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Argus Butadiene

Formerly Argus DeWitt Butadiene

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HIGHLIGHTS

- BD prices in Asia-Pacific inch up on production problems.
- One US BD producer nominates a rollover for the November contract.
- Europe continues to confront volatile energy prices.
- PBR values in northeast Asia have been flat since 15 September.

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MARKET SNAPSHOT

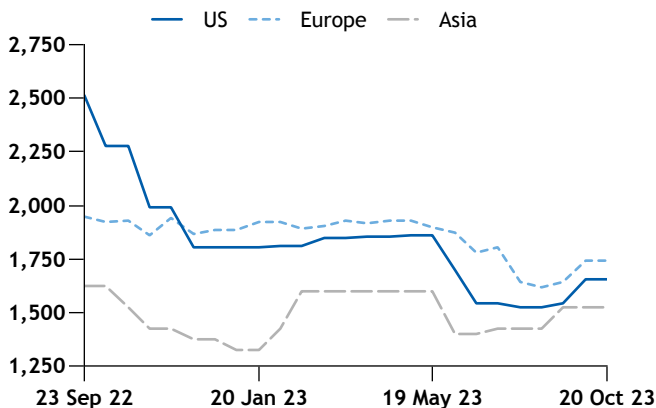
Key prices			
	Timing	Price	±
Americas			
Butadiene contract fob $\text{\$/lb}$		32.00-35.00	0.00
Butadiene prevailing contract fob $\text{\$/lb}$	Oct	33.50	0.00
Europe			
Butadiene contract delivered $\text{\$/t}$	Oct	765.00	0.00
Asia-Pacific			
Butadiene spot cfr NE Asia $\text{\$/t}$		1,030.00-1,070.00	+20.00

Global SBR			$\text{\$/t}$
	Timing	Price	±
US eSBR 1502	Oct	1,587-1,720	0
Europe eSBR 1502	Oct	1,721-1,764	+1
Asia eSBR 1502		1,500-1,550	0

Associated markets			$\text{\$/t}$
	Timing	Price	±
TSR20 SGX fob	Nov	1,443.00-1,469.00	+70.00
Naphtha 65 para NWE cif		659.50	+31.50
Naphtha Japan c+f		687.50	+39.25

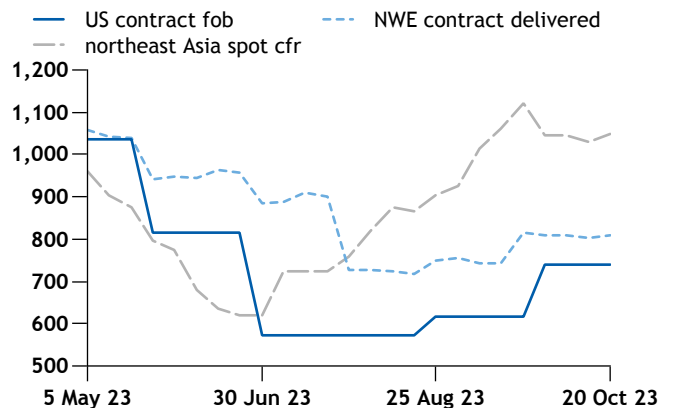
Global SBR

$\text{\$/t}$



Butadiene: Americas, Europe and Asia

$\text{\$/t}$



ENERGY AND FEEDSTOCKS

WTI crude futures climbed 19 October on continuing concerns that the Israel-Hamas conflict may spill over into the wider region. November Nymex WTI today rose by \$1.05/bl to \$89.37/bl, while December Ice Brent rose 88¢/bl to \$92.38/bl. The December Brent-December WTI spread narrowed to \$4.01/bl.

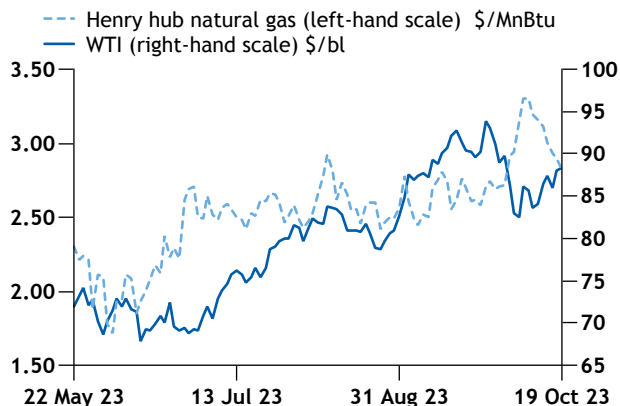
A likely ground offensive in Gaza by Israel's military risks escalating tensions in the Middle East, the world's largest oil producing region.

Iran's foreign minister Hossein Amir-Abdollahian on October 18 called on members of the Organisation of Islamic Co-operation to impose an oil embargo and other sanctions on Israel, although any embargo would have little impact on oil flows, given Israeli refineries mostly rely on crude from Russia, Azerbaijan and the Kurdistan region of Iraq.

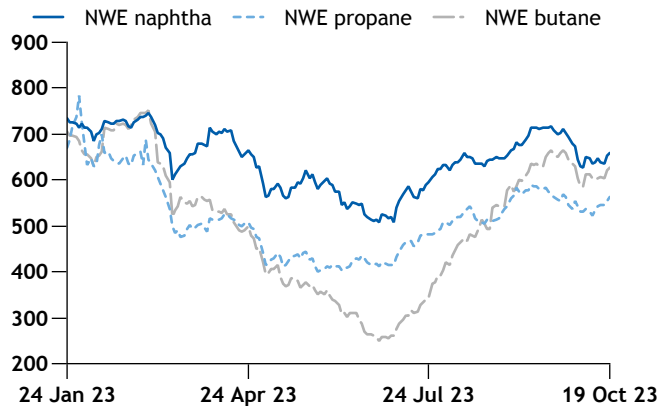
Nymex gas for November delivery dropped by 9.9¢/mmBtu, or 3.2pc, to settle at \$2.957/mmBtu. The 12-month strip declined by 2.6pc to \$3.289/mmBtu, while the 2024-calendar

Market prices			
	Timing	Price	±
Americas, 19 Oct			
Natural gas Houston Ship Channel All Index \$/mmBtu		2.43	+0.09
Ethane Mont Belvieu spot fob ¢/USG		26.75	-1.50
Propane Mont Belvieu spot fob ¢/USG		69.63	+0.50
Butane Mont Belvieu spot fob ¢/USG		80.6	+2.38
Naphtha 40 N+A USGC delivered ¢/USG		183.67	+12.17
Gasoline 87 conv USGC ¢/USG		240.42	+22.17
Gasoline 93 conv USGC ¢/USG		269.42	+22.17
Nymex WTI \$/bl		89.37	+6.46
WTI \$/bl		89.37	+6.46
Europe, 19 Oct			
Propane cif ARA large cargo \$/t		564.00	+33.25
Butane ARA/UK large cargo \$/t		534.25	+26.25
Naphtha 65 para NWE cif \$/t		659.50	+31.50
Ice Brent \$/bl		91.32	+7.12
Asia-Pacific, 19 Oct			
Naphtha Japan c+f \$/t		687.50	+39.25
Butane Argus Far East Index™ \$/t		669.50	+4.25
Propane Argus Far East Index™ \$/t		659.50	+4.25

