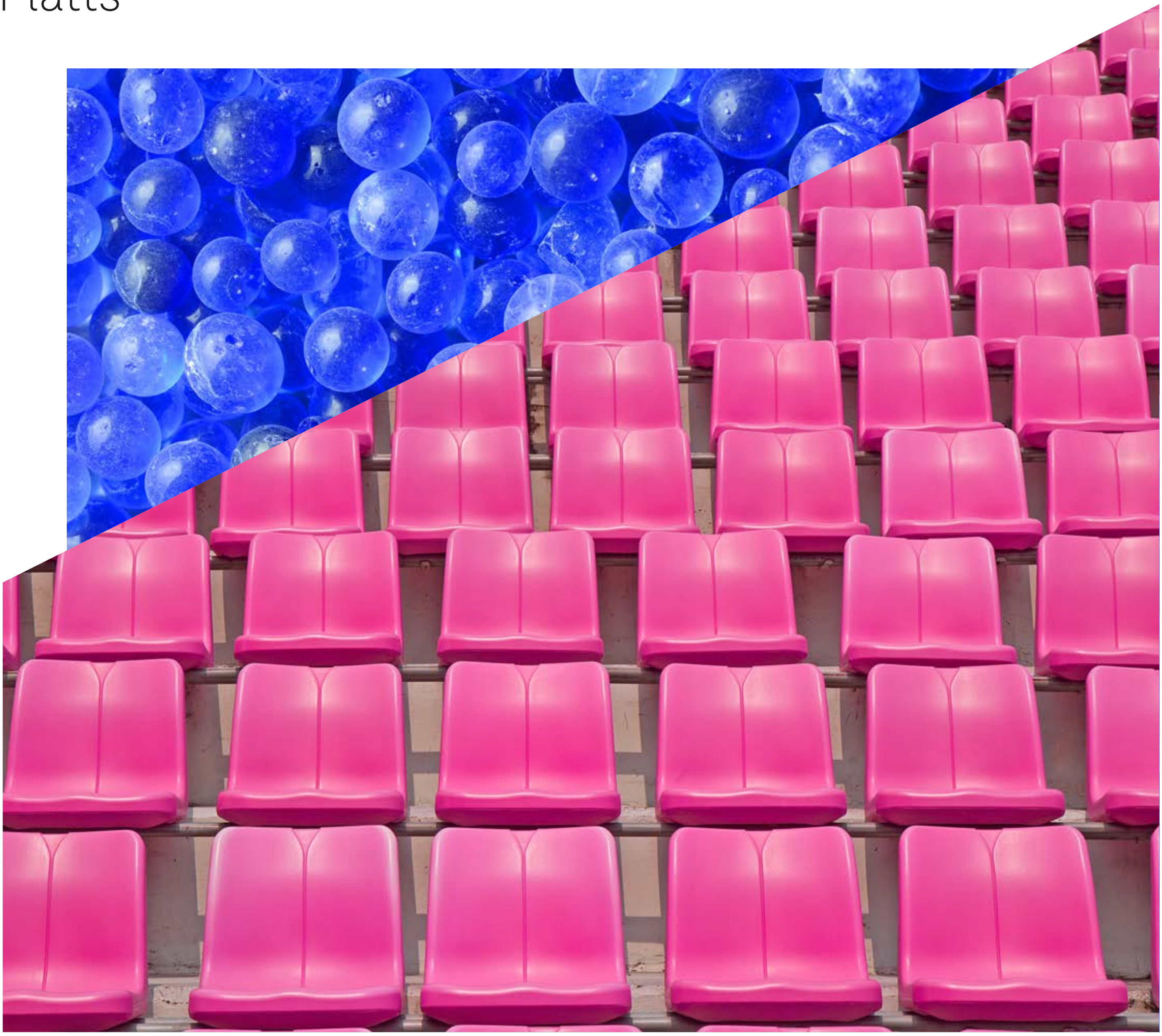
S&P Global
Platts



ASIA PETROCHEMICAL OUTLOOK H2 2016
OLEFINS & POLYMERS

PETROCHEMICALS SPECIAL REPORT

JULY 2016

Most Asian olefin and polymer markets will be weak in the second half of the year as tepid downstream demand is compounded by rising production from new plant start-ups. The market weakness comes against a backdrop of a slowing manufacturing sector in China, as the country transitions its economy towards the services sector. There are also Chinese government restrictions that will have a large impact in the second half. The government has ordered petrochemical plant production curbs during August to September ahead of the G20 summit in Hangzhou first week of September, to ensure clean air. The closures will affect butadiene, PP, PE, vinyls, and acetic acid plants in the area. Meanwhile, China's official Purchasing Managers' Index was reported at 50.1 in May, unchanged compared with April, reflecting the effect supportive measures enacted by the government earlier in the year. Early June indications suggest continued challenges for the manufacturing sector, with Minxin's June manufacturing PMI declining to a four-month low of 43.2 compared with 45.8 in May. The index surveys 4,000 small enterprises, in contrast to the official PMI, which tracks large listed companies and state-owned enterprises — who are often recipients of government support — sources said. While the ethylene market is likely to remain stable due to relatively tight supply and firm spot demand from downstream styrene monomer, propylene and butadiene are both expected to experience a weaker second half due to increasing supply in the former, and weak downstream demand in the later. Firm methanol demand in the first half was driven by profitable MTO plants, but may weaken in the second half as CTO plants with better feedstock competitiveness start up in Q4 and erode MTO profitability. Downstream polyolefins markets — polyethylene and polypropylene — will firm in Q3 due to peak turnaround season before new supply from new startups in Q4 weaken prices. The vinyls market is set for a late summer rebound, driven by Indian demand and tight supply, a rare bright spot amid a relatively gloomy market. MEG, acetic acid, and PET will likely remain weak in the second half as low demand season and ample supply weigh on the markets.

— *Yi-Jeng Huang, yi.jeng.huang@spglobal.com*

OLEFINS

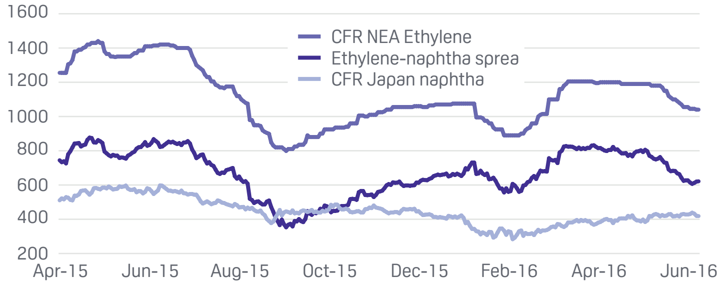
ASIAN ETHYLENE MARKET TO REMAIN STABLE

The Asian ethylene market will likely remain stable in the second half of this year, supported by tight supplies as well as healthy spot demand especially from styrene monomer sector, according to market sources.

Overall in the first half of the year, the market was largely bullish, with tight supplies triggered by steam cracker turnaround season in the second quarter of this year.

