

*T-PSI's*

*PLASTIC MARKET MONTHLY*

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# **POLYSTYRENE**

## **SEPTEMBER 2002**

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**US & Canada Prices/Margins**  
(Cents per Pound)

	Jun	Jul	Aug
Styrene Contract	35.0-37.0	37.0-39.0	36.5-38.5
Crystal Polystyrene Average <sup>(1)</sup>	42.11	44.20	44.43
Crystal, GP Molding			37.2-52.8
Crystal, High Heat			36.8-59.7
HIPS Average <sup>(1)</sup>	45.12	46.84	46.94
High Impact, Molding			42.0-62.5
High Impact, Extrusion			37.8-56.4
Off-Grade & Wide Spec			29.0-45.4
Crystal Producer's Gross Margin <sup>(2)</sup>	5.95	6.08	6.80
HIPS Producer's Gross Margin <sup>(2)</sup>	7.89	8.03	8.44

**Estimated Capacity Utilization**

	July	2002 YTD	2001 YTD	
Resin Producer <sup>(3)</sup>	96%	94%	80%	↑
Resin Converter <sup>(3)</sup>	85%	87%	80%	↑

**US & Canada Polystyrene Resin Producer Statistics**  
(Millions of Pounds)

	July	2002 YTD	2001 YTD	
Production <sup>(4)</sup>	582	3,965	3,560	↑
Domestic Sales <sup>(4)</sup>	535	3,823	3,501	↑
Total Sales <sup>(4)</sup>	563	4,023	3,639	↑
Inventory Change	19	-58	-79	

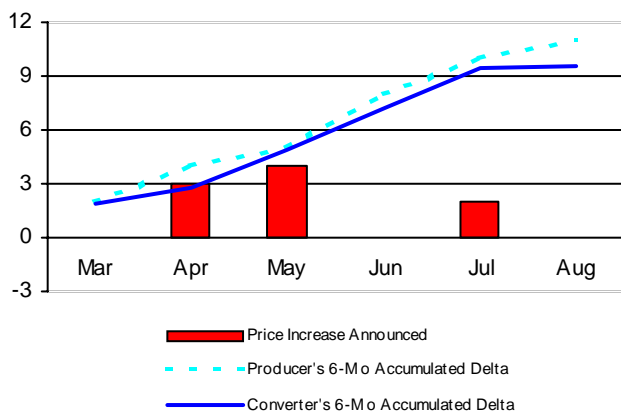
(1) Volume weighted average of price paid by converters for all grades; formerly referred to as realizations

(2) Excludes other variable costs beyond feedstock cost

(3) Source: Survey by T-PSI & APC statistics

(4) Source: APC; all sales line items include sales of imports

**Producers vs Converters Price Survey**  
(cents per pound delta)



**Polystyrene Price Movement Slows in August**

The upward trend in polystyrene prices lost some momentum in August. Contracts managed to increase, on average, about 0.17 cts/lb in August. The limited increase that took place in August was in stark comparison to the past six months in which prices have consistently inched higher. Contributing to the slow down in upward price pressure was the erosion of monomer costs in August. Styrene contracts dropped about 0.50 cts/lb and benzene prices also fell by 15.0 cts/gal. Ethylene prices rolled over for the fourth consecutive month. Decreasing monomer costs on the upstream side has added new vigor to converters contention that the polystyrene market has peaked and that any new price increases are unwarranted.

According to the Producers vs Converters Price Survey graph below, converters report taking increases from February 1<sup>st</sup> through August 30<sup>th</sup> at an average of 9.61 cts/lb for product delivered to their plants. Resin suppliers report that about 11.0-11.5 cents have been successfully implemented by the end of August. As explained in the prior month's publication, the discrepancy is to be expected since producers are most likely thinking about the majority of the product that has been invoiced of late, rather than the overall average of product that has arrived at the converter's plant through the end of August. See the bottom of page 6 for a complete explanation.

More than two-thirds of the PMM converters surveyed reported that their August resin shipments were under 30- or 60-day price protection. Some converters reported that they had successfully negotiated 90-day price protection, which clearly shows a time lag in the implementation of the June price increase. August price protection was 30% above the July level suggesting that producers are more willing to give some ground in negotiations given the limited price movement seen in August.

