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Issue 24-05
May 2024

Argus Base Oils Outlook

Overview

Americas ▲	Europe ▲	Asia-Pacific ▼
Imminent summer driving season continues to boost base oil, lubricant demand	Imminent summer driving season continues to boost base oil, lubricant demand	Growing signs of import substitution in China as base oil specifications stabilise
Low Group III-II premium to encourage higher production of Group II base oils	Low Group III-II premium to encourage higher production of Group II base oils	Monsoon season in India to weigh on demand
US Group III values weaken relative to Europe, Asia, Mideast Gulf	US Group III values weaken relative to Europe, Asia, Mideast Gulf	Higher freight rates, port congestion likely to restrict export volumes

Short-term price drivers

	Support	Pressure
Fundamentals	▲ Balanced-to-tight Group I, Group II supply in US, Europe	▼ Seasonal demand wanes in Asia-Pacific; buyers await competitively-priced cargoes
		▼ Domestically-produced supplies increasingly plentiful in China, India
	▲ Workable arbitrage to limit price downside for Asia-Pacific supplies	▼ China suspends tariff concessions on lubricant, base oil imports from Taiwan
		▼ Rising base oil premiums to competing fuels incentivise higher base oils production
Sentiment	▲ Above-normal Atlantic hurricane season prompts need to build larger inventories to buffer against weather-related disruptions	▼ Expectations of lower base oil prices as crude, refined product values drop
		▼ Buyers holding back purchases to limit exposure to any price downside from waning seasonal demand
Macroeconomics	▲ Flash US Manufacturing PMI rose to 50.9 in May, highlights growth in factory production	▼ Flash Eurozone Manufacturing PMI rose to 47.4 in May; remains in contraction zone
		▼ China official Manufacturing PMI declined to 49.5 in May, signalling an unexpected contraction

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Base oil price forecast												$/t
	Jun 24	Jul 24	Aug 24	Sep 24	Oct 24	Nov 24	Dec 24	Jan 25	Feb 25	Mar 25	Apr 25	May 25
US												
Group I												
SN 150 fob export	918	930	920	906	884	865	854	848	864	889	917	928
SN 500 fob export	1045	1063	1055	1042	1024	1001	986	981	994	1023	1053	1075
Bright stock fob export	1261	1285	1277	1265	1241	1222	1196	1184	1199	1235	1266	1290
SN 150 domestic	1043	1050	1036	1014	988	959	933	921	925	948	971	985
SN 500 domestic	1337	1329	1312	1285	1254	1221	1193	1171	1157	1173	1197	1216
Bright stock domestic	1575	1568	1550	1523	1493	1460	1435	1415	1403	1419	1442	1463
Group II												
N100 fob export	941	950	942	926	904	879	864	857	874	901	925	939
N220 fob export	938	952	943	931	914	890	869	855	875	902	929	944
N600 fob export	1067	1090	1104	1093	1073	1049	1033	1026	1039	1068	1091	1107
N100 domestic	1083	1088	1069	1046	1019	990	956	933	945	968	988	998
N220 domestic	1100	1103	1089	1068	1041	1007	971	950	960	980	1001	1020
N600 domestic	1394	1385	1366	1340	1310	1273	1236	1217	1207	1226	1251	1272
Group III												
4cst domestic	1329	1347	1360	1362	1349	1329	1314	1317	1332	1352	1363	1371
Europe												
Group I												
SN 150 fob export	1117	1108	1089	1056	1029	1011	984	964	955	975	998	1017
SN 500 fob export	1190	1182	1165	1137	1101	1080	1056	1036	1026	1043	1069	1089
Bright stock fob export	1438	1437	1418	1385	1347	1323	1295	1272	1257	1274	1298	1319
SN 150 domestic	1126	1134	1120	1098	1071	1048	1029	1021	1027	1046	1068	1095
SN 500 domestic	1191	1198	1184	1166	1142	1124	1099	1088	1094	1117	1151	1179
Bright stock domestic	1439	1443	1431	1414	1389	1373	1348	1329	1319	1341	1370	1395
Group II												
N150 fca ARA	1301	1301	1289	1268	1240	1205	1175	1156	1151	1169	1191	1206
N600 fca ARA	1373	1378	1366	1348	1324	1297	1276	1263	1256	1273	1295	1309
Group III												
4cst fca NWE	1647	1643	1627	1600	1567	1529	1502	1488	1498	1510	1526	1533
(a) 4cst fca NWE	1927	1917	1891	1861	1827	1789	1761	1743	1726	1737	1750	1755
(b) 4cst fca NWE	1436	1424	1410	1388	1362	1334	1316	1307	1318	1333	1351	1361
Asia												
Group I												
SN 150 fob export	774	764	751	754	765	758	755	766	780	807	830	847
SN 500 fob export	970	958	941	922	897	880	868	879	897	926	953	967
Bright stock fob export	1095	1083	1064	1047	1054	1041	1035	1049	1074	1106	1128	1142
Group II												
N150 fob export	877	866	848	824	805	792	781	796	818	846	870	891
N500 fob export	990	978	958	948	935	919	896	910	935	965	997	1015
N70 cfr India	870	845	830	837	852	845	832	850	875	904	928	942
N150 cfr India	910	895	875	866	861	851	837	853	872	902	928	949
N500 cfr India	1005	991	972	967	966	952	934	950	971	1005	1033	1053
Group III												
4cst cfr Northeast Asia	1052	1031	1013	1005	1010	998	987	997	1015	1040	1062	1077
4cst cfr India	952	935	921	927	943	929	918	932	953	981	1005	1020
4cst ex-tank UAE	1067	1048	1033	1024	1022	1011	1016	1033	1052	1074	1094	1109

Summary

The month ahead:
Base oil prices are generally forecast to be higher in the month ahead. There are signs of ebbing demand in Asia-Pacific. Group III supplies remain largely plentiful.

Seasonal demand typically wanes from mid-year. This time round, a delayed boost in seasonal demand is set to prolong buying activity in some regions.

In the US, buyers continue to build inventories ahead of the summer driving season. This is adding onto firm demand from Latin America and is compounding the price impact from more limited supply availability. In Europe, more producers are seeking higher prices as inventory levels drop and several supply disruptions are underway. In Asia-Pacific, demand has waned as supplies are deemed sufficient to cover short-term requirements.

The next 3-6 months:
Base oil prices in November 2024 are largely forecast to be lower than prices in June next month.

Waning seasonal demand and a light round of plant maintenances is set to weigh on base oil values in the second half of 2024. Lower crude and competing fuel values are also raising expectations that base oil prices have little room to rise further.

Base oil prices have strengthened relative to competing fuel values. This reflects firm fundamentals for the lubricant feedstock while gasoil and diesel prices fell. Base oil premiums have been unusually weak relative to competing fuel values in the first quarter of 2024. They are now higher than their historical averages.

The trend highlights a growing incentive among refiners to prioritise base oils production, should they have the flexibility to do so. Any such move is set to add onto supply availability and put downward pressure on prices.

