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# Argus Butadiene

Formerly Argus DeWitt Butadiene

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## HIGHLIGHTS

- BD prices in Asia-Pacific approach \$900/t cfr for the first time since September 2022.
- US supply is ample even with unplanned and planned outages to start the year.
- Texas BD pipeline maintenance will strain logistics starting at the end of January through mid-February.
- European month-over-month domestic demand improves in January.

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## MARKET SNAPSHOT

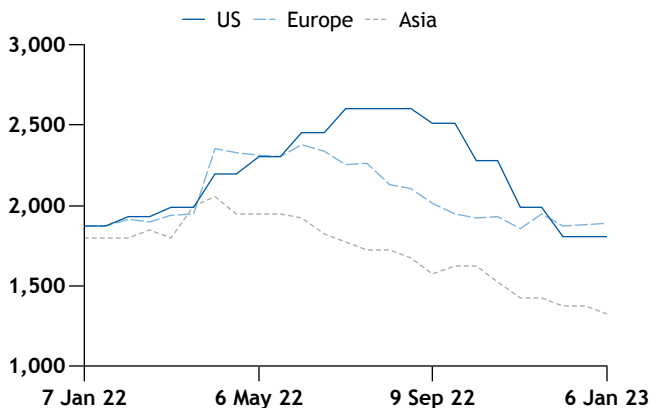
Key prices			
	Timing	Price	±
<b>Americas</b>			
Butadiene contract fob $\text{\$/lb}$		49.00-49.00	-5.00
Butadiene prevailing contract fob $\text{\$/lb}$	Jan	49.00	-5.00
<b>Europe</b>			
Butadiene contract delivered $\text{\$/t}$	Jan	960.00	-100.00
<b>Asia-Pacific</b>			
Butadiene spot cfr NE Asia $\text{\$/t}$		840.00-950.00	+45.00

Global SBR			$\text{\$/t}$
	Timing	Price	±
US eSBR 1502	Jan	1,722-1,885	0
Europe eSBR 1502	Jan	1,857-1,910	+2
Asia eSBR 1502		1,300-1,350	-50

Associated markets			$\text{\$/t}$
	Timing	Price	±
TSR20 SGX fob	Feb	1,315.00-1,326.00	-58.00
Naphtha 65 para NWE cif		613.25	+39.00
Naphtha Japan c+f		638.00	-1.88

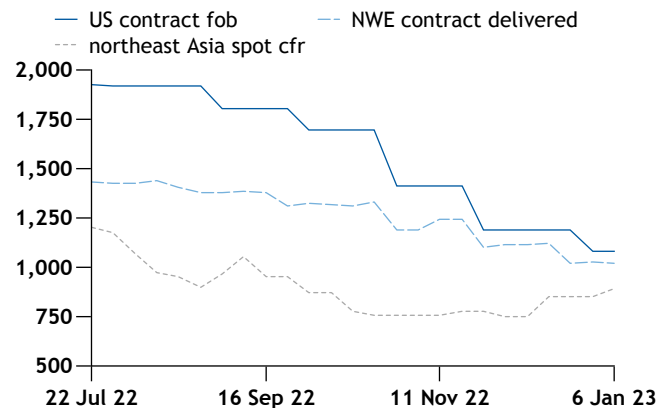
Global SBR

$\text{\$/t}$



Butadiene: Americas, Europe and Asia

$\text{\$/t}$



## ENERGY AND FEEDSTOCKS

WTI crude futures rose on 5 January for the first day in three as a US government report showed domestic gasoline and diesel stockpiles declined last week. February Nymex WTI rose by 83¢/bl to \$73.67/bl. March Ice Brent rose by 85¢/bl to \$78.69/bl, while the March Brent-March WTI spread widened to \$4.77/bl.

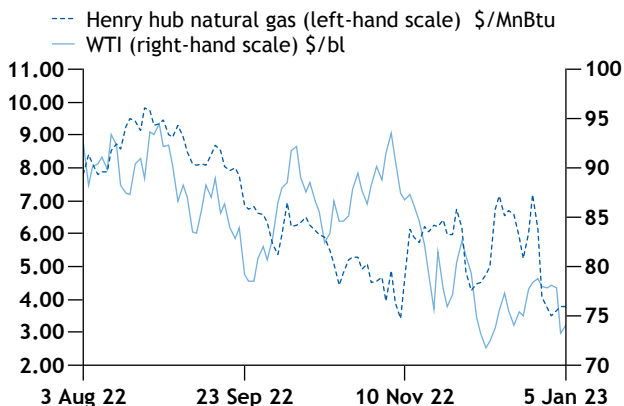
WTI Houston was last discussed at a \$0.80-\$0.95/bl premium to the Cushing benchmark at Nymex settlement Thursday, up from a volume-weighted average of \$0.66/bl yesterday, according to the Argus Crude Market Ticker (ACMT).

Crude had fallen sharply on the first two trading days of the year as concerns mounted over a global recession, with China's struggles to combat Covid-19 adding to bearish sentiment.

US gasoline inventories in the week ended 30 December ticked down by 0.1pc to 222.7mn bl, the second straight weekly drop following six builds, according to Energy Infor-

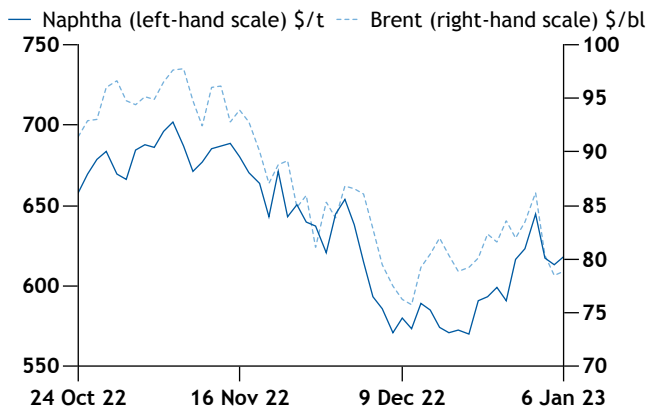
Market prices			
	Timing	Price	±
<b>Americas, 5 Jan</b>			
Natural gas Houston Ship Channel All Index \$/mmBtu		na	na
Ethane Mont Belvieu spot fob ¢/USG		27.00	-3.63
Propane Mont Belvieu spot fob ¢/USG		72.75	+2.12
Butane Mont Belvieu spot fob ¢/USG		101.3	+1.87
Naphtha 40 N+A USGC delivered ¢/USG		176.71	-4.96
Gasoline 87 conv USGC ¢/USG		228.96	-12.59
Gasoline 93 conv USGC ¢/USG		253.46	-4.09
Nymex WTI \$/bl		73.67	-4.73
WTI \$/bl		73.67	-4.73
<b>Europe, 5 Jan</b>			
Propane cif ARA large cargo \$/t		526.00	-14.00
Butane ARA/UK large cargo \$/t		533.75	-6.75
Naphtha 65 para NWE cif \$/t		613.25	+39.00
Ice Brent \$/bl	Mar	78.79	-3.22
<b>Asia-Pacific, 5 Jan</b>			
Naphtha Japan c+f \$/t		638.00	-1.88
Butane Argus Far East Index™ \$/t		623.50	-10.75
Propane Argus Far East Index™ \$/t		605.50	-18.75

