

Liquid Nitrogen Market Report and Forecast 2025-2034

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Report description:

The global liquid nitrogen market value is expected to grow at a CAGR of 4.00% in the forecast period of 2025-2034.

Global Liquid Nitrogen Market Growth

Liquid nitrogen is used for cryopreservation, cryosurgery, and cryo medicine since it allows supercooling down to approximately -200C. Due to its favourable properties, liquid nitrogen is invaluable for storing blood and bone marrow cells, sperm, ova, early embryos, and a host of microorganisms in the microbiology laboratory (bacteria, fungi, and others).

A super-chilled scalpel can excise cancer tissue during cryosurgery. Liquid nitrogen is extensively utilized in dermatology to freeze healthy growths, precancers, and skin cancers, thus driving the growth of the liquid nitrogen market.

Global Liquid Nitrogen Market Analysis

The increasing demand for liquid nitrogen to function as a coolant in a variety of end-use industries, including metal processing and construction, chemical and pharmaceuticals, and healthcare, among others is driving the growth of the market. The rising demand for cylinders and packaged gas has further contributed to the growth of the liquid nitrogen industry.

During the forecast period, tonnage delivery and merchant liquid distribution verticals of the storage segment are expected to be the major distribution modes of the product.

Global Liquid Nitrogen Industry Outlook

As per UNIDO, between 2021 and 2023, the global manufacturing index exhibited a consistent upward trend, with the index value increasing from just above 115 in early 2021 to approximately 122 by mid-2023. Throughout 2021, the index showed steady growth, peaking at around 120 by October. This positive momentum continued into 2022, with a notable rise reaching its highest

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point in October at around 124. The index stabilized at this elevated level throughout 2023, maintaining a steady performance of around 122 driving the liquid nitrogen industry revenue.

Medium-high and high technology industries consistently outperformed other manufacturing industries, with their index rising from around 123 in early 2021 to approximately 135 by mid-2023. This sector saw notable peaks, particularly in October 2021 and October 2022, reaching around 130 and 138 respectively, indicating strong and sustained growth in technologically advanced manufacturing sectors.

The liquid nitrogen market dynamics and trends are influenced by the growing healthcare expenditure. Since 2020, National Health Expenditure (NHE) trends versus GDP growth and the health share of GDP indicate a consistent increase in healthcare spending relative to the economy.

In 2022, the health share of GDP reached 17.3%, with an average annual NHE growth rate of 5.6% projected from 2023 to 2032. During this period, the nominal GDP growth is expected to average 4.3% annually, highlighting a faster pace in health expenditure compared to overall economic growth. The projections suggest that by 2032, the health share of GDP will increase to 19.7%, reflecting a continued emphasis on healthcare spending within the economy. This steady upward trend in the health share of GDP emphasizes the growing importance of healthcare expenditure as a significant component of economic activity.

Liquid nitrogen is extensively utilised in healthcare, food processing, and electronics, thus, boosting the liquid nitrogen market revenue.

- Provides effective cooling and freezing capabilities, essential for cryogenic applications.
- Well-established global production and distribution networks ensure consistent supply.

Energy-intensive production processes lead to high operational expenses.

- Requires specialised infrastructure for storage and handling, increasing logistical complexities.
- Handling poses safety risks due to extremely low temperatures.

Innovations in storage and transportation can reduce costs and improve efficiency.

- Increasing use in medical applications, such as cryopreservation and cryosurgery, drives liquid nitrogen market growth.
- Rising demand for frozen and processed foods boosts the need for liquid nitrogen in food processing.

Stricter environmental regulations on production and use may raise compliance costs.

- Development of alternative cooling and freezing technologies can reduce demand.
- Fluctuations in raw material prices and energy costs can impact profitability.

Key Players in the Global Liquid Nitrogen Market and Their Key Initiatives

Linde plc

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- Expanded production capacity with new liquid nitrogen plants globally.
- Enhanced distribution network through strategic partnerships and acquisitions to capture the growing liquid nitrogen market opportunities.

Air Products Inc.

- Expanded production capacity with new liquid nitrogen plants worldwide.
- Invested in sustainable technologies for efficient liquid nitrogen production.

