



# AMERICAS PETROCHEMICAL OUTLOOK H2 2016

**PETROCHEMICALS SPECIAL REPORT**

JULY 2016

## CONTENTS

US METHANOL TRACKS PRODUCTION, TRADE FLOWS	3
'ATYPICAL' YEAR FOR US MTBE CONTINUES HEADING INTO H2	5
US BENZENE MARKET BRACES FOR MORE VOLATILITY	6
MORE US STYRENE EXPORTS EXPECTED	7
US TOLUENE, MX TO SEE LIMITED PULL FROM GASOLINE	8
H2 TO BRING WEAK SPOT DEMAND FOR US BUTADIENE MARKET	9
SUPPORT EXPECTED FOR US ETHYLENE IN EARLY H2	10
US POLYETHYLENE MARKET EYES NEW CAPACITY	11
SLOW RECOVERY EXPECTED FOR BRAZIL'S POLYMER IMPORTS	11
DIRECTION OF US PS, ABS TO BE DRIVEN BY FEEDSTOCKS	13





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*As we enter the second half of 2016, the petrochemicals outlook for the Americas is one with more questions than answers amid complex developments in the world's political, financial and commodities sectors.*

*The recent vote by the United Kingdom to exit the European Union has sent shockwaves through markets in Europe and across the Atlantic, and the petrochemicals sector is unlikely to come away unscathed.*

*Crude prices have recovered more than 80% since hitting 13-year lows in February but will enter the third quarter some 55% below levels seen two years ago, incentivizing production and consumption of chemicals in some regions but stifling one or both in others.*

*Closer to the plant, a slew of new capacities in Asia and North America, combined with the marked slowdown of economies such as China's and Brazil's, could alter pricing significantly during the second half of the year.*

*In Latin America, the industry endures a period of increased uncertainty, with many of the region's biggest energy players – including Mexico's Pemex, Brazil's Petrobras and Colombia's Ecopetrol – looking to shed petrochemicals assets amid the oil slump.*

*Already, 2016 has proved many a prognosticator in the Americas petrochemicals space wrong. Markets have also seen their share of atypical developments and trade flows as prices in some markets have taken unexpected turns.*

*Expectations of stronger aromatics pricing in the US Gulf Coast region have been only partially fulfilled amid an early-year glut of supply on the benzene side and weaker-than-anticipated blending demand on the toluene and mixed xylenes side.*

*On the olefins side, the strengthening of ethane, while nominal, has surprised many who didn't expect the development until closer to the startup of a number of world-scale ethylene projects in 2017-2018. It has provided upward support for ethylene pricing even as the US market attempts to balance supply through record exports.*

*Propylene prices have remained stable to stronger despite the startup of Dow Chemical's world-scale propane dehydrogenation unit in Texas and stronger production from the refinery side.*

*Polymers-wise, North American polyethylene producers have benefited from strong pricing in Asia – itself fueled by ethylene above \$1,000/mt since March – squashing any expectations for lower pricing resulting from capacity expansions.*

*Polypropylene makers in the region opened 2016 with much-improved margins on contract material, only to see a flood of imports, much of it Asia-origin resin, hit the historically insulated domestic market, prompting spot prices to plummet to levels not seen since mid-2009 and contracts to shed more than 15% to end Q2.*

*This collection of reports highlights the key themes that stand to shape the petrochemical industry in the Americas through the second half of the year.*

*These include the expected uptick in benzene pricing during Q3 and its possible impact on downstream markets; the limited upside to methanol pricing despite China's demand for olefins production and the risks to Venezuela's production; a bullish sentiment emanating from the US ethylene market as feedstock prices strengthen and the market appears closer to balance; and the bearishness of polymer market participants in Brazil, a market hampered by political and financial crises that also strike at the core of the country's petrochemical industry.*

## US METHANOL TRACKS PRODUCTION, TRADE FLOWS FOR H2

US methanol has limited upside for pricing increases in the second half of the year, but an uncertain global production picture and expanding methanol-to-olefins capacity in China will attract attention in the latter portion of the year, market sources said.

The recent expansions to production capacity have caused alterations to global trade flows, with supply balances being watched as producers weigh additional capacity growth along the US Gulf Coast over the coming years.

The state of international production will represent a focal point for the second half of the year, sources said. In the Americas, Venezuela's economic and electricity issues have caused concerns in global methanol markets, and market participants monitor production in Trinidad and Tobago amid the natural gas curtailments there.

Global trade flows in methanol have shown signs of shifting, with material from Venezuela and Trinidad and Tobago increasingly targeting Europe and Asia after the expansions to US capacity.

US methanol capacity expanded to 5.75 million mt/year at the start of the year, up from 2.25 million mt/year at the start of 2015.

Additional methanol capacity expansions targeted for the US Gulf Coast include Natgasoline (1.75 million mt/year in 2017), South Louisiana Methanol (1.92 million mt/year in 2017) and Yuhuang Chemical (1.7 million mt/year in 2018).

Those expansions have led to a transition in the US from a key importer into an exporter of material, forcing product from

## CURRENT STATE OF US METHANOL PRODUCTION (mt/yr)

Company	Location	mt/yr
LyondellBasell	Channelview, Texas	780,000
LyondellBasell	La Porte, Texas	780,000
OCI	Beaumont, Texas	912,500
Methanex	Geismar, Louisiana	1,000,000
Methanex	Geismar, Louisiana	1,000,000
Celanese/Mitsui	Clear Lake, Texas	1,300,000
G2X Energy	Pampa, Texas	65,000

Source: Platts, Company Announcements

Venezuela and Trinidad and Tobago that traditionally satisfied US demand to find different markets.

“The sense I get is that market is really in balance with production meeting demand,” a source said.

The status of expansion plans appears to be in a holding pattern, with market players evaluating the dynamics of the spot market, a source said.

As trade flows have adjusted, US spot pricing has recovered from the low levels seen in the first quarter, limiting arbitrage opportunities.

The lack of arbitrage opportunities out of the US could lead to a buildup in supply similar to what occurred in the first quarter when high inventories pushed pricing to historic lows, a trader said.

Shipping rates to Asia have come off from the levels of \$70/mt that were seen in March, coming closer to \$55/mt. Even with lower rates, arbitrage windows have not been seen.

#### ‘Wild card’ in South America

Venezuela has encountered a range of issues leading to concerns in the global market. The country has seen reduced revenues from oil production, electricity shortages as drought conditions have impacted hydroelectric generation, protests over food shortages and a push for a recall vote of President Nicolas Maduro.

