

Gas Separation Membrane - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2025 - 2030)

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Report description:

The Gas Separation Membrane Market size is estimated at USD 2.06 billion in 2025, and is expected to reach USD 2.63 billion by 2030, at a CAGR of greater than 5% during the forecast period (2025-2030).

The COVID-19 pandemic negatively affected the gas separation membrane market. The pandemic disrupted the global supply chain, which affected the availability of raw materials, components, and equipment for manufacturing gas separation membranes. Delays in production and shipping led to temporary shortages of membrane systems and components. However, as countries gradually lifted lockdown restrictions, demand for gas separation membrane systems started to rebound.

Key Highlights

- The rising demand for membranes in carbon dioxide separation processes and strict government regulations for GHG emissions are expected to drive the gas separation membrane market.
- However, the plasticization of polymeric membranes in high-temperature applications and the upscaling and adoption of new membranes are expected to hamper the market growth of gas separation membranes.
- Furthermore, developing mixed matrix membranes (MMMs) and polymeric membranes with expanding applications is projected to provide new opportunities for the market studied.
- Asia-Pacific holds the largest share by geography in the market studied. It is expected to be the fastest-growing market over the forecast period due to the rising demand for gas separation membranes in China, India, and Japan.

Gas Separation Membrane Market Trends

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The Nitrogen Generation and Oxygen Enrichment Segment to Dominate the Market

- Nitrogen generation and oxygen enrichment are essential processes in various industrial applications. Industries such as oil and gas, chemicals, electronics, food and beverage, and pharmaceuticals require nitrogen for blanketing, purging, inerting, and packaging. At the same time, oxygen enrichment is necessary for processes such as combustion, fermentation, and wastewater treatment.
- Nitrogen generation and oxygen enrichment using gas separation membranes enable onsite gas production, eliminating the need for transportation, storage, and handling of compressed or liquified gases. This reduces logistic costs, enhances supply chain reliability, and improves safety in industrial operations.
- Nitrogen is used in the food and beverage industry to displace oxygen in food packaging to extend the shelf life and preserve freshness. It is used to pressurize kegs and dispense carbonated beverages like beer and soda. In food processing operations, nitrogen is used for inerting, blanketing, cryogenic, and freezing.
- China's beer industry is also experiencing the quickest expansion globally, with its total revenue reaching about USD 131.5 billion by the close of 2023.
- Nitrogen and oxygen find applications in the electronics industry. Nitrogen is used as a carrier gas in semiconductor fabrication processes to prevent contamination and maintain precise atmospheric conditions. It is also used for wave soldering, reflow soldering, and conformal coating processes to improve soldering quality and prevent oxidation.
- According to the report released by the Semiconductor Industry Association, global semiconductor sales increased by 5.3 % year-to-year in November 2023.
- Oxygen enrichment is used in metallurgical processes such as steelmaking, iron smelting, and non-ferrous metal refining to increase combustion efficiency, reduce fuel consumption, and improve process productivity.
- Therefore, the demand for gas separation membranes is expected to increase and thus have a positive impact on the market studied.

Asia-Pacific to Dominate the Market

- Asia-Pacific is home to rapidly growing countries such as India, China, Japan, South Korea, and other Southeast Asian countries. These countries are experiencing significant industrial growth, driving demand for gas separation membrane technologies across various sectors, including oil and gas, chemicals, electronics, healthcare, and food and beverage.
- Asia-Pacific is a central manufacturing hub with a diverse range of industries producing chemicals, electronics, semiconductors, automobiles, and consumer goods. Gas separation membranes are essential components in many manufacturing processes, leading to high demand in the region.
- According to the World Steel Organization, in December 2023, China produced 67.4 metric tons of steel. Meanwhile, India has risen to become the second-largest producer of crude steel globally. The country exported 6.72 million metric tons of finished steel while only importing 6.02 million metric tons in the fiscal year 2022-23.
- Furthermore, according to the Semiconductor Association, in January 2024, China's semiconductor sales soared to USD 14.76 billion, marking a notable rise from the previous year. This is a considerable jump compared to the sales in January 2023, which stood at USD 11.66 billion.
- In addition, the demand for gas separation membranes in the region's acid gas separation market is expected to be stimulated by the rising energy production in this area.

Gas Separation Membrane Industry Overview

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The gas separation membrane market is partially consolidated in nature, with a few major players dominating the market. The major companies operating in the market include Air Products and Chemicals Inc., UBE Corporation, Air Liquide Advanced Separations, DIC Corporation, and FUJIFILM Corporation.

Additional Benefits:

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

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