### Henry Hub natural gas vs WTI



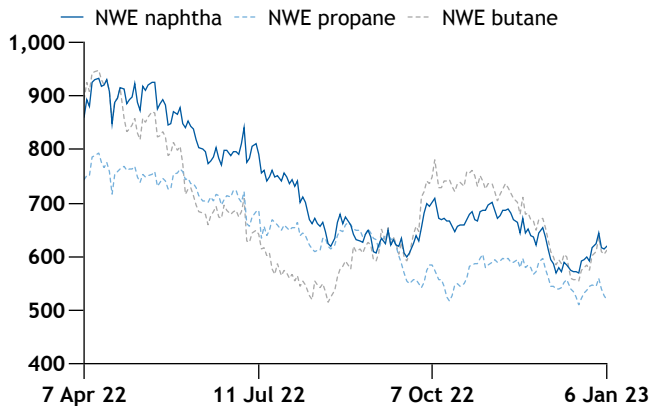
### Naphtha vs Ice Brent

\$/t



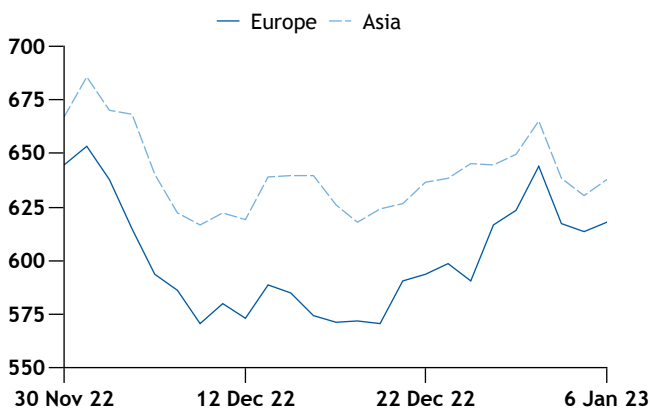
### European cracker feedstock prices

\$/t



### Europe and Asia naphtha

\$/t



## ENERGY AND FEEDSTOCKS

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mation Administration data. Domestic diesel stocks declined from the previous week's 11-month high, falling by 1.4mn bl to 118.8mn bl.

US natural gas futures tumbled on 5 January, ending at a 12-month low below \$4/mmBtu, on forecasts for mild weather and a government report showing a smaller-than-expected draw from gas storage.

Nymex gas for February delivery at the Henry Hub fell by 45.2¢/mmBtu, or 11pc, to settle at \$3.72/mmBtu. The 12-month strip dropped by 7.1pc to \$3.804/mmBtu, while the 2024-calendar strip was down by 4.7pc to \$3.973/mmBtu.

Total US gas inventories last week dropped to 2.891 Tcf –

6.7pc lower than the five-year average and 9.6pc lower than a year earlier, according to the US Energy Information Administration (EIA). Low inventories can bolster prices by stoking concerns about spikes in demand or supply shortfalls.

The EIA has said that it expects draws from gas storage to outpace average levels this winter on colder weather, the typical seasonal decline in gas output and the return of the 2 Bcf/d Freeport LNG export terminal in Texas, which shut in June following an explosion. The terminal restart has faced some delays but is scheduled to restart this month.

The shuttered terminal has backed gas into the US market, leaving more supply available to meet winter heating needs.

## AUTO UPDATE

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### Americas

For December 2022 total new vehicle sales in the US are projected to increase 5.3pc from the prior year to 1,254,700 units, according to a joint forecast from J.D. Power and LMC Automotive. New vehicle total sales in the fourth quarter of 2022 are projected to increase 9.6pc from the same time period in 2021. Total 2022 new vehicle sales are expected to drop 8.4pc to reach 13.6mn units compared to the year prior.

“While the inventory situation has improved modestly in the fourth quarter, supply remains well below the level at which consumer demand for new vehicles can be met. New-vehicle transaction prices continue to rise – albeit at a slower pace than earlier this year,” said Thomas King, president of the data and analytics division at J.D. Power.

The US Treasury Department will take until at least March to publish rules on tax credits for new electric vehicle (EV) sales that tie a \$7,500 subsidy to domestic sourcing requirements for the car's raw materials and battery. EV buyers until March or possibly later will qualify for the \$7,500 credit so long as the car is manufactured in the US.

Under the law, a buyer qualifies for up to \$3,750 in credits if at least 40pc of critical minerals in a car's battery were either extracted or processed in the US or a country with a free trade agreement with the US. Another \$3,750 in tax credits would be provided if at least 50pc of the EV battery components are manufactured in North America or a country with a free trade agreement with the US.

The Mexican auto industry will continue to grow in 2023,

driven by a normalization of the global supply chain, but it will still remain below pre-pandemic levels. Mexico will close this year with production of 3.26mn light vehicles, 7.6pc more than in 2021, with expectations for a 6.6pc increase in 2023 to 3.47mn units, according to estimates from the Mexican auto industry association (Amia).

Despite these advances, Mexican auto production will remain below the 3.81mn light vehicles manufactured in 2019, before the Covid-19 pandemic struck. The recovery of supply chains and clearer rules of origin within the US-Mexico-Canada free trade agreement (USMCA) is expected to contribute to increase Mexico's auto output, but a US economic slowdown could hurt, especially in terms of exports.

Electric vehicle (EV) maker Tesla increased its production by 47pc year-on-year following a year focused on opening new facilities and ramping up output. The automaker produced 1.4mn EVs in 2022 compared with 930,422 in 2021. Tesla built 439,701 EVs in the fourth quarter of 2022 compared with 305,840 in that part of 2021. Meanwhile, deliveries reached 405,278 EVs from 308,600 EVs in that time last year.

### Europe

In November, the EU new passenger car market increased 16.3pc compared to the year before, according to the European Automobile Manufacturers' Association (ACEA). The four largest markets in the EU all saw increases in November. Germany and Italy observed new passenger car registrations increase 31.4pc and 14.7pc.

## AUTO UPDATE

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In the first 11 months of 2022, new passenger car registrations in the EU were down 6.1pc. Italy and France dropped 11.6pc and 8.7pc respectively. Spain and Germany also saw new registration losses of 4.4pc and 2.4pc, respectively.

November UK car production rose 5.7pc year-on-year with 80,091 cars manufactured in the month, data released by the Society of Motor Manufacturers and Traders (SMMT) show. UK car manufacturing output has grown in six of the past seven months. However, November was 25.7pc lower than pre-pandemic levels in November 2019.

In November, registrations of new commercial vehicles in the EU decreased 0.6pc, reported the ACEA. November marks the seventeenth consecutive month of decline. Germany and Spain saw registrations increase at 14pc and 0.9pc, respectively. While Italy and France dropped 13.7pc and 7pc, respectively.

In the first 11 months of 2022, new commercial vehicle registrations in the EU were down 15.5pc. From January to November the four EU key markets all saw double digit declines. Spain and France dropped 19.2pc and 18.1pc respectively. German and Italy also saw new registration losses of 12.8pc and 10.7pc, respectively.

### Asia-Pacific

China's new energy vehicle (NEV) manufacturer BYD reported record-high output and sales in 2022, surpassing US electric vehicle (EV) producer Tesla as the world's largest EV producer. BYD's NEV production more than tripled from a year earlier to

1.88mn units in 2022, accounting for 99.8pc of the firm's total vehicle production.

Its NEV sales in 2022 were also slightly more than three times that of the previous year at 1.86mn units, making up 99.7pc of the firm's total vehicle sales. Tesla produced 1.4mn EVs in 2022 compared with 930,422 in 2021.

Japanese car production in November rose by 2pc on the year to 727,000 units, in line with an easing of automotive part shortages in southeast Asia triggered by the Covid-19 pandemic. Most of Japan's eight domestic car producers reported on 26 December a rise in November production.

But the impact of the easing shortages on individual production was mixed, as was the case in October when overall production fell by 37pc on the year. Nissan's production was up by 42pc on the year while output by Japan's largest domestic car producer Toyota fell by 3.3pc.

