

Rare Earth Elements Market Report by Application (Magnets, NiMH Batteries, Auto Catalysts, Diesel Engines, Fluid Cracking Catalyst, Phosphors, Glass, Polishing Powders, and Others), and Region 2024-2032

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Abstracts

The global rare earth elements market size reached US\$ 11.0 Billion in 2023. Looking forward, IMARC Group expects the market to reach US\$ 34.3 Billion by 2032, exhibiting a growth rate (CAGR) of 13.1% during 2024-2032. The increasing awareness of the utility of rare earth elements across different sectors, various industrial applications, widespread adoption of consumer electronics, and the shift toward sustainable and clean energy solutions are some of the major factors propelling the market.

Rare earth elements are a group of 17 chemical elements that consist of the 15 lanthanides, along with scandium and yttrium. Despite their name, most rare earth elements are not particularly rare in the Earth's crust. What makes them "rare" is the difficulty associated with mining and refining them. These elements are known for their unique magnetic, catalytic, and luminescent properties, which make them critical in various high-technology applications. They are essential components in a wide array of products, ranging from smartphones and consumer electronics to renewable energy systems and advanced military technologies.

Significant technological innovations across various industries, including consumer electronics, automotive, and renewable energy, represent one of the key factors driving the growth of the rare earth elements market across the globe. Rare earth elements are crucial in manufacturing components like batteries, magnets, and electronic displays, whose demand is rising with technological advancements. The market is also driven by their role in defense applications as these elements are essential in producing high-

performance materials used in radar systems, jet engines, and missile guidance systems. The growing emphasis on green energy is also acting as a major growth-inducing factor. Rare earth elements are vital in the production of wind turbines and electric vehicles, aligning with global sustainability goals to reduce carbon emissions. Additionally, geopolitics and trade relations significantly impact the market, as many rare earth element supplies are concentrated in specific regions, which are creating potential bottlenecks in supply chains. Moreover, government policies, including subsidies for technologies that use rare earth elements and strategic stockpiling, are creating a positive outlook for the market across the globe.

Rare Earth Elements Market Trends/Drivers:

Significant technological advancements

One of the most potent drivers of demand for rare earth elements is the relentless pace of technological innovation. These elements are indispensable in a plethora of high-tech applications. For instance, the powerful magnets used in wind turbines require neodymium, while hybrid and electric vehicle batteries often employ lanthanum. In addition to this, many electronic devices, such as smartphones, tablets, and laptops contain rare earth elements that enable smaller, and more efficient components. As these technologies continue to evolve and adoption rates climb, the demand for rare earth elements is escalating, which is further driving up the market value.

Rising green energy initiatives

Environmental sustainability is becoming a focal point for governments and organizations worldwide, stimulating the demand for clean energy technologies. Rare earth elements play a critical role in this sector. Elements like neodymium and dysprosium are used in the production of permanent magnets that are integral to the function of wind turbines. Similarly, the drive for electrification of the transport sector also boosts demand for rare earth elements used in batteries and electric motors. As nations strive to meet ambitious climate targets and transition to renewable energy sources, the market for these elements is fueling.

Rising defense applications

The demand for rare earth elements in defense applications significantly contributes to the market growth. These elements are indispensable for a variety of advanced military technologies. For instance, rare earths are essential components in the manufacturing of precision-guided munitions, radar systems, and avionics. They are also used in the

production of specialized glass for night-vision goggles and other optical equipment. As geopolitical tensions escalate and nations invest more in modernizing their defense capabilities, the need for rare earth elements rises. Military reliance on high-performance materials makes these elements a strategic priority, often leading to stockpiling and long-term procurement contracts.

Rare Earth Elements Industry Segmentation:

IMARC Group provides an analysis of the key trends in each segment of the global rare earth elements market report, along with forecasts at the global and regional levels for 2024-2032. Our report has categorized the market based on application.

Breakup by Application:

- Magnets
- NiMH Batteries
- Auto Catalysts
- Diesel Engines
- Fluid Cracking Catalyst
- Phosphers
- Glass
- Polishing Powders
- Others

Magnets dominate the market

A detailed breakup and analysis of the market based on the application has also been provided in the report. This includes the magnets, NiMH batteries, auto catalysts, diesel engines, fluid cracking catalyst, phosphers, glass, polishing powders, and others. According to the report, the magnets accounted for the largest market share.