Praxair Technology, Inc

- Expanded liquid nitrogen production capacity in North America and Europe.
- Developed new cryogenic freezing solutions for food and healthcare industries.

Taiyo Nippon Sanso Corporation

- Expansion of production capacity to meet rising demand of the liquid nitrogen market.
- Investment in advanced cryogenic technologies for enhanced efficiency.

Global Liquid Nitrogen Industry Segmentation

"Global Liquid Nitrogen Market Report and Forecast 2025-2034" offers a detailed analysis of the market based on the following segments:

Market Breakup by Function

- Coolant
- Refrigerant

Market Breakup by Technology

- Cryogenic Distillation
- Pressure Swing Adsorption

Market Breakup by Storage

- Cylinders and Packaged Gas
- Merchant Liquid
- Tonnage
- Others

Market Breakup by End Use

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- Chemical and Pharmaceutical
- Healthcare
- Food and Beverage
- Metal Manufacturing
- Construction
- Rubber and Plastic
- Others

Market Breakup by Region

- North America
- Europe
- Asia Pacific
- Latin America
- Middle East and Africa

Liquid Nitrogen Market Share

Over the projected era, the healthcare industry is expected to witness robust growth and rapid technological advancements. The increasing use of mobile technologies in the healthcare sector is expected to further propel the growth of the liquid nitrogen industry. Furthermore, the steady growth of the automotive industry and the increased car production around the world are anticipated to boost the liquid nitrogen market demand.

Leading Companies in the Liquid Nitrogen Market

The company's specialises in atmospheric, process and speciality gases, with a strong focus on innovation and sustainability. They provide solutions across healthcare, manufacturing, and energy industries.

- Linde plc
- Air Products Inc.
- Praxair Technology, Inc
- Taiyo Nippon Sanso Corporation
- Southern Industrial Gas Sdn Bhd

Liquid Nitrogen Market Report Snapshots

Liquid Nitrogen Market Size

Liquid Nitrogen Market Growth

Liquid Nitrogen Market Analysis

Liquid Nitrogen Market Share

Liquid Nitrogen Companies

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Table of Contents:

- 1 Executive Summary
 - 1.1 Market Size 2024-2025
 - 1.2 Market Growth 2025(F)-2034(F)
 - 1.3 Key Demand Drivers
 - 1.4 Key Players and Competitive Structure
 - 1.5 Industry Best Practices
 - 1.6 Recent Trends and Developments
 - 1.7 Industry Outlook
- 2 Market Overview and Stakeholder Insights
 - 2.1 Market Trends
 - 2.2 Key Verticals
 - 2.3 Key Regions
 - 2.4 Supplier Power
 - 2.5 Buyer Power
 - 2.6 Key Market Opportunities and Risks
 - 2.7 Key Initiatives by Stakeholders
- 3 Economic Summary
 - 3.1 GDP Outlook
 - 3.2 GDP Per Capita Growth
 - 3.3 Inflation Trends
 - 3.4 Democracy Index
 - 3.5 Gross Public Debt Ratios
 - 3.6 Balance of Payment (BoP) Position
 - 3.7 Population Outlook
 - 3.8 Urbanisation Trends
- 4 Country Risk Profiles
 - 4.1 Country Risk
 - 4.2 Business Climate
- 5 Global Liquid Nitrogen Market Analysis
 - 5.1 Key Industry Highlights
 - 5.2 Global Liquid Nitrogen Historical Market (2018-2024)
 - 5.3 Global Liquid Nitrogen Market Forecast (2025-2034)
 - 5.4 Global Liquid Nitrogen Market by Function
 - 5.4.1 Coolant
 - 5.4.1.1 Historical Trend (2018-2024)
 - 5.4.1.2 Forecast Trend (2025-2034)
 - 5.4.2 Refrigerant
 - 5.4.2.1 Historical Trend (2018-2024)
 - 5.4.2.2 Forecast Trend (2025-2034)
 - 5.5 Global Liquid Nitrogen Market by Technology
 - 5.5.1 Cryogenic Distillation
 - 5.5.1.1 Historical Trend (2018-2024)
 - 5.5.1.2 Forecast Trend (2025-2034)
 - 5.5.2 Pressure Swing Adsorption
 - 5.5.2.1 Historical Trend (2018-2024)
 - 5.5.2.2 Forecast Trend (2025-2034)

