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Argus *Ethylene and Derivatives*

Formerly Argus DeWitt Ethylene

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HIGHLIGHTS

Americas

- Texas ethylene prices are at two-month highs on improving demand
- Louisiana ethylene prices are coming down from six-month highs on a cracker restart
- Traded volumes were down significantly from the prior week

Europe

- Two cracker closures announced in same week
- Demand down from first-quarter peaks
- Unplanned cracker shutdowns resurface

Asia-Pacific

- Asia ethylene prices softened on more offers.
- Ethylene capacity losses are to hit 11-month high in April.
- Korea is to export more ethylene in May on high cracker runs.
- Derivative prices were supported by shorter supplies.

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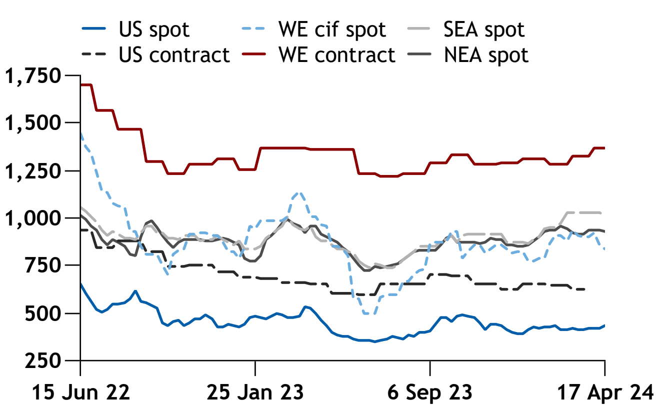
World ethylene prices $/t



MARKET SNAPSHOTS

Ethylene global prices				$/t
	Timing	Low	High	Mid
US				
Contract net transaction price	Mar			623
Pipeline del USGC spot		429.9	432.8	431.4
Month to date average spot prompt	Apr			421.7
Month to date average spot				421.7
Western Europe				
Contract MCP	Apr			1,365
NWE pipeline spot, del		813.9	872.4	843.2
Med spot, cif		800.0	900.0	850.0
NWE spot, cif		810.0	860.0	835.0
Asia-Pacific				
Taiwan contract	Feb			975
Southeast Asia spot, cfr		990.0	1,040.0	1,015.0
Northeast Asia spot, cfr		915.0	940.0	927.5
Northeast Asia spot, fob		880.0	900.0	890.0
China domestic truck ex-tank		896.0	908.0	902.0
Sinopec east China truck ex-tank				920.0

Polyethylene global prices				$/t
	Timing	Low	High	Mid
US, del EOR, 12 Apr				
LDPE liner film HC	Mar			1,213
LLDPE butene-1 film HC	Mar			1,102
HDPE blow mold HC del	Mar			1,124
Western Europe, del NWE, 12 Apr				
LDPE liner film	Mar			1,670
LLDPE butene-1 film	Mar			1,542
HDPE blow mold HIC	Mar			1,479
Asia-Pacific, cfr CMP, 12 Apr				
LDPE liner film spot		1,030	1,050	1,040
LLDPE butene-1 film spot		940	960	950
HDPE film spot		950	990	970

Related feedstocks				
	Delivery	Low	High	Mid
Ethane Mt Belvieu non-LST *¢USG*	Apr	18.88	19.38	19.13
Propane Mt Belvieu non-LST *¢USG*	Apr	78.38	80.13	79.25
Propane ARA large cargo *$/t*		515.25	521.25	518.25
Propane Argus Far East Index™ *$/t*				614.25
Butane Mt Belvieu non-LST *¢USG*	Apr	94.50	95.75	95.13
Naphtha full-range cif USGC *¢USG*		185.23	192.23	188.73
Naphtha 65 para NWE cif *$/t*		695.50	696.50	696.00
Naphtha Japan c+f *$/t*		707.75	710.25	709.00

Tables include hyperlinks to those values maintained in the Argus database.

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US/Canada

The traded range for front-month ethylene at the Enterprise Products Partners (EPC) cavern at Mont Belvieu, Texas, rose to between 19.5-19.625¢/lb, its highest level since mid-February. Traded volumes decreased as prices rose, with *Argus* recording four EPC deals for April delivery totaling 12mn lb. This was a decrease of 20mn lb, or more than 60pc from the prior week. At the Choctaw hub in Louisiana, *Argus* recorded three deals between 20.375-21¢/lb totaling 11mn lb, with prices trending lower from their six-month highs.

Behind the lower trend in Louisiana is Nova Chemicals' merchant cracker in Geismar, Louisiana, is restarting after a two-week extension to its planned turnaround, according to market sources. The 880,000 t/yr mixed-feed cracker began restarting over the weekend, but market participants expect a ramp-up period before the unit is back at its pre-turnaround operating rates.

The unexpected turnaround extension of Louisiana's only merchant ethylene unit caused the ethylene spot price at the Choctaw hub in Louisiana to rise to its highest premium against the Enterprise Products Partners' (EPC) hub in Mont Belvieu, Texas, in almost two years. Choctaw ethylene's first-quarter premium to Mont Belvieu averaged 0.25¢/lb, according to *Argus* data, when the market had priced in a turnaround ending by late March. For month-to-date April, when the unexpected turnaround extension began impacting Louisiana prices, Choctaw's premium to Mont Belvieu has averaged 1.42¢/lb.

In Texas there are no major issues with crackers. Motiva's 700,000 t/yr merchant cracker in Port Arthur, Texas, was flaring on 11 April, but no major issue was heard. There are two planned turnarounds for the second quarter, at Ineos' 930,000 t/yr unit in Chocolate Bayou and Dow's 726,000 t/yr ethane cracker in Orange. *Argus* believes that these two turnarounds will be of a shorter "pitstop" nature, perhaps lasting three weeks.

In feedstocks, it is nothing but more of the same. Ethane cracking margins stood around 11¢/lb. Ethane cracking margins have been virtually unchanged for the last two months. US spot ethane prices continue to be inexpensive, in line with natural gas. Ethane prices have not cracked 20¢/USG since late February. Spot gas prices at the Henry Hub ended yesterday at $1.385/mmBtu, but weather forecasts show an increase in heating demand in the eastern US. Butane cracking margins are just north of breakeven, while propane margins remain negative.