India's passenger car production and sales grew in November on the back of a boost in business and consumer sentiment and the easing of the semiconductor chip shortage. In November India produced 172,000 passenger cars, higher by 28pc compared to the prior year according to data from the Society of Indian Automobile Manufacturers (Siam).

India sold 130,100 passenger cars in November up 29pc compared to the same time period last year reported Siam. Passenger car production in November fell slightly on the month by around 1pc from 170,600 in October. Production and sales in October had received a boost from the domestic festive season.

## ECONOMIC UPDATE

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### Americas

November US retail and food services sales declined 0.6pc to \$689.4bn from October, according to data from the US Census Bureau. But US retail and food service sales were up 6.5pc from November 2021. Retail trade sales were down 0.8pc in November compared to the previous month but up 5.4pc from November 2021.

Inflation in Mexico is projected to fall next year driven by restrictive monetary policies, according to a survey of private banks in the country. But it is still expected to remain above the 3pc target set by the country's central bank.

Inflation ended 2022 with an 8pc annual rate that will decrease to 5.1pc by the end of 2023, according to a survey of 30

private banks by Citibanamex, Citibank's Mexican subsidiary. But Mexico's central bank (Banxico) is more optimistic, forecasting inflation of 8.3pc in 2022 and 4.1pc by the end of 2023.

The pandemic and the Russia-Ukraine conflict have had deeper and more lasting effects than expected and continue putting pressure on production costs, said Banxico in its latest quarterly report. To control inflation, Banxico has gradually raised its interest rates from 4pc in April 2021 to its latest increase of 10.50pc in mid-December.

After reaching a peak of 8.7pc annually in both August and September 2022, inflation in Mexico dropped to 8.4pc in October and 7.8pc in November, respectively, according to the latest data from the national statistics institute (Inegi).

## ECONOMIC UPDATE

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### Europe

The eurozone's manufacturing sector contracted again in December, but at a lesser rate than in prior months as inflationary pressures eased further. In its monthly survey, S&P Global said the region's manufacturing Purchasing Managers Index (PMI) was 47.8, below the 50 reading that marks the shift from contraction to expansion for a sixth successive month, but an improvement from 47.1 in November.

S&P Global said the rate of input price inflation was the weakest since November 2020, and manufacturers raised output charges by a lesser degree. Still, new orders remained low, and companies made further inroads into their backlogs. Purchases of raw materials also fell.

Russian president Vladimir Putin on 27 December signed a decree that will impose a ban on Russian oil exports to companies and traders that comply with a \$60/bl price cap mechanism led by the G7.

The oil export ban will go into effect on 1 February and will remain in place until 1 July, Russian state news agency Tass said. The ban comes in retaliation to the EU, the G7 and Australia pursuing a \$60/bl price cap on Russian seaborne crude that is meant to deprive Moscow of export revenues in response to the conflict in Ukraine.

The G7-led price cap mechanism – set to take effect on 5 February – will block western traders, shipbrokers, insurers and financial service providers from participating in Russian seaborne oil exports if a cargo is sold at a price above \$60/bl. Putin has previously said he would ban exports to those participating in the price cap and threatened to cut output in response.

German energy consumption fell by 4.7pc year on year in 2022 owing to high price levels and energy efficiency investments, according to energy sector working group Ageb. Germany's total energy consumption was 3.29PWh in 2022, 4.7pc lower than the previous year.

The population increase of nearly 1mn over the year was outweighed by the dual pressures of high energy prices, which

altered consumer behaviour, leading to reduced consumption, and milder weather compared with last year. Adjusted for temperature, the decline in consumption would have been closer to 3.9pc year on year, Ageb said.

### Asia-Pacific

The World Bank has forecast China's economy to grow at 2.7pc this year, recovering to 4.3pc in 2023 with a reopening of its economy from the impact of the Covid-19 pandemic. China's growth outlook faces significant risks because of an uncertain trajectory of the pandemic and the country's policy response, the bank said.

Its latest forecast for Chinese GDP growth this year is lower than the 4.3pc it forecast in June. China's mobility rose in December as Beijing scrapped its zero-Covid policy, but surging infection rates and self-quarantining are likely to cause oil demand to stall.

China's rising youth unemployment rate also presents a pressing challenge for policy makers, according to the World Bank. The youth unemployment rate was 17.1pc in November, although this was slightly down by a 0.8 percentage point from the previous month, according to China's National Bureau of Statistics (NBS).

The Chinese government did not set a GDP target for next year at the Central Economic Work Conference that concluded on 16 December.

The IMF estimates that Kuwait's economy has grown by 8pc in 2022, slightly down on an earlier projection of 8.7pc but still well up on the 1.3pc growth achieved in 2021. The IMF attributed the strong year-on-year growth to a combination of increased oil production, higher oil prices since the start of the Russia-Ukraine conflict in late February, and a sustained improvement in domestic demand.

The IMF gave no updated forecast for growth in 2023. In its latest report on the Mideast Gulf issued in October, the fund projected Kuwait's economy would grow by 2.6pc/yr in 2023-26.

## AMERICAS

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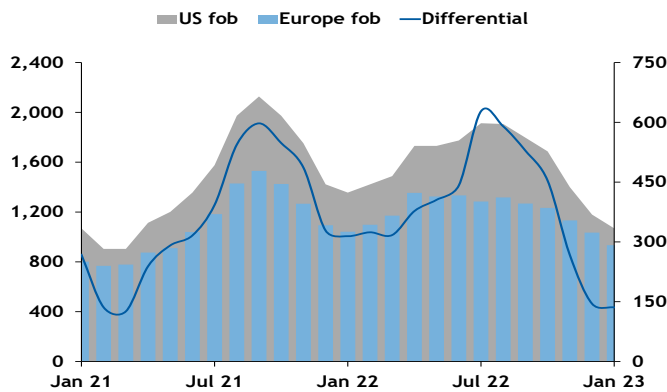
### Markets

A winter freeze hit the Gulf coast around 23-27 December that prompted multiple US Gulf coast crackers, butadiene (BD) producers and consumers to shut down or lower rates ahead

of the bad weather. Most have come back up and are running normally. One Texas BD producer declared *force majeure* (FM) last week after the freeze, but they never issued an allocation or cut term volumes. By Thursday, the FM was lifted. At least

AMERICAS

US vs Europe butadiene contract, fob basis \$/t



two other Texas BD producers this week were not operating normally, sources reported. Even with these supply constraints, most buyers had no complications and even provided relief to one of the Texas suppliers who had technical problems.

A couple consumers are still working on getting back online but are expected to be back to normal by the end of the week. Most others were operating normally. Overall, the impact of the December 2022 freeze was mild relative to the storm in February 2021.

Last week the January US BD contract price (CP) has settled at 49¢/lb (\$1,080) a 5¢/lb decrease from the Argus prevailing CP for December of 54¢/lb. This marks the sixth consecutive drop in the US CP coming off the last peak in July.

This week Argus assessed the spot market stable at 43-45¢/lb. No spot deals have been reported, and no new firm bids or offers have been heard.

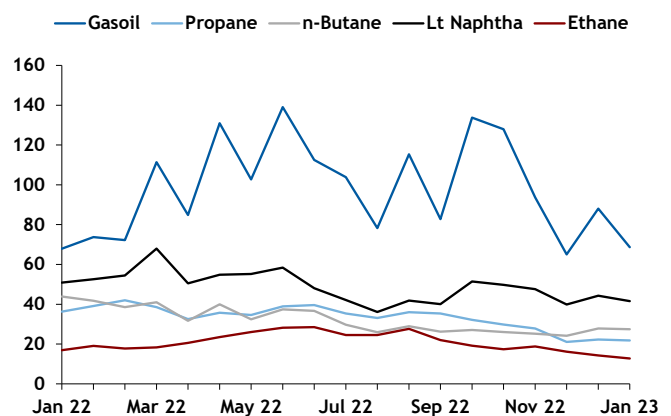
A major BD pipeline operator is shutting operations for about three weeks starting the last week of January until about mid-February. So far multiple consumers have said they are not anticipating any issues as they have been able to switch shipments during this time to truck, rail, barge, or the alternative BD pipeline.

