

Perfluorosulfonic Acid Membrane Market By Thickness (Below 20 Microns, 20 to 50 Microns, 50 to 150 Microns, Above 150 Microns) , By Application (Fuel Cells, Chlor-alkali Process, Hydrogen Production, Others) By End-Use Industry (Automotive, Energy and Power, Chemical Processing, Others) : Global Opportunity Analysis and Industry Forecast, 2024-2030

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Abstracts

The perfluorosulfonic acid membrane market was valued at \$6.3 billion in 2023, and is projected to reach \$17.7 billion by 2030, growing at a CAGR of 15.9% from 2024 to 2030.

Perfluorosulfonic acid membrane is a type of ion exchange membrane commonly used in a variety of electrochemical applications. These membranes exhibit superior chemical stability, high ionic conductivity, and robust mechanical properties due to the presence of hydrophobic fluorocarbon backbone and hydrophilic sulfonic acid functional groups, thus making them suitable for use in fuel cells. Furthermore, they find their application in various industrial processes such as chlor-alkali processes, water electrolysis, and various separation technologies.

The growth of the global perfluorosulfonic acid membrane market is driven by surge in penetration of electric vehicles. This is attributed to the fact that perfluorosulfonic acid membrane is the most common type of fuel cell used in electric vehicles as they offer longer driving ranges and faster refueling times as compared to battery electric vehicles. According to the International Energy Agency, a Paris-based autonomous

intergovernmental organization, over 3 million electric vehicles were sold in the first quarter of 2024, around 25% higher as compared to 2023. This number is estimated to reach 17 million by the end of 2024, exhibiting a 20% year-on-year increase, which is likely to boost the demand for polymer electrolyte membrane fuel cells. In addition, surge in demand for perfluorosulfonic acid membrane for various electrochemical applications notably contributes toward the market growth; for instance, water electrolysis for hydrogen production and redox flow batteries for energy storage rely heavily on perfluorosulfonic acid membrane. However, high cost associated with the materials used in the production of perfluorosulfonic acid membranes acts as a key deterrent factor of the global market. Moreover, complexities involved in manufacturing these membranes require skilled professionals, which incur additional cost, thus hampering the market growth. On the contrary, rise in government initiatives to promote clean energy is expected to offer remunerative opportunities for the expansion of the market during the forecast period. For instance, the UN adopted the 2030 Agenda for Sustainable Development in 2015, which aims to achieve more sustainable future by addressing global challenges such as poverty, inequality, climate change, environmental degradation, peace, and justice. Its 17 Sustainable Development Goals (SDGs) provides a comprehensive framework for tackling these challenges through coordinated international efforts. Furthermore, constant technological developments are expected to open new avenues for the growth of the market. For instance, innovations in membrane design such as enhanced proton conductivity, reduced gas crossover, and increased chemical stability are driving the broader adoption of perfluorosulfonic acid membrane across various industries.

The global perfluorosulfonic acid membrane market is segmented into thickness, application, end-use industry, and region. By thickness, the market is classified into below 20 microns, 20 to 50 microns, 50 to 150 microns, and above 150 microns. On the basis of application, it is divided into fuel cells, chlor-alkali process, hydrogen production, and others. Depending on end-use industry, it is segregated into automotive, energy and power, chemical processing, and others. Region wise, the market is analyzed across North America, Europe, Asia-Pacific, and LAMEA.

Key Findings

By thickness, the 20 to 50 microns segment held the highest market share in 2023 and is expected to maintain its leadership status by 2030.

On the basis of application, the fuel cells segment was the major shareholder in 2023 and is anticipated to dominate during the forecast period.

Depending on end-use industry, the automotive segment acquired the largest share in 2023 and is projected to continue the same trend in the coming years.

Region wise, Asia-Pacific is expected to experience fastest growth throughout the forecast period.

Competition Analysis

Competitive analysis and profiles of the major players in the global perfluorosulfonic acid membrane market include Vriitra Technologies, Shandong Hengyi New Material Technology Co., Ltd, Fuzhou Topda New Material Co., Ltd., The Chemours Company, ULTRANANOTECH PRIVATE LIMITED, Solvay, Ningbo Miami Advanced Material Technology Co., Ltd, Mianyang Prochema Commercial Co., Ltd., Shandong AME Energy Co., Ltd., and Weifang Senya Chemical Co., Ltd. These major players have adopted various key development strategies such as business expansion, new product launches, and partnerships to strengthen their foothold in the competitive market.

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Analysis of raw material in a product (by %)

End user preferences and pain points

Product Benchmarking / Product specification and applications

Product Life Cycles

Supply Chain Analysis & Vendor Margins

Upcoming/New Entrant by Regions

Technology Trend Analysis

Market share analysis of players by products/segments

New Product Development/ Product Matrix of Key Players

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Additional company profiles with specific client's interest

Additional country or region analysis- market size and forecast

Criss-cross segment analysis- market size and forecast

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Volume Market Size and Forecast

Key Market Segments

By Thickness

Below 20 Microns

20 t%li%50 Microns

50 t%li%150 Microns

Above 150 Microns

By Application

Fuel Cells

Chlor-alkali Process

Hydrogen Production

Others

By End-Use Industry

Automotive

Energy and Power

Chemical Processing

Others

By Region

North America

U.S.

Canada

Mexico

Europe

France

Germany

Italy

Spain

UK

Rest of Europe

Asia-Pacific

China

Japan

India

South Korea

Australia

Rest of Asia-Pacific

LAMEA

Brazil

South Africa

Saudi Arabia

Rest of LAMEA

Key Market Players

Vritra Technologies

Shandong Hengyi New Material Technology Co.,Ltd

Fuzhou Topda New Material Co., Ltd.

The Chemours Company

ULTRANANOTECH PRIVATE LIMITED

Solvay

Ningbo Miami Advanced Material Technology Co., Ltd

Mianyang Prochema Commercial Co., Ltd.

Shandong AME Energy Co., Ltd.

Weifang Senya Chemical Co., Ltd.

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