

## **Gas Separation Membrane Market | Growth, Trends, Covid-19 Impact, and Forecasts (2023 - 2028)**

Market Report | 2023-01-23 | 150 pages | Mordor Intelligence

### **AVAILABLE LICENSES:**

- Single User License \$4750.00
- Team License (1-7 Users) \$5250.00
- Site License \$6500.00
- Corporate License \$8750.00

### **Report description:**

The global gas separation membrane market is valued at USD 957.47 million in 2021 and is projected to register a CAGR of 5.87% during the forecast period (2022-2027).

#### Key Highlights

The major factors driving the market studied are the increasing demand for membranes in carbon dioxide separation processes and strict government norms towards GHG emissions.

On the flipside, plasticization of polymeric membranes in high-temperature applications and growth in shale investment has significantly hindered market growth.

The development of mixed matrix membranes and polymeric membranes and expanding applications are expected to create opportunities for the market studied.

Asia-Pacific represents the largest market and is also expected to be the fastest-growing market over the forecast period, owing to the increasing consumption from countries like China, India, and Japan.

#### Gas Separation Membrane Market Trends

##### Hydrogen Recovery Application to Dominate the Market

With the growing demand for clean energy, the demand for hydrogen is growing globally. Hydrogen is extensively used in hydro-treating and hydrocracking for cleaner and higher-value fuels and demand for chemical products and electronics

**Scotts International. EU Vat number: PL 6772247784**

tel. 0048 603 394 346 e-mail: [support@scott-international.com](mailto:support@scott-international.com)

[www.scott-international.com](http://www.scott-international.com)

production. The processes to generate hydrogen create residual gas streams or byproducts that retain a significant amount of valuable pressurized hydrogen. Therefore, gas separation membrane modules are employed to economically recover hydrogen from such gas streams with minimal losses. These membrane modules achieve separations that result in 90 -99.9% of hydrogen purities.

Hydrogen separation and recovery are extensively used during downstream treatment processes at high enough temperatures. The separation membranes are used for hydrogen separation converting natural gas via steam reforming reactions. In this process, methane conversion and hydrogen separation are carried out in a single component. The equilibrium shifting in this case by continuous hydrogen removal increases the degree of chemical conversion, enhancing the overall plant efficiency.

Despite countries growing initiatives toward decarbonization, more than 75% of global energy demand is met through fossil fuels. Unlike fossil fuels, hydrogen as an energy source produces water as the only byproduct. Using hydrogen as an energy source may significantly help address issues related to energy security, global climate change, and air pollution. Furthermore, the abundant availability of hydrogen in the universe contains the highest energy content per unit of weight compared to any known fuels.

Hydrogen is recovered from refinery and petrochemical streams, so it may be used in hydro-treating operations to produce low sulfur fuels. Membranes are used to efficiently recover and recycle hydrogen contained in purge gas to adjust H<sub>2</sub> / CO ratio.

According to Global Hydrogen Outlook, 2021, by IEA, based on planned projects and existing plants, global hydrogen production from fossil fuels with carbon capture and storage (CCSU) is expected to reach 9 Mt by 2030. In the United Kingdom, domestic low-carbon hydrogen production capacity is expected to reach 5 GW by 2030

Thus, growing hydrogen production may augment the hydrogen recovery procedures in refining and petrochemicals application, boosting the demand for gas separation membranes.

#### Asia-Pacific to Dominate the Market

Asia-Pacific is anticipated to account for the largest and the fastest-growing market for gas separation membrane, attributed to growing industrialization in the region, which, in turn, boosts the market growth.

Rising emphasis on CO<sub>2</sub> reduction and rising biogas demand in countries such as Indonesia, China, and India are expected to drive market growth.

This growth is driven mainly by the rising demand for carbon dioxide removal from reservoirs, increasing demand for sanitation and fresh water, increasing urbanization, and improved standard of living. Rapid growth and innovation, coupled with industry consolidations, are expected to lead to the rapid growth of the market in the region.

However, The oil and gas sector is one of the largest application industries for gas separation membranes in China. China has been investing to scale up its refining capacity over the past two decades to its growing economy. Moreover, for a long period, China has continuously expanded its refining capacity for all types of crudes. According to Institute for Energy Research, China will likely register 20 million barrels of refining capacity at the end of 2025, which will trigger the demand for gas separation membranes in the upcoming years.

Moreover, the crude oil output of China has registered at 33.47 million tons in the first two months of 2022, which is about 4.6 percent up from the same period of the previous year. According to the National Bureau of Statistics China, the daily output of crude oil is nearly 576,000 tons. Since gas separation membranes are widely used in the oil & gas industry, from oil wellhead to oil recovery to refinery, it will significantly augment product demand shortly.

Increasing biogas production in developing countries, particularly in Asia-Pacific, and the technique's cost-effectiveness, are further boosting the market growth. The presence of numerous reservoirs and rising shale gas production across South East Asian nations are expected to drive global demand for gas separation membranes.

Additionally, the increasing use of gas separation membranes to control CO<sub>2</sub> emissions from industrial effluents is expected to have a positive impact. Strengthening government regulations to curb gaseous emissions is expected to fuel the demand for the product in the future.

India sees huge investments from domestic and foreign players in the oil and gas industry. According to the Ministry of Petroleum

**Scotts International. EU Vat number: PL 6772247784**

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

and Natural Gas, the country is looking to cut its reliance on oil imports by 10% by 2022. The government is also planning to invest USD 2.86 billion in upstream oil and gas production to double the country's natural gas production to 60 bcm and drill more than 120 exploration wells by 2022. This is expected to create a huge demand for gas separation membranes in the country. Furthermore, significant growth of natural gas production in the region may propel the demand for gas separation membrane in acid gas separation in the regional market.

