

# **Single-Use Pump Market - Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmented, By Material (Polypropylene, Polyethylene, Polystyrene, Polycarbonate), By Application (Liquid Analysis, Environmental Monitoring, Medical Diagnostics, Pharmaceutical Production), By Sterilization (Gamma Irradiation, Ethylene Oxide, Steam), By Region & Competition, 2020-2030F**

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## **Abstracts**

### Market Overview

The Single-Use Pump Market was valued at USD 1.27 Billion in 2024 and is expected to reach USD 2.67 Billion by 2030 with a CAGR of 12.99%. The Single-Use Pump Market encompasses the development, manufacturing, and deployment of pumps designed for disposable or single-use applications, primarily within the biopharmaceutical, healthcare, and life sciences industries, although adoption is gradually expanding into food and beverage, chemical, and industrial sectors. Single-use pumps are engineered to transfer fluids safely and efficiently without the need for cleaning, sterilization, or cross-contamination prevention between batches, offering significant advantages in terms of operational efficiency, cost reduction, and regulatory compliance.

These systems typically include peristaltic, diaphragm, and pneumatic-driven pumps, among others, that are compatible with single-use tubing, assemblies, and disposable fluid paths, enabling rapid setup and minimizing downtime in production and research processes. The market is driven by the growing demand for biopharmaceutical

manufacturing solutions, particularly in monoclonal antibodies, vaccines, and cell and gene therapies, where contamination prevention and flexibility in small-to-medium batch production are critical. Increasingly, pharmaceutical and biotechnology companies are adopting single-use technologies to accelerate drug development timelines, reduce capital expenditures associated with stainless-steel systems, and enhance overall production scalability.

Furthermore, single-use pumps support modular and flexible manufacturing architectures, which are particularly relevant for contract manufacturing organizations (CMOs) and facilities producing personalized medicines or small-volume biologics, where traditional fixed stainless-steel infrastructure may be economically unfeasible. Beyond healthcare, single-use pumps are gaining traction in food and beverage processing, cosmetic manufacturing, and chemical production, as manufacturers seek efficient fluid handling solutions that reduce cleaning requirements, prevent cross-batch contamination, and support regulatory compliance. The market also benefits from advancements in pump materials, tubing technologies, and sensor integration, which improve precision, reliability, and monitoring capabilities while expanding the range of fluids and viscosities that can be handled.

## Key Market Drivers

### Rising Demand in Biopharmaceutical and Life Sciences Manufacturing

The global biopharmaceutical industry is witnessing unprecedented growth, driven by increasing prevalence of chronic diseases, rising investments in biotechnology research, and an expanding pipeline of biologics and vaccines. Single-use pumps have emerged as a critical component in modern biopharmaceutical manufacturing due to their ability to streamline production processes, reduce contamination risks, and enhance operational efficiency. Unlike traditional stainless-steel systems, single-use pumps eliminate the need for extensive cleaning and sterilization procedures, significantly reducing downtime and overall manufacturing costs.

The growing adoption of biologics, including monoclonal antibodies, cell therapies, and recombinant proteins, has intensified the need for flexible and reliable fluid handling solutions that can accommodate varying batch sizes and complex production workflows. Additionally, regulatory compliance in life sciences manufacturing demands stringent contamination control, which single-use technologies inherently support by minimizing the risk of cross-contamination and microbial ingress. The integration of these pumps into upstream and downstream processes, such as media transfer, formulation, and

buffer preparation, enables manufacturers to achieve higher productivity while maintaining product integrity.

This trend is particularly pronounced in contract manufacturing organizations (CMOs) and research institutions, which increasingly rely on modular, disposable systems to accelerate time-to-market for new therapies. Furthermore, the global expansion of biopharmaceutical manufacturing facilities, especially in emerging markets across Asia-Pacific and Latin America, is driving large-scale adoption of single-use pumps, as manufacturers seek cost-effective, scalable solutions to meet growing demand. The ability to deploy single-use systems quickly and with minimal infrastructure investment aligns with the industry's broader push toward flexible, adaptive manufacturing models that can respond rapidly to shifting market needs.

This driver is expected to remain a key growth catalyst, as ongoing innovation in pump designs, including enhanced flow control, automated monitoring, and compatibility with a wider range of fluids, continues to expand their applicability across diverse biopharmaceutical processes. Overall, the convergence of increasing biologics production, stringent regulatory requirements, and the need for operational efficiency is establishing single-use pumps as a cornerstone technology in modern life sciences manufacturing, ensuring sustained market expansion over the coming years. More than 9,000 biopharmaceutical manufacturing facilities are operating worldwide to meet rising therapeutic and vaccine demand. Over 1,200 monoclonal antibody therapies are currently in development across global pipelines. Around 60% of global clinical trials are linked to biopharmaceutical innovations in oncology, neurology, and rare diseases. The global workforce in biopharma and life sciences manufacturing exceeds 1.8 million professionals. Over 300 cell and gene therapy products are in late-stage development globally. Approximately 40% of new drug approvals annually come from biopharmaceuticals.

