



## PLASTIC RESINS INDUSTRY HIT HARD BY GLOBAL ECONOMIC RECESSION IN 2008

The US plastic resins industry witnessed an historic decline during 2008 as the global recession spread and worsened sharply in the second half of the year. According to the American Chemistry Council (ACC) Plastics Industry Producers' Statistics (PIPS) Group, resin production fell to 101.5 billion pounds in 2008, down 12.3 percent from 2007. Total sales for the year dropped to 104.2 billion pounds, a 10.1 percent decrease from 2007 and a seven-year low.

### **Economic Summary for 2008**

The year 2008 was another year of crisis in the global economy as the US recession that began in December 2007 spread to other nations. The decline in economic activity was particularly strong in Japan, Western Europe, and the Baltic nations as well as a number of leading exporters of manufactured goods. Growth in the global economy decelerated from a 5.0 percent pace in 2007 to 3.4 percent in 2008. The credit crisis in particular affected world trade, which slowed from a 7.2 percent gain to a 4.1 percent gain in 2008. During the fourth quarter, world trade volumes actually declined.

The US economy faced significant challenges during 2008, most notably the continued severe downturn in the housing market. In addition, during the first half of the year, rising energy prices sapped real consumer incomes as did inflationary pressures and declining home values. This engendered a softening of consumer spending, impacting demand for light vehicles in particular. These downturns in housing and light vehicles affected a number of manufacturing industries supplying construction materials and led to a cycle of softer production activity and higher inventories. This in turn led to downward pressures in a number of other manufacturing industries. As the global economy slowed and then entered recession, export demand began to soften. Growth in non-residential construction activity offset some of the weakness in housing but even this area began to falter late in the year. For 2008 as a whole, US economic growth was only 1.1 percent, down from 2.0 percent in 2007 and 2.8 percent in 2006. During the year, employment levels declined and by year-end, the unemployment rate rose to 7.2 percent, up from 5.0 percent in December 2007.

Canada was aided by higher energy and other commodity prices in the first half of the year, but then falling exports and recessionary pressures adversely affected that country's economy in the second half. Canadian economic growth ended the year at only 0.5 percent, down from 2.5 percent in 2007.

The North American trade deficit in plastic products deteriorated from a \$1.21 billion deficit in 2007 to a \$2.36 billion deficit in 2008. The contained plastic value in the net import position in this direct customer sector—as well as others in agricultural, mining, and manufactured goods—totaled 10.8 billion pounds.



## Trends in Customer Industries

The fourth quarter of 2008 witnessed the collapse of final domestic demand and in the closing months of the year, end-use customers engaged in a massive destocking of inventories. Analysis of industry activity indicates that customers were consuming 5.4 billion pounds of thermoplastics per month, but buying only 4.5 billion pounds per month.

Although the demand for plastics is ultimately tied to overall economic growth, plastic resins are used in variety of end-use markets which featured different dynamics at play:

- Packaging is the largest market for plastic resins and historically, packaging resin use was correlated with ‘real’ retail sales. According to data from the Bureau of the Census and Bureau of Labor Statistics, retail sales reversed from a 1.0 percent gain in 2007 to a 4.3 percent decline in 2008. This marked deceleration was the result of higher unemployment, the decline in home values, and eroding consumer confidence. The Canadian retail sector decelerated from a strong 5.8 percent pace during 2007 to 3.1 percent in 2008. As a result, output of the North American retail sector experienced a sharp fall-off in 2008. Packaging industry output for the region slipped 1.5 percent in 2008. Increased imports of plastic products and other finished goods incorporating plastic resins continued to present a challenge. Plastics in consumer and institutional end-uses reflected these dynamics as well although imports of finished goods often play a larger role.
- Building and construction represents an important market for plastic resins. As previously mentioned, housing activity in the United States plummeted during 2008. Housing starts fell from 1.36 million units in 2007 to 893,000 units in 2008. Early in 2009, the pace was below 500,000. Canada’s housing starts fell from 228,000 units in 2007 to 211,000 in 2008. Non-residential construction in both nations continued to support building and construction markets but even this segment appeared to be waning in early 2009. Overall North American construction activity fell 5.4 percent in 2008, the second consecutive decline.
- In another significant market for plastic resins—transportation—US light vehicle sales fell to 13.1 million units in 2008 as credit problems mounted and the recession intensified. Canadian sales slipped from 1.69 million units in 2007 to 1.68 million units in 2008. According to the Federal Reserve Board, production of motor vehicles and parts fell 14.4 percent in 2008, accelerating from the declines of 2005-2007. Canada’s production of motor vehicles and parts fell 21.4 percent in 2008. Thus, overall North American production of motor vehicles and parts decreased 15.1 percent in 2008, accelerating from drops during 2007 and 2006. Other transportation equipment segments featured mixed results, with 2008 providing a gain in North American aerospace.
- Another important plastics market is that for electrical and electronics, much of it centered in appliances. With the pull-back by US consumers and a soft US housing market, the North American appliance industry’s volume of output fell 11.2 percent in 2008. Other electrical and electronics markets are tied to capital spending. Production of computers and electronic products rose 9.9 percent in 2008, which was

nevertheless a deceleration in production from 2007 and 2006 levels. Production of other electrical equipment in North America rose 1.1 percent in 2008.

