



PRODUCTION AND SALES OF U.S. PLASTIC RESINS SEE REBOUND IN 2010

The U.S. plastic resins industry continued its recovery from the global economic recession during 2010. According to the American Chemistry Council (ACC) Plastics Industry Producers' Statistics (PIPS) Group, resin production recovered from a low in 2009, increasing 4.2 percent to 102.8 billion pounds in 2010. Total sales for the year rose 3.3 percent to 103.3 billion pounds in 2010, up from 100.0 billion pounds in 2009.

Economic Summary for 2010

In 2010, it was clear that the global economy had emerged from its deepest recession since the Great Depression. Fears of a double-dip recession subsided and the recovery took hold. Indeed, by the end of the year, the economic recovery was evolving into expansion in much of the world, particularly in the emerging markets. Growth in the global economy rebounded abruptly, expanding 3.7 percent after falling 2 percent in 2009 (the first such decline since the 1930s). World trade also recovered, accelerating 15 percent in 2010, up from a steep 13 percent drop in 2009.

Likewise, recovery took hold in North America in 2010. During 2010, U.S. GDP grew 2.8 percent which is up sharply from the 2.6 percent decline in 2009, but that is a relatively weak performance considering the point in the recovery. Boosts from inventory restocking played out and underlying demand remained tepid in the United States. The housing sector (which triggered the financial crisis and subsequently the worst economic downturn since the 1930s) continued to struggle as foreclosures mounted and high unemployment persisted. The weak economic growth to date has been slow to absorb the majority of the 8 million workers who lost jobs since the beginning of the recession in December 2007. In Canada, GDP grew 3.1 percent in 2010 following a 2.5 percent decline in 2009. Together, North American (Canada and United States) GDP grew by 2.8 percent in 2010, a subdued pace from the growth rates typical at this point in a recovery.

Trends in Customer Industries

The economic recovery, already engaged in most end-use markets, progressed in 2010. Tepid domestic demand for plastics was offset by strengthening export demand in the second half of the year, the result of dynamic economic growth overseas, a lower value of the dollar, sustained investment in innovation, and favorable energy costs in the United States. Many thermoplastic customer industries rebounded, in particular those focused on exports.

Although the demand for plastics is ultimately tied to overall economic growth, plastic resins are

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used in a variety of end-use markets which featured different dynamics at play:

- **Packaging** is the largest market for plastic resins, and historically packaging resin use has been correlated with ‘real’ retail sales, i.e., retail sales adjusted for inflation. According to data from the Bureau of the Census and Bureau of Labor Statistics, real retail sales rose 5.2 percent in 2010 following a 6.8 percent decline in 2009. This largely reflected a recovering job market as well as some restoration of confidence among households and businesses. According to Statistics Canada, the Canadian retail sector increased 3.8 percent in 2010 after a small decline (0.4 percent) in 2009. As a result, output of the North American retail sector experienced a 5.1 percent gain in 2010. Packaging industry output for the region was stable in 2010 after several years of decline. Imports and exports of plastic products and other finished goods incorporating plastics resins rebounded sharply in 2010, but growing imports continued to dampen demand for domestic production of plastic products and other manufacturers.
- **Building and construction** represents an important market for plastic resins. After four years of decline, housing starts increased modestly in the United States in 2010; however, they are still off 72 percent from the 2005 peak of 2.07 million units. Housing starts in the United States increased from 554,000 in 2009 to 585,000 units in 2010, whereas nonresidential construction continued to slide. Canada’s housing starts improved from 149,000 units in 2009 to 192,000 units in 2010. The Canadian construction industry grew in 2010 due in most part to growth in residential construction as non-residential construction remained hampered. Overall, North American construction activity grew by 4.1 percent in 2010, marking the first gain in four years.
- **Transportation** is another significant market for plastic resins. U.S. light vehicle sales saw a turn-around in 2010, as sales increased to 11.5 million units up from 10.4 million units in 2009. Canadian sales increased from 1.48 million units in 2009 to 1.58 million units in 2010. According to the U.S. Federal Reserve Board, production of motor vehicles and parts in the United States increased 27.9 percent in 2010, reversing the downward trend observed from 2006-2009. Production of motor vehicles and parts in Canada also reversed trend, jumping 68.1 percent in 2010. Thus, following a period of decline, overall North American production of motor vehicles and parts increased 31.9 percent in 2010. Other transportation equipment segments featured mixed results.
- **Electrical and electronics** are another important plastics market, much of which is centered in appliances. With a small pick-up in housing and less hesitation on the part of the consumer, the North American appliance industry’s output volume increased for the first time in five years, rising 5.7 percent in 2010. Other electrical and electronics markets are largely tied to capital spending, which rebounded strongly. Production of computers and electronic products in North America rose 10.2 percent in 2010, while production of other electrical equipment rose 15.6 percent.
- **Furniture and furnishings** represent a key market for plastics. Tied to housing, output in the North American furniture industry declined for the fifth year in a row in 2010, but the pace of decline moderated significantly. On a year-over-year basis, output in the industry



