

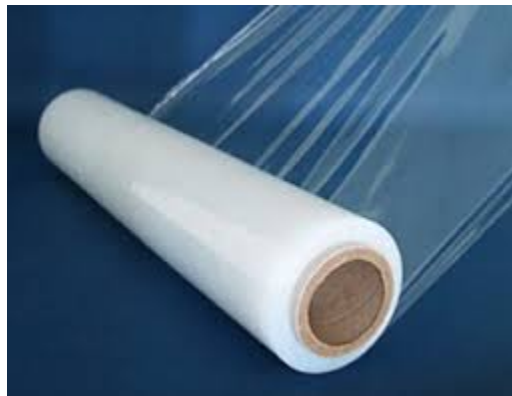


# PROSPECTUS

## POLYETHYLENE FILM MARKET ANALYSIS, VALUE-IN-USE, & TECHNOLOGIES

10<sup>TH</sup> EDITION

PUBLISHED SEPTEMBER 2017



# **\*\*Polyethylene Film Market Study 10th Edition\*\***

## *Highlights*

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- Published in September 2020. Includes a two-volume book set and an electronic version available in Excel and Adobe Acrobat formats.
- Interviews were conducted with hundreds of companies throughout North America.
- The study is divided into four major market categories: (1) Food Packaging; (2) Industrial Packaging; (3) Retail Packaging; and (4) Nonpackaging.
- The study includes an executive summary along with detailed data on 33 separate end-use markets.

### **Every chapter for each end-use market will provide in-depth coverage on the following topics:**

- Market size by total resin consumption and by resin type.
- Major processors and their locations.
- Primary products manufactured by these major processors.
- Total resin consumption and growth rates for each PE film extruder.
- Value-in-use analysis depicting the average selling price, which includes the margin, overhead and other cost related to manufacturing the various products.
- Listing of the entire group of participating companies in order from largest to smallest.
- Detailed information on the factors that affect the growth or decline of each market. (i.e. economy, material substitution, government regulations, environmental issues, technological trends, imports, shift of production from USA to foreign countries, mergers & acquisitions, NAFTA and other world trade issues, etc.)
- Growth rate comparison between the anticipated market growth and the anticipated processor growth per the 33 end-use markets. Where there is a difference, there will be qualitative data explaining the difference.
- Current capacity utilization and projected capacity utilization in 2020.
- Inter-polymer substitution.
- Detailed appendix of additional locations along with PE Film products manufactured and resin volumes.
- What are the favorite resin(s) you use for polyethylene film extrusion? Who supplies the resin and why is it a favorite?
- Do you believe the additional PE resin capacity coming online in the next few years will help you grow your business?

## Selected Exhibits

**Total resin by type consumed for Polyethylene Film in U.S. and Canada for 2020 and projected for 2020 in MM lbs.**

	2017	2020
<b>Resin</b> <i>(Sample list of resins)</i>	<b>Consumption</b> (MM lbs.)	<b>Consumption</b> (MM lbs.)
<b>LLDPE (linear low density polyethylene)</b>		
LLDPE-hexene		
LLDPE-butene		
LLDPE-octene		
LLDPE-metallocene		
<b>Total LLDPE</b>		
<b>LDPE (low density polyethylene)</b>		
LDPE-homopolymer		
LDPE-EVA (ethylene vinyl acetate) copolymer		
LDPE-EAA (ethylene acrylic acid) copolymer		
LDPE-EMA (ethylene methyl acrylate) copolymer		
<b>Total LDPE</b>		
<b>HDPE (high density polyethylene)</b>		
HMW-HDPE (high molecular weight)		
MMW-HDPE (medium molecular weight)		
<b>Total HDPE</b>		
<b>MDPE (medium density polyethylene)</b>		
<b>PCR (post consumer resin)</b>		
<b>UHDPE (ultra high density polyethylene)</b>		
<b>ULDPE (ultra low density polyethylene)</b>		
<b>GRAND TOTAL</b>		

Source: Mastio & Company Polyethylene Film Market Study

**Total resin consumption for 33 end-use markets for polyethylene film resins in U.S. and Canada for 2017 and projected for 2020 in MM lbs.**

