Gas Separation Membrane - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts 2019 - 2029

Market Report | 2024-02-17 | 170 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 Gas Separation Membrane Market size is estimated at USD 1.97 billion in 2024, and is expected to reach USD 2.61 billion by 2029, growing at a CAGR of 5.87% during the forecast period (2024-2029).

COVID-19 had a significant impact on the entire supply chain of the oil and gas industry, pharmaceutical industry, and biomedical devices industry, owing to strict lockdowns in several regions and thus negatively impacting the market for gas separation membranes. However, with the lifting of restrictions, the market is expected to gain pace with time and continue to grow during the forecast period.

Key Highlights
-The primary factors driving the market study include the rising demand for membranes in carbon dioxide separation operations and stringent government regulations governing GHG emissions.
-On the contrary, the plasticization of polymeric membranes in high-temperature applications and the upscaling and adoption of new membranes have significantly hampered market growth.
-Nevertheless, the development of mixed matrix membranes (MMM) and polymeric membranes, as well as expanding applications, are projected to open new potential in the market under consideration.
-The Asia-Pacific region is the largest market and is predicted to be the fastest-growing market throughout the projection period, owing to rising demand in China, India, and Japan.

Gas Separation Membrane Market Trends

- The processes of nitrogen generation and oxygen enrichment are integral parts of the chemical industry for the isolation of required products and the recovery of the reactants. The gas separation membrane modules build custom-made nitrogen or oxygen-enriched air generator systems for commercial and industrial applications.
- One major type of membrane used is polymeric, which operates at ambient or warm temperatures and may produce oxygen-enriched air (25-50% oxygen). Ceramic membranes are the other types used that may provide high-purity oxygen (90% or more). However, they require higher temperatures-around 800-900 degrees Celsius-to operate.
- Membrane gas separation is used to provide nitrogen-rich gases instead of air to fill jetliners' fuel tanks, reducing the likelihood of inadvertent burns and explosions. Nitrogen is widely utilized in the Haber process to produce ammonia. Ammonia is then employed in various chemical syntheses to produce fertilizers. Nitrogen is also used in packing and refrigeration, among other things.
- Furthermore, in today's world, oxygen and nitrogen are in high demand from the industrial sector, and large volumes are necessary for steel production. Nowadays, current basic oxygen steelmaking consumes almost 2 tons of oxygen for each ton of steel. As a result, to meet the requirement for oxygen, most steel factories employ gas separation modules, which are an essential aspect of plant operations.
- According to the World Steel Association, global crude steel production was 140.7 million tons (Mt) in December 2022. The total world crude steel production in 2022 was approximately 1,878 million tons, a 4% decrease compared to the production in the prior year. However, in 2023, it is expected to register a positive growth rate due to the increased demand in the industry, thereby driving the current studied market.
- The medical business has seen a surge in demand for oxygen concentrators in recent years, particularly during the pandemic era. With rising demand, several manufacturers intend to expand or open additional plants around the world. INOX Air Products Ltd, for example, announced in March 2022 the construction of India's largest greenfield plant, which will produce 2,150 tons per day (TPD) of industrial gases, including 2000 TPD of gaseous oxygen, 150 TPD of liquid oxygen, 1200 TPD of gaseous nitrogen, and 100 TPD of argon.
- Thus, the increased demand for nitrogen generation and oxygen enrichment will lead to an upsurge in the demand for the gas separation membrane and therefore positively affect the market.

Asia-Pacific to Dominate the Market

- Asia-Pacific is expected to be the largest and fastest-growing market for gas separation membranes, owing to the region's increasing industrialization, which drives the market's growth. The market's expansion is primarily driven by rising demand for carbon dioxide removal from reservoirs, a rising need for sanitation and freshwater, increased urbanization, and higher living standards. Fast expansion and innovation, combined with industry consolidations, will likely drive significant growth in the region's market.
- Nonetheless, the oil and gas industry in China is one of the most important application industries for gas separation membranes. Over the last two decades, China has invested in increasing its refining capacity to support its expanding economy.
- Furthermore, for a long time, China has steadily increased its refining capacity for all types of crude. According to the Institute for Energy Research (IEA), China is expected to have 20 million barrels of refining capacity by the end of 2025, resulting in an increased need for gas separation membranes in the coming years.
- Furthermore, China's crude oil output in 2022 was estimated to be about 204.6 million tons, a 3% increase over the same period last year. According to the National Bureau of Statistics (NBS) of China, the monthly output of crude oil in December 2022 was approximately 17 million tons, a 2.5% rise over the same period last year. Because gas separation membranes are widely employed in the oil and gas industry, from the oil wellhead to oil recovery to the refinery, product demand will skyrocket in the

near future.
- Even though India has a large power industry, the growing population, coupled with rising electrification and increasing per capita usage, will propel the industry's size in the upcoming years. According to the Indian Brand Equity Foundation (IBEF), as of October 31, 2022, India's installed renewable energy capacity (including hydro) stood at 165.94 GW, representing 40.6% of the overall installed power capacity.
- Additionally, the increasing use of gas separation membranes to control CO2 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.
- Furthermore, the significant growth of natural gas production in the region may propel the demand for gas separation membranes in acid gas separation in the regional market.

Gas Separation Membrane Industry Overview

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 and Chemicals, Inc., UBE Corporation, Air Liquide Advanced Seperations, DIC Corporation, Fujifilm Corporation, among others.

Additional Benefits:

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

Table of Contents:

Gas Separation Membrane - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts 2019 - 2029

Market Report | 2024-02-17 | 170 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*		Phone*	
First Name*		Last Name*	
Job title*			
Company Name*		EU Vat / Tax ID / NIP number*	
Address*		City*	
Zip Code*		Country*	
		Date	2026-03-05
		Signature