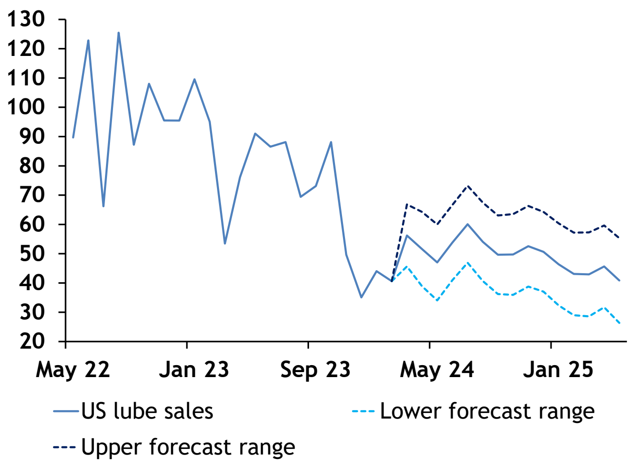
Longer term:
Base oil prices at the end of the forecast horizon in May 2025 are generally forecast to be lower compared with prices at the start of the period in June next month.

An expected rise in seasonal demand from the first quarter of 2025 will likely be outweighed by plentiful supply availability from a light round of scheduled plant maintenances. An absence of any weather-related disruptions is also set to release stocks that were held back as a buffer during the Atlantic Hurricane season.

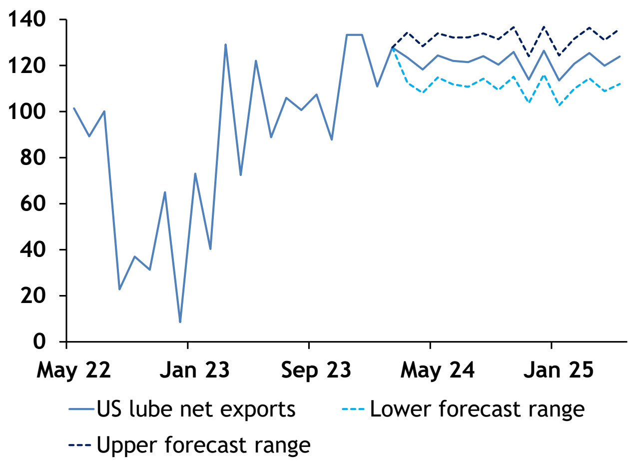
The extent of any pressure on prices is also dependent on the volume of arbitrage cargoes. Asia-Pacific base oil values are currently the lowest globally. This reflects the region's disproportionately large share of global nameplate production capacity, and ongoing logistical complications that have curbed the volume of exports from the region.

Most of the new production capacity is also housed in China, where the tax structure so far restricts exports. But the volume of Chinese imports from neighbouring regions have already slowed even as most new plants in the country have also yet to operate at optimal levels.

US lubricant sales (Base = 2017)



US net exports (Base = 2017)



US

May forecast

US Group I and Group II fob export prices at the end of the forecast horizon in May 2025 are forecast to be higher than prices at the start of the period in May 2024. Domestic Group I and Group II values are projected to be lower at the end of the forecast horizon. Group III prices are forecast to be higher.

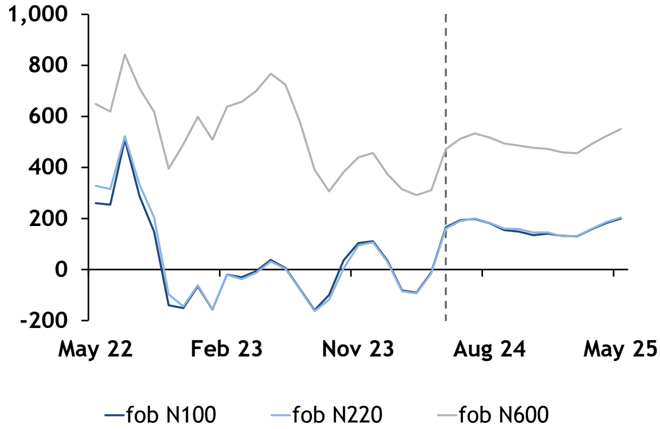
Base oil prices in the region are set to extend their rise in the months ahead following the clearance of surplus volumes and as blenders seek to build inventories ahead of the summer driving season. An expected rise in supply availability is then projected to weigh on prices later in the year.

Demand for the lubricant feedstock has held firm amid the spring oil-change season. Increased driving activity and marine and industrial oil blending has also boosted demand for base oils and provided upward support to prices.

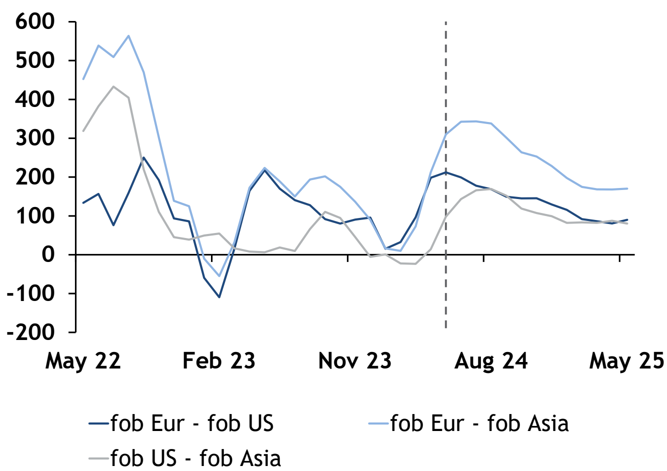
An above-normal Atlantic hurricane season for 2024 is set to prompt market participants to build larger inventories as a buffer against any weather-related disruptions. The National Oceanic and Atmospheric Administration predicts a 85pc chance of an above-normal season. The Atlantic hurricane season runs from June to November each year.

US manufacturing activity has also risen for the month. Flash US Manufacturing PMI rose to 50.9 in May, up from 50.0 in April. Factory output has risen for four consecutive months. Manufacturing firms continue to report an optimistic outlook which will likely boost demand for industrial lubricants.

US Group II spread to diesel *$/t*



SN 150 arbitrage spreads *$/t*



Export demand has also held firm. Demand from Latin America has risen as buyers sought to build inventories ahead of the Atlantic hurricane season, when supply is expected to be more limited. Demand is also firmer in Europe following refinery outages and as freight rates from Asia-Pacific rise.

While base oil values have strengthened relative to crude and competing fuel values, supply remains balanced-to-tight. Several producers have cleared surpluses into the export market in recent months. Some refiners continue to produce Group III base oils instead of Group II, with a yield drop. Other refiners have begun building inventories ahead of the hurricane season.

US Grp I prices extend weakness to European supplies

Group I base oils will likely get more price support in the months ahead.

US Group I fob export prices are currently at a $186/t discount, on average, to Europe Group I fob export values. The discount is at its highest since September 2022. Current discounts also contrast a typical premium of $27/t over the last 10 years.

US

Current discounts reflect more the strength of Europe Group I fob export prices than the weakness of US Group I values. While a week-long maintenance at a US refinery has reduced supply availability, a fire outbreak at an European refinery and an ongoing maintenance has further squeezed supply availability in Europe. Overseas demand for European supplies also remains firm.

The unusual weakness of US Group I prices will likely prompt more buyers to seek US supplies, should they have the flexibility to do so. Several European distributors have already begun seeking supplies from the US because of limited domestic supply availability. More such moves are likely underway as Group I nameplate production capacity shrinks in Europe and Asia-Pacific.

