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Carbon Capture Materials Market Forecasts to 2032 – Global Analysis By Material (Liquid Solvents, Solid Sorbents, Membranes, and Emerging Materials), Process (Absorption, Adsorption, Membrane Separation, Cryogenic Distillation, and Direct Air Capture [DAC]), Technology, End User, and By Geography

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Abstracts

According to Stratistics MRC, the Global Carbon Capture Materials Market is accounted for $67.2 billion in 2025 and is expected to reach $121.4 billion by 2032 growing at a CAGR of 8.8% during the forecast period. Carbon capture materials include liquid solvents, solid sorbents, membranes, and advanced adsorbents used across post-combustion, pre-combustion, and direct-air capture processes to separate and concentrate CO? for storage or utilization. Growth is driven by tightening emissions targets, corporate net-zero commitments, and scaling of industrial capture projects in power, cement, steel, and chemicals.

According to the International Energy Agency (IEA), new carbon capture materials are enabling capture of over 40 million tonnes of CO? annually, with ongoing large-scale projects worldwide.

Market Dynamics:

Driver:

Growing global focus on climate change mitigation

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Growing global focus on climate change mitigation has rapidly and sustainably increased demand for carbon capture materials and technologies. Governments, corporations, and international bodies are committing to net zero targets and stricter emissions policies, prompting investment in solvents, sorbents, membranes, and direct air capture research. This policy and market push channels funding toward scale up, pilot projects, and industrial demonstrations while encouraging private partnerships and collaboration. Furthermore, predictable regulatory frameworks and carbon pricing mechanisms create business cases for deployment, motivating manufacturers to improve capture efficiency, reduce costs, and expand supply chains to meet anticipated industrial requirements.

Restraint:

Energy-intensive processes reducing overall efficiency

Energy intensive processes reduce overall efficiency across many carbon capture technologies. Solvent regeneration, high temperature sorbent cycles and some membrane systems demand substantial heat and electricity, which lowers net CO2 removal and raises operational costs. High parasitic loads complicate integration with power plants and can offset captured emissions where low carbon energy is scarce. These energy burdens increase life cycle emissions and capital expenditure for auxiliary equipment.

Opportunity:

Increasing government incentives and funding for projects

Government incentives and project funding are accelerating commercialization of carbon capture materials and demonstrations. Subsidies, tax credits, and concessional financing lower capital barriers for pilot plants, encouraging private investment and enabling technology validation at scale. Additionally public procurement and mandated emissions reductions create demand for capture solutions across power generation, cement, steel, and chemical industries. International climate funds and public private partnerships de risk investment and help firms scale manufacturing and supply chains. Moreover targeted R&D grants improve material performance and reduce levelized costs strengthening commercial viability and investor confidence and private equity interest.

Threat:

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Regulatory uncertainties and policy inconsistencies

Regulatory uncertainties and policy inconsistencies create significant risk for carbon capture materials markets. Varying national approaches to carbon pricing differing eligibility rules for credits and shifting subsidy frameworks create investment ambiguity and complicate long term planning. Developers face unclear pathways to monetize captured CO2 while changes in permitting storage liability and accounting standards can alter project economics. Such instability deters capital delays project timelines and raises sovereign risk for international investors. Moreover inconsistent standards impede harmonization of supply chains and technology validation making it harder for manufacturers to design universally compliant systems to scale globally.

Covid-19 Impact:

Covid19 had a mixed impact on the carbon capture materials market. Early supply chain disruptions and diverted public spending delayed projects while reduced industrial activity temporarily lowered demand at point sources. Recovery packages and green stimulus later revived funding for pilot plants and R&D. The crisis sharpened political focus on resilient decarbonization pathways and reinforced long term support for capture materials even as near term schedules shifted by supply and financing constraints across markets.

The liquid solvents segment is expected to be the largest during the forecast period

The liquid solvents segment is expected to account for the largest market share during the forecast period because they are technically mature and already deployed at industrial scale for post combustion capture. Amines and newer blended solvents provide high CO2 selectivity and established regeneration cycles enabling retrofit solutions for power plants and industrial boilers with manageable modifications. Established supply chains operational know how and regulatory familiarity reduce project risk and ease financing. Continual solvent chemistry improvements target lower energy consumption and corrosion enhancing economics and operational life which sustains broad adoption and cements their market leadership in installed capacity.