Six steam crackers with a combined ethylene production capacity of 3.683 million mt/year — or around 19% of the total production capacity — were shut down during H1 for annual maintenance

NAPHTHA - ETHYLENE SPREAD SURGE TO $832/mt APRIL 5, A 10 MONTH HIGH ($/mt)



Source: Platts

work, according to Platts data. As of January 1 this year, there were 29 steam crackers in South Korea, Japan and Taiwan with a total ethylene production capacity of 19.15 million mt/year.

On the demand side, spot ethylene demand from the styrene monomer sector also boosted the Asian ethylene market. In addition, Japan turned an active buyer after Asahi Kasei shut its 470,000 mt/year steam cracker in Mizushima permanently in February this year.

According to Trade Statistics of Japan, Japan imported 35,196 mt of ethylene in January-April, against nothing recorded in the same period a year earlier.

As a result, the CFR Northeast Asia ethylene price benchmark hit $1,205/mt on March 17, the highest level since July 13, 2015, when the price was assessed at $1,230/mt.

The spread between ethylene and naphtha feedstock climbed to $832/mt on April 5, the highest level since June 30, 2015 when the spread was calculated at $842.50/mt.

The Asian ethylene market started to come down from May, as strength in Asia stimulated arbitrage cargo movements from the Americas, Europe and the Middle East to Asia. According to shipping reports, around 68,700 mt of deepsea cargoes have been loaded for May and June from Saudi Arabia, Europe and the US.

In addition, steam cracker operations in Asia are seen normalizing in July as the steam cracker turnaround season finishes. Shell also plans to restart its troubled 960,000 mt/year steam cracker in Singapore in July.

As of June 13, the CFR NEA ethylene price was assessed at $1,040/mt, the lowest level since March 3 this year then the price was assessed at $1,015/mt.

But the weakness is seen as temporary as fresh spot demand has started to emerge from the styrene monomer sector from the middle of June.

According to Platts data, styrene monomer producers are still able to make a profit of around $40-50/mt based on the current spot prices. Asian styrene monomer margins fell into negative territory briefly in the middle of May, at minus $4.1/mt on May 13, Platts data shows.

© 2016 S&P Global Platts, a division of S&P Global. All rights reserved.

Some market sources said styrene monomer producers, especially in China, started seeking spot ethylene cargoes again in June, as bullish crude oil market again started to push up the Asian styrene market.

Regional spot ethylene supplies would likely turn tight again as another round of steam cracker turnarounds are due to kick off from August. In Taiwan, Formosa Petrochemical plans to shut its 1.03 million mt/year No. 2 naphtha-fed steam cracker from August 1 to September 22 for an annual maintenance.

In Korea, SK plans to shut its 660,000 mt/year steam cracker in Ulsan from the middle of September for one month, while in Japan, JX Nippon Oil and Energy will shut its 404,000 mt/year steam cracker in Kawasaki from late July for an annual maintenance to September.

— Fumiko Dobashi, fumiko.dobashi@spglobal.com; Edited by Alisdair Bowles, alisdair.bowles@spglobal.com

PROPYLENE OVERSUPPLY IN ASIA TO PERSIST INTO H2 2016

The Asian propylene market is likely to remain under constant supply pressure in the second half of this year, with periodic support from plant turnarounds, similar to the situation seen in the first half. Demand is expected to be mixed across different consuming regions.

In H1 2016, the propylene market experienced robust supply, on the back of some new plant start-ups last year, including Hyosung Corporation's 300,000 mt/year propane dehydrogenation plant in Ulsan, South Korea.

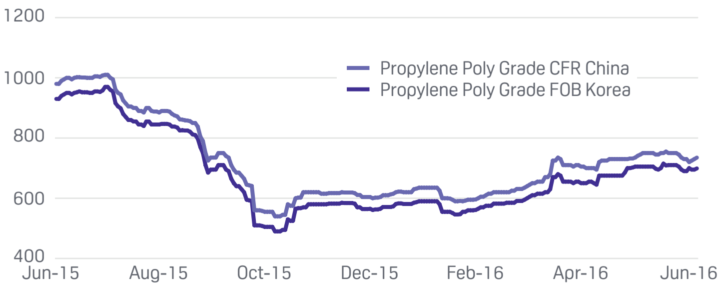
But, the market still experienced bouts of tightness with turnarounds, such as at Lotte Chemical's naphtha-fed steam cracker in Yeosu from April to May. This pattern is expected to continue in H2 2016.

Turnarounds to prop up oversupplied market

Supply from June onwards is broadly expected to be less tight with a recent plant start-up, and as some plants return from turnarounds.

SK Advanced started commercial operations at its new PDH at Ulsan in May, with a capacity of 600,000 mt/year of propylene. YNCC's 140,000 mt/year olefins converter unit restarted May 30, while Hyosung Corp. ended a turnaround at its 300,000 mt/year No. 2 PDH plant at Ulsan late May. In early June, another major South Korean producer, Korea Petrochemical Industry Co., restarted its 100,000 mt/year OCU at Ulsan at 40%-50% of capacity.

PROPYLENE PRICE ON DOWNWARD TREND ($/mt)



Source: Platts

However, from July to December, five steam crackers, two fluid catalytic crackers and one OCU will be shut for maintenance. In South Korea, SK Energy plans to shut its No. 2 steam cracker and No. 2 FCC in September and November respectively, for a month. The cracker can produce 350,000 mt/year of propylene and the FCC can make 350,000 mt/year of propylene.

In Japan, Idemitsu Kosan will shut its Hokkaido FCC for a 46-day turnaround on June 2. The unit can make 60,000 mt/year of propylene. JX Nippon Oil plans to shut its naphtha-fed steam cracker and OCU around the end of July, and the turnaround is estimated to take 60 days.

In Taiwan, CPC plans to shut its No. 4 naphtha-fed steam cracker at Linyuan, which can produce 193,000 mt/year of propylene, on December 12 for maintenance.

Demand situation mixed across countries

Market participants expect demand growth to continue in H2 2016 in South Korea, as domestic downstream demand expands. Polypropylene capacity in South Korea is projected to be higher in the second half, meeting increased demand requirements.

Downstream acetone production is also seeing expansions. South Korea's Kumho P&B Chemicals started commercial production at its new No. 4 solvents plant at Yeosu mid-May. As such, industry sources expressed concern over whether South Korean propylene production can keep up with the burgeoning local demand, and yet still support the export market.

Unlike in South Korea, China's demand for imported propylene has been easing, as export demand for China-made goods decrease, industry sources said. Local consumption of propylene fell in tandem with this trend. PP, which takes up 60% of propylene production, is expected to face sluggish growth in China throughout H2 2016.

Other downstream products, such as acetone, in China appear to have weak to stable demand, as domestic prices soften owing to new capacities.

Therefore, market participants felt that propylene demand in China could decline during in the second half. Supply issues that plagued Chinese plants in H1 2016 are also expected to reduce. Apart from turnarounds in H1, technical issues with key plants in China affected the reliability of local supply. From June, industry sources felt that these technical problems are being resolved progressively.

