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Global Porous Carbon CVD Silicon-Carbon Material Frameworks Supply, Demand and Key Producers, 2026-2032

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Abstracts

The global Porous Carbon CVD Silicon-Carbon Material Frameworks market size is expected to reach $ 2859 million by 2032, rising at a market growth of 76.2% CAGR during the forecast period (2026-2032).

Porous carbon serves as the carbon framework for silicon-carbon anodes. Porous carbon materials possess advantages such as high specific surface area, controllable microstructure, abundant pore structure, good conductivity, and high stability. The high specific surface area allows porous carbon to bind more lithium ions, providing high capacity for lithium-ion batteries. The multidimensional and complex pore structure provides effective and rapid diffusion channels for lithium ions, resulting in excellent electrochemical performance. The main raw materials for porous carbon are resin-based and biomass-based methods. Currently, biomass raw materials include renewable resources such as coconut shells, bamboo, rice husks, sawdust, and starch; resin raw materials are mainly phenolic resins, with mature production processes, controllable chemical structures, and better pore uniformity and batch consistency. However, due to higher raw material costs, the price is generally between 250,000 and 300,000 RMB per ton. Because the raw material price of biomass is relatively cheaper than that of resin, the cost per ton for resin-based porous carbon is significantly higher than that for bio-based porous carbon. The core of porous carbon production is the pore-forming process, primarily achieved through steam or alkali activation. This involves mixing an activator with a carbon precursor under high-temperature, inert gas protection to initiate a pore-forming reaction. Generally, this requires first carbonizing the carbon precursor at high temperatures (typically above 800?), followed by the use of steam or alkali as an activator to react with the precursor and achieve the pore-forming reaction. Based on chemical formulas and actual production conditions, on average, 1 ton of

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silicon-carbon anode material requires 0.5 tons of porous carbon and 0.6-0.7 tons of silane raw materials.

Porous carbon CVD silicon-carbon material frameworks refer to porous carbon framework materials prepared by chemical vapor deposition (CVD) for silicon-carbon anodes. This carbon framework has controllable pore sizes and ordered or semi-ordered pore structures, serving to support silicon particles, buffer the volume expansion of silicon during charge and discharge, and provide electronic conductivity pathways. The framework prepared by CVD has uniform pore size and high specific surface area, which can significantly improve the cycle stability and rate performance of high-silicon anodes.

Capacity construction:

On March 4, 2024, Zhejiang Zhongning Silicon Industry Co., Ltd., the holding company of Do-Fluoride New Materials Co., Ltd., completed a project with a capacity of 2,500 tons/year of porous carbon (used for the production of silicon-carbon anode materials).

On June 28, 2025, Hua County Dachaolin Real Estate Co., Ltd. completed a 3,000-ton porous carbon production line in Hua County, Anyang. This production line will effectively promote technological progress and industrial upgrading in the field of energy storage carbon materials.

On July 14, 2025, Shenzhen Solide New Materials Technology Co., Ltd. completed the first phase of its 10,000-ton/year porous carbon project for silicon-carbon anode materials (1,000 tons/year of porous carbon).

On January 7, 2026, the signing ceremony for the 10,000-ton-per-year porous carbon and silicon-carbon The Shanghai Keyun Industrial Co., Ltd. anode material project was held in Yu'an District, Lu'an City, Anhui Province. The porous carbon and silicon-carbon anode material project covers an area of ??approximately 100 mu and is expected to achieve an annual output of 10,000 tons of porous carbon when fully operational.

In 2025, the global shipment volume of Porous carbon CVD silicon-carbon material frameworks is approximately 0.075 million tons, with a gross profit margin of approximately 25%-40%.

Traditional major producers of porous carbon materials globally include the United States, Japan, and the Netherlands. However, due to constraints on raw materials and

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rising production costs, the porous carbon materials industry is gradually shifting to developing countries. While porous carbon material production in developed countries and regions such as North America, Japan, and Western Europe is gradually decreasing, domestic market demand continues to grow steadily. However, domestic production cannot meet these demands, necessitating substantial imports.