<b>TOTAL NORTH AMERICAN PE RESIN CONSUMPTION 2017 AND 2020</b>					
<b>Chapter</b>	<b>Market</b>	<b>2017 Consumption (MM lbs.)</b>	<b>2020 Consumption (MM lbs.)</b>	<b>AAGR 11-14 AAGR %</b>	<b>Growth/Decline 2017-2020 (MM lbs.)</b>
2	Baked Goods				
3	Meat & Poultry				
4	Fresh Produce and Self-Serve & Wet-Pack Bags				
5	Bag-In-Box				
6	Candy Packaging				
7	Deli Bags & Wrap				
8	Carton Liners & Slug Wrap				
9	Frozen Food				
10	Snack Food Packaging				
11	Cheese Packaging				
<b>Food Packaging Subtotal</b>					
12	Consumer & Industrial Product Liners				
13	Stretch Film				
14	Shrink Film				
15	Heavy Duty Sacks				
16	Sheet & Tubing				
17	Bubble Packaging				
18	Multi-Wall Sacks				
<b>Industrial Packaging Subtotal</b>					
19	Consumer Trash Bags				
20	Merchandise Bags				
21	Household Bags & Wrap				
22	Laundry, Dry Cleaning, Garment Bags				
23	T-Shirt Bags				
24	Pouches				
25	Paper and Personal Overwrap				
<b>Retail Packaging Subtotal</b>					
26	Institutional Trash Bags				
27	Construction Film				
28	Geomembrane Lining Systems				
29	Juvenile & Adult Hygiene Film				
30	Medical Film & Packaging				
31	Agricultural Film				
32	Drop Cloths, Tarps and Covers				
33	Envelope & Magazine Overwrap				
34	Miscellaneous				
<b>Nonpackaging Subtotal</b>					
<b>Grand Total</b>					

Source: Mastio & Company Polyethylene Film Market Study

**HISTORICAL COMPARISON - The following table provides an overview of the anticipated size of a market from the data collection effort in 2014, compared to the actual resin consumption for each market based on the new data. Where there is a negative number, the market did not grow to the level anticipated by respondents in 2014.**

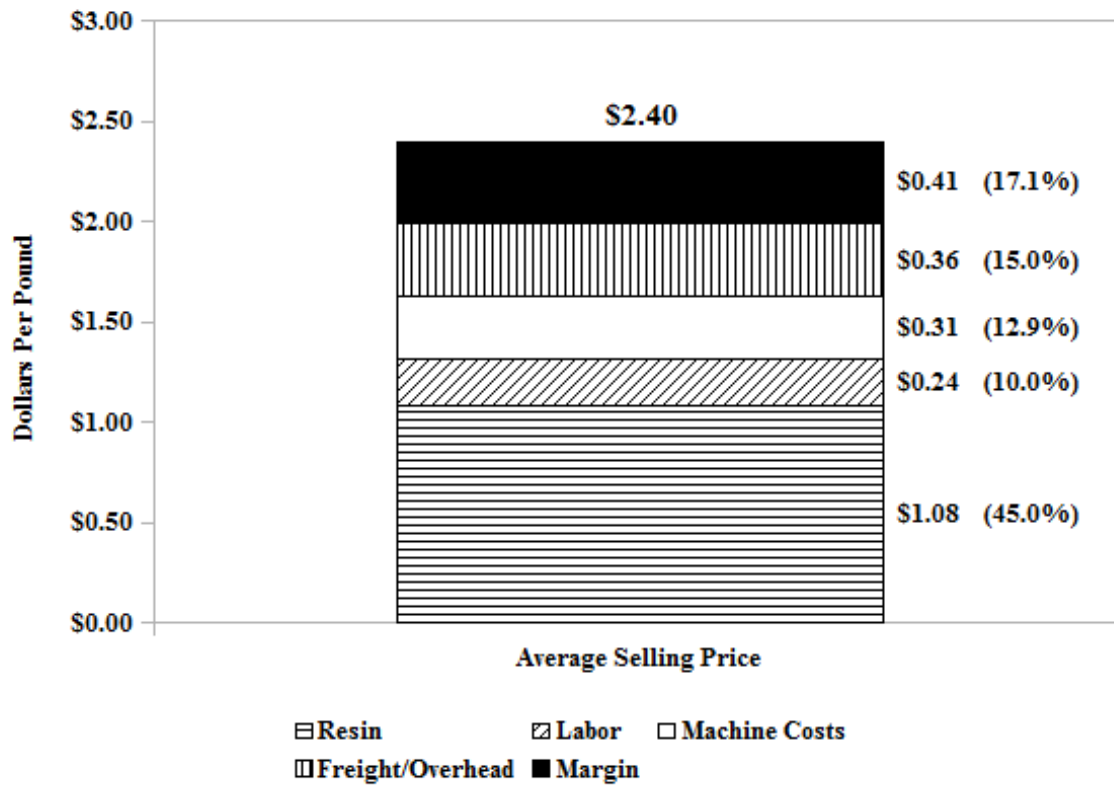
<b>ACTUAL RESIN CONSUMPTION VS. ANTICIPATED RESIN CONSUMPTION</b>				
<b>Chapter</b>	<b>Market</b>	<b>Actual 2017 Consumption</b>	<b>Anticipated 2017 Consumption (from 2014 study)</b>	<b>Difference</b>
2	Baked Goods			
3	Meat and Poultry			
4	Fresh Produce, Self-Serve and Wet-Pack Bags			
5	Bag-In-Box			
6	Candy Packaging			
7	Deli Bags and Wrap			
8	Carton Liners and Slug Wrap			
9	Frozen Food Packaging			
10	Snack Food Packaging			
11	Cheese Packaging			
12	Consumer and Industrial Product Liners			
13	Stretch Film			
14	Shrink Film			
15	Heavy Duty Sacks			
16	Sheet and Tubing			
17	Bubble Packaging			
18	Multi-Wall Sacks			
19	Consumer Trash Bags			
20	Merchandise Bags			
21	Household Bags and Wrap			
22	Laundry, Dry Cleaning and Garment Bags			
23	T-Shirt Bags			
24	Pouches			
25	Paper and Personal Care Overwrap			
26	Institutional Trash Bags			
27	Construction Film			
28	Geomembrane Lining Systems			
29	Juvenile and Adult Hygiene Film			
30	Medical Film and Packaging			
31	Agricultural Film			
32	Drop Cloths, Tarps and Covers			
33	Envelopes and Magazine Overwrap			
34	Miscellaneous			
<b>GRAND TOTAL</b>				

