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Argus *Propylene and Derivatives*

Formerly Argus DeWitt Propylene

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HIGHLIGHTS

Americas

- US July propylene contracts increase in a disputed settlement, spot prices fall after contract settlement
- Production outages, both planned and unplanned, continue to constrain propylene supply
- PP supplies are tight as output is curtailed in August and domestic demand remains strong

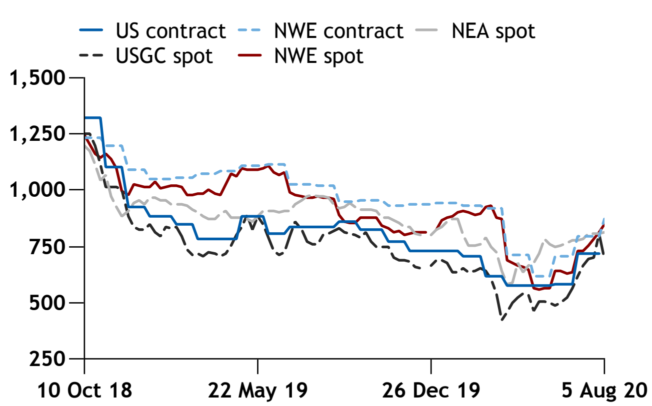
Europe

- Producers seek premiums to MCP for spot supply
- Market balance varies across the region
- August contract price a compromise after rare double settlement
- PP demand remains robust despite poor auto sector

Asia-Pacific

- Asia propylene capacity losses may fall to a year-low in August.
- China Bora LyondellBasell is starting a new 1.1mn t/yr cracker.
- China's PO surged to a two-year high on strong polyether export demand.

World PG propylene prices *$/t*



MARKET SNAPSHOTS

Global prices				$/t
	Timing	Low	High	Mid
US				
Poly grade USGC contract	Jul			717
Poly grade USGC contract	Jun			584
Poly grade USGC contract	May			573
Chemical grade USGC contract	Jul			683
Chemical grade USGC contract	Jun			551
Chemical grade USGC contract	May			540
Poly grade USGC pipeline spot		694	694	694
Refinery grade Mt Belvieu spot		309	369	339
C3 alkylation USGC calc value		591	597	595
PP Homo GP IM del EOR 30 Jul	Jul			1,003
Western Europe				
Poly grade NWE contract	Aug			869
Poly grade NWE cif spot		827	872	850
Chem grade NWE cif spot		803	827	815
PP Homo GP IM NWE del 30 Jul*	Jul			1,334
Asia-Pacific				
Poly grade Taiwan contract	Jun			663
Poly grade Taiwan contract	May			592
Poly grade Taiwan contract	Apr			508
Poly grade SE Asia cfr spot		730	770	750
Poly grade SE Asia fob spot		770	810	790
Poly grade NE Asia cfr spot		790	830	810
Poly grade NE Asia fob spot		740	790	765
Raffia cfr China 30 Jul		910	930	920

**freely negotiated monthly prices*

Acrylonitrile				$/t
	Timing	Low	High	Mid
USGC fob prompt *¢/lb*		37	40	39
China cfr spot		900	980	940

Related feedstocks				
	Delivery	Low	High	Mid
Ethane Mt Belvieu non-LST *¢/USG*	Aug	22.00	22.25	22.12
Propane Mt Belvieu non-LST *¢/USG*	Aug	49.75	52.13	50.94
Propane ARA large cargo *$/t*		317.25	319.75	318.50
Propane Argus Far East Index *$/t*				355.50
Propane S China refrig cfr *$/t*	2H Aug	353.00	358.00	355.50
Butane Mt Belvieu non-LST *¢/USG*	Aug	51.75	53.25	52.50
Naphtha full-range cif USGC *¢/USG*		92.56	94.56	93.56
Naphtha 65 para NWE cif *$/t*		358.00	359.00	358.50
Naphtha Japan c+f *$/t*		385.25	387.75	386.50

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US/Canada

Spot polymer-grade propylene (PGP) prices have fallen rapidly across the week as the front month rolled to August and the contract price was settled in a disputed settlement for July. The July contract price moved 6¢/lb higher to 32.5 ¢/lb for PGP and 31.0¢/lb for chemical-grade. At least one major seller did not agree to the settlement, despite other price reporting agencies calling the market settled. Spot PGP prices for July business peaked at 39¢/lb on 29 July, before the contract settlement. August spot PGP traded at 37¢/lb on 31 July, but this week multiple trades occurred at 31.5¢/lb.

Refinery grade propylene (RGP) markets were quiet during the week with no reported spot trades. The assessed range for the week tightened to 14-16.75¢/lb, from a broad assessed range of 11.5-17¢/lb the prior week. The final July month-to-date RGP spot price was 13.63¢/lb.

A Freeport, Texas, area PDH remains down on planned turnaround and a Houston PDH restarted on Tuesday after a brief unplanned outage. Mont Belvieu, Texas, EPC propane moved higher this week, reaching 53.5¢/USG on 3 August, before falling under 51¢/USG Tuesday. At the 3 August levels, propane prices were high enough to nearly price propane out of steam crackers, as cash margins were negative at that level. July US propane exports are strong and increases in crude and international paper trade pushed US market prices higher. Despite the propane price increases, US PDH units still have enough margin to operate well.

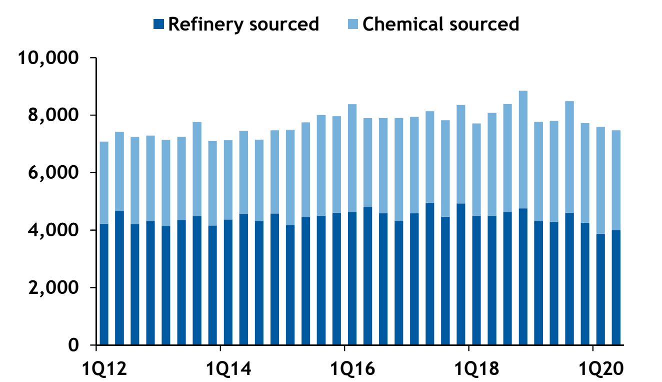
Refinery operations remain roughly flat compared with the prior week as refiners attempt to match operations with domestic and export demand. Refineries operated at 79.6pc of their operable capacity in the week ended on 31 July, up by 0.1pc from the previous week, according to the US Energy Information Administration. Refinery propylene production for the week ended on 31 July rose to an estimated 256,000 b/d from 253,000 b/d the prior week, based on *Argus* models. Compared with August 2019, refinery propylene production is estimated to have fallen by 28,000 b/d, 10pc lower than a year ago. In industry news, Marathon has announced the indefinite idling of both its Gallup, New Mexico and Martinez, California refineries. Martinez will be converted to a terminal and possible renewable diesel facility to take advantage of California's Low Carbon Fuels Standard. Gallup has been idled since 15 April, and Martinez has been down since 27 April due to decreased demand. HollyFrontier announced a similar conversion to renewable diesel for its Cheyenne, Wyoming refinery in June. None of these announced closures is expected to have a noticeable impact on the propylene market.