US prices				¢/lb
	Timing	Low	High	Mid
Ethylene				
Contract net transaction price	Mar			28.25
Contract net transaction price	Feb			29.25
Contract net transaction price	Jan			29.50
Pipeline del USGC spot		19.50	19.63	19.57
Month to date average spot prompt	Apr			19.13
Month to date average spot	Apr			19.13
Related assessments				
EG fiber grade contract marker, exw		38.50	39.50	39.00
EG antifreeze, USGC spot		20.00	21.00	20.50
EDC export, fob USGC (calculated price)		8.00	9.00	8.50
Polymers, 12 Apr				
LDPE liner film HC del EOR	Mar			55.00
LLDPE butene-1 film HC del EOR	Mar			50.00
HDPE blow mold HC del EOR	Mar			51.00
S-PVC pipe HC del EOR	Mar			56.50

Polyethylene (PE) operations in mid April are stable with a few ongoing supply issues, including an ongoing turnaround at a Texas high density polyethylene (HDPE) blow molding unit, which is expected to last through the end of the month. There were reports of a few other outages or slowdowns at HDPE units, which were contributing to snug supply for certain grades. Additional turnarounds are expected in the May/June time period, but for now, market participants believe supply will be adequate to meet needs.

Spot availability remains tight, with offgrade material selling well when its available. HDPE injection grade material is the most available and has the steepest discounts, while other HDPE grades are still relatively snug. Prices for most off-grade material is in the low-to-mid 40s¢/lb level, though injection grades have been offered lower than that.

Preliminary March data from the American Chemistry Council (ACC) showed total production reached a new record of 5.36bn lb, with plants running on average at around 86.9pc of total capacity, according to the ACC's Plastics Industry Producers' Statistics Group as compiled by Vault Consulting.

Total March sales rose to 5.297bn lb, just shy of the record 5.3bn lb in August 2023. March sales were up by 2.45pc from February, with exports down by 1.5pc and domestic sales up

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by 6.1pc over the period. With total output surpassing sales, producers added around 64mn lb to inventories in March, with a 96mn lb build in low density polyethylene, an 18mn lb build in HDPE and a 50mn lb draw in linear low density polyethylene.

Domestic demand in April is improving on seasonal factors, with buyers and suppliers seeing stronger orders books at the beginning of the second quarter. However, the economy continues to face some headwinds, including persistently high inflation, leading to concerns that the US Federal Reserve may not cut interest rates as quickly as was initially expected.

In the export market, buying activity is slowing as global buyers are looking for lower prices. Traders said they are focusing on back-to-back deals in anticipation of lower prices.

After March PE contracts settled flat, producers are trying again to push for a 3¢/lb increase in April. Buyers continue to resist higher prices, arguing that demand is not strong enough to support the higher prices. The likelihood of success will depend on whether producers stand firm.

The US suspension-grade polyvinyl chloride (S-PVC) market concluded March with a 2¢/lb increase for contract prices. Producers are looking to secure a further 3¢/lb increase for April, but buyers are skeptical of further price hikes in the midst of flattening demand.

The EDC market has had some activity of late as some producers return from turnaround. This additional volume has led to a deterioration in prices, however, as global demand softens and producers are forced to export to Asia where prices are cheaper. Prices in March had been between $240-255/t fob US Gulf coast, but recent transactions in the early weeks of April are pushing the price range into the low $200/t range.

Demand for US EDC has receded in the Arabian Peninsula and Southern Asia as some regional capacity has come back online, and European producers have become averse to paying higher EDC prices for fear of weakening their production margins in the midst of weak demand on the continent.

PVC demand has been stagnating for housing applications due to ongoing weakness in the homebuilding market. Permits and starts for housing construction both pulled back in March after a strong February for construction, leading to stagnating demand for PVC products used in homebuilding.

Housing starts were at a seasonally adjusted annual rate of 1.321mn units in March, according to the US Census Bureau and the Department of Housing and Urban Development (HUD). That's 14.7pc below the February estimate and 4.3pc lower year-to-year.

February construction was very strong due to unseasonably warm weather in many parts of the country, potentially pulling construction that would've happened in March a month earlier. Several market participants in PVC end use sectors such as flooring, windows and doors, and interior profiles like countertops of cabinets have noted downstream demand has stalled in March and April.

The PVC market as a whole has still seen improvements in demand because of modest growth in pipe manufacturing. Pipe demand has been a bit stronger due to ongoing infrastructure investment providing a more consistent bedrock of demand. With pipe production representing a majority of PVC resin consumption, even slight growth there has compensated for stagnating demand in other sectors.

The export market has been steady in recent days with pricing between $730-740/t fas Houston. Some traders have cautioned that prices could weaken further as producers come out of turnaround. Global demand remains poor, and some traders have said pricing at $730/t is too high for parts of Latin America. Formosa Taiwan dropped their pricing by $30/t to all Asian destinations for May shipments, but Asian prices are still too high with freight rates to be competitive into Latin America.

Latin America

Brazil's optimistic macroeconomic scenario favors the demand for polyolefins. The central bank projected a 1.95pc growth for 2024 GDP, the ninth consecutive weekly high. Retail sales volume reached a record in February, growing for the second month in a row, pushed by the fall in interest rates, credit expansion, and the increase in earnings. In February, retail sales volume increased 9.7pc from February 2023, leading to an 8.2pc growth from January to February year-on-year.

There were no ethylene imports or exports in the first quarter. International trading was conducted through ethylene derivatives.

The domestic macroeconomic scenario benefits Brazilian ethylene demand due to a positive outlook for polyethylene (PE), the ethylene demand driver. However, PE imports, especially from the US, continue to push local ethylene producers.

In the first quarter, Brazilian PE imports jumped 38pc year-on-year to 512,800t, with an average monthly price of

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$1,054/t fob, 13pc lower year-on-year. North America expanded its market share from 75pc to 84pc at competitive average monthly prices of $1,011/t fob, 11pc lower than in 1Q23. South American sellers fell from second to third-ranking position, losing ten percentage points to 5pc market share at the average monthly price of $1,258/t fob. PE imports from Africa-Middle East surpassed South America, getting 6pc of the market share at $1,210/t fob.

On the other hand, PE exports from Brazil increased 11pc year-on-year to 147,200, at the average monthly price of $1,317/t, by 4pc higher year-on-year. South America still is the buyer leader but lost five percentage points to 59pc of the market share at the average monthly price of $1,109/t. Asia-Pacific kept the second position with 24pc at $1,502/t, and Europe responded by 14pc paying $1,697/t.

In 1Q24 compared with 1Q23, PE net imports increased 52pc to 368,100t, and the value 22pc to $349.3mn, inhibiting the output from local producers.