Rare earth elements, particularly neodymium, dysprosium, and samarium, play a critical role in the development of high-performance magnets. These are not ordinary magnets; they offer superior magnetic properties as compared to traditional ferrite or alnico magnets. Neodymium magnets, often combined with small amounts of dysprosium to improve temperature stability, are widely used in a variety of applications requiring strong, compact magnets. In the renewable energy sector, these magnets are essential components in wind turbine generators. Their high magnetic force allows for more efficient energy conversion, thereby maximizing the electrical output. In the automotive industry, they are used in electric and hybrid vehicle motors, contributing to both power

and efficiency. These magnets are also prevalent in consumer electronics like headphones, smartphones, and hard disk drives, where their small size and high magnetic strength are particularly beneficial. Additionally, they are crucial in medical technologies such as MRI machines, which rely on strong magnetic fields for imaging.

Breakup by Region:

China

Japan & Northeast Asia

United States

China represents the largest market segment

The report has also provided a comprehensive analysis of all the major regional markets, which include China, Japan & Northeast Asia, and the United States. According to the report, China accounted for the largest market share.

In China, which controls a significant portion of the global supply of rare earth elements, several factors drive the market, both domestically and internationally. China has a booming electronics manufacturing sector that heavily relies on rare earth elements. As a global hub for consumer electronics, the internal demand for these elements is high. The Chinese government is implementing strategic policies to regulate and promote the rare earth industry. These include export quotas, strategic stockpiling, and subsidies to encourage domestic production. China's dominant position in the rare earth supply chain allows it to impact global prices and availability. This creates a virtuous cycle, which is attracting further investment into mining and processing facilities within the country. China is heavily investing in renewable energy technologies, such as wind turbines and electric vehicles, which require rare earth elements. This aligns with the country's ambitious environmental goals. Investments in research and technology aim to make the extraction and processing of rare earth elements more efficient and environmentally sustainable, which is maintaining China's competitive edge.

Competitive Landscape:

In the rare earth elements market, key players are engaging in a range of strategic initiatives to strengthen their position and capitalize on growing demand. This includes investments in research and development to enhance extraction technologies and improve the efficiency of refining processes. Companies are also exploring partnerships and collaborations, not just with other mining and chemical firms, but also with end-users like technology companies, defense contractors, and renewable energy providers.

Some leading players are working closely with governments to ensure stable supply chains, especially given the geopolitical sensitivities surrounding rare earth elements. Strategic stockpiling and long-term contracts are becoming more common as both companies and nations aim to mitigate supply risks. Additionally, market leaders are expanding their geographical footprint to tap into emerging markets where demand is rising due to technological adoption and industrial growth. Diversification of supply sources is also a key strategy, aimed at reducing dependence on specific regions.

The report has provided a comprehensive analysis of the competitive landscape in the market. Detailed profiles of all major companies have also been provided. Some of the key players in the market include:

Lynas Corporation Ltd.
Arafura Resources Limited
Great Western Minerals Group Ltd.
Avalon Advanced Materials Inc.
Greenland Minerals Ltd
Alkane Resources Ltd
Neo Performance Materials
Iluka Resource Limited
IREL (India) Limited
Canada Rare Earths Corporation

Recent Developments:

In April 2023, Hyderabad-based National Geophysical Research Institute has found large deposits of 15 Rare Earth Elements (REE) in Andhra Pradesh's Anantapur city. REE is a key component in many electronic devices and various industrial applications, including medical technology, aerospace, and defense.

In December 2021, China Rare Earth Group Co. Ltd, a state-owned enterprise (SOE) directly supervised by China's state assets regulator was formally established in East China's Ganzhou, Jiangxi Province. The newly launched rare earth mega SOE is a conglomerate of some top industrial producers, including the rare earth units of three of the "Big Six" SOEs that dominate the rare earth industry – Aluminum Corporation of China (CHALCO), China Minmetals Corporation, and Ganzhou Rare Earth Group Co., Ltd and two research companies – China Iron & Steel Research Institute Group and Grinm Group Corporation Ltd.

In December 2022, Japan to begin extracting rare earth metals from seabed in 2024 for electric vehicles and hybrids from the mud on the deep-sea bottom in an area off Minami-Torishima Island, a coral atoll in the Pacific Ocean about 1,900 kilometers southeast of Tokyo. Japan is aiming to reduce its reliance on China for rare earth

metals.

Key Questions Answered in This Report

1. What was the size of the global rare earth elements market in 2023?
2. What is the expected growth rate of the global rare earth elements market during 2024-2032?
3. What has been the impact of COVID-19 on the global rare earth elements market?
4. What are the key factors driving the global rare earth elements market?
5. What is the breakup of the global rare earth elements market based on the application?
6. What are the key regions in the global rare earth elements market?
7. Who are the key players/companies in the global rare earth elements market?

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