

# THE OUTLOOK FOR ALUMINUM FOIL PACKAGING

## 2011 EDITION

---

### ■ TABLE OF CONTENTS ■

<b>EXECUTIVE SUMMARY .....</b>	<b>ES-1</b>
<b>I. INTRODUCTION.....</b>	<b>1</b>
Report Highlights .....	3
Demographic Changes .....	5
A Brief History of Aluminum Foil.....	7
Characteristics of Aluminum Foil .....	9
Foil Usage .....	12
Household and Institutional Foil.....	14
Semi-Rigid Containers .....	17
Flexible Packaging .....	17
Aluminum Foil Imports and Exports .....	19
<b>II. THE ALUMINUM INDUSTRY .....</b>	<b>23</b>
Primary Aluminum Production .....	24
Bauxite Mining.....	25
Alumina Refining.....	28
Smelting .....	29
Secondary Aluminum Production .....	31
Aluminum Supply and Demand.....	32
Aluminum Production.....	33
Aluminum Consumption.....	37
Corporate Trends.....	40
<b>III. ALUMINUM FOIL PRODUCERS .....</b>	<b>45</b>
North America.....	45
Latin America.....	52
Western Europe .....	55
Spain.....	56
France.....	57
Italy .....	57

# THE OUTLOOK FOR ALUMINUM FOIL PACKAGING

## 2011 EDITION

---

### ■ TABLE OF CONTENTS ■

<b>III. ALUMINUM FOIL PRODUCERS (Continued)</b>	
Luxembourg .....	57
Netherlands .....	58
Germany .....	59
Austria .....	60
Sweden .....	61
Greece .....	61
East Central Europe and the Balkans .....	62
Commonwealth of Independent States .....	63
The Middle East and Sub-Saharan Africa .....	65
South Asia .....	67
East Asia.....	70
China .....	70
Taiwan.....	75
Japan.....	76
Southeast Asia and Australia .....	77
<b>IV. FLEXIBLE PACKAGING CONVERTERS.....</b>	<b>80</b>
<b>V. FOIL-BASED PACKAGING SYSTEMS .....</b>	<b>87</b>
Packaging Functions .....	87
End-Uses of Aluminum Foil .....	89
Aseptic Packaging .....	90
Hot Fill Pouches .....	95
Laminated Pouches .....	96
Confectionary Products .....	100
Cigarette Packaging.....	103
Laminated Tubes .....	108
Multilayer Lidstock .....	110
Pharmaceutical Blister Packaging .....	113
Semi-rigid Foil Trays .....	120

# THE OUTLOOK FOR ALUMINUM FOIL PACKAGING

## 2011 EDITION

---

### ■ TABLE OF CONTENTS ■

<b>VI. COMPETITIVE MATERIALS.....</b>	<b>124</b>
Barrier Resins .....	124
EVOH.....	125
Inorganic Coatings .....	126
Metallization.....	127
<b>VII. FOIL PACKAGING AND THE ENVIRONMENT .....</b>	<b>130</b>
Recovery and Recycling of Foil-Based Packaging .....	131
Source Reduction and Packaging Efficiency .....	134
<b>VIII OUTLOOK AND BUSINESS OPPORTUNITIES.....</b>	<b>136</b>
Aluminum Foil Still Matters .....	136
The Emerging Markets Will Dominate Growth.....	137
The Emerging Markets are Now Competitors as Well as Customers, Sources of Cheap Labor, and Commodity Suppliers .....	140
Respecialization is Replacing Downstream Integration in the Aluminum Industry .....	141
Aluminum Foil is Becoming More Fragmented .....	142
No New High Volume Foil Applications are on the Horizon.....	142
Consolidation is Occurring Among Flexible Packaging Converters ...	144
Converted Flexible Packaging is Still Years Away from Maturity.....	147
Concerns about the Environment will Continue to Grow .....	147
Future Growth .....	148
<b>REFERENCES AND METHODOLOGY .....</b>	<b>150</b>

