

Metal Organic Frameworks Market Opportunity, Growth Drivers, Industry Trend Analysis, and Forecast 2025 - 2034

<https://marketpublishers.com/r/MCDBFEF44353EN.html>

Date: November 2024

Pages: 250

Price: US\$ 4,850.00 (Single User License)

ID: MCDBFEF44353EN

Abstracts

The Global Metal Organic Frameworks Market reached USD 9.8 billion in 2024 and is projected to grow at a CAGR of 14.2% from 2025 to 2034. MOFs are gaining prominence due to their versatile applications in clean energy solutions, such as carbon capture, hydrogen storage, and energy storage. Their ability to efficiently adsorb gases like CO₂ and store hydrogen positions them as a crucial component in advancing sustainable energy initiatives. As industries prioritize reducing environmental impact, MOFs present an innovative alternative to traditional materials.

However, the market faces challenges, primarily due to high production costs. The synthesis of MOFs involves complex processes and expensive raw materials, making them less economically viable for price-sensitive industries like construction and manufacturing. Additionally, the scalability of MOF production is still evolving, as large-scale manufacturing techniques remain under development, limiting their accessibility and contributing to higher costs.

The market is segmented by product type into copper-based, iron-based, magnesium-based, zinc-based, and others. In 2024, the copper-based segment garnered USD 3 billion in revenue, driven by unique properties, such as high permanence and catalytic action. These MOFs are widely utilized in applications like gas storage, carbon capture, and drug delivery. Ongoing research to enhance the functioning and scalability of copper-based MOFs further cements their dominance in the market.

In terms of synthetic methods, the market is categorized into mechanochemical, hydro (solvo) thermal, electrochemical, microwave, ultrasonic, and others. The hydro (solvo) thermal segment held a 35.6% share in 2024, attributed to its precision in creating

MOFs with tailored properties. This method, which uses controlled temperature and pressure in solvent-rich environments, ensures accurate control over MOF shape and pore size. Its diverse applications, including gas storage and chemical sensing, make it a leading synthesis technique, strengthening its market position.

U.S. metal organic frameworks market generated USD 2.6 billion in revenue in 2024, bolstered by expanding applications in gas storage, energy storage, and carbon capture. MOFs' high surface area and tunable properties provide distinct advantages, meeting the growing demand for advanced materials in sustainable energy. Significant investments in clean energy and cutting-edge research further drive innovation, positioning the U.S. as a critical player in the global MOF industry. With industries increasingly adopting green technologies, the demand for MOFs is expected to rise, ensuring continued market growth.

Contents

Report Content

CHAPTER 1 METHODOLOGY & SCOPE

- 1.1 Market scope & definition
- 1.2 Base estimates & calculations
- 1.3 Forecast calculation
- 1.4 Data sources
 - 1.4.1 Primary
 - 1.4.2 Secondary
 - 1.4.2.1 Paid sources
 - 1.4.2.2 Public sources

CHAPTER 2 EXECUTIVE SUMMARY

- 2.1 Industry synopsis, 2021-2034

CHAPTER 3 INDUSTRY INSIGHTS

- 3.1 Industry ecosystem analysis
 - 3.1.1 Factor affecting the value chain
 - 3.1.2 Profit margin analysis
 - 3.1.3 Disruptions
 - 3.1.4 Future outlook
 - 3.1.5 Manufacturers
 - 3.1.6 Distributors
- 3.2 Supplier landscape
- 3.3 Profit margin analysis
- 3.4 Key news & initiatives
- 3.5 Regulatory landscape
- 3.6 Impact forces
 - 3.6.1 Growth drivers
 - 3.6.1.1 Increasing demand for clean energy
 - 3.6.1.2 Growth in pharmaceuticals industry
 - 3.6.1.3 Increasing use of electronics
 - 3.6.2 Industry pitfalls & challenges
 - 3.6.2.1 High production cost

- 3.6.2.2 Limited commercial application
- 3.7 Growth potential analysis
- 3.8 Porter's analysis
- 3.9 PESTEL analysis

CHAPTER 4 COMPETITIVE LANDSCAPE, 2024

- 4.1 Introduction
- 4.2 Company market share analysis
- 4.3 Competitive positioning matrix
- 4.4 Strategic outlook matrix

CHAPTER 5 MARKET SIZE AND FORECAST, BY PRODUCT, 2021-2034 (USD BILLION, KILO TONS)

- 5.1 Key trends
- 5.2 Aluminium based
- 5.3 Copper based
- 5.4 Iron based
- 5.5 Zinc based
- 5.6 Magnesium based
- 5.7 Others

CHAPTER 6 MARKET SIZE AND FORECAST, BY SYNTHETIC METHOD, 2021-2034 (USD BILLION, KILO TONS)

- 6.1 Key trends
- 6.2 Hydro(solvo)thermal
- 6.3 Microwave
- 6.4 Ultrasonic
- 6.5 Mechanochemical
- 6.6 Electrochemical
- 6.7 Others

CHAPTER 7 MARKET SIZE AND FORECAST, BY APPLICATION, 2021-2034 (USD BILLION, KILO TONS)

- 7.1 Key trends
- 7.2 Gas separation and purification

- 7.3 Catalyst
- 7.4 Gas storage
- 7.5 Drug delivery
- 7.6 Carbon capture
- 7.7 Atmospheric water harvesting
- 7.8 Others

CHAPTER 8 MARKET SIZE AND FORECAST, BY REGION, 2021-2034 (USD BILLION, KILO TONS)

- 8.1 Key trends
- 8.2 North America
 - 8.2.1 U.S.
 - 8.2.2 Canada
- 8.3 Europe
 - 8.3.1 UK
 - 8.3.2 Germany
 - 8.3.3 France
 - 8.3.4 Italy
 - 8.3.5 Spain
 - 8.3.6 Russia
- 8.4 Asia Pacific
 - 8.4.1 China
 - 8.4.2 India
 - 8.4.3 Japan
 - 8.4.4 South Korea
 - 8.4.5 Australia
- 8.5 Latin America
 - 8.5.1 Brazil
 - 8.5.2 Mexico
- 8.6 MEA
 - 8.6.1 South Africa
 - 8.6.2 Saudi Arabia
 - 8.6.3 UAE

CHAPTER 9 COMPANY PROFILES

- 9.1 BASF SE
- 9.2 CSIRO

- 9.3 Framergy
- 9.4 MOF Technologies
- 9.5 Mosaic Materials
- 9.6 Nanorh
- 9.7 Novo MOF
- 9.8 NuMat
- 9.9 Prof MOF
- 9.10 Promethean Particles

I would like to order

Product name: Metal Organic Frameworks Market Opportunity, Growth Drivers, Industry Trend Analysis, and Forecast 2025 - 2034

Product link: <https://marketpublishers.com/r/MCDBFEF44353EN.html>

Price: US\$ 4,850.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:

info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <https://marketpublishers.com/r/MCDBFEF44353EN.html>