Butane is strongly favored in steam crackers, followed by ethane feedstock. Propane cash costs remain considerably

US prices	Timing	Low	High	Mid ¢/lb
Propylene				
Poly grade USGC export spot		34.00	34.00	34.00
Poly grade USGC pipeline spot		31.50	31.50	31.50
Refinery grade USGC spot		14.00	16.75	15.38
Refinery grade USGC spot MTD	Jul			13.63
C3 alkylation USGC calc value		26.80	27.10	27.00
C3 fuel USGC calc value		11.50	12.50	12.00
Polypropylene				
PP Homo GP IM del EOR 30 Jul				45.50
Copolymer del EOR 30 Jul				47.50
Acrylonitrile				
USGC fob prompt		37	40	39

US contract pricing	$/t	¢/lb
Poly grade		
Jul	717	32.50
Jun	584	26.50
May	573	26.00
Chemical grade		
Jul	683	31.00
Jun	551	25.00
May	540	24.50

US propylene production by source *mn lb*



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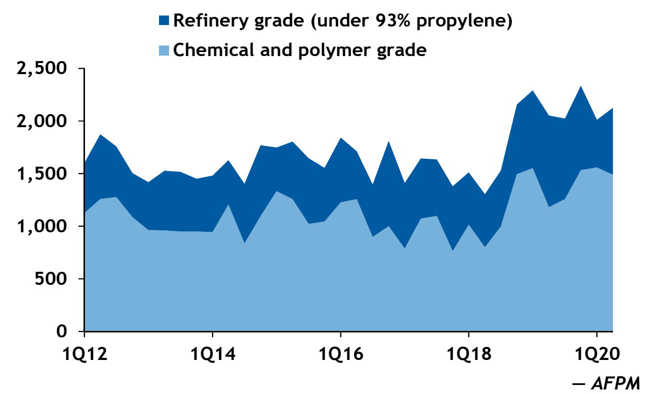
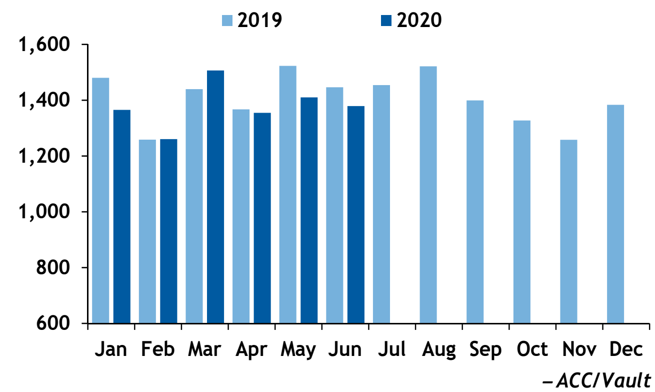
US propylene inventory *mn lb*



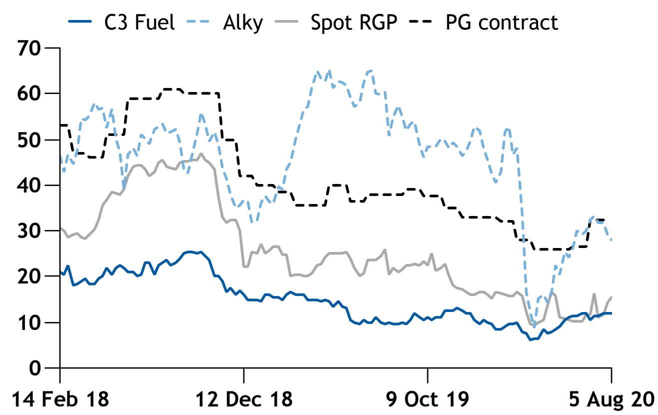
North America PP production *mn lb*



higher on a variable cost basis than ethane. Propylene production from crackers is still affected by steam cracker outages, planned and unplanned. BASF-Total's 1.14mn t/y mixed-feed cracker in Port Arthur, Texas remains down after going off line in early June due to compressor issues. Another Port Arthur mixed-feed steam cracker went down this week for a 10-day maintenance outage. The turnaround at Point Comfort, Texas, is now expected to wrap up in the fourth quarter. Permits filed with the Texas Commission on Environmental Quality indicate the Chocolate Bayou, Texas, mixed-feed steam cracker is the midst of a sizable expansion along with its maintenance turnaround, and the expansion will likely reduce the quantity of propylene the site produces. Other light-feeds steam crackers are also hampered by operational problems.

American Fuel & Petrochemical Manufacturers production statistics for the second quarter showed that propylene production from steam crackers, metathesis and PDH units decreased by more than 6pc from the first quarter to 3.5bn lbs and are down by less than 1pc from the second quarter of 2019. Polymer- plus chemical -grade propylene inventories ended the quarter well-supplied, down by 4pc from the first quarter to 1.5bn lb, and 26pc higher than the end of the second quarter of 2019. RGP production increased in the second quarter to nearly 4.0bn lbs, up 3pc from the first quarter of the year. Refinery propylene production fell by nearly 7pc in second quarter of 2020 compared with the second quarter of 2019. Resilience in refinery propylene output in the quarter supports our thesis that FCCU ZSM-5 catalyst additives were increased as refineries lowered operating rates and shifted production towards petrochemical markets as these markets

US propylene relationships *¢/lb*



have fared far better than transportation markets this year.