In addition, there are two planned BD turnarounds slated for the first quarter. One Texas producer is set for repairs that will start this month and wrap up in February. Another Texas producer will be going down for planned maintenance in January and is expected to finish repairs in mid-March.

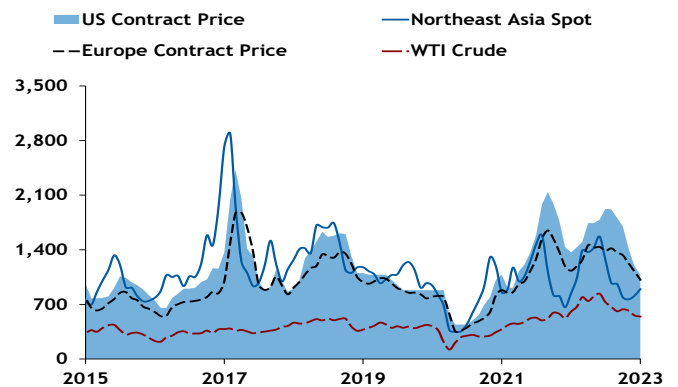
Import term and spot volumes are expected to arrive to

Americas prices			¢/lb
	Timing	Price	±
Butadiene US contract fob		49.00-49.00	-5.00
Butadiene US prevailing contract fob	Jan	49.00	-5.00
Butadiene US spot fob		43.00-45.00	0.00
Butene-1 US domestic fob	Dec	68.00-73.00	-6.00
Isobutylene 99% pure US fob	Dec	56.00-61.00	-10.00
Raffinate-1 (45% iC4=) US formula		49.10-49.80	+7.70
Crude C4 spot USGC cif		813.00-956.00	+42.00

US ethylene vs cash costs ¢/lb



Global butadiene price history, 2015-present \$/t



the US in January. There was a South Korean-origin parcel that was initially scheduled to load at the end of December. It is possible that this fixture has delayed loading to January.

## AMERICAS

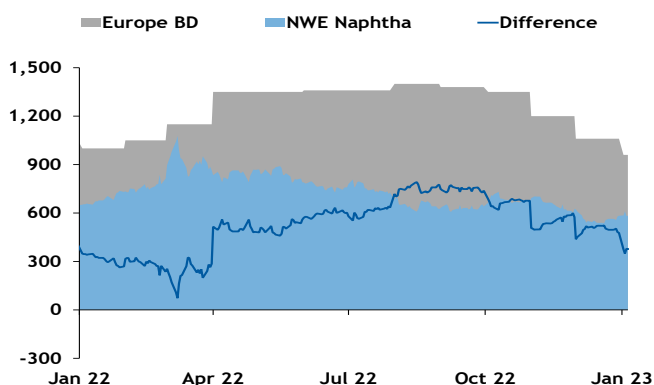
We will continue to inquire and provide an update in the next report. Otherwise there has been mere window shopping for additional imports into North America, but no business has concluded yet.

While still early in the month, consumers have said they expect January to be similar to slightly better than December in terms of demand. There seems to be spot available, but many consumers report they have all they need and are not interested.

The US Bankruptcy Court for the District of Delaware on 16 December approved TPC Group's Chapter 11 plan of reorganization, eliminating more than \$950mn of the company's approximately \$1.3bn of secured funded debt and liabilities. Full classification lists with claim amounts were not included in the plan of reorganization. TPC Group previously entered into a restructuring support agreement with a group of lenders that hold two of the company's notes, which became the framework for the company's restructuring.

## EUROPE

Europe butadiene MCP vs NWE naphtha €/t



Europe prices			
	Timing	Price	±
Butadiene NWE contract delivered €/t	Jan	960.00-960.00	-100.00
Butadiene NWE formula netback fob US \$/t		701.00-745.00	0.00
Isobutylene NWE delivered €/t	Dec	960.00-1,000.00	-182.50
Raffinate-1 NWE incremental cfr \$/t		809.00-835.00	+52.50
Naphtha factor \$/t		1.32-1.36	0
Crude C4 NWE spot dlvd USGC \$/t		613.00-706.00	+42.00
Naphtha factor \$/t		1.00-1.15	0.00

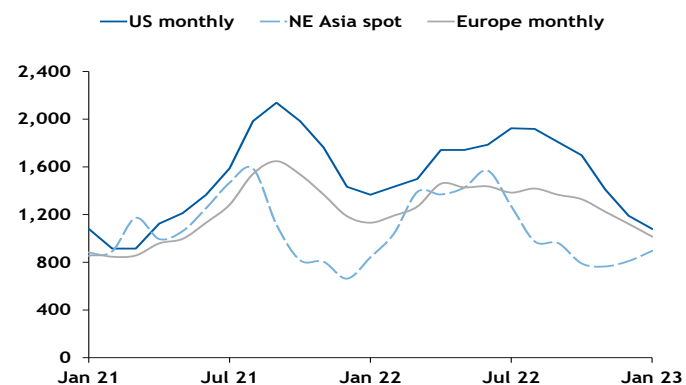
### Markets

European butadiene (BD) consumer demand improved some in January relative to December. Much of this was restocking as many buyers tried to maintain low stocks at the end of the year to manage working capital. A few crackers have been undergoing planned or unplanned repairs.

Cracker operators will continue to manage operating rates carefully. While rates may increase, they will be managed to balance ethylene and co-products. Visibility for olefins demand remains limited and on a near term basis.

Term BD export volume to North America continues to flow in 2023, starting in January. There have been rumors about an additional spot import parcel from Europe loading in January. But there has been no verification of this in shipping reports. In addition, a cargo is slated to export from the region to China for end January arrival. We believe this is part of a con-

Global butadiene prices \$/t



tract agreement. In crude C4 imports, indications point to a US January fixture for export to Europe, but shipping data has not been confirmed yet. We will continue to track and update. In 2022, there were similar, regular crude C4 imports.

Exporters kept their eyes on North America, which has two planned turnarounds in the first quarter. US import logistics



## EUROPE

however will be constrained starting the last week of January into at least mid-February on planned repairs to a Texas BD pipeline. Please see our *Americas* section for additional details.

In addition, there were signs of a possible pick up in Asia-Pacific where spot prices approached \$900/t for the first time since September 2022. Meanwhile lunar near year, which usually sparks a seasonal uptick in demand, is approaching and set for 22 January.

In BD production, one unit in Spain is approaching the end of its planned maintenance this week or next week. A French facility was expected to restart at the end of December, but we believe this has been delayed by a week or so. There are also constraints for up to two BD units in The Netherlands,

although details were scarce.

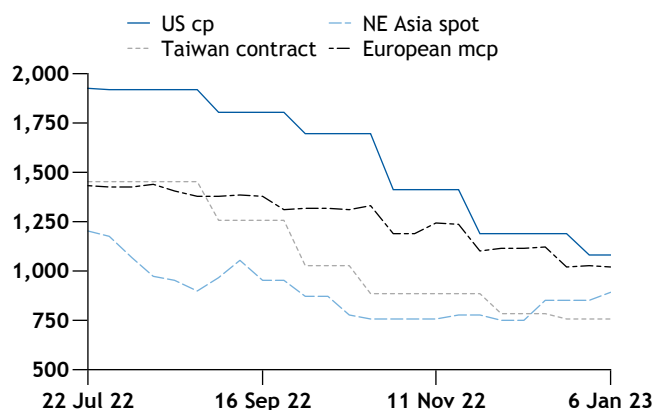
Volatile natural gas prices continue to afflict the region. Near-curve prices at European gas hubs fell sharply throughout December as temperatures were forecast to be milder than previously anticipated in January. Demand remained subdued, even during a December cold snap.

