Gas Separation Membrane Market by Module, Material Type, Application (Nitrogen Generation & Oxygen Enrichment, Hydrogen Recovery, CDR, Vapor/Gas Separation, Vapor/Vapor Separation, Air Dehydration, H2S Removal), and Region - Global Forecast to 2030

Market Report | 2025-10-27 | 258 pages | MarketsandMarkets

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Report description:

The gas separation membrane market is estimated to be worth USD 1.16 billion in 2025 and is projected to reach USD 1.67 billion by 2030, growing at a CAGR of 7.4% from 2025 to 2030. Spiral-wound modules combine a number of attributes that make them very appealing in many gas separation applications, acting as a strong middle ground between cost, performance, and operational practicality. Their compact design with high packing density allows for a large membrane area in a relatively small volume, meaning more separation area per module footprint. Also, spiral-wound modules are often less expensive to manufacture per unit of membrane area compared to many more complex module types, giving them cost-benefits especially in large-scale or energy-sensitive applications.

''Polysulfone type accounted for the second-largest market share during the forecast period."
Polysulfone types are expected to account for the second-highest market share in the gas separation membrane type segment, driven by their excellent balance of mechanical strength, thermal stability, and chemical resistance at a relatively lower cost compared to advanced polymers. Their robust structure makes them suitable for a wide range of industrial applications, including air separation, hydrogen recovery, and biogas upgrading, where moderate selectivity and durability are sufficient. Polysulfone is also highly processable, allowing manufacturers to fabricate membranes in different module configurations, such as hollow fiber and spiral wound, to meet diverse operational needs.

"Nitrogen generation & oxygen enrichment application is projected to account for the second-largest market share during the

forecast period.
The nitrogen generation & oxygen enrichment segment is expected to hold the second highest market share in the gas separation membrane market due to their wide industrial and commercial demand. Nitrogen generation membranes are extensively used in food packaging, electronics, pharmaceuticals, and chemical industries to create inert atmospheres that enhance product safety and shelf life. Similarly, oxygen enrichment applications are gaining traction in healthcare, metal cutting, and wastewater treatment, where a reliable and cost-effective oxygen supply is critical. Membranes offer significant advantages in these applications by providing on-site gas generation with lower energy consumption, compact systems, and reduced dependence on bulk gas deliveries. The scalability and operational simplicity of membrane-based systems make them highly attractive across both large-scale industries and small to medium enterprises. While carbon dioxide removal leads in adoption, the versatility and growing demand for nitrogen and oxygen in essential industries ensure this segment secures the second-largest share in the market.
"North America is expected to account for the second-largest market share during the forecast period.
North America is expected to hold the second-highest market share in the gas separation membrane market, driven by its strong industrial base, advanced technological adoption, and supportive regulatory framework. The region has a high demand for gas separation membranes in natural gas processing, hydrogen recovery, and carbon capture, driven by the presence of abundant shale gas reserves and growing clean energy initiatives. In addition, industries such as petrochemicals, chemicals, and healthcare are increasingly adopting membrane technologies for nitrogen generation and oxygen enrichment, benefiting from their cost-effectiveness and energy efficiency. Continuous investments in R&D, coupled with the presence of leading global players and government policies encouraging emission reduction, further strengthen the region's market position. While Asia Pacific dominates due to large-scale industrialization, North America's mature energy sector, innovation-driven ecosystem, and emphasis on sustainability ensure it remains the second-largest regional market for gas separation membranes. North America has numerous manufacturers, including Air Products and Chemicals, Inc. (US), Honeywell International Inc. (US), GENERON (US), Membrane Technology and Research, Inc. (US), Parker Hannifin Corporation (US), and others.
This study has been validated through primary interviews with industry experts globally. These primary sources have been divided into the following three categories:
-□By Company Type- Tier 1- 60%, Tier 2- 20%, and Tier 3- 20%
-□By Designation- C Level- 33%, Director Level- 33%, and Managers- 34%
-□By Region- North America- 20%, Europe- 25%, Asia Pacific- 25%, Middle East & Africa- 15%, and Latin America- 15%
The report provides a comprehensive analysis of company profiles:
Prominent companies Air Liquide (France), Air Products and Chemicals, Inc. (US), Honeywell International Inc. (US), UBE Corporation (Japan), FUJIFILM RUS LLC (Japan), Linde plc (Ireland), DIC Corporation (Japan), GENERON (US), Membrane Technology and Research, Inc. (US), Parker Hannifin Corporation (US).
Study Coverage

This research report categorizes the gas separation membrane market by module (Plate & Frame, Spiral Wound, Hollow Fiber and Other Modules), Material Type (Polyimide & Polyaramide, Polysulfone, Cellulose Acetate and Other Types), Application (Nitrogen Generation & Oxygen Enrichment, Hydrogen Recovery, Carbon Dioxide Removal, Vapor/Gas Separation, Vapor/Vapor Separation, Air Dehydration, H2S and Other Applications), Region (North America, Europe, Asia Pacific, Middle East & Africa, and South America). The scope of the report includes detailed information about the major factors influencing the growth of the gas separation membrane market, such as drivers, restraints, challenges, and opportunities. A thorough examination of the key industry players has been conducted in order to provide insights into their business overview, solutions, and services, key strategies, contracts, partnerships, and agreements. Product launches, mergers and acquisitions, and recent developments in the gas separation membrane market are all covered. This report includes a competitive analysis of upcoming startups in the gas separation membrane market ecosystem.
Reasons to buy this report:

The report will help the market leaders/new entrants in this market with information on the closest approximations of the revenue

numbers for the overall gas separation membrane market and the subsegments. This report will help stakeholders understand the competitive landscape and gain more insights to position their businesses better and plan suitable go-to-market strategies. The report also helps stakeholders understand the pulse of the market and provides them with information on key market drivers, restraints, challenges, and opportunities.
The report provides insights on the following pointers:

-□Analysis of key drivers (Growing need for membranes in carbon dioxide separation processes, rising demand for membranes in nitrogen generation and syngas cleaning), restraints (Technical disadvantages compared to alternative gas separation technologies, plasticization of polymeric membranes in high temperature applications), opportunities (Rising demand for clean energy, development of mixed matrix membranes) and challenges (Upscaling and commercializing new membranes, requirement for high initial investment for development and installation of polymeric membranes for separation).
-□Product Development/Innovation: Detailed insights on upcoming technologies, research & development activities, and service launches in the gas separation membrane market.

-□Market Development: Comprehensive information about lucrative markets - the report analyses the gas separation membrane market across varied regions.

-□Market Diversification: Exhaustive information about services, untapped geographies, recent developments, and investments in the gas separation membrane market

-□Competitive Assessment: In-depth assessment of market shares, growth strategies and service offerings of leading players like Air Liquide (France), Air Products and Chemicals, Inc. (US), Honeywell International Inc. (US), UBE Corporation (Japan), FUJIFILM RUS LLC (Japan), Linde plc (Ireland), DIC Corporation (Japan), GENERON (US), Membrane Technology and Research, Inc. (US), Parker Hannifin Corporation (US) among others in the gas separation membrane market.

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