“There is real concern about supply out of Venezuela,” a source said.

The production levels in Venezuela represent the “wild card” for the global market for the second half of the year, a source said. Market sources have estimated operating rates in the country at around 60%-70%. Methanol production in Venezuela includes SuperMethanol (725,000 mt/year), Metor (750,000 mt/year) and Metor II (850,000 mt/year).

The Metor complex typically has high electricity reliability with both plants running normally, a source with knowledge of its operations has said.

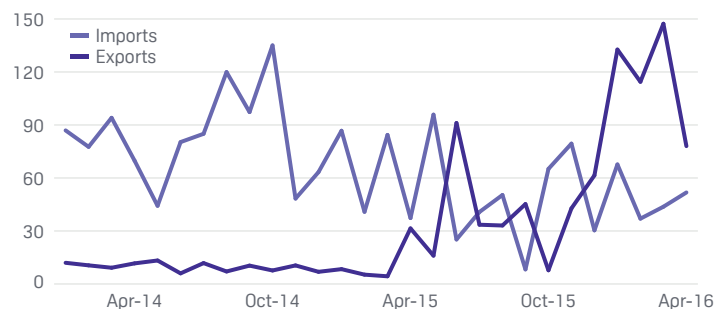
Trinidad and Tobago has started to increasingly export material into Asia, sources said. Natural gas curtailments have been as high as 25%, sources have said.

Elsewhere, Methanex was not expected to start up its 1.3 million mt/year plant in Damietta, Egypt during the summer months, with natural gas needed for cooling. The facility typically provides material to Europe.

#### Possible pull from China

China has been expected to see an additional four methanol-to-olefins units start up in the second half of the year. The facilities will bring 6.5 million mt/year of production capacity, raising the total of MTO units in China to 17 with a total methanol consumption of 18.5 million mt/year.

#### US METHANOL TRADE FLOWS ('000 mt)



Source: Platts

The additional capacity could lead to a reduction in operating rates at existing MTO plants, meaning consumption in China might remain relatively stable, a source said.

The MTO units' consumption capacity will make olefins' and olefins derivatives' prices in Asia an important factor, sources said.

“If prices are firm and going higher, then they can pay more for methanol,” a trader said. “There is a lot more production for MTO than is being used right now. If prices go up, they can ramp up production.”

Chinese MTO units have started to emerge as a global price setter for ethylene, LyondellBasell said, and the units have also started to have an increasingly important role in setting global methanol prices, sources said.

Strong run rates at those facilities could play an important role in dictating global methanol trade flows.

“Eventually, North American methanol could be exported to China as occurred at the end of 2015 and in the beginning of 2016,” a source said. “The volumes from South America that the US no longer needs could also go to China, as could Iranian methanol.”

US methanol pricing has been expected to follow a slight upward trend over the course of the year. The possibility of significant pricing increases appear highly unlikely, with the market likely relying on crude markets for any additional increases.

Growth rates have been expected to largely track GDP. “It will be GDP growth numbers, even if that is anemic,” a source said.

Likewise, methanol demand growth in Mexico will likely come in at around 1.5%-2%, numbers reflecting the expected growth in GDP, a source there said. Demand in Canada will likely remain stable unless crude prices show significant increases, a source in that country said.

#### Recovering from ‘rough’ first half

US spot methanol pricing has recovered from the low levels seen early in the year when strong inventory levels yielded from expanded production weighed on pricing.

US methanol has hovered in the low- to mid-60s cents/gal FOB USG since the start of May, a stark change from the first quarter of the year.

“The first part of the year was pretty rough as far as methanol pricing goes, but it seems like things have leveled out,” a source said.

US spot methanol pricing averaged 45.61 cents/gal FOB USG in the first quarter, according to S&P Global Platts data, the lowest average quarterly pricing since 42.84 cents/gal FOB USG in the first quarter of 2009.

The challenging market dynamics in the first half of the year led to BASF’s decision to delay the final investment decision on a planned methanol-to-propylene plant in Freeport, Texas, that would have been the first of its kind in the US.

Additionally, Northwest Innovation Works decided not to pursue a planned 7 million mt/year unit in Tacoma, Washington, that would have been the world’s largest after encountering environmental opposition. The company plans to move forward with a pair of 3.5 million mt/year plants in Kalama, Washington and Calfskin, Oregon.

Production rates in the US Gulf Coast have been described as strong through the first half of the year with no planned turnarounds and only OCI Beaumont (912,500 mt/year in Beaumont, Texas) and Celanese/Mitsui (1.3 million mt/year in Clear Lake, Texas) experiencing brief unplanned outages.

Those plants saw some benefit from soft feedstock costs early in the year. Feedstock natural gas has since shown upward movement, with NYMEX front-month natural gas contracts touching nine-month highs in early June.

NYMEX front-month natural gas averaged \$2.0092/MMBtu over the first five months of the year before rallying in June. — [Justin Schneewind, justin.schneewind@spglobal.com](#); Edited by [Richard Rubin, richard.rubin@spglobal.com](#)

## ‘ATYPICAL’ YEAR FOR US MTBE CONTINUES HEADING INTO H2

The US Gulf Coast MTBE market has seen a somewhat atypical first half of the year with stronger-than-usual supply levels in the net-short Americas region, but the inventories of octanes in the US Gulf Coast have delayed the usual increase in pricing at the start of the summer season.

Those factors, robust demand in Latin America and an upcoming capacity expansion in China will be focal points for the MTBE market in the second half of the year, market sources said.

MTBE supply levels in the US Gulf Coast have been strong on high production rates by the four US producers, a stark change from the maintenance-heavy first half of 2015.

## GLOBAL MTBE PRICING (\$/mt)



Source: Platts

“The next few weeks will be very telling for the MTBE market before refiners start talking about fall gasoline,” a producer source said.

Enterprise Products Partners (550,000 mt/year) completed a scheduled turnaround during the first quarter and has since been operating at high levels. The other US Gulf Coast producers, Huntsman (766,000 mt/year in Port Neches, Texas), LyondellBasell (525,000 mt/year in Channelview, Texas) and TPC Group (50,000 mt/year in Houston), have been running at high rates for the duration of the year, sources said.

Octane supplies in the US Gulf Coast have also been high as cheap gasoline prices in the winter and spring led to inventory building by blenders. Those inventories have impacted the MTBE market, sources said.

“The excess of other octanes are making blend values horrible,” a second producer source said.

### Firm Latin American demand

Firm demand from Latin America is expected to persist in the second half of the year with the two largest destinations for US MTBE continuing to see refinery issues.