**July's Nomination Cut in Half**

Producers had announced increases that totaled 14.0 cents for the year. In July there was clear evidence that the three initial nominations had basically been successful with the outcome of the July 1<sup>st</sup> 4.0 cts/lb increase still under debate. Many converters questioned whether the July nomination would hold or whether producers had nominated July in an attempt to secure the full 10.0 cents already on the table. The speculation in June and July proved to be only partially correct as producers decided to turn the 4.0 cts/lb nomination for July into a 2.0 cts/lb nomination and the remaining 2.0 cts/lb was pushed forward in the form of a temporary voluntary allowance or TVA. It's clear that producers are not satisfied with just letting the July increase die. On the other hand, it seems that producers had given in to the fact that the full 4.0 cents in July was not completely attainable. According to producers, the remaining 2.0 cents of the original nomination is beginning to be implemented at accounts whose price protection ended in July. Producers also commented that accounts, which had taken the full 4.0 cts/lb for July, were rebated the 2.0 cents that was converted into the TVA.

**Converters Report Another Half-Cent for September**

The data collected by the PMM seems to confirm producers contention that implementation of the adjusted July nomination may be under way. Converters report that September resin prices will be up slightly as compared to August shipments. September projections point to an increase, on average, of more than half a cent.

**Margins Tight for Producers & Converters**

Converters commented in July that they were looking for some price relief by the end of the third quarter. Already having taken nearly 10.0 cents in increases this year, converters are still finding it difficult to

(Continued on page 3)

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pass higher resin costs to their downstream customers. The soft economy is partly to blame in hampering converter's efforts to boost their own product prices.

Producers continue to voice their position that margins remain low. After an extremely poor polystyrene market in 2000-2001 producers are taking full advantage of the opportunity to put some margin back into the polymer side of their business. Margins continue to be squeezed due to the significant rise in styrene during the last six months. Styrene costs have increased by more than 14.0 cents while polystyrene prices have managed to rise only about 10.0 cents by the end of August. Although the July nomination was essentially cut in half, producers resolve remains strong in securing the remaining 2.0 cents. The implementation of the 2.0-cent TVA is still a possibility if market conditions improve or there is a spike in monomer costs.

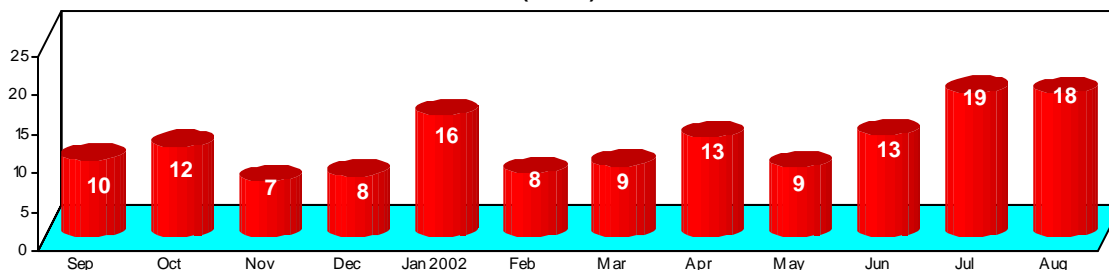
**Converter Supplies Remain Flat in August**

The Days of Supply graph suggests that converter inventory levels remained fairly stable in August. Inventories dropped just slightly from July's level of 19 days of supply. Some converters reported that their resin inventories increased in July-August due to a slowdown in finished goods demand. After rising 1.8% in July resin deliveries dropped 0.2% in August. This corresponds with converters comments that downstream demand is flat and that buyers are beginning to shy away from increasing their resin stocks. Deliveries are projected to remain relatively stable through the end of the year.

**Demand Continues to Outpace Expectations**

The cost-push from feedstocks is certainly a driving factor behind the run-up in polystyrene pricing during 2002. However, strong demand is also playing a key role in increasing resin values. The July APC report indicated that demand for polystyrene remains healthy.

**Days of Supply at Converters<sup>(6)</sup>**  
**(Resin)**



(6) Days of Supply (DOS) replaces Inventory Days from previous issues. DOS is the converter's volume weighted average days of resin supply, in inventory, at month end. This figure takes into account plant throughput and days of production.