Braskem's domestic price policy for PE in April is to roll over the March prices, when they increased R$500/t ($101/t) for all grades.

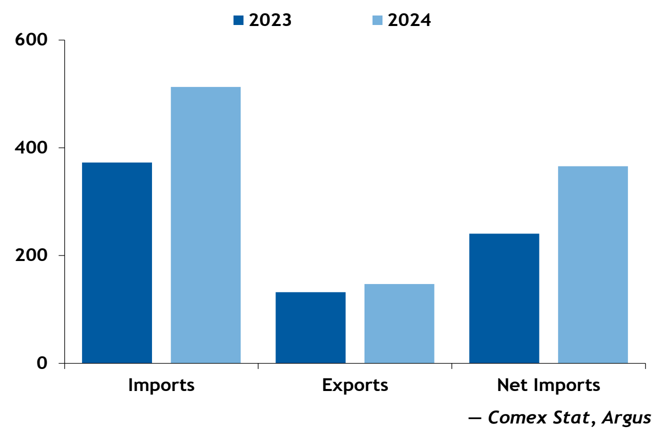
Referring to other ethylene derivatives imports, in March, for the first time this year, Brazil imported 15,700t of ethylene dichloride (EDC), priced at $275/t fob from the US. Comparing EDC imports in 1Q24 with 1Q23, they reduced 48pc, with the average monthly price increasing 1pc from $271/t fob to $275/t fob.

Ethylene glycol imports fell 2pc in 1Q24 year-on-year to 52,800t, with 99pc acquired from the US at the average monthly price of $469/t fob, 12pc higher than 1Q23.

Meanwhile, styrene (SM) imports in 1Q24 climbed 22pc from 1Q23 to 54,200t at the average monthly price of $1,044/t from the US. Imports are to meet the lack of domestic supply after EDN, one of the Brazilian SM producers, shut down its SM/polystyrene in July 2023 amid a challenging financial situation at its owner, Unigel, which is in judicial recovery.

From the industrial point of view, on 14 April at Braskem, in the Triunfo Petrochemical Complex (RS), an accident interrupted the operation of one of the unit's boilers. The oil leak resulted in a fire that was fought by the Emergency Brigade, with no injuries or casualties. The company is investigating the issue and should resume operation after it concludes.

Brazil PE net imports, Jan-Mar *'000t*

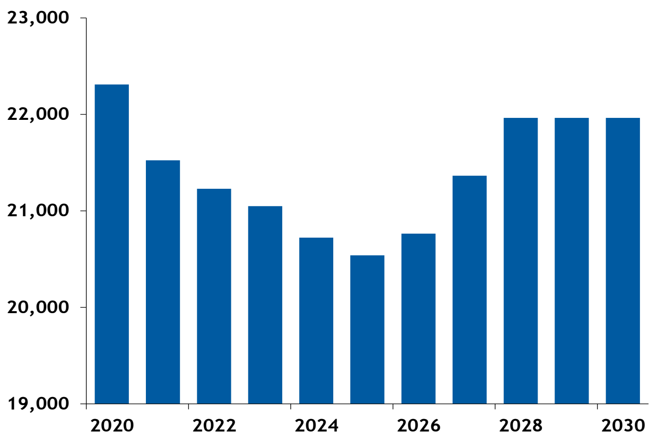


In Argentina, President Milei's government's unprecedented expense cut to face inflation may be successful, but it comes with a substantial social cost. Amid a weak domestic market, according to INDEC's official data, the manufacturing industry's production continues to fall. In February, it reduced 9.9pc from February 2023, cumulating a decline of 11.1pc in the first two months year-on-year. Production of plastics-manufactured products shrank 11.3pc in February month-on-month and 11pc year-on-year. The automotive industry's production fell 18pc in the monthly and yearly comparison.

Imports in Argentina could improve with no more of last year's restrictions. However, with a weak domestic market, PE imports from January to February fell 22pc year-on-year to 37,000t, with the average monthly price reducing 7pc to $1,625/t. In the two first months of this year, PE exports shrank 39pc from 2023 to 13,300t at an average monthly price of $1,077/t, 49pc lower. In the first two months of this year, the net PE imports was 24,700t or $46.8mn.

EUROPE

Western Europe ethylene capacity *'000t*



The European market was shocked last week by the announcement of two permanent cracker closures. Sabic announced that it will close its 550,000 t/yr cracker at Geleen in the Netherlands, while ExxonMobil announced that it intends to close its 400,000 t/yr cracker at Notre-Dame-de-Gravenchon, France. Sabic's announcement was not a surprise to most market participants, but ExxonMobil's was. Together, the closures represent 4.5pc of total west European ethylene capacity.

The news of the closures brought the perilous state of the European petrochemicals industry into stark focus. The industry is being required by EU legislation to invest billions of euros into lowering carbon emissions while being given no protection against imports from countries not subject to the same constraints and rules. The decisions around investment will be taken against a number of criteria, the age of the cracker, the cost of the investment, the long-term economic prospects for the region and where else the money might be spent. For some companies, with a global footprint, the competition for investment is fierce and Europe does not have the feedstock advantages or economic growth prospects of other regions. The one thing that might sway investors is the region as a testing ground for new low-carbon technologies — BASF, Linde and Sabic today announced the start-up of the world's first electric furnace, integrated into Ludwigshafen — but this requires a legislative framework and consistent long-term industrial strategy, neither of which is currently evident.

Even with a clearer political pathway, not all European crackers would survive. This year, the three oldest crackers in Europe will have their 60th birthdays. Age on its own is not the only criterion but it is significant that only eight of west Europe's 55 crackers are less than 30 years old and many are small relative to the new plants being built. West Europe will have closed 1.7mn t/yr of capacity in 2020-26, including the two just announced, as well as Versalis' Porta Maghera cracker in Italy and the reduction in capacity at Sabic's UK cracker at Wilton.

The cracker closures have been balanced to some extent by derivative shutdowns but there have also been some investments/expansions for ethylene oxide, ethylene dichloride and PE. The net loss of ethylene consumption over 2020-26 is 418,900t/yr, although we do anticipate that there could be more closures. This leaves Europe ethylene short and more exposed to the import market if operating rates and demand recover to anything close to the levels in 2020-21.

The European market balance is a little looser in April.