was off 0.4 percent in 2010, following an 18.2 percent decline in 2009 and a 17.9 percent decline in 2008. The slowdown in the North American furniture industry decelerated in 2010 as consumer spending rose. After four years of declines, North American production of carpeting and other textile furnishings rose 2.5 percent during 2010, reflecting modest improvements in the housing industry.

- **Industrial machinery** represents another important market, one aided by increased business investment needed to enhance competitiveness and to expand capacity both in North America and in rapidly growing emerging markets. North American production of industrial machinery rebounded sharply in 2010. On a year-over-year basis, output of industrial machinery increased 25.8 percent in 2010, following a 16.3 percent decline in 2009 and a 24.3 percent decline in 2008. The turnaround in this industry occurred as economic activity picked up, rejuvenating capital spending programs.

The previous discussion examines the primary end-use markets which ultimately drive demand. The plastics products industry (NAICS 3261) is the key immediate customer industry for plastic resins. It is this industry that supplies these important end-use markets. During 2010, North American plastics products production rose 9.3 percent as demand among the end-use markets improved. The rise in plastics products output reversed the downward trend that had been observed in recent years. Following steep declines in 2009, North American exports of plastics products increased by 21 percent as did imports in 2010. As a result, the trade deficit in plastic products grew from a \$3.7 billion deficit in 2009 to a \$4.6 billion deficit in 2010.

As North American petrochemical companies take advantage of abundant new supplies of natural gas liquids from shale gas deposits, the potential opportunity for the U.S. plastic resins industry is “game changing.” Already, competitively priced shale gas has put North American producers in a better position to compete globally. New investments have been announced to boost the production of petrochemicals used by resin producers. A new paradigm is emerging and the outlook for North American resin production appears to be brightening.

Analysis of Historical Trends for Major Resins

Continuing the trend from last year, 2010 was another positive year for North American polyethylene (PE). Total PE sales ended 2010 at 37.0 billion pounds, up 0.9 percent from 2009. This was driven by domestic sales, which increased 6.6 percent from 2009 and ended 2010 at 29.1 billion pounds. Exports reversed trend and decreased sharply in 2010, finishing the year down 15.7 percent with sales of 7.9 billion pounds.

Low density polyethylene (LDPE) sales totaled 6.7 billion pounds in 2010, up 0.9 percent from 2009. Total sales were driven by domestic sales of 5.5 billion pounds, up 5.2 percent from 2009. Two market segments with large increases in 2010 were non-food packaging film (up 16.1 percent) and extrusion coating (up 15.3 percent). Exports decreased sharply in 2010, finishing the year down 14.7 percent with sales of 1.2 billion pounds. Production of LDPE was up 1.1 percent from 2009.



