Argus *Chlor-Alkali and Derivatives*

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Monthly global prices and analysis

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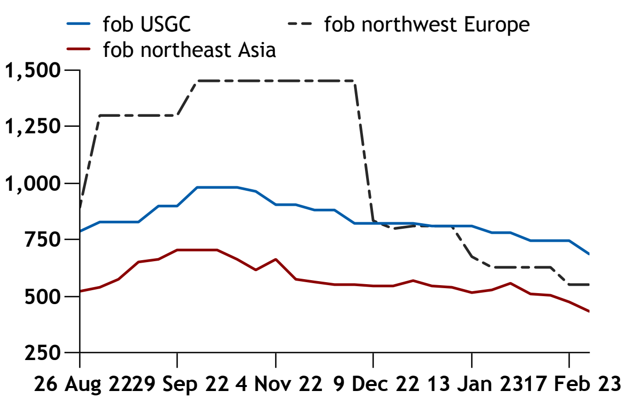
HIGHLIGHTS

Americas
- US caustic soda prices fall
- Chlorine prices stable
- Mexico caustic soda prices rises on import restrictions
- Supply restrictions increase ethylene dichloride (EDC) prices
- Weak caustic soda demand in Brazil

Europe
- Caustic soda prices decline in all markets
- Operating rates recover, but remain low
- No relief from caustic soda supply length
- Pearls price erosion continues

Asia Pacific
- Export prices continued to trend downward
- Export availability increased significantly
- Outbound freight rates from northeast Asia continued to fall
- Overall run rates remained high despite falling caustic prices

Global caustic soda export prices *$/dmt*



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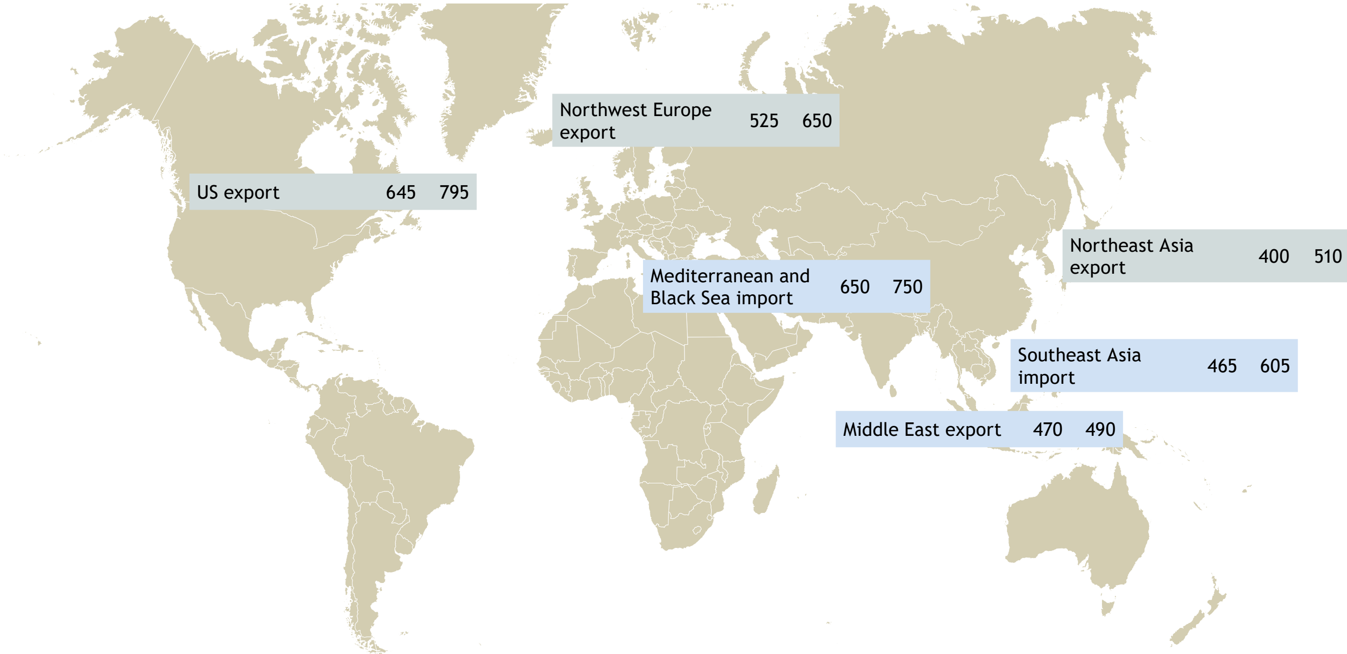
MARKET PRICES

Key prices

		Units	Timing	Low	High	±
Americas						
Caustic soda	fob USGC domestic contract	*$/dst*	Feb 23	1,010	1,055	-22.50
Caustic soda export	fob USGC month range	*$/dmt*	Feb 23	645	795	-90.00
Caustic soda	Brazil contract	*$/dmt*	Feb 23	815	1,010	-32.50
Caustic soda import	cfr Brazil	*$/dmt*	Feb 23	780	860	-40.00
Potassium hydroxide	Midwest ex-works	*c/lb*	Feb 23	49.0	52.0	-1.00
Potassium hydroxide	East coast ex-works	*c/lb*	Feb 23	47	50	-1.00
EDC export	fob USGC	*$/t*	Feb 23	280	350	+92.50
PVC pipe	del East of Rockies benchmark	*$/t*	Feb 23	na	na	na
PVC pipe export	fas Houston month range	*$/t*	Feb 23	805	904	+77.00
Europe						
Caustic soda	fd northwest Europe contract	*€/dmt*	1Q23	1,600	1,880	nc
Caustic soda export	fob northwest Europe month range	*$/dmt*	Feb 23	525	650	-137.50
Caustic soda import	cfr Med and Black Sea month range	*$/dmt*	Feb 23	650	750	-105.00
Solid caustic soda	fd northwest Europe contract	*€/t*	Feb 23	1,500	2,000	-400.00
Potassium hydroxide	fd Benelux contract	*€/dmt*	1Q23	2,600	2,800	nc
Potassium hydroxide	fd Germany contract	*€/dmt*	1Q23	2,500	2,800	nc
PVC pipe*	fd northwest Europe contract	*€/t*	Feb 23		1,560.0	+10.00
Middle East						
Caustic soda export	fob Middle East ports	*$/dmt*	Feb 23	470	490	-60.00
Asia-Pacific						
Caustic soda export	fob northeast Asia month range	*$/dmt*	Feb 23	400	510	-80.00
Caustic soda import	cfr southeast Asia month range	*$/dmt*	Feb 23	465	605	-90.00
Caustic soda 50pc	ex-factory China month range	*Yn/dmt*	Feb 23	2,840	3,360	-360.00
Potassium hydroxide (solid)	cfr Asia	*$/t*	Feb 23	1,250	1,380	nc
EDC	cfr Asia	*$/t*	Feb 23	300	320	+30.00
PVC pipe	ex-works China	*Yn/t*	Feb 23	6,300	6,850	+50.00
PVC import	cfr China	*$/t*	Feb 23	850	925	+37.50

**Contract marker*

GLOBAL PRICES FEBRUARY 2023, MONTHLY LOW-HIGH *$/DMT*



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Overview

Caustic soda prices continued their decline in the Americas in February with the exception of Argentina and Mexico where prices increased owing to country specific dynamics. Chlorine prices were stable in February despite slightly weaker offtake. There was reduced availability of EDC as US Gulf coast producers managed length in the co-product caustic soda market. EDC price ideas increased this month. Brazil remains mired in a long caustic soda market owing to an abundance of caustic soda imports and weak domestic demand.