## Gas Separation Membrane Market Competitor Analysis

The gas separation membrane market is partially consolidated in nature, with a few major players dominating a significant portion of the market. Some of the major companies are Air Products Inc., UBE Industries Ltd, Air Liquide, Evonik, and Membrane Technology and Research Inc., among others.

### Additional Benefits:

The market estimate (ME) sheet in Excel format  
3 months of analyst support

### Table of Contents:

#### 1 INTRODUCTION

- 1.1 Study Assumptions
- 1.2 Scope of the Study

#### 2 RESEARCH METHODOLOGY

#### 3 EXECUTIVE SUMMARY

#### 4 MARKET DYNAMICS

- 4.1 Drivers
  - 4.1.1 Increasing Demand for Membranes in Carbon Dioxide Separation Processes
  - 4.1.2 Strict Government Norms Toward GHG Emissions?
- 4.2 Restraints
  - 4.2.1 Plasticization of Polymeric Membranes in High-temperature Applications
  - 4.2.2 Growth in Shale Investment
- 4.3 Industry Value Chain Analysis
- 4.4 Porter's Five Forces Analysis
  - 4.4.1 Bargaining Power of Suppliers
  - 4.4.2 Bargaining Power of Consumers
  - 4.4.3 Threat of New Entrants
  - 4.4.4 Threat of Substitute Products and Services
  - 4.4.5 Degree of Competition

#### 5 MARKET SEGMENTATION

- 5.1 Material Type
  - 5.1.1 Polyimide and Polyaramide
  - 5.1.2 Polysulfone
  - 5.1.3 Cellulose Acetate

**Scotts International. EU Vat number: PL 6772247784**

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

- 5.1.4 Other Material Types
- 5.2 Application
  - 5.2.1 Nitrogen Generation and Oxygen Enrichment
  - 5.2.2 Hydrogen Recovery
  - 5.2.3 Carbon Dioxide Removal
  - 5.2.4 Removal of Hydrogen Sulphide
  - 5.2.5 Other Applications
- 5.3 Geography
  - 5.3.1 Asia-Pacific
    - 5.3.1.1 China
    - 5.3.1.2 India
    - 5.3.1.3 Japan
    - 5.3.1.4 South Korea
    - 5.3.1.5 Rest of Asia-Pacific
  - 5.3.2 North America
    - 5.3.2.1 United States
    - 5.3.2.2 Canada
    - 5.3.2.3 Mexico
  - 5.3.3 Europe
    - 5.3.3.1 Germany
    - 5.3.3.2 United Kingdom
    - 5.3.3.3 Italy
    - 5.3.3.4 France
    - 5.3.3.5 Rest of Europe
  - 5.3.4 South America
    - 5.3.4.1 Brazil
    - 5.3.4.2 Argentina
    - 5.3.4.3 Rest of South America
  - 5.3.5 Middle-East
    - 5.3.5.1 Saudi Arabia
    - 5.3.5.2 South Africa
    - 5.3.5.3 Rest of Middle-East

## 6 COMPETITIVE LANDSCAPE

- 6.1 Mergers and Acquisitions, Joint Ventures, Collaborations, and Agreements
- 6.2 Market Share (%)\*\*/Ranking Analysis
- 6.3 Strategies Adopted by Leading Players
- 6.4 Company Profiles (Overview, Financials\*\*, Products and Services, and Recent Developments)
  - 6.4.1 Air Liquide?
  - 6.4.2 Air Products Inc.?
  - 6.4.3 DIC Corporation
  - 6.4.4 FUJIFILM Corporation?
  - 6.4.5 Schlumberger Limited?
  - 6.4.6 Ube Industries Ltd
  - 6.4.7 GENERON?
  - 6.4.8 Honeywell International Inc.?
  - 6.4.9 Membrane Technology and Research Inc.?

**Scotts International. EU Vat number: PL 6772247784**

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

6.4.10 Evonik?

6.4.11 Toray?

6.4.12 Linde PLC (Praxair)?

6.4.13 Parker Hannifin Corp?

## 7 MARKET OPPORTUNITIES AND FUTURE TRENDS

7.1 Development of Mixed Matrix Membranes

7.2 Development in Polymeric Membranes and Expanding Applications

**Scotts International. EU Vat number: PL 6772247784**

tel. 0048 603 394 346 e-mail: [support@scotts-international.com](mailto:support@scotts-international.com)

[www.scotts-international.com](http://www.scotts-international.com)

**Gas Separation Membrane Market | Growth, Trends, Covid-19 Impact, and Forecasts  
(2023 - 2028)**

Market Report | 2023-01-23 | 150 pages | Mordor Intelligence

To place an Order with Scotts International:

- Print this form
- Complete the relevant blank fields and sign
- Send as a scanned email to support@scotts-international.com

**ORDER FORM:**

Select license	License	Price
	Single User License	\$4750.00
	Team License (1-7 Users)	\$5250.00
	Site License	\$6500.00
	Corporate License	\$8750.00
		VAT
		Total

\*Please circle the relevant license option. For any questions please contact support@scotts-international.com or 0048 603 394 346.

\*\* VAT will be added at 23% for Polish based companies, individuals and EU based companies who are unable to provide a valid EU Vat Numbers.

Email*	<input type="text"/>	Phone*	<input type="text"/>
First Name*	<input type="text"/>	Last Name*	<input type="text"/>
Job title*	<input type="text"/>		
Company Name*	<input type="text"/>	EU Vat / Tax ID / NIP number*	<input type="text"/>
Address*	<input type="text"/>	City*	<input type="text"/>
Zip Code*	<input type="text"/>	Country*	<input type="text"/>
		Date	<input type="text" value="2026-03-02"/>
		Signature	

**Scotts International. EU Vat number: PL 6772247784**

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

