

Carbon Nanotubes Market by Type (Single Walled & Multi Walled), End-use Industry (Electronics & Semiconductors, Chemical Materials & Polymers, Structural Composites, Energy & Storage, Medical), Method, and Region - Global Forecast to 2028

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Abstracts

The carbon nanotube (CNT) market size is projected to reach USD 2.3 billion by 2028 at a CAGR of 14.6% from USD 1.1 billion in 2022. The SWCNT, by type segment is estimated to account for the largest share in terms of value of the carbon nanotube (CNT) market in 2022.

“MWCNTs, by type likely to account for the largest share of carbon nanotube market in terms of volume.”

Carbon cylinders or tubes in concentric alignment make up MWCNT. Carbon end-caps are typically used to seal the ends of the tubes. Herringbone, bamboo, and double-wall tubes are further MWCNT variations. Comparatively speaking to SWCNTs, MWCNTs are simpler to manufacture in large quantities.

MWCNTs are employed in a variety of products due to their high electrical conductivity, including conductive heating films, conductive transparent electrodes, conductive nano inks, displays, nanodevices, chemical sensors, super batteries, supercapacitors energy storage, solar power cells, thermal interface material, and others.

“Energy & storage accounted for the fastest growing end-use industry segment of carbon nanotube (CNT) market.”

In terms of volume, energy & storage is where CNTs are most widely used. Lithium-ion

batteries are in high demand for automobiles since they are lightweight and have a high energy density. Used in hybrid cars, notebook computers, and cell phones, these batteries offer the best energy density per weight.

During the projection period, it is anticipated that the market for lithium-ion batteries would be driven by the rising use of plug-in hybrid electrical vehicles (PHEV) and portable electronic gadgets. In the energy & storage sector, this is anticipated to drive the market for carbon nanotubes. Due to numerous nations' initiatives to reduce CO₂ emissions and maintain a greener environment, many automakers have begun concentrating on EVs.

“Lithium-ion batteries, by sub-application accounted for the largest growing end-use industry segment of CNT market.”

In vehicles that require solutions that are lightweight and have a high energy density, the demand for lithium-ion batteries is rising quickly. Cell phones, notebook computers, and hybrid cars all use these batteries because they have the best energy density per weight.

Two electrodes (known as the anode or negative electrode), a cathode (known as the positive electrode), and an electrolyte—a material that is electrically conductive and allows charged particles or ions to move easily—make up lithium batteries, which are frequently used in portable electronics. In the electrodes of these batteries, CNTs are utilized. CNTs are employed as electrode components in capacitors. As a result of CNTs' high density and high orientation properties, this reduces the internal resistance of the capacitor.

“Asia Pacific, by region is forecasted to be the fastest growing segment of carbon nanotubes market during the forecast period.”

The largest market is in Asia Pacific and is anticipated to continue to be such in the foreseeable future. The main end-use industries for CNTs include the building & construction, automotive, and electrical & electronics sectors. Vehicle sales in the region are anticipated to rise as a result of the growth of the region's road and transport networks as well as government programs aimed at promoting industrial and infrastructure development. This is anticipated to have a positive effect on the market over the course of the forecast period. Due to its expanded industrial production over the previous five years, China is currently leading the world in the demand for CNTs. The relocation of manufacturing operations for the automotive, chemical, and aerospace

sectors from established markets to developing nations is another factor driving the industry.

Breakdown of Primary Interviews:

By Company Type: Tier 1 – 46%, Tier 2 – 36%, and Tier 3 – 18%

By Designation: C Level – 18%, D Level – 27%, and Others – 55%

By Region: North America – 18%, Asia Pacific – 55%, Europe – 9%, and the Middle East & Africa – 9% Latin America- 9%,

The key companies profiled in this report are LG Chemicals Limited (South Korea), Cabot Corporation (US), Resonac Corporation (Showa Denko K.K.) (Japan), Jiangsu Cnani Technology (China), Timesnano (Chengdu Organic Chemicals Co. Ltd.) (China), Nanocyl SA (Belgium), Arkema SA (France), Sumitomo Corporation (Japan), Cheap Tubes, Inc. (US), Hanwha Corporation (South Korea).

Research Coverage:

The carbon nanotube (CNT) market has been segmented based on Type (Single-walled Carbon Nanotube (SWNT), Multi-walled carbon nanotube (MWCNT)), Method (Chemical Vapor Deposition, Catalytic Chemical Vapor Deposition, High-Pressure Carbon Monoxide Reaction, Others), End-use Industry (Electronics & Semiconductors, Energy & Storage, Structural Composites Application, Chemical Materials & Polymers, Medical, and Others), and by Region (Asia Pacific, North America, Europe, South America, Middle East & Africa).

This report provides insights on the following pointers:

Analysis of key drivers (Emerging demand from the APAC region, High growth of end-use industries, such as electrical & electronics and automotive, Increasing demand for lightweight and low carbon-emitting vehicles), restraints (Environmental concerns and health & safety issues), opportunities (Growth in emerging applications), and challenges (Maintaining quality and reducing processing cost) influencing the growth of the carbon nanotube (CNT) market.

Product Development/Innovation: Detailed insight of upcoming technologies,

research & development activities, and new product launch in the carbon nanotube (CNT) market.

Market Development: Comprehensive information about lucrative markets – the report analyses the carbon nanotube (CNT) market across varied regions.

Market Diversification: Exclusive information about the new products & service untapped geographies, recent developments, and investments in carbon nanotube (CNT) market.

Competitive Assessment: In-depth assessment of market shares, growth strategies and service offerings of leading players like LG Chemicals Limited (South Korea), Cabot Corporation (US), Resonac Corporation (Showa Denko K.K.) (Japan), Jiangsu Cnani Technology (China), Timesnano (Chengdu Organic Chemicals Co. Ltd.) (China), among other in the carbon nanotube (CNT) market.

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