Meanwhile, demand in Taiwan is expected to be stable for the rest of 2016, after experiencing slow demand growth in the first half. Market sources attributed this to sluggish downstream demand in products such as polypropylene and phenol. Additionally, supply is expected to increase.

— Sunitha Katna, sunitha.katna@spglobal.com, Clement Choo, clement.choo@spglobal.com; Edited by Geetha Narayanasamy, geetha.narayanasamy@spglobal.com

© 2016 S&P Global Platts, a division of S&P Global. All rights reserved.

ASIAN BUTADIENE FACES DOWNWARD PRESSURE IN EARLY H2 BEFORE FIRMING

Asian butadiene markets are expected to face downward pressure from weak downstream derivative markets in the early part of H2 2016, followed by upward pressure due to a slew of scheduled turnarounds and rate cuts in late Q3 and early Q4.

Towards the end of H1, prices fell below $1,000/mt CFR Northeast Asia under the weight of weak demand and ample supply.

A good part of the supply came from a large volume of European and US origin cargoes arriving in Asia after an arbitrage window from Europe opened in February.

The EU exported 101,420 mt of butadiene in Q1, most of it to Asia, more than three times the volume in Q1 2015, according to Eurostat data.

As a result, several end-users in South Korea and Taiwan said they had sufficient butadiene cargoes to sustain them through to July.

A similar situation emerged in the US, resulting in concerns that Asia and the US will have to compete for European butadiene for July.

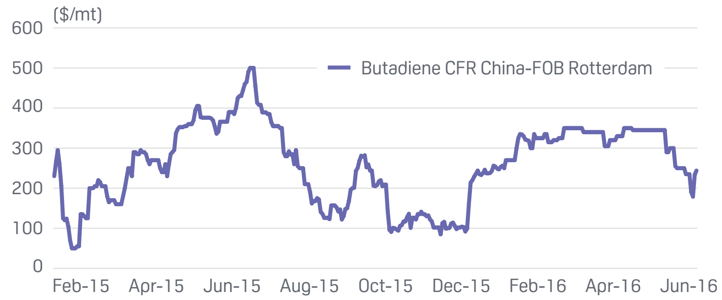
“People have enough product for June, and they will make do until July gets here,” a trader source said, adding the Europe-US arbitrage looks open on paper, but there was no spot activity due due to the lack of demand in the US.

One of the factors that opened the Europe-Asia arbitrage in H1 came from curtailed Asian production from November 2015 when Shell Chemicals shut its steam cracker at Pulau Bukom, Singapore. The oil major declared a force majeure on production from its 186,000 mt/year butadiene extraction unit as a result of the shutdown.

Shell Chemicals will now play a part in pushing prices lower as market sources expect its cracker and butadiene unit to resume production in July.

In May, Shell Chemicals confirmed it was repairing external corrosion to parts of its ethylene cracker complex at Pulau Bukom before it restarts.

ASIA-EUROPE ARBITRAGE OPENS EARLIER IN 2016 VERSUS 2015



Source: Platts

Also late May, Indonesia’s Chandra Asri stabilized operations at its sole naphtha-fed steam cracker at Cilegon, with production runs hovering at close to 100% of capacity.

The Cilegon cracker was shut September 25-December 25, 2015, for a maintenance and debottlenecking program and was plagued by short-term outages when it restarted, which kept runs at 50-80% over January to May.

The cracker supplies crude C4 to a 100,000 mt/year butadiene extraction unit run by Petrokimia Butadiene Indonesia, a wholly owned subsidiary of Chandra Asri. As such, the unit’s runs are tied to the operating rate of the cracker. Due to the higher runs, Chandra had surplus cargoes for June, which market sources said were sold early June on a formula basis.

Other signs of a potentially weaker market have emerged from China’s butadiene imports, which fell 54.3% to 13,170 mt in April from 28,822 mt in March, and were down 54.5% from 28,925 mt in April 2015.

Domestic prices in East China have fallen as demand weakened from early-May highs of Yuan 9,200/mt, or $1,182/mt on an import parity basis; China Petroleum and Chemical Corp. or Sinopec had cut prices by 18.5% to Yuan 7,500/mt by early June.

Turnarounds, run cuts in mid-H2

Prices are expected to find support in turnarounds scheduled for late Q3. Taiwan’s Formosa Petrochemical Corp. is expected to shut its No. 2 cracker August 1-September 22, which can make 162,000 mt/year of butadiene.

Japan’s JX Nippon is expected to shut its cracker at Kawasaki over August-September, which feeds a 70,000 mt/year butadiene extraction unit.

South Korea’s SK Energy will shut its Ulsan cracker September-October, which supplies a 100,000 mt/year butadiene unit.

The Northeast Asian turnaround schedule will coincide with reduced runs in East China as the Chinese government has ordered petrochemical plants in Shanghai, Hangzhou and Ningbo to curb production over August-September ahead of the G20 Summit in Hangzhou over September 4-5.

The affected plants include butadiene extraction units such as Shanghai Petrochemical’s 120,000 mt/year unit, Shanghai Secco’s two 90,000 mt/year units and Sinopec Zhenhai Refining and Chemical Co.’s 165,000 mt/year unit.

A producer said Chinese units will likely be operating at 50-60% of capacity, and the impact could be limited as downstream derivative plants making styrene-butadiene rubber and acrylonitrile-butadiene styrene in the same locations are also affected by the curbs.

Also early August, Sinopec Sabic Tianjin Petrochemical is expected to shut its 200,000 mt/year butadiene extraction unit at Tianjin.

© 2016 S&P Global Platts, a division of S&P Global. All rights reserved.

Throughout 2016, end-users will be looking for new sources of butadiene, with some opting to buy crude C4 instead due to the volatility in spot butadiene prices.

— Clement Choo, clement.choo@spglobal.com; Edited by Wendy Wells, wendy.wells@spglobal.com

ASIA METHANOL FACES HEADWINDS ON DOWNSTREAM WEAKNESS

Asian methanol is expected to come under downward price pressure in the second half this year, as demand drivers slow.

China, which is Asia's largest methanol consumer, is expected to face headwinds as one of its key pillars of support in the first half this year the downstream polyolefins sector weakens.

Methanol-to-olefins plants', which use methanol as a feedstock to produce polyolefins, profit margins peaked at $201/mt in April after starting the year at $62/mt. Since then, margins have come off to around $58/mt as of June 1, according to S&P Global Platts data. The turbulent swings in MTO margins closely mirror polypropylene prices, reflecting the product's influence on margins, over its feedstock. The MTO margin is calculated using the Platts CFR FE Asia PP raffia assessment, less the Platts CFR China methanol multiplied by three for the conversion factor, plus $150/mt to account for fixed costs.

