

Smart Packaging Market Report by Technology (Modified Atmosphere Packaging, Active Packaging, Intelligent Packaging), Industry Vertical (Food and Beverages, Automotive, Healthcare, Personal care, and Others), and Region 2024-2032

<https://marketpublishers.com/r/S490FFB1C07EEN.html>

Date: July 2024

Pages: 138

Price: US\$ 3,899.00 (Single User License)

ID: S490FFB1C07EEN

Abstracts

The global smart packaging market size reached US\$ 35.9 Billion in 2023. Looking forward, IMARC Group expects the market to reach US\$ 60.9 Billion by 2032, exhibiting a growth rate (CAGR) of 6.05% during 2024-2032. The rising utilization of three-dimensional (3D) printing in smart packaging design, increasing preferences for sustainable resources, and the growing reliance on online shopping channels are some of the major factors propelling the market.

Smart packaging refers to the integration of technology within packaging systems to create an intelligent connection between the product and the consumer or supply chain. It enhances traditional packaging by providing functionalities like monitoring, tracking, tracing, and communication. It allows communication between the package, the product, and the user. It enhances anti-counterfeiting measures, ensures product authenticity, and detects tampering or deterioration. It is used in the food and beverage (F&B) industry to monitor freshness, provide information on nutritional content, and ensure quality control. Besides this, it enhances the shopping experience by providing additional product information and engaging consumers through interactive elements.

The rising need for patient adherence, dosage tracking, and anti-counterfeiting measures in healthcare and pharmaceuticals is driving the adoption of smart packaging technologies in these sectors. Apart from this, the increasing need for portion control and freshness indicators in the food and beverage (F&B) sector is positively influencing the market. Additionally, the integration of Internet of Things (IoT) allows advanced

functionalities, such as remote monitoring and analytics. Furthermore, the rise of omnichannel retailing, wherein people can buy products through various channels like online platforms, mobile apps, and physical stores is favoring market growth.

Smart Packaging Market Trends/Drivers:

The increasing demand for sustainable solutions

The growing environmental concerns and rising awareness among individuals about the importance of sustainable solutions are positively influencing the market. Additionally, the shift towards sustainable resources is driving the use of recyclable and biodegradable materials in smart packaging, which is contributing to market growth. Smart packaging enables better tracking of product freshness and quality and aids in reducing unnecessary waste. Furthermore, the leading market players are introducing green packaging solutions to minimize harmful emissions and promote environmental health, which is strengthening the growth of the market. Apart from this, the convenience of QR codes and NFC technology that provide additional product information is attracting tech-savvy consumers.

Integration of advanced technologies

The rising utilization of three-dimensional (3D) printing in smart packaging design is allowing for rapid prototyping and customization. Additionally, the integration of augmented reality (AR) in smart packaging is offering an immersive consumer experience and elevating brand interaction. Along with this, the rising use of artificial intelligence (AI) for predictive analytics in packaging is improving inventory management and reducing waste, which is strengthening the growth of the market. Apart from this, the adoption of blockchain technology in smart packaging solutions helps in tracking and tracing increases transparency and authenticity. Furthermore, leveraging big data for insights and analytics in smart packaging is enhancing efficiency in the supply chain.

Rapid globalization and growth in the e-commerce industry

The rising preference for online shopping is catalyzing the demand for efficient packaging like smart packaging as it offers logistic solutions, including real-time tracking, and ensures efficient transportation. Additionally, the increasing reliance of individuals on online shopping channels to avail exciting deals and discounts, home delivery services, and various payment methods, is creating a positive outlook for the market. Smart packaging assists in complying with varied international trade

regulations, simplifying global business operations. Additionally, expanding global networks is driving the need for versatile packaging solutions that cater to different regional needs. Moreover, collaborations between packaging firms, online retail channels, and technology providers are strengthening the growth of the market.

Smart Packaging Industry Segmentation:

IMARC Group provides an analysis of the key trends in each segment of the global smart packaging market report, along with forecasts at the global, regional and country levels from 2024-2032. Our report has categorized the market based on technology and industry vertical.

Breakup by Technology:

Modified Atmosphere Packaging

Active Packaging

Antimicrobial

Gas Scavengers

Moisture Control

Corrosion Control

Intelligent Packaging

Indicators

Tracking Devices

Modified atmosphere packaging holds the majority of the market share

A detailed breakup and analysis of the market based on the technology has also been provided in the report. This includes modified atmosphere packaging, active packaging (antimicrobial, gas scavengers, moisture control, and corrosion control), and intelligent packaging (indicators and tracking devices). According to the report, modified atmosphere packaging accounted for the largest market share. Modified atmosphere packaging helps in extending the shelf life of perishable food products by altering the internal atmospheric composition. Additionally, it enhances food preservation without the need for added preservatives, aligning with consumer preferences for more natural products. Apart from this, as it contributes to waste reduction by preventing premature spoilage, the demand for modified atmosphere packaging is increasing across the globe. Furthermore, advancements in packaging technology are making modified atmosphere packaging more accessible and effective. Moreover, regulatory bodies of various countries are emphasizing food safety and quality, which is driving its demand.

