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Description:

Market Overview

The global market of freeze-drying is expected to have more than 8.2% CAGR in the forecast period and reach around USD 8 billion by 2027 from USD 73 billion in 2020. The major factor for this high growth of the freeze-drying market is the high demand for food preservation, lyophilized products, contract manufacturing rising demand, and the lyophilization technological advancement. Dry-freezing is the process of storing products for a longer time with eliminating the moisture process.

This dehydration process is also known as lyophilization. Different equipment that is used for the process of dry-freezing includes cryogenic liquid storage, freezing chamber, sensors, vacuum pumps, and others. However, the traditional process of freeze-drying is getting replaced by modern technologies. While smart technologies are introduced in the global freeze-drying equipment market, the high cost of installation can slow down the growth of the market.

Covid 19 Analysis

Along with all the other industries, the freeze-drying equipment market is also affected by the COVID 19 pandemic. The manufacturing and supply chain of the market is facing different challenges due to the pandemic. Product delivery to the end-users has been disrupted along with the service demand. This market was facing slow growth in the initial phase of the COVID 19 because of the limited operations, holding research, low funding, reduced product demand, and others.

However, people have brought freeze-drying machines for home use during the time of COVID 19. The food industry and pharmaceutical industry have faced challenges to get a smooth supply chain and staff unavailability. Although in most of the regions, the supply chain has been restored and manufacturing resumed, there are some places that are still facing difficulties.

Market Dynamics

• Drivers

Mostly the use of freeze-drying equipment is to preserve food, drugs, and other products like vegetables, fish, fruits, meat, ice-creams, drugs, herbs, and others. These foods are easily used afterward with just adding water. In the recent lockdown event, the demand for these freeze-drying equipment has increased to preserve food during the period.

Also, another key factor for increasing the growth of the global freeze-drying market is the adoption of smart technologies that helps remote control and monitor. Smart freeze equipment is available in the global market with the latest technology that provides more reliability, assists in freezing, and affordable. The benefits of the new equipment of freeze-drying along with innovations are expected to drive the growth in this market.

• Opportunities

In the growth of the freeze-drying equipment market, one of the leading contributors is biologics. They are expected to increase the growth due to the loss of patents of multiple companies in the forecast period. For chronic disorders, many biosimilar alternatives are developing that are cost-effective than pharmaceutical medications. Freeze drying equipment market forecast is expected for higher growth due to the upcoming demand for freeze-drying equipment for the requirement in injectable drugs.

• Restraints

Although the market of freeze-drying equipment is expected to have very high growth during the forecast period, the cost of this process is very expensive including high energy consumption, high cost of operation, long processing time, high capital investment, and many more. So, the food,

biotechnology, and pharmaceutical companies are looking for an alternative due to the capital-intensive nature of this process.

The spray drying market is growing rapidly which is an alternative to freeze-drying, and it can slow down the growth of this market. Still, the market of freeze-drying is best among all the alternatives and used by others because of the biologically active products, stable service, and longer shelf life.

- **Challenges**

There are few challenges that the freeze-drying market equipment needs to overcome to increase its growth in the forecast period. In this process, the desired removal of moisture is not reached, most of the products are contaminated due to excess moisture level. Removal of excess moisture can result in loss of integral structure by product instability. So, the importance of achieving the desired moisture level is very important to prevent food contamination or pharmaceutical product contamination.

- **Cumulative Growth Analysis**

The growth of the freeze-drying equipment market is expected to be very high in the forecast period due to the high demand for food, drug, and other products. The CAGR is expected to be around 8.2% and reach as high as 8 billion by the end of 2027. The rising demand for home freeze-drying equipment during the COVID pandemic is expected to have a high demand.

Value Chain Analysis

This is one of the valuable markets in the food and pharmaceutical industry that is expected to grow very well in the forecast period. The process of freeze-drying is mostly used to preserve food and drugs. With new technology advancement, innovations, companies entering the market, it is projected to reach a high revenue. In many regions, the food manufacturing and processing plants are increasing that can propel the growth in the review period.

Segment Overview

By Type, the tray-style freeze-dryers are the largest share holder of the freeze-drying equipment market with 72.1%. Here are all the segments are given below of the freeze-drying equipment market by type.

- Manifold freeze dryers
- Tray-style dryers
- Shell freeze dryers

By Scale of Operation, the largest share of the freeze-drying equipment market is acquired by the industrial-scale lyophilization equipment around 68.2%. Here are the segments of the freeze-dryers equipment market based on the scale of operation.

- Pilot-scale lyophilization equipment
- Industrial-scale lyophilization equipment
- Laboratory-scale lyophilization equipment

By Application, the food packaging and processing is accounted to be the highest share holder with more than 36.3%. All the segments of the freeze-drying market based on application are given below.

- Medical applications
- Food processing and packaging
- Industrial-scale lyophilization equipment

By Accessories, loading and unloading have the highest market share with around 26.6% among others. Here all the segments are given below of the freeze-drying equipment market by accessories.

