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Vaccine Storage & Packaging Market Forecasts to 2032 – Global Analysis By Product Type (Vaccine Storage and Vaccine Packaging), Packaging Material (Plastic, Glass, Paper & Paperboard, Metal and Other Packaging Materials), Vaccine Type, Application, End User and By Geography

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Abstracts

According to Stratistics MRC, the Global Vaccine Storage & Packaging Market is accounted for $40.06 billion in 2025 and is expected to reach $88.57 billion by 2032 growing at a CAGR of 12.0% during the forecast period. Vaccine storage and packaging play a critical role in maintaining the efficacy and safety of vaccines from production to administration. Cold chain logistics, or refrigeration systems that guarantee vaccines stay within a predetermined temperature range, are crucial because proper storage conditions, especially temperature control, are crucial to maintaining vaccine potency. Moreover, improved traceability and security have resulted from packaging innovations like tamper-evident seals and temperature-sensitive labels. Demand for reliable, effective, and sustainable vaccine storage and packaging solutions is going to increase as global immunization efforts spread, particularly in isolated and underdeveloped regions.

According to the Pan American Health Organization (PAHO), vaccine vial monitors (VVMs) are heat indicators that change color when exposed to temperatures above a specified threshold. There are five different types of VVMs, each designed for specific vaccines based on their heat stability. These VVMs are classified using three temperature thresholds: 37°C, 25°C, and 5°C.

Market Dynamics:

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Driver:

Increasing worldwide immunization initiatives

One of the main factors propelling the vaccine storage and packaging market is the spread of immunization campaigns in both developed and developing nations. Every year, billions of dollars are spent on mass vaccination campaigns to combat diseases like measles, polio, HPV, and COVID-19 by groups like the World Health Organization (WHO), Gavi, and UNICEF. As of 2023, for instance, Gavi has facilitated the vaccination of more than 981 million children. Additionally, the need for specialized storage systems and protective packaging solutions is increased as a result of these efforts, which call for a highly dependable supply chain with stringent temperature and safety controls to guarantee vaccine potency.

Restraint:

High operating and capital expenses

Vaccine storage systems, especially those that use ultra-cold chain logistics, are expensive to set up and maintain. Particularly in environments with limited resources, specialized freezers, insulated containers, and monitoring equipment are costly to purchase and run. Recurring operating costs are also increased by the electricity needed to maintain constant low temperatures. Ultra-low temperature (ULT) freezers, for example, can cost anywhere from $10,000 to $25,000 per unit and use a lot more energy than conventional refrigeration systems. Furthermore, adoption may be restricted by these expenses, particularly in developing nations with limited resources and infrastructure, small hospitals, and rural clinics.

Opportunity:

Technological advancements in smart packaging

Real-time monitoring sensors, RFID tags, temperature-sensitive labels, and traceability enabled by QR codes are examples of smart packaging solutions that are becoming more and more popular. These technologies improve supply chain transparency, lower human error, and increase safety. For example, vaccination campaigns supported by the WHO now routinely use vaccine vial monitors (VVMs), which change color when exposed to heat. Moreover, businesses now have new ways to differentiate their

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products in a crowded market and offer value-added services by integrating IoT and AI-based tracking into packaging.

Threat:

Disruptions in the supply chain cause vaccine waste

Supply chain vulnerabilities continue to pose a threat in spite of technological advancements. The effectiveness of vaccines may be compromised by temperature excursions brought on by equipment failures, delays at customs, inadequate transportation infrastructure, and power outages. The WHO estimates that up to 50% of vaccines are thrown away worldwide, mostly as a result of handling and temperature control problems. Manufacturers and governments suffer financial losses as a result, and storage systems lose their credibility. Additionally, inconsistent cold chain performance discourages additional spending on upscale packaging and storage innovations.

Covid-19 Impact:

The COVID-19 pandemic significantly impacted the vaccine storage and packaging market by creating an unparalleled demand for sophisticated packaging and cold chain infrastructure worldwide. The quick development and widespread use of vaccines that needed to be stored at extremely low temperatures, such as Pfizer-BioNTech and Moderna, prompted investments in specialized freezers, insulated shippers, dry ice packaging, and real-time monitoring systems. Rapid capacity expansion by governments, pharmaceutical firms, and logistics providers led to a spike in market expansion. Furthermore, the pandemic brought to light deficiencies in cold chain capabilities in low#- #and middle-income nations, which led to global investment and advancements in portable and energy-efficient storage devices.

The plastic segment is expected to be the largest during the forecast period

The plastic segment is expected to account for the largest market share during the forecast period because of its affordability, robustness, and portability, which make it perfect for widespread vaccination distribution. Because of its resistance to breaking, which is a big issue with glass, it is frequently used in vaccine vials, syringes, ampoules, and secondary packaging. Common plastics used in vaccine packaging include cyclic olefin copolymer (COC), polypropylene (PP), and high-density polyethylene (HDPE), which guarantee sterility and compatibility with various vaccine formulations. Moreover,

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temperature-controlled logistics are supported by plastic packaging, as evidenced by the growing popularity of polymer-based cold chain solutions and specialized insulated containers.

