TODAY IN THE MARKETS

**Propylene:** RGP’s implied alkylate value Monday was higher by 0.7 cpp at 32.4 cpp. Dec MB-EPC RGP was offered down to 26 cpp. Dec pipeline RGP has not yet traded; it was offered down to 27 cpp on Friday. Dec rail RGP was bid at 29.5 cpp. Dec MB-EPC PGP was offered at 37.5 cpp for much of the day. Late in the day, Dec was offered down to 37.25 cpp. Dec last traded at 38.5 cpp last week. Dec paper PGP was bid at 36.5 cpp. A Dec-Mar MB-EPC PGP versus paper PGP deal was done with a 0.5 cpp premium on the paper component. Two Q1 2019 paper PGP strips traded at 39 cpp; a physical 2Q 2019 PGP strip also traded at 39 cpp.

**Benzene:** Dec was steady at 204 cpg ($610/mt). There were no new sales confirmed. During trading, Dec was offered only at 207 cpg DDP HTC. Jan was 204-213 cpg DDP HTC, Feb was 206-218 cpg DDP HTC, and Mar was 207-223 cpg DDP HTC. The month-to-date calendar average for Dec was 204 cpg. The US Dec benzene contract was understood to settle at 211 cpg ($631/mt), down 69 cpg from Nov. Global values were steady to higher. Asia was up by $1/mt to $639/mt (214 cpg) FOB Korea and Europe was unchanged at $603/mt (202 cpg) CIF ARA.

**Downstream Chemicals:** The implied cumene price was lower by 0.4 cpp at 30.2 cpg. Styrene was steady at 38.7 cpg ($853/mt).

**Aromatics & Blendstocks:** Dec toluene was unchanged at 230 cpg, 26 cents above benzene. Toluene’s blend value was higher by 5.9 cpg at 201.5 cpg. Dec MX was flat at 242 cpg; its blend value was up by 6.7 cpg at 213.4 cpg. Blendstocks were steady to lower. Alkylate (92 octane, 5.5 RVP) was down by 1 cpg at M4 gasoline plus 24 cpg (166.89 cpg), raffinate was unchanged at gasoline minus 16 cpg (126.89 cpg), and reformate was steady at gasoline plus 50 cpg (192.89 cpg).

**Operations:** Enterprise’s PDH unit at Mont Belvieu, TX was flaring this past weekend following a power blip that caused a loss of feedstock supply to the unit. Multiple NGL fractionators in the Mont Belvieu area were also flaring due to the power supply interruption. See Global Outages on page 3.

**Gasoline:** Jan NYMEX RBOB futures settled at 143.14 cpg, up by 2.95 cpg from Friday. Prompt Colonial Pipeline Gulf Coast gasoline differentials were mixed. A4 CBob 87 regular was higher by 0.50 cpg at 6.25 cpg under the Jan NYMEX settle. The regrade to D4 CBob 93 premium was higher by 1.25 cpg at 17.75 cpg. M4 was higher by 0.50 cpg at 0.25 cpg under the screen. The regrade to V4 premium was unchanged at 13 cpg. The 3-2-1 crack in the Gulf Coast was $7.21/bbl, $6.34 under the screen.

---

**Closing Spot Prices**

<table>
<thead>
<tr>
<th></th>
<th>Price</th>
<th>Change</th>
<th>30-day avg</th>
<th>MTD avg</th>
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**RGP vs. ALKYLATE IN $/POUND**

Closing prices are based on transactions and firm bid/ask indicators as confirmed by brokers and/or counterparties. Implied prices are derived from market-based formulas.
Refinery Focus Daily

Daily insight into refinery blending economics from the editors of PetroChem Wire

September 21, 2018 | Volume 12: Issue 183

BTX FORWARD CURVES

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Benzene prices are basis DDP HTC. Toluene and MX prices are basis FOB USG

BENZENE ECONOMICS

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<td>N+A naphtha</td>
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<td>RBOB gasoline</td>
<td>0.61</td>
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Benzene ratio to:

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<tbody>
<tr>
<td>WTI</td>
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<td>Brent</td>
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<td>N+A naphtha</td>
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<td>Ethylene</td>
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<td>Styrene</td>
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<td>Cumene</td>
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HDA/STDP margins ($/mt)