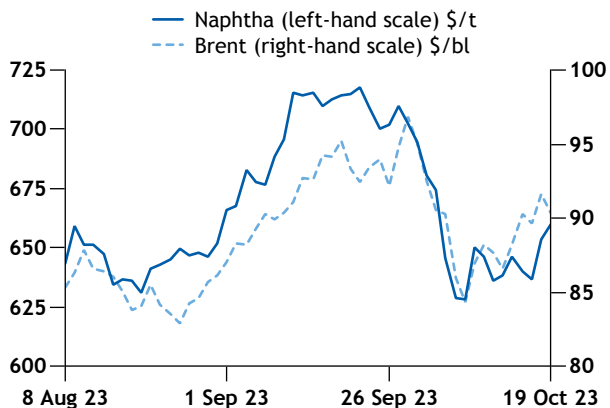
Henry Hub natural gas vs WTI



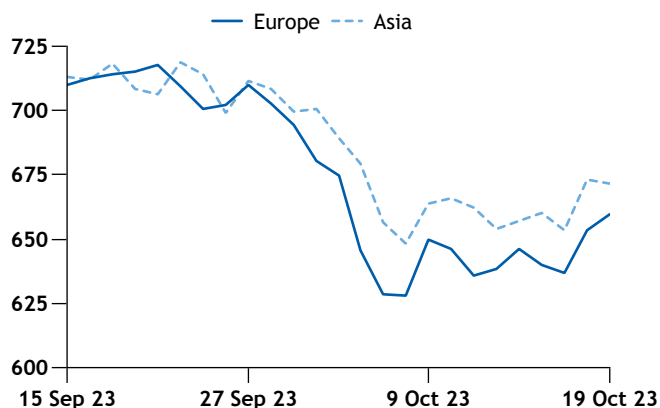
European cracker feedstock prices



Naphtha vs Ice Brent



Europe and Asia naphtha



ENERGY AND FEEDSTOCKS

strip was down by 2.1pc to \$3.434/mmBtu. Prompt-month prices have declined for seven consecutive sessions, shedding 13pc since hitting about an eight-month high on 10 October.

Prices have plunged as forecasters pared expectations for colder-than-normal weather in October, the final month of the injection season. A drop in weather-related demand in October can curb inventory growth and pull high US gas inventories closer to average levels. Mild weather last week likely led to a large build in gas inventories.

US gas inventories in the week ended 13 October rose by 97 Bcf (2.7bn m³), the US Energy Information Administration (EIA) said today in its weekly inventory report. That increase was the biggest in four months and larger than the five-year-

average increase of 85 Bcf. Analysts surveyed by Argus had expected a build of 79 Bcf. The large increase underscores a sharp drop in demand as the US gas market approaches the start of the winter heating season.

Total inventories last week rose to 3.626 Tcf – 5.1pc above the five-year average and 9pc higher than a year earlier, according to the EIA. High inventories can put downward pressure on prices by easing concerns about spikes in demand and supply shortfalls.

The EIA last week projected that inventories would peak ahead of the 1 November start of the winter heating season at 3.854 Tcf, or 6pc above the five-year average. Injections often continue into November until there is enough heating demand to spur withdrawals.

AUTO UPDATE

Americas

The US Department of Treasury announced on 6 October that at the start of 2024, consumers will be allowed to earn a \$7,500 tax credit for New electric vehicles (EV) purchased as well as a \$4,000 tax credit for used EVs purchased. This is the result and an extension of previously set rules for automotive manufacturers, located in the Inflation Reduction Act that was signed by President Biden in August.

US sales of light vehicles rose in September as Americans shopped for cars and trucks amid ample inventories and parts at factories through the start of a strike at the Big 3 automakers.

Sales of light vehicles – cars and light trucks – rose to a seasonally adjusted annual rate of 15.7mn units in September from a 15.3mn unit pace the prior month, according to the Bureau of Economic Analysis (BEA). Sales were up from a 13.7mn unit rate in September 2022, when parts shortages kept a lid on production.

Americans continued to buy new cars even as the United Auto Workers (UAW) launched its strike. Steady job growth and wage gains have spurred buying even as lending rates continue to climb. Sales of light trucks rose to a 12.46mn unit rate in September, up from 12.2mn in August and 10.8mn units in September last year. Sales of autos rose to a 3.2mn unit rate in September from a 3.1mn unit annual pace the prior month and 2.9mn units in September 2022.

Domestic auto production rose to a seasonally adjusted 158,200 units in August from 149,000 in July. They were up

from 154,000 units in August last year. Output is reported with a one-month lag to sales.

The strike, in its fifth week, expanded to Ford's Kentucky truck plant, the company's largest factory, on 11 October after the union rejected a deal it said was the same one it received two weeks prior. A company executive on 12 October said Ford reached its limit for what it can offer financially.

Besides the Kentucky plant, the UAW has struck five assembly plants and 36 distribution centers across the Big 3 automakers, with nearly 34,000 union-represented members picketing for increased pay and better benefits.

Brazil's vehicle output increased slightly by 0.5pc in September from a year earlier, with lower exports to Latin America. The country produced almost 208,890 vehicles in September from 207,760 units a year earlier, according to the Brazil's vehicle association Anfavea. Brazil vehicle exports fell by 3.9pc to 27,440 in September from a year earlier.

Europe

New electric vehicle (EV) registrations in Germany fell to a five-month low in September and were down by almost 30pc on the year, according to data from federal motor transport authority KBA.

EV registrations were down by 28.6pc on the year and more than halved on the month to 31,714, the lowest since April. And the share of EV registrations of total new car registrations declined by 17.6 percentage points on the month to 14.1pc.

Plug-in hybrid car registrations again registered a strong

AUTO UPDATE

decline on the year, falling by almost 46pc from September 2022 to 15,383. But registrations were at the highest since June, and their share of total new registrations rose to 6.9pc from 5.3pc in August. Registrations of other hybrid cars rose by 1,951 to 57,795.

New gasoline-fueled car registrations rose by almost 3,400 on the month and by 9.1pc on the year to 73,979, and their share of total new car registrations rose to 35.2pc from 27.6pc in August. And diesel-fueled car registrations also rose both on the month and on the year, standing at 4.6pc above the equivalent month in 2022 at 39,900. Their share of total new registrations rose to 17.8pc from 14.5pc in August.

A total of 224,502 new cars were registered in Germany in September, down from 273,417 in August but a decline of just 0.1 percentage points on the year.

European battery materials maker Umicore and lithium-ion battery maker AESC signed a 10-year cathode active materials (CAM) supply agreement to support their North American production.

The materials from this agreement will power AESC EV battery production in North America.

AESC is expanding its lithium-ion battery production in the US to meet the demand of automakers looking to electrify their production.

The company is building plants in Tennessee, South Carolina and Kentucky. AESC's US plants will run at full capacity by 2026, according to the battery maker. AESC will supply batteries made with these CAMs to German automaker BMW who will use them to supply its EV production in South Carolina.

Asia-Pacific

China's new energy vehicle (NEV) production and sales continued to increase in September following consecutive rises since May, in response to firm demand from buyers.

China produced 879,000 NEVs in September, up by 16pc from a year earlier and by 4.3pc from August, according to data from

the China Association of Automobile Manufacturers (CAAM). Sales also rose to 904,000 units, up by 28pc from September 2022 and by 6.9pc from August. NEVs refer to battery-electric vehicles, plug-in hybrids, and fuel-cell vehicles in China.