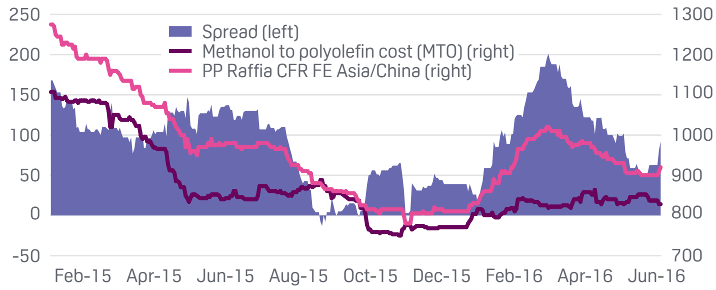
The lowered margins for MTO plants are likely here to stay, due to a series of issues. More coal-to-olefin PP capacity additions in the fourth quarter are expected to lengthen PP supply, dampening prices. These CTO plants are the currently the lowest cost producer of PP in China as of June, a PP end-user notes.

Already, about 650,000 mt/year of new PP production capacities have started up this year, out of the 3 million mt/year expected in 2016. MTOs may already be feeling the pinch, a methanol trader notes. "Current [Chinese] MTO operating rate is around 60%," he said.

Apart from narrowing profit margins for MTO producers, the weaker outlook for PP is also seeing the delay of new MTO plant start-ups, which has resulted in lower-than-expected demand for methanol in the second half.

Fund Energy's 300,000 mt/year MTO plant at Changzhou will be delayed from mid- to Q4 2016, making it the only MTO plant

MTO MARGINS REACHED YTD PEAK OF $201/MT IN APRIL BEFORE TRENDING LOWER JUNE ($/mt)



Source: Platts

expected to be completed in 2016, sources said. Shenghong Jiangsu Sier Bang Petrochemical's 200,000 mt/year plant will be delayed from the second half of 2016 to Q1 2017, and Jiutai Energy's 350,000 mt/year plant at Ordos will be delayed from H2 2016 to 2017.

Weak demand to hurt Q4 China imports

Going forward, China is expected to import less methanol after a bumper Q1 when imports surged 41% on year to 1.7 million mt.

The upward trend in China's methanol imports looks set to continue or even increase in Q3, but may be blunted by weaker demand from MTO in Q4 if profits erode due to CTO competition, industry sources said.

The drop is expected to hurt main producers in the Americas and in the Middle East, which are unlikely to see much support from Asian markets outside China.

Malaysia and Indonesia will undergo a seasonal slowdown in construction during Ramadan in Malaysia and Indonesia and the monsoon rains in India during June and July, industry sources said.

"In Indonesia, demand from formaldehyde [sector] will be slower for at least June and July due to the [Ramadan] fasting period [and resulting] slowdown in construction," an end-user said, estimating demand would shrink by 10-20% in Q3 compared with Q2.

— Yi-Jeng Huang, yi.jeng.huang@spglobal.com; Edited by Jonathan Dart, jonathan.dart@spglobal.com

POLYMERS

ASIA PE TO FIRM IN Q3, BUT WEAK FUNDAMENTALS PREVAIL

Asia's polyethylene market is likely to find support in the third quarter of this year from heavy turnarounds and China's curb on East China petrochemical plants' production, only to ease back down towards the end of Q4 as the market remains fundamentally weak, industry sources said this week.

Short-term upside to the market this second half of the year will likely come from an increase in buying from import-dependent China, as the government has ordered petrochemical plants in Shanghai, Hangzhou and Ningbo to curb production over August-September ahead of the G20 Summit in Hangzhou over September 4-5.

Runs at Sinopec Zhenhai Refining and Chemical's 450,000 mt/year linear low density polyethylene plant for one, is likely to be reduced under the directive.

The curb comes amid seasonal increase in PE demand during September as manufacturing activities gear up to meet Christmas demand, as well as turnarounds elsewhere in the region, sources said.

© 2016 S&P Global Platts, a division of S&P Global. All rights reserved.

Chevron Phillips Singapore Chemicals will take a 200,000 mt/year high density polyethylene plant on Jurong Island offline for around 40 days' maintenance from July 14 to August 20 in line with a cut in ethylene feedstock supply from Petrochemical Corporation of Singapore due to a steam cracker turnaround.

Saudi Polymers plans to shut its Jubail polymers plant, which includes two reactors with total 1.1 million mt/year of PE capacity of mainly high-density grade, in October for a 30-45 day turnaround.

In South Korea, Korea Nexlene Company will shut its 230,000 mt/year octene-based metallocene LLDPE plant at Ulsan in October for a month-long turnaround.

SK Global Chemical will shut its 210,000 mt/year No. 1 LLDPE for 40 days from September 17 to October 26, and its 190,000 mt/year No. 2 high density/LLDPE swing unit for 26 days from September 19 to October 14 for maintenance.

More structural supply

But the expected uptrend is unlikely to be sustained through till the end of this year, as new capacities — mostly in China — start up towards the end of 2016 amid the typical surge in US supply to avoid the year-end inventory tax, and as more cargoes from Russia and Central Asia find their way to Asia, sources said.

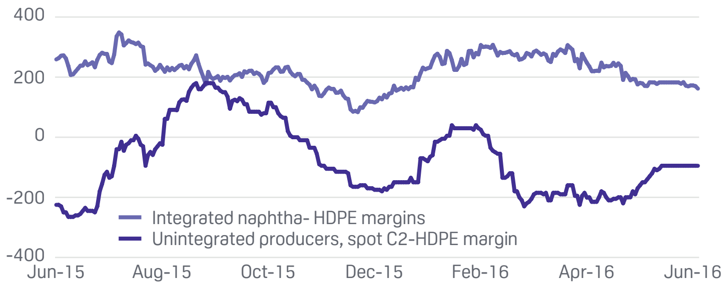
The weaker Russian ruble against the dollar this year has rendered Russian exports cheaper, leading to higher imports by China, traders said. And with the dollar expected to strengthen against the ruble this year, the pace of Russian exports to China seen so far in 2016 is likely to be sustained, they added.

China imported 11,485 mt of PE from Russia over January-April, surging 375% from the same period last year, latest Chinese customs data showed.

Uzbekistan had also begun exports to China this year, following the startup of Uz-Kor Gas Chemical's new 387,000 mt/year PE plant, where construction was completed in late 2015.

The influx of new supply from Russia and Central Asia, India, Iran, as well as new plants in China, which total around 7 million mt/year, may result in a price war to gain market share in China, depressing PE prices, traders said.

INTEGRATED PRODUCERS ENJOY STEADY NAPHTHA TO HDPE MARGINS WHILE SPOT C3-HDPE MARGINS REMAIN VOLATILE ($/mt)



Source: Platts

Many traders confirmed they have been offering Uzbekistan material at a discount of $50/mt to other Middle Eastern grades. Confirmation from Uz-Kor Gas Chemical could not be sought.

But China itself is becoming increasingly self-sufficient. The country's overall PE deficit was expected to narrow to 8 million mt by the end of 2016, from 9.8 million mt in 2015, once new coal-to-polyolefin plants come online, sources said.

As already, the slowdown in Asia's economic growth has curbed the region's appetite for PE this year.PE demand has also slowed from greater use of recycled resin as a substitute for virgin material, as prices for the latter rose after oil prices rebounded from February, sources said.