Western Europe prices

	Timing	Low	High	Mid
Ethylene				
Contract MCP €/t	Apr			1,260.00
Contract MCP €/t	Mar			1,220.00
Contract MCP €/t	Feb			1,190.00
NWE pipeline spot, del €/t		765.0	820.0	792.5
Med spot, cif $/t		800.0	900.0	850.0
NWE spot, cif $/t		810.0	860.0	835.0
Related assessments, del NEW				
EG fiber grade contract €/t	Feb			730.00
EG fiber grade contract €/t	Jan			690.00
EG fiber grade contract €/t	Dec			702.50
Polymers, 12 Apr				
LDPE liner film €/t	Mar			1,570.0
LLDPE butene-1 film €/t	Mar			1,450.0
HDPE blow mold HIC €/t	Mar			1,390.0
HDPE injection mold €/t	Mar			1,390.0
HDPE HMW film €/t	Mar			1,420.0
S-PVC pipe €/t	Mar			1,087.5

Western Europe feedstock prices

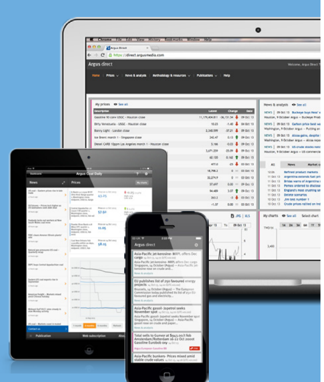
	Price	Diff to previous month
Naphtha para 65 cif NWE barge averages (€/t)		
Apr (Month-to-Date)	642	-11
Mar	653	+38
Feb	615	+29

EUROPE

Unplanned and planned derivative shutdowns are the main driver, although demand has eased from the highs in February and March. Some derivative imports are flowing round the Cape of Good Hope and polyolefin buyers are waiting to see if they can gain some more leverage on prices by waiting.

There has been a spate of unplanned cracker shutdowns, in France and Italy, after a few months with limited cracker issues. This has left the Mediterranean short but with the shipping market tight and customers in the region largely needing smaller ship sizes, it is difficult to cover the outages at short notice. The market remains balanced and spot discounts have been rising over the past weeks despite these outages and despite high feedstock prices. The spot market has been quiet but bids-offers on the pipeline have close to 40pc discounts to the monthly contract price and even higher than that for tons at the coast or in the Mediterranean.

The PE market has eased following a strong February and March, when producers pushed through a significant margin improvement. Buyers are now attempting to take back some of the pricing initiative, but stocks remain low and production disruptions in France, Italy and Germany will have done nothing to restore inventory. Producers will seek to defend their margin and increase prices by at least the €40/t monomer price increase. Some buyers may have enough stock to stay out of the market, but most cannot and even if you have stock, with tensions in the Middle East, there is no guarantee that waiting will mean lower prices next month.



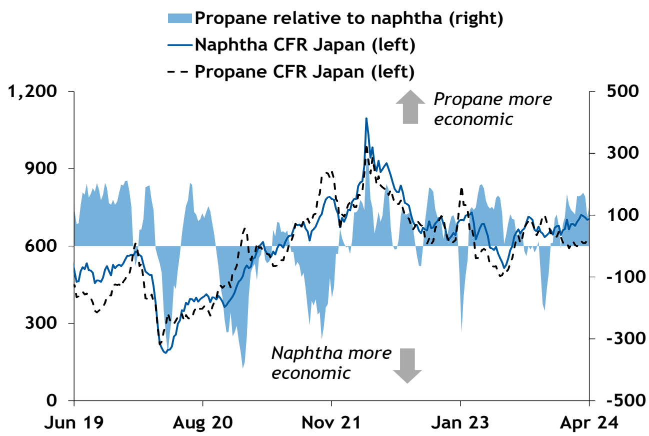
Net change of ethylene consumption 2019-26	
West Europe	**Net change**
E/P Rubber	-61.8
Ethanol	-214.2
Ethylbenzene	-255.1
Ethylene Dichloride	55.1
Ethylene Oxide	256.0
LLD-HDPE	-117.5
Vinyl Acetate Monomer	-81.4
Total capacity	-418.9

PVC producers are still struggling to increase prices even in line with 50pc of the ethylene contract price movement and margins are being nibbled. Reduced imports are supporting producers, but the core construction market remains depressed, particularly in the core German and French regions. There is slightly better construction activity reported by the PMI for the Netherlands, UK and Spain but this is not enough to bolster overall demand. Caustic soda demand and prices have been easing and this will probably lead to lower chlorine operating rates, which might support PVC into the summer.

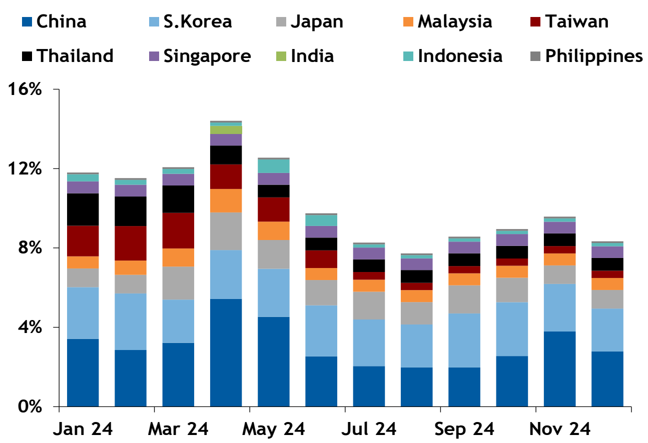
The European MEG market is stable with good availability to meet robust demand from the PET market. The March contract price settled at $775/t, an increase of €25/t from February. There is an initial settlement for April — another increase — which market participants expect to be confirmed alongside an initial settlement for May in the dual settlement pattern that has been the norm this year. Indorama Ventures with PET/PTA assets in the Netherlands has announced that it is evaluating its asset portfolio in response to evolving market dynamics. This announcement follows confirmation by the European Commission that it is confirming anti-dumping duties on PET from China following provisional duties imposed in November. The duty will apply to both recycled and virgin PET from China and ranges from 6.6pc to 24.2pc, depending on the exporting producer and will be imposed for five years. While anti-dumping will be welcomed by producers, it is unlikely to convince them that the EU has a serious long-term industry strategy, which would encourage the major investments needed to meet the low-carbon challenges.