China's decarbonization targets for 2030 and 2060 have boosted its EV sales significantly, with the country leading global growth in the past decade. NEVs accounted for 26pc of China's total new vehicle sales in 2022, 30pc over January-September, and 32pc in September.

CAAM earlier this year lowered its prediction for China's NEV sales growth to 30pc at 9mn units in 2023. However, many market participants expect China's NEV sales to reach 10mn units this year, up by 45pc from 2022.

China's NEV exports also more than doubled during January-September compared with a year earlier. The country exported 825,000 units of NEVs during January-September, up sharply from 389,000 units in the same period last year, according to data released by the China Association of Automotive Manufacturers. China's top three export destinations for NEVs were Belgium, Thailand and the UK.

Indian automobile production and sales rose in the first half of the 2023-24 fiscal year on strong domestic economic activity and will likely rise further in the upcoming festive season.

Passenger vehicles sales rose by 6.9pc on the year to 2.07mn units in April-September, exceeding 2mn units for the first time in the first half of the fiscal year, according to Society of Indian Automobile Manufacturers (SIAM).

Three-wheeler sales climbed by 73pc on the year to 339,690 in April-September, while two-wheeler sales inched up by 4.1pc on the year to 8.74mn units in April-September, according to SIAM.

India has entered the festival season with the continuing Navratri and will last until mid-November when Deepavali is celebrated, which will further bolster auto sales.

In contrast, India's total automobile exports during April-September declined by 17pc on the year to 2.21mn units.

ECONOMIC UPDATE

Americas

US job growth accelerated in September at the fastest rate since the first month of 2023, a sign the US Federal Reserve will likely have to keep interest rates higher for longer to rein in inflation.

The US added 336,000 nonfarm jobs in September, about double what was expected by analysts, and the unemployment rate was unchanged at 3.8pc, the Labor Department said on 6 October. Job gains for the prior two months were revised higher by a combined 119,000 jobs.

ECONOMIC UPDATE

The robust job report signals that the Federal Reserve will likely have to hike its target rate further to slow hiring and the broader economy to tame inflation. Odds of a quarter point Fed rate hike at the 1 November policy meeting rose by about 10 points to 28pc from the week ended 29 September, according to the CME FedWatch tool.

Job growth over the prior 12 months averaged about 267,000 jobs, compared with a monthly average of about 190,000 jobs created in the year before Covid-19 struck in early 2020, eliminating about 22mn jobs over several months.

Leisure and hospitality added 96,000 jobs, above the monthly gain of 61,000 over the prior 12 months. Government employment increased by 73,000 jobs, above the monthly gain of 47,000 jobs over the prior 12 months. Health care added 41,000 jobs.

Manufacturing added 17,000 and construction added 11,000 jobs. Oil and gas extraction added 200 jobs, and mining excluding oil and gas lost 400 jobs. Motor vehicle and parts dealers added 9,400 jobs. Gasoline stations added 5,400 jobs. Transportation and warehousing added 8,600 jobs.

Average hourly earnings rose by 4.2pc over the 12 months through September, slowing from 4.3pc for the 12 months through the prior month.

The IMF raised its 2023 growth outlook for the Mexican economy to 3.2pc, supported by robust private consumption and investment, with notable strength in the service sectors, construction, and auto output.

The latest forecast marks an upgrade from the IMF's previous 2023 forecast of 2.6pc growth made in July.

Those estimates are below the Mexican finance ministry's forecasts of around 2.5-3.5pc, according to its draft budget sent to congress in early September.

The IMF expects the next administration, which will take office on 1 October 2024, will face challenges in maintaining Mexico's economic growth as a large fiscal consolidation is expected in 2025 that could reverse the boost recorded in 2024.

Europe

EU manufacturing output in August was much lower on the year but slightly higher on the month, preliminary data from Eurostat show.

Manufacturing across the EU fell 4pc from August 2022. Output dropped on the year in all five of the top countries – Germany, the Netherlands, Spain, Italy and France – falling the most in the Netherlands, by 7.9pc, and the least in Germany, by 0.7pc.

Dutch manufacturing output fell on the year each month in January-August. Most other countries also recorded steep drops in manufacturing, with only Sweden, Denmark, Greece, and Malta registering gains. August was a particularly weak month for EU consumption, which was 6pc lower on the year and nearly 20pc below the 2017-21 average.

Output in the non-metallic minerals and paper products sectors led the decline for the third month in a row, falling by 13.4pc and 11.6pc, respectively. August was the fourth consecutive month in which manufacturing output declined on the year.

Turkish manufacturing output increased on the year in August but moved down monthly. Calendar-adjusted manufacturing output was up by 1.8pc from August 2022, national statistics institute TUIK said on 10 October.

Overall, seasonally and calendar-adjusted manufacturing output fell by 1.3pc in August from July.

Similar trends are observed in the wider index of industrial output, which was 3.1pc up on the year but down by 0.8pc from July.

Higher exports may have again supported Turkey's industrial activity. The Turkish export volume index rose by 3.4pc in August from a year earlier, with exports of manufactured goods – except food, beverages and tobacco – registering a small increase of just 0.3pc.

Asia-Pacific

The World Bank and Japan have launched a partnership to help emerging markets and developing countries (EMDCs) develop their clean-energy manufacturing and mineral industries, which garnered more than \$40mn of initial pledged contribution.

The partnership, coined as the Resilient and Inclusive Supply-chain Enhancement (RISE) initiative, was launched on 11 October during the ongoing IMF-World Bank annual meeting in Morocco's Marakesh. It aims to support low- and middle-income countries in mineral processing, refining as well as component manufacturing and assembling of "clean energy products" to diversify the global supply chain, according to Japan's ministry of finance.

Japan plans to contribute \$25mn to the initiative, while the remaining pledged amount will come from Italy, South Korea, Canada and the UK. Chile and India acted as representatives of prospective recipient countries during the launch event, according to the World Bank.

ECONOMIC UPDATE

"The energy transition will create a trillion-dollar market, with tens of millions of jobs along global mineral value chains," said the World Bank. "It represents an opportunity for EM-DCs to build manufacturing capacity, boost job growth, and strengthen long-term economic development."

The International Monetary Fund (IMF) sees the Chinese on track to continue to decelerate.

The global economy overall has performed better than most economists expected a year ago, showing resilience despite energy and food price spikes and other spillovers of the

pandemic and the conflict in Ukraine. But that resilience is not evenly distributed - especially in China.

The IMF has revised its forecasts for China in 2023 and 2024. By contrast, it expects China to grow at a slower pace than projected three months ago. China's economy is hampered by a real estate crisis and flagging consumer and business confidence, the IMF says. It forecasts China's growth will drop to 4.2pc next year from a projected 5pc this year. Beijing has periodically indicated it may deploy further stimulus measures to boost growth.

AMERICAS

Markets

A US producer has nominated a rollover for the butadiene (BD) November contract price (CP) at 35¢/lb (\$772/t), which is stable to its October nomination. In October, there were two producers who nominated 35¢/lb while the remaining two nominated 32¢/lb. In the case of a split settlement like in October, Argus takes the average of the four nominations to determine the prevailing contract price, as noted in our methodology. Argus' October prevailing CP was 33.50¢/lb.