Detailed information on the factors that affect the growth or decline of each market by processor.

Processor	Estimated share of the market %	% growth rate you see the market growing over the next three years	% growth rate you see your company growing over the next 3 years in the market	Key factors for decline or growth in each market
Company A	15%	4%	10%	New customers doing business with another supplier.
Company B	10%	3%	2%	Closing one of our facilities.
etc. ↓				

**Average Growth Rate 3.5%**

**VALUE-IN-USE ANALYSIS FOR A COEXTRUDED, MEAT AND POULTRY BARRIER BAG**



Source: Mastio & Company Polyethylene Film Market Study

**Breakdown of resin consumption by process type.**

	2017		2014
	Consumption (MM lbs.)	Market Share (%)	Market Share (%)
<b>Film Extrusion Process</b>			
<b>Blown Film Extrusion</b>	<b>529.4</b>	<b>86.9</b>	<b>88.4</b>
<b>Cast Film Extrusion</b>	<b>79.6</b>	<b>13.1</b>	<b>11.6</b>
<b>Totals</b>	<b>609.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Coextruded Film Constructions</b>			
<b>Monolayer Film Constructions</b>	<b>65.8</b>	<b>10.8</b>	<b>20.1</b>
<b>Totals</b>	<b>609.0</b>	<b>100.0</b>	<b>100.0</b>

**Detailed listing of participants and their location.**

<b>Company</b>	<b>Location</b>
Company A	Van Buren, Arkansas
Company B	Oshkosh, Wisconsin
Company C	St. Louis, Missouri
Company D	Paris, Illinois
Company E	Elyria, Ohio
Company F	Jacksonville, Florida

**Capacity Utilization –provided in the electronic edition.**

<b>Processor</b>	<b>Current Utilization 2017</b>	<b>Anticipated Utilization 2018</b>	<b>Reason for increase or decline</b>
Company A	50%	75%	
Company B	80%	70%	
Company C	75%	80%	
Company D	75%	95%	
Company E	63%	70%	
Company F	93%	87%	

What are the favorite resins that you use for PE film extrusion and who supplies them to you? – included in the electronic edition.

Resin Supplier	Why is this resin a favorite of yours?

