

# Barrier Materials for Flexible Packaging 2016 to 2020

## **Introduction**

- A. Barrier films and coatings defined
  - 1. Barrier
  - 2. Extrudable resins
  - 3. Fluid coatings
  - 4. Air coatings
  - 5. Aluminum foil
  - 6. Vacuum-deposited coatings
  - 7. Flexible packaging
  - 8. Retort pouch
- B. Study organization
- C. Study methodology
- D. Geographic regions
- E. Conventions

## **Executive Summary**

- A. Barrier materials included in this study
- B. Market drivers and trends
  - 1. Macro environment
  - 2. Consumer drivers
  - 3. Drivers specific to barrier flexible packaging
- C. Technology trends
  - 1. Downgauging
  - 2. Substrate surface design
  - 3. Optimization of vacuum coated film
  - 4. PVOH technology
  - 5. Nanotechnology
  - 6. Barrier adhesives
  - 7. Oxygen scavengers
  - 8. Micro-layer films
- D. Market
  - 1. Very high oxygen barrier materials
  - 2. High oxygen barrier materials
  - 3. Medium oxygen barrier materials
  - 4. Very high moisture vapor barrier materials
- E. Economic and environmental impact
  - 1. Material selection
  - 2. Economic results
  - 3. Environmental results

## Technology

- A. Barrier principles
  - 1. Temperature dependence
  - 2. Humidity
  - 3. Material thickness
  - 4. Coatings
- B. Aluminum foil
  - 1. Aluminum foil global supply
  - 2. Aluminum foil production
  - 3. Aluminum foil product performance
  - 4. Aluminum foil packages
  - 5. Aluminum foil suppliers
- C. PVOH resin
  - 1. PVOH resin global supply
  - 2. PVOH resin production
  - 3. PVOH product performance
  - 4. PVOH barrier packaging
  - 5. PVOH resin suppliers
- D. EVOH resin
  - 1. EVOH resin global supply
  - 2. EVOH resin production
  - 3. EVOH product performance
  - 4. EVOH barrier film production
  - 5. EVOH resin suppliers
- E. Transparent oxide-coated film
  - 1. Transparent oxide-coated film global supply
  - 2. Transparent oxide-coated film performance
  - 3. Transparent oxide-coated film suppliers
  - 4. Equipment suppliers
- F. PVDC resin
  - 1. PVDC resin global supply
  - 2. PVDC resin and packaging production
  - 3. PVDC product performance
  - 4. PVDC resin suppliers
- G. Metallized film
  - 1. Metallized film global supply
  - 2. Metallized film production
  - 3. Metallized film product performance
  - 4. Metallized film suppliers

- H. Nylon resin
  - 1. Nylon resin global supply
  - 2. Nylon resin and packaging production
  - 3. Nylon barrier performance
  - 4. Nylon resin suppliers
- I. PET film
  - 1. PET film global supply
  - 2. PET resin and packaging production
  - 3. PET film barrier performance
  - 4. PET film suppliers
- J. Polychlorotrifluoroethylene (PCTFE) resin
  - 1. PCTFE resin global supply
  - 2. PCTFE resin and packaging production
  - 3. PCTFE product performance
  - 4. PCTFE resin suppliers
- K. Cyclic olefin copolymer (COC) resin
  - 1. COC resin global supply
  - 2. COC resin and packaging production
  - 3. COC resin barrier film properties
  - 4. COC resin suppliers
- L. Specialty-coated films
  - 1. PAA-coated films
  - 2. Nanotechnology-enhanced coated films
  - 3. Triazine-coated films
  - 4. Coated film barrier comparison
  - 5. Specialty-coated film suppliers
- M. Emerging technology
  - 1. Oxygen absorbers
  - 2. Nanocomposite technology in flexible packaging
  - 3. Substrate surface design
  - 4. Sol-gel coatings
  - 5. Barrier adhesives
  - 6. Micro-layer films
  - 7. Liquid crystal polymers
  - 8. Polyglycolic acid resin (PGA)