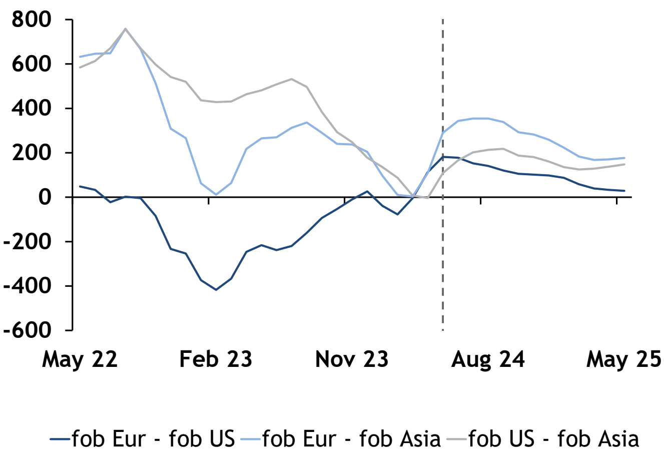
An expected rise in European supply availability is also expected to dampen the strength of European Group I base oil values. The refinery in France has resumed operations following the fire outbreak. Another Group I producer in Hungary will complete its scheduled maintenance by mid-July 2024.

The discount of US Group I fob export prices to Europe Group I fob export values is forecast to drop to an average of $44/t by the end of the forecast period.

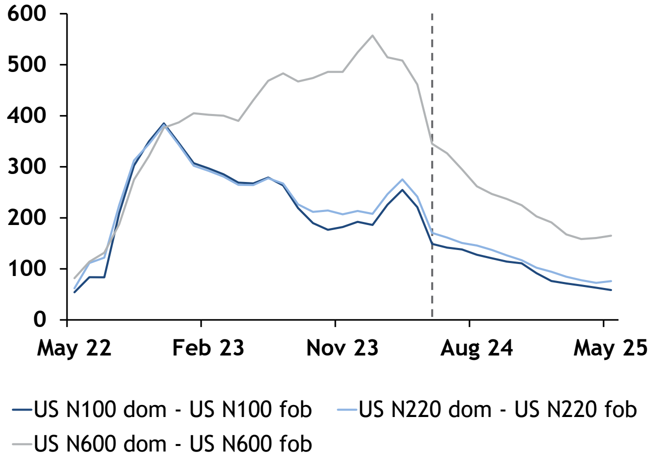
Grp II domestic-export spreads narrow, remains high

Like Group I base oils, overseas demand for Group II supplies is also expected to rise.

Bright stock arbitrage spreads $/t



US Group II domestic-export spreads $/t



US domestic Group II N100 prices are currently at a $149/t premium to US Group II N100 fob export values. The premium is at its lowest since mid-2022. But it remains higher than its 10-year average of $71/t.

US domestic Group II N600 prices are currently at a $345/t premium to US Group II N600 fob export values. The premium is more than three times higher than its 10-year average of $104/t.

Higher domestic prices reflect moves by producers to prioritise the domestic market by clearing surplus volumes into the export market. The US market, unlike other regional markets, is also characterised by a producers' posted prices system.

Higher domestic premiums for grades with a higher viscosity also highlights a competitive export market and limited production of the grade in domestic markets. The crude slate used in the US is typically lighter and sweeter.

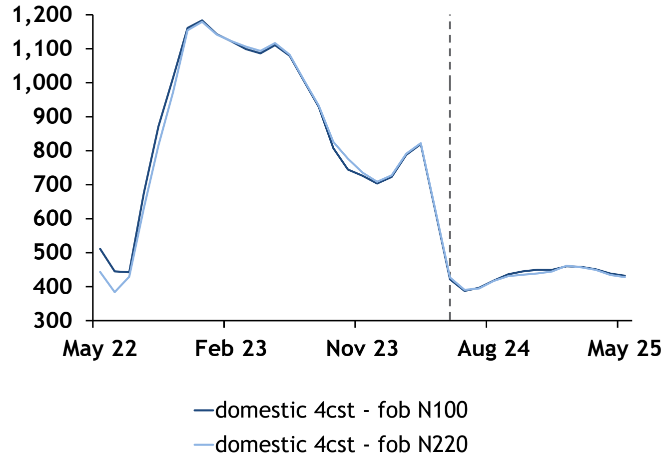
A wider-than-usual domestic-export spread will likely continue incentivising producers to divert more supplies towards the domestic market, should they have the flexibility to do so. An above-normal Atlantic hurricane season is expected to prompt market participants to build larger inventories and will likely facilitate such a move.

US

While Asia-Pacific Group II supplies are priced more competitively, higher freight rates and a longer voyage time have also deterred European buyers from seeking Asian cargoes. Any heightened interest in US Group II supplies will likely further domestic-export spreads further.

The premium of US domestic Group II N100 prices to US Group II N100 fob export values is forecast to drop to $59/t by the end of the forecast period. The premium of US domestic Group II N600 prices to US Group II N600 fob export values is also projected to fall to $165/t by the end of the same period.

US Group III - Group II spreads *$/t*



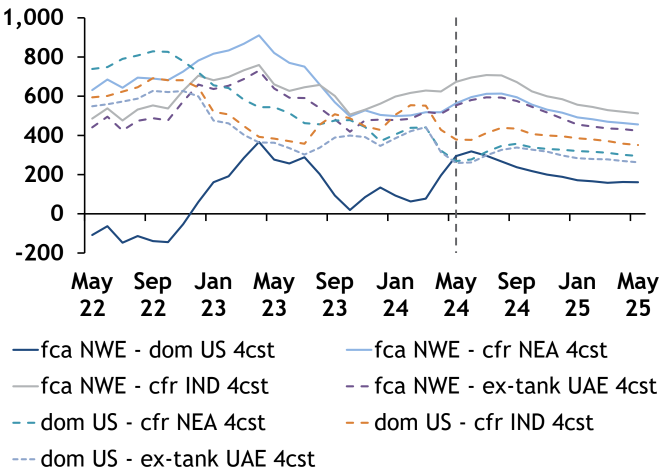
Attractiveness of US Grp III market wanes

While Group I and Group II values have risen more recently, Group III prices have held relatively stable. The trend reflects plentiful supply availability of the premium grade.

US domestic Group III 4cst prices are currently at a $259/t premium to Group III 4cst ex-tank UAE values. The premium is at its lowest since February 2021 and is reflective of its 10-year average of $235/t.

As mentioned in previous editions of the *Argus* Base Oils Outlook, unusually high Group III prices in the US are unlikely to persist. Regional producers are incentivised to divert more supplies to higher-priced outlets. Domestic producers are also incentivised to continue producing Group III base oils instead of Group II. These moves have materialised.

Group III 4cst arbitrage spreads *$/t*



Group III base oil margins have held firm relative to other grades of base oils. This has prompted producers to maintain production of the premium grade. The result is a growing supply overhang of Group III base oils globally, especially in the Mideast Gulf. A workable arbitrage has also incentivised exports to the US, which typically has a dearth of Group III base oils production.

While the arbitrage remains workable to divert more supplies towards the US, the European market is a more attractive outlet. Fca northwest Europe Group III 4cst values are currently at a $295/t premium to US domestic Group III 4cst prices. Any larger exports to Europe will likely limit the volume of exports to the US.

Domestic producers are also expected to optimise their output streams as Group III premiums to Group II drop. US domestic Group III 4cst prices are currently at a $273/t premium to US domestic Group II N100 values, down from $400/t from month-ago levels. The premium is also at its lowest since the first quarter of 2020.