The TTF front-month contract shed 45pc of its value last month – changing hands at €75.30/MWh on 30 December, down from €137/MWh at the start of the month. Forecasts for overnight temperatures in Amsterdam were revised upwards in December and were expected to hold well above the seasonal average throughout this month. In stark contrast, the earlier forecasts were projecting lows to remain below average throughout December and into January.

## ASIA-PACIFIC

Butadiene prices: US, WE and Asia-Pacific

\$/t



## Markets

An operating glitch at China's Shenghong Petrochemical's new 150,000 t/yr butadiene (BD) extraction unit at Lianyungang sparked a price rally in the domestic market, and to a lesser extent, the sea-borne sector.

Shenghong Petrochemical had to shut down its 150,000 t/yr unexpectedly because of unspecified technical issues. The company had initially expected to reach on-specification production of BD in December after starting up its new 1.1mn t/yr naphtha-fed cracker but ran into unspecified difficulties

Asia-Pacific prices			\$/t
	Timing	Price	±
<b>Butadiene</b>			
fob NE Asia spot	prompt	805.00-890.00	+52.50
fob NE Asia month average	Dec	755.00	+32.50
cfr NE Asia spot	prompt	840.00-950.00	+45.00
cfr NE Asia spot month average	Dec	810.00	+45.00
cfr southeast Asia spot	prompt	750.00-860.00	+45.00
cfr southeast Asia spot month average	Dec	720.00	+45.00
fob southeast Asia spot	prompt	730.00-840.00	+45.00
fob southeast Asia month average	Dec	700.00	+50.00
Taiwan contract month	Nov	754.00-756.00	0.00
Sinopec price Yn/t	prompt	7,800.00	+500.00
Sinopec price import parity	prompt	984.00	+74.00
<b>Raffinate-1</b>			
Naphtha cfr Japan premium		70.00-120.00	0
fob Asia		697.00-749.00	-23
cfr China		867.00-919.00	-23

and sold crude C4 supplies into the domestic market instead. Traders are now expecting the company to attempt to start BD production next week.

This operating glitch combined with sporadic restocking of raw material BD by Chinese synthetic rubber makers ahead of the lunar new year holiday helped to drive domestic prices higher during the week. State-controlled major, Sinopec, raised their east China ex-works price by 1,000 yuan/t from



## ASIA-PACIFIC

the previous week to Yn7,800/t or import parity equivalence of \$986/t. Sinopec is also thought to have made an import purchase for a 2,000t end-January/early-February arrival at \$950/t cfr China although further details could not be confirmed.

However, most BD consumers rejected this price as they are not expecting a dramatic pick-up in February after the lunar new year holidays and were not in a rush to make additional purchases. One key Chinese BD consumer said they were in the midst of negotiating for a February, Europe-origin delivery at just under the \$850/t cfr China mark although no deal was reached by the close of business on Friday.

Buying indications for February cfr Taiwan deliveries were pegged even lower at \$800/t given that downstream operating rates are expected to remain low even after the lunar new

year holidays. Similarly there was no fresh buying interest in the South Korea market located during the week.

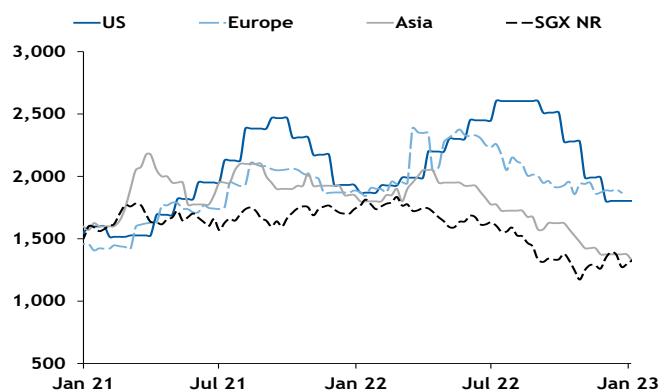
There was however, interest from South Korean producers for February-loading exports at \$900/t fob although there were no deals confirmed by the close of business on Friday.

In India, ONGC Petro Additives Limited (Opal) remains in extended negotiations for 36,000t of BD for term 2023 exports from Pipavav for undisclosed reasons. The state-controlled refiner had initially expected to discussions to be wrapped up by end-December. Opal sold 27,000t of BD for March-December 2022 loading at \$150-160/t discounts to published cfr southeast Asia assessments. Fellow BD producer on the east coast, Haldia Petrochemicals, sold 72,000t of BD for 2023 loading at discounts of \$120-130/t against cfr southeast Asia assessments on a fob basis.

## C4 DERIVATIVES

Global SBR 1502 and TSR20 NR prices

\$/t



### Americas

There is looming uncertainty about a bullish forecast for new US light vehicle sales. Most are projecting increased sales in 2023 on a year-on-year basis. The optimists are citing depleted inventories that require restocking. On the other hand, higher interest rates, lower trade-in values for used cars and recessionary fears could weigh down demand.

Goodyear Tire on 4 January released a demonstration tire with 90pc sustainable-material content. The demonstration tire passed all regulatory and Goodyear's internal testing.

The tire includes 17 featured ingredients across 12 dif-

Synthetic rubber general						
	£/lb		€/t		\$/t	
	Low	High	Low	High	Low	High
<b>Americas</b>						
eSBR 1502 US	78.10	85.50	1,622	1,776	1,722	1,885
eSBR 1712 US	78.40	84.80	1,629	1,761	1,728	1,870
Polybutadiene US	81.25	86.25	1,688	1,792	1,791	1,901
<b>Europe</b>						
eSBR 1502 NWE	84.25	86.66	1,750	1,800	1,857	1,910
eSBR 1712 NWE	80.88	83.29	1,680	1,730	1,783	1,836
Polybutadiene NWE	86.66	89.06	1,800	1,850	1,910	1,963
<b>Asia-Pacific</b>						
eSBR 1502 Asia	58.97	61.24	1,235	1,283	1,300	1,350
eSBR 1712 Asia	56.70	58.97	1,188	1,235	1,250	1,300
Polybutadiene Asia	63.50	68.04	1,330	1,425	1,400	1,500
<b>Natural rubber</b>						
			Low	High	Settle	±
TSR20 fob SGX futures \$/t			1,315.00	1,326.00	1,326.00	-52.50

ferent tire components. Such as four different carbon blacks produced from methane, carbon dioxide, and plant-based oil, and end-of-life tire pyrolysis oil feedstocks. These technologies target reduced carbon emissions.

In January 2022, Goodyear announced its capability to demonstrate at 70pc sustainable-material tire. The company now plans to sell a 70pc sustainable-material tire to consumers

## C4 DERIVATIVES

in 2023. This is one step close to Goodyear’s goal of introducing the first 100pc sustainable-material tire in the industry by 2030.

Ahead of the late December winter storm, some EB-SM sites were preemptively shut-in, while others adjusted operations and took precautions to run through. Several Houston area styrene production complexes were impacted and are now in the process of resuming operations. Most suppliers are either back to producing normally again, or on the cusp thereof. Others ran through without incident. Some capacity, which was idled well ahead of year-end to manage inventories, is also returning.

### Europe

Toyo Tire Corporation announced on 14 December the official opening of its new factory in Serbia. Production had partially started at the passenger vehicle tire in July 2022 as all equipment was installed. This is Toyo Tire’s first tire production site in Europe.