Domestic US

Caustic soda consumers are concerned about deflationary pressures in their end use products and fear margin compressions as domestic caustic soda contract prices are slow to follow international prices. US Gulf coast caustic soda contract prices fell this month, although not as quickly as the barge market or international prices. Most buyers reported prices falling between $20-30/dst while a few noted flat pricing. Argus assessed caustic soda contract prices lower by an average of $22.50/dst to $1,010-1,055/dst. No new price increases have been announced, although some buyers expect producers to announce price increases in advance of the impending maintenance season. Despite some producers indicating caustic soda demand above their forecasts, the overall demand for caustic soda remains weak. Three

Americas prices

	Units	Timing	Low	High	±
Caustic soda					
North America domestic contract fob USGC	$/dst	Feb 23	1,010	1,055	-22.50
North America barge fob USGC	$/dst	week 8	785	825	-40.00
North America barge fob USGC month range	$/dst	Feb 23	785	905	-42.50
Northeast US contract ex-works	$/dst	Feb 23	1,240	1,290	-10.00
Southeast US contract ex-works	$/dst	Feb 23	1,120	1,220	-10.00
Midwest US contract ex-works	$/dst	Feb 23	1,150	1,250	nc
West coast US contract ex-works	$/dst	Feb 23	1,015	1,115	-5.00
US export fob USGC	$/dmt	week 8	645	725	-60.00
US export fob USGC month range	$/dmt	Feb 23	645	795	-90.00
Brazil contract ex-works	$/dmt	Feb 23	815	1,010	-32.50
Brazil import cfr	$/dmt	Feb 23	780	860	-40.00
Chlorine					
US domestic contract fd	$/st	Feb 23	945	965	nc
Potassium hydroxide (KOH)					
Midwest US contract ex-works	c/lb	Feb 23	49.0	52.0	-1.00
East coast US contract ex-works	c/lb	Feb 23	47	50	-1.00
Hydrochloric acid (HCl)					
US west coast contract free delivered	$/st	Feb 23	325	355	nc
US Gulf coast contract free delivered	$/st	Feb 23	325	375	nc
Northeast US contract free delivered	$/st	Feb 23	385	405	nc
Southeast US contract free delivered	$/st	Feb 23	340	360	nc
US midwest US contract free delivered	$/st	Feb 23	365	385	nc
EDC					
US export fob USGC	$/t	Feb 23	280	350	+92.50
PVC					
Pipe del East of Rockies benchmark	USD/t	Feb 23	na	na	na
Pipe fas Houston bagged month range	USD/t	Feb 23	805	904	+77.00

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chloralkali plants on the US Gulf coast were noted to be having operating issues this month. One plant has been having operating issues since early December while the other two plants have been having operating issues for the last few days of February. Despite these supply restrictions and the imminent maintenance season, buyers report more than adequate supplies of caustic soda in the market.

North America barge fob USGC		*$/dmt*
Timing	**Low**	**High**
February	785	905
Week 8	785	825
Week 7	825	865
Week 6	845	905
Week 5	845	905

Regional US

Prices for caustic soda in the northeast declined by an average of $10/dst to $1,240-1,290/dst ex-tank, with some low-priced inventory from China moving through shore tanks. Despite import offers from Europe continuing to fall buyers have limited opportunity to take advantage of the weaker pricing as much of their planed volumes are contracted to domestic suppliers. A train derailment in the region resulted in some minor delays to some caustic soda deliveries, but the market is more concerned with the potential for new regulations on shipping products like the new generation fuel ammonia or other products like vinyl chloride on rail.

Caustic soda prices in the southeast fell by $10/dst on average this month to $1,120-1,220/dst ex-tank. Caustic soda offers from Europe continue to fall and at least one buyer was able to fit in some volume this month despite some US Gulf coast producers attempting to match the delivered price level. Multiple pulp and paper mills in the region are taking extended maintenance shutdowns in the region to address deferred maintenance from the last year or so. This is coupled with slow textile activity is reducing caustic soda demand in the region.

The Midwest caustic soda market was quiet this month as market participants look forward to the reopening of the Upper Mississippi to replenish depleted inventories. Recent winter storms have slowed caustic soda deliveries, but most buyers appear to have adequate inventories. Caustic soda prices in the Midwest are stable this month at $1,150-1,250/dst ex-tank.

Caustic soda prices on the west coast declined moderately this month to $1,015-1,115/dst ex-tank. Some buyers report flat pricing while others with more negotiating power are seeing some price relief. Buyers are eyeing the strong price declines in Asia as well as falling freight rates in the spot market and are beginning to make a case for lower prices in the next couple of months.

Domestic barge

With operating issues noted at a number of plants along the US Gulf coast, at least one buyer was forced to enter the spot market to acquire a membrane barge. The assessed price range for February is $785-905/dst fob US Gulf coast, down $42.50/dst from January but still $187.50/dst higher than February 2022. The weekly US Gulf barge market assessment declined by $40/dst to $785-825/dst fob US Gulf coast.

US exports

US Gulf coast exports are increasingly challenged by lower-priced caustic soda from Europe and Asia in the seaborne market. Some buyers are beginning to show a slight interest in additional quantities of caustic soda, but not nearly to the level of supply being offered. Yet with some buyers being offered the same parcel of caustic soda from multiple traders, it may be making the market seem more oversupplied than it may otherwise be. New import restrictions in Mexico are also impacting the ability of US producers to move product as import terminals have to be co-located with customs offices. At this juncture, only two terminals in Mexico meet this requirement. Movements of caustic soda by rail are subject to the same requirements, but as all rail crossings between Mexico and the US have customs offices there have been no noticeable impact. US Gulf coast producers are not keen to enter the spot export market at this time as they are not willing to beat international prices from Europe or Asia to most destinations. They are however actively negotiating exports under contract extensions at lower prices. The weekly Argus US export price range fell by an average of $60/dmt to $645-725/dmt fob. The monthly Argus US export price range declined by an average of $90/dmt to $645-795/dmt fob.

US export fob USGC		*$/dmt*
Timing	**Low**	**High**
February	645	795
Week 8	645	725
Week 7	695	795
Week 6	695	795
Week 5	695	795

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Potassium hydroxide

Potassium hydroxide (KOH) prices in the Midwest declined by 1¢/lb to 49-52¢/lb this month. A late February winter storm with heavy snowfall has given de-icing fluid producers some hope to reduce their inventories but does not appear to be giving them incentive to increase their offtake of KOH. Some imports of KOH from Europe have been noted although at premium prices to the domestic market. Agricultural potassium chloride prices decreased by $11.50/t to $536.50/t fob Vancouver this month.

Chlorinated derivatives

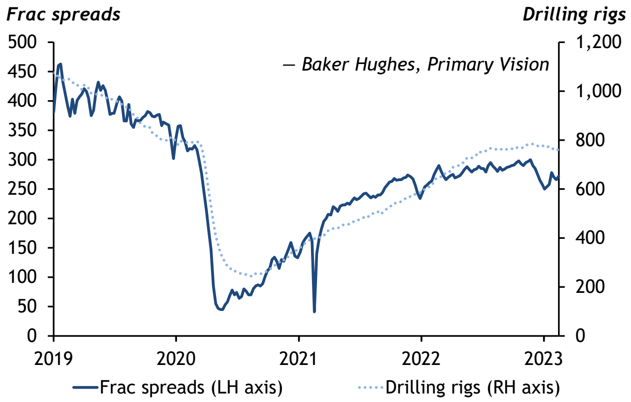
February chlorine operating rates are estimated to have edged down to 82pc, as a couple of chlor-alkali plants were noted to have operating issues and US Gulf coast EDC producers limited operating rates to control caustic soda production. At least one isocyanates producer was noted to have reduced operating rates as a result of restricted chlorine supply. In general, operating rates are being impacted by seasonal declines in chlorine offtake into water treatment and refrigerants as well as weak demand from titanium dioxide and vinyls applications. The Argus chlorine contract price was assessed flat this month at $945-965/st.