The premium of US domestic Group III 4cst prices to Group III 4cst ex-tank UAE values is forecast to average $295/t across the forecast period.

Europe

May forecast

European Group I base oil prices at the end of the forecast horizon in May 2025 are forecast to be lower than prices at the start of the period in June 2024. Fca Antwerp-Rotterdam-Amsterdam (ARA) Group II and fca domestic northwest Europe (NWE) Group III prices are also projected to be lower.

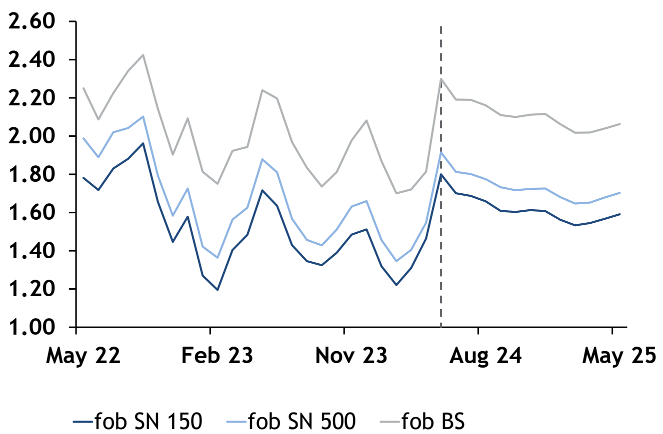
European base oil prices are forecast to rise in the month ahead before trending lower from the third quarter of the year. The trend reflects a combination of waning seasonal demand, rising supply availability, and an increasingly attractive arbitrage.

Base oil prices in the region continue to be supported by supply fundamentals. Availability of Group I base oils has been more limited following the announcement of a refinery closure. A fire in another refinery has further exacerbated supply availability.

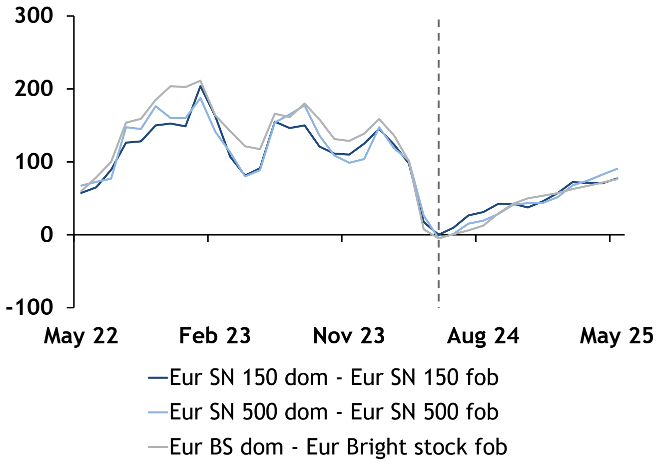
Scheduled maintenances in the months ahead will likely ease the pace of any supply recovery. A Group III producer in Finland is undergoing maintenance until June 2024. A refiner in Hungary is scheduled for maintenance till mid-July. Another producer in Spain is also scheduled for a turnaround beginning in November. These supply disruptions will likely curb Group I supply availability.

While supply fundamentals have provided a boost to prices, demand is more mixed.

Europe Group I Price Strength -



Europe Group I domestic-export spreads ***$/t***



Market activity has slowed in the region amid several holidays in May. Some buyers have suspended purchases as they await a clearer price and economic outlook. Manufacturing activity remains in contraction, even if they have risen to their highest in 15 months. Flash Eurozone Manufacturing PMI rose to 47.4 in May, up from 45.7 in April.

Demand among others blenders is firmer amid the spring oil-change season. Some blenders continue to struggle to meet rising demand for finished lubricants demand. These blenders also face competition from rising export demand, particularly from north Africa. Some European refiners do not have sufficient inventory to fulfil larger-than-expected orders. Other distributors are instead importing from other regional producers.

Grp I price strength ratio rises to 32-month high

The rise in base oil prices more recently also contrasts a drop in Brent crude oil values. The result is a higher-than-usual price-strength ratio.

The price-strength ratio, or the ratio of base oil to crude oil prices, measures the strength of base oil prices relative to crude oil values.

The price-strength ratio for Group I fob export supplies in Europe is currently at 2.00. The price-strength ratio is at its highest since September 2021. It is also higher than its 10-year average of 1.80.

Europe

The price-strength ratio for Europe domestic Group I supplies is also at 2.00. The price-strength ratio is at its highest since mid-2023. It is close to its 10-year average of 1.99.

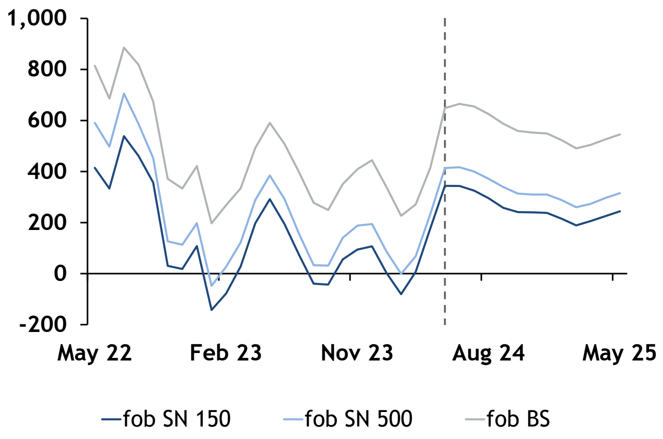
Higher price-strength ratios for Group I fob export prices reflect firmer export demand and more limited supply availability among European producers. Several Group I plant closures recently have squeezed the availability of Group I base oils globally. Domestic supply disruptions have further slashed producers' capacity to fulfil requirements in north and west Africa as they sought to prioritise the domestic market.

At the same time, crude oil values have weakened in part due to a de-escalation of the tension between Israel and Iran.

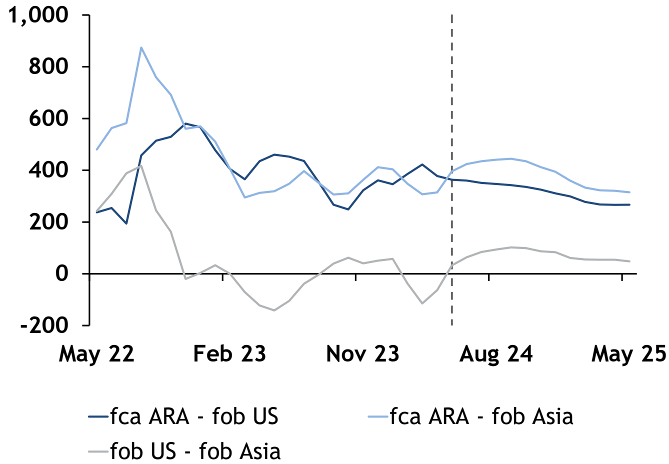
A higher-than-usual price-strength ratio is unlikely to persist. Supply availability of Group I base oils is set to rise in the months ahead. According to *Argus*'s proprietary base oils supply index, Europe Group I net nameplate production capacity is estimated to rise by 2.3pc in the third quarter of 2024 from the second quarter. A higher-than-usual price-strength ratio also incentivises higher run rates for base oils.