If the four producers maintain their October nomination levels, November would mark the first CP to rollover since August following two consecutive months of increases. The remaining three producer nominations are pending, and the direction of the settle price should be clearer next week.

In production, a Texas BD unit has been offline due to cracker technical issues since early September. Market participants estimate an end of October for the cracker restart. This same production problem resulted in an October allocation by a tolling partner. The technical issue has also halted new exports from the US and pushed a few buyers into the spot market to short cover.

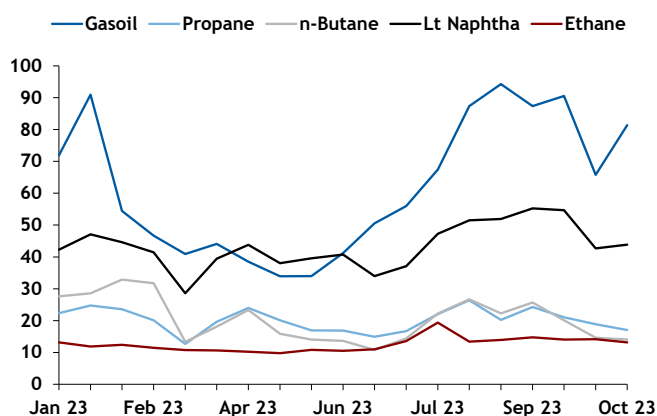
A second Texas BD producer also has an allocation in place this month. At this point it is unclear if the volume restrictions for either supplier will persist into November. Additionally, a cracker in Canada that is tied to a BD unit has been offline since mid-September with a likely restart at the end of the month. Should there be any delays, this could impact BD supply to rail consumers in the US midcontinent.

There has been a deepsea shipment from the US to northeast Asia, although this business concluded in August, prior to recent unplanned production woes. At the same time, North

Americas prices			¢/lb
	Timing	Price	±
Butadiene US contract fob		32.00-35.00	0.00
Butadiene US prevailing contract fob	Oct	33.50	0.00
Butadiene US spot fob		34.00-37.00	0.00
Butene-1 US domestic fob	Sep	81.00-86.00	0.00
Isobutylene 99% pure US fob	Sep	78.00-83.00	0.00
Raffinate-1 (45% iC4=) US formula		59.20-59.90	-6.80
Crude C4 spot USGC cif		785.00-882.00	-10.50

US ethylene vs cash costs

¢/lb



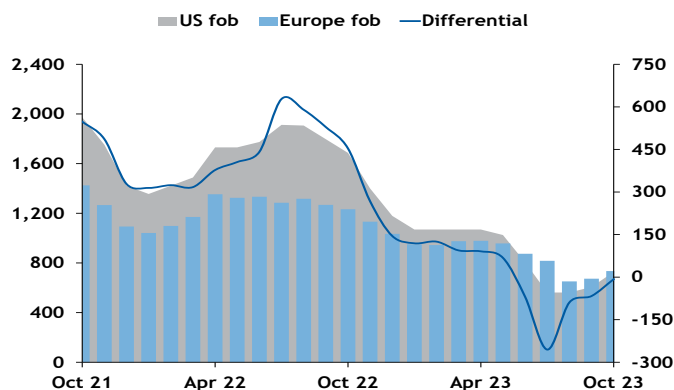
American term volume imports from Europe have been diverted to northeast Asia for two consecutive months in September and October. The shipment usually moves in the early part of the month, so we will be monitoring vessel fixtures.

Downstream, we are also aware of at least two derivative

AMERICAS

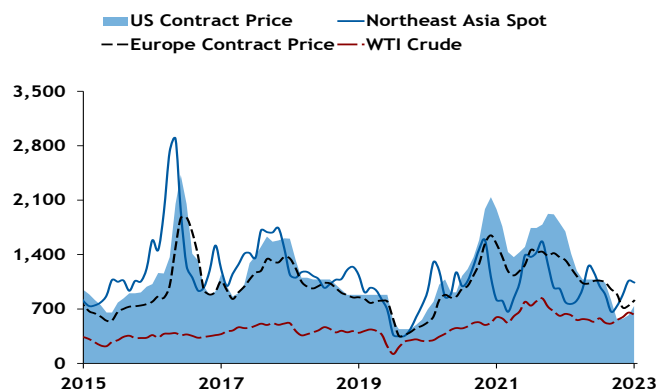
US vs Europe butadiene contract, fob basis

\$/t



Global butadiene price history, 2015-present

\$/t



turnarounds during parts of October, which has helped with supply constraints.

While overall domestic demand for BD remains weak and is not expected to pick up until the mid-2024, spot interest for US material has recently increased mostly because of the allocations and production outages. But the quantities of interest are below 2,000t, which is the minimum requirement to be considered in the *Argus* assessment process. Buyers still experience a challenge in locating spot supply via pipeline.

The UAW strike is predicted to extend into November as no agreements have been made in proposed contracts of Detroit's Big Three automakers. Although UAW plans to expand its attacks and worsen its impact to the automotive industry, little to no change to BD demand is expected as of now.

This week *Argus* rolled over the spot assessment up to 34-37¢/lb. No new deals have been reported recently. In previous

weeks, spot price ideas have been heard to be hovering at or slightly above the October CP.

In logistics, waiting times in the canal are growing and are likely to further increase as the transit is further restricted from 32 to 31 daily vessels, beginning on 1 November. Average delays in the larger Neopanamax locks in the Panama Canal stood at 11 days northbound from the Pacific to the Atlantic basin and to nine days southbound on 17 October, up from two days in both directions on 2 October.

Looking upstream for crackers without operational issues, ethane cracking margins have been at their highest level since mid-April. The gross spot cash margin for cracking ethane into ethylene on the US Gulf coast has averaged just over 9¢/lb so far in October, according to an *Argus* generic model. The September ethylene contract settled 2.5¢/lb up to 32¢/lb on 2 October, the highest monthly settlement since 2022 December.

EUROPE

Markets

Weak but stable butadiene (BD) demand persists in Europe as some market players report they've been carrying minimum inventories. A few participants have not seen much change in the BD market over the past few months and do not expect much change through the end of the year.

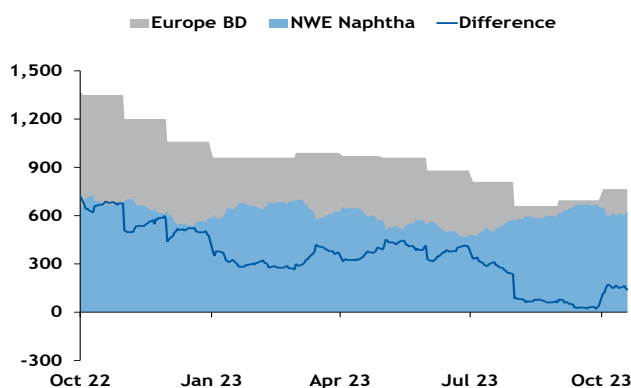
Three BD spot deals have been reported in the last two weeks all for October loading totaling over 2,000t. Two of these were concluded below the October monthly contract price