Chinese traders said converters have been adding a proportion of recycled PE resin into the resin mix to lower production costs.

"This probably belongs to some plastic converters whose finished products do not have high standards and are not exported to Europe or US," a Japanese trader said.

Price volatility

On a side note, Asian PE prices are going to be more volatile because of low cargo buffer and the likelihood of a rise in Iranian supply post-sanctions, most sources said.

In view of risk adversity, buyers are unwilling to hold buffer stocks and will purchase on a just-in-time basis, sources said.

The market will also continue to see price volatility from China's monetary easing policies, currency fluctuations against the US dollar and traded volumes in LLDPE futures on the Dalian Commodity Exchange, sources said.

Traders said PE trading is tightly linked to China's monetary supply and policies, and are watching to see if a monetary stimulus would be repeated.

On February 16, Chinese authorities loosened controls on brokerages' lending to investors. This caused weekly LLDPE prices to surge $105/mt from February 16 to $1,180/mt CFR Far East Asia on March 31, Platts data showed.

— Heng Hui, hui.heng@spglobal.com; Edited by Irene Tang, irene.tang@spglobal.com

SUMMER TURNAROUNDS TO SUPPORT PP PRICES, BUT Q4 START-UPS TO OUTPACE DEMAND

Asia's polypropylene market is expected to be firm until October due to summer turnarounds, but weaken in Q4 as new capacity additions outpace projected demand growth, industry sources said.

Domestic China PP raffia prices surged to a year-to-date high of Yuan 7,500/mt on April 1, about $931/mt on an import parity basis, as spring turnarounds — including at Shenhua Baotou's

© 2016 S&P Global Platts, a division of S&P Global. All rights reserved.

300,000 mt/year coal-to-olefin linked PP plant, Sinopec Wuhan's 400,000 mt/year PP plant and Zhangjiagang Yangtze River Petrochemical's 400,000 mt/year PP plant in Jiangsu — tightened cargo supply in April.

Turnaround fears had abated in May due to new plant start-ups, but flared again in June as low spot inventories in the PP supply chain caused the China domestic PP raffia price to surge Yuan 250/mt on the week to Yuan 7,300/mt on June 22, rapidly approaching April highs.

A heavy summer turnaround from June to August will cause PP production losses of up to 400,000 mt, but will ease in October as full production resumes, a trader predicted.

The main summer turnarounds include Sinopec's Yanshan plant with a nameplate capacity of 410,000 mt/year to be shut May 28 for 40 days or more, Pucheng Clean Energy Chemical's 400,000 mt/year Weinan plant to be shut in July for a 30-day turnaround, and Formosa Ningbo's 450,000 mt/year plant to be shut August for an estimated 40-50 days, he added.

In addition, three PP plants will be shut for at least 14 days in August-September on orders from the Shanghai Environmental Protection Bureau, ahead of the September G20 summit in Hangzhou, according to the bureau. Affected plants include Shanghai Petrochemical's two lines with a total capacity of 200,000 mt/year, Sinopec Sabic Tianjin Petrochemical's 450,000 mt/year PP plant and Tianjin United's 60,000 mt/year plant.

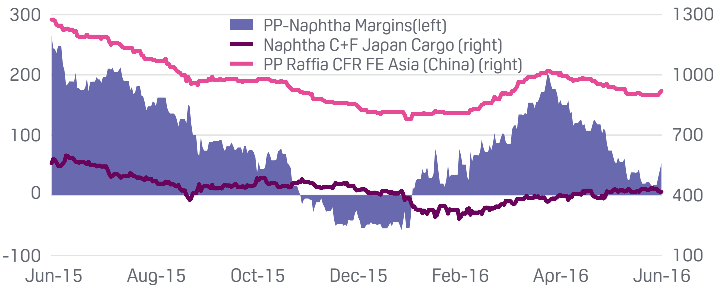
Q4 China start-ups expected to outpace demand

Overall, however, China is expected to add slightly less than 3 million mt/year of new PP capacity, raising its total PP capacity to about 21 million mt/year by the end of 2016, an estimated 17% year-on-year capacity growth, with the majority of the start-ups expected in Q4, according to industry sources.

Demand, is expected to grow significantly slower at 5.4% year on year to 20.3 million mt in 2016, according to Platts Petrochemical Analytics.

Two plants have already come on stream in April, including Fujian Meide Petrochemical's 350,000 mt/year propane dehydrogenation plant, and China Coal Mengda New Energy's 300,000 mt/year CTO plant, both of which ramped up to 80% operating rates by May, according to sources.

INTEGRATED PP PLANT MARGINS NARROW IN MAY AS NAPHTHA FIRMS, PLANT TURNAROUND FEARS ABATE ($/mt)



Source: Platts

CHINA POLYPROPYLENE PLANT STARTUP SCHEDULE (as of June)

Plant Name	Type	Scheduled	Capacity (mt/year)
H1 2016			
Fujian Meide Petrochemical	PDH	Apr-16	350,000
China Coal Mengda New Energy PP, Ordos	CTO	Apr-16	300,000
Total			**650,000**
H2 2016			
Shenhua Xinjiang Coal Liquefaction	CTO	Jul-16	300,000
Ningbo Fortune PP, Ningbo	PDH	Mid-2016	400,000
Shenhua Group PP 5, Ningdong	CTO	Oct-16	300,000
Shenhua Group PP 6, Ningdong	CTO	Oct-16	300,000
SINOPEC Zhong Tian He Chuang Energy PP 1, Ordos	CTO	Q4-2016	350,000
SINOPEC Zhong Tian He Chuang Energy PP 2, Ordos	CTO	Q4-2016	350,000
Fund Energy PP, Changzhou	MTO	End-2016	300,000
Total			**2,300,000**

Source: Industry Sources

Another 2.3 million mt/year in new PP capacity is expected come online in the second half of 2016. The Shenhua Group will be starting a major CTO plant, the 300,000 mt/year Shenhua Xinjiang plant, in July, and completing a major 600,000 mt/year expansion at its Ningdong plant in October, an end-user said.

The additional capacity starting in October will increase supply and pressure domestic China prices in Q4, fueling export pressure for PP homopolymers, he predicted.

China pp exports to increase in q4

China will export more cargoes to Southeast Asia as the summer turnaround subsides and new supply from start-ups hit the domestic market in Q4, traders said. Already a significant volume of cargoes have been exported earlier in the year when the export window was open.

The last time the export window opened was on April 6, when the spread between PP raffia CFR SE Asia and the notional FOB China price widened into positive territory at $8/mt, hitting a high of $78/mt on May 9, before narrowing to minus $2/mt on May 31, according to S&P Global Platts data. The spread has been negative since, shutting the export window to Southeast Asia for now, a Chinese trader said. Traders agreed that the window opens if the CFR SE Asia- notional FOB China price spread exceeds typical freight costs from east China to Vietnam of about $10-$15/mt.