ASIA-PACIFIC

Asia cracker feedstock economics $/t



Asia ethylene capacity loss 2024 by countries %



Asia-Pacific prices					$/t
	Timing	Low	High	Mid	±
Ethylene					
Taiwan contract	Feb			975	39
Taiwan contract	Jan			936	39
Taiwan contract	Dec			936	39
Southeast Asia spot, cfr		990	1,040	1,015	-10
Northeast Asia spot, cfr		915	940	928	-8
Northeast Asia spot, fob		880	900	890	-20
China domestic truck ex-tank		896	908	902	-16
Sinotec east China truck ex-tank				920	-1
Related assessments					
MEG spot weekly cfr China		515	525	520	-3
SM spot weekly cfr China		1,145	1,170	1,158	5
EDC cfr Asia	Mar	290	300	295	-65
Polymer assessments, cfr, 12 Apr					
LDPE liner film, CMP		1,030	1,050	1,040	7
LLDPE butene-1 film, CMP		940	960	950	2
HDPE injection mold, CMP		880	905	893	3
HDPE film, CMP		950	990	970	0
S-PVC pipe cfr China		730	805	768	0

Upstream and cracker margins

Naphtha prices increased marginally to an average of $704/t cfr Japan from last week's $702/t. While propane prices fell by $15/t on the week to an average of $610/t cfr Japan this week. Naphtha-based cracker cash margins worsened to -$167/t, down by $23/t as a result of firm naphtha and declines in ethylene and butadiene prices. Propane remained a preferred cracker feedstock against naphtha. Propane cracker margins increased to -$37/t from last week's -$50/t. Ethane based cracker margins retreated to a three-month low of $286/t, down by $21/t from last week.

Ethylene capacity losses are expected to surge to a 11-month high of 15.3pc in April, much higher than last estimate of 14.7pc in the beginning of the month. The additional losses came from the extended shutdown at Vietnam Long Son's cracker until June, the repair works at Malaysia Prefchem's cracker from end March for a month, a fresh shutdown plan at Japan Keiyo Ethylene's cracker from 10 April for a half month, and delayed restart at Tosoh Yokkaichi's 527,000 t/yr cracker from mid-April to the end of April. The year's spring maintenance will abate slightly in May with initial forecast for May capacity losses decreasing to 13.5pc.

Ethylene

Deals and discussions:

- Deal: $915/t cfr China, 3,000-3,500t, May delivery, trading firm to PVC/SM maker
- Deal: +$27-28/t to cfr northeast Asia on a cfr China basis, South Korean producer to a Yangtze River-based converter
- Buying ideas: $910-920/t cfr northeast Asia, May/June arrivals
- Buying ideas: $980-1,000/t cfr southeast Asia, May/June arrivals

Asian ethylene prices softened this week with lower demand following derivative shutdowns.

ASIA-PACIFIC

A northern China-based polyvinyl chloride (PVC)/styrene monomer (SM) maker bought a Japanese cargo at $915/t cfr China for May delivery for re-exporting purpose which is exempted from a 1.7pc import duty. Beyond that, discussions were still hovering around $920-940/t cfr northeast Asia level.

On a floating price basis, South Korea's GS Caltex sold its May spot volumes to some Yangtze River-based Chinese converters last week at a premium of $27-28/t to cfr northeast Asia prices. Discussions at main ports were around $10-15/t premiums, slightly lower than previous $15-20/t.

Four Chinese private cracker operators emerged to sell ethylene this week.

SP Chemical unexpectedly shut its downstream 320,000 t/yr SM plant on 15 April because of a technical issue. The shutdown will last about a week. The company sold some spot truck cargoes at 7,400 yuan/t ex-tank Taixing this week, down by Yn200-250/t from last week.

Wanhua Chemical came out to offer an ethylene vessel cargo this week because of delayed restart of its 400,000 t/yr PVC unit in south China's Fujian province. The PVC unit, which was supposed to resume operations early April, only reached on specification production earlier this week. Selling ideas from Wanhua were quoted at flat or slightly higher than term prices about a premium of $10/t to cfr northeast Asia on a cfr China basis.

Satellite Lianyungang also sold some spot truck cargoes this week at close to Yn7,500/t ex-tank Lianyungang. The company plans to shut its second 200,000/900,000 t/yr ethylene oxide (EO)/ ethylene glycol (EG) plant while restart 600,000 t/yr SM unit in late April, resulting in excessive ethylene supplies. The company's 1.25mn t/yr No.1 ethane-fed cracker is undergoing a 50-day turnaround starting 2 April.

Sanjiang Chemical was also in the market offering domestic truck cargoes as well as an ethylene vessel cargo for May delivery. The company had originally planned to shut its methanol-to-olefin (MTO) plant sometime in April-May and therefore bought ethylene cargoes from Iran, but later abolished the shutdown plan as falling methanol supported MTO margins.

China's domestic ethylene trade prices declined to Yn7,400-7,500/t ex-tank this week, down by Yn100-150/t from last week. The prices are equivalent to $888-900/t based on a 2pc import duty or $906-918/t based on a zero import duty.

Regional supply remained ample especially from South Korea. LG Chem plans to raise slightly cracker operations to an

Outages

Shutdown	Plant	KTA	Duration
Restarted			
Luxi Chemical	MTO	120	3Feb-15Mar
Chengzhi Chemical	MTO	230	1Mar-19Mar
Liaoyang Petrochemical	Cracker	200	20Mar-3Apr
Rayong Olefins	Cracker	800	midNov23-endMar
Sinopec Maoming No.1	Cracker	380	13Dec-13Mar
CPC No.6	Cracker	700	15Jan-1Apr
Ningbo Fund	MTO	300	24Mar-3Apr
Ongoing			
YNCC No.3	Cracker	500	18Aug23, restart likely Jun
Sinopec Shanghai	Cracker	300	3Sep23-Jan, extended
Changzhou Fund	MTO	130	1Nov23, restart unknown
Sinopec Qilu Petrochemical No.1	Cracker	570	23Dec23, to shut permanently
Sinopec Qilu Petrochemical No.2	Cracker	270	23Dec23, to shut permanently
Formosa No.2	Cracker	1,035	endJan-earlyJun
PTTGC I4-2	Cracker	400	earlyFeb-endApr
Long Son Petrochemical	Cracker	1,000	21Feb, at least until June
ENEOS Kawasaki	Cracker	460	5Mar-midMay
Tosoh Yokkaichi	Cracker	527	4Mar-endApr, extended
Sinopec Zhongke	Cracker	800	18Mar-18May
Petronas PRefChem	Cracker	1,290	endMar-endApr
Satellite Lianyungang No.1	Cracker	1,250	2Apr, 50days
Zhejiang Petrochemical No.2	Cracker	1,400	30Mar, 40days
Keiyo Ethylene	Cracker	768	10Apr, 14 days
Expected			
Lotte Titan No.2	Cracker	430	endApr-endMay
Chandra Asri	Cracker	900	1HMay, 40days
Nanjing Chengzhi	MTO	120	earlyMay, 20 days
Yangmei Hengtong	MTO	120	endApr, 1 mth
Maruzen Chiba	Cracker	525	May-Jun
Mitsubishi Kashima	Cracker	540	May-Jun
PertroChina Dushanzi	Cracker	600	15May-7Jun
Zhejiang Petrochemical No.1	Cracker	1,400	May/June, 10-20days
New plants			
Long Son Petrochemical	Cracker	1,000	Onspec late Dec 23
Shandong Jingcheng Petrochemical	Cracker	700	2H 2024
Ineos Tianjin	Cracker	1,200	mid-to-late 2024
Shandong Yulongdao	Cracker	1,500	late 2024