**Top Importing Countries to US**  
**(Millions of Pounds) <sup>(5)</sup>**

	Jun	YTD
Mexico	19	103
Canada	16	87
Brazil	1	17
Korea, South	1	3
Bahamas	1	3
Japan	1	2
Thailand	0.4	5

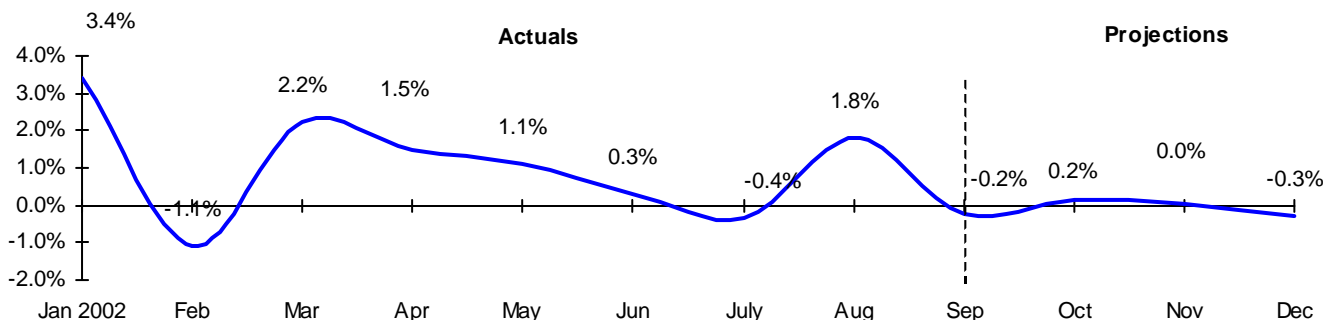
**Top Countries for US Exports**  
**(Millions of Pounds) <sup>(5)</sup>**

	Jun	YTD
Canada	27	166
Mexico	15	86
Belgium	2	11
UK	1	6
Costa Rica	1	5
Brazil	1	4
China	0.5	4

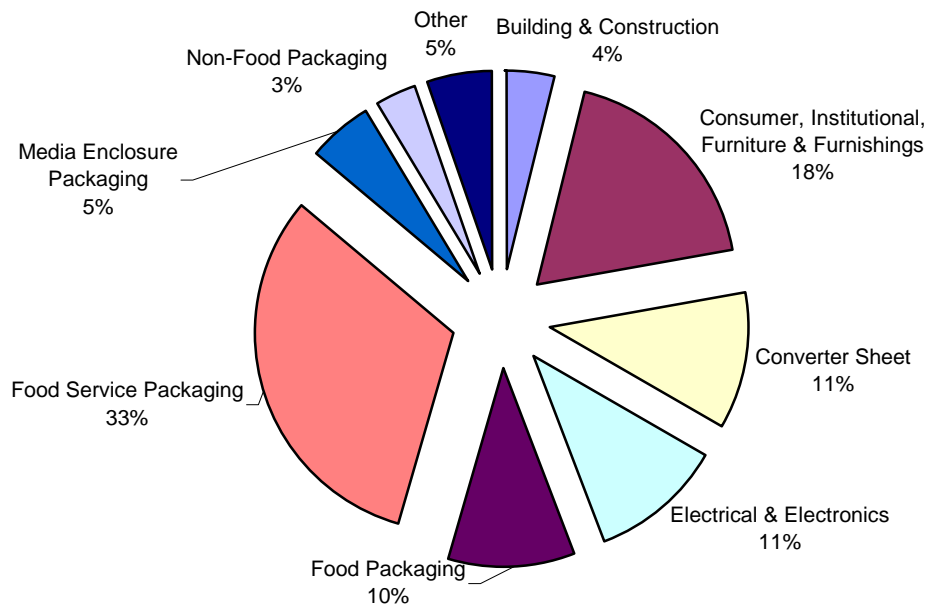
**Net Exports**  
**(Millions of Pounds) <sup>(5)</sup>**

	Jun	YTD	2001 Total
U.S. Exports	52	310	527
Imports to U.S.	39	233	440
Net Exports	13	77	87