Linear low density polyethylene (LLDPE) continued its growth trend with total sales of 13.5 billion pounds, up 4.6 percent from 2009. The growth was driven by strong domestic sales of 9.9 billion pounds, which represented an increase of 7.2 percent from 2009. Market segments with large increases were food packaging film (up 20.9 percent), industrial liners (up 19.6 percent), injection molding (up 12.3 percent), and rotomolding (up 34.6 percent). Export sales reversed trend and declined by 2.0 percent in 2010. Production of LLDPE was up 5.1 percent from 2009.

High density polyethylene (HDPE) finished the year with total sales of 16.7 billion pounds, a decrease of 1.8 percent from 2009. Domestic sales grew by 6.7 percent, but this growth was offset by a 27.9 percent decrease in exports. Several market segments saw significant growth in 2010. Sales in film were driven by non-food packaging (up 16 percent) and trash bags/can liners (up 13.6 percent). Injection molding experienced significant growth in tubs and containers (up 17.4 percent) and caps and closures (up 19.3 percent). HDPE pipe experienced significant growth in the water segment, which grew 33.9 percent in 2010. Other segments with high growth rates were crates and totes (up 17.4 percent) and sheet (up 25.1 percent). Production of HDPE was down 0.4 percent from 2009.

Total **polypropylene (PP)** sales (on a NAFTA basis, domestic and export sales) totaled 17.2 billion pounds, up 3.8 percent from 2009. The increase was driven by strong domestic sales (up 9.2 percent to 15.9 billion pounds), offsetting the significant drop in exports, down 41.8 percent from 2009.

In 2010, sales volumes were led by shipments to injection molding applications totaling 5.1 billion pounds (up 2.6 percent from 2009), fiber and filaments at 2.8 billion pounds (up 4.9 percent), and film and sheet at 2.8 billion pounds (up 11.6 percent). Of the 15.9 billion pounds of sales within the NAFTA region, 83.5 percent was consumed in the United States, 11.5 percent in Mexico and 5 percent in Canada.

2010 production of PP in the NAFTA region rose 3.8 percent versus 2009, to 17.2 billion pounds. NAFTA PP capacity utilization was 88 percent.

In 2010, **polystyrene (PS)** posted a slight increase in total sales of only 0.4 percent, but that was enough to end a 5-year run of declining sales volumes. This growth was due in large part to export sales, which surged 18.7 percent in 2010 while domestic PS sales fell 0.9 percent. PS production rose 3.9 percent.

Sales to packaging and one-time use applications (54 percent of the PS domestic market) were down 2.6 percent in 2010. Domestic sales of expandable polystyrene (EPS) increased 5.3 percent.

Polyvinyl chloride (PVC) production and sales volumes increased significantly in 2010, attributed to the strong demand in export markets. Domestic production increased 9.9 percent to 14 billion pounds. Total sales and captive use in 2010 were also 14 billion pounds, an overall increase of 9.6 percent. Domestic PVC demand shrank by 985 million pounds, a 9.7 percent loss from the previous year, due to weakness in housing and construction markets. PVC resin exports posted another record year. Exports rose 85 percent in 2010, to 4.8 billion pounds, as domestic PVC producers looked for market opportunities outside the United States and Canada.



Since the building and construction sector represents more than 80 percent of domestic PVC demand, the market's decline inhibited demand growth significantly. Domestic PVC demand decreased in end use markets such as pipes, windows and doors, siding profiles, wire and cable, fencing and decking, and flooring applications. Extrusion applications, which include some of the major segments for the construction sectors, represented approximately 74 percent of the domestic demand; this sector was down by nearly 18 percent or about 1,456 million pounds in 2010.

The figures are based on primary data for selected major plastics materials as compiled by Veris Consulting, Inc., for ACC's Plastics Industry Producers' Statistics Group.

Please note the following: The ACC Plastics Industry Producers' Statistics Group makes more detailed reports (including monthly end-use sales figures for major thermoplastic and thermoset resins) available to subscribers of its various services. For more information about available subscription options and pricing, please call ACC at 202-249-7000 or visit www.americanchemistry.com/resinstatistics.

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