Mexico imported 1,962,000 barrels of MTBE in the first three months of the year, according to US Energy Information Administration data. The demand resulted from growth in gasoline demand and amid a range of refinery issues impacting the country.

Mexico has sought imports of MTBE to blend within the country, and blenders importing finished gasoline into the country have sought the high-octane blendstock, sources said.

“We expect strength on the demand side with a lot of new cars,” a Mexico-based source said.

The EIA data only include outright MTBE and not MTBE blended into gasoline at US Gulf Coast refineries and then exported. MTBE is not used in the US gasoline pool.

Venezuela, typically the second-largest destination for US MTBE, imported 945,000 barrels during the first quarter amid refinery issues there.

The country's demand will be a focal point for the rest of the year considering the economic and political issues there and the amount of material the country typically consumes.

Venezuela has encountered challenges of reduced revenues from oil production, electricity shortages as drought conditions have impacted hydroelectric generation, protests over food shortages and a push for a recall vote of President Nicolas Maduro.

Chile has become a market of increasing interest to US producers, with demand showing growth despite gasoline specifications that include a 10% oxygen limit, sources said. Chile imported 639,000 barrels of MTBE from the US in the first quarter.

Within Latin America, Argentina has started to transition from an importer into an exporter of MTBE after recent regulatory changes. An increase in the country's ethanol blending requirement to 12% has minimized MTBE's share in the gasoline blending pool.

State-run YPF (60,000 mt/year capacity) and Carboclor (30,000 mt/year) will likely be forced to seek new markets for their production, sources said. "YPF and to a smaller extent Carboclor are planning exports," a source in the country said.

### Eyes on Asia

Capacity expansions will not occur in the US Gulf Coast in the near term, but market participants will gauge a startup in China scheduled for the second half of the year.

The 750,000 mt/year Huntsman/Sinopec joint venture plant in Nanjing, China, has been expected to startup in H2, but market sources have mixed expectations regarding the plant's impact on the Americas market this year.

The expansion could lead to some bearishness in the Americas and will likely result in Asian material coming to the Americas region, a trader said.

Pricing in the two regions has not allowed for an arbitrage into the Americas, but the startup might create that opportunity that was seen for a period last year, the source added.

Other sources have indicated that the startup might not impact the Americas region until 2017 as the plant will take time to reach full rates and lead to an adjustment in trade flows within Asia.

Feedstock butane pricing has contributed to the differences seen this year with pricing in the US remaining unseasonably high. Ample supply of low-cost, low-RVP components have incentivized blending butane into gasoline, sources said.

Butane pricing has averaged 54% of crude pricing through the first five months of the year, up from 37% last year, according to S&P Global Platts data.

Feedstock methanol has seen spot pricing steady in the low-to-mid 60s cents/gal FOB USG in recent weeks, with sources in

the market expecting limited gradual upward pricing movement. The first half of the year presented challenges in the market, with strong production rates contributing to the high levels of oxygenates in the market.

### Gasoline, octane supply impact prices

The market has not seen the typical runup in pricing ahead of summer, which some attribute to the state of gasoline pricing and to the amount of octane supply in the US Gulf Coast.

The average US Gulf Coast MTBE price in the first quarter of \$1.4621/gal FOB USG marked the lowest quarterly average in more than 10 years, Platts data showed. US Gulf Coast MTBE pricing averaged \$1.5792/gal FOB USG in the first five months of the year.

Production margins had been low to start the year, with Huntsman and LyondellBasell both reporting first-quarter MTBE margins down year on year by 30% or more.

"If the next few months don't show improvement, it will be an OK year but not a great year," a producer said. — [Justin Schneewind, justin.schneewind@spglobal.com](#); Edited by [Jason Lindquist, jason.lindquist@spglobal.com](#)

### US BENZENE MARKET BRACES FOR MORE VOLATILITY IN H2

A combination of fewer imports, a low benzene-crude ratio and stronger energy has participants in the US benzene market bullish about the second half of 2016.

For most of H1, benzene prices were under pressure by oversupply and cheaper crude. Inventories were high because of large amounts of shipments from Asia during January and February. At one point, 400,000 mt of benzene was expected to arrive from Asia in January and February combined, sources said.

Another factor contributing to a bearish benzene market in the US during the first quarter was cheaper crude pricing. NYMEX crude pricing fell as low as \$26.21/b on February 11.

Front-month spot benzene prices fell to near seven-year lows on February 9-10, assessed at \$1.76/gal (\$526.24/mt) FOB US Gulf Coast. They have since recovered, opening the third week of June at 208 cents/gal in a contango market structure.

The benzene-WTI crude ratio, a ratio used by market participants to gauge benzene's value, was higher than the accepted average during that time – at 2.86 on February 11, for example – despite benzene being near its cheapest level this year.

The ratio was being accepted by market participants at higher levels because strong derivative styrene demand was softening benzene declines, sources said.

Demand for derivative styrene was strong in the US as Asia bought regularly during the first quarter. The US is a net exporter



of styrene, and attractive arbitrages to other regions translate to stronger demand. However, this wasn't enough to absorb excess US benzene supply. US styrene demand softened at the end of April and into May as Asia didn't need as much product from the US, sources said.

### Higher ratio expected

The benzene-WTI crude ratio has been consistently below 1.8 since May 13. The lower ratio is a result of US spot benzene prices gradually rising, while crude pricing has moved higher at a faster pace. As US benzene inventories tighten, the ratio will likely shift to levels higher than 1.8, sources said.

"This ratio is below 1.8 because of the ample supply we've seen, but it'll be back above this level soon," a source said.

US benzene prices have been trending higher since June 1. US benzene shipments were sent to Europe and this tightened prompt supply, sources said.

"Around 15,000-20,000 mt of benzene was fixed to Europe at the end of May," a US-based trader said.

South Korean exports to the US were around 52,000 mt for May, sources said, adding there wasn't a lot coming in June either.

Additionally, US toluene, used as a feedstock in disproportionation units for the production of benzene and xylenes, has stopped being extracted from reformat by refineries and is being blended into the gasoline pool, sources have said. That means less domestic benzene production.

