

Global Hydrogen Energy Carbon Paper Market 2026 by Manufacturers, Regions, Type and Application, Forecast to 2032

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Abstracts

According to our (Global Info Research) latest study, the global Hydrogen Energy Carbon Paper market size was valued at US\$ 837 million in 2025 and is forecast to a readjusted size of US\$ 2981 million by 2032 with a CAGR of 19.8% during review period.

Carbon paper is an advanced two-dimensional material made from carbon fibers. As a key fundamental material, it has a wide range of applications. In the hydrogen energy field, it can be used as a gas diffusion layer material for fuel cells and a diffusion layer material for proton exchange membrane electrolyzers. In the energy storage field, it can be used as an electrode material for flow batteries. The main functions of hydrogen-energy carbon paper include uniform gas diffusion, electron conduction, thermal management, and water transport, thereby improving the power density, efficiency, and durability of fuel cells and electrolyzer stacks. Typical product forms are sheets or rolls, with a thickness of approximately 100–400 μm and a porosity of generally 70%–80%. The surface hydrophobic/hydrophilic properties and conductivity can be optimized according to application requirements to balance gas/liquid transport performance and mechanical strength. The core technologies include carbon fiber network structure design, thermal carbonization/graphitization treatment, and surface functional coatings to achieve stable operation of high-power-density fuel cells, proton exchange membrane electrolyzers (PEM Electrolyzers), and some flow battery systems. Hydrogen-energy carbon paper is an indispensable basic material in PEMFC, PEM electrolyzer, and flow battery systems. The core raw materials for carbon paper production are carbon fiber, polyvinyl alcohol resin, and phenolic resin. Carbon paper production processes are divided into wet and dry processes. The wet process is a mature technology, used by manufacturers such as Toray and SGL Carbon. Wet-processed

carbon paper exhibits good uniformity and a dense structure, making it a commonly used method for high-performance carbon paper in fuel cells abroad. Dry-process carbon paper production is a rapidly developing technology in recent years. This method uses air as a medium, employing an airflow web-forming process to create the base paper, followed by subsequent processes such as sizing, drying, and carbonization. Its characteristics include a high carbon fiber content and high product strength.

In 2025, the global production of Hydrogen Energy Carbon Paper was approximately 11.394 million square meters, with a unit price of approximately US\$57.14-142.85 per square meter, an average price of approximately US\$71.42 per square meter, and a gross profit margin of approximately 9.38%-19.74%.

Current and Existing Production Capacity:

SPIC Hydrogen Energy Technology Development Co., Ltd. has a 300,000^{m²} annual production line for its 'SPIC' carbon paper.

Shanghai Tanji Industrial Group Co., Ltd. achieved sales of over 10,000 square meters of roll carbon paper in 2024.

Li Neng New Energy Technology (Beijing) Co., Ltd. has invested RMB 104 million to build a carbon paper material manufacturing base and engineering technology R&D center in Huangcun Town. Upon completion, its carbon paper production line will have a capacity of 720,000^{m²}/year, making it one of the largest high-performance carbon fiber two-dimensional material production bases in China.

KBC Corporation, Ltd. is expanding into the hydrogen fuel cell carbon paper sector, planning to build a 300,000^{m²} production capacity. Roll carbon paper production began in the first half of 2023, and the sheet carbon paper production line has been completed and is supplying in batches.

Shandong Renfeng Special Materials Co., Ltd.'s 1.5 million m²/year GDL gas diffusion layer production line has been included in Zibo City's '14th Five-Year Plan' for major hydrogen energy industry demonstration projects and Shandong Province's key energy sector technology research projects. The first phase, a 500,000 m² production line, has been completed and put into operation.

In 2023, Suzhou Tianshang Anneng Carbon Material Technology Co., Ltd. began

construction of a 100,000 m²/year carbon paper (sheet) production line and the production of high-performance carbon paper products.

The essence of the hydrogen energy carbon paper industry lies in providing efficient and stable gas diffusion and electron conduction media for fuel cells and hydrogen electrolyzers. As a key basic material within membrane electrode assemblies (MEAs), carbon paper achieves uniform distribution of hydrogen and oxygen through its porous carbon fiber network, while also undertaking electron conduction, thermal management, and water management functions, significantly improving the power density and lifespan of fuel cell stacks. The industry has clear boundaries, mainly covering PEMFCs, PEM electrolyzers, and some flow battery systems, providing core material support for downstream electric transportation, stationary energy storage, and portable hydrogen energy devices.

From a supply perspective, global hydrogen energy carbon paper production is characterized by high technological barriers and regional concentration. North America, Europe, and East Asia are the core production areas, with major suppliers exhibiting differentiated product offerings in terms of thickness, porosity, conductivity, and surface treatment methods.

From a demand structure perspective, downstream growth primarily stems from the expansion of transportation, stationary energy storage, and portable hydrogen energy equipment. Global hydrogen energy policy initiatives and the increasing penetration rate of fuel cell vehicles, coupled with the continued rise in demand from energy storage and industrial hydrogen production markets, are driving the diversification of carbon paper specifications and steady production growth. Simultaneously, the application of high-performance carbon paper in high-power-density fuel cells and long-life energy storage systems is driving technological iterations in thickness optimization, porosity control, and surface functionalization.

From a product roadmap and technology evolution perspective, the industry is undergoing multi-level material upgrades, including carbon fiber matrix optimization, refined resin impregnation and heat treatment, and exploration of surface functional coatings and composite functionalization. Regional supply chain migration, capacity expansion, and capital expenditure dynamics are impacting the global supply-demand balance and price system. In the future, the industry will continue to develop towards high performance, low cost, and long lifespan, but attention still needs to be paid to the potential localized substitution pressure from alternative materials (such as metal mesh diffusion layers or conductive composite films).