Acrylonitrile demand is improving but remains tepid. Domestic pricing was not able to capture the full increase in contract propylene prices and margins were compressed in July. Unplanned outages in China are enabling spot prices to move higher, and seeing higher prices, downstream consumers are buying product. American Fuel & Petrochemical Manufacturers production statistics for the second quarter reveal that production was down nearly 37pc from the first quarter of 2020.

US polypropylene (PP) output should remain constrained in August with one major turnaround planned and a few producers rebuilding following operational outages in July. It was not immediately clear whether Ineos has lifted its *force majeure* on PP following an outage at its 230,000 t/yr Carson, Cali-

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fornia, plant, though the plant was heard to have restarted. Other operational challenges were reported at a Texas plant that was set to begin a turnaround this month. Braskem's new 450,000 t/yr plant is still expected to start up soon with raffia-grade material, but market participants say they have not seen evidence of new product in the market.

Supplies are tight, with little spot material available. Prices have moved higher to the upper-40s-low-50s¢/lb range for spot volumes.

July production data are not yet available, but anecdotal evidence suggests PP output last month likely declined from June levels. June output fell to 1.379bn lb, which was down by 2.2pc from May and 4.7pc lower than in June 2019, according to final data from the American Chemistry Council's Plastics Industry Producers' Statistics Group as compiled by Vault Consulting.

PP sales in June jumped to 1.475bn lb, up by 10.6pc from May and up by 7.1pc from June 2019. Exports climbed by 17.5pc from May, while domestic demand rose by 10pc. Year-to-date sales fell by 2.3pc from the same period in 2019, with exports rising by 43pc and domestic sales falling by 3.9pc over the period. Of those year-to-date domestic sales, rigid packaging and film sales got by far the largest increases, with markets such as transportation and compounding still lagging.

With June sales surpassing output, producers drew down inventories by around 96mn lb, leaving inventories below average levels.

Demand remains strong across most sectors in August, with food packaging and personal protective equipment still the strongest. However, export demand has fallen as US prices have increased.

July PP contracts are largely moving higher by 6¢/lb, tracking the partial settlement in the PGP market. Market participants said they expect another smaller cost increase in August based on PGP prices. Multiple US producers have also announced an additional 3¢/lb of margin enhancement to take effect this month, based on tight supplies and improving demand. However, one major producer has not announced such a move, making it appear unlikely this month.

Latin America

Brazil's central bank is growing slightly less pessimistic in its forecasts for Brazil's Covid-19-hit economy. Its latest forecast calls for 2020 GDP to drop by 5.66pc while industrial production is expected to fall by 7.92pc, compared with decreases of 6.50pc and 9pc respectively, forecast on 10 July. The real is depreciating and the R$/USD average exchange rate, which stood by 5.28 in July, is at 5.31 in early August.

Brazilian crackers, which ran at more than 85pc of capacity in July, are cutting rates in August in line with planned work on ethylene downstream units. Brazil exported a 2,800t propylene cargo in May priced at $326/t fob to China. Two 5,000t cargoes went to Asia-Pacific in July. Brazil exported 9,200t of propylene in the first half of the year, 67pc less than in the same period of 2019. Propylene producers are prioritizing the domestic market and have no plans to export propylene in August.

Naphtha is the preferred feedstock for all Brazilian crackers in 2020, except in Rio de Janeiro, where ethane and propane are used. Braskem will not import ethane in the next few months to replace naphtha at one of its crackers in Camaçari. That will maximize ethylene co-products output, including propylene.

A five-year deal was negotiated between Braskem and Petrobras for Petrobras to supply 650,000t/yr to 2.5 mn t/yr of petrochemical naphtha to Braskem's northeastern and southern crackers. The deal will start in December at a price based on 100pc of ARA. The naphtha deal to the Sao Paulo cracker will be negotiated later.

State-owned Petrobras is selling its northeastern and the southeastern Brazilian refineries, including associated logistics. The Abu Dhabi fund Mubadala Investment is in the lead to buy the Landulpho Alves refinery, known as RLAM, in Bahia state. Mudabala made the highest bid and is set to hold exclusive talks with Petrobras on the acquisition.

Brazil's domestic polypropylene (PP) prices rose by R$400/t ($76/t) in August after an increase of R$500 ($95/t) in July. Domestic demand is strong for food packaging and hygiene products and for cleaning uses and in materials for hospitals, including non-woven material for masks and clothing for personal protection. The latest forecast for the Brazilian harvest calls for a 2.5pc gain from 2019. But automotive production, another key sector for PP, fell by 50.5pc in the first half, with domestic sales and exports dropping by 40pc and 46pc, respectively, from the same period of 2019.

Brazil's PP exports in June rose by 6pc to 43,700t from June 2019, with China the top buyer at 13,700t at a price of $730/t fob. Imports in the same period grew by 27pc to 21,200t, with Saudi Arabia the top seller with 6,300t at $905/t fob. The June import-parity price fell to $1,438/t, down by

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$70/t from May. The volume of Brazil's PP exports in the first half of the year outdid imports by 26,400t, or by $6.06mn.

Brazil's acrylonitrile unit shut on 17 March after declaring force majeure and restarted on 23 July and is now running properly. There were no June exports. In the first half of this year, 13,400t was shipped, mostly to Mexico, India and the UK. The total fell by 54pc from the same period of 2019.

Camaçari's acrylic acid unit restarted on 1 July after 10 days of maintenance and shut again on 26 July for a 30-day turnaround. A 30-day turnaround is planned in September. The Brazilian acrylic acid unit exported 208t in June, mostly to Colombia at $688/t fob. Exports of acrylic acid in the first half of this year totaled 18,600t, three times more than in the same period of 2019. There were practically no exports of 2-ethyl hexyl acrylate in the first half of 2020, down from the same period of 2019 when 7,000t was exported.

Brazil's propylene oxide unit shut for 30 days of maintenance in late July.

The country's oxo alcohols unit ran above planned operating rates in July and is stable in early August.

WESTERN EUROPE

It is holiday season in Europe and many are taking time off despite Covid-19, leaving the market quiet and settled. The market is balanced but is tighter at the coast than inland, where stable refinery production and reduced demand into some derivatives is a challenge. The August monthly contract price (MCP) settled last week at €732.50/t after two valid settlements were made almost simultaneously, leading to a compromise increase of €27.50/t. Demand into PP is stable and strong, with increases in the non-woven and packaging sectors largely compensating for lower automotive offtake.