The new factory is expected to reach its full capacity of five million tires per year by the second half of 2023. The factory is planned to meet local European demand while also reaching its main market in North America.

In styrene, operating rates in Europe remained reduced, with some units still offline as of 5 January. A POSM unit and an ethylbenzene-styrene unit, both in the Netherlands, have been down since November and December, respectively.

Europe is the price leader globally for styrene since the second half of December. But the arbitrage from the US and

Asia-Pacific have been impaired by limited vessel availability and high freight costs, estimated at \$120-150/t and more than \$200/t, respectively. The heavy backwardation in the European market and the long lead time of at least eight weeks are also dampening trading firms’ interest in importing from the far east.

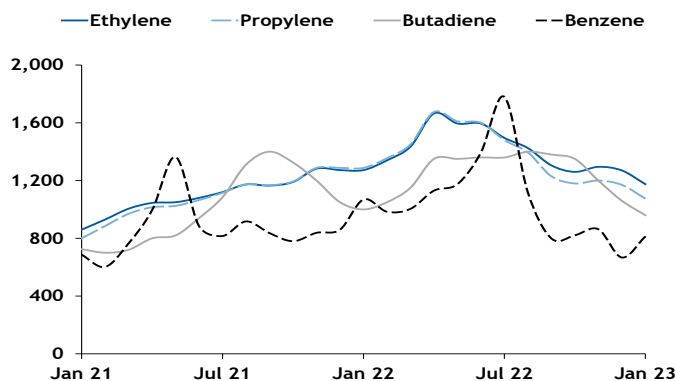
### Asia-Pacific

Chinese polybutadiene rubber (PBR) came under renewed pressure during the week as demand remained slow and inventory levels high.

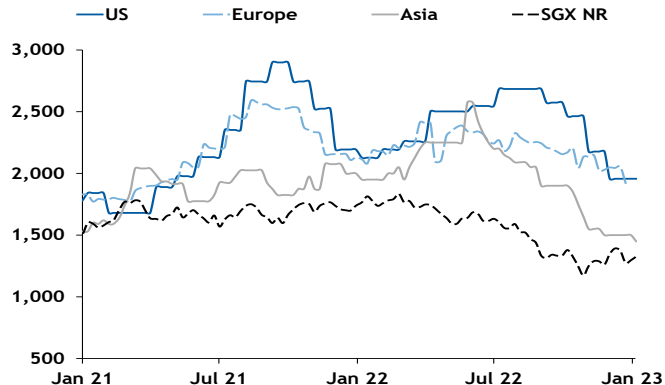
At least two domestic PBR producers took their production lines down for unscheduled maintenance during the week and these units are not expected to be restarted until after the lunar new year holidays. Domestic PBR prices retreated 200 yuan/t from the previous week to Yn10,100/t delivered. Chinese domestic styrene butadiene rubber (SBR) however, held steady at Yn10,700-10,800/t delivered. Domestic traders are not expecting any pick-up in demand til after the lunar new year holidays in end-January. Some are also expecting a possible new round of cutbacks in synthetic rubber production rates as feedstock butadiene (BD) costs have risen sharply over the past month, while rubber prices had not kept pace.

Synthetic rubber operating rates in both South Korea and Taiwan are also expected to remain in the 50-60pc range as producers in both regions have yet to see any significant pick-up in demand despite China easing its coronavirus restrictions. Most tire producers in the Asia-Pacific region are still running their plants at around 50pc of nameplate capacity and would

European base petrochemicals, free delv’d basis €/t



Global polybutadiene vs TSR20 NR prices \$/t



## C4 DERIVATIVES

only consider raising operating rates should demand recover after the lunar new year holidays.

Discussions remain limited in the import market but selling indications for South Korea SBR dropped \$50/t to \$1,300-1,350/t cif. Selling indications for PBR were also dropped to \$1,450/t cif China.

Selling ideas for SBR and PBR on a cif southeast Asia basis were maintained at a \$50/t premium to cif China values at \$1,350/t and \$1,500/t, respectively.

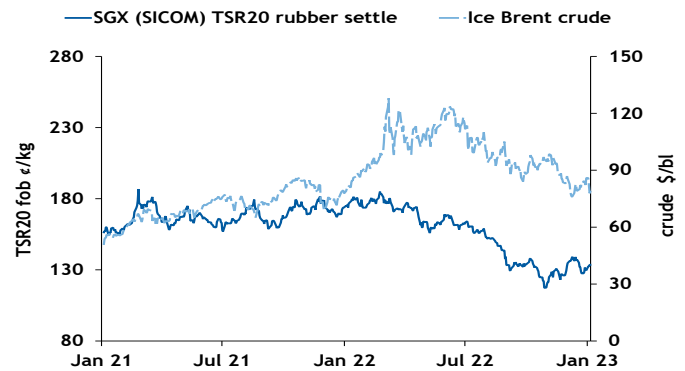
### Natural rubber

TSR20 natural rubber (NR) futures on the SGX settled at \$1,326/t, down 3.4pc since 16 December and a decrease of 0.7pc compared to Thursday. Prices have averaged \$1,329/t month-to-date in January, decreasing 0.6pc from the December average of \$1,337/t.

In November the world production of NR recorded a growth of 2.7pc to 1.426mn t as compared to the prior year, according to the latest report from the Association of Natural Rubber Producing Countries (ANRPC). World rubber demand inched up 0.6pc year-over-year to an estimated 1.301mn t in November.

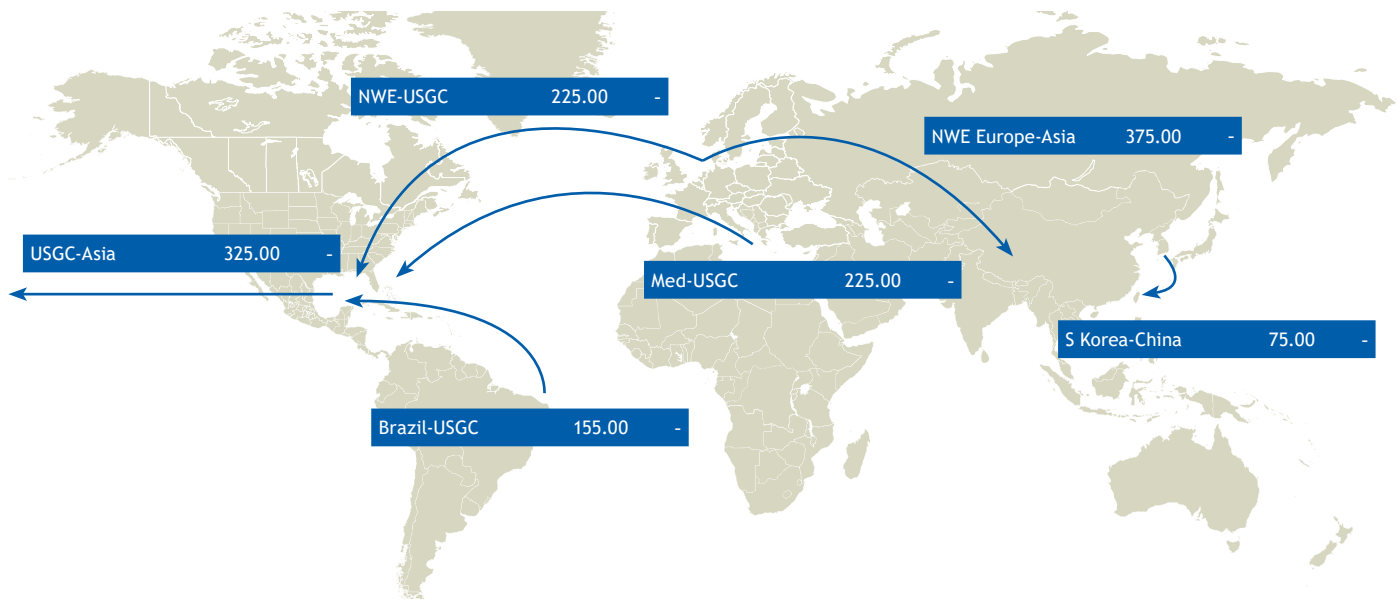
Cambodia earned more than \$453mn in the first 11 months of 2022 from the export of rubber latex and rubber wood, according to the latest report from the General Directorate of Rubber. Cambodia exported 46,119t of rubber as of November 2022. An increase of 22.8pc compared to the same time period in the previous year.

