Global Advanced Carbon Materials Market - Materials and Applications

Market Report | 2025-05-01 | 418 pages | Industry Experts

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Report description:

Advanced Carbon Materials Market Trends and Outlook

Advanced Carbon Materials are a specialized class of materials utilized in engineering and scientific innovations due to their exceptional chemical, physical and electrical characteristics. Major types of the same comprise carbon fibers, carbon foams, carbon nanotubes (CNTs), fullerenes and graphene. Due to their distinctive and fundamental characteristics, Advanced Carbon Materials are regarded as the backbone of scientific revolution of the 21st century. They are widely used in various end-use applications, such as aerospace, sporting goods, medical, civil engineering, electronics, biosensors, marine, seismic retrofitting and water & waste management where low weight, high tensile strength, durability, impact absorption, resistance and stiffness are indispensable properties to have.

The high stiffness, high tensile strength and low weight of Carbon Fibers, for example, enable their wide use in composite materials for high-performance applications, such as automotive, aerospace and sports equipment. Graphene comprises a single layer of carbon atoms that is arranged in a hexagonal lattice and offers exceptional electrical conductivity, flexibility and strength, allowing it to be utilized in areas as diverse as flexible electronics, sensors and energy storage devices. Carbon Nanotubes (CNTs) form another type of Advanced Carbon Materials, the remarkable strength, electrical conductivity and thermal stability properties of which make them ideal in the aerospace, electronics and nanotechnology sectors.

Global Advanced Carbon Materials market size is estimated at US$6.6 billion in 2024 and is projected to reach US$14.1 billion by 2030 at a CAGR of 13.6% between 2024 and 2030. Demand for advanced carbon materials is being driven by several factors, which include their distinctive properties and applications in various end-use sectors. The increasing need for lightweight, high-strength materials in the automotive, aerospace and energy industries is bolstering the market. Developments in carbon nanomaterials, including graphene and carbon nanotubes, are instrumental in creating new prospects in the fields of energy storage batteries, electronics, biomedical and other sectors. Apart from this, carbon composites are being adopted increasing in energy sector, such as wind blades, solar panels and lithium-ion batteries. Increased investments in research & development are striving towards making these materials more sustainable and lightweight as per the required criteria. Cost-cutting and development of environment-friendly production processes to meet the need of end-users have also been major key factors in surging the demand further.

Advanced Carbon Materials Regional Market Analysis

The report reviews, analyzes and projects the Advanced Carbon Materials market for global and regional markets including the North America, Europe, Asia-Pacific and Rest of World for the period 2021-2030 terms of value (US$ million). Asia-Pacific is the leading global market for Advanced Carbon Materials with a share of 45% in 2024, followed by Europe and North America. Asia-Pacific is also expected to be the fastest growing market with a CAGR of 16% during 2024-2030 attributed to several factors, which include expansion in various industries, such as electronics, automotive, energy storage and rapid industrialization. Significant investments across China, South Korea and Japan in nanotechnology and cutting-edge materials, along with robust backing by the governments in promoting sustainable development and innovations, are stimulating the market.

Advanced Carbon Materials Analysis by Material Type
Advanced Carbon Materials analyzed in this study include Carbon Fibers, Carbon Nanotubes, Graphene, Fullerenes and Carbon Foams. Carbon Fibers are the largest material type in the global market for Advanced Carbon Materials with a share of 67% in 2024. The extensive use of carbon fibers in the manufacturing of diverse composite applications in the energy, electronics, construction and automotive sectors has been fostering industry expansion. However, the demand for Graphene is projected to post the fastest CAGR of around 24% between 2024 and 2030 to reach US$643 million by 2030, owing to their growing demand as conductive materials in energy storage batteries.