- Manifolds

- Loading and unloading systems
- Drying chambers
- Controlling and monitoring systems
- Clean-In-Place systems
- Vacuum Systems
- Freeze Drying Trays & Shelves
- Other accessories

Regional Analysis

The market of freeze-drying equipment is divided into 5 key regions with high growth such as Europe, North America, Asia Pacific, Middle East & Africa, and Latin America. Among all of these regions, Asia Pacific has the largest share of the market around 34.6%. This region is also expected to have more than 10.4% CAGR during the forecast period. This high growth is projected in this region due to the high number of investments, geographical expansion of the companies, R&D expenditure growth, and others.

Following the Asia Pacific, the Americas have a high growth potential in the forecast period with the advanced sector of pharmaceutical and leading companies. The emerging economy in the food industry and the rise of demand for freezing equipment in different regions are expected to have a deep impact on the global market of freeze-drying equipment.

Competitive Landscape

In most of the growth prudential regions, new companies are entering the market with new products and strategies. Some of the popular companies in the market are Azbil Corporation, GEA Group, SP Industries Inc., and others.

List of Key Players

- GEA Group
- Cuddon Freeze Dry
- Millrock Technology Inc
- Industria Macchine Automatiche S.P.A
- Tofflon
- Azbil Telstar SLU
- MechaTech Systems Ltd.
- Labconco
- Martin Christ Gefriertrocknungsanlagen GmbH
- Hosokawa Micron B.V
- SLU
- OPTIMA Packaging Group GmbH
- ZIMBUS Technology GmbH

Recent Developments

- Azbil Corporation launched the Lyoquest Arctic that is a Bench-top freeze dryer for the laboratory in 2020
- Millrock Technology signed a partnership with Purdue University to develop real-time sensor technologies along with bioanalytical tools and computational modeling with funding of USD

750,000 from the National Science Foundation

- SP Industries introduced their new series in the market in 2020 named Leo Constellation
- Martin Christ Gefriertrocknungsanlagen GmbH signed a collaboration with the Elementar Americas (US) to be the service, support, and sales partner.

Report Overview

In this report, in-depth information about the growth of freeze-drying equipment in the forecast period is provided. All the information is collected from primary and secondary sources.

Report Detail

- Historic Period: 2018-2021
- Base Year: 2021
- Forecast Period: 2021-2027

By Geographically:

- North America (Canada, U.S., Mexico, and others)
- Asia Pacific (China, India, Japan, South Korea, Taiwan, Australia, and rest of the region)
- Europe (Germany, UK, Spain, Russia, France, and others)
- The Middle East and Africa (Saudi Arabia, Brazil, South Africa, and others)
- Latin America

FREEZE-DRYING MARKET

Freeze-drying market is expected to have more than 8.2% cagr in the forecast period and reach around USD 8 billion by 2027



BY PRODUCT

- Bench Top Freeze Dryers
- Mobile Freeze Dryers

BY TYPE

- Industrial Freeze Dryers
- Laboratory Freeze Dryers
- General Purpose Freeze Dryers

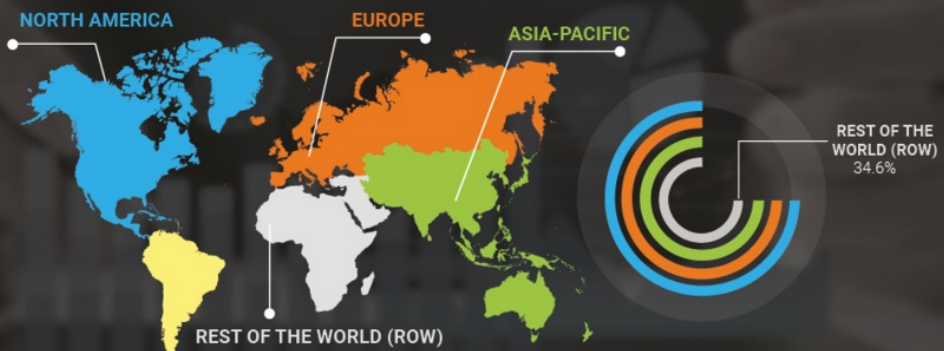
BY APPLICATION

- Biotechnology
- Pharmaceuticals
- Food Processing
- Surgical Procedures
- Others

BY REGION

- North America
- Europe
- Asia-Pacific
- Rest of the World

GLOBAL FREEZE-DRYING EQUIPMENT MARKET SHARE, BY REGION, 2018



DRIVERS:

- Adoption of smart technologies
- Increased to preserve food



RESTRAINT:

- High energy consumption
- High cost of operation
- Long processing time
- High capital investment



CHALLENGES:

- Food manufacturing and processing plants



KEY PLAYERS:

- GEA Group
- Cuddon Freeze Dry
- Millrock Technology Inc
- Industria Macchine Automatiche S.P.A
- Tofflon
- Azbil Telstar SLU
- MechaTech Systems Ltd.
- Labconco
- Martin Christ Gefriertrocknungsanlagen GmbH
- Hosokawa Micron B.V
- SLU
- OPTIMA Packaging Group GmbH
- ZIMBUS Technology GmbH



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