OPEC+ members are also scheduled for a meeting in early June to discuss crude output and potential supply cuts. Any drop in crude oil output will likely support prices and weaken the price-strength ratio closer to historical averages.

Europe Group I spread to diesel $/t



Group II (N100/N150) Light-Grade spreads $/t



Open arbitrage to pressure Grp II values

Like Group I base oils, Group II supply availability is also tighter than usual. But unlike Group I base oils, the region remains reliant on overseas supplies for premium-grade base oils.

Fca ARA Group II N150 prices are currently at a $396/t and $364/t premium to Asia Group II N150 and US Group II N100 fob export prices, respectively. These premiums are higher than their respective 10-year averages of $286/t and $240/t.

Fca ARA Group II N600 prices are currently at a $372/t and $322/t premium to Asia Group II N500 and US Group II N600 fob export prices, respectively. These premiums are also higher than their respective 10-year averages of $307/t and $185/t.

Higher-than-usual European Group II values reflect a slowdown in imports more recently. Higher freight rates and a lack of vessels have continued to curb the volume of imports from Asia. Producers in the US have also prioritised the Indian and the Middle Eastern markets because of a larger volume uptake. At the same time, domestic spot supply availability had been more limited due to a scheduled maintenance with the Group II unit in the Netherlands.

Higher European Group II values also reflects an appreciation of the euro against the US dollar. The euro appreciated by 1.45pc against the US dollar in May. Group II base oils are typically transacted in euros in the region.

Europe

The premium of European Group II supplies is forecast to drop in the year ahead.

A workable arbitrage to divert more supplies to Europe will likely weigh on Group II prices in the region and add onto any supply recovery from domestic sources. Any easing of logistical complications will further facilitate such a move.

An above-normal Atlantic hurricane season is also expected to prompt US market participants to build inventories to buffer against any weather-related disruptions. Supply availability in the US is already more balanced following a clearance of surplus volumes more recently. An inventory build will likely further limit supply availability in the region.

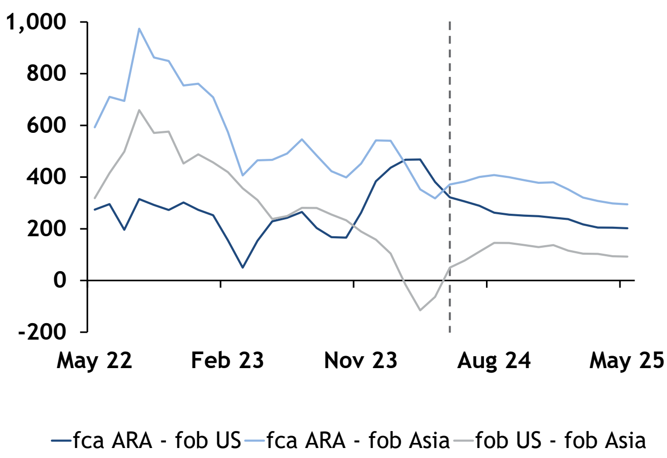
The premium of fca ARA Group II N150 prices to Asia Group II N150 and US Group II N100 fob export values is forecast to drop to $315/t and $267/t, respectively, by the end of the forecast period. The premium of fca ARA Group II N600 prices to Asia Group II N500 and US Group II N600 fob export values is projected to fall to $295/t and $202/t, respectively, by the end of the same period.

Attractiveness of Grp III (b) supplies rises

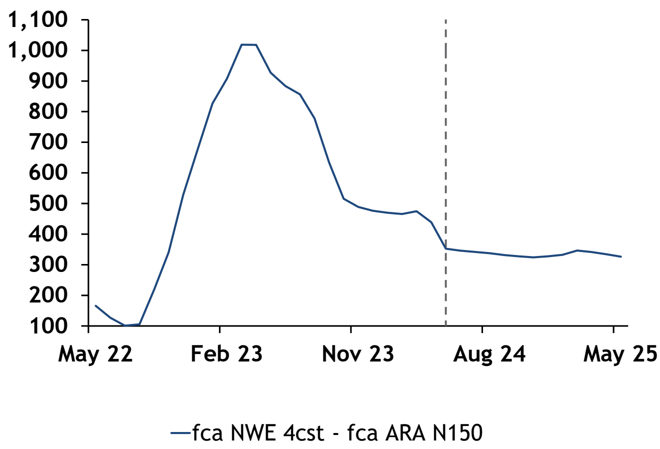
Unlike Group I and Group II, supply availability of Group III base oils is more plentiful. The result is an unusually narrow spread between Group III and Group II supplies.

Fca NWE Group III (b) 4cst prices are currently at a $158/t premium to fca ARA Group II N150 values. The premium is at its lowest since August 2022 and is below its five-year average of $242/t.

Group II Heavy-Grade spreads *$/t*



Europe Group III - Group II spreads *$/t*



The relative weakness of Group III prices reflects a growing surplus of Group III base oils globally. Chinese imports of Group III base oils have fallen as domestic production rises. Several producers have also opted to optimise output of Group III base oils as margins held firm relative to other grades of base oils. Such a move is deemed attractive even with a yield drop.

The premium of Group III to Group II prices were also higher than usual for longer than usual. This incentivised blenders to use more Group II base oils in formulations, should they have the flexibility to do so.

While a supply overhang of Group III base oils without the full set of OEM approvals persist, blenders are now incentivised to revert to using Group III base oils in formulations. Such a move is especially attractive should the premium of using Group III base oils is lower than the cost of additives from using Group II supplies. More such moves will likely counter a larger price drop.

The premium of fca NWE Group III (b) 4cst prices to fca ARA Group II N150 values is forecast to hold relative steady and average $141/t across the forecast period.

Asia

May forecast

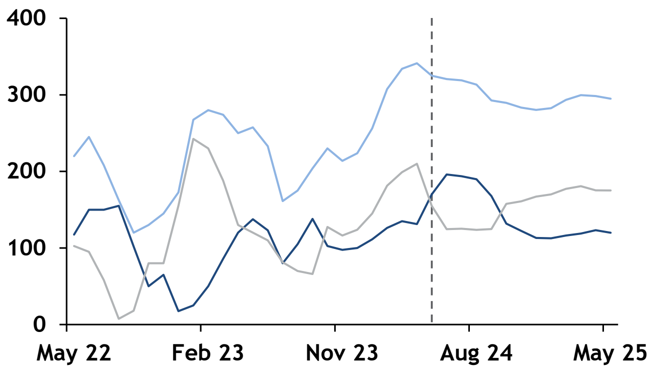
Asia-Pacific Group I base oil export prices at the end of the forecast horizon in May 2025 are largely forecast to be higher than prices at the start of the period in June 2024. Group II and Group III prices are also projected to be higher at the end of the forecast period.

Base oil prices in the region are forecast to trend lower in the months ahead as seasonal demand ebbs and supply availability rises. Lower crude and refined product prices will likely further support such a trend.