EDC export prices were assessed higher this month at $280-350/t fob US Gulf coast. No spot EDC trades were noted this month, as US Gulf coast producers were restricting the production of EDC owing to the length in the co-product caustic soda market. Export demand for EDC remains strong with a lot of interest from Europe and Asia. Buyers, however, cannot afford US Gulf coast EDC because of the weak PVC pricing in their respective regions. In the last week of February, some US producers have started to indicate higher price ideas for March. EDC exports for the full year of 2022 increased by 3.2pc from the prior year, to 880,000t from 853,000t.

Negotiation for the US polyvinyl chloride (PVC) market are fluid this week as February contracts are trending toward another price increase. Producers are pushing for between a 4¢/lb and 5¢/lb increase, while many buyers expect a shallower increase between 1¢/lb and 3¢/lb. Some downstream participants still see potential for a rollover as domestic demand remains weak and producers are forced to push a higher percentage of production to the export market. Export prices remained steady this week but narrowed to between $830-860/t fas Houston as the main range of activity.

Single-family housing authorizations in January were at a rate of 718,000. That is 40pc below the January 2022 rate and 1.8pc below December. That rate is also the lowest since April 2022, a sign that the lingering weakness in the housing market could be more entrenched in 2023.

Frac spreads and rig count



Total PVC sales for December were 1.161bn lbs (527,000t), according to the ACC's Plastics Industry Producers Statistics Group as compiled by Vault Consulting. This was a 5pc decrease from November and the fourth consecutive month of declining sales. Exports rose to at least an eight-year high of 553mn lbs (251,000t) in December, accounting for nearly half of all sales. Domestic sales declined for the seventh month in a row, falling to 608mn lbs (276,000t). Exports have been a crucial outlet for producers to keep inventories relatively balanced as domestic demand has been heavily curtailed by a weakening US housing market.

HCl supply in February was impacted by reduced operating rates at at least one isocyanates producer. The market is adequately supplied despite the noted supply disruptions. Demand for HCl is below some market participants plans as the price of natural gas in the US has fallen below $2/mmbtu. This is leading some exploration companies to revaluate their drilling plans. HCl demand into the steel industry is improving with an increase in automobile production, however white goods manufacturing continues to be a drag. The number of operating frac spreads increased by 14 this month, with 272 units operating, according to Prime Vision. This is 11 units lower than this time last year. The number of active drilling rigs as reported by Baker Hughes is 760, down by 11 rigs compared with last month and 115 rigs higher than last year. HCl prices in the Midwest were flat this month at $365-385/sst of 22Be.

Brazil

Caustic soda prices in Brazil fell by an average of 280 reals/dmt to R4,710/dmt ex-works this month. The price

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range in US dollar terms fell by $32.50/dmt to $815-1,010/dmt ex-works. The market is being pressured by continued imports of caustic soda from Asia. Other suppliers continue to struggle to maintain or grow share in light of slow demand and as some are resisting falling prices. The recent political change in the country has generated some uncertainty about the economy and future public policies. The typical trade flow of caustic soda from the US Gulf coast to Brazil remains uncompetitive.

Caustic soda imports to Brazil continue to reflect the volatility of global prices, as well as changes in shipping costs. Northeast Asia has been the only viable source for caustic soda for the past several months, although European product is becoming more competitive with the recent decline in spot freight rates. Liquid caustic soda import prices were assessed $40/dmt lower on average at $780-860/dmt cfr. Solid caustic soda flake imports were assessed $75/t lower at $700-720/t cfr.

Prices for US-origin PVC to Brazil were assessed at $920-950/t cfr Brazil this week. Brazil's official data shows that PVC imports in the first month of the year rose by 55pc from a year earlier. PVC imports in January rose to 38,324t, up from 24,714t in the same period last year, according to data from Brazilian trade ministry database Comexstat. However, the value of those imports fell to $30.1mn from $45.6mn a year earlier. The top suppliers in the period were the US, Colombia, Argentina and Taiwan. The data confirms that US material has been shipped to Brazil, possibly to large customers and under long-term contracts. It also confirms that the easing of anti-dumping duties for US material into Brazil last year are favouring US PVC shipments.

Mexico

Caustic soda prices in Mexico are one of the few standouts in the global caustic soda market with prices rising. New import restrictions to the country have reduced the number of import terminals to two, limiting the ability of buyers to import caustic soda. Buyers are also not allowed to import caustic soda to their own docks. The new regulations require import terminals to have a customs office on site. Imports of caustic soda by rail are not impacted as all rail crossings between the US and Mexico have a customs office. Buyers are attempting to move more volume by rail, but the railcar fleet is limited and buyers are unable to transition all of their volumes. This may lead to an increase in domestic chlorine production and an increase in chlorine exports to the US. Caustic soda prices in Mexico increased by $85/dmt to $980-1,050/dmt ex-works. Chlorine prices were at $950-1,010/mt ex-works.

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Overview

European caustic soda consumption is showing signs of rebound, but the market is still dealing with the aftermath of exceptionally low consumption in December and January. The supply chain is full, producers have comfortable stock and sellers are generally proactive in trying to move more volume. The uptick in demand is so far on a small scale and may be attributed to customers restocking after price decreases took effect and some ramping up operations as raw material and energy costs have become somewhat more manageable. It is also not evident in all regions or for all end uses, and so offtake remains generally depressed.

Chlor-vinyl producers have faced the question whether or not they should ramp up their plants to meet the slightly higher PVC demand or whether they should look to buy EDC and VCM instead of pushing more caustic soda into the market. It is clear that the few merchant EDC sellers in Europe have no interest in satisfying additional demand for a lack of a caustic soda outlet, and so the interested parties have placed a number of enquiries in the US Gulf while raising their operating rates slightly.

More than adequate supply has ensured that the price erosion has continued in February for all monthly or shorter-term markets. February prices in Italy have dropped below the €1,000/dmt fd threshold for the first time since August after south Europe's range settled at €940-1,100/dmt fd this month. Monthly contracts in central and eastern Europe have declined again to €1,000-1,100/dmt fd, whereas monthly prices in Germany have been eroded to €1,300-1,500/dmt fd but are still some of the highest in Europe. With availability long and suppliers under pressure to move product, customers are seeking to leverage this dynamic and continue to press for price relief.

The persistent downward pressure on domestic prices has prompted exporters and traders to retreat from targeting Europe and so imports are playing less of a role than in late 2022. The Mediterranean and Black Sea markets have returned to being largely self sufficient as landed prices sit at $650-680/dmt cfr and overseas imports are not competitive. The northern parts of Europe are still seeing some selling interest from the US, but volumes are likely to decline as the price advantage for imports is shrinking.

Europe prices

	Units	Timing	Low	High	±
Caustic soda					
Northwest Europe contract fd	€/dmt	1Q23	1,600	1,880	nc
Germany contract fd	€/dmt	1Q23	1,750	1,880	nc
Germany contract fd	€/dmt	Feb 23	1,300	1,500	-350.00
Benelux contract fd	€/dmt	1Q23	1,600	1,700	nc
UK contract fd	£/dmt	1Q23	1,770	1,835	nc
Southern Europe contract fd	€/dmt	Feb 23	940	1,100	-110.00
Central and eastern Europe contract fd	€/dmt	1Q23	1,500	1,700	nc
Central and eastern Europe contract fd	€/dmt	Feb 23	1,000	1,100	-425.00
Nordic contract fob northwest Europe	€/dmt	1Q23	1,745	1,755	nc
Export fob northwest Europe	$/dmt	week 8	525	580	nc
Export fob northwest Europe month range	$/dmt	Feb 23	525	650	-137.50
Import cfr Med and Black Sea	$/dmt	week 8	650	680	nc
Import cfr Med and Black Sea month range	$/dmt	Feb 23	650	750	-105.00
Solid northwest Europe contract fd	€/t	Feb 23	1,500	2,000	-400.00
Chlorine					
Contract fd	€/t	1Q23	350	380	nc
Potassium hydroxide (KOH)					
Benelux contract fd	€/dmt	1Q23	2,600	2,800	nc
Germany contract fd	€/dmt	1Q23	2,500	2,800	nc
Flakes northwest Europe contract fd	€/t	Feb 23	2,000	2,100	-250.00
PVC					
Pipe Europe contract*	€/t	Feb 23		1,560.0	+10.00