Last week's MCP settlement reflected the tighter market balance and higher feedstock costs. But the scale of the increase, barely recovering the average increase in naphtha costs when comparing June with July, points to the fragility of sentiment. The market balance has tightened gradually over the past month as improving demand from some of the derivatives hit hardest by coronavirus lockdowns reopened and refineries restarted production. The balance is delicate and inconsistent across the region. Cracker operating rates remain stable, with some reducing rates because of longer co-product balances and some rate reductions because of higher summer temperatures.

Buyers looking for spot volumes at the coast have limited options, and deals have been done flat with the MCP and talked about at a premium to the contract, although we have no evidence that this has been done and discounts of 5pc have also been reported. The problem for buyers is that even at these higher prices there is not enough of an incentive for a producer to make more product when other cracker products are long. Inland, CGP prices are lower, with MCP minus 10pc or 11pc being discussed.

Western Europe prices				€/t
	Timing	Low	High	Mid
Propylene				
Poly grade NWE cif spot		695	732	714
Chem grade NWE cif spot		675	695	685
Polypropylene				
PP Homo GP IM del spot 30 Jul*	Jul			1,133
Copolymer del 30 Jul*	Jul			1,193
Acrylonitrile				
Monthly feedstock cost delta	Aug			+25

**freely negotiated monthly prices*

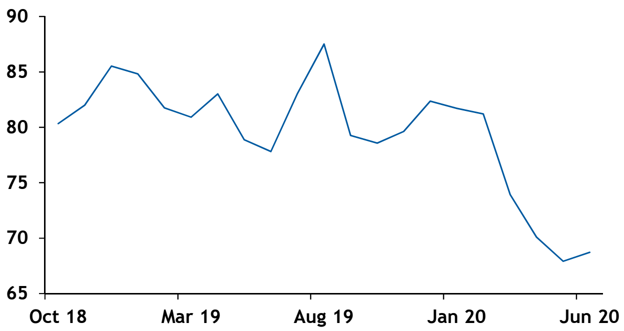
Western Europe contract pricing (MCP)		
	$/t	€/t
Poly grade		
Aug	869	732.5
Jul	794	705
Jun	708	630

Supply from the refinery sector has been reduced, with overall operating rates lower at 70.2pc between March and June against a long-term average of 83.5pc. But this does not give the full picture — operating rates across Germany were reduced during the period but not to the same extent, leaving the propylene balance long. In the Mediterranean, a more widespread programme of prolonged refinery maintenance and shutdowns significantly reduced supply from the region — and as these units reopen the additional supply could create a local imbalance.

For refinery operators, there is the longer-term and more fundamental issue of refinery margins. Not only has demand been dramatically decreased by the coronavirus — as demonstrated by operating rates — margins are well below

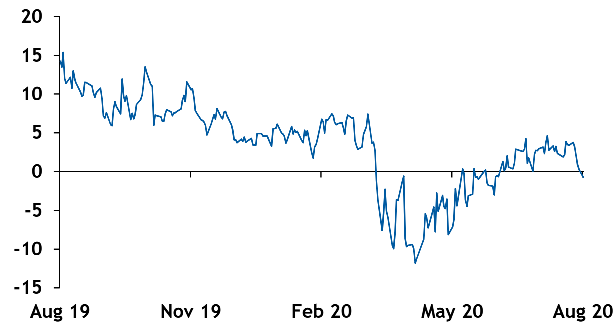
WESTERN EUROPE

Refinery utilisation %



— Argus consulting / Euroilstock

Gasoline Eurobob oxy NWE barge prompt $/t



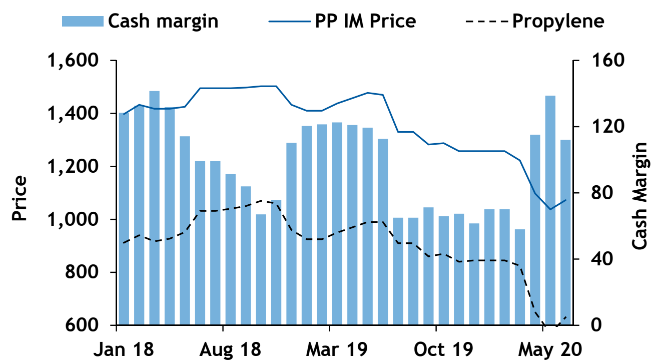
Note: London close, midpoint, barge

sustainable levels. Gasoline margins as indicated by the *Argus* — Gasoline Eurobob oxy NWE barge prompt quotation were below zero for most of March to early June, which was historically unprecedented. Gunvor announced that it intends to mothball its 115,000 b/d Antwerp refinery. Although this refinery does not produce propylene, another in France that does is under threat as a result of the investment required to upgrade its crude pipeline. We expect further rationalisation of refining units in Europe, although it is difficult to predict the impact on propylene production.

North Sea Dated crude rose to $44.09/bl on the prompt market, reacting to lower stock figures in the US, but gains were capped by fears that the rising number of coronavirus cases will reduce fuel demand. It is clear that the agreement by the Opec+ group to reduce production has supported oil prices, but the volumes agreed by the parties are due to rise in August and with little prospect of jet, gasoline and diesel demand returning to 2019 levels in 2020, the potential for oil prices to fall is still there. Lower oil prices have reduced output in the US, which has a knock-on effect on NGL volumes. For the moment, propane production and exports have remained solid — except for some weeks between late March and early May when the ratio to naphtha was above 1 — as demonstrated by the 24pc average discount to naphtha in July. LPG volumes remain high in historical terms, but if the oil price remains low there could be further disruption to the LPG market.

Operationally, issues at crackers are still very limited, although reductions are occurring because of heat or as producers balance their internal co-product mix. A cracker in Scandinavia remains off line, while a French unit should be able to

PP IM calculated cash margin



run more normally in August as its associated refinery is being prepared to restart after a stoppage since February. Two refineries in the Mediterranean are in the process of restarting, but units in Iberia and Scandinavia remain off line.