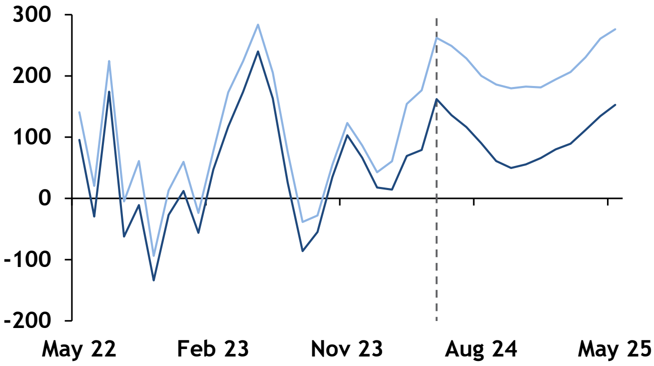
There are signs of waning market activity in Asia-Pacific. In China, buying activity is increasingly muted as finished lubricants demand is lacklustre and inventories are deemed sufficient to cover short-term requirements. In India, buying interest has slowed ahead of the monsoon season that typically runs from June to September each year. The rainy season typically weighs on base oils demand as industrial and transport activities slow.

Even so, demand in the Indian manufacturing sector continues to expand more recently, albeit at a slower rate. Flash India Manufacturing PMI registered at 58.4 in May, down from 58.8 in April. Manufacturers are increasing hires to fulfil orders. China's official Manufacturing fell to 49.5 in May from 50.4 in April. Lower demand contributed to a surprise contraction in the sector.

Asia Group I spreads $/t



Asia Group II spread to diesel $/t



Rising supply availability is set to compound the price impact from waning demand. Taiwan's sole base oil plant has resumed production following a scheduled maintenance since early March. India's base oils production has risen following larger imports of alternative crude. Competitively-priced cargo arrivals more recently are also set to keep supply plentiful for longer than usual.

A light round of plant maintenances will likely extend supply availability. A producer in Indonesia is scheduled for a partial, month-long maintenance from June 2024. A South Korean refiner's Group I and Group II unit is scheduled for a turnaround from the third week of September to end-October 2024. There are no other scheduled maintenances for the rest of 2024 so far.

A drop in crude and gasoil values more recently is also set to put pressure on base oil prices. Regional crude and gasoil prices have dropped by about 4pc in May. This is weighing on some buyers' price expectations. It also boosts the incentive of producing more base oils, should refiners have the flexibility to do so.

Asia

Waning demand to narrow Grp I heavy-light spreads

While base oil prices are forecast to drop in the months ahead, some grades are set to fall by more than others.

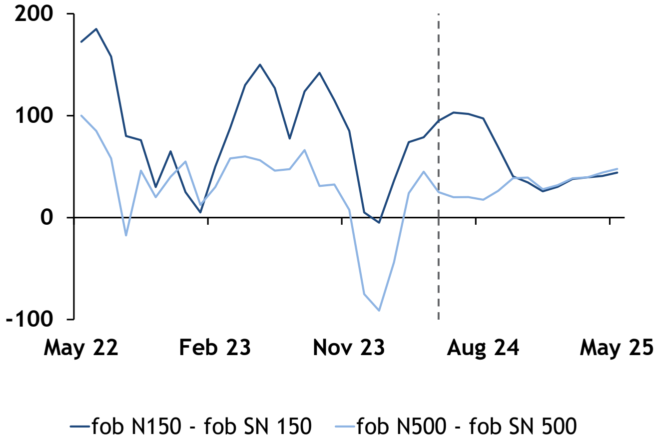
Asia Group I bright stock fob export prices are currently at a $325/t premium to Group I SN 150 fob export values. The premium remains above the 10-year average of $292/t.

Asia Group I SN 500 fob export prices are currently at a $170/t premium to Group I SN 150 fob export values. The premium has risen for seven consecutive months and is higher than its 10-year average of $107/t.

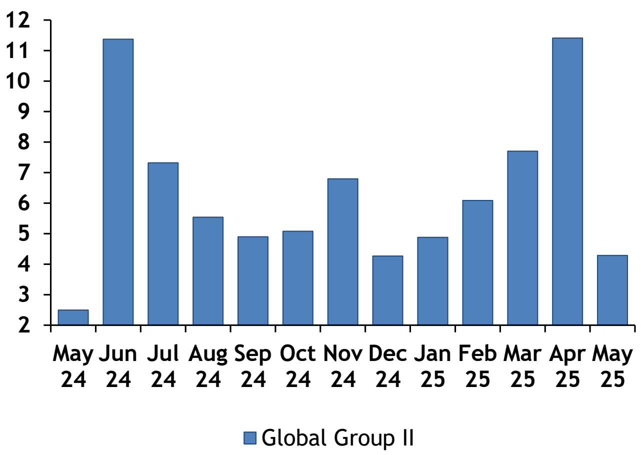
Higher-than-usual heavy-grade prices reflect a typical rise in heavy-grade demand in the first half of each year. Grades with a higher viscosity are better suited for engine oils used during the warmer months.

Supply for heavy-grade products was also more limited. A key Group I producer in Thailand was in maintenance from end-January to February 2024. A Group I plant in Japan shut permanently in the fourth quarter of 2023. These supply disruptions have had more impact on heavy-grade base oils. The yield of heavy-grade base oils is typically more limited than for grades with a lower viscosity.

Asia Group II - Group I spreads $/t



Global Group II YoY growth %



Even so, the premium of heavy-grade base oils is forecast to ebb. Demand for grades with a lower viscosity typically rises in the second half of each year and as winter approaches. Regional producers are also incentivised to produce more heavy-grade base oils, should they have the flexibility to do so.

A Chinese Group I refiner has resumed production of its bright stock. India's base oils production has also risen. These moves will likely boost heavy-grade supply availability and curb import requirements.

The premium of Asia Group I bright stock fob export prices to Group I SN 150 fob export values is forecast to fall to $295/t by the end of the forecast period. The premium of Group I SN 500 prices to Group I SN 150 fob export values is forecast to drop to $120/t by the end of the same period.

Limited plant maintenances to pressure Grp II values

Global Group II production is also set to rise as several refin-ers complete their maintenances in the first half of the year.

According to *Argus*' proprietary base oils supply index, global Group II base oils net nameplate production capacity is set to rise by 5.4pc in the second half of the year compared to the first half of 2024. Group II supply is also estimated to

Asia

rise by 5.6pc from the same period the previous year. More turnarounds were scheduled in the second half of 2023.

The relatively light round of plant maintenance is set to boost supply availability in the largest base oil producing region in the world. Port congestions, rising freight rates, and a longer delivery time will likely limit the outflow of supplies from Asia and weigh on prices in the region.

Even so, an above-normal Atlantic hurricane season will likely incentivise some market participants to build larger inventories as a buffer against weather-related disruptions. Such a move is expected to counter a growing supply overhang of Group II base oils.

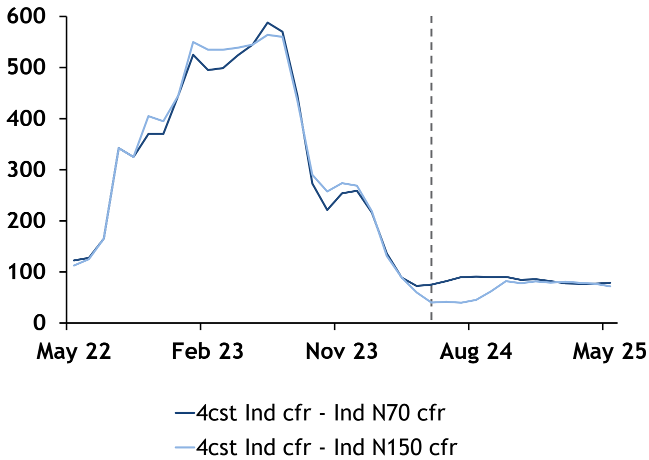
Import substitution to weigh on NEA Grp III prices

Like Group II, supply availability of Group III base oils is plentiful. The result is a narrower spread between regional Group III values.