**Contract marker*

Northwest Europe

Weak caustic soda demand and comfortable stocks at suppliers have maintained a more than well supplied caustic soda market. The consequence has been further price erosion for monthly business and February settled at €1,300-1,500/dmt fd after prices declined gradually throughout the month. Suppliers remain under pressure to move volumes and with ongoing and competitively priced imports from southern, central and eastern Europe it has been fairly easy for customers to achieve further price relief. Caustic soda and chlorine consumption have started to pick up and most producers are running their plants slightly harder than in January, but there are no signs of the market rebalancing and the supply length easing. Producers are preparing for the spring maintenance season effortlessly — stocks were already comfortable in January and are easy to top up given the current market sentiment. First-quarter prices are at

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€1,750-1,880/dmt fd.

In project news, BASF has announced that it will permanently close its 300,000 t/yr TDI plant in Ludwigshafen. The plant started up in late 2015, but it has been underutilised and has not met economic performance, prompting the company to close the site. The unit has operated sporadically and at very low rates, and while the closure will remove some HCl volumes from an already tense HCl market, there are no indications that chlorine capacity will be affected or that the caustic soda market balance could be significantly altered.

There has been no real shift in the Benelux and northern France markets. Caustic soda supply remains long amid low, albeit increasing, demand and good stock of local and previously imported product. Buyers have worked to gain further raw material cost relief on the back of these fundamentals and have succeeded where there is exposure to spot or monthly business. Quarterly customers, on the other hand, are seeing stable prices at €1,600-1,700/dmt fd. Suppliers are working to address the supply length, mainly by liquidating product into the market. Some producers are actively seeking to move material into export and still have availability for March lifting, while re-sellers are pushing more volumes into local markets at the expense of pricing. Import activity for overseas material has slowed as the continuous price erosion in the local market and the long lead times are too high a risk for most traders. March will see the kick-off of the spring maintenance season with planned maintenance at Nobian's Botlek unit from late March, while other producers will undergo shutdowns later in spring and appear to be adequately stocked already.

Caustic soda offtake into pulp and paper in the Nordic region has held up much better for longer than on the continent, but there are now indications that demand is beginning to slow. Declining consumption for some paper grades, for example packaging, are beginning to impact raw material consumption and so the caustic soda demand outlook is now less optimistic. At the same time, customers continue to enjoy the easing of caustic soda prices. Some of the largest buyers are relying more on spot product than usual given the long supply, and their pricing has eased to below €1,000/dmt fob northwest Europe. Quarterly prices are far above that at €1,745-1,755/dmt fob, but the proportion of business fixed for the whole quarter is smaller than normal.

There is good availability in the UK market. The production losses from the long partial shutdown in Runcorn and overall reduced chlorine consumption are being offset by weak caustic soda demand and the ongoing arrival of imports of European origin. These mainly originate in northwest Europe, where suppliers struggle with the long availability and are pushing material into the UK distribution system to alleviate pressure within their own systems. First-quarter business is taking place at £1,770-1,835/dmt fd.

Major European outages 2023

Producer	Location	Nature of shutdown	Timing
CABB	Gersthofen	Maintenance	Mar-Apr
Covestro	Dormagen	Force Majeure	Aug-Mar 23
Covestro	Tarragona	New plant start-up	In progress
Covestro	Uerdingen	Force Majeure	Dec-Feb
Karpatnafto-chim	Kalush	Political conflict	Feb-22
Nobian	Botlek	Maintenance	Mar-Apr
Spolchemie	Usti nad Labem	Maintenance NaOH & KOH	May
Vestolit	Marl	Maintenance	Apr
Vinnolit	Knapsack	Maintenance	Apr-May
Vynova	Loos	KOH flakes	Aug
Vynova	Thann	KOH flakes	Jul

Central and eastern Europe

Firm availability and continuing weaker-than-usual demand in central and eastern Europe have led to further price decreases to monthly business in February. Prices this month generally settled at €1,000-1,100/dmt fd, compared with January's €1,350-1,600/dmt fd depending on source and location. Although suppliers were initially hoping for more limited price decreases this month, prices were impacted by good availability of local product, competition from lower-priced imported material flowing into southern parts of the region, limited consumer offtake amid the ongoing economic challenges and more stable electricity costs.

Demand remains on the low side as most customers are not rushing to conclude deals in anticipation that prices have the potential to drop further in March based on the long supply. Suppliers, on the other hand, are hoping that prices will stabilise in March as Europe consumes its way through the majority of imported material and the spring maintenance season begins, possibly paving the way towards a more balanced supply situation. Sellers are also hopeful that the arrival of spring may herald an uptick in demand as Europe emerges from winter. For now, suppliers focus on shifting

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more volume outside their key markets with much more activity in Germany, for example, than usual. Customers, on the other hand, buy minimum volumes at quarterly contract pricing of €1,500-1,700/dmt fd in order to benefit from the lower prices for shorter-term business.

Further south in the region, some prices have been noted below €1,000/dmt fd for Romanian product and imported material from Turkey flowing into Greece and the Balkans. The imports consist of Russian, Iranian and Turkish material as traders in Turkey struggling with a poor local offtake look towards Europe as an outlet for excess caustic soda.

Southern Europe

Southern Europe has seen decreases in both the Italian and Iberian markets this month, with February prices generally settling at €940-1,100/dmt fd. An ongoing weak offtake and an abundance of supply in the region has been the main driver for the price erosion from January's €1,000-1,260/dmt fd.

Italian prices dropped below the €1,000/dmt fd mark this month for the first time since August, eventually settling in the mid €900s/dmt fd after several weeks of consecutive price decreases. Some customers are already paying in the low €900s/dmt fd, but such levels are not yet widespread. Iberian prices held slightly firmer in February, with the majority of business closing this month at or just below €1,100/dmt fd.

Covestro's Tarragona plant in Spain has officially opened this month but *Argus* understands that the site is currently operating well below full capacity. The additional volumes of caustic soda have so far had minimal impact on the Iberian market but it is expected that supply within the region will increase as the plant ramps up its operating rates over the next few months. The addition of an estimated 130,000 t/yr chlorine capacity has the potential to alter market dynamics in Spain and the wider southern European market. Key players will assess how the additional material will affect their market and price position in the long term and supply flows within as well as in and out of Iberia may shift accordingly.

Seaborne markets

Europe is back in its bubble after the arbitrage for overseas imports closed or the price spread is too narrow in order to guarantee re-sellers some margin by the time the product arrives. The pressure is now on European sellers to shift product and so export availability is comfortable relative to demand. Northwest European export prices are now at $525-580/dmt fob, with deals to non-European markets generally lower-priced than to European markets. The number of active exporters is still smaller than usual, but volume pressure is high, the global seaborne market is long and offtake in the target markets is subdued. Offered prices continue to decline with evidence of product available below $500/dmt fob northwest Europe to the Americas, but deals have yet to be concluded.

Imports into Europe have reduced substantially as a result of lower domestic prices. The arbitrage into northwest Europe is technically still open, but Asian product has been unattractive in 2023 so far as the long lead times are too high a risk in a declining market. Importers have considered US product, but buying interest for that is also dwindling even though landed prices have been quoted around $900/dmt cfr and some margin would be achievable for traders and resellers in today's market. But the downward pressure on re-selling prices continues and so fewer traders and resellers consider US imports for March or April arrival.

