

Single-Walled Carbon Nanotubes Market Revenue to cross \$1,014 Million by 2027 – Astute Analytica

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The [Global Single-Walled Carbon Nanotube Market](#) revenue was US\$ 191.1 Million in 2021. The Global Single-Walled Carbon Nanotube Market is forecast to reach a revenue of US\$ 1,014 Million by 2027, growing at a CAGR of 32.1% during the forecast period from 2022 to 2027.

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The single-walled carbon nanotube is a one-dimensional, cylindrical nanostructure of carbon molecules. In addition, due to its thermal, electrical, and physical features, many industries, including military & aerospace, sports, polymers, electrical & electronics, automotive, energy, chemicals, etc., use single-walled carbon nanotubes. Excellent electrical qualities make CNTs and their derivatives suitable for usage in base materials like reinforcement and polymers.

Aspects Affecting Market Growth

Market Drivers

Increasing demand for renewable energy sources and growing demand for SWCNT in end-use sectors will boost the market during the forecast period.

CNTs have exceptional physio-chemical qualities that make them perfect for usage in the military and aerospace industries, including optical, electrical, and thermal conductivity, chemical reactivity, and high tensile strength. In the electrical industry, conductive polymers based on carbon nanotubes are extensively being used to prevent electrostatic discharges.

The rising environmental problems owing to the increasing usage of coal and petroleum

products as primary energy sources have increased the acceptance of renewable energy sources. Thus, this factor fuels the acceptance of CNTs in these industries.

Market Restraints

Production challenges coupled with high prices and increasing demand for inorganic and boron nitride nanotubes hamper the growth of SWCNT.

The increased price of preparing appropriate conditions for carbon nanotube expansion and its ultimate commercial scale-up constraints raise the production prices of carbon nanotubes.

Thus, the increased cost of SWCNTs has limited their penetration in industries, which is likely to have a negative impact on global market growth.

The across-the-board adoption of inorganic and boron nitride may slow down the overall industry growth.

Market Trends

The factors offering lucrative opportunities for market expansion include the commercial release of CNT transistors, biomedical applications of carbon nanotubes, and the increasing scope of applications for carbon nanotubes driven by research and development.

Market Segments

On the basis of type, the armchair-form carbon nanotube segment will exhibit the highest market share over the forecast period, and chiral-form carbon nanotubes will witness the highest CAGR.

In 2021, in terms of the synthesis process, the chemical vapor deposition segment held dominance in the market. However, high-pressure carbon monoxide is forecast to grow at a CAGR for the forecast period.

Based on application, the conductive polymer composites segment is likely to hold the largest share during the forecast period due to the rising demand for polymers across the construction and automotive sector.

On the basis of end users, the biomedical segment is forecast to experience the highest CAGR over the forecast period owing to the use of CNTs in biological systems that brings progress in medical science, mainly in disease treatments, biosensing, diagnostics, and drug delivery.

In terms of Geography, Asia Pacific is forecast to witness the highest share and CAGR in the global single-walled carbon nanotubes market.

The Region's Growth Factors

In North America, the U.S. dominated the Market in 2021 in terms of revenue

In 2021, the U.S. garnered the highest market share, while, during the forecast period, Mexico is likely to grow at the fastest CAGR in the region's market.

On the basis of end users, in 2021, the electronics & semiconductors segment accounted for most of the revenue in the industry in North America owing to the increase in the application of SWCNT in the energy sector. In 2021, the conductive polymer composites application segment accounted for the maximum market share.

In Europe, during the forecast period, Poland is forecast to experience the highest CAGR in the market

In terms of revenue, Germany garnered a major market share in 2021. However, Poland would see the greatest CAGR during the predicted period.

Based on end-users, during the forecast period, the biomedical segment is likely to witness the highest CAGR as a result of the use of CNTs in biological systems that carries progress in medical science, particularly in disease treatments, biosensing, diagnostics, and drug delivery.

In terms of the synthesis process in 2021, the chemical vapor deposition segment held dominance in the Europe market.

In the Asia-Pacific Single-Walled Carbon Nanotubes Market, China dominated the market in 2021

On the basis of country, China maintained the highest market share in 2021. However, Japan is forecast to witness the highest CAGR in the APAC single-walled carbon nanotubes market over the projection period due to the existence of leading market participants and end-use sectors such as automotive and electrical & electronics in the marketplace.

In terms of type, the armchair form carbon nanotube segment will dominate the market during the forecast period.

South Africa is forecast to be the leading market in MEA single-walled carbon nanotubes market during the forecast period.

In terms of country, during the forecast period, South Africa is likely to grow at the highest CAGR in the MEA market due to the growing construction activities in the region.

However, in 2021, the rest of MEA retained the major share in the Middle East & Africa single-walled carbon nanotubes market. In addition, sensor applications are likely to grow at the highest CAGR over the forecast period.

Brazil accounted for the major South America Single-Walled Carbon Nanotubes Market share in 2021

Argentina is forecast to have the highest CAGR growth in the South America market over the projection period. However, Brazil leads with the highest share in 2021.

On the basis of the synthesis process, in 2021, the chemical vapor deposition segment held dominance in the market. However, high-pressure carbon monoxide is forecast to grow at the fastest rate during the forecast period.

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Competitive Landscape

OCSiAl is a multinational corporation engaged in nanotechnology and is the biggest producer of graphene nanotubes in the world. Its main office is in Luxembourg, with operations in countries including Asia, Europe, and North America.

Thomas Swan & Co., headquartered in England in 1926, is a well-known independent producer of fine and performance chemicals. The business produces more than 100 products in amounts ranging from one kilogram to many tonnes, and it also provides a knowledgeable and adaptable custom manufacturing service.

Continental Carbon Nanotechnologies, Inc., established in Houston, Texas, offers high-quality carbon nanotube blends and & carbon nanotubes. Additionally, they provide kilogram quantities of CNT for developing applications or grams for study.

ZEON is a global pioneer in specialty polymers, elastomers, and specialty chemicals and has been manufacturing cutting-edge specialized elastomers since 1950. They have a global network of manufacturing facilities in North America and Asia and R&D space in Japan, the U.S., Singapore, and China.

Segmentation Analysis

The global single-walled carbon nanotubes market segmentation focuses on Type, Synthesis Process, Application, End-User, and Region.

By Type segment

Armchair Form Carbon Nanotube

Zigzag Form Carbon Nanotube

Chiral Form Carbon Nanotube

By Synthesis Process segment

Arc Discharge

Laser Ablation

Chemical Vapor Deposition

High-Pressure Carbon Monoxide

Others

By Application segment

Conductive Adhesives

Conductive Polymer Composites

Fire Retardant Plastics

Li-ion Battery Electrodes

Metal Matrix Composites

Structural Polymer Composites

Sensor Applications

Others

By End User segment

Aerospace & Defence

Automotive

Electronics & Semiconductors

Energy

Chemicals

Sporting Goods & Leisure products

Biomedical

Other Industrial Applications

By Region segment

North America

The U.S.

Canada

Mexico

Europe

Western Europe

The UK

Germany

France

Italy

Spain

Rest of Western Europe

Eastern Europe

Poland
Russia
Rest of Eastern Europe

Asia Pacific
China
India
Japan
Australia & New Zealand
ASEAN
Rest of Asia Pacific

Middle East & Africa (MEA)
UAE
Saudi Arabia
South Africa
Rest of MEA

South America
Brazil
Argentina
Rest of South America

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