**Converters Change in Deliveries from Previous Month**



HIGH IMPACT AND CRYSTAL POLYSTYRENE MARKET MIX BY END-USE MARKET



HIGH IMPACT AND CRYSTAL POLYSTYRENE SUPPLIER END-USE MARKET MIX

	Building & Construction	Consumer, Institutional, Furniture & Furnishings	Converter Sheet	Electrical & Electronics	Food Packaging	Food Service Packaging	Media Enclosure Packaging	Non-Food Packaging	Other	Totals
ATOFINA	1.2%	10.6%	10.0%	1.5%	19.9%	50.9%	3.7%	0.6%	1.6%	100.0%
BASF	0.0%	13.3%	19.3%	20.8%	17.9%	22.5%	0.0%	1.4%	4.9%	100.0%
Chevron Phillips	2.0%	12.6%	10.7%	1.0%	7.9%	56.4%	0.7%	2.7%	6.2%	100.0%
Compounders	1.6%	74.9%	0.0%	4.0%	0.0%	0.0%	0.0%	7.7%	11.8%	100.0%
Dart	6.3%	4.4%	0.0%	0.0%	0.0%	89.3%	0.0%	0.0%	0.0%	100.0%
Distributors/Brokers	4.5%	50.7%	12.5%	10.2%	3.2%	7.8%	0.0%	4.4%	6.6%	100.0%
Dow	9.3%	10.0%	4.4%	18.4%	7.4%	29.5%	10.1%	3.9%	6.9%	100.0%
KAMA	0.0%	0.0%	78.1%	0.0%	0.0%	0.0%	0.0%	0.0%	21.9%	100.0%
Nova	4.2%	16.0%	6.6%	11.3%	10.4%	32.9%	8.3%	3.5%	6.6%	100.0%
Others	0.0%	72.9%	0.0%	3.9%	1.3%	8.5%	0.0%	9.3%	4.3%	100.0%
Unspecified	3.2%	39.0%	14.0%	14.3%	1.4%	10.5%	6.6%	9.0%	2.1%	100.0%
Average Supplier	3.9%	18.4%	10.9%	10.9%	10.4%	31.6%	5.2%	3.3%	5.4%	100.0%

Source: T-PSI Market Share Report

HIGH IMPACT AND CRYSTAL POLYSTYRENE SUPPLIER END-USE MARKET SHARE

	Building & Construction	Consumer, Institutional, Furniture & Furnishings	Converter Sheet	Electrical & Electronics	Food Packaging	Food Service Packaging	Media Enclosure Packaging	Non-Food Packaging	Other	Totals
ATOFINA	5.8%	10.5%	16.8%	2.5%	35.2%	29.6%	13.2%	3.3%	5.5%	18.4%
BASF	0.0%	7.9%	19.2%	20.7%	18.8%	7.8%	0.0%	4.7%	9.8%	10.9%
Chevron Phillips	3.9%	5.3%	7.5%	0.7%	5.8%	13.8%	1.0%	6.3%	8.8%	7.7%
Compounders	0.2%	1.8%	0.0%	0.2%	0.0%	0.0%	0.0%	1.0%	0.9%	0.4%
Dart	1.2%	0.2%	0.0%	0.0%	0.0%	2.1%	0.0%	0.0%	0.0%	0.7%
Dist./Brokers	9.6%	22.5%	9.3%	7.6%	2.5%	2.0%	0.0%	10.9%	9.9%	8.2%
Dow	48.1%	10.9%	8.0%	33.6%	14.3%	18.7%	39.0%	23.9%	25.6%	20.0%
KAMA	0.0%	0.0%	14.6%	0.0%	0.0%	0.0%	0.0%	0.0%	8.3%	2.0%
Nova	23.9%	19.2%	13.4%	22.9%	22.1%	23.0%	35.6%	23.7%	27.1%	22.1%
Others	0.0%	3.2%	0.0%	0.3%	0.1%	0.2%	0.0%	2.3%	0.6%	0.8%
Unspecified	7.3%	18.6%	11.2%	11.5%	1.2%	2.9%	11.2%	23.9%	3.4%	8.8%
Totals	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: T-PSI Market Share Report

**ECONOMIC TRENDS**

The U.S. economy continues to show improvement albeit at a slower pace than most analysts expected. The Commerce Department recently reported that the preliminary estimate for second quarter GDP remained stable at a 1.1% annual rate. This was a marked deceleration from the 5.0% growth rate achieved in the first quarter of 2002. The slowdown in GDP was largely due to a decrease in private inventory investment and in personal consumption expenditures. A sharp increase in imports, which are a subtraction in the calculation of GDP, also helped slow second quarter growth.

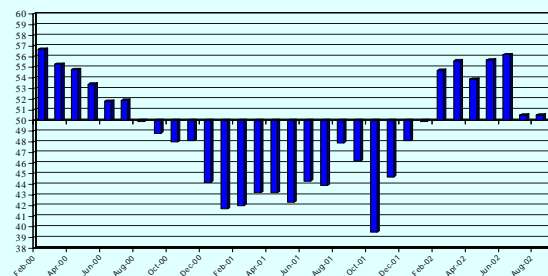
The Federal Reserve decided to hold interest rates steady at its August meeting. The Federal Funds Rate remains at 1.75%. Some analysts predicted an interest rate cut in August, but the Fed defended its decision by pointing to the underlying strength of the economy. Low interest rates have helped support the economic recovery by encouraging consumers to take advantage of low mortgage rates and zero-percent automobile financing. The evidence is clear that low interest rates are driving much of the current economic growth with new homes sales in July up 6.7% and auto sales increasing 3.3% in the same time period.