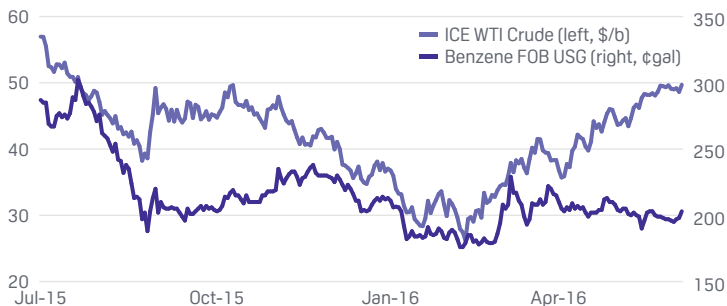
### Fewer imports from Asia

Going forward, market participants anticipate upward movement in US spot benzene prices for the next few months.

"The US was the cheapest-priced region for too long, and arbitrage opportunities to the US were closed," a source said. "Prices have to move higher because of this."

The arbitrage from Asia hasn't been attractive, and the Korea-US benzene spread was around \$21/mt on June 20. Sources said higher prices are foreseeable through the end of July and into August as it usually takes 6-8 weeks for South Korean benzene to arrive.

### US BENZENE-WTI RELATIONSHIP



Source: Platts

There was also talk of styrene turnarounds in Asia during July and August that could increase styrene buying from the US and strengthen benzene demand.

However, September and December are times when some participants tend to sell product from their tanks to avoid taxes on inventories and. Both of these periods could see downward movement as usual, but periods in between could see higher pricing, sources said. — [John Calton, john.calton@spglobal.com](mailto:john.calton@spglobal.com); Edited by Jason Lindquist, [jason.lindquist@spglobal.com](mailto:jason.lindquist@spglobal.com)

### MORE US STYRENE EXPORTS EXPECTED IN H2

Lower US styrene spot pricing in the short term, with the US continuing to track the arbitrage to either Europe or Asia and spot supply in the US remaining tight is what to expect for the second half of the year, sources said.

As the year approaches its midway point, the US styrene market has seen healthy margins and open arbitrage windows to both Europe and Asia so far this year, sources said.

More of the same is expected for the second half of the year, but questions abound with how much lower US spot pricing will go, sources added.

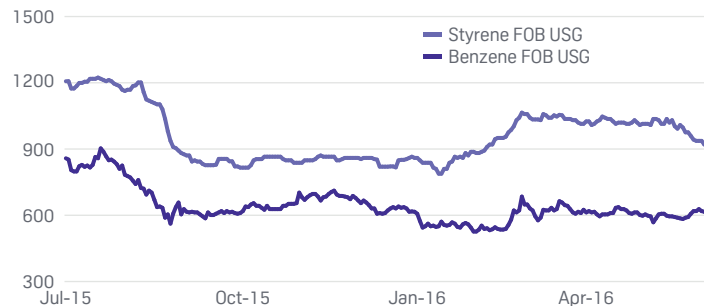
### Lower pricing to start H2

Early expectations for the second half of the year have called for pricing to dip further in the short term before stabilizing and possibly firming.

Spot pricing in Asia and Europe have fallen over the last month, and the US has followed the global declines lower. US spot pricing dropped to a 3-1/2 month low on June 13 at 41.75 cents/lb (\$920/mt) FOB US Gulf Coast, down 5.25 cents/lb since May 23, according to S&P Global Platts data.

Since the end of May, styrene spot pricing in Europe, fell \$217/mt to an assessment June 14 at \$985/mt FOB Amsterdam-Rotterdam-Antwerp. Spot pricing in Asia have been at or below \$1,000/mt FOB Korea since mid-May, and spot prices on a CFR China basis have been at or below \$1,035/mt since May 13, according to Platts data.

### US STYRENE: HEALTHY MARGINS IN H1 (\$/mt)



Source: Platts

The US tracked the arbitrage to Asia from November into March, with Europe becoming the more attractive arbitrage destination in March and remaining that way into June, sources said.

However, as the second half of the year begins, sources were expecting bearish pricing to continue in Europe, with uncertainty in Asia as turnarounds begin in August and September in that region. "I hope pricing firms in Asia," a seller source said.

That sentiment was repeated throughout the US market as sellers and traders look for an outlet to US spot supply, which was heard tight through at least the third quarter as sellers continued to sell months in advance to lock in healthy margins, sources said.

### US spot supply to remain tight

US spot supply has been tight over the first half of the year as sellers have sold two-three months in advance to lock in healthy margins. With feedstocks benzene and ethylene remaining cheap, variable costs for styrene have hovered from 27-33 cents/lb for most of the first half of the year, according to Platts data.

Over the first half of the year, US styrene pricing has averaged 43.9 cents/lb FOB USG, compared to an average of 47 cents/lb FOB USG for last year and 51.07 cents/lb FOB USG over the first half of 2015, according to Platts calculations.

The US styrene-benzene spread has averaged \$373/mt over the first half of 2016 after averaging \$285.6/mt over 2015, including \$393/mt over the first half of last year, according to Platts calculations.

With US benzene spot pricing expected to rise in the second half of the year, with the possibility that styrene pricing drops further, sources have said the styrene-benzene spread should narrow and styrene margins, which have been 10 cents/lb or more for most of the first half of the year, should narrow as well.

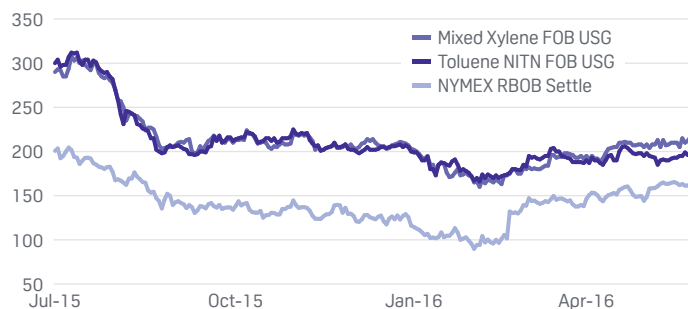
However, even with the expectations for higher feedstocks benzene spot pricing in the short term and possibly narrower styrene margins, sources expected more of the same for the US styrene market in the second half of 2016 -- tight spot supply and the ability to track the open arbitrage. — [Jeremy Rakes, jeremy.rakes@spglobal.com](mailto:jeremy.rakes@spglobal.com); Edited by [Richard Rubin, richard.rubin@spglobal.com](mailto:richard.rubin@spglobal.com)

### US TOLUENE, MX TO SEE LIMITED PULL FROM GASOLINE

US toluene and mixed xylene market participants are bearish regarding the second half of the year, with expectations of weaker gasoline blending demand compared to 2015.

As the market enters the summer months, expectations for a stronger pull from octane demand has been defied by ample supply in inventories of toluene, mixed xylene, gasoline and other blendstocks, sources said.