**Resin consumption, market share, and AAGR by resin type, 2017 and 2020**

Resin	2017		2020		2017-2020 AAGR (%)
	Consumption (MM lbs.)	Market Share (%)	Consumption (MM lbs.)	Market Share (%)	
<b>mLLDPE</b>	<b>128.3</b>	<b>20.4</b>	<b>146.4</b>	<b>20.7</b>	<b>4.4</b>
<b>LLDPE-octene</b>	<b>98.6</b>	<b>15.7</b>	<b>110.7</b>	<b>15.6</b>	<b>3.9</b>
<b>LLDPE-hexene</b>	<b>88.4</b>	<b>14.1</b>	<b>94.5</b>	<b>13.3</b>	<b>2.2</b>
<b>LLDPE-butene</b>	<b>51.9</b>	<b>8.3</b>	<b>56.6</b>	<b>8.0</b>	<b>2.9</b>
<b>LLDPE-super hexene</b>	<b>28.5</b>	<b>4.5</b>	<b>33.0</b>	<b>4.7</b>	<b>5.0</b>
<b>Total LLDPE</b>	<b>395.7</b>	<b>62.9</b>	<b>441.2</b>	<b>62.3</b>	<b>3.7</b>
<b>LDPE-homopolymer</b>	<b>61.7</b>	<b>9.8</b>	<b>73.4</b>	<b>10.4</b>	<b>5.9</b>
<b>LDPE-EVA copolymer</b>	<b>39.3</b>	<b>6.2</b>	<b>42.4</b>	<b>6.0</b>	<b>2.5</b>
<b>LDPE-EAA copolymer</b>	<b>22.9</b>	<b>3.6</b>	<b>26.3</b>	<b>3.7</b>	<b>4.6</b>
<b>Total LDPE</b>	<b>123.9</b>	<b>19.7</b>	<b>142.1</b>	<b>20.1</b>	<b>4.6</b>
<b>HMW-HDPE</b>	<b>14.4</b>	<b>2.3</b>	<b>16.9</b>	<b>2.4</b>	<b>5.4</b>
<b>MMW-HDPE</b>	<b>4.8</b>	<b>0.8</b>	<b>5.2</b>	<b>0.7</b>	<b>2.8</b>
<b>Total HDPE</b>	<b>19.2</b>	<b>3.1</b>	<b>22.1</b>	<b>3.1</b>	<b>4.8</b>
<b>EVOH</b>	<b>29.4</b>	<b>4.7</b>	<b>32.8</b>	<b>4.6</b>	<b>3.7</b>
<b>Nylon</b>	<b>22.7</b>	<b>3.6</b>	<b>26.9</b>	<b>3.8</b>	<b>5.8</b>
<b>PVDC</b>	<b>18.7</b>	<b>3.0</b>	<b>20.7</b>	<b>2.9</b>	<b>3.3</b>
<b>VLDPE</b>	<b>17.6</b>	<b>2.8</b>	<b>19.5</b>	<b>2.8</b>	<b>3.4</b>
<b>Tie-resin</b>	<b>0.9</b>	<b>0.1</b>	<b>1.7</b>	<b>0.2</b>	<b>22.6</b>
<b>MDPE</b>	<b>0.8</b>	<b>0.1</b>	<b>1.1</b>	<b>0.2</b>	<b>9.9</b>
<b>GRAND TOTAL</b>	<b>628.9</b>	<b>100.0</b>	<b>708.0</b>	<b>100.0</b>	<b>4.0</b>



**Alphabetical listing of polyethylene film processors by total resin consumption for each of the 33 end-use markets.**

<b>Polyethylene Film Processors and their Primary Markets</b>														
<b>Company</b>	<b>Total Resin Use (MM lbs.)</b>	<b>Market Amounts in MM lbs.</b>												
		<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>
Company Name	91.6	0.6				1.0								
Company Name	72.2									0.8	0.4			0.8
Company Name	2.7	0.7					0.2	0.2	0.2					
Company Name	55.0													
Company Name	11.2												0.2	
Company Name	5.3													
Company Name	71.5													
Company Name	55.9											5.9		
Company Name	22.0				0.3			0.4		0.1				
Company Name	82.0							2.0						
Company Name	170.1		168.3	0.9	0.9									
Company Name	7.0		1.9											
Company Name	6.9													
<b>GRAND TOTAL</b>	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx

**Source: Mastio & Company Polyethylene Film Market Study**

**Listing of PE Film extruders by total resin consumption (largest to smallest).**

<b>Exhibit</b>	
<b>2017 PE FILM ANNUAL CONSUMPTION BY COMPANY</b>	
Note: Multi-divisional companies have been listed separately along with their parent company in brackets.	
<u>Company</u>	<u>Quantity (MM lbs.)</u>
[REDACTED]	1,275.0
[REDACTED]	702.0
[REDACTED]	601.8
[REDACTED]	600.0
[REDACTED]	540.0
[REDACTED]	484.0
[REDACTED]	458.9
[REDACTED]	412.1
[REDACTED]	402.8
[REDACTED]	385.2
[REDACTED]	382.0
[REDACTED]	360.0
[REDACTED]	320.0
[REDACTED]	319.6
[REDACTED]	315.0
[REDACTED]	310.5
[REDACTED]	300.2
[REDACTED]	300.0
[REDACTED]	274.9
[REDACTED]	230.2
[REDACTED]	213.5
[REDACTED]	209.0
[REDACTED]	181.5
[REDACTED]	175.0
[REDACTED]	168.0
[REDACTED]	166.8
[REDACTED]	165.0
[REDACTED]	154.0
[REDACTED]	152.8

Source: Mastio & Company Polyethylene Film Market Study