Although GDP growth continues to stagnate and interest rates are at historic lows, inflation remains subdued. The Consumer Price Index (CPI) increased only marginally in July rising 0.1%. The GDP Chained Price Index, the broadest measure of inflation, also increased in the second quarter but only slightly. Low inflation rates are to be expected as price deflation historically coincides with the first year of an economic recovery.

The economic outlook for the rest of the year is mixed. After a sharp drop in July, the August ISM manufacturing index remained unchanged at 50.5. The reading of 50.5 implies the manufacturing sector is still expanding, but the slow down in August has some economists debating the issue of a double-dip recession. Even though some areas of weakness persist, most economists believe the current growth of the economy is sustainable and should continue to improve into 2003.

**Purchasing Manager's Index**

Expansion & Contraction of US Manufacturing



Source: Institute for Supply Management™, [www.ism.ws](http://www.ism.ws)

**Key Economic Indicators**

GDP, Annualized Growth Rate	Q2	1.1%	
Capacity Utilization, US Manufacturing	Jul	76.1%	↑ 0.1%
Housing Starts (millions)	Jul	1.649	↓ 2.7%
Building Permits (millions)	Jul	1.698	↓ 0.5%
Unemployment Rate	Aug	5.7%	↓ 0.2%
Prime Rate	Aug	4.75%	↔ 0.0%
Consumer Price Index (1984=100)	Jul	180.1	↑ 0.1%
Industrial Production Index (1992=100)	Jul	140.7	↑ 0.2%
Producer Price Index (1982=100)	Jul	138.9	↓ 0.2%

Source: US Government

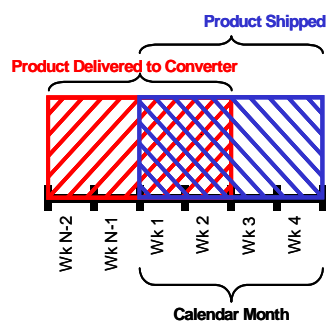
# POLYSTYRENE

## MONTHLY PRICES IN CENTS PER POUND

PMM Sep 2002

	Converter Actuals				Delta		Converter Projections
	May	Jun	Jul	Aug	Current Month	6 Mo's To Date	Sep
<b>Crystal, GP Molding</b> [Grade # 201110]							
90th Percentile	47.8	50.4	52.6	<b>52.8</b>	0.2	8.1	53.7
Vol Wtd Avg	40.2	42.7	44.8	<b>45.0</b>	0.2	7.6	45.8
10th Percentile	32.5	35.0	37.0	<b>37.2</b>	0.2	7.3	37.9
<b>Crystal, High Heat</b> [Grade # s 201120, 201220]							
90th Percentile	54.7	57.2	59.3	<b>59.7</b>	0.4	7.8	60.2
Vol Wtd Avg	38.0	40.4	42.4	<b>42.8</b>	0.4	7.3	43.2
10th Percentile	32.3	34.6	36.5	<b>36.8</b>	0.3	6.8	37.2
<b>High Impact, Molding</b> [Grade # s 202121, 202122, 202123]							
90th Percentile	57.7	60.8	62.3	<b>62.5</b>	0.2	8.2	63.2
Vol Wtd Avg	44.0	47.1	48.6	<b>48.8</b>	0.2	7.9	49.3
10th Percentile	37.5	40.5	41.8	<b>42.0</b>	0.2	7.3	42.5
<b>High Impact, Extrusion</b> [Grade # 202220]							
90th Percentile	52.2	54.3	56.3	<b>56.4</b>	0.1	7.9	57.4
Vol Wtd Avg	42.6	44.6	46.4	<b>46.5</b>	0.1	7.3	47.3
10th Percentile	34.2	36.2	37.8	<b>37.8</b>	0.0	6.7	38.6
<b>Off-Grade &amp; Wide-Spec</b> [Grade # s 201900, 202900]							
90th Percentile	41.1	43.1	45.3	<b>45.4</b>	0.1	8.0	45.4
Vol Wtd Avg	33.1	34.9	37.0	<b>37.0</b>	0.0	7.4	36.5
10th Percentile	25.4	27.2	29.0	<b>29.0</b>	0.0	6.9	28.5

### EXPLANATION OF MONTHLY PRICES



Prices are based on monthly survey of converters that subscribe to PMM. Converters fill in a data form for each grade; see last page of publication for sample data form and more details about methodology.