### SGX natural rubber vs Ice Brent crude, first month



## C4 FREIGHT RATES

\$/t



## IMPORTS AND EXPORTS

North America C4 imports						
Ship name	BD '000t	CC4 '000t	C4 RAF/IB	Load Port	Laycan	Destination
GasChem Arctic	4.5			ARA	Early Jan	USG
Coral Alameda	4.5			Brazil	Early Jan	Mexico
Navigator Gemini	5.3			Brazil	Mid Jan	USG
Kalolimnos	7.6			S. Korea	Mid Jan	Mexico, USG
GasChem Atlantic	5.0			ARA	End Jan	USG
Celtic Gas	8.0			ARA	End Jan	USG
Stina Kosan	3.2			Med	End Jan	Mexico
GasChem Baltic	5.0			ARA	H1 Feb	USG
Eco Ice	4.0			Brazil	H1 Feb	USGC
Penelope M	5.5			S. Korea	Mid Feb	USG
GasChem Caribic	4.0			Brazil	Mid Feb	USG
GasChem Atlantic	5.0			USG	End Feb	Mexico
Celtic Gas	7.7			USG	End Feb	Mexico
Thetagas	4.0			USG	End Feb	ARA
GasChem Baltic	5.0			ARA	End Feb	USG
Stina Kosan		4.0		USG	End Feb	ARA
Clamor Schulte #2	4.2			USG	Early Mar	Mexico
Clamor Schulte #3	1.7			USG	Early Mar	Mexico
Clamor Schulte #4	3.1			USG	Early Mar	Mexico
Gaschem Arctic	5.0			S. Korea	Early Mar	USGC
GasChem Adriatic	9.0			ARA	Ely Mar	USG
Clipper Hebe	7.0			ARA	Ely Mar	USG
Navigator Gemini	7.0			Brazil	H1 Mar	Mexico
Marie	5.0			S. Korea	Mid Mar	USGC
GasChem Atlantic		3.0		Mexico	March	USGC
Bow Gallant	4.5			USG	March	Mexico
Sophia Kosan	5.0			Brazil	End Mar	USG
Clipper Hermes	4.5			Asia	End Mar	USG
Fortunato	5.0			S. Korea	Early Apr	USG
Stina Kosan	5.0			Med	H1 April	Mexico
Pacific Gas	5.0			Europe	Mid-April	USG
Earth Summit	9.0			Europe	H1 April	US, Mexico
Atlantic Gas	9.0			Brazil	End April	Mexico
GasChem Caribic	5.3			Brazil	H1 May	USG
Navigator Saturn	5.3			Brazil	H1 May	Mexico
Bering Gas	9.0			ARA	Early May	USG
Bwek Anholt	4.0			ARA	Late May	Mexico
Navigator Saturn	5.3			Brazil	H1 June	USG
Sigmagas	4.2			Europe	H2 June	USG
GasChem Atlantic	5.1			Europe	H2 June	USG
Pacific Gas	3.5			Brazil	End June	US, Mexico
Ellington	5.3			Brazil	End June	Mexico
Sigmagas	3.0			USG	End June	Mexico
Balearic Gas	9.0			ARA	H1 July	US, Mexico
Astipalea	6.5			Brazil	H1 July	US, Mexico
Arctic Gas	5.0			Europe	H2 July	US
Sigmagas	5.0			Europe	Early Aug	US/Mex
GasChem Pacific	9.0			Europe	H1 Aug	US
GasChem Caribic	5.2			Brazil	H1 Aug	USG
Camilla Kosan	6.0			Korea	H1 Aug	US
GasChem Dollart	6.6			Brazil	H1 Aug	Mexico
Ellington	4.0			Europe	H2 Aug	US
Earth Summit	4.1			Brazil	H2 Aug	US, Mexico
Bering Gas	10.2			Europe	Early Sept	US

## IMPORTS AND EXPORTS

North A C4 imports						
Ship name	BD '000t	CC4 '000t	C4 RAF/IB	Load port	Laycan	Destination
Sigmagas	3.2			USG	H1 Sept	Mexico
GasChem Atlantic	5.0			Brazil	H1 Sept	USA
Arctic Gas	5.3			Brazil	Mid Sept	USA
GasChem Arctic	3.4			Brazil	Mid Sept	Mexico
GasChem Arctic	3.0			Brazil	Mid Sept	US
Paros	6.0			Europe	Early Oct	US
Balearic Gas	5.0			Europe	H1 Oct	Mexico
GasChem Atlantic	3.0			Brazil	H1 Oct	Mexico
GasChem Atlantic	5.3			Brazil	H1 Oct	US
GasChem Atlantic		2.5		Mexico	H1 Oct	USG
GasChem Caribic	5.0			Brazil	End Oct	Mexico
Happy Peregrine	4.0			Europe	H1 Nov	US
Happy Peregrine	3.0			Europe	H1 Nov	Mexico
GasChem Arctic	5.0			Europe	H1 Nov	US
Kalolimnos	3.0			Europe	Mid Nov	US
Kalolimnos	4.0			Europe	Mid Nov	Mexico
Happy Avocet	6.0			Brazil	Mid Nov	US
GasChem Atlantic	5.5			USG	Mid Nov	Mexico
Zetagas	4.0			Europe	H2 Nov	Mexico
Mygas	4.0			Middle East	H2 Nov	US
Mygas	2.0			Europe	H2 Nov	US
Bering Gas	6.0			Europe	H1 Dec	US
Bering Gas	4.0			Europe	H1 Dec	Mexico
Happy Peregrine	3.0			USG	H1 Dec	Mexico
GasChem Caribic	5.3			Brazil	H2 Dec	US
Arctic Gas	7.0			Europe	H1 Jan	US
Total 2022	398.0	9.5	0.0			
Total 2021	331.9	5.3	0.0			
Total 2020	96	0.0	2			
Total 2019	150.2	95.5	13.4			
Total 2018	250.0	134.0	0.0			
* with butene-1						
**with propylene						
Total 2021	331.9	5.3	0.0			

