

Nano-Enabled Packaging for the Pharmaceutical Industry: a Technology, Industry and Market Analysis

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Nano-Enabled Packaging for the Pharmaceutical Industry: a Technology, Industry and Market Analysis

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Packaging in the pharmaceutical industry has gone through major changes in the past decade. The advent of new drug delivery systems and the development of new biochemical compounds have resulted in a need not only for enhanced protection against factors such as moisture, light, oxygen and mechanical forces, but also for packaging forms to play a more integral role in the drug delivery process. Packaging design today provides stability and shelf life to the drug and the delivery system, which becomes fundamental to the safety, convenience and compliance of drug use.

Nanotechnology, the science of very small materials, is poised to have a big impact in pharmaceutical packaging. Basic categories of nanotechnology applications and functionalities appear in development of pharmaceutical (or pharma) packaging in terms of enhancement of plastic materials' barriers; incorporation of active components that can deliver functional attributes beyond those of conventional active packaging; and sensing and signaling of relevant information.

STUDY GOAL AND OBJECTIVES

The study is intended to benefit existing manufacturers of pharmaceuticals who seek to expand market opportunities. It also can serve as a reference for pharma packaging industry players who would like to expand to nano-enabled technologies for drug packaging. This study also provides the most complete accounting of nano-enabled packaging of pharmaceutical products in various markets around the globe.

The main objective of this report is to understand the current state of nano-enabled packaging in the pharmaceutical industry, market opportunities, the companies involved, technologies being pursued and intellectual property (IP) trends.

This study covers various aspects of nano-enabled packaging, providing data about the size and growth of application segments, industry trends, new developments including a detailed patent analysis, and company profiles. Another goal of this report is to provide a detailed and comprehensive multi-client study of the market in North America, Europe, Asia Pacific and the rest of the world for nano-enabled packaging, as well as potential business opportunities emerging in the future.

The study objectives include thorough coverage of the underlying economic issues driving the nano-enabled packaging business, as well as assessments of new advanced nano-enabled packaging that are being developed. Particular attention was paid to providing realistic market data and forecasts for the nano-enabled packaging industry segments. This study provides the most thorough and up-to-date assessment that can be found anywhere on the subject. The study also provides extensive quantification of the many important facets of market developments in nano-enabled packaging all over the world. Ultimately, the study contributes to the determination of the kinds of strategic responses that can be adopted by companies hoping to compete in this dynamic market.

REASONS FOR DOING THE STUDY

In the pharmaceutical industry, there is an ever growing emphasis on security, as well as on patient convenience and greater automation, without compromising quality or safety standards. Increasing importance has been placed on the role that packaging plays in establishing brand preference.

The role of packaging in pharmaceuticals has taken an incremental leap forward in terms of its critical importance as an integral part of the product. New packaging solutions will focus more on drug safety by controlling microbial growth, delaying oxidation, improving tamper visibility and enhancing convenience. Therefore, iRAP felt a need to do a detailed market update and analysis for this industry.

CONTRIBUTIONS OF THE STUDY

This study provides the most complete accounting of the nano-enabled pharma packaging market growth in North America, Europe, Asia Pacific and the rest of the world currently available in a multi-client format. It provides the most thorough and up-to-date assessment that can be found anywhere on the subject and includes extensive quantification of the many important facets of market developments in various markets for nano-enabled pharma packaging. This quantification, in turn, contributes to the determination of strategic responses that suppliers may adopt in order to compete in these dynamic markets. Audiences for this study include marketing executives, business unit managers and other decision makers in the pharma packaging companies, as well as in companies peripheral to this business.

SCOPE AND FORMAT

The market data contained in this report quantifies opportunities for nano-enabled packaging technologies, nanomaterials used for packaging, and technology applications. In addition to product types, it also covers the merits and future prospects of the nano-enabled pharma packaging business. It also covers in detail the economic and regulatory issues regarded by many as critical to the industry's current state of change. The report provides a review of the nanotechnologies involved in the pharma packaging industry, its structure, and the companies involved in providing these packaged products.

TO WHOM THE STUDY CATERS

The report provides the most thorough and up-to-date assessment that can be found anywhere on the subject. The study is intended to benefit current pharma packaging producers and users as well as developers of new technologies in this area. Specifically, the report would be of great use to:

- producers and suppliers of pharma packaging;
- suppliers of pharma packaging materials;
- resin supplier;
- producers and suppliers of nanoparticles;
- users of pharma packaging;
- universities and research institutions involved in research in the pharma packaging area;
- investors and venture capitalists interested in new technology areas.

REPORT SUMMARY

Packaging in the pharmaceutical industry has gone through major changes in the past decade. The advent of new drug delivery systems and the development of new biochemical compounds have resulted in a need not only for enhanced protection against factors such as moisture, light, oxygen and mechanical forces, but also for packaging forms to play a more integral role in the drug delivery process.

