

Rare Gas Market - Global Industry Size, Share, Trends, Opportunity and Forecast, Segmented By Type (Neon, Krypton and Xenon), By Application (Automotive, Electronics, Consumer Durables, Manufacturing, Construction, Others), By Mode of Transport (Cylinder, Tanker, Tonnage), By Region & Competition, 2021-2031F

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Abstracts

The Global Rare Gas Market is projected to expand from USD 4.51 billion in 2025 to USD 6.89 billion by 2031, registering a CAGR of 7.32%. This market encompasses the commercial extraction and distribution of chemically inert noble gases, including helium, neon, argon, krypton, and xenon. The industry's trajectory is largely fueled by the booming semiconductor sector, where these gases are vital for wafer fabrication, alongside enduring demand from the healthcare field for cryogenic cooling in MRI machines.

However, the market faces potential obstacles due to supply chain volatility caused by geopolitical instability in primary production zones, leading to scarcity and erratic pricing. To understand the sector's economic scope, the European Industrial Gases Association reported that the global industrial gas market was valued at ?86.9 billion in 2024, highlighting the massive infrastructure that underpins the specialized rare gas segment.

Market Driver

The relentless growth of global semiconductor manufacturing, driven by AI and 5G technologies, acts as the main engine for the rare gas market, with high-purity noble

gases being essential for modern lithography and wafer fabrication. Neon is indispensable for the excimer lasers used in chip patterning, while helium ensures necessary cooling for high-throughput tools, with demand intensifying as the industry moves toward advanced nodes. Reflecting this trend, SEMI's 'World Fab Forecast' from June 2024 anticipates a 6% rise in global semiconductor capacity for the year, a growth rate that necessitates increased rare gas procurement to sustain operations at major fabrication hubs.

In parallel, the aerospace sector provides a strong revenue channel through the surge in satellite launches and the use of electric propulsion systems, which rely on xenon and krypton. These heavy noble gases are favored for Hall-effect thrusters because of their storage density and high ionization efficiency, characteristics critical for maintaining low-Earth orbits. According to the Satellite Industry Association's June 2024 report, a record 2,781 commercial satellites were deployed in 2023, boosting propulsion gas consumption. Highlighting the scale of suppliers meeting this demand, Linde plc reported full-year 2023 sales of \$32.9 billion in 2024, demonstrating the substantial capital involved in global rare gas distribution.

Market Challenge

Geopolitical instability causes significant supply chain volatility, serving as a major constraint on the Global Rare Gas Market by introducing operational risks that hinder steady commercial growth. Disruptions in key production regions constrain the supply of essential noble gases such as neon and krypton, leading to sudden price hikes and logistical challenges that prevent suppliers from meeting delivery schedules. As a result, major end-users in the healthcare and semiconductor industries encounter budgetary unpredictability, forcing them to delay purchases or stockpile inefficiently, which upsets the supply-demand balance and stifles organic growth.

The severity of this issue is compounded by the semiconductor sector's deep reliance on these materials for wafer fabrication. Data from SEMI in 2024 indicates that global wafer fabrication materials revenue reached \$42.9 billion, underscoring the massive scale of the industrial segment dependent on a reliable flow of precursors like rare gases. Volatility in the supply chain threatens this multi-billion dollar ecosystem, making it difficult to secure material availability; this uncertainty discourages infrastructure investments and long-term supply agreements, thereby restricting the market's overall expansion potential.

Market Trends

Semiconductor fabrication plants are increasingly adopting closed-loop recycling systems as a vital strategy to stabilize supply lines and control volatile procurement costs. This approach entails capturing and purifying noble gases, such as helium and neon, from equipment exhaust streams for reuse instead of venting them, allowing manufacturers to reduce their dependence on external market shifts. Demonstrating the efficacy of this method, SK Hynix announced in April 2024 that it had developed a recovery system achieving a 72.7% neon gas recovery rate, substantially decreasing its reliance on imports for chip production.

Simultaneously, the industry is witnessing a shift toward supply chain regionalization, with major industrial gas suppliers building infrastructure near end-users to reduce geopolitical exposure. This localization strategy seeks to protect the semiconductor ecosystem from logistical bottlenecks and trade restrictions by establishing domestic production capabilities for essential materials. For example, Air Liquide announced in June 2024 an investment exceeding \$250 million to construct a cutting-edge industrial gas facility in Idaho, dedicated to supporting domestic memory chip manufacturing.

Key Market Players

Air Liquide

Linde plc

Air Products and Chemicals, Inc.

Messer Group GmbH

Taiyo Nippon Sanso Corporation

Iwatani Corporation

Linde plc

Matheson Tri-Gas, Inc.

Air Water Inc.

Gulf Cryo

Report Scope

In this report, the Global Rare Gas Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

Rare Gas Market, By Type

Neon

Krypton

Xenon

Rare Gas Market, By Application

Automotive

Electronics

Consumer Durables

Manufacturing

Construction

Others

Rare Gas Market, By Mode of Transport

Cylinder

Tanker

Tonnage

Rare Gas Market, By Region

North America

United States

Canada

Mexico

Europe

France

United Kingdom

Italy

Germany

Spain

Asia Pacific

China

India

Japan

Australia

South Korea

South America

Brazil

Argentina

Colombia

Middle East & Africa

South Africa

Saudi Arabia

UAE

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the Global Rare Gas Market.

Available Customizations:

Global Rare Gas Market report with the given market data, TechSci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

Detailed analysis and profiling of additional market players (up to five).

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