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- 5.6 Global Liquid Nitrogen Market by Storage
 - 5.6.1 Cylinders and Packaged Gas
 - 5.6.1.1 Historical Trend (2018-2024)
 - 5.6.1.2 Forecast Trend (2025-2034)
 - 5.6.2 Merchant Liquid
 - 5.6.2.1 Historical Trend (2018-2024)
 - 5.6.2.2 Forecast Trend (2025-2034)
 - 5.6.3 Tonnage
 - 5.6.3.1 Historical Trend (2018-2024)
 - 5.6.3.2 Forecast Trend (2025-2034)
 - 5.6.4 Others
- 5.7 Others Global Liquid Nitrogen Market by End Use
 - 5.7.1 Chemical and Pharmaceutical
 - 5.7.1.1 Historical Trend (2018-2024)
 - 5.7.1.2 Forecast Trend (2025-2034)
 - 5.7.2 Healthcare
 - 5.7.2.1 Historical Trend (2018-2024)
 - 5.7.2.2 Forecast Trend (2025-2034)
 - 5.7.3 Food and Beverage
 - 5.7.3.1 Historical Trend (2018-2024)
 - 5.7.3.2 Forecast Trend (2025-2034)
 - 5.7.4 Metal Manufacturing
 - 5.7.4.1 Historical Trend (2018-2024)
 - 5.7.4.2 Forecast Trend (2025-2034)
 - 5.7.5 Construction
 - 5.7.5.1 Historical Trend (2018-2024)
 - 5.7.5.2 Forecast Trend (2025-2034)
 - 5.7.6 Rubber and Plastic
 - 5.7.6.1 Historical Trend (2018-2024)
 - 5.7.6.2 Forecast Trend (2025-2034)
 - 5.7.7 Others
- 5.8 Global Liquid Nitrogen Market by Region
 - 5.8.1 North America
 - 5.8.1.1 Historical Trend (2018-2024)
 - 5.8.1.2 Forecast Trend (2025-2034)
 - 5.8.2 Europe
 - 5.8.2.1 Historical Trend (2018-2024)
 - 5.8.2.2 Forecast Trend (2025-2034)
 - 5.8.3 Asia Pacific
 - 5.8.3.1 Historical Trend (2018-2024)
 - 5.8.3.2 Forecast Trend (2025-2034)
 - 5.8.4 Latin America
 - 5.8.4.1 Historical Trend (2018-2024)
 - 5.8.4.2 Forecast Trend (2025-2034)
 - 5.8.5 Middle East and Africa
 - 5.8.5.1 Historical Trend (2018-2024)
 - 5.8.5.2 Forecast Trend (2025-2034)

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6 North America Liquid Nitrogen Market Analysis