The direct air capture (DAC) segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the direct air capture (DAC) segment is predicted to witness

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the highest growth rate because it addresses corporate net zero commitments and markets that demand durable sequestration. Advances in low energy sorbents modular plant design and waste heat utilization are lowering capital and operating expenses per tonne of CO2 removed. Policy tools such as removal credits procurement guarantees and blended financing further de risk scale ups. As governments and commercial offtakers contract for removal capacity investment increases accelerating deployment and reinforcing DAC s growth advantage over mature point source capture technologies in diverse regions.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share driven by a combination of advanced industrial infrastructure emissions reduction commitments and deep capital markets. The region hosts mature power cement and chemical sectors where capture retrofits are technically feasible and economically supported by tax incentives and carbon policy mechanisms. Well established research institutions experienced EPCs and established CO2 storage and transport projects reduce deployment barriers. Additionally active private investment and public funding for large scale demonstrations accelerate commercialization ensuring North America retains market leadership.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR as rapid industrialisation rising energy demand and stringent air quality goals drive adoption of capture technologies. Large emerging economies are investing in pilot projects local manufacturing and skilled workforces while international vendors enter through partnerships and licensing. Expanding availability of financing increasing corporate sustainability commitments and government policies supporting low carbon technologies further accelerate uptake. Moreover growing demand from heavy industries and power generation combined with falling equipment costs positions Asia Pacific for the fastest growth.

Key players in the market

Some of the key players in Carbon Capture Materials Market include Ecolab Inc., BASF SE, Dow Inc., Mitsubishi Heavy Industries, Ltd., Solvay S.A., Air Products and Chemicals, Inc., Tosoh Corporation, Honeywell International Inc., Zeochem AG, Climeworks AG, Global Thermostat, CO2 Solutions by Saipem, Carbon Clean

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Solutions, Carbon Engineering Ltd., Aker Carbon Capture ASA, CarbonFree, Carbfix, ExxonMobil Low Carbon Solutions, Air Liquide, and Shell plc.

Key Developments:

In May 2025, BASF became the first company to produce metal-organic frameworks (MOFs) on a multi-ton production scale for carbon capture. These MOFs, highly crystalline structures with nanometer-sized pores and large surface area, will be used as solid sorbents for carbon capture projects in various industrial sectors including hydrogen, pulp and paper, cement, steel, aluminum, and chemicals.

In May 2024, Climeworks announced the launch of its next-generation Direct Air Capture (DAC) technology, Generation 3, which features a new structured adsorbent material designed to cut energy requirements in half and double the lifetime compared to previous generations, aiming to drive down the cost of carbon removal.

In March 2024, Shell made a final investment decision for the Polaris project at its Scotford refinery, a carbon capture project using Shell's own amine-based solvent technology to capture approximately 650,000 tonnes of CO2 annually from the refinery.

In February 2024, Carbfix and its partner SLB announced the launch of the Carbfix2 project at Hellishei?i Power Station, which will integrate an advanced amine-based capture system with Carbfix's underground mineralization technology, creating an integrated chain for capturing and permanently storing CO2 as rock.

Materials Covered:

- Liquid Solvents
- Solid Sorbents
- Membranes
- Emerging Materials

Process Covered:

- Absorption

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- Adsorption
- Membrane Separation
- Cryogenic Distillation
- Direct Air Capture (DAC)

Technologies Covered:

- Pre-Combustion Capture
- Post-Combustion Capture
- Oxyfuel Combustion
- Direct Air Capture (DAC)

End Users Covered:

- Power Generation
- Oil & Gas
- Chemical & Petrochemical
- Cement & Steel Manufacturing
- Metal & Mining
- Industrial Processes
- Other End Users

Regions Covered:

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US

Canada

Mexico

Europe

Germany

UK

Italy

France

Spain

Rest of Europe

Asia Pacific

Japan

China

India

Australia

New Zealand

South Korea

Rest of Asia Pacific

South America

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Argentina

Brazil

Chile

Rest of South America

Middle East & Africa

Saudi Arabia

UAE

Qatar

South Africa

Rest of Middle East & Africa

What our report offers:
- Market share assessments for the regional and country-level segments
- Strategic recommendations for the new entrants
- Covers Market data for the years 2024, 2025, 2026, 2028, and 2032
- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)
- Strategic recommendations in key business segments based on the market estimations
- Competitive landscaping mapping the key common trends
- Company profiling with detailed strategies, financials, and recent developments
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SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

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Note: Tables for North America, Europe, APAC, South America, and Middle East & Africa Regions are also represented in the same manner as above.

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