## IMPORTS AND EXPORTS

Europe, Mediterranean C4 exports						
Ship name	BD '000t	CC4 '000t	C4 RAF/IB	Load port	Laycan	Destination
GasChem Arctic	4			ARA	Ely Jan	USG
GasChem Atlantic	5.0			ARA	End Jan	USG
Celtic Gas	8.0			ARA	End Jan	USG
Stina Kosan	3.2			Med	End Jan	Mexico
GasChem Baltic	5.0			ARA	H1 Feb	USG
GasChem Adriatic	9.0			ARA	Ely Mar	USG
Clipper Hebe	7.0			ARA	Ely Mar	USG
Stina Kosan	5.0			Med	H1 April	Mexico
Pacific Gas	5.0			Med	Mid-April	USG
Earth Summit	9.0			ARA	H1 April	US, Mexico
Paros			7.0	ARA	Mid-April	Middle East
Theresa Schulte			6.0	ARA	H1 May	Middle East
Bwek Anholt	4.0			ARA	Late May	Mexico
Sigmagas	5.0			Europe	H2 June	USG
GasChem Atlantic	5.1			Europe	H2 June	USG
Balearic Gas	9.0			ARA	H1 July	US, Mexico
Arctic Gas	5.0			Europe	H2 July	US
Sigmagas	8.5			Europe	Early Aug	US
GasChem Pacific	6.1			Europe	H1 Aug	US
Ellington	4.0			Europe	H2 Aug	US
Bering Gas	10.2			Europe	Early Sept	US
Paros	6.0			Europe	Early Oct	US
Balearic Gas	5.0			Europe	H1 Oct	Mexico
GasChem Arctic	5.0			Europe	H1 Nov	US
Happy Peregrine	4.0			Europe	H1 Nov	US
Happy Peregrine	3.0			Europe	H1 Nov	Mexico
Kalolimnos	3.0			Europe	Mid Nov	US
Kalolimnos	4.0			Europe	Mid Nov	Mexico
Zetagas	4.0			Europe	H2 Nov	Mexico
Mygas	4.0			Middle East	H2 Nov	US
Mygas	2.0			Europe	H2 Nov	US
Thekla Schulte	7.0			Europe	H1 Dec	Asia
Bering Gas	6.0			Europe	H1 Dec	US
Bering Gas	4.0			Europe	H1 Dec	Mexico
Arctic Gas	7.0			Europe	H1 Jan	USG
Total 2022	181.6	0.0	13.0			
Total 2021	243.2	30.4	73.2			
Total 2020	356.0	24.0	51			
Total 2019	287.2	127.5	38.6			
Total 2018	290.5	146.5	0.0			

## IMPORTS AND EXPORTS

US butadiene exports						
Ship name	BD '000t	CC4 '000t	RAF '000t	Load port	Laycan	Destination
GasChem Atlantic	5.0			USG	End Feb	Mexico
Celtic Gas	7.7			USG	End Feb	Mexico
Adriatic Gas	3.6			Mexico	End Feb	S. Korea
Clamor Schulte #2	4.2			USG	Early Mar	Mexico
Clamor Schulte #3	1.7			USG	Early Mar	Mexico
Clamor Schulte #4	3.1			USG	Early Mar	Mexico
Thetagas	3.0			USG	Early Mar	Mexico
GasChem Adriatic	9.0			USGC	End Mar	ARA
Clipper Hebe	7.0			USGC	End Mar	ARA
Eco Ice	9.0			USG	End Mar	ARA
GasChem Atlantic		4.5		USG	Mid May	ARA
Dilos		4.0		USG	Mid June	ARA
Pacific Gas	3.0			USG	End June	Europe
Sigma Gas	3.0			USG	End June	Mexico
Navigator Saturn		6.0		USG	H1 July	Europe
Clipper Hermes		6.0		US	H1 Aug	Europe
Sigmagas	3.2			USG	H1 Sept	Mexico
Balearic Gas		4.5		USG	H1 Sept	Europe
Gas Flawless			2	USG	H1 Sept	Mexico
Bering Gas		4.5		US	H1 Oct	Europe
GasChem Atlantic	5.5			USG	Mid Nov	Mexico
Happy Peregrine	3.0			USG	H1 Dec	Mexico
Happy Peregrine		6.5		USG	H2 Dec	Asia
Total 2022	68.0	36.0	1.7			
Total 2021	8.0	25.2	6.6			
Total 2020	68.3	0.0	0.0			
Total 2019	48.5	3.5	0.0			
Total 2018	48.0	0.0	0.0			

Asia-Pacific C4 exports					
Ship Name	BD '000t	CC4 '000t	Load port	Laycan	Destination
Kalolimnos	7.6		S. Korea	Mid Jan	Mexico, USGC
Penelope M	5.5		S. Korea	mid Feb	USGC
Gaschem Arctic	5.0		S. Korea	Early Mar	USGC
Marie	5.0		S. Korea	Mid Mar	USGC
Clipper Hermes	4.5		Thailand	End Mar	USG
Fortunato	5.0		S. Korea	Early Apr	USG
DL Poppy		2.0	Asia	End Mar	Middle East
Sabrina	2.9		Indonesia	H1 April	India
Kamilla Kosan	5.0		S. Korea	mid Aug	US
Total 2022	40.5	2.0			
Coral Furcata	5.0		S. Korea	Ely June	USGC
Navigator Umbrio	5.0		China	H1 June	Mexico
Navigator Europa	5.0		S. Korea	mid-July	USG
Thekla Schulte	4.0		Thailand	H1 Aug	USG
Napa Spirit	6.0		S. Korea	H2 Aug	USG
Pacific Venus	6.0		S. Korea	End Aug	USGC, Mexico
JBU Schelde	6.0		S. Korea	End Aug	USG
Kamilla Kosan	6		S. Korea	H1 Sept	USG
Happy Bird	5		S. Korea	Mid Oct	USG
Total 2021	47.1	0.0			
L Kosan	5.0		S. Korea	Mid Mar	USGC
Sonoma Spirit	5.0		S. Korea	Mid Mar	USGC
Total 2020	10.0	0.0			
Navigator Centauri		6.0	Philippines	Jun	USGC
Total 2019	0.0	6.0			
Penelope M	5.0		S. Korea	1H May	USGC
PGC Eirini	5.0		Singapore	1H May	USGC
Norgas Shasta		6.0	S. Korea	End Aug	USGC
Total 2018	10.0	6.0			

Asia-Pacific C4 imports						
Ship name	BD '000t	CC4 '000t	C4 RAF/IB	Load port	Laycan	Destination
Adriatic Gas		3.6		Mexico	End Feb	S. Korea
Happy Albatross			7.0	Middle East	H2 Feb	Asia
Happy Bird			5.0	Middle East	End Feb	Middle East
DL Poppy			2.0	India	End Feb	Singapore
DL Freesia			1.0	S. Korea	Early Mar	Asia
Eco Ice	11.5			Brazil	Early Mar	Asia
Paros	2.5			Saudi Arabia	Late May	India
Katherine Kosan	5.0			Saudi Arabia	early June	Korea
Sabrina	2.9			India	Mid June	Asia
Napa Spirit	5.0			Saudi Arabia	Late June	Korea
Epic St. Martin	2.9			India	H2 June	Asia
Dillos	6.5			Brazil	H1 Sept	Korea
Atlantic Gas	10.0			Brazil	H2 Oct	Asia
Thekla Schulte	7.0			Europe	H1 Dec	Asia
Happy Peregrine		7.2		US	H2 Dec	Asia
Total 2022		56.9	15.0			
Total 2021		111.5	0.0			
Total 2020		501	9.0			
Total 2019		470.4	6.5			
Total 2018		331.5	0.0			



## FREIGHT

Cargo bookings to North America			
	Nov 22	Dec 22	Jan 22
<b>Ex-Europe</b>			
Butadiene	25	10	7
Crude C4	0	0	0
C4 raffinate	0	0	0
<b>Ex-Asia</b>			
Butadiene	0	0	0
Crude C4	0	0	0
<b>Ex-Rest of World</b>			
Butadiene Brazil	6	5	0
Crude C4 Mexico	0	0	0
Crude C4 Turkey	0	0	0
Crude C4 Brazil	0	0	0
Butadiene Other	12	3	0
<b>Totals</b>			
Butadiene	42	18	7
Crude C4	0	0	0
C4 raffinate	0	0	0

Freight rates	\$/t	
	Rate	±
C4 freight NWE - USGC	225.00	0.00
C4 freight Med - USGC	225.00	0.00
C4 freight Brazil - USGC	155.00	0.00
C4 freight USGC - Asia	325.00	0.00
C4 freight NWE Europe - Asia	375.00	0.00
C4 freight S Korea - Taiwan	75.00	0.00

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