The Vol Wtd Avg price is weighted by delivered quantities while the 90th and 10th percentiles are not volume-weighted. Therefore, for contract purposes, we DO NOT recommend the use of the 10th or 90th percentile indexes.

Prices are for bulk quantities of prime material delivered to converters and received during the calendar month by either rail car or truck. "Product delivered" to converters will vary from "product shipped" by a supplier due to transit time. The following example illustrates differences that may occur between the product received by converters and product shipped by producers.

For illustrative purposes only, transit time is two weeks in this example and the calendar month is defined as weeks 1, 2, 3 & 4 in the diagram at left.

Shippers, represented in blue, tend to consider a month in terms of the volume shipped, the prices for each of those shipments, and the resultant average price generated. Buyers, represented in red, based on PMM's methodology, define a month as the product received during a calendar month. Given the two week transit time assumed for this example, a buyer would receive product shipped in weeks N-2, N-1, 1 and 2 during the calendar month. In relatively stable markets this creates no issue. In rapidly rising or falling markets however, this difference in time buckets can cause misunderstanding.

**Ethylene Contracts Remain Unsettled**

The majority of the market has not settled on an ethylene contract price for August. According to our sources, only one buyer settled a contract flat from July. They expect that they may experience an increase of 2.0 cts/lb in September. This isolated case, however does not mean that an agreement is being reached at the contract level. In fact, another major buyer mentioned that no one wants to negotiate right now as both suppliers and buyers are hoping that the market will dictate a move in their favor.

Presently, availability of supply and spot prices as low as 16.0 cts/lb probably point to a flat settlement for August. September's ethylene contract price is still very much in question. While major producers are pushing for a 2.0 cts/lb increase, converters are looking for a decrease. Producers may not have much of a case with cash costs remaining about the same since May and natural gas prices dropping in early September from their August price levels.

**Styrene Prices Fall in August**

After six consecutive months of rising styrene prices the upward trend was brought to a sudden halt in August. Producers, having pushed through more than fourteen cents since January, nominated August contracts up 3.0 cts/lb. Buyers, having a difficult time passing higher monomer costs down the value chain combined with a general lack of buying interest, managed to secure a decrease for August contracts.

August contracts, on average, settled down about 0.50 cts/lb. Contract settlements were mixed with some small buyers only able to secure a rollover from July's number. Larger buyers enjoyed decreases that in some cases amounted to a decrease of over 1.5 cts/lb. Although the settlements in August generally reflected the buying power of the purchaser, most deals were done between 0.25-0.75 cts/lb.

**September Styrene Contracts Nominated Higher**

Producers decided in August to nominate styrene prices higher in September by 2.5-3.0 cts/lb. Some producers commented that the nominations were the result of higher crude oil and energy prices. They also pointed to tightness in the market due to several plant turnarounds in the U.S. and over seas. On the other side, buyers suggested the styrene market has "topped-out" and that prices should continue the downward trend started in August. To further support their case for lower styrene prices, some buyers pointed to the stability of ethylene prices over the past four months and to the price erosion in the benzene market. Spot prices remain 6.0-7.0 cents below contract prices which may add more ammunition to the buy-side's argument for lower prices.

**Benzene Prices Dip in August**

Benzene contracts in August decreased 15.0 cents to settle at \$1.35/gal. The August settlement marks the first drop in benzene values since December 2001. Benzene buyers were able to secure lower settlements for August due to slack demand and a weakening spot market. Several do-

US & Canada Prices				
	June	July	August	Change
Ethylene List, cents/lb	23.0	23.0	23.0	↔
Ethylene Spot,	20.25	20.0-20.5	16.0-17.0	↓
Styrene List, cents/lb	35.0-37.0	37.0-39.0	36.5-38.5	↓
Styrene Spot, cents/lb	31.0 - 33.0	29.0-30.0	30.0-31.0	↑
Benzene List, \$/gal	1.32	1.50	1.35	↓
Benzene Spot, \$/gal	1.60 - 1.70	1.20-1.30	1.27-1.33	↑
Butadiene List, cents/lb	22.0	23.0	24.0	↑
Butadiene Spot, cents/lb	24.0 - 26.0	25.0-26.0	26.0-28.0	↑
Natural Gas, \$/MMBtu	3.20 - 3.60	2.80-2.95	3.10-3.68	↑
WTI Crude Oil, \$/Barrel	25.52	26.95	28.65	↑
Brent Crude Oil, \$/Barrel	23.63	25.69	26.81	↑
Arab Light Crude Oil, \$/Barrel	21.98	23.09	23.38	↑

mestic styrene turnarounds have hurt demand and in turn put much more benzene on the open market. The additional supply has helped push down spot prices in August and into September. Current spot prices remain below \$1.30/gal.