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Selected ethylene shipment

Vessel	mts	Origin	Destination	Laycan	Charter
Taugas	Up to FC	Houston	Europe	01-02 Apr	Integra
Electra	Up to FC	Houston,Targa	Options	01-05 Apr	Mitsubishi
Thetagas	5,000	Ras Lanuf,Libya	Aliaga, Turkey	03-05 Apr	BGN
Emilius	11,500	Houston	Asia	10-20 Apr	Marubeni
Thetagas	CHOPT F/C	Ras Lanuf,Libya	Skikda/Aliaga, Turkey	13-15 Apr	BGN
Navigator Triton	11,500	Houston	Options	Mid Apr	Marubeni
Eclipse	12,000	Houston	Options	Mid Apr	BASF
Exhibitionist	12,000	Houston	SEA	10-15 May	BASF
Navigator Solar	9,300	Houston	Options	Mid May	Repsol
Navigator Luna	9,300	Houston	China	End May	Marubeni
Mygas	6,500	Houston	Sines, Portugal	DNR	Repsol

average of 76pc in May from April's 75pc. The company sold up to 35,000t of spot ethylene cargoes for May loading, compared with 25,000t for April loading. GS Caltex, Hanwha Total and SKGC plan to maintain crackers run rates at 100pc in May. YNCC will run its No.1 and No.2 crackers in Yeosu at full rates, while its No.3 cracker will restart in July. Only KPIC is reducing run rate from 90pc to 85pc in May.

Japan is in a heavy cracker turnaround season from March to June. Tosoh Yokkaichi's 527,000 t/yr cracker and Keiyo Ethylene's 768,000 t/yr cracker are expected to resume operations only by the end of April. Eneos Kawasaki's 460,000 t/yr cracker is likely to come back in mid-May. While Maruzen Chiba's 525,000t t/yr cracker and Mitsubishi Chemical's 540,000 t/yr cracker are scheduled for turnarounds in May-June.

Buying interest from southeast Asia also weakened after most of April-May demand was met. Buying ideas from a major Indonesia-based polyethylene maker edged lower to $980-1,000/t cfr southeast Asia from previous low $1,000s/t cfr southeast Asia.

The US-southeast Asia arbitrage remained open but narrower. Cost for the US cargo to reach southeast Asia reached around $990/t cfr southeast Asia, taking into account the slightly firmed US prices to $430-440/t from previous $420/t, persistently high freight at $470-480/t via Cape of Good Hope, and port dealing charges of about $80/t.

Malaysia's Lotte Titan has slightly pushed back turnaround schedule at its 430,000 t/yr No.2 cracker from mid-April to end of April. The turnaround will last about a month and a half.

Polyethylene (PE)

PE prices in China firmed for less availability of spot cargoes in both domestic market and import market. This also supported linear low-density polyethylene (LLDPE) futures although it had a small fall earlier this week with lower crude.

Domestic producers o raised their offers for most of PE grades accordingly. Domestic LLDPE film prices were at 8,200-8,600 yuan/t, up by Yn50/t from the previous range's high end. High density-polyethylene (HDPE) film prices increased to Yn8,300-8,600/t, up by Yn100-150/t from the previous week, more than other grades due to relatively shorter supply. Low density-polyethylene (LDPE) film prices were stable at Yn9,150-9,550/t.

Spot trades were moderate compared with previous week owing to limited buying interests among downstream converters. And consumption has slowed, especially for agricultural film, where seasonal demand typically begins early March and ends in early May.

PP and polyethylene inventories at major Chinese producers edged lower to 830,000t on 17 April, down by 30,000t from a week earlier. Domestic supply tightened this week as average PE operating rates inched lower to 76pc this week, down by one percentage point compared with previous week after some plant shutdowns this week. Shenhua commenced a planned 40-day maintenance at 400,000t/yr LLDPE/ HDPE unit from 15 April. PetroChina Guangdong shut its 400,000t/yr unit for one-week maintenance on the same day.

More PE plant outages are expected in the coming weeks.

ASIA-PACIFIC

Pucheng Clean Energy plans to shut its 300,000t/yr LLDPE/HDPE unit from 1 May to 15 May. Wanhua Petrochemical is also looking to conduct maintenance at its 450,000t/yr LLDPE/HDPE unit from early May to early June.

Buying interest for imports increased with more buying enquiries emerging. But quantities available to China were still limited. A Saudi producer quoted LLDPE at $950/t cif China, HDPE film at $970/t cif China with trades done at these prices. Another Saudi-origin LLDPE was also transacted at $970/t cif China with limited quantities. Qatari-origin LLDPE was offered at $970-980/t cif China with notional buying ideas at $960-970/t cif China. And the workable level for Middle Eastern LDPE was at $1,040-1,060/t cif China.

The weekly assessment for LLDPE film was at $950-970/t cfr China, $10/t higher from the previous assessment. HDPE film was assessed at $960-990/t cfr China, up by $10/t from the low end of previous week's range. LDPE film was assessed at $1,040-1,060/t cfr China, up by $10/t on the week.

The cfr China metallocene prices saw a small increase this week, tracking higher PE prices in China but demand remains weak. Mainstream spot duty-free metallocene LLDPE was traded at $1,130-1,195/t cfr China, increased by $5/t from the previous week. And dutiable cargoes were transacted at $1,060-1,110/t cfr China, $10/t higher than the low end of previous week.

Ethylene glycol (MEG)

MEG prices held steady at $515-525/t on a cfr China basis during the assessment week following stable crude oil and MEG futures.