Europe prices			
	Timing	Price	±
Butadiene NWE contract delivered €/t	Oct	765.00-765.00	0.00
Butadiene NWE formula netback fob US \$/t		478.00-544.00	0.00
Isobutylene NWE delivered €/t	Sep	1,110.00-1,140.00	0.00
Raffinate-1 NWE incremental cfr \$/t		890.00-924.00	+33.50
Naphtha factor \$/t		1.35-1.40	0
Crude C4 NWE spot dlvd USGC \$/t		560.00-607.00	-10.50
Naphtha factor \$/t		0.85-0.92	-0.06

EUROPE

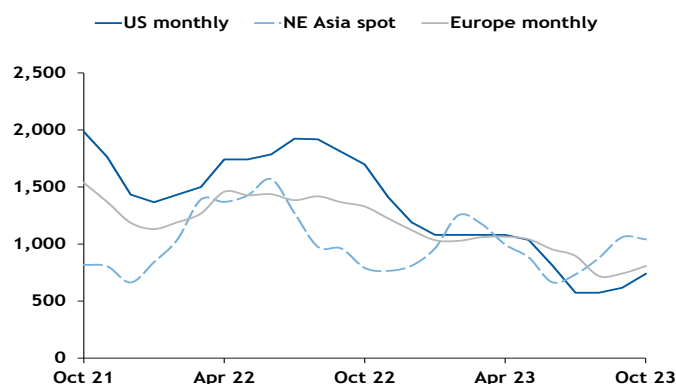
Europe butadiene MCP vs NWE naphtha

€/t



Global butadiene prices

\$/t



(MCP) of €765/t (\$804/t) the other was done flat to the MCP.

Traders were more active in the second half of September but interest slowed earlier in the month. This week traders made inquiries, seeking second half November cargoes to export to northeast Asia. The problem is that freight rates are on the rise, estimated between \$400-450/t for a 7,000t vessel. In addition, there are a number of derivative turnarounds in northeast Asia during the next several weeks.

A crude C4 spot deal was reported in the last two weeks for around 2,000t at 0.85 x naphtha. This is a decrease from the ranges seen in the last month when the midpoint was 0.94 x naphtha assessed in the last two reports.

A tender to offer for term crude C4 volume from Turkey has been offered and is expected to close next week. The tender is typically based on a factor to naphtha. The timing coincides with falling spot crude C4 values. Looking at the full year, there have been steady declines in crude C4 prices since January. Earlier in the year, Argus assessed European crude C4 delivered northwest Europe (NWE) at 1.075 x naphtha on 6 January. This is a 12pc drop in prices from January to October.

MTBE demand in Europe has slowed down but raffinate-1 spot deals were heard still holding some strength. Two raffinate-1 deals transacted within the range of 1.35 to 1.40 x naphtha, which is on the higher end of ranges seen since September.

Discussions on the European MCP begins this week. At the time of publication, no nominations had been reported. As discussions begin, market participants are considering the movements of feedstocks and energy.

In feedstocks, European naphtha has averaged \$646.4/t month to date in October, a \$53/t drop from the September

average of \$699.4. On the 18 October, Argus assessed European naphtha at \$653.25/t down 3pc from the beginning of the month. But if you compare average prices from mid-August to mid-September versus mid-September to mid-October, naphtha has gained about \$10/t.

Additionally, producer margins have suffered for three consecutive months. The BD to naphtha spread in August was \$78/t (€71/t); September was \$43/t (€40/t) and October month-to-date through 16 October was \$160/t (€151/t). Producers target at least a premium of \$200-250/t to naphtha in order to maintain profitability.

Also top of mind is that Dutch TTF natural gas prices on a day ahead basis have been increasing in October as compared to the month prior. The month to date October average is €41.3/MWh, up from September's average of €36.8/MWh, according to Argus data. Argus assessed the TTF front-month price at €44.82/MWh on Thursday.

Looking upstream, naphtha refining margins hit their widest discount to North Sea Dated crude since November on 16 October. Discounts hit 11-month lows of \$21.02/bl, on the back of weaker demand and ample supply in the region. European petrochemical demand remains muted while gasoline blending demand, the main outlet for naphtha, is experiencing a seasonal demand lull.

Currently there are no immediate concerns about the BD supply chain in the Middle East given the recent conflict between Israel and Hamas. BD supply and demand in the region are limited to Saudi Arabia, Iran and Turkey. On a macro level, if the fighting extends further into the region, transit in and out of the Suez Canal could be diverted.

ASIA-PACIFIC

Markets

Asia Pacific butadiene (BD) prices rose this week. The shutdown of Sinopec Zhenhai cracker, with its associated butadiene extraction unit, raised the domestic market in China and prices across the Asia Pacific region.

Sinopec Zhenhai owns and operates two butadiene extraction units at the site with total capacities of 320,000 t/yr.

Liquidity of butadiene coming out of southeast Asia rose, with three producers selling at least 8,000t of butadiene for loading in November.

The Philippines' JG Summit likely sold two cargoes of butadiene totalling 4,000t for loading in November in mid-\$900s/t fob level. After accounting \$115-120/t freight costs to carry 2,000t of butadiene from Batangas to China, the fob price would be equivalent to mid-to-high \$1,000/t cfr China.

Thai and Malaysian producers PTTGC and Lotte Titan each sold 2,000t of butadiene for loading in the second half of November. They were thought to be sold in the region of mid-to-high double digit discounts to published cfr northeast Asia assessments.

Malaysian PrefChem is expecting to restart its butadiene extraction unit this coming weekend, with the view of achieving on-specification output early next week. The unit was previously slated to restart operations in the middle of October.

A EU-origin cargo for arrival in the second half of December was floated to the market in northeast Asia at \$1,100/t cfr. There were pockets of demand for butadiene imports for arrival in December, with buying indications being placed at \$1,000/t cfr.

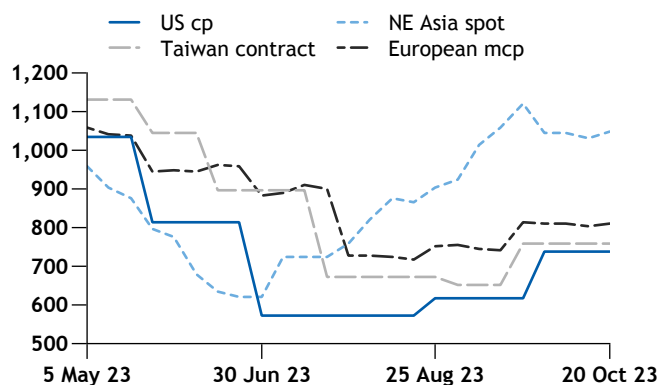
The rise in the domestic prices in China has resulted in sellers raising their selling ideas. Lotte Titan has sold out its November-loading volumes last week. A South Korean producer put its selling indication at \$1,100/t fob.

