

# Global Ion Exchange Membrane of All-Vanadium Redox Flow Battery Market 2024 by Manufacturers, Regions, Type and Application, Forecast to 2030

<https://marketpublishers.com/r/G99F81D5590EN.html>

Date: January 2024

Pages: 75

Price: US\$ 3,480.00 (Single User License)

ID: G99F81D5590EN

## Abstracts

According to our (Global Info Research) latest study, the global Ion Exchange Membrane of All-Vanadium Redox Flow Battery market size was valued at USD 22 million in 2023 and is forecast to a readjusted size of USD 70 million by 2030 with a CAGR of 18.2% during review period.

The vanadium redox battery (VRB) (or Vanadium flow battery) is a type of rechargeable flow battery that employs vanadium ions in different oxidation states to store chemical potential energy. The vanadium redox battery exploits the ability of vanadium to exist in solution in four different oxidation states, and uses this property to make a battery that has just one electroactive element instead of two.

As the schematic shown in Fig, a vanadium redox-flow battery has two chambers, a positive chamber and a negative chamber, separated by an ion-exchange membrane. These two chambers are circulated with electrolytes containing active species of vanadium in different valence states,  $VO_2^+/VO_2^+$  in the positive electrolyte and  $V^{2+}/V^{3+}$  in the negative electrolyte. During discharge process,  $VO_2^+$  is reduced to  $VO_2$  at the positive electrode and  $V^{2+}$  is oxidized to  $V^{3+}$  at the negative electrode, as shown in Equation(1) and (2). The reactions proceed in the opposite direction during charge process. The active species are normally dissolved in a strong acid, and the protons transport across the ion-exchange membrane to balance the charge.

Global Ion Exchange Membrane of All-Vanadium Redox Flow Battery key players include Chemours (DuPont), etc. Global top one players hold a share about 90%.

North America is the largest market, with a share about 90%, followed by China and

Europe, having a total share about 5 percent.

In terms of product, Full-fluorinion Ion Exchange Membrane is the largest segment, with a share about 60%. And in terms of application, the largest application is Large-Scale Energy Storage, followed by Industrial Grid Adjustment and Management, etc.

The Global Info Research report includes an overview of the development of the Ion Exchange Membrane of All-Vanadium Redox Flow Battery industry chain, the market status of Large-Scale Energy Storage (Full-fluorinion Ion Exchange Membrane, Non-fluorinion Ion Exchange Membrane), Industrial Grid Adjustment and Management (Full-fluorinion Ion Exchange Membrane, Non-fluorinion Ion Exchange Membrane), and key enterprises in developed and developing market, and analysed the cutting-edge technology, patent, hot applications and market trends of Ion Exchange Membrane of All-Vanadium Redox Flow Battery.

Regionally, the report analyzes the Ion Exchange Membrane of All-Vanadium Redox Flow Battery markets in key regions. North America and Europe are experiencing steady growth, driven by government initiatives and increasing consumer awareness. Asia-Pacific, particularly China, leads the global Ion Exchange Membrane of All-Vanadium Redox Flow Battery market, with robust domestic demand, supportive policies, and a strong manufacturing base.

#### Key Features:

The report presents comprehensive understanding of the Ion Exchange Membrane of All-Vanadium Redox Flow Battery market. It provides a holistic view of the industry, as well as detailed insights into individual components and stakeholders. The report analysis market dynamics, trends, challenges, and opportunities within the Ion Exchange Membrane of All-Vanadium Redox Flow Battery industry.

The report involves analyzing the market at a macro level:

**Market Sizing and Segmentation:** Report collect data on the overall market size, including the sales quantity (Sqm), revenue generated, and market share of different by Type (e.g., Full-fluorinion Ion Exchange Membrane, Non-fluorinion Ion Exchange Membrane).

**Industry Analysis:** Report analyse the broader industry trends, such as government policies and regulations, technological advancements, consumer preferences, and

market dynamics. This analysis helps in understanding the key drivers and challenges influencing the Ion Exchange Membrane of All-Vanadium Redox Flow Battery market.

**Regional Analysis:** The report involves examining the Ion Exchange Membrane of All-Vanadium Redox Flow Battery market at a regional or national level. Report analyses regional factors such as government incentives, infrastructure development, economic conditions, and consumer behaviour to identify variations and opportunities within different markets.