Imports into the Mediterranean and Black Sea area are almost exclusively of European origin, with landed prices now at $650-680/dmt cfr. Local availability is still slightly more than adequate, but the price erosion has slowed down. For some exporters, moving product inland by road or rail is still more attractive than accepting export prices by vessel in the $500s/dmt fob, which appears to limit export availability from some sources. But importers are still careful to restock. Some are still working through higher-priced inventories from previous arrivals, while others monitor the market to gauge when it may bottom out. The market is unlikely to see supply issues in the coming weeks, given the rise in chlorine offtake, the expectation that operations in Lavera will normalise after technical issues and the overall

Export fob northwest Europe		*$/dmt*
Timing	Low	High
February	525	650
Week 8	525	580
Week 7	525	580
Week 6	600	650
Week 5	600	650

Import cfr Med and Black Sea		*$/dmt*
Timing	Low	High
February	650	750
Week 8	650	680
Week 7	650	680
Week 6	690	750
Week 5	690	750

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slow caustic soda consumption.

Solid caustic soda

The solid caustic soda market has this month seen price decreases for both pearls and flakes customers. Most northwest European pearls suppliers have shown a more competitive pricing approach this month, with February's €1,500-2,000/t fd price range significantly narrowing from January's €1,600-2,700/t fd. Suppliers at the top end of last month's price range offered larger decreases to align themselves more closely with the rest of the market, whereas customers that already were around the lower end of the range saw minimal reductions, if any. There is also evidence that a minority of business is taking place in the €1,300s/t fd and €1,400s/t fd for customers buying product imported mainly from Russia and the Middle East.

In southern Europe, pearls prices have mostly rolled over from January. Italian customers are able to secure product at €1,150-1,350/t fd while Iberian buyers are paying €1,050-1,200/t fd for product of both local and overseas origin.

There have been no issues with pearls supply this month as European producers have been operating at adequate rates and imports continue to flow into Europe from Russia and Qatar. The plentiful supply has been met with low demand once again this month, contributing to the downward price pressure in northwest Europe. There is some expectation among buyers that pearls prices could decrease further in March based on the long supply, poor offtake and recently stable electricity costs.

Caustic soda flakes prices in February have generally settled at around €1,100-1,150/t fd, roughly €200/t fd below January's €1,300-1,400/t fd. Demand remains at a low level for flakes across Europe and the export market continues to be the main focus for one major flakes producer benefiting from the stronger demand from African and Latin American customers.

Potassium hydroxide

Ongoing downward pressure for KOH prices continues to bring customers raw material cost relief. Price reductions in February have been limited to monthly and spot business, which is taking place in the low to mid €2,000s/dmt fd across northwest Europe. Levels for quarterly business are unchanged at €2,500-2,800/dmt fd and €2,600-2,800/dmt fd in Germany and the Benelux region, respectively, but customers plan to push for further price relief at the next opportunity in April.

The recent cost relief at producer level is a major contributor to the continuous price erosion as it allows suppliers to pass on the saving to customers. KCl prices have come down from their peak this quarter to €700-900/t fd depending on the source, although they remain high by any standard. Power prices also remain higher than normal, but have also been more manageable and extreme peaks have been absent for several months. There is a degree of confidence among producers that their average power prices will remain below the extreme highs in the coming months owing to a combination of warmer weather as well as their decision to hedge a proportion of their electricity requirements. They also widely expect to see further raw material KCl price relief in the second quarter on the back of weak offtake for fertiliser grade and overall good availability including for industrial grade KCl. This outlook of an easier cost position has enabled producers to go along with the continuing KOH price pressure.

KOH is readily available across all markets. The unique chlorine integration at some KOH plants means that chlorine operating rates have held up much better than those integrated into vinyls or isocyanates, and so KOH output has remained firm throughout. A very weak de-icing season and lower, albeit recovering, demand into other applications is ensuring long KOH supply. With the cost pressure easing sellers are now competing over market share again and this enables customers to easily allocate adequate volumes at increasingly competitive prices. Some output losses are expected during the spring maintenance season, which will see operations reduced at a minimum of three sites, but at this stage it is difficult to imagine that these losses could bring about a meaningful shift in the market balance.

Flakes availability is equally comfortable despite the small number of local suppliers. Prices have eased further and this month's range has narrowed to €2,000-2,100/t fd as suppliers have worked to shift volume and, in some cases, compete with lower-priced imports. Asian flakes are still competitively priced and they remain available through resellers.

Chlorinated derivatives

Chlorine offtake has started to rebound from the very low levels in December and January, when average operating rates stood at just 52pc. Capacity utilisation is now estimated at around 60pc on average as various chlorinated derivatives sectors have commenced restocking activity. This includes the vinyls industry, where producers have faced the question whether to run harder or to purchase merchant EDC and VCM to avoid pushing more caustic soda into the

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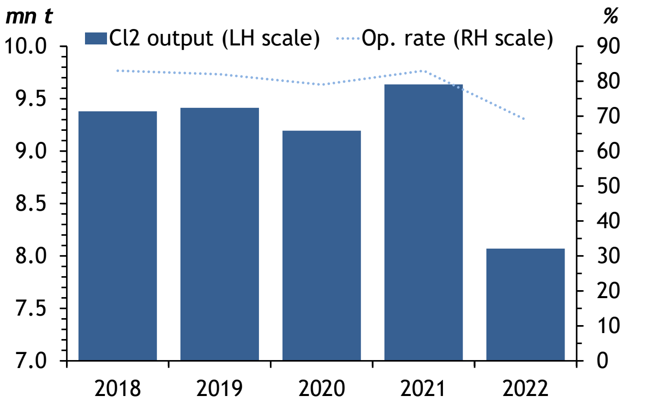
market. European sources are generally not utilising their plants harder to be able to move more EDC than usual and so chlor-vinyl producers have placed a number of enquiries in the US Gulf.

Other than the overall reduced output owing to poor chlorine consumption operational stability is high. There have been no new major production issues besides the force majeures at Covestro in Uerdingen and Dormagen and KemOne at Lavera. A number of planned shutdowns are coming up as part of the spring maintenance programme however. They will begin with Nobian's Botlek site at the end of March, followed by CABB in Gersthofen, also in March, as well as Vinnolit and Vestolit in April and Spolchemie in May. Several other producers are also planning maintenance within the next three months, but they are still working to specify and make public the exact details.

A total of 8,069,761t of chlorine were produced in the EU 27 countries plus Norway, Switzerland and the UK last year, according to industry association EuroChlor. This was down by 16pc on 2021, with average daily output declining to 22,142t from 26,410t in the same period. The slowdown in chlorine demand brought down average operating rates to 69pc from typically the low 80spc, although this number does not represent the reality of the chlorine demand slowdown. The first six months of 2022 were pretty normal before chlorine consumption started to drop off in June and kept deteriorating until December when capacity utilisation stood at just 52pc. Much of the second half of 2022 saw operating rates below the 69pc mark and that is still the case today. Caustic soda stocks saw the opposite trend. They averaged 212,164dmt in 2022 compared with 203,602dmt in 2021 after historically high market prices destroyed more caustic soda demand than normal at this stage of an economic downturn. The rise in overseas imports into Europe and lack of competitiveness for export into the international seaborne markets also contributed to the build-up of stocks.

Annual chlorine output EU27+NO+CH+UK



MIDDLE EAST

An integrated facility has scheduled a 20-day maintenance shutdown starting from 24 February. No spot volumes are available for export. A small cargo with around 3,000dmt of India-origin supplies was fixed at around $520-540/dmt cfr, which will netback to about $450/dmt fob, bound for Saudi Arabia's west coast port.

A Saudi alumina refinery also imported caustic soda as part of its regular imports. The cargo was likely priced based on an index-linked formula. No other major production issues were reported in the region.

