

Helium-3 Market Business Strategy, Overview, Competitive Strategies and Forecasts 2024 - 2032

The global helium-3 market size was USD 378.0 Million in 2022 and is expected to register a rapid revenue CAGR of 9.0% during the forecast period

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/EINPresswire.com/ -- The global [helium-3 market](#), valued at USD 378.0 million in 2022, is set for significant growth, driven by a robust (CAGR) of 9.0% during the forecast period. This surge is largely fueled by the increasing demand for detection equipment and the growing adoption of Magnetic Resonance Imaging (MRI) and other medical imaging technologies.



Helium-3 Overview

Helium-3 is a light, stable isotope of helium, notable for its two protons and one neutron. Its applications are diverse, spanning various high-tech industries and specialized fields such as border security, fusion research, space exploration, and defense. Helium-3 is available in two main purity grades: ultra-high purity and high purity.

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Key Market Drivers

Rising Demand for Detection Equipment: The popularity of fast neutron spectroscopy measurements is boosting demand for helium-3, especially in medical laboratories where it is critical for MRI and nuclear magnetic resonance spectroscopy. The annual demand for helium-3 has reached approximately 65,000 liters.

Strategic Partnerships: Air Liquide's long-term agreement with Laurentis Energy Partners, signed on December 7, 2021, underscores the growing importance of helium-3. This partnership ensures a steady supply of helium-3, extracted as a byproduct of energy production at the Darlington power plant in Canada, for various applications including quantum computing, astrophysics, and medical imaging.

Market Challenges

Despite the promising growth, the market faces challenges such as high production costs and limited availability. Helium-3 extraction is energy-intensive and complex, contributing to higher costs. Moreover, the limited supply, primarily sourced from dismantling nuclear weapons, poses a constraint on market expansion.

Helium-3 Top Companies and Competitive Landscape

The global helium-3 market is consolidated, with large and medium-sized players accounting for most of the market revenue. Major players are deploying various strategies, entering mergers & acquisitions, strategic agreements & contracts, developing, testing, and introducing more effective helium-3 products in the market.

Some of the major companies included in the global helium-3 market report are:

Helium-3 Ventures

Bruker

Oxford Instruments

Praxair Technology Inc.

Air Liquide

Savannah River Site

Raims Ltd.

LND Inc.

Isoflex

Chemgas

NTI

Merck KGaA

European Space Agency

Laurentis Energy Partners Inc.

Helium-3 Latest Industry News

On February 3, 2023, Bruker installed two new compact 1.0 GHz NMR spectrometers for advanced molecular and structural biology applications, exceeding expectations. initially late 2022. Two new Ascend NMR Evo 1.0 GHz systems operate at 4.2 Kelvin with no sub-liquid temperatures. The helium temperature and thus liquid helium consumption are approximately 65% lower than with the previous 1.0 GHz, 2 Kelvin two-stage magnet. These new 1.0 GHz NMR magnets also significantly reduce area, weight and ceiling height requirements and are suitable

for most single-story laboratories.

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Market Segments

Type Insights:

Ultra-High Purity Grade: Dominates the market due to its critical role in MRI machines, semiconductor manufacturing, and optical fiber production. It is characterized by a purity level of 99.9995%.

High Purity Grade: Used where slightly lower purity levels are acceptable, such as in shielding gas and blimps.

Product Insights:

Gas Segment: Expected to grow steadily, driven by its applications in nuclear fusion, welding, and leak detection. Gas helium's precise control over thermal processes makes it essential in producing ultra-high purity gas.

Liquid Segment: Anticipated to hold a significant market share due to its unique properties that support low-temperature applications and its use as a superfluid in advanced technologies.

Application Insights:

Medical Segment: Rapid growth expected due to helium-3's use in MRI, X-rays, and surgical procedures, particularly for its inert properties that aid in neuroprotection and treating abdominal diseases.

Cryogenics Segment: Fastest-growing segment, driven by the demand for superconductors, quantum applications, and x-ray crystallography.

End-Use Insights:

Cryogenics: Expected to dominate, benefiting from helium-3's low mass and high-temperature properties, which are ideal for superconductors and quantum applications.

Helium-3 Market Segment Analysis

For the purpose of this report, Emergen Research has segmented the global helium-3 market on the basis of type, form, application, end-use, and region:

Type Outlook (Revenue, USD Million; 2019-2032)

Ultra-High Purity Grade

High Purity Grade

Product Outlook (Revenue, USD Million; 2019-2032)

Gas

Liquid

Application Outlook (Revenue, USD Million; 2019-2032)

Oil & Gas (O&G)

Defense

Power Plant

Medical

Others

End-use Outlook (Revenue, USD Million; 2019-2032)

Cryogenics

Nuclear Magnetic Resonance (NMR)

Border Security

Fusion Research Labs

Space Exploration

Others

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Regional Outlook (Revenue, USD Million; 2019–2032)

North America

U.S.

Canada

Mexico

Europe

Germany

France

UK

Italy

Spain

Benelux

Rest of Europe

Asia Pacific

China

India

Japan

South Korea

Rest of APAC

Latin America

Brazil

Rest of LATAM
Middle East & Africa
Saudi Arabia
UAE
South Africa
Turkey
Rest of Middle East & Africa

The helium-3 market is on a strong growth trajectory, bolstered by rising demand in medical imaging and advanced technology applications. Strategic partnerships and technological advancements will be pivotal in overcoming production challenges and ensuring a steady supply to meet global demand.

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