PP production remains surprisingly robust. Every month there is an expectation that the next month will be worse, but this has not transpired so far. Demand into the packaging sector has been the main beneficiary, and producers that have been able to switch from auto-based grades have to some extent been able to mitigate the reduction in car production since March. The non-woven sector has also been operating at higher than forecast rates, with excellent demand for medical PPE and masks.

PP contract prices did not recoup the full €75/t monomer price increase in July, but rises of €50-55/t leave both integrated and non-integrated producers with healthy margins.

Acrylonitrile operating rates steadily improved in July,

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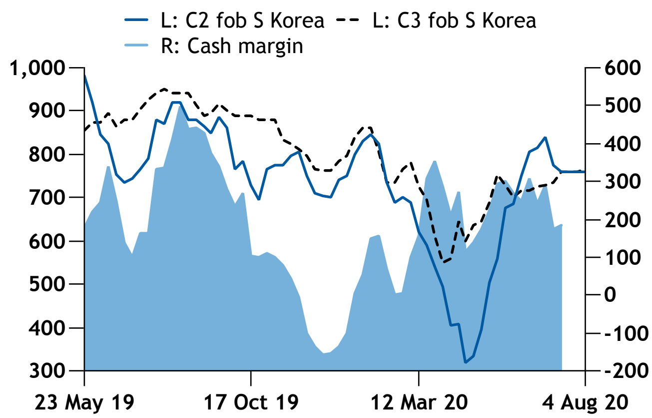
with some units reaching as high as 90pc of normal, although had the Ineos unit at Seal Sands not permanently closed last year rates would be lower. Local production has suffered some pressure from imports from the US and some exceptional additional production in Europe. Demand from the acrylic fibre sector improved, but higher acrylonitrile prices are squeezing margins for this cost-sensitive sector. Acrylonitrile feedstock costs increased by €74/t in July, following a €54/t increase in June. Producers are thought to have passed most, but not all of this, through to customers. ABS demand saw a more gradual improvement, helped by demand for appliances, but the poor state of the automotive sector is weighing on the market.

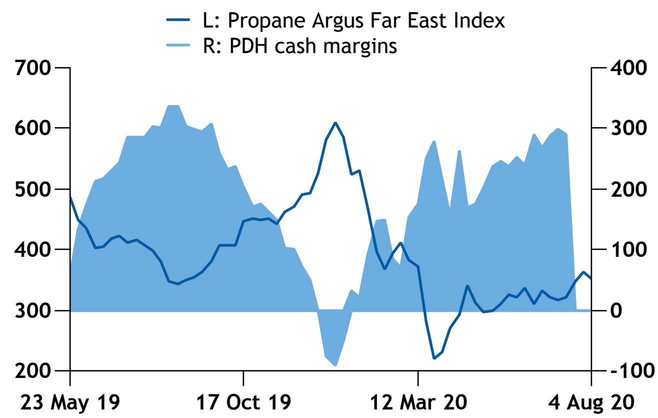
Oxo-alcohol demand is struggling because of continued low operating rates at car plants, although they have continued to slowly improve. Other aspects of the car industry such as diesel use for cetane improvers, a reduction in demand for windscreen replacements because of lower mileage and a reduction in the use of hire cars are also a problem. Some maintenance at the end of July and into August should help the overall European oxo-alcohol balance and may enable additional exports. PO production has improved but remains below long-term average operating rates. Lower demand into polyols and down into MDI is an issue and being exacerbated by a force majeure at an MDI unit in Germany.

ASIA-PACIFIC

Asian cracker cash margin spot *$/t*



PDH cash margin, based on propane AFEI *$/t*

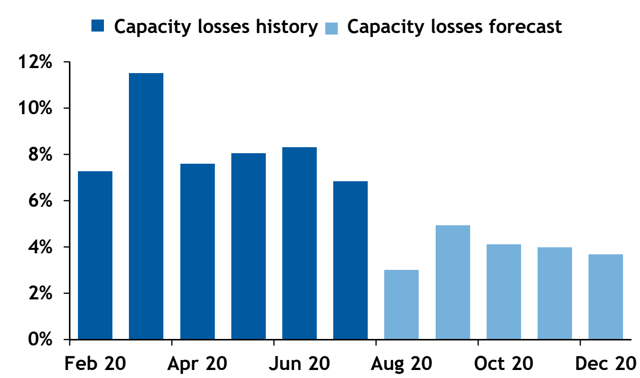


Upstream and cracker margins

Naphtha prices dropped to $384/t this week, down by $16/t. Alternate feedstock propane prices were also lower at $353/t, down by $9/t compared with the previous session.
For steam crackers, naphtha cash margins are $242/t, up by $55/t from last week while propane cash margins are at $272/t, up by $22/t. Producers continued to use propane as feedstock where possible because of better cash margins compared with naphtha. PDH margins inched up to $254/t, up by $10/t compared with last week.

Asian propylene capacity losses closed at 6.8pc for July compared with 8.3pc in June. The losses were slightly lower

Asia propylene capacity loss, 6 months rolling *%*



ASIA-PACIFIC

Outages			
Shutdown	**Plant**	***KTA***	**Duration**
Lotte Daesan	Cracker	550	4Mar-likely Nov
Petronas Rapid	FCC + Cracker	730+630	Mar- likely in 4Q
S Oil	FCC	700	30May-26Jul
Mitsui Osaka	Cracker+OCU	280+140	11Jun-19Jul
Guangzhou Juzhengyuan	PDH	600	6Jul-26Jul
Yanchang China Coal	DCC	300	21Jun-27Jul
Yanchang China Coal	CTO	300	24Jun-27Jul
China Coal Yulin	CTO	300	3Jul-31Jul
Ningxia Baofeng No 1	CTO	300	30Jun-31Jul
Jiangsu Sailboat	MTO	470	17Jul-28Jul
Datang International	CTP	460	28Jul, 28 days
ExxonMobil No2	Cracker	500	Sept, 1 month
Hebei Haiwei	PDH	500	10Aug, 1 month
Formosa No2	FCC	375	midAug, a few months
Formosa	OCU	250	cut rate to 70pc
Formosa No3	Cracker	600	midAug, 40 days
Idemitsu Tokuyama	Cracker	370	Sept, 45 days
JXTG Negishi 2	FCC	70	midSept - midOct
JXTG Negishi 1	FCC	70	1Oct - midNov
Sinopec SK Wuhan	Cracker	400	delayed to Oct, 70 days
SKGC Ulsan	Cracker	350	12Oct-24Nov
YNCC No2	Cracker	300 to 440	end Oct, 40 days
CPC Dalin	FCC	90	Oct-Dec
Hanwha Total	Cracker	700 to 800	Nov-Dec
Map Ta Phut Olefins	Cracker+OCU	500+300	Nov-Dec 45 days