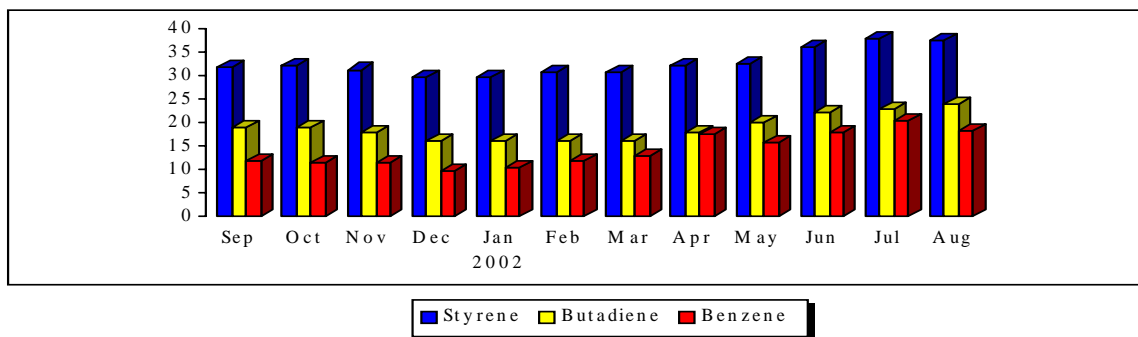
**Benzene's Downward Trend Continues in September**

The weakness in the benzene market is now apparent as September contracts settled lower for the second consecutive month. September contract negotiations finished in late August bringing contracts down 7.0 cts/gal to \$1.28/gal. The settlement is close to spot values seen in much of August. Buyers anticipate the price erosion will continue into the fourth quarter given there are no sudden spikes in energy prices.

**Butadiene Prices Move Higher in August**

August butadiene settled up a penny bringing contracts to 24.0 cts/lb. August marks the fifth consecutive month in which butadiene prices have increased. The increase encountered little resistance due to continued tightness in the market. Butadiene supplies remain short due to a lack of crude C4's and several plant outages. The unplanned outages have reduced butadiene allocations at several production facilities. Most butadiene producers have nominated September contracts higher by 1.0 ct/lb. One producer has elected to rollover August prices into September.

**Contract Prices in cts/lb: Styrene, Butadiene, Benzene**



<u>POLYSTYRENE GRADES</u>	<u>TYPICAL SPECS</u>	<u>TYPICAL APPLICATIONS</u>	<u>GRADE #</u>
<b>CRYSTAL</b>			
<b>Molding</b>			
<i>General Purpose</i>	8 - 20 Melt Flow	Toys, Rigid Packaging, Cutlery, House wares	201110
<i>High Heat</i>	Vicat above 224 F	Vials, Jars, Bottles, Cassettes, Toys, Appliances	201120
<b>Extrusion</b>			
201220	<i>High Heat</i> (2 or less Melt Flow)	Vicat above 224 F Egg Cartons, Meat Trays, Clam Shell Containers, Oriented Sheet	
<i>Medium Flow</i>	5 - 8 Melt Flow	Foamed Sheet, Panels	201230
<b>Off-grade &amp; Wide-spec</b>			201900
<b>IMPACT</b>			
<b>Medium Impact Molding</b>			
<i>High Flow</i>	1.4 or less Izod* 9+ Melt Flow	Containers, Closures, House wares, Toys	202111
<i>Easy Flow</i>	1.4 or less Izod* 7 - 8.5 Melt Flow		202112
<i>Medium Flow</i>	1.4 or less Izod* 3.5 - 6 Melt Flow		202113
<b>High Impact Molding</b>			
<i>High Flow</i>	1.5+ Izod* 9+ Melt Flow	House wares, Furniture, Toys	202121
<i>Easy Flow</i>	1.5+ Izod* 7 - 8.5 Melt Flow	House wares, Industrial Parts, Toys	202122
<i>Medium Flow</i>	1.5+ Izod* 3.5 - 6 Melt Flow	Food Containers, Toys, Radio & TV Cabinets, Cassette Shells, Automotive Parts	202123
<i>Flame Retardant</i>	UL-V-O	Appliances, Electronics	202130
<b>Extrusion</b>			
<i>Medium Impact</i>	1.2 - 1.5 Izod* 3 or less Melt Flow	Drink Cups, Lids, Disposable Dishware, Sheet	202210
<i>High Impact</i>	1.5+ Izod* 3 or less Melt Flow	Portion Packaging, Dairy Containers, Lids, Sheet	202220
<b>Off-grade &amp; Wide-spec</b>	*Izod at .125" notched and 73 F		202900