Breakup by Industry Vertical:

- Food and Beverages
- Automotive
- Healthcare
- Personal care
- Others

Food and beverages dominate the market

The report has provided a detailed breakup and analysis of the market based on the industry vertical. This includes food and beverages, automotive, healthcare, personal care, and others. According to the report, food and beverages represented the largest segment. The increasing consumer preference for convenience in food preparation and consumption is catalyzing the demand for ready-to-eat (RTE) meals and on-the-go beverages, which is positively influencing the market. Smart packaging offers numerous features like resealable packages, portion control, and easy-to-open designs. Apart from this, the implementation of stringent food safety regulations is driving the need for precise monitoring and control over food products. Smart packaging technologies comply with these regulations by providing detailed tracking and monitoring. Furthermore, by providing real-time information about the freshness and expiration of products, smart packaging helps in reducing food waste. Moreover, rising concerns associated with counterfeiting are catalyzing the demand for smart packaging solutions as they offer authentication features that ensure product genuineness and safety.

Breakup by Region:

- North America
 - United States
 - Canada
- Asia-Pacific
 - China
 - Japan
 - India
 - South Korea
- Australia
- Indonesia
- Others
- Europe

Germany
France
United Kingdom
Italy
Spain
Russia
Others
Latin America
Brazil
Mexico
Others
Middle East and Africa

North America exhibits a clear dominance, accounting for the largest smart packaging market share

The report has also provided a comprehensive analysis of all the major regional markets, which include North America (the United States and Canada); Asia Pacific (China, Japan, India, South Korea, Australia, Indonesia, and others); Europe (Germany, France, the United Kingdom, Italy, Spain, Russia, and others); Latin America (Brazil, Mexico, and others); and the Middle East and Africa. According to the report, North America accounted for the largest market share as the region has a well-established and rapidly growing e-commerce sector, which requires efficient packaging solutions that provide tracking, monitoring, and enhanced user experiences. Additionally, North America, especially the United States, is home to numerous technology hubs and leading innovation centers. This supports the development of cutting-edge technologies that can be integrated into smart packaging, giving the region a competitive edge. Apart from this, the sophisticated supply chain and logistics networks in the region are well-suited for the integration of smart packaging technologies. Moreover, many leading companies in the smart packaging domain are headquartered in North America.

Competitive Landscape:

Companies are investing in research and development (R&D) activities to create cutting-edge solutions in smart packaging. This includes integrating technologies like the Internet of Things (IoT), NFC, blockchain, and augmented reality (AR) to enhance product tracking, consumer engagement, and security. Additionally, they are using eco-friendly materials and designing packaging that reduces waste, aligning with environmental regulations and consumer preferences. Apart from this, various leading companies are offering tailored solutions to various industries, such as food and

beverages (F&B), pharmaceuticals, and consumer electronics. This industry-specific approach enables them to meet unique needs and regulatory requirements. Moreover, many smart packaging firms are exploring opportunities in emerging markets and adapting their products to meet regional preferences and regulations.

The report has provided a comprehensive analysis of the competitive landscape in the market. Detailed profiles of all major companies have also been provided. Some of the key players in the market include:

Amcor plc
American Thermal Instruments
Avery Dennison Corporation
Berry Global Inc.
Crown Holdings Inc.
Dupont De Nemours Inc.
Linde plc
Multisorb Technologies Inc. (Filtration Group Corporation)
Point Five Packaging LLC
R.R. Donnelley & Sons Company
SEE
WestRock Company
Zebra Technologies Corporation

Recent Developments:

In May 2023, Amcor plc announced that it signed a definitive agreement to acquire ModaSystems, the manufacturer of state-of-the-art automated protein packaging machines.

In February 2022, Avery Dennison Corporation announced its first partnerships with startups for an accelerator program called ADStretch to solve the ecological harms of the packaging industry by developing materials that generate a positive ecological impact.

Key Questions Answered in This Report

1. What was the size of the global smart packaging market in 2023?
2. What is the expected growth rate of the global smart packaging market during 2024-2032?
3. What has been the impact of COVID-19 on the global smart packaging market?
4. What are the key factors driving the global smart packaging market?

5. What is the breakup of the global smart packaging market based on the technology?
6. What is the breakup of the global smart packaging market based on the industry vertical?
7. What are the key regions in the global smart packaging market?
8. Who are the key players/companies in the global smart packaging market?

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