China's customs data showed January to May PP homopolymer exports rising 59% year on year to more than 107,000 mt, much of it directed towards Southeast Asia. Exports to Vietnam surged 114% to more than 34,000 mt, year on year, during January-May, while exports to Thailand increased 31% to 5,200 mt over the same period.

As China domestic PP production increases in the future, there will be a growing need for international sales channels, a major trading company said.

A Middle East-based distributor noted as early as April that a major Chinese company has been offering competitively priced, half-year fixed contracts, to build up the "dependability" factor of Chinese cargoes this year, whereas Chinese cargoes in prior years tended to be sporadic and opportunistic.

— *Yi-Jeng Huang, yi.jeng.huang@spglobal.com; Edited by Geetha Narayanasamy, geetha.narayanasamy@spglobal.com*

© 2016 S&P Global Platts, a division of S&P Global. All rights reserved.

ASIAN VINYLS MARKET SET TO REBOUND FROM LATE Q3

The Asian vinyls market, which was strong for much of the first half despite Chinese weakness, is set to rebound in July or August, driven by a return of Indian buying appetite as well as tight supply, market sources said.

"There are some PVC plant turnarounds in August, which will tighten the market again," a trading source said.

In addition, buyers in India would likely return around August after the monsoon season ends, sources said.

Slightly further out, operating rates at vinyls plants in China will likely fall during a G20 meeting there in September.

Hanwha Chemical, however, has been in talks with local authorities about not having stop its vinyls plants in Ningbo completely during the event, sources close to the company said.

The company wants to run the plants at a minimum 50% of capacity. Hanwha Chemical has a 500,000 mt/year EDC unit in Ningbo, and a 300,000 mt/year VCM plant and 300,000 mt/year PVC unit.

EDC is a key feedstock to produce VCM, which is further processed to PVC.

Strong H1

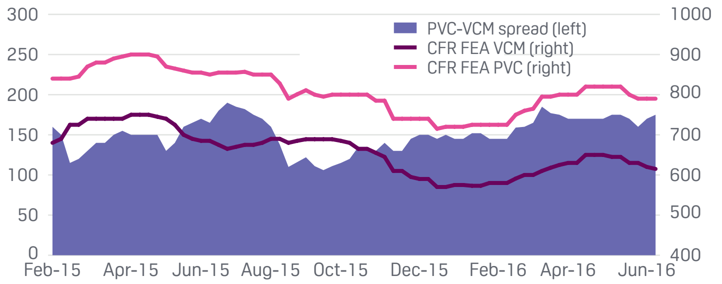
The vinyls market was bullish in the first half of the year, supported by strong PVC demand in India and despite weak demand in China whose PVC imports from January to April fell 25% year on year to 208,513 mt.

The CFR India PVC price hit $890/mt on April 20, the highest since August 12 last year when the price was assessed at $895/mt, S&P Global Platts data showed. Meanwhile, the CFR China PVC price benchmark hit $820/mt on April 17, the highest level since August 16, when it was at $828/mt.

In addition, fresh PVC demand emerged in Australia, after Australian Vinyls shut its 130,000 mt/year PVC plant earlier this year. Market sources said around 10,000 mt of PVC was now being exported to Australia from Taiwan.

In line with the strong PVC market, the Asian VCM market was also in a rising trend. The CFR Far East Asia VCM price benchmark rose to $650/mt on April 17, the highest since November 1 when it was assessed at $655/mt.

CFR CHINA PVC HIT $820/MT APRIL 17, A 9 MONTH HIGH ($/mt)



Source: Platts

VCM supplies were also reported to be tight in the H1 this year as Indonesia's Asahimas kept unstable operations at its new 400,000 mt/year VCM plant in Anyer.

The CFR Far East Asia ethylene dichloride price benchmark also spiked, hitting an eight-month high of $280/mt on April 7. High freight rates from the US to Asia also kept the Asian EDC market firm.

"EDC freight rates were quite high in H1 as active styrene monomer exports from the US to Asia limited space to export EDC," said a trading source.

US is a key exporter to Asia. According to the Chinese Customs, US EDC materials account around 74% of its total imports to China in April.

Weakness started to be seen in May in the Asian vinyls market as India's demand slowly started to diminish due to the monsoon season.

— Fumiko Dobashi, fumiko.dobashi@spglobal.com; Edited by Dan Lalor, daniel.lalor@spglobal.com

AA FUNDAMENTALS LIKELY TO REMAIN BEARISH IN H2 2016

The Asian acetic acid market will likely remain under pressure during the second half of 2016 due to ample supply amid lackluster downstream demand, industry sources said.

CFR Southeast Asia acetic acid was assessed at $310/mt on June 9, down 6.06% from January 7, while CFR South Asia was flat over the same period to be assessed at $300/mt. S&P Global Platts assesses acetic acid prices on a weekly basis.

Short-term supply tightness

"AA prices will continue to be supported by limited availability during the turnaround period, but the situation will become challenging in July when the major suppliers return to normal operations," a producer in China said.

Celanese Corporation plans to shut its 1.2 million mt/year AA plant in Nanjing, China, for two to three weeks at the end of June for scheduled maintenance. Jiangsu Sopo plans to shut its 1.2 million mt/year AA plant in China's eastern Jiangsu province in late June for 25 days of maintenance, a source close to the company said.

Shanghai Wujing was also heard to have shut its 500,000 mt/year AA plant in Shanghai for 15-20 days from May 28 for maintenance. Yankuang Guotai shut its 1 million mt/year AA plant at Yankuang, in eastern Shandong province, late May for 15 days of maintenance. Despite the ongoing and upcoming turnarounds, inventories in China were still at normal levels, industry sources said this week.

© 2016 S&P Global Platts, a division of S&P Global. All rights reserved.

Bearish demand fundamentals

Softer demand in some parts of Asia will also likely cap prices, sources said. A major producer in China noted that "August-September would be a particularly difficult period" for AA as many purified terephthalic acid, or PTA, plants in Ningbo will be required to shut operations or restrict operations due to the G20 summit.

The summit will be held at Hangzhou, in eastern China's Zhejiang province, over September 4-5, and petrochemical plants in surrounding cities have been asked to reduce production in order to ensure improved air quality during the summit.

Based on the preliminary proposal, Zhejiang Yisheng Petrochemical has been asked to stop all production of PTA, amounting to a total capacity of 5.5 million mt/year, Platts previously reported. Formosa Chemicals & Fibre Corporation and Ningbo Mitsubishi Chemical Co. are also expected to have to cut all production of PTA, with capacity of 1.2 million mt/year and 600,000 mt/year, respectively. PTA, is among the fastest growing applications within the AA market.

Meanwhile, India's downstream PTA demand will likely pick-up as Reliance Industries ramps up production at its PTA plants at Dahej, Gujarat. Reliance shut its No. 1 and No. 2 PTA plants, which have a production capacity of 1.12 million mt/year each, in May, due to an increase in water salinity.

JBF Industries will likely start production at its new 1.25 million mt/year PTA plant in the Mangalore Special Economic Zone in India in the second half of this year, industry sources said.

