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Metal-Organic Framework (MOF) for CO2 Capture Market - A Global and Regional Analysis: Focus on End-Use Industry, Product Type, Process, and Country Level Analysis - Analysis and Forecast, 2025-2034

https://marketpublishers.com/r/MF31E1E8D255EN.html
Date: June 2026
Pages: 0
Price: US$ 4,900.00 (Single User License)
ID: MF31E1E8D255EN

Abstracts

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This report will be delivered in 7-10 working days.Global Metal-Organic Framework (MOF) for CO2 Capture Market: Industry Overview

The global Metal-Organic Framework (MOF) for CO2 Capture market is rapidly gaining traction as a vital solution in the fight against climate change. MOFs, known for their high surface area and selective adsorption capabilities, provide an efficient method to capture CO2 emissions from key sectors such as power generation, cement, oil and gas, and steel. Increasing regulatory pressures worldwide to reduce greenhouse gas emissions are accelerating the adoption of MOF-based technologies. Advances in MOF synthesis have improved scalability and cost-effectiveness, facilitating integration with Carbon Capture, Utilization, and Storage (CCUS) and Direct Air Capture (DAC) systems. North America, Europe, and Asia-Pacific dominate market growth, supported by supportive policies and significant R&D investments. Despite challenges like high production costs and competition from other carbon capture methods, MOFs represent a promising technology poised to play a critical role in global decarbonization efforts and the transition toward a sustainable low-carbon economy.

Metal-Organic Framework (MOF) for CO2 Capture Market: Lifecycle Stage

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The Metal-Organic Framework (MOF) for CO2 Capture market is currently in the growth stage of its lifecycle. Having moved beyond initial research and development phases, MOF technologies are witnessing increasing commercial adoption, particularly in carbon-intensive industries such as power generation, cement, and steel manufacturing. The market benefits from rising environmental regulations and growing corporate commitments to sustainability, which fuel demand for effective CO2 capture solutions.

Product innovation and scalability improvements characterize this phase, as companies refine MOF synthesis methods to reduce costs and enhance capture efficiency. Strategic partnerships, pilot projects, and early commercial deployments are increasingly common, signaling market maturation. However, challenges related to large-scale manufacturing, integration with existing infrastructure, and competition from traditional capture technologies mean the market is not yet in full maturity.

Overall, the MOF for CO2 Capture market is positioned for accelerated expansion, moving steadily toward widespread commercialization and adoption as part of global decarbonization efforts.

Metal-Organic Framework (MOF) for CO2 Capture Market Segmentation:

Segmentation 1: by End Use

Power Generation

Cement Industry

Oil and Gas Industry

Iron and Steel Industry

Others

The Power Generation is one of the prominent end use segments in the global metal-organic framework (MOF) for CO2 capture market.

Segmentation 2: by Product Type

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Zeolitic Imidazolate Frameworks (ZIFs)

MOF-74 Series

MIL-Series MOFs

UiO-Series MOFs

Others

The global metal-organic framework (MOF) for CO2 capture market is estimated to be led by the zeolitic imidazolate frameworks (ZIFs) segment in terms of product type.

Segmentation 3: by Process

Carbon Capture, Utilization, and Storage (CCUS)

Direct Air Capture (DAC)

The global metal-organic framework (MOF) for CO2 capture market is estimated to be led by the carbon capture, utilization, and storage (CCUS) segment in terms of process.

Segmentation 4: by Region

North America - U.S., Canada, and Mexico

Europe - Germany, France, Italy, Spain, U.K., and Rest-of-Europe

Asia-Pacific - China, Japan, South Korea, India, and Rest-of-Asia-Pacific

Rest-of-the-World - South America and Middle East and Africa

In the metal-organic framework (MOF) for CO? capture market, North America leads due to advanced regulatory frameworks, significant R&D investment, and early adoption of MOF technologies in carbon-intensive industries. The U.S., in particular, drives growth through policy incentives and pilot projects.

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Metal-Organic Framework (MOF) for CO2 Capture Market: Demand – Drivers and Limitations

The following are the demand drivers for the global metal-organic framework (MOF) for CO2 capture market:

Rising Industrial CO2 Emissions

Stringent Environmental Regulations

The global metal-organic framework (MOF) for CO2 capture market is expected to face some limitations as well due to the following challenges:

High Production and Operational Costs

Technological Maturity and Scale-up Challenges

Key Market Players and Competition Synopsis

The global Metal-Organic Framework (MOF) for CO2 Capture Market is led by prominent players driving technological innovation and market expansion. Key companies include BASF, novoMOF AG, MOF Technologies Ltd. (now Nuada), framergy, Inc., Promethean Particles Ltd, Baker Hughes Company (Mosaic Materials Inc.), Atomis, Inc., MOFWORX, and Immaterial Ltd. These players compete through diversified MOF product portfolios such as Zeolitic Imidazolate Frameworks and MIL-series MOFs, focusing on applications across industries like power generation, cement, and oil & gas. Strategic collaborations and R&D investments underpin their efforts to enhance MOF performance, reduce costs, and scale Carbon Capture, Utilization, and Storage (CCUS) and Direct Air Capture (DAC) processes. This competitive ecosystem accelerates the deployment of MOF-based CO2 capture solutions, reinforcing their critical role in global decarbonization efforts.

Some prominent names established in this market are:

BASF

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Baker Hughes Company (Mosaic Materials Inc.)

novoMOF AG

MOF Technologies Ltd. (now Nuada)

framergy, Inc.

Promethean Particles Ltd

Atomis, Inc.

MOFWORX

Immaterial Ltd.

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