### US TOLUENE, MX vs. RBOB (¢/lb)



Source: Platts

Although mixed xylene inventories became tighter in May as the US sent shipments to Asia, slower gasoline demand has limited upward movement, sources said.

### Demand fails to pick up

Toluene and mixed xylene inventories were oversupplied going into 2016 as market participants anticipated another year of strong gasoline blending demand, sources said.

"(It's) a typical situation where everyone thought the market was going one way and it went another," a US-based trader source said. "Storage for toluene and mixed xylene was often near maximum capacity during the first quarter."

US front-month spot mixed xylene prices hit a seven-year low February 11 at \$1.60/gal (\$484.80/mt) FOB US Gulf Coast, while front-month spot toluene did the same at \$1.66/gal (\$504.64) FOB USG on the same day.

Cheaper gasoline also contributed to the lower prices in those markets, sources said. NYMEX RBOB fell to its lowest level on February 9 at 89.89 cents/gal, just two days before the cheapest toluene and mixed xylene levels so far in 2016.

Both aromatics assessments have recovered markedly since – MX some 22% and toluene 18% – but not to the levels many expected. MX, for example, entered the third week of June hovering around the 216 cents/gal mark, well below the 311 cents/gal seen in June 2015.

### All eyes on gasoline

The correlation of toluene and mixed xylene to RBOB has remained strong, with gasoline being the primary driver of those markets. The toluene-RBOB spread was at 48.47 cents/gal on June 17, based on the S&P Global Platts assessment at \$1.99/gal FOB USG and an RBOB settlement at \$1.5053/gal, while the MX-RBOB spread was at 65.47 cents/gal, based on the Platts assessment at \$2.16/gal FOB USG.

These spreads are seasonally low, but a great indication of how weak gasoline demand is. Spreads would normally be around the 70-80 cents/gal mark during the driving season, sources have said.

Toluene and mixed xylene markets could see stronger gasoline blending demand through the end of September,



when the driving season ends, but ample supply in other blendstocks will tame any pressure of upward price movement, sources said.

Industry players are bearish on these markets after September. During the fourth quarter, market participants expect these markets to continue to trend with RBOB gasoline, but anticipate further downward pressure since toluene and mixed xylene aren't typically blended into gasoline during the period. — [John Calton, john.calton@spglobal.com](mailto:John.Calton@spglobal.com); Edited by [Annie Siebert, ann.siebert@spglobal.com](mailto:Annie.Siebert@spglobal.com)

## H2 TO BRING WEAK SPOT DEMAND FOR US BUTADIENE MARKET

Spot demand for butadiene in the US is expected to remain slow during the second half of the year, which, despite tighter supply, could keep pricing relatively stable after significant gains in recent months, market sources said.

After rising 66% from late February to early June, pricing has remained in the low 40s cents/lb (\$882-948/mt) CIF US Gulf Coast in recent weeks, even as the market contends with its second unplanned outage in as many months, sources said.

Overall, weak demand has been credited for keeping prices from moving higher, and sources said there were expectations that spot demand would remain at current levels through the rest of 2016. As a result, there was some talk that spot prices could decline some, but would most likely stabilize in the second half of the year.

### Rebounds after 7-year low

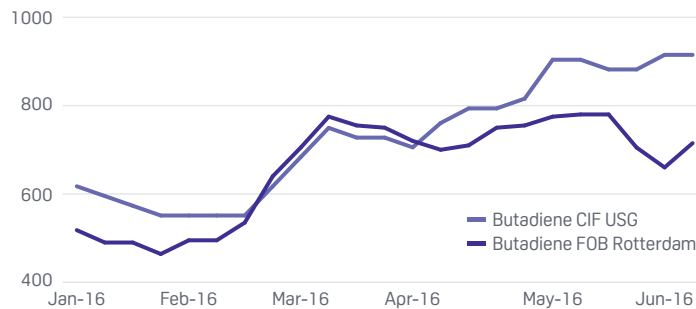
US spot butadiene pricing dropped to its lowest level in seven years in late January – assessed at 25 cents/lb CIF US Gulf Coast, where it stayed for much of February – before rallying 66% through early June, according to S&P Global Platts data.

For the year, spot pricing averaged 33.7 cents/lb through mid-June, last assessed June 17 at 42 cents/lb CIF USG, per Platts data.

On the contract side, there were expectations that prices could roll over in July after June prices rose 3 cents, with settlement levels at 34-40 cents/lb (\$750-\$882/mt), sources said.

US spot supply is expected to become more balanced with demand in the second half of the year, but that is dependent on how long production issues persist, sources said.

## US SPOT BUTADIENE vs. NW EUROPE (\$/mt)



Source: Platts

Shell Chemicals declared a force majeure on butadiene out of its Norco, Louisiana, petrochemicals facility at the start of June following an unplanned outage of an extraction unit in late May, sources said.

Shell declined to comment on the production issue or the FM declaration beyond confirming maintenance work was under way at an undisclosed unit at Norco.

"For reasons of commercial confidentiality, we do not provide details about the operational status of individual units or information on supply," Shell spokesman Ray Fisher said. The extraction unit was expected to be down into early July, sources said. The Norco facility has an estimated butadiene production capacity of 585 million lb/year (265,000 mt/year).

The Shell outage followed another at BASF/Total's Port Arthur, Texas butadiene extraction unit earlier in the second quarter. The 900 million lb/year (408,000 mt/year) facility was down through April and the first part of May following an unplanned shutdown, a BASF spokeswoman said.

In addition to the unplanned outages, the market was further tightened by exports of more than 20,000 mt to Asia during March and April, sources said.

### Further exports unlikely

Spot pricing was pulled higher during that span as the US tracked Asia, and has remained firm since. Given the current and anticipated supply situation, market sources said the US is not likely to export material again this year.

Import activity also has been limited, and despite arbitrage opportunities that appeared workable from Europe in early June, there has been little interest in bringing product over due to the weak US demand, sources said.

Europe sent 29,623 mt of butadiene to the US between January and April, according to Eurostat, though most of that was through contract cargoes.

Sources in Europe have indicated that sellers there would be looking to Asia and the US for buyers during the second half of the year following the startups of new capacities. — [Jeremy Rakes, jeremy.rakes@spglobal.com](mailto:Jeremy.Rakes@spglobal.com); Edited by [Jason Lindquist, jason.lindquist@spglobal.com](mailto:Jason.Lindquist@spglobal.com)

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## SUPPORT EXPECTED FOR US ETHYLENE IN EARLY H2

A bullish sentiment persists in the US ethylene market for the second half of the year, as feedstock prices have recovered and a number of planned and unplanned outages have chewed up much of the inventory accumulated in the first half of the year, sources said.