In China, Sinopec raised its list butadiene price by 600 yuan/t to Yn9,200/t, or the import parity equivalence of \$1,053/t, which represented a \$3/t premium to the latest published cfr northeast Asia marker. The latest raise followed

Asia-Pacific prices			\$/t
	Timing	Price	±
Butadiene			
fob NE Asia spot	prompt	1,040.00-1,070.00	+20.00
fob NE Asia month average	Sep	1,006.25	+178.75
cfr NE Asia spot	prompt	1,030.00-1,070.00	+20.00
cfr NE Asia spot month average	Sep	1,060.00	+194.00
cfr southeast Asia spot	prompt	960.00-1,010.00	+20.00
cfr southeast Asia spot month average	Sep	985.00	+188.00
fob southeast Asia spot	prompt	910.00-1,000.00	+20.00
fob southeast Asia month average	Sep	955.00	+188.00
Taiwan contract month	Aug	756.00-758.00	0.00
Sinopec price Yn/t	prompt	9,200.00	+600.00
Sinopec price import parity	prompt	1,091.00	+69.00
Raffinate-1			
Naphtha cfr Japan premium		220.00-230.00	0
fob Asia		904.00-916.00	+27
cfr China		1,084.00-1,096.00	+27

Butadiene prices: US, WE and Asia-Pacific

\$/t



the shutdown of Sinopec Zhenhai cracker. Prices in east China stood at 8,900 yuan/t, or the import parity equivalence of \$1,019/, which represented a \$31/t discount to the latest published cfr northeast Asia marker.

C4 DERIVATIVES

Americas

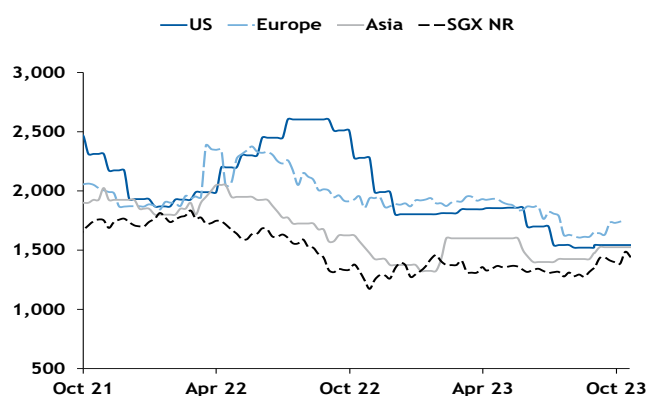
Derivative demand for spot butadiene (BD) has been driven by unplanned supply problems and allocations by two Texas producers. Even with these curtailments, term imported volume

from Europe has been diverted to northeast Asia in September and October. November could be a challenge as prices in Asia Pacific have decreased from their peak of \$1,120/t cfr on 22 September to \$1,050/t today.

C4 DERIVATIVES

Global SBR 1502 and TSR20 NR prices

\$/t



The US had been exporting high cis polybutadiene rubber (PBR) to Asia-Pacific given elevated BD and PBR prices in August and September. But PBR prices in northeast Asia have been flat at \$1,575/t cfr since 15 September. The US BD CP though jumped 5.50¢/lb (\$121/t), with the Argus prevailing CP for October at 33.50¢/lb.

The United Auto Workers (UAW) union strike that began on 15 September is ongoing at the time of publication against the big three auto makers - Ford, General Motors (GM) and Stellantis. Currently, there have still been no concerns on the tire side in terms of disruptions. Please see the auto section for more details on the UAW strikes.

Europe

In styrene, supply in Europe is plentiful and more than adequate to fulfill demand, which remains low. Domestic In styrene, supply in Europe is plentiful and more than adequate to fulfill demand, which remains low. Domestic output grew with the restart of units that were shuttered, either for economic reasons or unexpected disruptions, which had tightened the European market in the third quarter.

A styrene unit in Germany that was offline for planned maintenance in August-September, was the last one to come back online in October. A styrene unit in the Netherlands has been shut indefinitely since the summer as consultations continue with the Dutch works council regarding the unit's permanent closure.

Production margins continue to languish, with the benzene-styrene spread shrinking to \$30/t this week, bringing the average to \$65/t so far in October. Styrene producers are

Synthetic rubber general

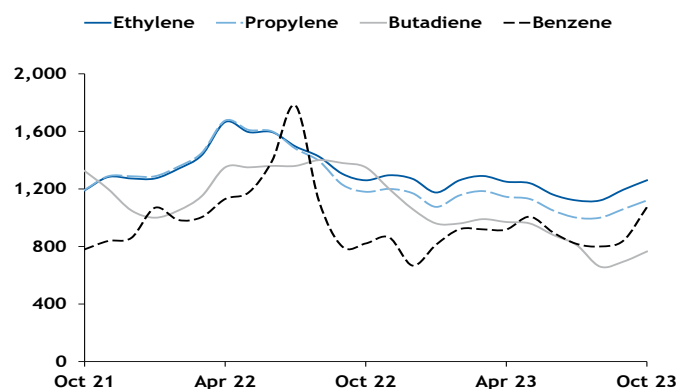
	¢/lb		€/t		\$/t	
	Low	High	Low	High	Low	High
Americas						
eSBR 1502 US	72.00	78.00	1,499	1,623	1,587	1,720
eSBR 1712 US	71.70	78.10	1,492	1,626	1,581	1,722
Polybutadiene US	67.25	72.25	1,400	1,504	1,483	1,593
Europe						
eSBR 1502 NWE	78.07	80.00	1,625	1,665	1,721	1,764
eSBR 1712 NWE	74.47	76.87	1,550	1,600	1,642	1,695
Polybutadiene NWE	77.11	79.52	1,605	1,655	1,700	1,753
Asia-Pacific						
eSBR 1502 Asia	68.04	70.31	1,418	1,466	1,500	1,550
eSBR 1712 Asia	65.77	68.04	1,371	1,418	1,450	1,500
Polybutadiene Asia	68.04	74.84	1,418	1,560	1,500	1,650

Natural rubber

	Low	High	Settle	±
TSR20 fob SGX futures \$/t	1,443.00	1,469.00	1,444.00	+58.00

European base petrochemicals, free delv'd basis

€/t



keeping output and inventories under control, with confidence in the demand outlook for the rest of this year undermined by climbing feedstock and energy prices and consumers grappling with the cost-of-living crisis.

Asia-Pacific

Discussions for Asia Pacific synthetic rubber prices were assessed steady in the week ending 20 October.

In the import market, offers for Taiwanese-origin polybutadiene rubber (PBR) remained steady at \$1,600/t cif.

Taiwanese-origin styrene butadiene rubber (SBR) were offered at \$1,600/t cif.

C4 DERIVATIVES

In the Chinese domestic market, state-controlled PBR remained at 12,400 yuan/t.

State-controlled SBR declined to Yn12,400/t, compared with last week's Yn12,700/t. Non-staten-controlled SBR stood at Yn12,000/t.

Natural rubber

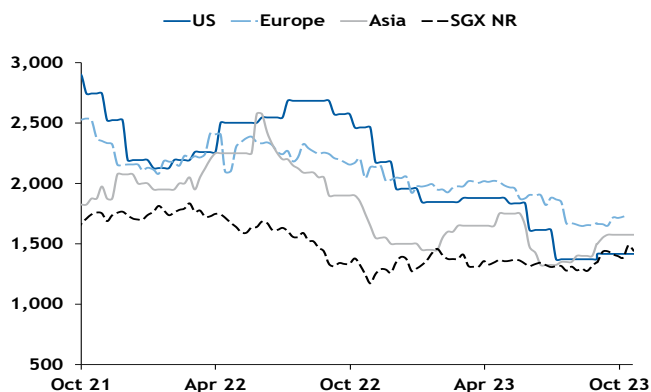
TSR20 natural rubber (NR) futures on the SGX settled at \$1,444/t on 20 October, an increase of 3.9pc from 6 October. Prices have averaged \$1,433/t month-to-date in October, up 1.45pc from the September average of \$1,412/t.