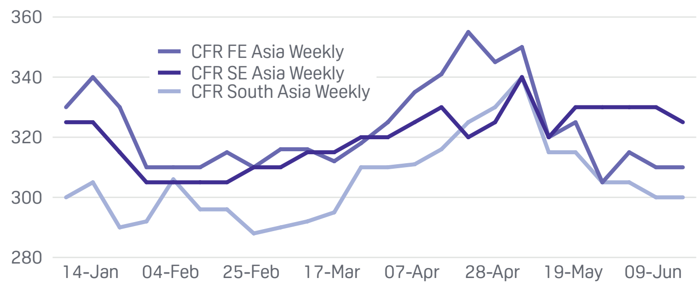
However, any potential increase in demand will likely be met by ample AA inventories in the domestic market as well as sufficient availability from China and Southeast Asia, sources said.

"Exports of ethyl acetate — downstream of AA— haven't picked up," a buyer in India said, noting that AA prices in India could possibly see resistance at $315/mt CFR for the remainder of the year. "Until my plants are running firmly, I will not look at more supplies," he said.

VAM seen softer

With AA languishing, VAM is also likely to move in line during the second half of this year, industry sources said. The CFR SEA VAM price was assessed at $835/mt on June 9, down 10.22%

ACETIC ACID PRICES TO REMAIN UNDER DOWNWARD PRESSURE ON BEARISH FUNDAMENTALS ($/mt)



Source: Platts

from the assessment on January 7, 2016, while the CFR South Asia marker plummeted 12.53% over the same period to be assessed at $810/mt on June 9, Platts data showed.

Market participants said Shell's repair plans at its Singapore complex could be completed by end-July and that VAM supply from Dairen would subsequently increase. Shell had declared force majeure on the supply of ethylene and propylene from its steam cracker at Pulau Bukom in Singapore in December 2015. The steam cracker has a production capacity of 960,000 mt/year of ethylene, 540,000 mt/year of propylene, 186,000 mt/year of butadiene and 276,000 mt/year of benzene.

In India, supply from Saudi International Petrochemical, or Sipchem, was heard to be ample. The upcoming monsoon season will also likely weaken demand for VAM in India, a buyer in India said.

Other factors

Signals of continued weakness in the Chinese economy will also likely affect the outlook for AA, sources said. China's official May manufacturing purchasing managers' index released on June 1 stood at 50.1, while the privately conducted Caixin survey saw its PMI reading drop for the fourth consecutive month to 49.2 in May.

AA feedstock methanol will likely remain firm during the remainder of the year due to new methanol-to-olefins plant start-ups in China, sources said. But this was less likely to prop AA prices due to the supply overhang situation in the acetic acid market, they said.

CFR China methanol was assessed at $229/mt on June 9 compared with $206/mt CFR on January 7.

— *Surabhi Sahu, surabhi.sahu@spglobal.com; Edited by Geetha Narayanasamy, geetha.narayanasamy@spglobal.com*

ASIAN MEG RECOVERY MIXED AMID BULLISH INDIAN GROWTH, LACKLUSTER CHINA ECONOMY

Most Asian polyester producers are cautious about a recovery in feedstock monoethylene glycol prices in second-half 2016, as the earlier forecast for a strong price recovery fizzled out by March.

"March through May typically sees high seasonal demand for both polyester and PET resin. [But this year, despite] bullish crude prices — which ran up from a low of $28/b to nearly $50/b in end May — [there has been no] significant recovery in MEG," said a global MEG producer.

"Polyester demand from India has remained bullish, tracking Indian GDP growth which had accelerated in the first quarter to 7.9%, exceeding the 7.5% annual growth forecast by the International Monetary Fund for 2016," he added.

"In terms of polyester, our initial forecast was for global growth to be likely around 5% while we anticipated Indian polyester

© 2016 S&P Global Platts, a division of S&P Global. All rights reserved.

S&P Global
Platts

GLOBAL POLYMER PRICES

Act quickly in today's fast paced plastic and resin marketplace.
Use Platts' impartial polymer price assessments.

Make informed pricing decisions based on Platts' coverage of regional and global polymer markets.

Platts provides you with:

- **Global prices** – more than 200 term and spot polymer assessments for Europe, the Americas and Asia.
- **Deeper coverage** – LDPE, LLDPE, HDPE, PP, PVC, PS, ABS, plus key feedstocks and intermediates.
- **Pricing charts** – depicting historic and current polymer market activity
- **Weekly reports** – global polymer prices, news and market commentary.
- **Access anywhere** – access to Platts' information on your desktop, tablet or smartphone.

5 REASONS TO CHOOSE PLATTS

1. **Impartial and independent**
   We have no vested interest in the market.
2. **Open and transparent**
   Our price discovery process is designed to reflect true market value.
3. **Upstream integration**
   By operating across the energy value chain we have the full picture.
4. **IOSCO compliant**
   We go beyond the required reporting standards.
5. **Global**
   We're connected to every market.

For more information on Platts' price assessments and market insight, visit: **www.platts.com/polymers** demand to grow about 6%-7%. We have revised our outlook for Indian polyester growth to exceed 7% for 2016," he said.

The producer anticipates Indian demand for MEG to pick up in H2 2016, extending the upward momentum seen so far, with Indian MEG imports likely to exceed 1 million mt in 2016, from just under 1 million mt imported in 2015.

For China, market participants were concerned about economic recovery in the country amid reports of weak foreign trade data. In addition, the Chinese government has also refrained from adding fresh stimulus to boost the commodity and stock markets.

"For polyester demand, Chinese imports of MEG have increased since 2014. China imported 8.24 million mt of MEG in 2014 and around 8.77 million mt in 2015. For 2016, we had initially forecast China to import around 8.6 million mt of MEG, if not more, based on IMF forecast of China's GDP growth at 6.3%. But we have revised down our forecast to below 8.6 million mt, based on a likely lower GDP growth rate of below 6.3%," said a Taiwanese producer.

Asian MEG prices were hovering around $580/mt CFR China in early January but managed to recover through February and into early March. MEG prices rose to $662/mt CFR China on February 6, and climbed further to a high of $740/mt CFR China on March 7, but since then had retreated and continued to lose ground through to June, according to S&P Global Platts data.

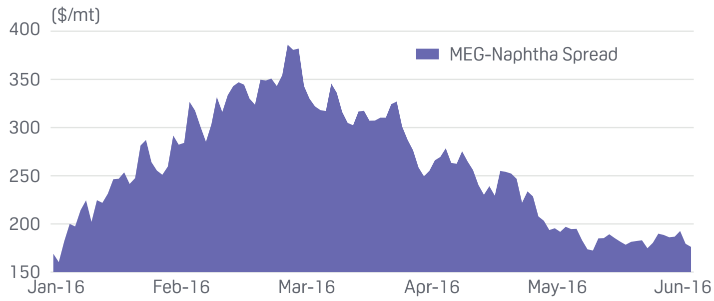
Operating rates across Taiwanese and Chinese polyester and PET resin plants were reported around 80%-90% during the peak season between late February to May, but declined to around 75%-80% for polyester and around 75% for PET resin by early June.