The sentiment comes despite the startup of two expansions that will add over 1 billion lb/year (454,000 mt/year) of ethylene production capacity.

This is partly because Enterprise Products Partners is scheduled to begin operations at its 200,000 b/d ethane export terminal in Morgan's Point, Texas in the third quarter, with some sources anticipating the start of operations in August or September.

Spot ethane reached a 23-month high of 24.875 cents/gal on June 9, S&P Global Platts data showed, on talk of the expected exports, 12 cents/gal above the record low 12.875 cents/gal assessment on December 22. Ethane is the most widely used feedstock in North America for the production of olefins.

### Ethane raises floor

The almost doubling of feedstock prices points toward a floor building for ethylene prices, sources said. There are 2.92 lb in 1 gallon of ethane and it takes 1.289 lb of ethane to make 1 lb of ethylene.

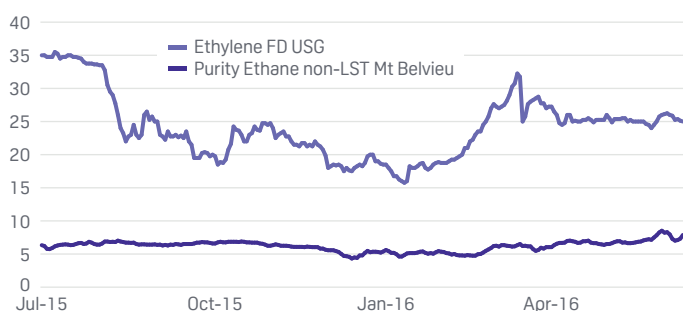
From a feedstock perspective, producers like to keep at least a 10 cents/lb spread between feedstock and ethylene prices to account for conversion costs and other expenses, sources said.

Four planned outages in the second quarter of the year have drawn down most of the inventory stacked up in the first half of the year, according to producer and trader sources. A number of unexpected outages in the latter part of May and in June have limited recent inventory build as well.

Three production outages are also set draw on stocks and provide support for prices in the third quarter.

A planned turnaround on Dow Chemical's LHC No. 8 in Freeport, Texas is expected to start in early July, and is expected to "substantially de-rate" the 2.2 billion lb/year plant for one or two months.

### US ETHYLENE: ETHANE INCHES UP (¢/lb)



Source: Platts

Chevron Phillips Chemical is scheduled to carry out a planned turnaround at its Cedar Bayou, Texas, plant in late August, taking the 1.84 billion lb/year plant out of action for 50-60 days.

Additionally, Dow's 1.6 billion lb/year LHC No. 3 in Plaquemine, Louisiana is set to undergo a planned debottlenecking/feedstock change in September for 60 days.

### Expansions near

Any Q3 price rise is expected to be minimal in nature though, as two producers are bringing expansions online in the quarter.

LyondellBasell is expected to complete an 800 million lb/year expansion of its Corpus Christi, Texas complex, bringing the total capacity of the site to 2.5 billion lb. Also, Westlake Chemical is to add 250 million lb/year of capacity at its Petro-1 steam cracker in Lake Charles, Louisiana, bringing the output of the plant up to 1.5 billion lb/year.

The last expansion of 1 billion lb/year or more was in September 2014, when prices were hovering at all-time high of 76.25 cents/lb (\$1,681/mt) and subsequently dropped 34 cents/lb or 44.6% to 42.25 cents/lb.

But such a drop in pricing from a current price level of 25 cents/lb FD USG is unlikely, sources added.

Front-month spot ethylene pricing has rebounded substantially since dropping to 15.75 cents/lb on January 20. That level was the lowest since late 2008, per Platts data. Pricing rose to an eight-month high in late March, topping at 32.25 cents/lb before settling back down in a range of 24-28 cents/lb, where it has hovered since.

### Exports likely to continue

With limited upside in spot pricing, sources said exports will continue to flow from US shores, as long as the arbitrage window stays open to Asia.

US ethylene exports in the first half of 2016 were estimated to be in a 115,000 mt-125,000 mt range, about 20,000 mt below the 135,000 mt exported in the entirety of 2015.

Multiple exporters said the appetite for US ethylene will remain strong in coming years and with the upcoming expansions in the US, construction of another export terminal is almost unavoidable.

Currently, the US has only one export terminal for ethylene, located in the USG.

Construction cost estimates for a second export terminal have been in a wide range of \$180 million-\$450 million. However, the number of major US-based players willing to be involved in such an endeavor so far has been limited to Enterprise.

The company is expected to make a final investment decision on the possible new terminal by the end of Q3, according to investor presentations. Sources have estimated the size of

the terminal at 1-1.5 million mt/year, or three to four times the current export terminal capacity of 330,000-360,000 mt/year.

— [Pavel Pavlov, pavel.pavlov@spglobal.com](mailto:pavel.pavlov@spglobal.com); Edited by [Keiron Greenhalgh, keiron.greenhalgh@spglobal.com](mailto:keiron.greenhalgh@spglobal.com)

## US POLYETHYLENE MARKET EYES NEW CAPACITY IN H2

The second half of 2016 brings cautious optimism for the US polyethylene market, as new production capacity comes online in North America and plants under maintenance return to service.

Market sources have been of the opinion that pricing might dip in the third quarter amid what they have described as a slow seasonal demand during the summer months.

However, recent tightness in key grades – mainly low-density and linear low-density – has suppliers looking for a rollover in domestic contract pricing to start the second half of the year.

New capacity expected online in Mexico, the US and Canada – totaling more than 2.3 million mt/year – should make resin pricing more competitive in the coming months, sources said.

### Domestic markets await decreases

After back-to-back monthly decreases totaling 5-6 cents/lb (\$110-\$132/mt) to open the year, domestic contract prices saw two market-wide increases totaling 9 cents/lb during the first half of the year, according to S&P Global Platts data.

While some participants saw additional non-market decreases, pricing in general was higher throughout the second quarter, supported by tight spot supply and talk of falling inventories, sources said.

US polyethylene stocks rose in May after three months of declines, as domestic sales fell to their lowest level since January and exports were at their lowest point since October, according to data from the American Chemistry Council.