Natural rubber (NR) futures surged in the week ended 13 Oct, according to Japan Stock Exchange (JPX), because of purchases related to funds and projected traders. Recent weather disruptions and heavy rains heightened physical rubber prices that forced fund managers to buy larger volumes of rubber futures, the weekly review shared.

In a week-on-week comparison, March 2024 OSE rubber futures in Osaka, Japan rose 11pc, OSE 'front contracts' for October delivery increased by 25pc and SICOM's active January 2024 contracts rose 6.9pc, according to JPX. For China's SHFE and INE exchanges on the week, rubber futures prices rose 5.9pc and 7.4pc, respectively.

Global polybutadiene vs TSR20 NR prices

\$/t



SGX natural rubber vs Ice Brent crude, first month



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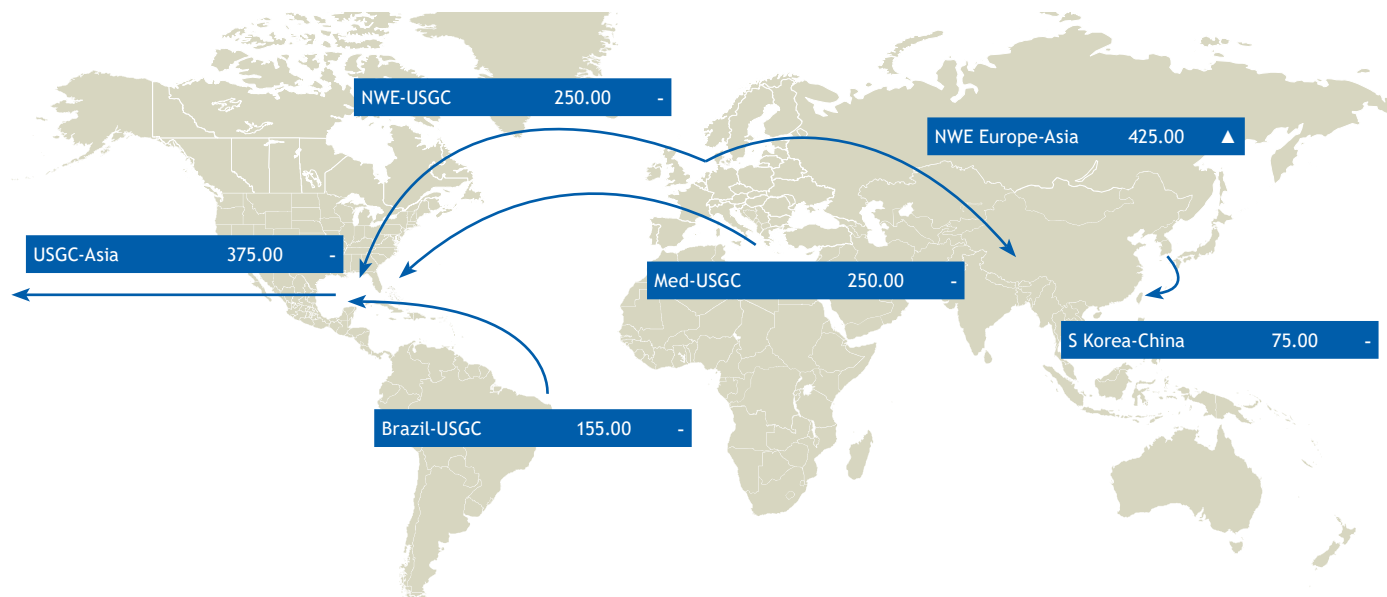
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C4 FREIGHT RATES

\$/t



IMPORTS AND EXPORTS

Asia-Pacific C4 imports						
Ship name	BD '000t	CC4 '000t	C4 RAF/IB	Load port	Laycan	Destination
Zoe Schulte	7.0			Europe	Mid Jan	Asia
Paros	7.0			Europe	H1 Mar	Asia
Happy Peregrine	7.0			US	End Mar	Asia
Gaz Victory	10.0			Europe	Mid April	Asia
Ithacki	7.0			Brazil	Mid April	Asia
Bering Gas	10.0			Europe	H1 May	Asia
Trans Catalonia	4.0			Saudi Arabia	Mid-May	Asia
Happy Osprey	7.0			US	end May	Asia
Trans Iberia	6.5			US	H1 June	Asia
Trans Catalonia	6.0			Europe	H2 June	Asia
Happy Peregrine	7.0			US	H1 July	Asia
Deltagas	7.5			Europe	H2 July	Asia
Christoph Schulte	5.0			Europe	H2 July	Asia
Navigator Gemini	2.6			Europe	July	Asia
Seapeak Cathinka	6.0			US	End July	Asia
Navigator Gemini	8.0			US	H1 Aug	Asia
Celtic Gas	11.0			Brazil	H1 Aug	Asia
Happy Albatross	7.0			US	End Aug	Asia
Kithnos	7.0			Europe	H1 Sep	Asia
Thalea Schulte	7.5			Europe	H2 Sep	Asia
Happy Peregrine	7.3			US	H1 Oct	Asia
Arctic Gas	10.0			Europe	H1 Oct	Asia
Total 2023	157.4	0.0	0.0			
Total 2022	63.9	7.2	15.0			
Total 2021	111.5	44.0	0.0			
Total 2020	501	12	9.0			
Total 2019	470.4	88.2	6.5			
Total 2018	331.5	43.5	0.0			

IMPORTS AND EXPORTS

North America C4 imports						
Ship name	BD '000t	CC4 '000t	C4 RAF/IB	Load Port	Laycan	Destination
Arctic Gas	5.0			Europe	H1 Jan	US
Arctic Gas	2.5			Europe	H1 Jan	Mexico
Marie	5.0			S Korea	H1 Jan	US
GasChem Arctic	5.0			Europe	H1 Jan	Mexico
GasChem Caribic	5.3			Brazil	End Jan	US
Kalolimnos	4.2			Europe	H1 Feb	USG
Kalolimnos	3.0			Europe	H1 Feb	Mexico
Moritz Schulte	4.5			Europe	H1 Feb	US
GasChem Atlantic	5.0			Brazil	H2 Feb	US
GasChem Atlantic	4.0			Brazil	H1 March	Mexico
Syn Antares	5.3			Brazil	H1 March	US
Happy Osprey	5.3			Brazil	H1 March	US
GasChem Atlantic	4.7			US	H1 March	Mexico
Kamilla Kosan	3.0			Europe	H2 March	Mexico
Kamilla Kosan	5.0			Europe	H2 March	US
GasChem Caribic	5.0			Brazil	H2 March	Mexico
GasChem Arctic	5.0			Brazil	H1 April	US
Trans Iberia	5.3			Europe	Mid April	US
Trans Iberia	3.0			Europe	Mid April	Mexico
Kamilla Kosan	3.0			Europe	H1 May	US
Kamilla Kosan	3.0			Europe	H1 May	Mexico
Eco Ice	5.3			Brazil	mid May	US
Eco Ice	4.0			Brazil	mid May	Mexico
GasChem Caribic	5.0			Brazil	H2 May	Mexico
Trans Iberia	3.0			US	H2 May	Mexico
GasChem Arctic	2.1			US	H2 May	Mexico
GasChem Caribic	5.0			Brazil	H2 June	Mexico
Gaschem Antarctic	3.0			Europe	H1 July	Mexico
Gaschem Antarctic	4.0			Europe	H1 July	US
Happy Peregrine	6.5			US	H1 July	Mexico
GasChem Arctic	5.3			Brazil	H2 July	Mexico
Eco Ice		3.4		Mexico	H2 July	US
Kirkby		1.7		US	End July	Mexico
Kalolimnos	4.0			Europe	H1 Aug	US
GasChem Arctic	4.5			US	H1 Aug	Mexico
GasChem Atlantic	4.6			Brazil	H2 Aug	Mexico
GasChem Arctic	2.0			US	H2 Aug	Mexico
GasChem Atlantic	5.3			Brazil	H1 Sep	US
Kalolimnos	4.0			US	H1 Sep	Mexico
GasChem Caribic	3.5			US	H1 Sep	Mexico
Total 2023	162.2	5.1	0.0			
Total 2022	391.1	5.5	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						

