Benzene

USES
Benzene is used to produce several intermediates, including styrene, phenol, caprolactam, methylene di-isocyanate (MDI), maleic anhydride (MA), alkylbenzenes and chlorobenzenes. It is also used to make anthraquinone and hydroquinone, benzene sulfonic acid and other products in drugs, dyes, insecticides and plastics.

SUPPLY/DEMAND
Regional supply/demand balance improved moving into 2016.

In Q4 2015, traders shifted most of their supplies from South Korea to the US amid an open arbitrage window. South Korea exported 83,089 tonnes in November and 197,211 tonnes in December. Such large quantities are typically not expected to be easily digested. Strong toluene prices also encouraged South Korea producers to lower operating rates at their toluene disproportionation (TDP) units, thereby reducing benzene oversupply.

In January, the market was supported by restocking activities from China as downstream end-users restarted their units after a concentration of shutdowns at major styrene monomer (SM) and MDI plants in the last quarter of the year. China supply was also shortened by the unexpected shutdown of Ningbo Zhongjin’s 480,000 tonne/year benzene plant, resulting in a shortage of term quantities allocated to end-users.

Many southeast Asia-origin cargoes were shipped to Taiwan and China in December and January because of a force majeure at Shell’s Bukom cracker in Singapore.

Several key derivative plants were taken off line or had to lower operating rates as they were unable to secure co-feedstock ethylene or propylene, causing demand to weaken and resulting in excess benzene cargoes floating in the market.

PRICES
Spot FOB Korea benzene prices in the second half of 2015 fell by close to 25%, tracking in tandem a meltdown in crude oil prices. Weekly prices in December averaged $591/tonne compared to $778/tonne in July, according to ICIS data.

Benzene margins against naphtha were $128-206/tonne from July to December, averaging $180/tonne over the period, according to ICIS data.

As a result, along with overall positive PX-naphtha margins, cracker-based benzene units were running at high rates.

TDP margins, on the other hand, were squeezed, with strong toluene prices reducing incentives to maximise run rates. TDP margins were estimated to be around $83/tonne in second half of 2015.

TECHNOLOGY
Benzene can be produced from pyrolysis gasoline (pygas) in the steam cracking of naphtha, gasoil or condensates to make olefins. Another source is the selective disproportionation of toluene, whereby benzene is co-produced in a PX-rich xylenes stream. A third, albeit high-cost, route is the hydrodealkylation (HDA) of toluene. In Asia, HDA plants are mostly not running this year because of expensive hydrogen feedstock and a supply glut in benzene.

OUTLOOK
In the short term, benzene demand is expected to stay strong from China for March and April cargoes as manufacturing season begins late in the first quarter. China is also structurally short, so market players expect a steady requirement for imports.

Amid the price downtrend, it might be difficult for traders to sell out high-cost inventories at the shore tanks in China. Therefore inventory levels are likely remain at high levels, with further addition of imports to come, according to market players.

Traders are taking a bearish stance on the US in the first quarter, because of heavy imports expected to arrive, which might take time to digest. In Japan, on the other hand, the balance is likely to grow longer as a result of a closure at Asahi Kasei’s 320,000 tonne/year SM plant in February.

Asia’s benzene market is looking at a challenging year ahead, as supply is expected to increase further in the second half of 2016 with no expected strong recovery in demand amid the global economic slowdown, industry sources said. There is 1.4m tonnes/year new capacity slated to start up in the second half of 2016.

A positive benzene-naphtha spread will encourage producers to continue running their facilities at high rates, market sources said. However, on the other hand, there might be a repeat of strong gasoline-blending demand, which would mean lower benzene production from TDP units.

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DAPHNE HO PROFILE LAST PUBLISHED 10 APRIL 2015

ASIA CHEMICAL PROFILE

ASIA BENZENE CAPACITY* ’1000 TONNES/YEAR

<table>
<thead>
<tr>
<th>Company</th>
<th>Location</th>
<th>Capacity</th>
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<tbody>
<tr>
<td>Formosa</td>
<td>Mailiao, Taiwan</td>
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<td>Hanwha Total</td>
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<td>ExxonMobil</td>
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<td>Lotte Chemical</td>
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</tbody>
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NOTE: *Top 15 plants by capacity

ASIA BENZENE $/tonne, spot FOB Korea

Jan 2015 | Jan 2016

900 | 900
850 | 850
800 | 800
750 | 750
700 | 700
650 | 650
600 | 600
550 | 550
500 | 500

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