**Market Projections:** Report covers the gathered data and analysis to make future projections and forecasts for the Ion Exchange Membrane of All-Vanadium Redox Flow Battery market. This may include estimating market growth rates, predicting market demand, and identifying emerging trends.

The report also involves a more granular approach to Ion Exchange Membrane of All-Vanadium Redox Flow Battery:

**Company Analysis:** Report covers individual Ion Exchange Membrane of All-Vanadium Redox Flow Battery manufacturers, suppliers, and other relevant industry players. This analysis includes studying their financial performance, market positioning, product portfolios, partnerships, and strategies.

**Consumer Analysis:** Report covers data on consumer behaviour, preferences, and attitudes towards Ion Exchange Membrane of All-Vanadium Redox Flow Battery. This may involve surveys, interviews, and analysis of consumer reviews and feedback from different by Application (Large-Scale Energy Storage, Industrial Grid Adjustment and Management).

**Technology Analysis:** Report covers specific technologies relevant to Ion Exchange Membrane of All-Vanadium Redox Flow Battery. It assesses the current state, advancements, and potential future developments in Ion Exchange Membrane of All-Vanadium Redox Flow Battery areas.

**Competitive Landscape:** By analyzing individual companies, suppliers, and consumers, the report present insights into the competitive landscape of the Ion Exchange Membrane of All-Vanadium Redox Flow Battery market. This analysis helps understand market share, competitive advantages, and potential areas for differentiation among industry players.

**Market Validation:** The report involves validating findings and projections through primary research, such as surveys, interviews, and focus groups.

### Market Segmentation

Ion Exchange Membrane of All-Vanadium Redox Flow Battery market is split by Type and by Application. For the period 2019-2030, the growth among segments provides accurate calculations and forecasts for consumption value by Type, and by Application in terms of volume and value.

### Market segment by Type

- Full-fluorinion Ion Exchange Membrane

- Non-fluorinion Ion Exchange Membrane

- Others

### Market segment by Application

- Large-Scale Energy Storage

- Industrial Grid Adjustment and Management

- Others

### Major players covered

- Chemours Company

- FuMa-Tech

- Golden Energy Fuel Cell

- Dalian Institute of Chemical Physics

Market segment by region, regional analysis covers

North America (United States, Canada and Mexico)

Europe (Germany, France, United Kingdom, Russia, Italy, and Rest of Europe)

Asia-Pacific (China, Japan, Korea, India, Southeast Asia, and Australia)

South America (Brazil, Argentina, Colombia, and Rest of South America)

Middle East & Africa (Saudi Arabia, UAE, Egypt, South Africa, and Rest of Middle East & Africa)

The content of the study subjects, includes a total of 15 chapters:

Chapter 1, to describe Ion Exchange Membrane of All-Vanadium Redox Flow Battery product scope, market overview, market estimation caveats and base year.

Chapter 2, to profile the top manufacturers of Ion Exchange Membrane of All-Vanadium Redox Flow Battery, with price, sales, revenue and global market share of Ion Exchange Membrane of All-Vanadium Redox Flow Battery from 2019 to 2024.

Chapter 3, the Ion Exchange Membrane of All-Vanadium Redox Flow Battery competitive situation, sales quantity, revenue and global market share of top manufacturers are analyzed emphatically by landscape contrast.

Chapter 4, the Ion Exchange Membrane of All-Vanadium Redox Flow Battery breakdown data are shown at the regional level, to show the sales quantity, consumption value and growth by regions, from 2019 to 2030.

Chapter 5 and 6, to segment the sales by Type and application, with sales market share and growth rate by type, application, from 2019 to 2030.

Chapter 7, 8, 9, 10 and 11, to break the sales data at the country level, with sales quantity, consumption value and market share for key countries in the world, from 2017 to 2023. and Ion Exchange Membrane of All-Vanadium Redox Flow Battery market forecast, by regions, type and application, with sales and revenue, from 2025 to 2030.

Chapter 12, market dynamics, drivers, restraints, trends and Porters Five Forces analysis.

Chapter 13, the key raw materials and key suppliers, and industry chain of Ion Exchange Membrane of All-Vanadium Redox Flow Battery.

Chapter 14 and 15, to describe Ion Exchange Membrane of All-Vanadium Redox Flow Battery sales channel, distributors, customers, research findings and conclusion.

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