- Furniture and furnishings represent a key market for plastics. Output gains in the North American furniture industry fell 10.5 percent as the recession intensified and as inroads continued to be made by imports. North American production of carpeting and other textile furnishings in the US fell 7.3 percent during 2008, which reflects the contraction in housing and softening replacement markets.
- Industrial machinery represents an important plastics market, one aided by increased business investment needed to enhance competitiveness, and to expand capacity. North American production of industrial machinery fell 1.1 percent during 2008, with the steepest decline in the fourth quarter as uncertainty among business leaders led to a reining-in of capital 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. In turn, this industry supplies these critical end-use markets. During 2008, North American plastics products production fell 4.5 percent as final demand among the end-use markets shrank, the result of the recession.

## **ANALYSIS OF HISTORICAL TRENDS FOR MAJOR RESINS**

If 2008 had come to completion for **polyethylene (PE)** at the end of July we might have said it was an OK year, down just slightly. Unfortunately, the year did not end in July and the PE industry felt the effects of the economic downturn coupled with Hurricane Ike in the last third of the year. Total PE sales ended 2008 at 36.3 billion pounds, down 8.6 percent from 2007. Export sales continued to be relatively strong but finished the year down 1.3 percent. Domestic sales were down 10.3 percent in 2008 vs. 2007.

**Low density polyethylene (LDPE)** sales totaled 7.1 billion pounds in 2008, down 10.7 percent from 2007, primarily due to the economic downturn and the disruption caused by Hurricane Ike in September. Through July, exports were outpacing 2007 levels, but finished the year down 13.3 percent. Domestic sales were down 10 percent from 2007. Two market segments with large decreases in 2008 were industrial liners (down 25 percent) and extrusion coating paperboard (down 18.4 percent). LDPE production declined 11.7 percent from 2007.

**Linear low density polyethylene (LLDPE)** also faced challenges in 2008 with overall sales of 12.4 billion pounds—down 7.4 percent from 2007—due to a 9.9 percent decrease in domestic sales and a modest gain in export sales of 1.4 percent. Market segments experiencing significant declines in 2008 were construction and agriculture film (down 17 percent), trash and can liners (down 16.9 percent) and shrink/stretch film (down 9.4 percent). Production of LLDPE was down 11.2 percent from 2007.

**High density polyethylene (HDPE)** finished the year with total sales of 16.8 billion pounds, a loss of 8.4 percent from 2007. Export sales experienced a moderate increase of 3 percent, but that gain was more than offset by the drop in domestic sales, down 10.7 percent. The largest HDPE market segment movers included corrugated pipe (down 26.1 percent), housewares (up

25.6 percent), gas distribution pipe (up 10.8 percent) and retail bags (down 24.4 percent). HDPE production fell 10.8 percent in 2008 versus 2007.

Total **polypropylene (PP)** sales and use—as measured on a full NAFTA basis (i.e., United States, Canada and Mexico)—totaled 17.2 billion pounds in 2008, down 11.0 percent from 2007. Sales and use for 2008 was at a five-year low, totaling 15.8 billion pounds, 14 percent less than sales in 2007. In 2008, sales volumes were led by shipments to injection molding applications totaling 5.5 billion pounds (down 9.6 percent from 2007), fiber and filaments at 3.2 billion pounds (down 10.2 percent), and film at 1.5 billion pounds (down 2.2 percent). Of the 15.8 billion pounds of sales within the NAFTA region, 13.3 billion pounds were consumed in the United States (84 percent), 1.6 billion pounds in Mexico and 848 million pounds in Canada.

Production of PP in the NAFTA region fell to 16.8 billion pounds in 2008, down 13.8% as compared to 2007 levels. Market capacity utilization averaged 79 percent during 2008 and inventory levels averaged 37 days of sales overall for the year.

A struggling **polystyrene (PS)** industry recorded the fourth consecutive year of declining sales volumes. In 2008, PS demand fell by 10.5 percent. Crystal PS sales dropped 8.7 percent and High Impact PS sales were down 12.2 percent. Total sales of expandable polystyrene (EPS) slumped 11.7 percent in 2008 after a good showing in 2007.

Sales to packaging and one-time use applications (54 percent of the PS domestic market) were off by 12.0 percent in 2008. Sales to the food service segment fell less sharply, declining by 5.3 percent last year.

**Polyvinyl chloride (PVC)** production and sales volumes declined in 2008, attributed to the continued slowdown in the overall US economy, particularly in housing and the building and construction sector. Domestic production fell 12.4 percent to 12.8 billion pounds. Total sales and captive use in 2008 were 12.9 billion pounds, an overall decrease of 11.5 percent. Domestic PVC demand shrank by 2.1 billion pounds, a 16.1 percent loss from the previous year. The bright spot was PVC resin exports which posted a record year. Exports of PVC rose 27.4 percent in 2008, as domestic producers looked for market opportunities outside the US 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 molding applications. Extrusion applications, which include some of the major segments for the construction sectors, represented about 80 percent of the domestic demand; this sector was down by about 18.3 percent or about 1.9 billion pounds in 2008.

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