Negotiations were limited because consumers remained on the sidelines and were unwilling to purchase MEG imports amid sufficient Chinese domestic supply. Polyester operating rates edged up to around 91pc from previous 90pc, but polyester producers said domestic MEG supply was sufficient to meet production needs.

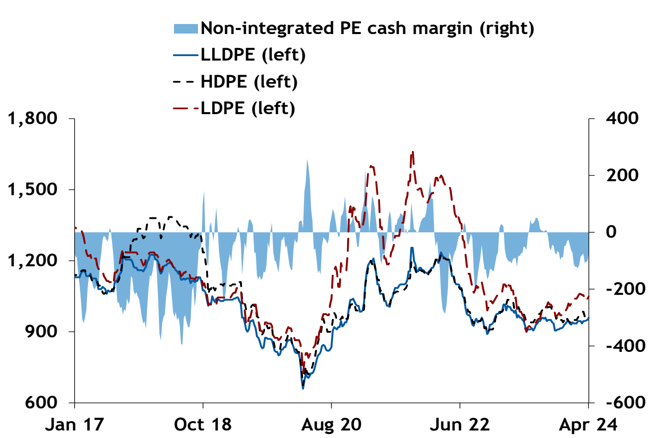
Only a few trading firms made purchases to fulfil their sales requirements. Transaction prices inched up from $520/t to $525/t cfr China during 10-12 April but retreated marginally by $10/t to $515/t cfr China during 15-16 April because of higher MEG inventory.

MEG inventory at the east China's main ports increased by 40,000t to 860,000t as some deep-sea cargoes arrived. Market participants expected more volumes to arrive in late April and inventory to further increase.

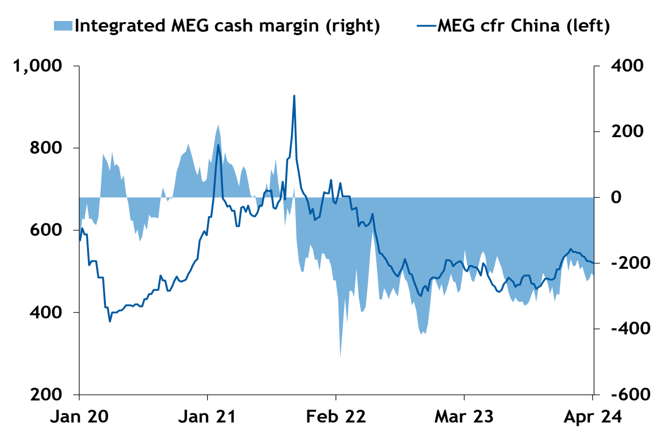
The Chinese domestic MEG market was also quiet. A few trading firms bought prompt shipments during the week. But consumers adopted a wait-and-see approach.

Prices inched up from 4,425 yuan/t to Yn4,460/t ex-tanks during 10-12 April, but softened to Yn4,420/t ex-tanks on 16 April following lower MEG futures.

Asia non-integrated PE cash margin $/t



NEA MEG integrated cash margin $/t



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Zhejiang Petrochemical shut an 800,000t/yr MEG unit in early April for a 40-day turnaround. But China's syngas-based MEG operating rates rose to nearly 65pc this week. Anhui Haoyuan restarted its 300,000t/yr MEG unit early this week, and Tongliao GEM resumed production at its 300,000t/yr MEG after 4-5 days of brief shutdown.

Ethylene oxide (EO)

China's EO prices remained stable at 7,000 yuan/t ex-tank east China for the third consecutive week. Continued tight supplies underpinned prices, but lower feedstock ethylene prices weighed down buying sentiment.

The shortage of supply eased slightly this week with the average run rate retuning to 57pc from 53pc two weeks ago, but still lower than the average rate of 61pc in 2023. PetroChina Liaoyang restarted its 240,000 t/yr plant late last week, about two weeks behind initial schedule. The plant was unexpectedly shut in late March due to technical issues. Shandong Lianhong brought back production at its 120,000 t/yr unit after a scheduled maintenance.

Tight supply will continue to support EO prices in the coming weeks. Satellite Lianyungang plans to shut its second 200,000/900,000 t/yr EO/EG unit in late April due to margins concerns. It's first EO/EG unit with similar capacities was taken offline on 1 April and the shutdown could last up to three months.

Buying idea softened slightly this week. Downstream water reducing agent sector already entered a peak demand season, but the overall demand is still lower than the previous year, because of the protracted contraction of investments in the real estate market. Demand in the downstream surfactant sector remained relatively healthy.

Non-integrated EO margins rose slightly, but remained negative. If based on import ethylene prices, EO margins rose to -$62/t from -$67/t two weeks ago. If based on China domestic ethylene prices, EO margins returned to -$40/t from previous -$55/t.

Styrene monomer (SM)

SM prices in Asia Pacific rose further this week. Expectations of shorter supply emerged with the shutdown of a major domestic SM plant.

The *Argus* Asia SM marker averaged $1,162/t in the first three days of the week. This compared with last week's average over the same period $1,158/t.

Prices in the domestic Chinese market averaged Yn9,653/t, or the import parity equivalence of $1,157/t, in the first three days of the week. This represented a $1/t discount premium to published cfr China assessments.

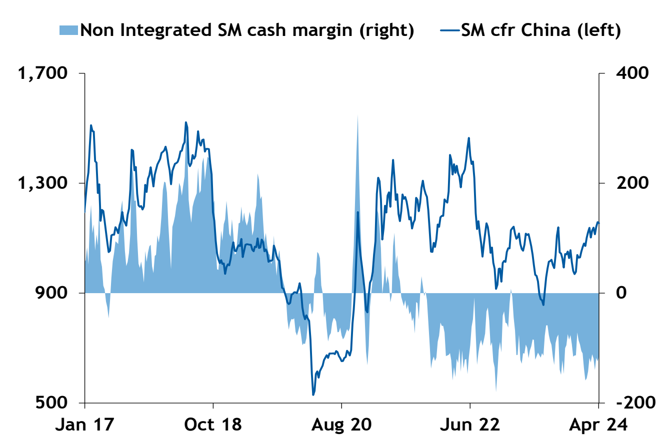
This compared with last week, when domestic Chinese prices averaged Yn9,637/t, or the import parity equivalence of $1,145/t. This represented a $2/t discount to published cfr China assessments.

SP Chemical shut down its 320,000 t/yr SM plant on Monday because of an unspecified technical issue. The firm is expecting to restart the plant within a week.