## Key Market Challenges

### High Initial Costs and Investment Barriers

One of the most significant challenges facing the single-use pump market is the high initial cost associated with adoption, which can limit accessibility, especially for small to mid-sized biotechnology firms and contract manufacturing organizations (CMOs). Unlike traditional stainless-steel systems, single-use pumps and associated components require specialized materials, including medical-grade plastics, polymers, and precision-engineered fittings, which drive up procurement costs. Additionally, companies must

often invest in complementary infrastructure, such as disposable tubing, connectors, and sensors, to ensure seamless integration into existing production workflows.

This initial financial outlay can be a substantial barrier, particularly in emerging markets where funding and capital availability are constrained, thereby slowing market penetration despite clear long-term operational benefits. Beyond purchase costs, companies also face expenses related to training and technical skill development, as operators and engineers must be proficient in handling single-use systems to avoid contamination risks and ensure optimal performance. Moreover, organizations may incur costs from waste management and regulatory compliance, since disposable components must be handled in accordance with environmental and safety regulations.

This combination of upfront capital expenditure, recurring operational costs, and regulatory considerations makes adoption a carefully weighed decision, leading some companies to delay transition from traditional systems. Consequently, manufacturers of single-use pumps are challenged to balance pricing strategies with innovation, ensuring products remain cost-effective while meeting stringent quality and performance standards. This scenario is particularly critical in regions with price-sensitive markets, where the higher cost of single-use pumps compared to reusable systems can result in slower uptake.

Addressing this challenge requires strategic collaboration between suppliers, end-users, and industry stakeholders, potentially through financing solutions, modular systems, or scalable options that reduce initial expenditure while highlighting the long-term efficiency, contamination reduction, and productivity gains of single-use systems. Overall, while the high initial cost represents a clear barrier to widespread adoption, it also underscores the need for manufacturers to continuously innovate, optimize production efficiency, and provide value propositions that clearly demonstrate return on investment over the product lifecycle, thereby driving broader market acceptance.

## Key Market Trends

### Growing Adoption in Biopharmaceutical Manufacturing

The Single-Use Pump Market is witnessing a significant uptrend driven by the growing adoption of single-use technologies across biopharmaceutical manufacturing, where flexibility, sterility, and operational efficiency are paramount. Traditional stainless-steel systems require extensive cleaning and validation, leading to increased production downtime and higher operational costs. In contrast, single-use pumps offer sterile,

disposable fluid handling solutions that streamline processes, reduce cross-contamination risks, and enhance overall manufacturing productivity. This trend is further reinforced by the rapid expansion of biologics, vaccines, and cell and gene therapy production, which demand highly flexible, small-batch, and multi-product manufacturing environments.

Manufacturers are increasingly deploying single-use pumps to accommodate these needs, enabling faster process changeovers and reducing the reliance on cleaning validation protocols. Additionally, the growing complexity of biopharmaceutical formulations, including sensitive proteins and living cells, requires precise, low-shear fluid handling that single-use pumps can reliably deliver. Companies are also leveraging integrated single-use systems combining pumps, tubing, and sensors to provide end-to-end process control, improving batch consistency and ensuring regulatory compliance.

The global push for personalized medicines and accelerated drug development timelines has further amplified the demand for modular, scalable solutions, reinforcing the role of single-use pumps in enhancing manufacturing agility. This trend is particularly pronounced in regions such as North America and Europe, where the biopharma sector is highly mature, while emerging markets in Asia-Pacific are beginning to adopt single-use systems as part of their modernization initiatives.

With increasing regulatory support for flexible manufacturing technologies and the ongoing shift toward contract manufacturing organizations (CMOs), the biopharmaceutical segment is poised to remain a dominant driver of single-use pump adoption, contributing to sustained market growth over the next decade. Overall, the alignment of single-use pump solutions with the evolving needs of advanced therapeutics, cost efficiency, and operational flexibility underscores a robust and transformative trend in biopharmaceutical manufacturing.

### Key Market Players

GE Healthcare Life Sciences

Sartorius AG

Thermo Fisher Scientific Inc.

Pall Corporation (Danaher company)

Watson-Marlow Fluid Technology Group (WMFTG)

Eppendorf AG

Cole-Parmer Instrument Company LLC

Iveka, Inc.

Admix Inc.

Asahi Kasei Corporation

#### Report Scope:

In this report, the Global Single-Use Pump Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

#### Single-Use Pump Market, By Material:

Polypropylene

Polyethylene

Polystyrene

Polycarbonate

#### Single-Use Pump Market, By Application:

Liquid Analysis

Environmental Monitoring

Medical Diagnostics

Pharmaceutical Production

### Single-Use Pump Market, By Sterilization:

Gamma Irradiation

Ethylene Oxide

Steam

### Single-Use Pump Market, By Region:

North America

United States

Canada

Mexico

Europe

France

United Kingdom

Italy

Germany

Spain

Asia-Pacific

China

India

Japan

Australia

South Korea

South America

Brazil

Argentina

Colombia

Middle East & Africa

South Africa

Saudi Arabia

UAE

Kuwait

Turkey

Competitive Landscape

Company Profiles: Detailed analysis of the major companies presents in the Global Single-Use Pump Market.

Available Customizations:

Global Single-Use Pump Market report with the given Market data, Tech Sci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

Detailed analysis and profiling of additional Market players (up to five).

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