**METHODOLOGY**



The **Plastic Market Monthly (PMM)** is unique among resin market information and pricing services, in that it is the only service to obtain its information through a database of thermoplastic resin converters. All information, unless otherwise noted, is derived from a standardized survey of hundreds of converters conducted at the beginning of each month. In particular, the resin prices reported are those paid by converters for resin volumes that have been delivered during the calendar month (see Delivered Product section below); resin prices are not estimated nor are they list prices.

Each month the **PMM** receives hundreds of data forms from participating subscribers (resin converters) throughout North America. No other chemical or plastic publication collects such specific data from so many market participants. In some of the 60+ grades published, **PMM's** data represent more than 70% of the market. This method of collecting data enables subscribers to evaluate (1) pricing in the marketplace, (2) days of supply at converting sites and (3) converters' anticipated short-term demand.

**DATA FORM**

Participants fill in data forms for each grade that they purchase, as shown in the example at right. Converters provide regular & spot supply delivered, volume weighted average price paid, expected deliveries over the next 4 months and expected average prices for the following months; resin usage, end-of-month resin inventory and days of production are also provided to generate Days of Supply. Data is submitted to **PMM** via fax or it's website. All data is verified and checked as it arrives; copies of invoices are requested when necessary and on a random basis.

The **PMM** is committed to the highest level of security and maintains proprietary data collected on data forms according to its policies and procedures.

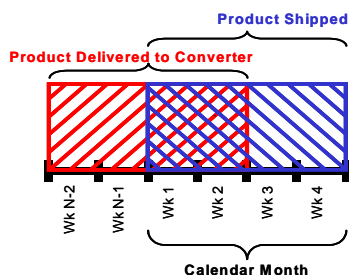
**PRICING BENCHMARKS**

The following are derived from data collected from hundreds of participating subscribers

- **90<sup>th</sup> Percentile:** A calculation to indicate the top of the price range; about 10% of our panelists are paying above this level. Not volume weighted.
- **Volume Weighted Average (Vol Wtd Avg):** A calculation of prices, weighted by resin purchased, then averaged.
- **10<sup>th</sup> Percentile:** A calculation to indicate the bottom of the price range; about 10% of our panelists are paying below this level. Not volume weighted.

**DELIVERED PRODUCT**

Prices reported on data forms and thus in the **PMM** are for bulk quantities of prime material delivered to converters and **received during the calendar month** by either rail car or truck. "Product delivered" to converters will vary from "product shipped" by a supplier due to transit time.



The diagram at left illustrates differences that may occur between the product received by converters and product shipped by producers. For illustrative purposes, transit time is two weeks in this example and the calendar month is defined as weeks 1, 2, 3 & 4 in the diagram at right.

**Shippers, represented in blue,** tend to consider a month in terms of: the volume shipped; the prices for each of those shipments; and the resultant average price generated. **Buyers, represented in red,** based on **PMM's** methodology, define a month as the product received during a calendar month. Given the two week transit time assumed for this example, a buyer would receive product shipped in weeks N-2, N-1, 1 and 2 during the calendar month. In relatively stable markets this creates no issue. In rapidly rising or falling markets however, this difference in time buckets can cause misunderstanding.

**REPORTS AVAILABLE**

All reports are published monthly on the 15th, unless a holiday or weekend occurs on the 15th in which case reports are published on the nearest working day. There are 8 reports to choose from with delivery via email or access via our website, [www.t-psi.com](http://www.t-psi.com).

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|----------------|-------|---------------------------|-------------|
| HDPE Molding   | LDPE  | Polypropylene Homopolymer | PVC         |
| HDPE Extrusion | LLDPE | Polypropylene Copolymer   | Polystyrene |

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