## **Economic and Environmental Case Studies**

- A. Case 1: Target OTR: 0.31 cc/m<sup>2</sup>-day-atm
  - 1. Material selection and specifications
  - 2. Barrier properties of selected materials
  - 3. Assumptions
  - 4. Economic Results

5. Environmental results – Energy
6. Environmental results – Greenhouse gas
- B. Case 2: Target OTR: 0.31 to 1.55 cc/m<sup>2</sup>-day-atm
  1. Material selection and specifications
  2. Barrier property results
  3. Assumptions
  4. Economic results
  5. Environmental results – Energy
  6. Environmental results – Greenhouse gas
- C. Case 3: Target OTR: 1.55 to 15.5 cc/m<sup>2</sup>-day-atm
  1. Material selection and specification
  2. Barrier property results
  3. Assumptions
  4. Economic Results
  5. Environmental results – Energy
  6. Environmental results – Greenhouse gas
- D. Case 4: Target OTR: 15.5 to 77.5 cc/m<sup>2</sup>-day-atm
  1. Material selection and specifications
  2. Barrier property results
  3. Assumptions
  4. Economic results
  5. Environmental results – Energy
  6. Environmental results – Greenhouse gas
- E. Case 5: Target WVTR: 0.0 to 1.55 gm/m<sup>2</sup>-day-atm
  1. Material selection and specifications
  2. Barrier property results
  3. Assumptions
  4. Results
  5. Environmental results – Energy
  6. Environmental results – Greenhouse gas

## **Market Trends and Projections**

- A. Drivers and trends
  1. Macro environment
  2. Consumer drivers
  3. Drivers specific to barrier flexible packaging
- B. End-use packaging 1
  1. Baked goods
  2. Breakfast food
  3. Condiments
  4. Confectionery
  5. Dairy foods

6. Dried foods & pasta
  7. Dried mixes
  8. Meat, poultry, and seafood
  9. Medical device
  10. Personal care
  11. Pet food
  12. Pharmaceutical
  13. Prepared drinks
  14. Snacks
  15. Tobacco
- C. PET film
1. PET film volume by end-use
  2. PET film market value
  3. PET film volume by geographic region
- D. Nylon resin
1. Nylon resin volume by end-use
  2. Nylon resin market value
  3. Nylon resin volume by geographic region 1
- E. Aluminum foil
1. Aluminum foil volume by end-use
  2. Aluminum foil market value
  3. Aluminum foil volume by geographic region
- F. Metallized films
1. Metallized film volume by end-use
  2. Metallized film market value
  3. Metallized film volume by geographic region
- G. PVDC resin
1. PVDC resin volume by end-use
  2. PVDC resin market value
  3. PVDC resin volume by geographic region
- H. EVOH resin
1. EVOH resin volume by end-use
  2. EVOH resin market value
  3. EVOH resin volume by geographic region
- I. Transparent oxide-coated film
1. Transparent oxide-coated film volume by end-use
  2. Transparent oxide-coated film market value
  3. Transparent oxide-coated film volume by geographic region
- J. AMAB resin
- K. PVOH resins
1. PVOH resin volume by end-use
  2. PVOH resin market value

- 3. PVOH resin volume by geographic region
- L. Specialty-coated film
  - 1. Specialty-coated film volume by end-use
  - 2. Specialty-coated film market value
  - 3. Specialty-coated film volume by geographic region
- M. COC resin
  - 1. COC resin volume by end-use
  - 2. COC resin market value
  - 3. COC resin volume by geographic region
- N. PCTFE resin
  - 1. PCTFE resin volume by end-use
  - 2. PCTFE resin market value
  - 3. PCTFE resin volume by geographic region
- O. Barrier materials summary
  - 1. Barrier materials volume summary
  - 2. Barrier materials value summary
  - 3. Barrier materials summary by geographic region

## **Producer Profiles**

## **Glossary**