In terms of regional distribution of demand for porous carbon materials, China, the United States, the European Union, and Japan are the main consuming regions, with China being the world's second-largest consumer of porous carbon materials after the United States. In recent years, with the continuous development of the macroeconomy in developing countries, industrial growth has led to increasingly prominent environmental pollution problems. Consequently, countries have continuously strengthened their efforts in environmental governance and protection, driving rapid growth in the consumption of porous carbon materials in these regions.

The porous carbon market for silicon-carbon anodes is experiencing unprecedented development opportunities, benefiting from the strong demand from the global lithium-ion battery industry for higher energy density, longer cycle life, and faster charging rates. As the electric vehicle (EV) market continues to expand, the demand for high-performance silicon-carbon anode materials for power batteries is growing rapidly. Porous carbon, as a core material for buffering silicon volume expansion and improving cycle stability, is becoming increasingly important. At the same time, the pursuit of high-efficiency batteries in downstream markets such as portable electronic devices and energy storage systems is constantly driving technological innovation and large-scale application of porous carbon materials. Government policies, industrial investment, and battery manufacturers' proactive investment in technological upgrades have provided a strong impetus for the development of this emerging material market. Despite its promising market prospects, the porous carbon industry still faces numerous challenges and risks. On the one hand, the preparation of high-performance porous carbon materials with controllable pore size distribution and batch-consistent quality involves complex processes and high energy consumption, resulting in high costs and hindering large-scale production. On the other hand, fluctuations in raw material prices, supply chain instability, and the varying performance and quality requirements of different downstream customers put pressure on suppliers' quality control and delivery capabilities. Furthermore, the industry has high technological barriers and a long investment recovery period, posing certain market entry risks for new entrants. Suppliers with high market concentration hold a large market share, leaving small and medium-sized enterprises facing both cost and technological challenges in competition. From 2025 to 2032, the downstream demand landscape will continue to optimize, with

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power batteries remaining the largest consumer of porous carbon materials, particularly in high-energy-density batteries, high-rate fast-charging batteries, and solid-state battery architectures, where its role in improving the overall performance of battery systems becomes increasingly crucial. Compared to traditional graphite anodes, porous carbon combined with high-silicon content anode systems will enable electric vehicles with higher energy density and longer lifespans. In addition, the demands for longer-life and smaller batteries in the consumer electronics and energy storage markets will also promote the expansion of porous carbon materials in various battery forms. Overall, the future market demand structure will show a trend of parallel development, with power batteries dominating and innovative applications expanding.

This report studies the global Porous Carbon CVD Silicon-Carbon Material Frameworks production, demand, key manufacturers, and key regions.

This report is a detailed and comprehensive analysis of the world market for Porous Carbon CVD Silicon-Carbon Material Frameworks and provides market size (US$ million) and Year-over-Year (YoY) Growth, considering 2025 as the base year. This report explores demand trends and competition, as well as details the characteristics of Porous Carbon CVD Silicon-Carbon Material Frameworks that contribute to its increasing demand across many markets.

Highlights and key features of the study

Global Porous Carbon CVD Silicon-Carbon Material Frameworks total production and demand, 2021-2032, (Tons)
Global Porous Carbon CVD Silicon-Carbon Material Frameworks total production value, 2021-2032, (USD Million)
Global Porous Carbon CVD Silicon-Carbon Material Frameworks production by region & country, production, value, CAGR, 2021-2032, (USD Million) & (Tons), (based on production site)
Global Porous Carbon CVD Silicon-Carbon Material Frameworks consumption by region & country, CAGR, 2021-2032 & (Tons)
U.S. VS China: Porous Carbon CVD Silicon-Carbon Material Frameworks domestic production, consumption, key domestic manufacturers and share
Global Porous Carbon CVD Silicon-Carbon Material Frameworks production by manufacturer, production, price, value and market share 2021-2026, (USD Million) & (Tons)
Global Porous Carbon CVD Silicon-Carbon Material Frameworks production by Type, production, value, CAGR, 2021-2032, (USD Million) & (Tons)
Global Porous Carbon CVD Silicon-Carbon Material Frameworks production by