Notional prices were assessed at $470-490/dmt fob in the absence of spot fixtures to the Middle East, reflecting the prevailing price range of transactions as most trades were linked to a published northeast Asian fob index. The rapidly falling northeast Asian export prices will continue to weigh on Middle Eastern fob prices.

Middle East prices

	Units	Timing	Low	High	±
Caustic soda					
Export fob Middle East ports	*$/dmt*	Feb 23	470	490	-60.00

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Overview

Northeast Asian export prices settled sharply lower this week at $400-460/dmt fob following another five fixtures of Chinese, Japanese and South Korean origin heading to southeast Asia, Taiwan, and other deep-sea destinations, a cumulative drop of $110/dmt since business activities resumed after the lunar new year holiday. This sets the monthly fob range for February at $400-510/dmt, down by another $75/dmt on mid-point as compared to previous month.

Rising inventories contributed to the continuous sharp decline in export prices, especially on the last week of February. Rapid recovery in chlorine netbacks prompted integrated producers in the vinyl and non-vinyl downstream industries to maintain higher run rates despite rapidly falling caustic soda prices, resulting in excess supply with more volumes being diverted to exports.

Exports in China were ample, but Chinese producers held their offers firmer at above $450/dmt fob, near their domestic parity price level and break-even ECU cash cost level, despite ample supply for exports in China. However, some producers have succumbed to inventory pressure and lower their offers to near $400/dmt fob level.

A total of floating spot cargoes of around 130,000dmt are available for March and April loading in northeast Asia, coupled with another 40,000dmt available from Iran. The increase in export availability is substantial and it's likely to further depress the fob prices in Asia in near term.

Traders remained cautious and avoided taking positions in the market. But rapidly falling northeast Asian prices attracted some buying interest for imports to supplement

Asia-Pacific prices

	Units	Timing	Low	High	±
Caustic soda					
Export fob northeast Asia	*$/dmt*	week 8	400	460	-42.50
Export fob northeast Asia month range	*$/dmt*	Feb 23	400	510	-80.00
Import cfr southeast Asia	*$/dmt*	week 8	465	530	-47.50
Import cfr southeast Asia month range	*$/dmt*	Feb 23	465	605	-90.00
Domestic China 50pc	*Yn/dmt*	week 8	2,840	2,960	-170.00
Domestic China 50pc month range	*Yn/dmt*	Feb 23	2,840	3,360	-360.00
Domestic Thailand	*Bt/lmt*	Feb 23	10,000	10,800	nc
Domestic Malaysia	*ringgit/lmt*	Feb 23	1,350	1,450	-200.00
Domestic Singapore	*S$/dmt*	Feb 23	950	980	-50.00
Domestic Indonesia	*Rp/lkg*	Feb 23	9,500	10,500	nc
Domestic India	*Rs/dmt*	Feb 23	33,000	39,000	-5500.00
99pc solid export fob China	*$/t*	week 8	550	570	-45.00
99pc solid export fob China month range	*$/t*	Feb 23	550	625	-72.50
Potassium hydroxide (KOH)					
Solid cfr Asia	*$/t*	Feb 23	1,250	1,380	nc
EDC					
Import cfr Asia	*$/t*	Feb 23	300	320	+30.00
PVC					
Pipe ex-works China month range	*Yn/t*	Feb 23	6,300	6,850	+50.00
Import China month range	*$/t*	Feb 23	850	925	+37.50

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their requirements. Freight rates dropped substantially, causing cfr prices to drop more rapidly and widening the arbitrage gap for northeast Asian cargoes to head to other long-haul deep-sea destinations.

Despite market expects to see a more significant recovery in domestic offtake when manufacturing activities resumed in March, the prospect of a upside is limited as both the traders and producers still saddled with high spot inventory that needs to be floated, especially for March and April loading. Furthermore, there were no indications of scaling down despite rapid fall in caustic soda prices as producers continued to rely on chlorine to recoup their operation netback.

China

The domestic liquid caustic soda markets in China were sluggish with slow demand recovery. Downstream caustic demand is gradually recovering but slower than market expectations after the lunar new year holiday. The latest contractual ex-tank prices for alumina sector settled broadly lower as caustic soda consumption among the alumina refineries has not yet fully resumed, further depressing the spot market.

Rising inventory pressures led to a continued fall in domestic parity prices for 32pc and 50pc grades, as many major producers maintained higher run rates despite falling soda prices and slowing domestic demand. Overall run rates were maintained at around 84-85pc, slightly lower compared with the previous month.

A recent rapid recovery in netback rates for chlorine and its derivatives prompted producers to ramp up their operations instead of recouping losses made from falling caustic soda prices., leading to higher inventory pressure. This has resulted in a further lengthening of an already long market. Slowing export demand and falling buying ideas forced producers to divert their attention to the domestic market, aggravating the price pressure in the domestic market.

Mainstream ex-tank prices of the 32pc grade in Shandong fell by 120-180 yuan/lmt over a period of three weeks and settled at Yn850-900/lmt, while the 50pc grade fell by about Yn360/dmt to Yn2,840-2,960/dmt ($417/dmt) ex-tank. East China prices also fell. Ex-tank prices of the 32pc and 50pc grades in Jiangsu fell sharply by Yn200-240/lmt to Yn870-1,000/lmt and Yn1,440-1,630/lmt, respectively. Ex-tank prices of the 32pc grade in Zhejiang fell sharply by Yn200-250/lmt to Yn1,100-1,200/lmt. Anhui ex-tank prices declined by Yn100/lmt to Yn1,015-1,100/lmt.

The caustic soda market is likely to remain subdued in the coming weeks because of limited upward momentum. The fall, if any, could be limited as the market is seen gradually recovering in March.

Northeast Asia

Taiwanese domestic ex-works prices for 45pc grade for December delivery fell by NT$0.45/lkg after recent price hikes, taking the February delivery price down to NT$10.35-10.45/lkg ($762/dmt). Ex-works prices for major buyers fell to NT$9.95-10.05/lkg ($730/dmt). The continuous fall in domestic parity prices is driven by rapid decline in northeast Asian export prices and arrival of lower-priced import cargoes.

The continuous rebound in PVC prices in February helped to temporarily lift chlorine netback and eased some cost pressures for integrated producers. Major facilities have not resumed full operations to keep the caustic soda in a more balance position.

Three import cargoes of east China origin were at $460-510/dmt fob, which yielded a landed price of around $500-550/dmt cfr. Downstream markets began showing signs of gradual demand recovery, especially from the steel, petrochemical and textile sectors.

Two export fixtures of around 5,000-6,000dmt each from South Korea was fixed at $450-475/dmt fob in February loading, likely destined for Australia and other deep-sea destinations. Supply is now more balanced as most production lines have returned to normal. Caustic consumption is also showing signs of gradual recovery.

Japanese export availability for February and March loading have increased as producers continued to divert

Caustic soda 50pc ex-factory China		*Yn/dmt*
Timing	**Low**	**High**
February	2,840	3,360
Week 8	2,840	2,960
Week 7	3,020	3,120
Week 6	3,180	3,280
Week 5	3,200	3,360

Export fob northeast Asia		*$/dmt*
Timing	**Low**	**High**
February	400	510
Week 8	400	460
Week 7	465	480
Week 6	500	505
Week 5	510	510

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export cargoes originally allocated for the Indian market, coupled with fiscal year-end liquidation. Three fixtures were reported at around $430-450/dmt fob heading to southeast Asia. Japan exported 970,000dmt, more than 25pc of its caustic production output in 2022, to maintain a more stable domestic market and domestic parity prices.

The latest fall in energy prices and recovery in vinyl netback eased cost constraints on local integrated producers, although northeast Asian caustic soda export prices continued to decline. as hiking the domestic caustic soda prices is a rather lengthy process.