This report is a detailed and comprehensive analysis for global Hydrogen Energy Carbon Paper market. Both quantitative and qualitative analyses are presented by manufacturers, by region & country, by Type and by Application. As the market is constantly changing, this report explores the competition, supply and demand trends, as well as key factors that contribute to its changing demands across many markets. Company profiles and product examples of selected competitors, along with market share estimates of some of the selected leaders for the year 2025, are provided.

Key Features:

Global Hydrogen Energy Carbon Paper market size and forecasts, in consumption value (\$ Million), sales quantity (K Sqm), and average selling prices (US\$/Sq m), 2021-2032

Global Hydrogen Energy Carbon Paper market size and forecasts by region and country, in consumption value (\$ Million), sales quantity (K Sqm), and average selling prices (US\$/Sq m), 2021-2032

Global Hydrogen Energy Carbon Paper market size and forecasts, by Type and by Application, in consumption value (\$ Million), sales quantity (K Sqm), and average selling prices (US\$/Sq m), 2021-2032

Global Hydrogen Energy Carbon Paper market shares of main players, shipments in revenue (\$ Million), sales quantity (K Sqm), and ASP (US\$/Sq m), 2021-2026

The Primary Objectives in This Report Are:

- To determine the size of the total market opportunity of global and key countries
- To assess the growth potential for Hydrogen Energy Carbon Paper
- To forecast future growth in each product and end-use market
- To assess competitive factors affecting the marketplace

This report profiles key players in the global Hydrogen Energy Carbon Paper market based on the following parameters - company overview, sales quantity, revenue, price,

gross margin, product portfolio, geographical presence, and key developments. Key companies covered as a part of this study include Toray, SGL Carbon, AvCarb, Freudenberg, JNTG, Caplinq, Mitsubishi Chemical, CeTech, Shandong Renfeng Special Materials Co., Ltd., Shanghai Legion, etc.

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

Market Segmentation

Hydrogen Energy Carbon Paper market is split by Type and by Application. For the period 2021-2032, the growth among segments provides accurate calculations and forecasts for consumption value by Type, and by Application in terms of volume and value. This analysis can help you expand your business by targeting qualified niche markets.

Market segment by Type

Wet Process Carbon Paper

Dry Process Carbon Paper

Market segment by Thickness

200–300 ?m

> 300 ?m

Market segment by Surface Treatment

PTFE Hydrophobic

Non-Hydrophobic

Market segment by Product Form

Sheets

Rolls

Market segment by Application

Fuel Cell Gas Diffusion Layer

PEM Electrolyzer Diffusion Layer

Redox Flow Battery Electrode

Other

Major players covered

Toray

SGL Carbon

AvCarb

Freudenberg

JNTG

Caplinq

Mitsubishi Chemical

CeTech

Shandong Renfeng Special Materials Co., Ltd.

Shanghai Legion

Shenzhen General Hydrogen Corp., Ltd.

Shanghai Tanji Industrial Group Co., Ltd.

Shanghai Hesun Electric Co., Ltd.

Li Neng New Energy Technology (Beijing) Co., Ltd.

Guoke Lingxian New Materials (Changzhou) Co., Ltd.

Shanghai Jiazi New Materials Technology Co., Ltd.

Suzhou Tianshang Anneng Carbon Material Technology Co., Ltd.

Anhui Tianfu Environment Protection and Technological Material Co.Ltd

SPIC Hydrogen Energy Technology Development Co., Ltd.

Guangdong Guanbao High-Tech Co., Ltd.

KBC Corporation, Ltd.

Jiangsu Tanfeng Hydrogen Energy Technology Co., Ltd.

Market segment by region, regional analysis covers

North America (United States, Canada, and Mexico)

Europe (Germany, France, United Kingdom, Russia, Italy, and Rest of Europe)

Asia-Pacific (China, Japan, Korea, India, Southeast Asia, and Australia)

South America (Brazil, Argentina, Colombia, and Rest of South America)

Middle East & Africa (Saudi Arabia, UAE, Egypt, South Africa, and Rest of Middle East & Africa)

The content of the study subjects, includes a total of 15 chapters:

Global Hydrogen Energy Carbon Paper Market 2026 by Manufacturers, Regions, Type and Application, Forecast to 2...

Chapter 1, to describe Hydrogen Energy Carbon Paper product scope, market overview, market estimation caveats and base year.

Chapter 2, to profile the top manufacturers of Hydrogen Energy Carbon Paper, with price, sales quantity, revenue, and global market share of Hydrogen Energy Carbon Paper from 2021 to 2026.

Chapter 3, the Hydrogen Energy Carbon Paper competitive situation, sales quantity, revenue, and global market share of top manufacturers are analyzed emphatically by landscape contrast.

Chapter 4, the Hydrogen Energy Carbon Paper breakdown data are shown at the regional level, to show the sales quantity, consumption value, and growth by regions, from 2021 to 2032.

Chapter 5 and 6, to segment the sales by Type and by Application, with sales market share and growth rate by Type, by Application, from 2021 to 2032.

Chapter 7, 8, 9, 10 and 11, to break the sales data at the country level, with sales quantity, consumption value, and market share for key countries in the world, from 2021 to 2026. and Hydrogen Energy Carbon Paper market forecast, by regions, by Type, and by Application, with sales and revenue, from 2027 to 2032.

Chapter 12, market dynamics, drivers, restraints, trends, and Porters Five Forces analysis.

Chapter 13, the key raw materials and key suppliers, and industry chain of Hydrogen Energy Carbon Paper.

Chapter 14 and 15, to describe Hydrogen Energy Carbon Paper sales channel, distributors, customers, research findings and conclusion.

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