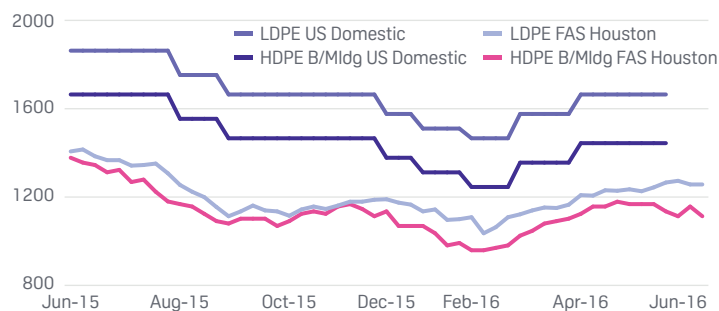
Yet domestic contract prices saw marketwide rollovers in May, with HDPE blowmolding and injection assessed at 65-66 cents/lb (\$1,433-\$1,455/mt) delivered rail car basis, high molecular-weight film at 68-69 cents/lb (\$1,499-\$1,521/mt), LDPE at 75-76 cents/lb (\$1,653-\$1,675/mt) and LLDPE butene at 61-62 cents/lb (\$1,345-\$1,367/mt).

US domestic contract pricing has fallen 10 cents/lb – 13-14% – year on year for LLDPE butene and high density blowmolding; LDPE, meanwhile, shed 9 cents/lb, or 11%, since June 2015.

With June domestic contracts yet to have settled by time of publication, market expectations centered around a second consecutive rollover, although one distributor source said he would not be surprised to see a settlement where HDPE fell, while LLDPE and LDPE stayed flat.

“Demand is normal,” a second US-based distributor said, adding that a flat settlement on all grades was expected.

## US PE: SPOT EXPORT vs. CONTRACT (\$/mt)



Source: Platts

### New capacity, new imports

Canada-based Nova is expected to start up 431,000 mt/year of additional LLDPE capacity in Joffre in the fourth quarter, while Mexico's Braskem-Idesa is expected to approach full rates at its recently inaugurated complex in Veracruz state, one that has a nameplate capacity of 750,000 mt/year of HDPE and 300,000 mt/year of LDPE.

The company, a 75-25 joint venture between Brazil's Braskem and Mexico's Grupo Idesa, began producing ethylene in March and HDPE in April, with the LDPE line expected online by late June.

In Texas, an Ineos-Sasol joint venture is expected to add more than 460,000 mt/year of HD capacity during the second half, while LyondellBasell is expected to add more than 450,000 mt/year of additional HD and LLDPE capacity before year's end.

The additional capacities could apply downward pressure on export pricing in the US Gulf Coast region. “We are keeping an eye on Mexico,” a US-based trader said. “They could play a part in pricing going forward.”

US export pricing is on track to kick off the second half of the year down some \$100/mt – or some 7-8% – year on year, although having shown significant gains through H1.

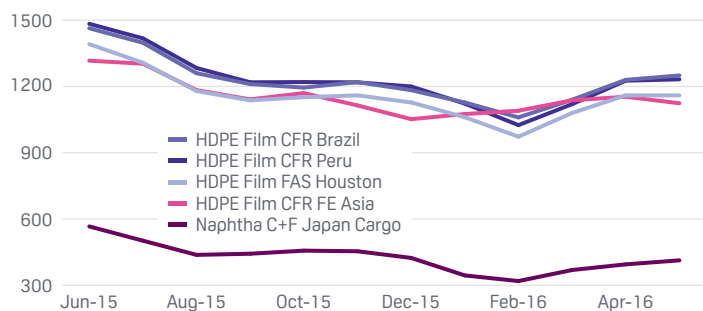
For example, the FAS Houston assessment for LLDPE butene rebounded nearly 20% from 2009 lows seen in early February (\$1,014/mt) to enter the third week of June at \$1,224/mt. Similar gains were seen in LD and HDPE pricing, with US-origin export assessments bolstered in part by stronger ethylene and PE pricing in Asia. — [Emmanuel Gallegos, emmanuel.gallegos@platts.com](mailto:emmanuel.gallegos@platts.com); Edited by [Richard Rubin, richard.rubin@spglobal.com](mailto:richard.rubin@spglobal.com)

### SLOW RECOVERY EXPECTED FOR BRAZIL'S POLYMER IMPORTS

Brazilian import polymer prices are expected to be stable to lower in the third quarter of 2016 due to weak buy interest and competitive domestic prices, sources said.

Key export destination countries in the Latin America for Brazilian petrochemical producers have mirrored the past months' economic and political struggles in the region. In addition, market participants said the dull demand will persist



**LATIN POLYMERS: IMPORTS TRACK ASIA, NAPHTHA (\$/mt)**

Source: Platts

through 2016. However, while the year has not gotten off to a strong start, it has been better than 2015, sources said.

Brazil, the largest economy in the region, has been rocked by a major corruption scandal at state-controlled Petrobras, and the issue has included names such as the current and former presidents of Brazil, multiple congressmen and other officials. Petrobras, which is looking to shed non-core assets, is Braskem's main provider of feedstock naphtha, which the Brazilian petrochemical giant uses in the production of basic petrochemicals, polyethylene, polypropylene and other polymers.

Petrobras also owns 36.1% of Braskem, and multiple media reports indicate the oil and gas conglomerate is considering selling its stake, although neither company has provided comment.

The political issues have escalated into an impeachment process where Brazil's Senate voted to hold a trial to depose the elected President Dilma Rousseff. Now, multiple economic changes are in the hands of acting President Michel Temer.

Uncertainty has found its way into the polymer markets as well.

"The Brazilian plastic resin market is suffering the effects of the country's economic downturn," said Andrea Carla Cunha, director of technical affairs at ABIQUIM, Brazil's largest petrochemicals trade association, and the leader of the group's department dealing with thermoplastic resins.

**Demand, imports down**

Brazilian resin demand, measured by apparent consumption, decreased 18.1% in the first quarter from the year-ago quarter, on top of a 7.4% demand decrease in 2015 from 2014. Resin imports decreased 21% in H1 2016 from H1 2015.

With Brazil's economy struggling, demand has been talked weak for months due to a combination of factors. These include a palpable increase in delinquent payments and instability of the US dollar against the Brazilian currency, the real.

Overall, buyers remain cautious, maintaining inventories at low levels, multiple market participants have said. And what affects Brazil impacts other countries in Latin America.

"The year 2016 began with a challenging economic scenario for Brazil's chemical industry," Braskem said during a first-quarter earnings call in early May. "Braskem ... focused on keeping its [steam] crackers operating at high utilization rates to meet domestic demand and to export resins and basic petrochemicals by capturing opportunities in the global market."