Southeast Asia

Southeast Asian import prices fell sharply this week to the recent low of $465-530/dmt cfr, following a biggest weekly drop of $75/dmt. Six fixtures of northeast Asian origin headed to Indonesia, Vietnam, Philippines, and Malaysia. This set the monthly cfr range at $465-605/dmt. This represents a further decline of $90/dmt at mid-point as compared to last month. A total of eleven cfr fixtures were reported in February.

Overall domestic demand for caustic soda was showing signs of gradual recovery, especially from the textile sector, with oleochemical and petrochemical industries also gradually picking up.

The recent continuous fall in freight rates destined for southeast Asian ports hastened the fall of cfr prices in the region. The latest outbound freight rates from northeast Asia destined to southeast Asian regular ports declined by $20-30/dmt to around $63-70/dmt.

Malaysian domestic delivered prices fell further this month to 1,350-1450 ringgit/lmt ($630/dmt). The arrival of lower priced import cargoes and intense price competition among local producers and traders brought down domestic prices. The resumption of the Pengerang facility in late Q1 will significantly lift caustic soda consumption in Malaysia, although demand from other sectors remains lackluster. Three cargoes of northeast Asian origin were fixed at around $515-525/dmt cfr to supplement domestic supply.

Producers opted to roll over their February delivered prices at 10,000-10,800 baht/lmt ($632/dmt), after recent downward correction in the absence of arrival of import cargoes, despite rapid falling cfr prices in the region. The recent strong Thai baht pushed import costs significantly higher and made it difficult for traders to compete with local material.

No imports were reported in February. But producers might consider some downward adjustment in coming months in view of rapid falling import prices. Caustic soda consumption remained steady, as the offtake from the sugar harvesting season bolstered the caustic consumption, although the season is ending soon. Rayon producers will partially restart output after recent operation cuts

Import cfr southeast Asia		*$/dmt*
Timing	**Low**	**High**
February	465	605
Week 8	465	530
Week 7	540	550
Week 6	550	580
Week 5	600	605

Indonesian producers persisted with higher run rates to fulfill contractual EDC obligations and PVC requirements, as PVC prices continued to pick up. The recovery in chlorine netback rates helped integrated producers sustain their operations with positive margins.

Producers continued to offload excess caustic soda cargoes into the export market or to major consumers in the alumina and mineral processing sector. An import of around 5,000dmt destined for a nickel plant in Obi Island was fixed at around $530/dmt cfr, which nets back to around $440/dmt fob because of higher freight rates to Obi Island. Another purchase tender for two cargoes were also concluded around $465/dmt cfr, this is likely to be of China origin.

Caustic offtake from smaller downstream producers, especially from the textile and oleochemical sectors, was showing signs of gradual recovery. A spot cargo destined for the Philippines was fixed at around $505/dmt cfr levels, which netback to around $410/dmt fob, while another spot cargoes destined for Vietnam was fixed at around $475-480/dmt cfr.

India

India's domestic liquid caustic soda prices continued to weaken and settled lower this week at 35,000-36,000 rupees/dmt ($428/dmt), excluding tax and delivery, as domestic parity prices fell by another Rs3,000/dmt over four consecutive weeks compared to the previous month. This sets the February ex-plant monthly price range at Rs33,000-39,000/dmt.

Market sentiment was subdued as producers maintained higher run rates, resulting in rising inventories. Slowing domestic consumption, especially from the non-alumina sector in the textile and pulp industries, dragged down domestic prices.

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Long term supply contracts with traders for 2023 have not yet been finalized as domestic producers diverted more inventory to their main caustic consumers in the alumina sector to ease their inventory pressure, which reduced imports to almost zero.

The continuous drop in coal prices and rise in chlorine netbacks helped to ease cost pressures and maintain higher run rates despite falling domestic prices. But producers have begun evaluating the possibility of scaling down to stem further ECU margin erosions if domestic parity prices continue falling.

Two export cargoes for February-March loading were fixed at around $450-490/dmt fob, with the cargoes likely heading to the Middle East and Africa, which would help to temporarily ease the inventory pressure.

Alumina

Caustic soda consumption in the alumina sector in Asia remained largely mixed, despite merchant alumina prices stabilising at $360-370/t fob. There were some minor shrinks in caustic soda consumption and shifts in trade flows. The fall in caustic soda prices provided more cost relief to many alumina refineries across the region, especially in Australia, China, Indonesia and India.

Latest contractual ex-plant prices in China's fixed-alumina sector fell this month as many refineries have not fully resumed their operations after the lunar new year holiday, and caustic supplies were ample across most parts of the country.

The contractual ex-tank price for 32pc grade for February delivery in Shandong fell further by another 60 yuan/lmt ($8.70/dmt) to Yn860/lmt. Delivered contractual prices of 32pc grade for Henan fell by another Yn240/dmt to Yn3,550/dmt. Contractual delivered prices of 50pc grade for Shanxi refineries also settled lower by Yn240/dmt to Yn3,500/dmt.

Besides contractual cargoes heading to Australian alumina refineries, a 7,500dmt spot cargo of northeast Asian origin was fixed at $595/dmt cfr Bunbury. The spot cargo is likely to be used as a top up and will netback to around $500/dmt fob. Australia's alumina sector imported around 2mn dmt of caustic soda in 2022.

Long term supply contracts for 2023 for northeast Asian origin products have yet to be finalized with traders for alumina refineries in India. Domestic refineries focused more on local supplies because of falling Indian domestic parity prices. India imported about 148,000dmt of caustic soda, mainly destined for the alumina refineries as part of old supply contracts.

The construction of China's Hangzhou Jinjiang's 2mn t/yr alumina refinery and 1mn t/yr aluminium smelter projects in Saudi Arabia will begin this year. Caustic soda consumption is expected to reach about 200,000 dmt/yr once the refinery starts up. The firm also invested in the first phase of PT Borneo's 1.5mn t/yr alumina refinery project in Indonesia.

Alumina refineries and mineral processing plants in Indonesia source most of their requirements domestically and some have been imported by their internal sourcing companies. Most of these imports were of Chinese origin.

Solid caustic soda

China's flake export fob prices fell sharply lower this week to around $550-560/t fob as it has been falling for the past four consecutive weeks, putting the monthly fob range at $550-625/t. A complete lifting of Covid restrictions and high inland flake inventories bolstered more movement of inland flake into the coastal markets and exports that further lowered export prices.

Falling coal prices and a drop in domestic liquid feedstock prices further dragged down fob prices. Rapidly falling northeast Asian fob export prices and slowing export demand aggravated the already tepid sentiment in the flake market.

Outside of China, some export offers fell to $550-560/dmt fob level to stay competitive, although there were some higher offers of $570-580/t fob. Most of the cfr prices offered into southeast Asia hovered at $570/t. Some of the smaller southeast Asian flake and pearl producers stayed away from the export market because of higher domestic parity prices.

Domestic demand for flake in China did not pick up when business activity resumed after the lunar new year holiday. Downstream consumption has not fully recovered as buying interest remained slow with consumers and traders refraining from restocking.

The lifting of Covid restrictions and the movement of flake cargoes from inland to coastal markets returning to normal has failed to lift buying support for producers. A fall in domestic feedstock prices also dampened price sentiment

99pc solid export fob China		$/dmt
Timing	Low	High
February	550	625
Week 8	550	570
Week 7	600	610
Week 6	620	625
Week 5	620	625

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as mainstream ex-plant prices were mostly lower. There was little motivation among traders and downstream manufacturers to restock, as they were wary of further falls and slow downstream manufacturing activity.

Mainstream ex-plant prices in Inner Mongolia and Ningxia fell further to Yn3,200-3,300/t, while ex-plant prices in Xinjiang fell sharply to Yn3,100/t. An increased influx of lower-priced inland material and slowing demand weighed on Shandong's ex-plant prices, which fell to Yn3,450-3,700/t. Flake markets are likely to continue falling in the coming months because of a weak recovery in demand given a slower resumption in downstream manufacturing activity.