Advanced Carbon Materials Market Analysis by End-use Application

Application areas analyzed in the study include Aerospace & Defense, Sports & Leisure, Energy, Automotive & Transportation, Construction/Infrastructure, Electrical & Electronics, Medical and Other Applications. Global value market for Advanced Carbon Materials is led by Aerospace & Defense and Energy applications, demand for which is estimated at around US$2 billion each in 2024. During the outlook period, demand for Advanced Carbon Materials in Energy sector is slated to post the fastest CAGR of 18.6% to reach US$5.6 billion by 2030. Driving factors for these materials usage in the Energy sector include substantial increase in the usage of carbon nanotubes and graphene as conductive additives in cathodes and anodes of energy storage batteries such as li-ion, as well as rapid growth in demand for carbon fibers in wind blade production over the outlook period.

Advanced Carbon Materials Market Report Scope

This global report on Advanced Carbon Materials analyzes the global and regional market based on material type and end-use application for the period 2021-2030 in terms of value in US$. In addition to providing profiles of major companies operating in this space, the latest corporate and industrial developments as well as key market trends influencing the industry have been covered to offer a clear panorama of how and where the market is progressing.

Key Metrics
Historical Period: 2021-2023
Base Year: 2024
Forecast Period: 2024-2030
Units: Value market in US$
Companies Mentioned: 160+

Advanced Carbon Materials Market by Geographic Region
-North America (The United States and Canada)
-Europe (France, Germany, Italy, Spain, The United Kingdom and Rest of Europe)
-Asia-Pacific (China, India, Japan, South Korea, Taiwan and Rest of Asia-Pacific)

-Rest of World (Brazil, Russia, Turkiye and Other Rest of World)

Advanced Carbon Materials Market by Material Type
-Carbon Fibers
-Carbon Foams
-Carbon Nanotubes (CNTs)
-Fullerenes
-Graphene

Advanced Carbon Materials Market by End-use Application
-Aerospace & Defense
-Sports & Leisure
-Energy
-Automotive & Transportation
-Construction/Infrastructure
-Electrical & Electronics
-Medical
-Other Applications

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- Aligned Carbon (United States)
- American Dye Source, Inc. (Canada)
- American Elements Corp. (United States)
- Applied Graphene Materials plc (United Kingdom)
- Applied Nanotech, Inc. (United States)
- Arkema Group (France)
- Arry International GmbH (Germany)
- Asbury Carbons Inc. (United States)
- Avanzare Innovaci?n Tecn?logica S.L. (Spain)
- Aztrong Corporation (Taiwan)
- BeDimensional S.p.A. (Italy)
- Bergen Carbon Solutions AS (Norway)
- BESTGRAPHENE Co.,Ltd. (South Korea)
- Black Swan Graphene Inc. (Canada)
- Bluestar Fibres Corporation (China)
- BTCorp Generique Nano Private Ltd (India)
- Cabot Corporation (United States)
- Canatu Oy (Finland)
- Carbon Gates Technologies LLC (United States)
- Carbon Solutions, Inc. (United States)
- Carbon Waters (France)
- CealTech AS (Norway)
- CFOAM LLC (United States)
- Changsheng (Langfang) Technology Co., Ltd. (China)
- CHASM Advanced Materials, Inc. (United States)
- Cheap Tubes Inc. (United States)
- Chengdu Zhongke Times Nano Energy Tech Co., Ltd (China)
- CNT Solution Co., Ltd. (South Korea)
- Continental Carbon Nanotechnologies, Inc. (United States)
- DexMat (United States)
- Deyang Encarbon Technology Co. Ltd (China)
- Directa Plus S.p.A. (Italy)
- DowAksa (Turkey)
- Eden Innovations Ltd (Australia)
- Elemental Advanced Materials (Unites States)
- Enerage Inc. (China)
- Entegris, Inc. (United States)
- ERG Aerospace (United States)
- Firefly International Energy Co (United States)
- First Graphene Ltd (Australia)
- Formosa Plastics Corporation (Taiwan)
- Frontier Carbon Co., Ltd. (Japan)
- GanSu HaoShi Carbon Fiber Co., Ltd. (China)
- General Graphene Corporation (United States)
- Global Graphene Group (United States)
- Goodfellow Cambridge Ltd (United Kingdom)
- Grafen Nanoteknoloji (Turkey)