Nanotechnology is poised to have a big impact in pharmaceutical packaging and will enable it to bring innovative and new generation packaging solutions to market. The addition of certain nanoparticles into shaped objects and films has been shown to render them light, fire-resistant and stronger in terms of

mechanical and thermal performance, as well as less permeable to gases. Thus, it is possible to make new packaging solutions that focus more on drug safety by controlling microbial growth and delaying oxidation as well as improving tamper visibility and anti-counterfeiting.

As nanotechnology meets the new demands of pharma packaging, there are opportunities for tremendous growth in next few years. To clearly understand the landscape and undercurrents, the nano-enabled packaging for pharma industry has been segmented by:

- technology – active and smart packaging;
- pharma packaging applications – blisters, containers, bottles, pouches, syringes etc.;
- market regions – namely, North America, Latin America, Europe (including Russia), Asia Pacific and China.

The total market for nano-enabled packaging for pharma is \$3.8 billion in 2009, which is expected to grow to \$8.1 billion by 2014, at a compound annual growth rate (CAGR) of 16.48% from 2009 to 2014.

Other major findings of this report are:

- The U.S. and Europe will remain the largest consumers of pharmaceutical packaging, as their advanced drug-producing sectors introduce new therapies with specialized packaging needs.
- The North America market for nano-enabled packaging in pharma will grow from \$1.08 billion in 2008 to \$2.03 billion by 2014. The European market will grow from \$1.15 billion in 2008 to \$1.46 billion in 2014.
- Japan continues to have the major share of the Asia Pacific market (65%), but its share is expected to decrease as India evolves into a fast-growing pharmaceutical packaging market as drug-producing sectors are upgraded and diversified, especially in the area of generic drugs.
- China's growth opportunities will be among the strongest, based on rapidly expanding pharmaceutical manufacturing capabilities there and the phasing-in of a government program designed to upgrade the quality and integrity of nationally produced medicines.

Table of Content

INTRODUCTION

Study Goal and Objectives
Reasons for Doing the Study
Contributions of the Study
Scope and Format
Methodology
Information Sources
Whom the Study Caters to
Author's Credentials

EXECUTIVE SUMMARY

Summary Table Market for Nano-enabled Packaging for Pharma by Technology, 2008, 2009 and 2014 (\$ Billions)
Summary Figure Market for Nano-enabled Packaging for Pharma by Technology, 2009 and 2014

INDUSTRY OVERVIEW

Industry Players

Table 1 Companies in Nano Enabled Packaging for Pharma

Market Segments

Market by Application Types

Market by Application Types (continued)

Table 2 Market for Nano Enabled Packaging for Pharma by Application Type, 2008, 2009 and 2014 (\$ Billions)

Figure 1 Market for Nano-enabled Packaging for Pharma by Application Type, 2009 and 2014

Market by Technology

Table 3 Market for Nano Enabled Packaging for Pharma by Technology, 2008, 2009 and 2014 (\$ Billions)

Figure 2 Market for Nano-enabled Packaging for Pharma by Technology, 2009 and 2014

Market by Region

Market by Region (continued)

Table 4 Market for Nano-enabled Packaging for Pharma by Regions, 2008, 2009 and 2014

Figure 3 Market for Nano-enabled Packaging for Pharma by Regions, 2009 and 2014

Regulatory Issues

TECHNOLOGY OVERVIEW

Packaging Technology

Active Packaging

Handling Highly Oxidative Compounds

Handling Highly Oxidative Compounds (continued)

Moisture Control

Protection for Drug Formulations

Protection for Drug Formulations (continued)

Getting the Right Packaging Solution

Smart Packaging

Tampering and Counterfeiting

Tampering and Counterfeiting (continued)

Drug Compliance

Drug Compliance (continued)

Drug Compliance (continued)

Table 5 new Compliance Product Introductions

Packaging Application Types

Blister Packs

Blister Packs (continued)

Containers (inhalers and Syringes)

Plastic Bottles

Pouches and Strips

Accessories and Closures

Packaging Material Types

Secured Aluminum Foil

Nano-enabled Thin Films

Nano-enabled Thin Films (continued)

Coatings

Future Trends

Future Trends (continued)

MARKET ANALYSIS

Global Industry

Mergers and Acquisitions

Table 6 Packaging-related Mergers and Acquisitions in the Pharma Industry (2004-2009)

Table 6 Packaging-related Mergers and Acquisitions in the Pharma Industry, 2004-2009 (continued)

Global Markets

North America

Table 7 North American Market for Nano-enabled Packaging for Pharma by Technology, 2008, 2009 and 2014 (\$ Billions)

Figure 4 North American Market for Nano-enabled Packaging for Pharma by Technology, 2009 and 2014

Table 8 North American Market for Nano-enabled Packaging for Pharma by Application Type, 2008, 2009 and 2014 (\$ Billions)

Figure 5 North America Market for Nano-enabled Packaging for Pharma by Application Type, 2009 and 2014

Latin America

Table 9 Latin American Market for Nano-enabled Packaging for Pharma by Technology, 2008, 2009 and 2014 (\$ Billions)

Figure 6 Latin American Market for Nano-enabled Packaging for Pharma by Technology, 2009 and 2014