Asia-Pacific prices					*$/t*
	Timing	**Low**	**High**	**Mid**	**±**
Poly grade propylene					
SE Asia cfr spot		730	770	750	0
SE Asia fob spot		770	810	790	0
NE Asia cfr spot		790	830	810	+3
NE Asia fob spot		740	790	765	+5
east China domestic *Yn/t*		6,600	6,650	6,625	nc
Sinopec east China domestic *Yn/t*				6,650	nc
Polypropylene					
Raffia cfr China 30 Jul		910	930	920	+10.00
Copolymer cfr China 30 Jul		950	990	970	+5.00
Acrylonitrile					
China cfr spot		900	980	940	+70.00
Propylene oxide					
del east China *Yn/t*		11,100	12,600	11,850	+1000
del east China		1,296	1,471	1,384	+128

Asia-Pacific contract pricing		
	$/t	***€/t***
Poly grade Taiwan		
Jun	663	563
May	592	526
Apr	508	463

than the last estimate of 7.6pc because Jiangsu Sailboat reduced the duration of maintenance at an MTO unit to 11 days from earlier plan of 20 days after a mechanical outage. Korea's S-Oil has also restarted its fluidized catalytic cracker (FCC) a week earlier than planned. Capacity losses are expected to decrease for the remainder of the year on a lighter turnaround schedule. The losses may fall to a year-low at around 3pc in August before increasing to 4.9pc in September.

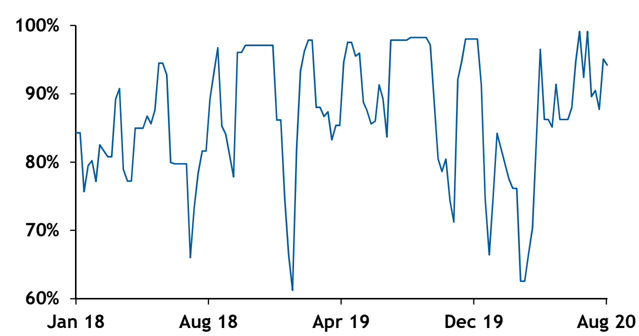
Propylene

The following deals were done in the past week:

- Deals: $820/t cfr China main port, early September arrival, 1 lot
- Offers: $830-850/t cfr China/Taiwan, Korea/Japan origin, August shipment
- Bids: $780-790/t cfr China/Taiwan, September arrival.

Northeast Asian propylene markets remained quiet. Prices edged higher on continued strong demand from China. Supply is likely to increase for August shipments because Japan and South Korea have no major turnaround plans for August.

China PDH operating rates %



There were sporadic spot deals done at around $820/t cfr China for first-half September arrivals between trading firms and Chinese consumers. Most buyers' buying ideas were pegged below $800/t cfr China/Taiwan but sellers were insisting on offers at $830/t cfr China in the wake of limited supplies.

The expected supply-driven downtrend failed to manifest

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after the turnaround season. The impending shutdown at Formosa's FCC with 375,000 t/yr propylene capacity from mid-August until the end of the year will reduce Taiwan's exports. Formosa also cut operating rates at its 250,000 t/yr metathesis plant to 70pc from early August because of the lack of raffinate feedstock during a RDS shutdown.

The major turnaround at Formosa's No. 3 cracker will not have much impact on propylene supply. Formosa will shut a 350,000 t/yr polypropylene (PP) plant, a 250,000 t/yr n-butanol unit and cut acrylonitrile (ACN) operations to balance its propylene losses during the cracker shutdown.

The impact from two new propane dehydrogenation (PDH) plants in China has been limited so far. Zhejiang Petrochemical early this week raised its new 600,000 t/yr PDH plant to 80pc from last week's 50pc operating rates. But the company has not yet sold propylene to the market and is only supplying its captive ACN production. Zhejiang Huahong maintained a low rate of about 30-40pc at its new 450,000 t/yr PDH unit due to some facility issues after the second start-up attempt late last week.

The week's average Chinese PDH rate inched down to 94pc from last week's 95pc. Juzhengyuan has restarted its 600,000 t/yr plant on 26 July. Hebei Haiwei had a plan to shut its 500,000 t/yr plant in early August for maintenance, but the plan has lkely been delayed to October.

Downstream PP sector continued to lend support to propylene prices this week with firm and stable prices. Prices were mainly underpinned by a slew of scheduled plant shutdowns in China's domestic market, as well as an uptrend in PP futures during the week.

China's domestic propylene prices were stable in east China at 6,600-6,650 yuan/t ex-tank and slightly higher in Shandong at Yn6,700-6,850/t ex-tank this week. The east China market was balanced. The Shandong market was mainly driven by strong demand from downstream non integrated propylene oxide producers.

The southeast Asia market is quiet. There were some inquiries from Indonesia this week but no deals were concluded. Discussion levels remained at a spread of around $50/t to northeast Asia, which is about $730-770/t on a cfr southeast Asia basis.

Thailand exported 31,579t propylene in June, the highest monthly exports since March 2018. Vietnam imported 16,390t, followed by China at 8,928t and Singapore at 4,719t.

Thai producers such as PTT Global Chemical (PTTGC) have been exporting more propylene since May because of a change in feedstock, which led to more propylene output than usual and higher monthly exports. Poor downstream acrylonitrile (ACN) demand also lowered operating rates at PTT's 200,000 t/yr ACN unit in Mab Ta Phut that also saw an excess of propylene, although no further details could be confirmed.