India's domestic flake prices fell further to Rs40-41/kg ex-plant because of a slower demand recovery and rising inventories. More producers have opted to convert more liquid feedstock into flakes to reduce their liquid feedstock inventory pressure. Weak export demand aggravated the supply situation in the country.

Potassium hydroxide

KOH prices in Asia remained under pressure from the rapid fall in northeast Asian caustic soda prices, which is dragging KOH prices into a downward trend. A continuous fall in KCl feedstock prices and slowing demand from broader downstream industries have depressed price sentiment across the region.

Cfr prices for 48pc Chinese-origin liquid KOH fell further to around $800-810/lmt for February shipment. First-quarter KOH cfr prices for South Korean-origin cargoes were unchanged at $840-850/lmt after a recent downward correction, putting the February cfr price range at $800-850/lmt.

Chinese KOH producers dropped their 96pc flake prices to around $1,250/t cfr for February shipment, while South Korean prices maintained their first-quarter prices at around $1,350/t cfr after a recent downward correction, setting the February cfr price range at $1,250-1,380/t. KOH export prices are likely to continue trending downwards in the near term, mainly driven by slowing demand in both export and domestic markets and falling KCl feedstock prices. The continuous fall in freight rates for containerised and liquid cargoes will likely drag cfr prices down further, although producers are trying to maintain a better netback on fob prices.

Chlorinated derivatives

The domestic liquid chlorine market in China fell broadly lower this week, although it still remained in the positive territory. Merchant chlorine prices rose sharply higher when business activities resumed after the lunar new year holiday.

Domestic merchant liquid chlorine prices climbed in the first three weeks of the month as demand for merchant chlorine recovered at a faster pace than for caustic soda. This helped to shift most ex-tank prices across China into positive territory. A complete lifting of Covid-19 restrictions on the movement of chlorine also bolstered consumption across the region.

Mainstream ex-tank prices in Shandong province for truck delivery rose by about 700 yuan/t and settled into the positive territory at around Yn150-200/t, while ex-tank prices in Jiangsu also rose by more than Yn600-700/t back into the positive territory at around Yn50-100/t.

Despite a rapid fall in domestic caustic soda prices in India, the merchant chlorine prices remained in the negative territory at 3,000-4,000 rupees/t ex-plant as demand recoveries were slow. Indian producers were also trying to divert more chlorine in the form of hydrochloric acid (HCl) into the export market. India's HCl exports rose by 9-10pc in 2022 as compared to the previous year.

Import prices of ethylene dichloride (EDC) in Asia rose further this month in response to continuing recovery in the vinyl market. But the sentiment is a little more bullish in southeast Asia, while the northeast Asian market was largely subdued. The notional prices were assessed at $300-320/t cfr Asia reflecting the prevailing fixture prices.

The continuous rise in the polyvinyl chloride (PVC) market helped to lift sentiment for EDC in Asia, with this being more evident in the southeast Asian market. Fob prices of the latest fixture reported in northeast Asia were hovering at around $260-270/t.

Buying interest for EDC in China were relatively subdued because of the slow rebound of the PVC market in China, as notional buying ideas remained low. But the demand for EDC in southeast Asia and India recovered, which resulted in a wider price gap. Chinese domestic EDC ex-plant prices also rose in tandem with higher import prices and settled marginally higher at Yn2,480-2,670/t in the eastern coastal market for non-vinyl applications.

Polyvinyl Chloride (PVC)

Asian PVC markets remained generally mixed as demand recovery in southeast Asian and India markets were comparatively more robust, while Chinese PVC market recovery was slower than expected although overall domestic prices were on an upward trend.

Taiwan's Formosa announced its PVC price nominations for March-loading cargoes with a further increase of $70-90/t

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compared with the previous month as demand recovery continues, especially outside China. Cfr prices in China were at $925/t, $920/t cif southeast Asia and $970/t cif in India. But trades fared poorly in India as prices for China-origin cargoes were more competitive. Prices were assessed at $920-925/t cfr China.

Chinese PVC prices continued to inch up despite limited trades, with PVC futures continuing to rise. Trading activity was a little slower than expected as recovery was slow, because of cautious buying interest from downstream converters that completed their feedstock purchases over the past 2-3 weeks when prices fell. Operating rates at downstream converters increased significantly to 43-44pc, up by 16-17 percentage points from the previous week.

Prices of carbide-based PVC were at Yn6,200-6,400/t exworks, or an import parity equivalent of $736-760/t, up by Yn50/t from the previous session. Ethylene-based PVC prices were assessed unchanged at Yn6,300-6,700/t.

Average operating rates at Chinese PVC plants edged higher to 80pc, up by 1 percentage point from the previous week. Run rates at carbide-based plants were at 79pc, while ethylene-based plants operated at 83pc. Sinopec Qilu shut its 360,000 t/yr unit for 10-day maintenance on 13 February.

The export arbitrage window widened as China-origin cargoes were quoted at competitive prices compared with other regions. Ethylene-based PVC traded at $860-890/t fob China, while carbide-based PVC traded at $830-860/t fob China, mainly destined for southeast Asia and south Asia.

Freight rates from China to Vietnam and to India were at $15-20/t and $20-40/t respectively. Carbide-based PVC was assessed at $830-860/t fob China, up by $10/t from the previous assessment's high end. Ethylene-based PVC was assessed at $860-890/t fob China, $10/t higher from the previous week's high end. China's SP Chemical postponed the start-up of its new 400,000 t/yr vinyl chloride monomer (VCM) plant again to late February from the original plan of early February.

Indian PVC pipe-grade prices widened to at $920-970/t cfr India as new offers emerged for March shipment. The midpoint price fell by $10/t. A key Taiwanese producer offered cargoes at $970/t cif, with limited buying interest as buyers deemed the offer to be too high. Some deals were done but the producer was unable to fully sell out its allocations for India like it did in the last two months. Another Taiwanese producer also offered cargoes at $970/t cif.

There are two South Korean producers that also offered cargoes at $970/t, with one offering discounts of $10/t if buyers purchased 100t and $30/t if buyers purchased at least 300t. A Thai producer offered cargoes at $1,020/t cif but buying interest was limited. The producer later introduced discounts, in line with what the South Korean producer offered. Cargoes were eventually offered at $1,000-1,010/t cif. This would be the equivalent of $975-985/t cif, after considering duty benefits on imports from southeast Asia.

Cargoes from Vietnam were offered at $990/t cif. This would be around $965/t cif after duty benefits. The high end of this week's assessment rose on new offers from southeast Asia, Taiwan and South Korea, but the low end of this week's assessment fell as Chinese cargoes flooded the market. Carbide-based PVC cargoes were offered at $890-900/t cif. Ethylene-based PVC cargoes were offered at $920-930/t cif.

Buyers that were keen on restocking mostly purchased ethylene-based PVC cargoes from China as prices were more competitive. Some deals were also concluded on the higher end of the assessment this week. But restocking interest dipped as most buyers restocked on expectations of increased export availability in the near term.

Some buyers were less keen on Chinese cargoes because of existing ADD investigations on carbide-based PVC. These buyers were looking at cargoes from the US, which were offered at $940/t cif. These cargoes will take a longer time to arrive. It is unclear if cargoes from the US will continue to flow into Asia at high volumes as netbacks for US PVC producers seem to be higher in other regions.

The lack of downstream demand in China has raised concerns among Indian buyers. Prices could stagnate or even soften if Chinese PVC demand does not recover. Indian trading firms that suffered big losses in 2022 are hoping to recover these losses in the first half of this year.

Cargoes from Indonesia were offered in Pakistan at $980/t cif. Pakistani buyers continue to face challenges in securing cargoes from import markets because of tightened credit restrictions. Pakistani buyers have had to purchase cargoes from domestic PVC producer Engro instead. The overwhelming demand for domestic cargoes has forced the producer to raise prices.

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