The mRNA vaccines segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the mRNA vaccines segment is predicted to witness the highest growth rate, motivated by the success of COVID-19 vaccines like Pfizer-BioNTech and Moderna, as well as developments in biotechnology. Because these vaccines must be stored at extremely low temperatures (-70°C to -20°C), there is a greater need for insulated containers, temperature monitoring equipment, and specialized cold chain packaging solutions. Additionally, the market is expanding due to the quick uptake of mRNA technology in personalized medicine, cancer immunotherapy, and infectious diseases. Storage needs should be lessened by advancements in lyophilized (freeze-dried) formulations and enhanced lipid nano particle stability, but ultra-cold chain infrastructure is still crucial.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share, driven by robust government immunization programs, high vaccine production, and sophisticated cold chain infrastructure. The need for specialized storage and packaging solutions has increased due to the presence of major pharmaceutical companies like Pfizer, Moderna, and Johnson & Johnson as well as regulatory support from the FDA and CDC. Furthermore, the region's market position was further strengthened by the mass distribution of COVID-19 vaccines, which was made possible by its well-established ultra-cold chain logistics.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR, driven by growing pharmaceutical production, enhancing cold chain infrastructure, and quickly growing immunization programs. To support mass immunization efforts, nations like China, India, and Japan are making significant investments in vaccine production, temperature-controlled logistics, and biotechnology research and development. The market is expanding as a result of government initiatives to improve healthcare infrastructure and the rising demand for vaccines against infectious diseases. Moreover, the region's rapid growth is also facilitated by the

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emergence of regional vaccine producers and the use of cutting-edge packaging technologies like insulated shipping containers and smart labels.

Key players in the market

Some of the key players in Vaccine Storage & Packaging Market include Corning, Inc., Thermo Fisher Scientific Inc., Becton, Dickinson and Company, Stevanato Group, Dulas Ltd., Azenta Inc., Cardinal Health Inc., PHC Holdings Corporation, Blue Star Limited, Panasonc Healthcare Co., Ltd, Nipro Corporation, Standex International Corporation, Eppendorf SE, Gerresheimer AG and Haier Biomedical.

Key Developments:

In February 2025, Thermo Fisher Scientific Inc. announced that the company has entered into a definitive agreement with Solventum to acquire Solventum's Purification & Filtration business for approximately $4.1 billion in cash. Solventum's Purification & Filtration business is a leading provider of purification and filtration technologies used in the production of biologics as well as in medical technologies and industrial applications.

In October 2024, BD (Becton, Dickinson and Company) announced it has reached an agreement to resolve the vast majority of its existing hernia litigation. Terms of the settlement agreement, which are confidential, include cases in both the Rhode Island consolidated litigation and the federal multidistrict litigation in Ohio.

In August 2024, Corning Incorporated and Lumen have announced an agreement for a substantial supply of next-generation optical cable. The agreement reserves 10% of Corning's global fiber capacity for each of the next two years to interconnect AI-enabled data center.

Product Types Covered:

Vaccine Storage

Vaccine Packaging

Packaging Materials Covered:

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- Plastic
- Glass
- Paper & Paperboard
- Metal
- Other Packaging Materials

Vaccine Types Covered:

- mRNA Vaccines
- DNA Vaccines
- Protein-Based Vaccines
- Viral Vector Vaccines

Applications Covered:

- Human Vaccines
- Animal Vaccines

End Users Covered:

- Pharma and Biotech Companies
- Diagnostic Centers
- Hospitals
- Government Agencies

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- Clinical Research Organization
- Other End Users

Regions Covered:

- North America
  - US
  - Canada
  - Mexico
- Europe
  - Germany
  - UK
  - Italy
  - France
  - Spain
  - Rest of Europe
- Asia Pacific
  - Japan
  - China
  - India
  - Australia

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New Zealand

South Korea

Rest of Asia Pacific

South America

Argentina

Brazil

Chile

Rest of South America

Middle East & Africa

Saudi Arabia

UAE

Qatar

South Africa

Rest of Middle East & Africa

What our report offers:
- Market share assessments for the regional and country-level segments
- Strategic recommendations for the new entrants
- Covers Market data for the years 2024, 2025, 2026, 2028, and 2032
- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)
- Strategic recommendations in key business segments based on the market estimations
- Competitive landscaping mapping the key common trends
- Company profiling with detailed strategies, financials, and recent developments

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- Supply chain trends mapping the latest technological advancements

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Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

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Note: Tables for North America, Europe, APAC, South America, and Middle East & Africa Regions are also represented in the same manner as above.

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