Polypropylene (PP)

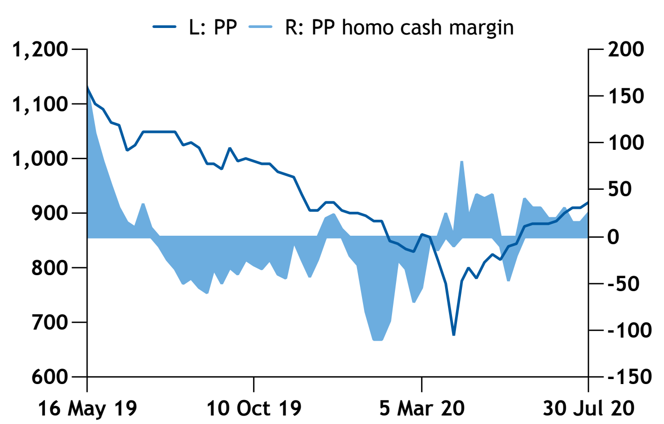
The Chinese PP market was steady to firm this week in tandem with the uptrend in PP futures. Major Chinese producers raised ex-work offers with cost support.

Inventories of polyethylene and PP at China's Sinopec and PetroChina rebounded to 705,000t from 645,000t last Wednesday. Inventories increased by 60,000t, but inventories levels was still lower than the same period last year. Overall supplies remained comfortable, but the market may face some pressure in the coming weeks with the completion of major maintenance and the addition of new capacities in late August.

Trading sentiment improved this week, driven by higher PP futures. China's domestic PP raffia prices were Yn50-100/t higher at Yn7,750-8,000/t ex-warehouse. Co-polymer prices increased by Yn50-100/t to Yn8,000-8,300/t ex-warehouse.

Sellers lifted offers for imports along with higher buying interest. Indian producers offered their raffia cargoes at $935/t cfr China. Saudi homopolymers cargoes were offered at $920/t cfr China. Raffia prices were assessed at $920-940/t cfr China this week, up by $10/t from last week. Co-polymer prices were unchanged at $950-990/t cfr China. Saudi producers offered co-polymers at $950-960/t.

PP homopolymer non-integrated margin *$/t*



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July-August is a traditional low demand season for PP. CTO producers ramping up operations after heavy turnarounds in July have seen increasing difficulties in selling cargoes into the major consumption hubs in east and south China. Many faced an accelerated inventory build-up this week. The average CTO run rate recovered to 84pc this week from the year's lowest level at 59pc in early July. CTO producers including Yanchang China Coal's 600,000 t/yr unit, China Coal Yulin's 300,000 t/yr unit and Ningxia Baofeng's 300,000 t/yr No.1 plant have all restarted from maintenance in the past week.

There are still a few ongoing shutdowns. Jinxi's 150,000 t/yr unit was shut from 15 July for 75 days. Fujian refinery's 120,000 t/yr unit started maintenance from 1 July for two months. Xuzhou Haitian shut its 200,000 t/yr PP unit from 25 July for a month. Sinopec Maoming's 200,000 t/yr PP unit is down from 26 July-10 August. Datang International has scheduled a 45-day turnaround at its 460,000 t/yr unit on 28 July.

New plants are coming up soon, including Bora's 600,000 t/yr PP units likely in early August, Sinopec Zhanjiang's 550,000 t/yr capacities in late August and Sinochem Quanzhou's 580,000 t/yr PP capacities at the end of August.

Downstream outages

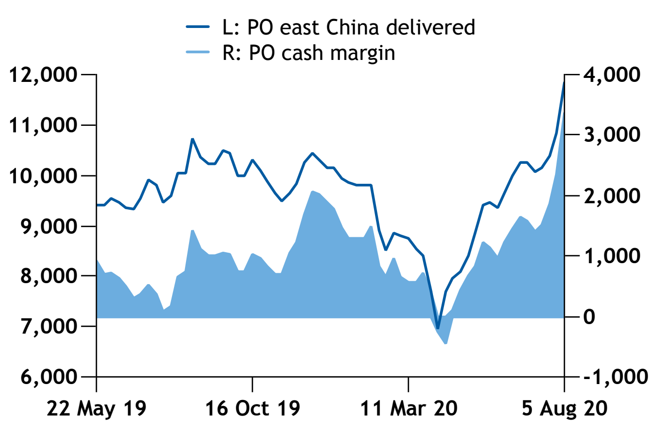
Shutdown	Plant	*KTA*	Duration
Sinopec Mitsui Shanghai	Ph/Ac	250/150	28Jun, 2 months
Zhejiang Petrochemical	Ph/Ac	400/250	startup delayed
Korea S Oil	PO	300	earlyJun-29Jul
Jinling Huntsman	PO	240	Nov, 1 month
Jiangsu Sailboat	ACN	520	17Jul-4Aug
Shandong Haili	ACN	130	1Aug, 25 days
Formosa Mailiao	ACN	280	cut to 85pc rate
Formosa Mailiao	NBA	250	midAug, 40 days
Yanchang China Coal	PP	300	24Jun-27Jul
Yanchang China Coal	PP	300	24Jun-27Jul
Fujian refinery	PP	120	1Jul-30Aug
Guangzhou Juzhengyuan	PP	300	6Jul-26Jul
China Coal Yulin	PP	300	3Jul-31Jul
Sinopec Maoming	PP	200	26Jul-10Aug
Ningxia Baofeng No 1	PP	300	30Jun-31Jul
Sinopec Zhongyuan	PP	60	1Aug, 45 days
Sinopec Zhongyuan	PP	100	25Jul, 90 days
Xuzhou Haitian	PP	200	25Jul, 1 month
Ningxia Petrochemical	PP	100	1Jul-18Aug
Datang International	PP	460	28Jul, 45 days
Korea S Oil	PP	400	earlyJun-2Aug
Formosa Mailiao	PP	350	midAug, 40 days

Propylene oxide (PO)

China's PO prices rallied in the past two weeks, driven by robust export demand for downstream polyether flexible foam products that picked up since the start of July.

There has been strong demand for Chinese-made polyether flexible foam from southeast Asian countries recently after the region ramped up mattress production for exporting to the US ahead of the introduction of anti-dumping duties. The US announced on 31 March that it would levy high anti-dumping duties ranged from 47.97pc to 1,008.28pc on Asean origin mattresses, effective from 22 October.

PO non-integrated margins *Yn/t*



The strong demand for foams boosted polyether converters' buying interest for feedstock PO. Spot trade prices surged to Yn12,500-12,600/t delivered ($1,507-1,519/t on an import parity basis) in east China towards the close of the assessment week against offers at Yn13,000/t delivered. Such high prices have not seen since October 2018. The prices were a rise of 20pc from two weeks earlier. Market participants expect the strong demand for polyether to continue until the end of August.