SM futures closed at Yn9,601/t on 17 April, from Yn9,490/t at the close of 10 April.

China EO cash margins, run rates

NEA SM non integrated cash margin *$/t*



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Despite the expectation of tightness, producers in Asia Pacific still sought to export May-loading SM, in view of better netback compared with selling SM to China. A Chinese producer was in a discussion to export 6,000t of SM for loading in the end of May at $1,170-1,180/t fob. The cargo could possibly go to South Korea. South Korean producers have not started discussing May-loading exports in earnest.

The interests in exporting SM also came on the back of arbitrage opportunities with Europe. Arbitrage spread remained wide, with the spread between month 2 fob Rotterdam SM and month 1 cfr east China prices averaging $439/t in the first two days of the week. Two weeks ago, a South Korean producer has sold a Europe-bound cargo due to load in the end of April at $1,200/t fob, representing a premium in excess of $50/t to selling its products in the domestic Chinese market in the same period.

In northeast Asia outside China, the May market has started proper, according to market participants. Deals for spot May cargoes to northeast Asian consumers were concluded between $25-32/t premiums to cfr China assessments.

In India, prices remained relatively stable at 106 rupees/kg, compared with Rs105/kg last week. Offers of spot SM imports were placed at $55-60/t premiums to published cfr China assessments.

Non-integrated SM margins rose this week with the expectations of shorter supply, averaging -$116/t this week, compared with last week's average of -$124/t.

Selected downstream outages

Shutdown	Plant	KTA	Duration
Ningxia Baofeng	SM	200	20Feb, restart unclear
Satellite Lianyungang	SM	600	1Dec-2HApr
Sinopec Qilu	SM	200	23Dec, restart unclear
Gulei Refinery	SM	600	27Mar-17Apr
Shandong Lihuayi	SM	720	18Apr, 1mth
Hainan Dongfang	SM	120	earlyApr, 40-50 days
SP Chemical	SM	320	15Apr, 1 week
Shandong Lianhong	EO	120	19Mar-9Apr
PetroChina Liaoyang	EO	240	20Mar-12Apr
Sinopec Zhenhai No.2	EO/EG	200/800	16Mar-25Apr
Sinopec Zhongke	EO/EG	250/500	18Mar-20May
Ningbo Fund	EO/EG	60/500	24Mar-5Apr
Satelllite Lianyungang No.1	EO/EG	200/900	1Apr, likely 3 mths
Zhejiang Petrochemical	EO/EG	100/800	31Mar, 40 days
Satellite Lianyungang No.2	EO/EG	200/900	2HApr, duration unclear
Guangdong Tosoh	PVC	220	7 Mar-7Apr
Wanhua Chemicals	PVC	400	4 Mar-13Apr
Tianjin Bohai Chemical	PVC	200*2	6Apr, 10days each
Guangxi Huayi	PVC	400	earlyApr, 4days
Shanghai Chlor Alkali Chemical	PVC	90	20May, 20-30days
Yangmei Hengtong	PVC	300	earlyMay, 1mth
Asahi Glass	EDC	280	22Jan, ongoing
Japan Taiyo Vinyl	PVC	310	endFeb-midApr
Tosoh Corp	EDC	190	earlyMar-midMay
Tosoh Corp	VCM	250	earlyMar-midMay

Polyvinyl chloride (PVC)

China's domestic PVC demand remained subdued this week. Prices declined on a wider basis despite sellers' efforts to maintain their offers.

Taiwan's Formosa announced its May offers on 16 May. The May's offers were down by $30/t compared with April with cfr China settled at $775/t, cfr southeast Asia at $770/t, cfr India at $800/t and fob Taiwan at $730/t.

While the lower offers from Formosa for May cargoes were within the market's expectations, sellers and trading firms were holding on to their offers because of production costs, hence cushioning the declines of PVC prices this week.

Ethylene-based PVC were at 5,630-5,950 yuan/t ex-works this week, down by Yn70/t. Carbide-based were slightly higher at Yn5,530-5,620/t ex-works, up by Yn10/t compared with last week.

In the exports market, deals for carbide-based PVC were likely concluded at $697-700/t fob China this week. Some offers of carbide-based PVC were tabled at $705/t fob China as well. Carbide-based PVC prices for fob China were assessed at $695-705/t, down by $2.50/t.

Meanwhile offers of ethylene-based PVC were holding at $720-740/t fob China with no firm deals likely have been concluded so far. The ethylene-based PVC prices for fob China were assessed stable this week at $705-715/t.

The Chinese PVC plants operating rates were lower as of end last week because of plants shutdown. Tianjin Bohai commenced maintenance at its two 400,000 t/yr PVC units on 6 April for 10 days each. Other producers, including Henan Haohua Yuhang's carbide-based 400,000t/yr PVC unit, Anhui

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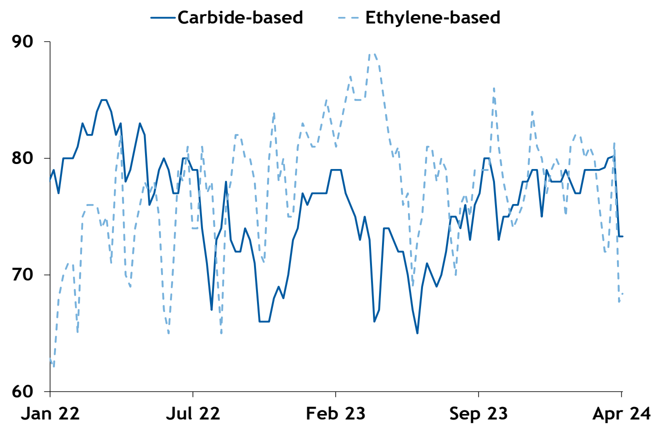
China PVC plant operating rate



Huasu's carbide-based 640,000t/yr PVC plant, Qinghai Saltlake Yuanpin Chemical's carbide-based 220,000t/yr PVC line, Qinghai Saltlake Haina Chemical's carbide-based 200,000t/yr PVC unit and Yibin Tianyuan's carbide-based 380,000t/yr PVC plant were also under maintenance.

Estimated average PVC operating rates were at 72pc as of end last week, down by 8 percentage points compared with two weeks ago. Run rates for carbide-based PVC units were at 73pc, while ethylene-based PVC run rate were at 68pc.

There were no discussions observed in the cfr China market. Prices were adjusted lower to $705-775/t cfr China because of the decreases seen in domestic ethylene-based PVC prices and also lower offers from Taiwan's Formosa this week.

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