# THE OUTLOOK FOR ALUMINUM FOIL PACKAGING

## 2011 EDITION

---

### ■ LIST OF EXHIBITS ■

#### EXECUTIVE SUMMARY

ES-1 Aluminum Foil in Packaging .....	ES-3
ES-2 Global Cigarette Consumption.....	ES-8
ES-3 Global Pharmaceuticals Sales by region.....	ES-10

#### 1. INTRODUCTION

I-1 Major Emerging Economies .....	7
I-2 Industrial and Packaging End-Uses of Aluminum Foil.....	13
I-3 Aluminum Foil in Packaging.....	14
I-4 U.S. Household Foil Sales (2005-2008).....	15
I-5 Growth in the Flexible Packaging Industry .....	18
I-6 Aluminum Foil Imports .....	20
I-7 Imports by Country.....	21
I-8 Aluminum Foil Exports.....	22

#### II. THE ALUMINUM INDUSTRY

II-1 Aluminum Production Cycle .....	24
II-2 Major Bauxite-Producing Countries.....	26
II-3 Identified Reserves of Bauxite by Country .....	27
II-4 Primary Aluminum Output by Country.....	36
II-5 Worldwide Primary Aluminum Demand .....	39
II-6 Largest Primary Aluminum Producers-2009.....	42

#### III. ALUMINUM FOIL PRODUCERS

III-1 Noranda Aluminum – Rolling Mill Facilities.....	49
III-2 Aluminum Foil Production and Consumption in Brazil.....	53
III-3 Aluminum Foil Deliveries – Europe .....	55
III-4 Novelis – European Foil Plants .....	58

# THE OUTLOOK FOR ALUMINUM FOIL PACKAGING

## 2011 EDITION

---

### ■ LIST OF EXHIBITS ■

#### III. ALUMINUM FOIL PRODUCERS (Continued)

II-5 China – Aluminum Foil Production (2000-2009) .....	71
III-6 China – Aluminum Foil Exports (2000-2009) .....	71
III-7 Japan – Aluminum Foil Shipments .....	76

#### IV. FLEXIBLE PACKAGING CONVERTERS

IV-1 Largest U.S. Flexible Packaging Companies .....	81
IV-2 Ten Largest European Flexible Packaging Converters .....	84

#### V. FOIL-BASED PACKAGING SYSTEMS

V-1 Typical Aseptic Construction.....	92
V-2 Big Three U.S. Tuna Brands.....	99
V-3 U.S. Confectionary Volume and Retail Sales.....	101
V-4 Top Ten Confectionary Producers.....	101
V-5 Global Cigarette Consumption.....	104
V-6 Cigarette Consumption by Region.....	105
V-7 Per Capita Cigarette Consumption.....	105
V-8 Global Smoking Prevalence.....	106
V-9 Cigarette Global Market Share by Company.....	107
V-10 U.S. Laminate Tube Market Share.....	109
V-11 Global Pharmaceutical Sales by Region .....	113
V-12 Global Pharmaceutical Sales by Company .....	114
V-13 Pharmaceutical Blister Packaging Materials.....	116

#### VI. COMPETITIVE MATERIALS

VI-1 Key Barrier Material Options in Flexible Packaging .....	129
---	-----

# **THE OUTLOOK FOR ALUMINUM FOIL PACKAGING**

## **2011 EDITION**

---

### **■ LIST OF EXHIBITS ■**

#### **VII. FOIL PACKAGING AND THE ENVIRONMENT**

VII-1 Packaging Efficiency.....	135
---------------------------------	-----

#### **VIII. OUTLOOK AND BUSINESS OPPORTUNITIES**

VIII-1 Consumer Packaged Goods – Retail Sales.....	139
VIII-2 Rank Group .....	146
VIII-3 Constantia Packaging AG.....	147