6.1 United States of America

6.1.1 Historical Trend (2018-2024)

6.1.2 Forecast Trend (2025-2034)

6.2 Canada

6.2.1 Historical Trend (2018-2024)

6.2.2 Forecast Trend (2025-2034)

7 Europe Liquid Nitrogen Market Analysis

7.1 United Kingdom

7.1.1 Historical Trend (2018-2024)

7.1.2 Forecast Trend (2025-2034)

7.2 Germany

7.2.1 Historical Trend (2018-2024)

7.2.2 Forecast Trend (2025-2034)

7.3 France

7.3.1 Historical Trend (2018-2024)

7.3.2 Forecast Trend (2025-2034)

7.4 Italy

7.4.1 Historical Trend (2018-2024)

7.4.2 Forecast Trend (2025-2034)

7.5 Others

8 Asia Pacific Liquid Nitrogen Market Analysis

8.1 China

8.1.1 Historical Trend (2018-2024)

8.1.2 Forecast Trend (2025-2034)

8.2 Japan

8.2.1 Historical Trend (2018-2024)

8.2.2 Forecast Trend (2025-2034)

8.3 India

8.3.1 Historical Trend (2018-2024)

8.3.2 Forecast Trend (2025-2034)

8.4 ASEAN

8.4.1 Historical Trend (2018-2024)

8.4.2 Forecast Trend (2025-2034)

8.5 Australia

8.5.1 Historical Trend (2018-2024)

8.5.2 Forecast Trend (2025-2034)

8.6 Others

9 Latin America Liquid Nitrogen Market Analysis

9.1 Brazil

9.1.1 Historical Trend (2018-2024)

9.1.2 Forecast Trend (2025-2034)

9.2 Argentina

9.2.1 Historical Trend (2018-2024)

9.2.2 Forecast Trend (2025-2034)

9.3 Mexico

9.3.1 Historical Trend (2018-2024)

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- 9.3.2 Forecast Trend (2025-2034)
- 9.4 Others
- 10 Middle East and Africa Liquid Nitrogen Market Analysis
 - 10.1 Saudi Arabia
 - 10.1.1 Historical Trend (2018-2024)
 - 10.1.2 Forecast Trend (2025-2034)
 - 10.2 United Arab Emirates
 - 10.2.1 Historical Trend (2018-2024)
 - 10.2.2 Forecast Trend (2025-2034)
 - 10.3 Nigeria
 - 10.3.1 Historical Trend (2018-2024)
 - 10.3.2 Forecast Trend (2025-2034)
 - 10.4 South Africa
 - 10.4.1 Historical Trend (2018-2024)
 - 10.4.2 Forecast Trend (2025-2034)
 - 10.5 Others
- 11 Market Dynamics
 - 11.1 SWOT Analysis
 - 11.1.1 Strengths
 - 11.1.2 Weaknesses
 - 11.1.3 Opportunities
 - 11.1.4 Threats
 - 11.2 Porter's Five Forces Analysis
 - 11.2.1 Supplier's Power
 - 11.2.2 Buyer's Power
 - 11.2.3 Threat of New Entrants
 - 11.2.4 Degree of Rivalry
 - 11.2.5 Threat of Substitutes
 - 11.3 Key Indicators for Demand
 - 11.4 Key Indicators for Price
- 12 Value Chain Analysis
- 13 Price Analysis
 - 13.1 North America Historical Price Trends (2018-2024) and Forecast (2025-2034)
 - 13.2 Europe Historical Price Trends (2018-2024) and Forecast (2025-2034)
 - 13.3 Asia Pacific Historical Price Trends (2018-2024) and Forecast (2025-2034)
 - 13.4 Latin America Historical Price Trends (2018-2024) and Forecast (2025-2034)
 - 13.5 Middle East and Africa Historical Price Trends (2018-2024) and Forecast (2025-2034)
- 14 Competitive Landscape
 - 14.1 Supplier Selection
 - 14.2 Key Global Players
 - 14.3 Key Regional Players
 - 14.4 Key Player Strategies
 - 14.5 Company Profiles
 - 14.5.1 Linde plc
 - 14.5.1.1 Company Overview
 - 14.5.1.2 Product Portfolio
 - 14.5.1.3 Demographic Reach and Achievements

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- 14.5.1.4 Certifications
- 14.5.2 Air Products Inc.
 - 14.5.2.1 Company Overview
 - 14.5.2.2 Product Portfolio
 - 14.5.2.3 Demographic Reach and Achievements
 - 14.5.2.4 Certifications
- 14.5.3 Praxair Technology, Inc.
 - 14.5.3.1 Company Overview
 - 14.5.3.2 Product Portfolio
 - 14.5.3.3 Demographic Reach and Achievements
 - 14.5.3.4 Certifications
- 14.5.4 Taiyo Nippon Sanso Corporation
 - 14.5.4.1 Company Overview
 - 14.5.4.2 Product Portfolio
 - 14.5.4.3 Demographic Reach and Achievements
 - 14.5.4.4 Certifications
- 14.5.5 Southern Industrial Gas Sdn Bhd
 - 14.5.5.1 Company Overview
 - 14.5.5.2 Product Portfolio
 - 14.5.5.3 Demographic Reach and Achievements
 - 14.5.5.4 Certifications
- 14.5.6 Others

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