PE, PP and PVC exports jumped in Q1 to over 415,000 mt, Braskem said, a 62% increase from the year-ago quarter and a 107% rise from Q4 2015.

**Adding flexibility**

Braskem is also focusing on feedstock flexibility in Brazil. In March, it signed a 10-year supply contract with US-based Enterprise Product Partners to import ethane from the US. The volume to be imported was not disclosed.

Naphtha currently represents 85% of the raw material used in Braskem's crackers in Brazil, with gas at 15%. With the supply of ethane to Braskem's Camacari complex in northern Brazil, ethane's share of the company's cracker feedstock will increase to 20%, Braskem said.

"The company may eventually use this gas at other operations in Brazil, such as Duque de Caxias [in Rio de Janeiro state]," Braskem said in an email.

"The company continues studying numerous opportunities to diversify raw material, with the flexibility to focus on petrochemical production in order to enhance Braskem competitiveness."

The bulk of Braskem's petrochemical production is naphtha-based, but the company does operate an ethane-fed steam cracker in Rio de Janeiro with 520,000 mt/year of ethylene capacity.

Overall, 2016 resin import prices on a CFR Brazil basis have been trending higher since reaching the lowest levels on record in January and February. Platts began assessing these polymer markets in 2011.

From June 17, 2015, to June 15, 2016, PP import homopolymer dropped 23%, last assessed at \$1,105-\$1,110/mt CFR Brazil. HDPE film fell 16% over the same period, assessed June 15 at \$1,235-\$1,245/mt CFR Brazil. LDPE import prices fell 11% for the period, with an assessment at \$1,285-\$1,295/mt CFR Brazil.

As the political turmoil continues to unfold in Brazil, the situation has prevented buyers from having more confidence in taking positions.

"The consequence of this corruption investigation is unpredictable," a Brazil-based distributor said. — [Ingrid Furtado, ingrid.furtado@spglobal.com](mailto:ingrid.furtado@spglobal.com); Edited by Richard Rubin, [richard.rubin@spglobal.com](mailto:richard.rubin@spglobal.com)

## DIRECTION OF US PS, ABS TO BE DRIVEN BY FEEDSTOCKS

The US polystyrene and acrylonitrile-butadiene-styrene markets will continue to track changes in feedstocks during the second half of the year, sources said.

US polystyrene domestic pricing has been mostly range-bound through the first half of the year, with the acrylonitrile-butadiene-styrene market also seeing little change in movement over the first six months of the year due to only slight changes in major feedstocks, sources said.

US benzene contract prices have averaged just under 200 cents/gal (\$598/mt) over the first half of the year, while styrene spot pricing has averaged 43.9 cents/lb FOB USG over the first half of the year, according to S&P Global Platts data. Both US domestic PS and ABS prices follow movement in benzene contracts as well as styrene closely.

For ABS, feedstock butadiene contract pricing has averaged a split settlement of 27.8-34 cents/lb so far this year, while US butadiene spot pricing has averaged 33.7 cents/lb CIF USG, according to Platts data. US butadiene contracts typically settle in a split settlement. Feedstock acrylonitrile spot pricing has averaged \$870/mt FOB USG, while domestic ACN pricing has averaged 50.8 cents/lb as chemical-grade propylene – the main feedstock for ACN – has averaged 30.1 cents/lb for contracts in the first half of the year, according to Platts data.

### Benzene in contango

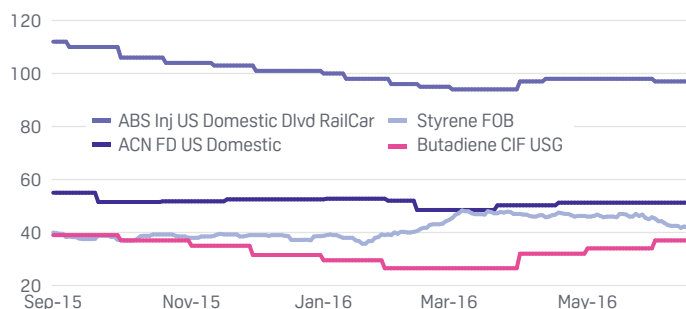
Benzene spot pricing is expected to rise some to start the second half of the year before falling again, while styrene spot pricing is expected to fall to start the second half but to stabilize and possibly rise later in the second half, sources said.

Butadiene spot pricing is expected to remain mostly stable in the low-40s cents/lb CIF USG to start the second half of the year, while acrylonitrile spot pricing is expected to rise further due to tight supply, sources said.

US polystyrene demand has been healthy as the summer season kicked in starting in April, but demand typically wanes in July, sources said, adding that general-purpose polystyrene supply has been tight through the second quarter and not expected to lengthen much in the third quarter. High-impact polystyrene supply has been more available than GPPS, but it, too, is snug and expected to remain snug, sources said.

US ABS demand has also been healthy in the second quarter as seasonal demand started up in the construction and the

## US ABS vs. KEY FEEDSTOCKS (¢/lb)



Source: Platts

appliance season, but in the short-term, demand is expected to slow some before stabilizing, sources said.

However, participants in both markets continue to keep an eye on imports. ABS imports typically make up around 20% of the US market, sources have said, and ABS import pricing has been at least 10 cents/lb below US domestic pricing.

Expectations are for the imports in ABS to continue, but a distributor source noted in May that contractual import supply was good, but spot imports were hard to find.

### Imports more prevalent

In PS, imports have been heard more frequently so far in 2016, with GPPS import pricing in June heard as low as the high-50s cents/lb – which is at least 10 cents/lb below where spot rail cars for GPPS was heard. HIPS import pricing has also been heard much lower than domestic pricing, with pricing on the West Coast heard as low as 67 cents/lb. Sources expected the imports of PS from Asia and even from South America to continue in the second half of the year.

With GPPS contracts for June assessed at 86-88 cents/lb delivered rail car and HIPS domestic contracts for June assessed at 95-97 cents/lb delivered rail car, several sources said an increase in the third quarter was possible if benzene contracts spike.

ABS domestic contracts for June were assessed at 96-98 cents/lb delivered rail car, but like in polystyrene, sources said an increase sometime in the third quarter was possible depending on direction of feedstocks. Styrene and benzene makes up around 60-65% of ABS, so the market tracks those two markets more closely, but if butadiene and ACN pricing remains firm, sources have said they could pressure pricing as well. — [Jeremy Rakes, jeremy.rakes@spglobal.com](mailto:jeremy.rakes@spglobal.com); Edited by [Richard Rubin, richard.rubin@spglobal.com](mailto:richard.rubin@spglobal.com)

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