STYRENE-BENZENE SPREAD

*Producer breakeven is $150-200/mt*
GLOBAL BENZENE PRICE SNAPSHOT

<table>
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<tr>
<th></th>
<th>Price</th>
<th>Change</th>
<th>MTD average</th>
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<td>FOB Korea $/mt</td>
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<td>FOB Korea $/gal</td>
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<tr>
<td>CIF ARA $/mt</td>
<td>855.000</td>
<td>1.000</td>
<td>861.650</td>
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<td>CIF ARA $/gal</td>
<td>2.860</td>
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<td>US DDP HTC $/mt</td>
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GLOBAL OUTAGES

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<th>Company</th>
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<th>Location</th>
<th>Capacity</th>
<th>Timing</th>
<th>Duration</th>
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<tr>
<td>Synthos</td>
<td>SM</td>
<td>Kralupy</td>
<td>170,000 mt</td>
<td>2H 2018</td>
<td>30-45 days</td>
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<tr>
<td>Sinopec ZRCC</td>
<td>BTX/NGT/MX</td>
<td>Zhejiang</td>
<td>700,000 mt</td>
<td>Mid-Oct</td>
<td>45 days</td>
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<tr>
<td>*Taiyo Oil</td>
<td>SM</td>
<td>Ube</td>
<td>370,000 mt</td>
<td>Aug-18</td>
<td>30-40 days</td>
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<tr>
<td>*Idemitsu Kosen</td>
<td>SM</td>
<td>Tokuyama</td>
<td>330,000 mt</td>
<td>Sep-18</td>
<td>30-45 days</td>
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<td>Lotte Chemical</td>
<td>BTX</td>
<td>Yeosu</td>
<td>240,000 mt</td>
<td>Sep-18</td>
<td>30-45 days</td>
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<td>*SECCO Petrochemical</td>
<td>SM</td>
<td>Shanghai</td>
<td>650,000 mt</td>
<td>Oct-18</td>
<td>45-60 days</td>
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<tr>
<td>*Sinopec Guangzhou</td>
<td>SM</td>
<td>Guangzhou</td>
<td>80,000 mt</td>
<td>Oct-18</td>
<td>30 days</td>
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<tr>
<td>*CNOOC Ningbo Daxie</td>
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<td>Formosa Chemicals &amp; Fibre</td>
<td>BTX</td>
<td>Mailiao</td>
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<td>*Sinopec Maoming</td>
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<td>Maoming</td>
<td>100,000</td>
<td>Nov-18</td>
<td>50-60 days</td>
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</table>

MIDDLE EAST

| *EQUATE          | SM                       | Shuiaba  | 450,000 mt | 4Q     | 30-45 days|

BENZENE PREMIUMS

BENZENE RATIOS
**BLENDSTOCK VALUES ($/GAL)**

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<th>Differential</th>
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<th>Outright</th>
<th>Change</th>
<th>MTD avg</th>
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<td>Raffinate</td>
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<td>0.0000</td>
<td>1.8270</td>
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<td>Reformate</td>
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<td>Toluene blend value</td>
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<td>Mixed xylenes blend value</td>
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**CASH GASOLINE / REGRADE PRICES**

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<tr>
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<td>CBOB 87</td>
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<td>CBOB 93</td>
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<td>CBOB Regrade Value</td>
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<td>M grade</td>
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<td><strong>NY Harbor gasoline ($/gal)</strong></td>
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<td>CBOB 87</td>
<td>1.9445</td>
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<td><strong>Group 3 gasoline ($/gal)</strong></td>
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<td>Group 3</td>
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<td><strong>Ultra low sulfur diesel</strong></td>
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<td>US Gulf Coast $/gal</td>
<td>2.2738</td>
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NAPHTHA / VACUUM GASOIL PRICES

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<th>Outright</th>
<th>Change</th>
<th>MTD avg</th>
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<td>90.73</td>
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<td>17.75</td>
<td>0.00</td>
<td>89.09</td>
<td>0.37</td>
<td>91.73</td>
</tr>
<tr>
<td>HS Vacuum Gasoil barges $/bbl</td>
<td>16.75</td>
<td>0.00</td>
<td>88.09</td>
<td>0.37</td>
<td>90.73</td>
</tr>
</tbody>
</table>

TODAY IN THE MARKETS

3-2-1 CRACK SPREADS