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Application, production, value, CAGR, 2021-2032, (USD Million) & (Tons)

This report profiles key players in the global Porous Carbon CVD Silicon-Carbon Material Frameworks market based on the following parameters - company overview, production, value, price, gross margin, product portfolio, geographical presence, and key developments. Key companies covered as a part of this study include Kuraray, Ingevity Corporation, Osaka Gas Chemicals, Haycarb, Momentum Materials Solutions, Fujian Yuanli, Hua County Dachaolin Real Estate Co., Ltd., SinoSteel Group Maanshan Mining Research Institute Co., Ltd., Aemcn, KBC Corporation, Ltd., etc.

This report also provides key insights about market drivers, restraints, opportunities, new product launches or approvals.

Stakeholders would have ease in decision-making through various strategy matrices used in analyzing the World Porous Carbon CVD Silicon-Carbon Material Frameworks market

Detailed Segmentation:

Each section contains quantitative market data including market by value (US$ Millions), volume (production, consumption) & (Tons) and average price (US$/Ton) by manufacturer, by Type, and by Application. Data is given for the years 2021-2032 by year with 2025 as the base year, 2026 as the estimate year, and 2027-2032 as the forecast year.

Global Porous Carbon CVD Silicon-Carbon Material Frameworks Market, By Region:

United States

China

Europe

Japan

South Korea

ASEAN

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India

Rest of World

Global Porous Carbon CVD Silicon-Carbon Material Frameworks Market, Segmentation by Type:

Biomass Porous Carbon

Resin Porous Carbon

Pitch/Coal Porous Carbon

Global Porous Carbon CVD Silicon-Carbon Material Frameworks Market, Segmentation by Porous:

Microporous(50nm)

Global Porous Carbon CVD Silicon-Carbon Material Frameworks Market, Segmentation by Surface Area:

Standard?Surface Area 1,500?1,850 m?/g?

High Performance?Surface Area 2,000?2,350 m?/g?

Others

Global Porous Carbon CVD Silicon-Carbon Material Frameworks Market, Segmentation by Application:

Power Batteries

Consumer Batteries

Drones and EVOLT

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Others

Companies Profiled:

Kuraray

Ingevity Corporation

Osaka Gas Chemicals

Haycarb

Momentum Materials Solutions

Fujian Yuanli

Hua County Dachaolin Real Estate Co., Ltd.

SinoSteel Group Maanshan Mining Research Institute Co., Ltd.

Aemcn

KBC Corporation, Ltd.

Shanghai Emperor of Cleaning Hi-Tech Co., Ltd.

Guangdong Dowstone Technology Co., Ltd.

Xuancheng Silike New Materials Co., Ltd.

Norit

Shengquan Group

Fujian Xinsen Carbon Co., Ltd.

Bengbu Gifuli New Materials

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Shenzhen Solide New Materials Technology Co., Ltd.

Do-Fluoride New Materials Co., Ltd.

Shanghai Putailai New Energy Technology Co., Ltd.

Jiangsu PURESTAR Environmental Protection Technology Co., Ltd.

BTR New Material Group Co., Ltd.

Hunan Zhongke Shinzoom Co., Ltd.

Shanghai XFH Technology Co.,Ltd

Key Questions Answered:

1. How big is the global Porous Carbon CVD Silicon-Carbon Material Frameworks market?
2. What is the demand of the global Porous Carbon CVD Silicon-Carbon Material Frameworks market?
3. What is the year over year growth of the global Porous Carbon CVD Silicon-Carbon Material Frameworks market?
4. What is the production and production value of the global Porous Carbon CVD Silicon-Carbon Material Frameworks market?
5. Who are the key producers in the global Porous Carbon CVD Silicon-Carbon Material Frameworks market?
6. What are the growth factors driving the market demand?

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