiconductors

CNTs offer exceptional electrical conductivity, thermal stability, and mechanical strength. They are used in transistors, flexible displays, sensors, and conductive films, enabling the development of miniaturized, high-performance devices. CNTs enhance chip efficiency, heat dissipation, and energy storage in next-generation semiconductors and batteries. With the growth of 5G, AI, and IoT technologies, demand for faster, smaller, and more efficient electronic components is increasing, boosting CNT adoption.

+357 96 030922
info@marketpublishers.com

Restraint:

Limited standardization

Limited standardization in carbon nanotubes arises due to variations in synthesis methods, purity levels, structural properties, and functionalization techniques. Differences in diameter, length, chirality, and defect density impact CNT performance, making it difficult to establish uniform quality standards. This inconsistency hampers mass production, quality control, and commercial adoption, leading to challenges in regulatory approvals and industrial applications.

Opportunity:

Emerging applications in 3D printing

CNTs improve the strength, conductivity, and flexibility of 3D-printed polymers, metals, and composites, making them ideal for aerospace, automotive, and biomedical applications. Their excellent reinforcement capabilities enable lightweight yet durable structures, increasing demand in customized electronics, medical implants, and high-performance components. Additionally, CNT-infused filaments support the development of functional and conductive 3D-printed materials, expanding possibilities in smart devices and energy storage. As 3D printing advances, CNT adoption accelerates, boosting market expansion and innovation.

Threat:

Competition from alternative nanomaterials

Alternative nanomaterials to CNTs include graphene, boron nitride nanotubes, carbon and nanocellulose. Graphene, with its superior electrical and mechanical properties, is a major competitor in electronics and energy storage. BNNTs offer better thermal stability, making them preferable in aerospace applications. These alternatives hamper CNT market growth by offering lower production costs, better dispersion, or enhanced properties, leading industries to shift focus toward more scalable and efficient nanomaterials.

Covid-19 Impact:

+357 96 030922
info@marketpublishers.com

The covid-19 pandemic disrupted the carbon nanotubes market due to supply chain interruptions, reduced manufacturing activities, and delays in R&D projects. Industries like electronics, automotive, and aerospace faced slowdowns, affecting CNT demand. However, the healthcare sector boosted CNT applications in biosensors and drug delivery. Post-pandemic recovery led to renewed investments in nanotechnology, energy storage, and advanced materials, driving market growth.

The arc discharge segment is expected to be the largest during the forecast period

The arc discharge segment is expected to account for the largest market share during the forecast period. Arc discharge is a common method for synthesizing carbon nanotubes (CNTs) by generating plasma between two graphite electrodes in an inert gas environment, typically helium or argon. This method produces high-quality single-walled (SWCNTs) and multi-walled (MWCNTs) with fewer structural defects. It remains popular due to its ability to produce CNTs with excellent electrical and mechanical properties.

The structural composites segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the structural composites segment is predicted to witness the highest growth rate. CNTs enhance structural composites by improving mechanical strength, electrical conductivity, and thermal stability. When added to materials like polymers, metals, and ceramics, CNTs significantly increase stiffness, toughness, and durability, making them ideal for aerospace, automotive, and construction applications. Their lightweight nature contributes to fuel efficiency in vehicles and aircraft.

Region with largest share:

During the forecast period, the Asia Pacific region is expected to hold the largest market share, due to increasing demand in electronics, energy storage, and automotive industries. Countries like China, Japan, and South Korea lead in CNT production and applications, driven by strong R&D investments and industrial advancements. The region’s thriving semiconductor and EV sectors boost CNT adoption in batteries and conductive materials. Government initiatives supporting nanotechnology and renewable energy further enhance market expansion.

Region with highest CAGR:

+357 96 030922
info@marketpublishers.com

Over the forecast period, the North America region is anticipated to exhibit the highest CAGR, due to increasing demand in aerospace, defense, electronics, and energy storage applications. The United States leads the region, driven by strong R&D investments, government funding, and advancements in nanotechnology. CNTs are widely used in EV batteries, composites, and medical applications, boosting market growth. North America remains a key market, fostering new applications and commercialization of CNT-based technologies.

Key players in the market

Some of the key players in Carbon Nanotubes Market include LG Chem, Arkema SA, Cabot Corporation, OCSiAl, Resonac Holdings Corporation, Toray International Group Limited, Jiangsu Cnano Technology Co., Ltd., Kumho Petrochemical Co., Ltd., Timesnano, Klean Commodities, Nanocyl SA, Nanoshel LLC, Thomas Swan & Co. Limited, CHASM Advanced Materials, Inc., Sumitomo Corporation, Nanolab Inc., Cheap Tubes, Inc., Nano-C, Carbon Solutions, Inc. and Raymor Industries.

Key Developments:

In April 2024, Canatu and Denso announced the startup of their jointly developed carbon nanotube reactor at Canatu’s factory in Finland. This reactor was designed to scale up the production of CNT film, particularly for the automotive industry's advanced driver assistance systems (ADAS) market, where demand has been increasing.

In March 2021, Cabot Corporation introduced the ENERMAX™ 6 carbon nanotube series, characterized by a high aspect ratio, making it the most conductive multi-walled CNT product in their portfolio. This series is designed to enhance battery performance at lower loadings, thereby enabling higher energy density in batteries.

Types Covered:

Single-Walled Carbon Nanotubes (SWCNTs)

Multi-Walled Carbon Nanotubes (MWCNTs)

Production Methods Covered:

Chemical Vapor Deposition (CVD)

+357 96 030922
info@marketpublishers.com

- Arc Discharge
- Laser Ablation
- Flame Synthesis
- Plasma Torch
- Other Production Methods

Applications Covered:

- Smart Fabrics
- Water Purification
- Reaction Enhancement
- Structural Composites
- Conductive Films
- Other Applications

End Users Covered:

- Electronics & Electrical
- Automotive & Transportation
- Healthcare & Biomedical
- Energy & Power
- Sports

+357 96 030922
info@marketpublishers.com

- Construction & Infrastructure
- Other End Users

Regions Covered:

- North America
  - US
  - Canada
  - Mexico
- Europe
  - Germany
  - UK
  - Italy
  - France
  - Spain
  - Rest of Europe
- Asia Pacific
  - Japan
  - China
  - India
  - Australia

+357 96 030922
info@marketpublishers.com

New Zealand

South Korea

Rest of Asia Pacific

South America

Argentina

Brazil

Chile

Rest of South America

Middle East & Africa

Saudi Arabia

UAE

Qatar

South Africa

Rest of Middle East & 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 2024, 2025, 2026, 2028, and 2032
- 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

+357 96 030922
info@marketpublishers.com

- 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

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

+357 96 030922
info@marketpublishers.com

Contents

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

10 KEY DEVELOPMENTS

+357 96 030922
info@marketpublishers.com

11 COMPANY PROFILING

+357 96 030922
info@marketpublishers.com

List Of Tables

LIST OF TABLES

+357 96 030922
info@marketpublishers.com

Note: Tables for North America, Europe, APAC, South America, and Middle East & Africa Regions are also represented in the same manner as above.

+357 96 030922
info@marketpublishers.com

I would like to order

Product name: Carbon Nanotubes Market Forecasts to 2032 – Global Analysis By Type (Single-Walled Carbon Nanotubes (SWCNTs) and Multi-Walled Carbon Nanotubes (MWCNTs)), Production Method, Application, End User and By Geography

Product link: https://marketpublishers.com/r/C6EA4FBD787CEN.html

Price: US$ 4,150.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:
info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page https://marketpublishers.com/r/C6EA4FBD787CEN.html