

The Global Market for Smart (Active and Intelligent) Packaging 2023-2033

<https://marketpublishers.com/r/G8A146BDB6DDEN.html>

Date: May 2023

Pages: 280

Price: US\$ 1,250.00 (Single User License)

ID: G8A146BDB6DDEN

Abstracts

Smart packaging incorporates novel technologies that improve its core functions and provide additional capabilities compared to conventional packaging, allowing for improved personalization and traceability while minimizing waste. 'Smart packaging' refers to both active packaging and intelligent packaging. Active packaging serves to prolong the shelf life of sealed goods & produce, while intelligent packaging utilizes advanced technology to communication data on package contents or other information. The two technologies frequently overlap (e.g. food chain management).

Consumer demand for convenience, packaging security concerns (anti-counterfeit and anti-theft), and the requirement to track goods along the supply chain drive demand for smart packaging. Use of smart packaging can help extend the shelf life of food, improve product quality, maintain safety, and track product performance throughout the supply chain via the use of sensors (biosensors, gas sensors), indications (temperature, freshness), and data carriers (barcode, RFID (radio frequency identification)). The use of technologies such as AI, IoT, computer vision, and 3D printing is leading to the next generation of smart packaging solutions. Sustainability concerns are also playing an integral part in the evolution of these solutions, prompting businesses to adopt new business models like reusable packaging-as-a-service and custom designs to cut down on waste.

Report contents include:

Recent innovations and industry activity in smart packaging.

Market drivers and trends in smart packaging.

Market map for the smart packaging sector.

Analysis of sustainability in smart packaging.

Electronics in smart packaging.

Analysis of active smart packaging market including scavengers, diffusion systems, microwave susceptors, antimicrobial agents and phase change materials in packaging.

Analysis of intelligent smart packaging market including printed codes and markings, sensors and indicators, RFID and NFC.

Global revenues, historical and estimated to 2033, by technology type and end use market.

132 company profiles. Companies profiled include Akorn Technology, Inc., Apeel Sciences, Arylla, Avery Dennison, Cellr, Circolution, CollectID, Copptech, CuePath, Danaflex-Nano, Digimarc, DipoleRFID, Ennoventure, FL Technology, Fresh Inset, Handary, Hazel Technologies, Identiv, Infratab, Muuse, Mysteria Colorum (MyCol), NthDegree, ParxMaterials, ScanTrust, Securikett, SoFresh, Sufresca, Tempix and Wiliot.

Contents

1 RESEARCH METHODOLOGY

2 TERMS AND DEFINITIONS

3 INTRODUCTION

3.1 What is Smart Packaging?

3.1.1 Active packaging

3.1.2 Intelligent packaging

3.2 Supply chain management

3.3 Improving product freshness and extending shelf life

3.4 Brand protection and anti-counterfeiting

3.5 Product information

4 MARKET ANALYSIS

4.1 Market drivers and keys trends

4.2 Market challenges

4.3 Market map

4.4 Sustainability and reusability

4.4.1 Sustainable electronic smart packaging

4.4.2 Natural biopolymers in smart packaging

4.4.3 Invisible barcoding

4.5 Active packaging and food safety

4.6 AI in smart packaging

4.7 Packaging inspection

4.8 Internet of Packaging

4.9 Printed and flexible electronics in packaging

4.10 Printed lighting in packaging

4.11 Direct-to-shape package printing

4.12 Packaging as a service

4.13 Packaging displays

4.14 Nanomaterials

4.15 Edible Coatings

4.16 Active packaging

4.16.1 Scavengers/emitters

4.16.1.1 Oxygen scavengers

- 4.16.1.2 Ethylene scavengers/emitters
- 4.16.1.3 Moisture scavengers and desiccants
- 4.16.2 Diffusion systems
 - 4.16.2.1 Ethanol emitters
 - 4.16.2.2 Carbon dioxide emitters
 - 4.16.2.3 Sulfur dioxide emitters
- 4.16.3 Microwave susceptors
- 4.16.4 Antimicrobial agents
 - 4.16.4.1 Ethanol
 - 4.16.4.2 Preservatives
 - 4.16.4.3 Inorganic Nanoparticles
 - 4.16.4.4 Natural extracts
- 4.16.5 Phase change materials
- 4.17 Intelligent packaging
 - 4.17.1 Printed codes and markings
 - 4.17.1.1 Barcodes (D)
 - 4.17.1.2 D data matrix codes
 - 4.17.1.3 Quick response (QR) codes
 - 4.17.1.4 Augmented reality (AR) codes
 - 4.17.2 Sensors and indicators
 - 4.17.2.1 Freshness Indicators
 - 4.17.2.2 Time-temperature indicator labels (TTIs)
 - 4.17.2.3 Natural colour formulation indicator
 - 4.17.2.4 Thermochromic inks
 - 4.17.2.5 Gas indicators
 - 4.17.2.6 Chemical Sensors
 - 4.17.2.7 Electrochemical-Based Sensors
 - 4.17.2.8 Optical-Based Sensors
 - 4.17.2.9 Biosensors
 - 4.17.2.10 Edible Sensors
 - 4.17.3 Antennas
 - 4.17.3.1 Radio frequency identification (RFID)
 - 4.17.3.2 Near-field communications (NFC)
- 4.18 Smart blister packs
- 4.19 End use markets
 - 4.19.1 Food & beverage
 - 4.19.2 Pharmaceuticals
 - 4.19.3 Consumer goods
 - 4.19.4 Logistics monitoring