IMPORTS AND EXPORTS

Europe, Mediterranean C4 exports						
Ship name	BD '000t	CC4 '000t	C4 RAF/IB	Load port	Laycan	Destination
Arctic Gas	5.0			Europe	H1 Jan	USG
Arctic Gas	2.5			Europe	H1 Jan	Mexico
GasChem Arctic	4.7			Europe	H1 Jan	Mexico
Zoe Schulte	7.0			Europe	Mid Jan	Asia
Sophia Kosan		4.2		Turkey	Jan	Europe
Epic Salina		4.2		Turkey	Jan	Europe
Helena Kosan		4.2		Turkey	Jan	Europe
Kaloimnos	4.2			Europe	H1 Feb	US
Kaloimnos	3.0			Europe	H1 Feb	Mexico
Moritz Schulte	4.5			Europe	H1 Feb	US
Epic Susak		4		Turkey	Feb	Europe
Helena Kosan		4		Turkey	Feb	Europe
Epic Shikoku		4		Turkey	H2 Feb	Europe
Epic Sardinia		4		Turkey	H2 Feb	Europe
Paros	5.0			Europe	H1 Mar	Asia
Kamilla Kosan	3.0			Europe	H2 Mar	Mexico
Kamilla Kosan	3.0			Europe	H2 Mar	US
Epic Susak		4		Turkey	H2 Mar	Europe
Trans Catalonia			6.0	Europe	H1 April	Middle East
Gaz Victory	8.5			Europe	Mid April	Asia
Trans Iberia	5.3			Europe	Mid April	US
Trans Iberia	3.0			Europe	Mid April	Mexico
Westminster		4		Turkey	H2 April	Europe
Epic Breeze		4		Turkey	H2 April	Europe
Chelsea		4		Turkey	End April	Europe
Kilburn		4		Turkey	H1 May	Europe
Bering Gas	10.0			Europe	H1 May	Asia
Kamilla Kosan	3.0			Europe	H1 May	US
Kamilla Kosan	3.0			Europe	H1 May	Mexico
Trans Catalonia	6.0			Europe	H2 June	Asia
Gaschem Antarctic	3.0			Europe	H1 July	Mexico
Gaschem Antarctic	4.0			Europe	H1 July	US
Stina Kosan		4		Turkey	H1 July	Europe
Epsilongas			3.0	Europe	H2 July	Middle East
Christoph Schulte	5.0			Europe	H2 July	Asia
Alexandra Kosan		4		Turkey	H2 July	Europe
Deltagas	7.5			Europe	End July	Asia
Navigator Gemini	6.0			Europe	July	Asia
Kalolimnos	4.0			Europe	H1 Aug	US
Sophia Kosan		4		Turkey	H1 Aug	Europe
Tessa Kosan			2.0	Europe	H1 Aug	Middle East
Etagas			7.0	Europe	H1 Aug	Middle East
Epic Salina		4		Turkey	H2 Aug	Europe
Happy Candor			5.0	Europe	H2 Aug	Middle East
BWEK Aruba		4		Turkey	H2 Aug	Europe
Kithnos	7.0			Europe	H1 Sep	Asia
Kappagas			3.0	Europe	H1 Sep	Middle East
Epic Bali		4		Turkey	H1 Sep	Europe
BWEK Aruba		4		Turkey	H2 Sep	Europe
Thalea Schulte	7.5			Europe	H2 Sep	Asia
Arctic Gas	10.0			Europe	H1 Oct	Asia
Epsilongas			3.0	Europe	H1 Oct	Middle East
Total 2023	134.7	79.8	29.0			
Total 2022	182.6	79.8	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			

US butadiene exports						
Ship name	BD '000t	CC4 '000t	RAF '000t	Load port	Laycan	Destination
Zetagas		4.1		USG	H1 Jan	Europe
Balearic Gas		7.0		US	H1 Feb	Europe
Kamilla Kosan		6.0		US	H1 Feb	Europe
Moritz Schulte		3.0		US	H1 Mar	Europe
GasChem Atlantic	4.7			US	H1 Mar	Mexico
Happy Peregrine	7.1			US	End Mar	Asia
GasChem Adriatic			2	US	End Mar	Mexico
Trans Iberia	3.0			US	H2 May	Mexico
GasChem Arctic	2.1			US	H2 May	Mexico
Happy Osprey	7.0			US	end May	Asia
Trans Iberia	6.5			US	H1 June	Asia
Seapeak Cathinka	3.7			US	End July	Asia
Kirkby		1.6		US	End July	Mexico
Navigator Gemini	6.0			US	H1 Aug	Asia
GasChem Arctic	4.5			US	H1 Aug	Mexico
Gaschem Arctic	2.0			US	H2 Aug	Mexico
Happy Albatross	7.3			US	End Aug	Asia
Kalolimnos	4.0			US	H1 Sep	Mexico
GasChem Caribic	3.5			US	H1 Sep	Mexico
Happy Peregrine	7.3			US	H1 Oct	Asia
Total 2023	68.7	21.7	1.6			
Total 2022	73.5	40.7	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			

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Asia-Pacific C4 exports					
Ship Name	BD '000t	CC4 '000t	Load port	Laycan	Destination
Marie	5.0		S. Korea	H1 Jan	US
Gas Exelero	2.1		Taiwan	H2 Mar	Europe
Total 2023	7.1	0.0			
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			

FREIGHT

Cargo bookings to North America			
	Aug 23	Sep 23	Oct 23
Ex-Europe			
Butadiene	4	0	0
Crude C4	0	0	0
C4 raffinate	0	0	0
Ex-Asia			
Butadiene	0	0	0
Crude C4	0	0	0
Ex-Rest of World			
Butadiene Brazil	5	5	0
Crude C4 Mexico	0	0	0
Crude C4 Turkey	0	0	0
Crude C4 Brazil	0	0	0
Butadiene Other	6	8	0
Totals			
Butadiene	15	13	0
Crude C4	0	0	0
C4 raffinate	0	0	0

Freight rates		\$/t
	Rate	±
C4 freight NWE - USGC	250.00	0.00
C4 freight Med - USGC	250.00	0.00
C4 freight Brazil - USGC	155.00	0.00
C4 freight USGC - Asia	375.00	0.00
C4 freight NWE Europe - Asia	425.00	+50.00
C4 freight S Korea - Taiwan	75.00	0.00

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