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Carbon Nanotubes (CNT) Market – Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmented By Type (Multi-Walled Carbon Nanotubes and Single-Walled Carbon Nanotubes), By Method (Chemical Vapor Deposition, Catalytic Chemical Vapor Deposition, High Pressure Carbon Monoxide Reaction and Others), By Application (Structural Polymer, Conductive Polymer, Conductive Adhesives, Metal Matrix Composites, Li-ion Battery Electrodes), By End User (Electronics & Semiconductors, Advanced Materials, Chemical & Polymers, Batteries & Capacitors, Aerospace & Defense, Energy, Medical and Others), By Region & Competition, 2021-2031F

https://marketpublishers.com/r/CF047066C2D9EN.html
Date: May 2026
Pages: 180
Price: US$ 4,500.00 (Single User License)
ID: CF047066C2D9EN

Abstracts

The Global carbon nanotubes (CNT) market is anticipated to expand from USD 3.79 billion in 2025 to USD 8.63 billion by 2031, reflecting a compound annual growth rate of 14.7%. These nanoscale cylindrical carbon structures are highly valued for their outstanding electrical conductivity, thermal capabilities, and tensile strength. Market expansion is largely fueled by the growing need for robust yet lightweight materials in the aerospace and automotive industries, coupled with their increasing use in advanced electronics and semiconductors. Furthermore, their essential function in optimizing energy storage systems, especially by boosting the energy density and performance of electric vehicle batteries, significantly contributes to this upward trajectory.

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Highlighting this substantial industrial growth, a March 2026 report in Nano Letters noted that the worldwide annual production capacity for carbon nanotubes has surpassed 5,000 tons. Nevertheless, even with this impressive scaling, the market faces significant hurdles that restrict more widespread adoption. The primary obstacles include the steep costs of production and the intricate technical difficulties involved in maintaining uniform purity and high quality during large-scale manufacturing operations.

Market Driver

A major catalyst propelling the global carbon nanotubes (CNT) market is their surging utilization in electric vehicles (EVs) and initiatives focused on reducing vehicle weight. CNTs deliver outstanding characteristics that are vital for improving the performance and energy density of EV batteries, while simultaneously aiding the creation of exceptionally strong, lightweight composites for automotive manufacturing. Underscoring this strong demand, Cabot Corporation announced in its February 2026 financial report that its Performance Chemicals division, which includes battery materials, saw a 7% year-over-year rise in earnings before interest and taxes during the first quarter of fiscal year 2026.

An additional force driving market expansion is the surge in research and development funding dedicated to progressing CNT applications and related technologies. Such financial commitments are essential for upgrading manufacturing techniques, enhancing the quality of materials, and discovering novel applications in various high-tech industries. Demonstrating this commitment, the U.S. Department of Energy's Office of Critical Minerals and Energy Innovation introduced a $500 million funding initiative in March 2026 to enhance battery material manufacturing and recycling, directly benefiting components like CNTs. Highlighting the maturity of the supply chain, LG Chem confirmed in an October 2025 update that it consistently delivers several thousand tons of carbon nanotubes each year.

Market Challenge

The expansion of the global carbon nanotubes (CNT) market is considerably hindered by steep production expenses and the difficulty of ensuring uniform purity and quality on an industrial level. The high costs of manufacturing, driven by the need for complex synthesis methods and specialized machinery, inevitably lead to increased prices for consumers. Consequently, CNTs become less competitive when compared to traditional, more affordable materials, which restricts their use in budget-conscious segments of the aerospace and automotive industries. Illustrating the broader economic

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strain on advanced materials, a September 2025 survey by the National Association of Manufacturers revealed that 68.1% of U.S. manufacturers identified rising raw material costs as a primary business obstacle.

Moreover, the challenge of preserving standard quality and purity levels throughout massive production runs poses substantial risks to the market. Consistent material traits are absolute necessities for demanding applications in advanced composites and electronics, as any deviations can severely undermine structural strength or device functionality. Such unpredictability generates hesitation among industrial buyers, leading to extended product development cycles and a need for more rigorous testing. Ultimately, the absence of dependable, standardized purity during large-scale manufacturing diminishes industry confidence and slows down the incorporation of CNTs into high-volume production lines.

Market Trends

A prominent trend shaping the global carbon nanotubes (CNT) market is their increasing incorporation into wearable and flexible electronic devices. Because CNTs provide critical attributes like transparency, mechanical pliability, and strong electrical conductivity, they are perfectly suited for modern conductive textiles, sensors, and displays. These features facilitate the creation of highly durable, lightweight, and thin electronics capable of adapting to uneven shapes. The momentum of this integration is reflected in the wider electronics industry, with India's Ministry of Electronics and Information Technology forecasting the domestic electronics market to hit $300 billion by 2025–26, highlighting a surging need for sophisticated materials such as CNTs.

Another key market trend is the rapid commercialization of single-walled carbon nanotubes (SWCNTs). While they have historically been difficult to manufacture on a massive scale, recent breakthroughs in synthesis methods are enabling their shift from laboratory research to full-scale industrial use. Compared to their multi-walled counterparts, SWCNTs deliver superior physical strength and electrical conductivity, making them highly sought after for demanding uses like high-frequency electronics and advanced battery enhancements. Highlighting the market's increasing preparedness for these solutions, OCSiAl launched a new European manufacturing plant in Serbia in October 2024, boasting a starting annual production capacity of 60 tonnes of graphene nanotubes.

Key Market Players

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Arkema S.A.

Nanocyl S.A.

Showa Denko K.K.

Cheap Tubes Inc.

LG Chem Ltd.

Thomas Swan & Co. Ltd.

Applied Nanostructured Solutions Inc.

Cnano Technology Ltd.

Raymor Industries Inc.

OCSiAl S.A.

Report Scope

In this report, the Global Carbon Nanotubes (CNT) Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

Carbon Nanotubes (CNT) Market, By Type

Multi-Walled Carbon Nanotubes

Single-Walled Carbon Nanotubes

Carbon Nanotubes (CNT) Market, By Method

Chemical Vapor Deposition

Catalytic Chemical Vapor Deposition

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- South Korea

South America

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- Argentina
- Colombia

Middle East & Africa

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South Africa

Saudi Arabia

UAE

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the Global Carbon Nanotubes (CNT) Market.

Available Customizations:

Global Carbon Nanotubes (CNT) Market report with the given market data, TechSci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

Detailed analysis and profiling of additional market players (up to five).

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