China's PO production held largely steady this week without major shutdowns. The average operating rate inched down to 74pc from 75pc two weeks earlier following a rate cut at Shandong Xinyue's 350,000 t/yr facility to 70pc from 90pc for tower scrubbing. Chlorohydrin-based plant run rates slipped to 78pc from 80pc.

There was a lack of discussions for spot cfr cargoes. Trades were solely for term customers. The last transactions for spot

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cargoes were seen at the end of July at the $1,250-1,300/t cfr China level. Korea's S-Oil has sent the first batch cargoes to its contracted customers after the restart of its 300,000 t/yr unit on 29 July.

Non integrated PO margins in China jumped to a two-year high level at $480/t this week, a significant increase from $265/t two weeks earlier. The year-to-date margins were about $150/t this week.

Acrylonitrile (ACN)

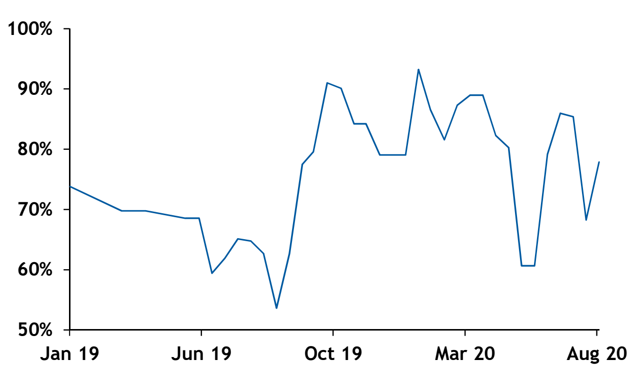
China's ACN prices were on a slight uptrend since late July. Spot prices returned to Yn7,700-7,900/t ex-tank east China on 5 August, up by Yn600/t or 8pc from two weeks earlier.

Prices were mainly underpinned by the sudden plant outage at Jiangsu Sailboat's 520,000 t/yr capacities on 17 July following a mechanical outage at its upstream MTO unit. The plant returned to production on 4 August and is ramping up.

The week's average operating rate of Chinese ACN plant recovered to 78pc after dipping to 68pc in late July. As Jiangu Sailboat restarted its plant, Shandong-based Haili Chemical shut its 130,000 t/yr unit on 1 August for 25 days of maintenance. Continued negative margins were the main cause for the shutdown.

The market is expected to remain under supply pressure given a light turnaround period. But more production cutbacks among Korean, Taiwanese and Thai producers from continued poor margins may ease some of the supply pressures. Formosa has reduced operations at its Mailiao-based 280,000 t/yr ACN plant to 85pc from full rates from the beginning of August. South Korea's Tongsuh and Thailand's PTTGC have also reduced their ACN operations since July.

China ACN plant operating rate %



Demand has been steady and firm from the ABS and acrylic fibre sectors. But potential growth from these sectors will also be limited if no incremental capacities occur.

Import prices edged up following higher domestic prices. Bid offer levels were seen at $900-980/t cfr Asia this week, up by $20-30/t from last week.

Non integrated ACN makers in China continued to see losses at an estimated -$280/t this week compared with -$310/t two weeks earlier. The year-to-date average non integrated ACN margins were only about -$100/t.

Phenol/acetone

China's phenol market resumed a downtrend this week given weak market fundamentals. Supply was ample with high operations among Chinese producers and an increase of import arrivals during July-August after active buying activities in June-July. Demand slowed down with two major downstream bis-phenol A plants under turnaround until late August.

China's domestic prices corrected upwards to Yn5,700-5,800/t ex-tank east China in the last week of July from Yn5,550-5,600/t ex-tank in the previous week. The end-month price increase arose from a prompt supply tightness caused by a delay of import arrivals. Prices have fallen to the Yn5,300-5,400/t ex-tank ($639-651/t on an import parity basis) east China level early this week.

The operating rate of Chinese phenol plants was stable at 76pc this week, except for Mitsui Shanghai's plant that is under scheduled maintenance until the end of August. Other plants have maintained high and steady operation.

Zhejiang Petrochemical has further delayed its startup date at its new 400,000/250,000 t/yr phenol/acetone plant because of facility issues. The company had planned to start the plant in early August.

Discussion prices for cfr cargoes dropped along with lower domestic prices. Offers at $700/t cfr China attracted few buyers. Buying ideas already retreated to about $650/t cfr China, an import parity of the domestic price level. Overseas plants in Saudi Arabia and Japan have resumed normal operations after plant outages.

By-product acetone prices in China continued a rapid downtrend this week. Spot prices plunged to a four-month low at Yn5,450-5,550/t ex-tank in east China this week, losing another 22pc in the past two weeks after a 16pc fall in the previous two weeks. Acetone prices have more than halved in just two months from a peak at Yn12,500/t ex-tank east China

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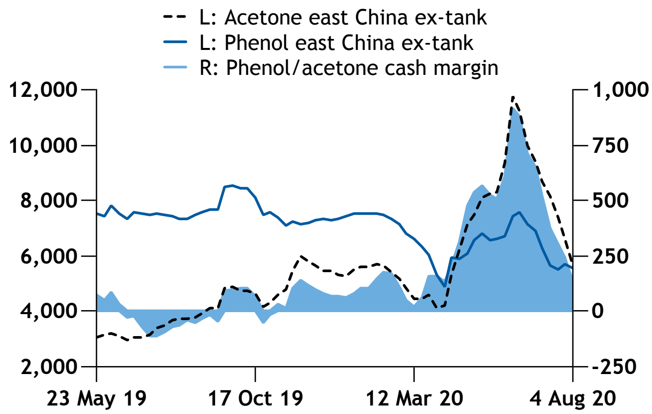
Phenol non-integrated margins



in early June. The market was long as production and imports remained high, but buyers hesitated to enter the market given the extended downward trek of prices.

Non integrated phenol margins for Chinese makers shrank to $130/t this week compared with $300/t two weeks earlier. Other Asian standalone phenol producers' margins were squeezed to about $65/t from $200/t.

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