- Grafoid Inc. (Canada)
- Graphene Industries Ltd. (United Kingdom)
- Graphene Lab Co., Ltd. (South Korea)
- Graphene Square Inc. (South Korea)
- Graphenea (Spain)
- Graphene-XT (Italy)
- Graphitene Ltd (United Kingdom)
- Graphjet Technology Sdn. Bhd. (Malaysia)
- Grupo Antolin Ingenieria S.A (Spain)
- Grupo Graphenano (Spain)
- Guangdong Coal-based Carbon Materials Research Co., Ltd. (China)
- Guangdong Dowstone Technology Co., Ltd. (China)
- Hamamatsu Carbonix Co., Ltd. (Japan)
- Haydale Graphene Industries Plc (United Kingdom)
- HeiQ Materials AG (Switzerland)
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- Jiangsu Hengshen Co., Ltd. (China)
- Jilin Chemical Fiber Group Co., Ltd. (China)
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- KB-ELEMENT Co., Ltd. (South Korea)
- Klean Commodities (Canada)
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- Kumho Petrochemical Co., Ltd. (KKPC) (South Korea)
- Kureha Corporation (Japan)
- Layer One ? Advanced Materials (Norway)
- LeaderNano (China)
- Levidian Nanosystems Limited (United Kingdom)
- LG Chem (South Korea)
- Materials Technologies Research (MTR) Ltd. (United States)
- Meijo Nano Carbon Co., Ltd (Japan)
- Mersen Group (France)
- Mitsubishi Chemical Corporation (Japan)
- Modern Synthesis Technology ??? "???-????" (Russia)
- Molecular Rebar Design, LLC (MRD) (United States)
- Nanjing JCNANO Technology Co., LTD (China)
- Nanjing XFNANO Materials Tech Co., Ltd (China)
- Nano-C (United States)
- Nanocyl SA (Belgium)
- nanoEMI (Poland)

- Nanograf Private Limited (India)
- Nanografi Nanotechnology Inc. (Turkiye)
- Nanointegris Inc. (Canada)
- NanoLab, Inc. (United States)
- NanoSolution Co., Ltd. (South Korea)
- Nanostructured & Amorphous Materials, Inc. (United States)
- NanoTechLabs, Inc. (United States)
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- Syensqo SA (Belgium)
- Talga Group Ltd (Australia)
- TDA Research (United States)
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- The Sixth Element (Changzhou) Materials Technology Co., Ltd (China)
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- Toyo Tanso Co Ltd (Japan)
- TPR Co., Ltd. (Japan)

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o April 2025
- Salgenx Introduces Hybrid Flow Energy Platform Using Graphene-Based Ultracapacitor
o March 2025
- Time Magazine Ranks Skeleton Technologies among World's Top 30 GreenTech Companies
- Graphene Manufacturing Group Signs Pact with the Battery Innovation Center of Indiana for Graphene Aluminium-Ion Battery
- Levidian and Graphmatech Collaborate for the Future of Clean Hydrogen
- Versarian Announces Graphinks? Supply Agreement with Montana
- Versarian Announces Sale of Korean Assets
- Huntsman and Advanced Material Development Team up for Carbon Nanotube Composites
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- Hexcel and FIDAMC Partner up for the Evolution of Composite Materials
- Teijin Carbon Launches Tenax? IMS65 E23 36K 1630tex
- Teijin Carbon launches new Sustainable Carbon Fiber Brand: Tenax Next?
o February 2025
- CNT Solution Develops Eco-Friendly Technology for Carbon Quantum Dots
- Mitsubishi Chemical Group receives ISCC PLUS Certification for its Prepreg Using Plant-Derived Resin
- Bodo Moller Chemie and DowAksa Collaborate for Sustainable Future with Resins and Fibers
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