Table 10 Latin American Market for Nano-enabled Packaging for Pharma by Application Type, 2008, 2009 and 2014 (\$ Billions)

Figure 7 Latin American Market for Nano-enabled Packaging for Pharma by Application Type, 2009 and 2014

Europe

Table 11 European Market for Nano-enabled Packaging for Pharma by Technology, 2008, 2009 and 2014 (\$ Billions)

Figure 8 European Market for Nano-enabled Packaging for Pharma by Technology, 2009 and 2014

Table 12 European Market for Nano-enabled Packaging for Pharma by Application Type, 2008, 2009 and 2014

Figure 9 European Market for Nano-enabled Packaging for Pharma by Application Type, 2009 and 2014

Asia-pacific

Table 13 Asia-pacific Market for Nano-enabled Packaging for Pharma by Technology, 2008, 2009 and 2014 (\$ Billions)

Figure 10 Asia-pacific Market for Nano-enabled Packaging for Pharma by Technology, 2009 and 2014

Table 14 Asia-pacific Market for Nano-enabled Packaging for Pharma by Application Type, 2008, 2009 and 2014 (\$ Billions)

Figure 11 Asia-pacific Market for Nano-enabled Packaging for Pharma by Application Type, 2009 and 2014

Table 15 Chinese Market for Nano-enabled Packaging for Pharma by Technology, 2008, 2009 and 2014 (\$ Billions)

Figure 12 Chinese Market for Nano-enabled Packaging for Pharma by Technology, 2009 and 2014

Table 16 Chinese Market for Nano-enabled Packaging for Pharma by Application Type, 2008, 2009 and 2014 (\$ Billions)

Figure 13 Chinese Market for Nano-enabled Packaging for Pharma by Application Type, 2009 and 2014

PATENTS AND PATENT ANALYSIS

List of Patents

High Stability Package for Dental Treatment Devices

Sorbent Canister With Beveled Edges

Child-resistant Compact for Blister Card Products

Threaded Child-resistant Package Having Linerless Closure

Child-resistant One-piece Push and Turn Closure

Humidity Control Device

Closure and Container Package With Rfid Circuit

Plastic Packaging Having a Marker Material

Child-resistant Tamper-indicating Package

Polyacrylic Film Forming Compositions

Child-resistant Flip-top Dispensing Closure and Package

Closure and Package Having Child-resistant and Non-child-resistant Modes of Operation

Closure and Package With Induction Seal and RFID TAG

Monitoring Object Movement

Child-resistant Container and CAP
Oxygen-absorbing Compositions and Method
Deactivating a Data TAG for Tamper-evident Packaging
Acid-gas Absorbing Tablet and Method of Use
Packaging and Delivery of Pharmaceuticals and Drugs
Recloseable Biosensor
Packaging Film, Package and Process for Aseptic Packaging
Method and Packaging for Pressurized Containers
Sorbent Capsule
Oxygen-absorbing Composition
Tamper-indicating Band Arrester
Pressed Adsorbent and Method of Fabrication Thereof
Child-resistant Dispenser
Interactive Information Package
Dispensing Closure
Self-retaining Adsorbent Unit
Pharmaceutical KIT for Oxygen-sensitive Drugs
Oxygen Scavenging Compositions for Packaging Applications
One-hand Opening Child-resistant Blister Pack Container
Pharmaceutical KIT for Oxygen-sensitive Ddrugs
Dispensing Unit for Oxygen-sensitive Drugs
Patent Analysis
Table 17 Number of U.S. Patents Granted to Companies in the Oxygen Scavenging Category From 2004 Through 2008
Figure 14 top Companies Granted U.S. Patents for Barrier Packaging in Pharma From 2004 Through 2008

COMPANY PROFILES

Aardex LTD.
ABR Pharma
Alcoa Flexible Packaging
Alcan Packaging
Allplas Embalagens, LTDA.
Amcor Flexibles Winterbourne
Amerisource Bergen Corporation
Ampac Packaging, LLC
Anderson Packaging Inc.
Astra Zeneca PLC
Bang & Olufsen Medicom
Bilcare Limited
Bosch Packaging Technology
Bristol-myers Squibb Co.
Burgopak LTD.
Cardinal Health, Inc.
Colbert Packaging
CSP Technologies, Inc.
Cryopak Industries
Cryovac Sealed air Corporation
Curwood, Inc.
Cypak AB
Dragon International Group Corp.
Ecobliss-pharma
Gerresheimer
Glaxosmithkline PLC
Honeywell International Inc.

Ineos Films Inc
Information Mediary Corporation
Kimberly-clark Health Care
Klöckner Pentaplast
Mcneil Consumer Healthcare
Meadwestvaco Corporation (MWV)
Menasha Corporation
Merck
Multisorb Technologies, Inc.
Neopac
Packshield
Perfecseal Ltd.
Rexam Closures
Roche Diagnostics Corporation
Schott North America, Inc.
Stora Enso
Sud-chemie Ag
Superfos A/s
Tekni-films U.S.
Thermo Fisher Scientific Inc.
United Drug PLC
Wyeth Consumer Healthcare, Inc.

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