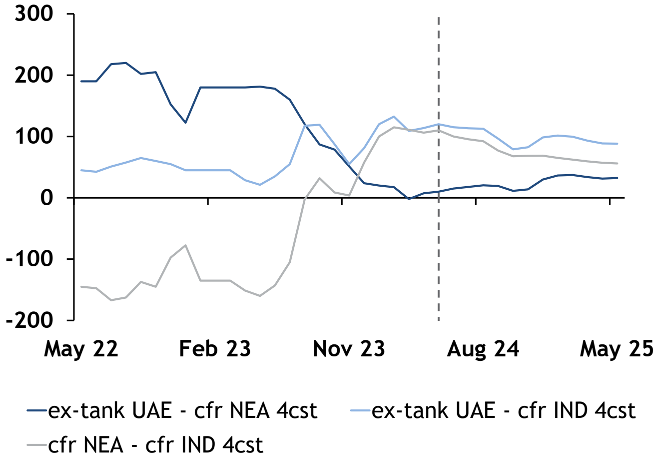
Group III 4cst ex-tank UAE prices are currently at a $10/t premium to Group III 4cst cfr NEA values. The premium remains significantly lower than its 10-year average of $85/t.

The trend reflects plentiful supply availability in the Mideast Gulf and waning demand in key outlets like the US, where supplies typically flow into. US production of Group III base oils have risen because of its premiums over Group II supplies. Such a move is deemed attractive even with a yield drop.

India Group III - Group II spreads *$/t*



Asia Group III spreads *$/t*



Logistical complications have further exacerbated demand and supply balances in the region. Higher freight rates and lack of vessels have disrupted exports to Europe and the US. The drop in exports is putting pressure on prices in domestic markets.

An expected recovery in logistical complications and any re-optimisation of trade routes will likely ease a growing supply overhang in the region. At the same time, import substitution in China will likely put pressure on delivered prices in the country.

Since 2017, more than 3.6mn t/yr of Group III nameplate production capacity has been added to the Chinese market. Most of these plants have yet to run at optimal rates. Base oil specifications among some producers have also yet to stabilise. But a key domestic blender has started to substitute imported cargoes for domestically-produced supplies. More such moves will reduce China's reliance on imported cargoes.

The premium of Group III 4cst ex-tank UAE prices to Group III 4cst cfr NEA values is forecast to rise to $32/t by the end of the forecast period. The premium is expected to remain lower than usual as supply availability rises.

Maintenance and shutdowns

Upcoming / recent base oil plant maintenance / shutdowns / closures					
Refiner	**Location**	**Timing**	**Capacity**	**Capacity affected**	**Cause**
Luberef	Jeddah, Saudi Arabia	Mid-2026	270,000 t/yr	All, Group I	Closure
ExxonMobil	PAC, Singapore	2025 for 2 months	660,000 t/yr	NA	Refinery turnaround
Luberef	Saudi Arabia, Yanbu	1Q 2025 for 45 days	1.1mn t/yr	All, Group I/II	Maintenance
Cepsa	San Roque, Spain	Nov 2024	265,000 t/yr	All, Group I	Maintenance
S-Oil	Onsan, South Korea	19 Sep to 31 Oct 2024	41,000 b/d	Group I, II unit	Maintenance
Pertamina-SK	Dumai, Indonesia	10 Jun to 9 Jul 2024	505,000 t/yr	Partial, Group III	Maintenance
MOL	Szazhalombatta, Hungary	End May-Mid Jul 2024	195,000 t/yr	All	Maintenance
Aoxing Petrochemical	Shandong, China	Mid-May 2024 for 30 days	200,000 t/yr	All, Group II	Maintenance
PBF Energy	Paulsboro, New Jersey	1H May 2024 for 1 week	11,000 b/d	All, Group I	Maintenance
Chevron/Neste	Porvoo, Finland	Apr-Jun 2024	250,000 t/yr	All	Maintenance
Shanxi Lu'an	Shanxi, China	End-Apr for 30 days	350,000 t/yr	All, Group III	Maintenance
SK Enmove	Ulsan, South Korea	13 Mar–26 Apr 2024	26,000 b/d	All, Group III	Maintenance
ExxonMobil	Port Jerome, France	11 Mar to May 2024	626,000 t/yr	All	Fire
Shandong Jincheng	Shandong, China	Ely Mar to mid-May 2024	600,000 t/yr	All, Group II	Maintenance
Formosa	Mailiao, Taiwan	Ely-Mar to 12 May 2024	600,000 t/yr	Partial, Group II	Run-cut
PetroChina	Dalian, China	Ely Mar for 40 days	300,000 t/yr	All, Group I	Maintenance
Cross Oil	Smackover, Arkansas, US	Ely March for 20-30 days	5,000 b/d	All naphthenic	Maintenance
Tupras	Izmir, Turkey	Feb–Ely Mar 2024	400,000 t/yr	Partial, Group I	Maintenance
HD Hyundai Shell	Daesan, South Korea	15-25 Feb 2024	1.2 mn t/yr	Partial	Maintenance
ExxonMobil	Rotterdam, Netherlands	12 Feb to end-Apr 2024	900,000 t/yr	All, Group II	Maintenance
IRPC	Rayong, Thailand	End Jan 2024 for 3 weeks	320,000 t/yr	All	Maintenance
Petronas	Melaka, Malaysia	24 Jan 2024 to 3 Mar 2024	280,000 t/yr	All, Group II/III	Refinery turnaround
Formosa	Mailiao, Taiwan	From 24 Jan 2024	600,000 t/yr	Full	Refinery fire
GS Caltex	Yeosu, South Korea	2H Dec 2023	27,000 b/d	Partial	Run-cut
ENEOS	Mizushima-A, Japan	Late-Dec 2023 to 20 Jan 2024	225,000 t/yr	Full	Refinery maintenance
Henan Junheng	Henan, China	Mid-Dec to late Jul 2024	400,000 t/yr	All, Group II	Maintenance
San Joaquin Refining	Bakersfield, California, US	Mid-Nov 2023 for 50 days	8,100 b/d	All, Naphthenics	Maintenance
GFL Environmental	Columbus, Ohio, US	Mid-Nov 2023 for 35 days	1,500 b/d	All, GII+	Maintenance
Petrobras	Rio de Janeiro, Brazil	Nov 2023 for 30 days	90 mn l/mth	All, Group I	Maintenance
Excel Paralubes	Westlake, Louisiana, US	Ely Nov 2023 for 5-6 days	22,000 b/d	Group II, Group III	Unplanned outage
ENEOS	Wakayama, Japan	16 Oct 2023	360,000 t/yr	All	Refinery closure
Formosa	Mailiao, Taiwan	13 Oct to 9 Dec 2023	600,000 t/yr	All, Group II	Maintenance
HF Sinclair	Tulsa, Oklahoma, US	End-Sep 2023 for 90 days	490,000 t/yr	All, Group I	Maintenance
BPCL	Mumbai, India	From mid-Sep 2023	180,000 t/yr	Partial, Group II	Refinery maintenance
Shanxi Lu'an	Shanxi, China	Mid-Sep 2023 to mid-Jan	350,000 t/yr	Partial, Group III	Maintenance
Shandong Jincheng	Shandong, China	Mid-Sep to ely-Dec 2023	600,000 t/yr	Partial, Group II	Maintenance
Cosmo Oil	Yokkaichi, Japan	9 Sep 2023 to end-Sep 2023	175,000 t/yr	All	Electrical issue
HD Hyundai Shell	Daesan, South Korea	From 5 Sep 2023	1.2 mn t/yr	Partial	Run-cut
ENEOS	Mizushima A, Japan	Late-Aug 2023 for 3 months	225,000 t/yr	Full	Refinery maintenance
Henan Junheng	Henan, China	18 Aug-ely Nov 2023	400,000 t/yr	All, Group II	Catalyst change
Naftan	Novopolotsk, Belarus	Mid-Aug 2023 for 1 month	200,000 t/yr	Partial	Maintenance
Rosneft	Angarsk, Russia	Ely-Aug to mid-Sep 2023	250,000 t/yr	All	Maintenance
Acelen	Mataripe, Bahia, Brazil	Aug to Sep 2023 for 45 days	1,750 b/d	All, Group I	Maintenance
HD Hyundai Oilbank	Daesan, South Korea	25 Aug 2023 for 7 days	25,000 b/d	Full	Fire
HD Hyundai Shell	Daesan, South Korea	25 Aug 2023 for 7 days	1.2 mn t/yr	Full	Refinery fire
HD Hyundai Oilbank	Daesan, South Korea	10 Aug to 4 Sep 2023	25,000 b/d	Partial	Refinery maintenance
HD Hyundai Shell	Daesan, South Korea	From end-Jul to 4 Sep 2023	1.2 mn t/yr	Partial	Refinery maintenance
MOL	Szazhalombatta, Hungary	12 Jul 2023 to 26 Aug 2023	195,000 t/yr	All	Maintenance