"Asian MEG prices rose [earlier this year], pulled by bullish crude, optimistic market sentiment and higher operating rates across Northeast Asian PET and polyester plants. But the higher prices were not sustainable, and fizzled out by end-March, despite continuing strong crude prices which ran up to touch nearly $50/b in May," said a Japanese trader.

MEG margins will likely remain flat into H2 2016

Asian MEG margins, using ethylene as a base feedstock, improved briefly from late February through to late March

NAPHTHA - MEG MARGINS HIT A HIGH OF OVER $380 ON MARCH 7



Source: Platts

2016, following a weak second-half 2015 when margins had come under pressure from low seasonal demand for PET and polyester and reduced PET and polyester plant operating rates across Northeast Asia.

The MEG production margin is calculated by multiplying the ethylene price with a conversion of 0.6, and adding an estimated $150/mt in production costs.

"With MEG prices reaching a peak of nearly $740/mt CFR China in early March and ethylene contract prices around $890/mt CFR Northeast Asia, ethylene-based MEG producers enjoyed good margins at around $56/mt, albeit briefly, as MEG prices fell consecutively lower, to around $650-$610/mt CFR China while ethylene contract prices rose to $935-$945/mt CFR Northeast Asia, from early April to early June," said a Taiwanese producer.

"However, naphtha-based producers were able to enjoy good spreads [taking the price of MEG minus CFR Japan naphtha price] from January through to early June," he added.

Asian naphtha prices rose from $345/mt CFR Japan in end-January to $396/mt CFR Japan in end-March, while MEG prices rose from $600/mt CFR China in end-January to $700/mt CFR China in end-March, according to Platts data.

Over the same period the MEG/naphtha spread rose from $255/mt to $305/mt.

From early April to early June, Asian naphtha prices rose from $405/mt to $432/mt CFR Japan, while Asian MEG prices fell from $660/mt to $610/mt CFR China, according to Platts data. In this period, the MEG/naphtha spread declined from $255/mt to $178/mt.

"We expect MEG prices to remain flat in second-half 2016 at around $600-$700/mt CFR China, and MEG production margin based on ethylene feedstock to remain narrow or slide into negative. But the MEG/naphtha spread is expected to remain positive within the $150-$250/mt range, based on crude prices at $45-$55/b" said a major producer.

Volatile Chinese MEG futures to influence physical spot prices

Besides demand and supply fundamentals, Asian MEG spot prices have increasingly become dominated by volatile trading on the major Chinese bourses.

"Futures traders have been aggressively short selling paper swaps on the main regional Huaxicun Commodity Exchange, and they also have large monthly volumes of physical contract cargoes which they have sold fairly aggressively. Around 1 million to 1.5 million swaps contracts are traded daily across the Huaxicun Commodity Exchange, Shanghai Futures Exchange and Changjiang Guoji (East China) Exchange," said a Japanese trader.

"There is a lot of liquidity on regional futures exchanges where MEG swaps are traded, and the heavy selling of yuan-denominated swaps often pressurize both physical forward and

© 2016 S&P Global Platts, a division of S&P Global. All rights reserved.

prompt spot prices. It is almost impossible to go against the direction of these heavy weights," added a South Korean trader.

Traders said market sentiment seemed stubbornly entrenched in negative, with most participants expecting flat to weak economic data from China during the second half of the year.

Additionally, as the peak demand season for polyester and PET resin comes to an end in June, most market participants expect the weaker downstream polyester and PET resin markets to drag down feedstock MEG in H2 2016.

"While it may seem that major Chinese futures traders hold sway over spot prices, around 90% of the regional supply of an estimated 24 million mt of MEG are mostly sold on contract basis. Only around 2.5 million mt of physical MEG are traded on the spot market within China," said a major producer.

— *Jennifer Lee, jennifer.lee@spglobal.com; Edited by Haripriya Banerjee, haripriya.banerjee@spglobal.com*

ASIAN PET TO REMAIN UNDER SUPPLY PRESSURE DESPITE SLIGHT DEMAND UPTICK IN H2

The Asian polyethylene terephthalate market is likely to remain weak in the second half of this year as the peak summer demand season is almost over, but some demand support is expected in November though it would not be enough to offset steady production, sources said.

Chinese domestic demand for PET resin and polyester fibers has been bearish for most of 2016 and is expected to remain so for the rest of the year amid weak foreign trade data and concerns about economic recovery.

"China remains hugely oversupplied with both PET and [feedstock] PTA. For the second half of 2016, we have revised our forecast of China's GDP growth rate to below the IMF's original forecast of 6.3%, and for polyester growth rate to below 6%," said a Taiwanese PET producer.

China, with an annual production capacity estimated at around 45 million mt, accounts for about 55% of the global polyester production, 10 million mt of which is PET resin capacity.

Turnarounds, Indian demand seen as supportive

While demand is expected to remain generally weak in the second-half, there will be some support for PET resin and polyester fibers starting late October ahead of the festive periods in Europe, the Middle East, North America as well as parts of Asia, sources said.

Also, India's polyester demand is expected to remain firm, tracking the Indian GDP growth rate, industry sources said.

"In terms of polyester, our initial forecast was for global growth to be likely around 5% while we anticipate Indian polyester demand to grow about 6%-7%. We have [since] revised our outlook for Indian polyester demand growth to exceed 7% for 2016," a producer said.

Turnarounds at China Resource Chemical Holdings are also likely to support Asian PET market, as it will mean 600,000 mt/year of PET capacity going offline.

China Resource Chemical has a 1 million mt/year PET plant at Changzhou and a 300,000 mt/year plant at Zhuhai and plans to take them offline for maintenance in November or December, sources said.

The G-20 summit to be held in China over September 4-5 may also add some relief as it will see many downstream plants shut so as to minimize pollution.

"The temporary shutdown of several PET resin and polyester plants for the G-20 summit will certainly ease pressure on PET prices and aid to stabilizing prices," a major producer said.

The summit will be held in Hangzhou in eastern China's Zhejiang province. But for the rest of Asia — South Korea, Indonesia, Thailand and Malaysia — PET production is expected to remain steady with no major turnarounds planned.

As such with demand support minimal and supply seen to be steady to ample, the second-half of 2016 would remain under pressure.

— *Sunitha Katna, sunitha.katna@spglobal.com, Yi-Jeng Huang, yi.jeng.huang@spglobal.com; Edited by Haripriya Banerjee, haripriya.banerjee@spglobal.com*

S&P Global
Platts

For more information, please visit us online or speak to one of our sales specialists:

www.platts.com | support@platts.com

NORTH AMERICA	EMEA	LATIN AMERICA	ASIA-PACIFIC	RUSSIA
+1-800-PLATTS8 (toll-free) +1-212-904-3070 (direct)	+44-(0)20-7176-6111	+55-11-3371-5755	+65-6530-6430	+7-495-783-4141

© 2016 S&P Global Platts, a division of S&P Global. All rights reserved.