4.20 Global revenues 2015-2033 by market

4.20.1 Technologies

4.20.2 Markets

5 COMPANY PROFILES 143 (132 COMPANY PROFILES)

6 REFERENCES

List Of Tables

LIST OF TABLES

- Table 1. Market drivers and key trends for smart packaging.
- Table 2. Market challenges for smart packaging.
- Table 3. Smart technologies for smart food packaging.
- Table 4. Smart packaging displays.
- Table 5. Packaging displays.
- Table 6. Application markets, competing materials, nanomaterials advantages and current market size in packaging.
- Table 7. Nanomaterials used in active and smart packaging.
- Table 8. Summary of anti-counterfeit nano-based packaging.
- Table 9. Nanosensors in intelligent packaging for food safety and quality.
- Table 10. Examples of edible coatings.
- Table 11. Commercially available active packaging scavenger products.
- Table 12. FreshMax Oxygen Absorber.
- Table 13. Features of commercially available systems working as moisture regulators.
- Table 14. Summary of antimicrobial active packaging.
- Table 15. Examples of packaging with natural extracts as active agents.
- Table 16. Commercially available freshness indicators.
- Table 17. Commercially available gas indicators.
- Table 18. Commercially available food sensors.
- Table 19. Examples of RFID in packaging.
- Table 20. Commercially available radio frequency identification systems (RFID) technology.
- Table 21. Examples of NFC in packaging.
- Table 22. Examples of smart packaging in pharmaceuticals.
- Table 23. Examples of smart packaging in consumer goods.
- Table 24. Examples of smart packaging in logistics monitoring.
- Table 25. Global revenues for smart packaging 2015-2033 (Billion USD), by technologies.
- Table 26. Global revenues for smart packaging 2015-2033 (Billion USD), by market.

List Of Figures

LIST OF FIGURES

- Figure 1. Smart packaging for detecting bacteria growth in milk containers.
- Figure 2. Active packaging examples.
- Figure 3. Intelligent packaging examples.
- Figure 4. Active packaging film.
- Figure 5. Anti-counterfeiting smart label.
- Figure 6. Printed electronics packaging label.
- Figure 7. Market map for smart packaging.
- Figure 8. TriVision Packaging SmartInspector.
- Figure 9. Levels of connected packaging.
- Figure 10. Light up Packaging examples.
- Figure 11. Printed OLED for smart packaging
- Figure 12. Schematic of gas barrier properties of nanoclay film.
- Figure 13. Security tag developed by Nanotech Security.
- Figure 14. Commercial examples of time-temperature indicators.
- Figure 15. Fundamental principle of a gas sensor for detecting CO₂ (gas) after food spoilage
- Figure 16. A standard RFID system.
- Figure 17. RFID functions and applications of silver nanoparticle inks.
- Figure 18. OHMEGA Conductive Ink + Touchcode box.
- Figure 19. Wiliot RFID.
- Figure 20. Smart blister pack.
- Figure 21. Innoscentia smart expiry date label.
- Figure 22. Temperature threshold indicator.
- Figure 23. Global revenues for smart packaging 2015-2033 (Billion USD), by technologies.
- Figure 24. Global revenues for smart packaging 2015-2033 (Billion USD), by market.
- Figure 25. MonitorMark from 3M.
- Figure 26. Asahi Kasei Invisible Metal Mesh (IMA) for packaging.
- Figure 27. Avery Dennison smart labels.
- Figure 28. Ageless by Mitsubishi.
- Figure 29. Multisorb oxygen scavenger.
- Figure 30. RipeSense.
- Figure 31. SavrPak moisture scavenging sachet.
- Figure 32. Varcode Smart Tag.

I would like to order

Product name: The Global Market for Smart (Active and Intelligent) Packaging 2023-2033

Product link: <https://marketpublishers.com/r/G8A146BDB6DDEN.html>

Price: US\$ 1,250.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:

info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <https://marketpublishers.com/r/G8A146BDB6DDEN.html>

To pay by Wire Transfer, please, fill in your contact details in the form below:

First name:
Last name:
Email:
Company:
Address:
City:
Zip code:
Country:
Tel:
Fax:
Your message:

****All fields are required**

Customer signature _____

Please, note that by ordering from marketpublishers.com you are agreeing to our Terms & Conditions at <https://marketpublishers.com/docs/terms.html>

To place an order via fax simply print this form, fill in the information below and fax the completed form to +44 20 7900 3970