

Global Aerospace Cryogenic Fuel Market Size Study, by End User (Rocket, Space Launch Vehicles, Others), by Fuel Type (Liquid Nitrogen, Liquid Hydrogen, Liquid Helium, Liquid Neon, Liquid Air, Others) and Regional Forecasts 2022-2032

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Abstracts

Global Aerospace Cryogenic Fuel Market is valued at approximately USD 10.45 billion in 2023 and is anticipated to grow with a healthy growth rate of more than 6.60% over the forecast period 2024-2032. Aerospace cryogenic fuels, which include liquid hydrogen, liquid oxygen, and liquid methane, are fundamental to rocket propulsion systems due to their high energy density and efficient combustion properties. These fuels are stored at cryogenic temperatures, requiring advanced insulation technologies and rigorous safety protocols. The increased energy density and high thrust-to-weight ratio make them indispensable for space exploration missions, such as Mars expeditions, facilitating the launch of heavy payloads. The continuous advancements in cryogenic fuel technology are driving efficient and sustainable energy solutions, not only in aerospace but also in other high-energy-demand sectors.

The trend towards sustainable aviation and decarbonization is propelling market growth. Companies like ZeroAvia, Universal Hydrogen, and Airbus are retrofitting existing aircraft to operate on hydrogen, showcasing the industry's commitment to innovation and environmental responsibility. The development of cryogenic hydrogen tanks and cryogenically cooled electrical systems is enhancing operational efficiency in aviation. These advancements not only improve propulsion efficiency but also contribute to reducing harmful emissions, aligning with global clean energy initiatives.

The adoption of liquefied natural gas (LNG) in the aerospace sector is another significant growth driver. LNG is gaining popularity due to its low emissions and cost-

effectiveness compared to traditional jet fuels. The increasing demand for LNG in aerospace is driving the development of cryogenic fuels and equipment for production, storage, and transportation. Technological advancements in cryogenic equipment, such as heat transfer efficiency improvements and material innovations, are enhancing the viability of LNG as an aerospace cryogenic fuel. Moreover, the advancements in cryogenic equipment, increased use of cryogenic technology in high-energy-demand sectors, as well as rising demand for LNG in emerging markets present various lucrative opportunities over the forecast years. However, maintaining cryogenic temperatures and weight carrying capacity limitations are challenging the market growth throughout the forecast period of 2024-2032.

The key regions considered for the Global Aerospace Cryogenic Fuel Market study include Asia Pacific, North America, Europe, Latin America, and Rest of the World. North America is a dominating region in the Global Aerospace Cryogenic Fuel Market in terms of revenue. The market growth in the region is being attributed to factors including the significant involvement of the aerospace industry in utilizing cryogenic fuels for various applications. The region benefits from a strong presence of key players in the data storage industry, technological advancements, and increased awareness. Whereas, the market in Europe is anticipated to grow at the fastest rate over the forecast period fueled by major aerospace companies like Airbus, which utilize cryogenic fuels for space missions and aircraft propulsion. The European aerospace industry is a major consumer of cryogenic fuels, with applications in rocket propulsion, satellite launch vehicles, and aircraft fuel systems.

Major market players included in this report are:

Air Liquide (France)
Air Products & Chemicals (U.S.)
Air Water, Inc. (Japan)
ZeroAvia, Inc. (U.S.)
Universal Hydrogen (U.S.)
Messer Group GmbH (Germany)
Mitsubishi Chemical Holdings (Taiyo Nippon Sanso) (Japan)
Narco Inc. (U.S.)
Linde Plc (Praxair Technology, Inc.) (Ireland)
SOL Group (Italy)
Honeywell International Inc.
Ball Aerospace & Technologies Corp.
The Boeing Company
Rocket Lab USA, Inc.

Safran S.A.

The detailed segments and sub-segment of the market are explained below:

By End User

Rocket

Space Launch Vehicles

Others

By Fuel Type

Liquid Nitrogen

Liquid Hydrogen

Liquid Helium

Liquid Neon

Liquid Air

Others

By Region:

North America

U.S.

Canada

Europe

UK

Germany

France

Spain

Italy

ROE

Asia Pacific

China

India

Japan

Australia

South Korea

RoAPAC

Latin America

Brazil

Mexico
Rest of Latin America

Middle East & Africa
Saudi Arabia
South Africa
RoMEA

Years considered for the study are as follows:

Historical year – 2022

Base year – 2023

Forecast period – 2024 to 2032

Key Takeaways:

Market Estimates & Forecast for 10 years from 2022 to 2032.

Annualized revenues and regional level analysis for each market segment.

Detailed analysis of geographical landscape with Country level analysis of major regions.

Competitive landscape with information on major players in the market.

Analysis of key business strategies and recommendations on future market approach.

Analysis of competitive structure of the market.

Demand side and supply side analysis of the market.

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