Every effort has been made to verify information directly with appropriate company sources. Some information has been obtained from usually reliable sources, but cannot be officially confirmed with the refinery concerned. The list will be updated when new information becomes available.

Market fundamentals

Upcoming / recent expansions / conversions / new plants					
Refiner	**Location**	**Timing**	**New capacity**	**Grade**	**Expansion / new plant**
Petrobras	Rio de Janeiro, Brazil	2028	617,000 t/yr	Group II	New
IOC	Chennai, India	2027	250,000 t/yr	Group II	Expansion
ReGen III	Texas City, US	NA	Up to 5,600 b/d	Re-refined Group II+/III	New
ReGen III	Alberta, Canada	NA	Up to 2,200 b/d	Re-refined Group II+/III	New
Modrica refinery	Modrica, Bosnia	NA	200,000 t/yr	Group III	Expansion
NA	Southeast Asia	NA	Up to 300,000 t/yr	Group II N150, N500	New
Shell	Wesseling, Germany	2026-2028	300,000 t/yr	Group III	Conversion
Luberef	Yanbu, Saudi Arabia	2026	175,000 t/yr	Group III	Conversion/new
Luberef	Yanbu, Saudi Arabia	2026	100,000 t/yr	Group II	Conversion/expand
IOC	Panipat, Delhi, India	2026	540,000 t/yr	Group II/III	New
ExxonMobil	Jurong, Singapore	2025	1mn t/yr	Group II N150, N600, high-vis base oils	New
Saudi Aramco/Sabic	Yanbu, Saudi Arabia	2025	NA	NA	New
IOC	Vadodara, India	Ely 2025	235,000 t/yr	Group II/III	New
Avista Green	Kalundborg, Denmark	2024-2026	Up to 40pc higher	Group I+ re-refinery	New
IOC	Haldia, India	End-24/	200,000 t/yr	Group III	Expansion
Avista Oil	Dollbergen, Germany	2024	NA	Group III re-refined	New
SANEG (Fergana)	Fergana, Uzbekistan	2024	Up to 100,000 t/yr	Group II/III 2cst, 4cst, 6cst and 8cst	New
BPCL	Mumbai, India	2024	450,000 t/yr	Group II N65, N150, N500, Group III 8cst	Expansion
IOC	Haldia, India	2Q 2024	50,000-60,000 t/yr	Group II	Expansion
PetroChina	Fushun, China	Ely 2024	100,000 t/yr	Group I, bright stock	Conversion
Hongrun Petrochemical	Weifang, China	Apr-May	Up to 500,000 t/yr	Group III; white oils	New
Chevron	Richmond, California	Jul 2023	2,500 b/d	Group III 4cst and 6 cst	Conversion
Hainan Handi Sunshine	Hainan, Yangpu, China	Jan 2023	Up to 800,000 t/yr	Group II+/III 4cst	Conversion
Xinji-Feitian	Hebei, China	Ely-Sep 2022	250,000 t/yr	Group II/III	New
Nuspec Oil	York, United Kingdom	2Q 2022	Up to 5,000 t/yr	Bio-bright stock	New
Tayras	Selimiye, Turkey	Mid-Jan 2022	40,000 t/yr	Group II+ re-refinery, N70, N110, N220	New
Hyundai Oilbank	Daesan, South Korea	Jan 2022	NA	Group II bright stock	New
EGEO Oil	Portugal	2022	14,000 t/yr	Group I re-refined SN 80/150/200/350	New
Hainan Handi	Hainan, China	2022	300,000 t/yr	Group II re-refinery	Cancelled
Gazpromneft	Omsk, Russia	Aug 2023	220,000 t/yr	Group II/III 2cst, 4cst, 6cst and 8cst	Expansion
Avista Green	Kalundborg, Denmark	End-2021	10-15pc higher	Group I+ re-refinery	Expansion
CNOOC/Bora Petchem	Liaoning, China	End-2021	1.2mn t/yr	Naphthenic	Expansion
Ilboc (Sk-Repsol)	Cartagena, Spain	2H 2021	Up to 50pc higher	Group II/III	Expansion
Sinopec	Yanshan, China	Jun-Jul 2021	250,000 t/yr	Group II	Expansion
Panjin Haoye	Liaoning, China	Apr 2021	200,000 t/yr	Group II N100, N150 and N350	New
Lukoil	Volgograd, Russia	Feb 2021	NA	Group II	New
Shenghong Petrochemi-	Lianyungang, China	2021	620,000 t/yr	Group II/III	Cancelled
Sasol	Louisiana, US	After 2020	NA	GTL	Cancelled
Qinghe Petrochemical	Shandong, China	Jun 2020	600,000 t/yr	Group III/II	New
Ningbo Bohui	Zhejiang, China	2Q 2020	300,000 t/yr	Group II	New
Gen III Oil Corporation	Bowden, Canada	2Q 2020	2,240 b/d	700 b/d Group II, 1,540 b/d Group III	New
HILL	Chimkent, Kazakhstan	2020	250,000 t/yr	Group I/II/III	New
Liaohe Petrochemical	Liaoning, China	4Q 2019	400,000 t/yr	Naphthenic base oils	New
Sinopec	Jingmen, China	End-Oct 2019	550,000 t/yr	Group II heavy and white oils	New
Petrochina	Karamay, China	Oct 2019	30,000 t/yr each	Naphthenic bright stock, rubber oil	Expansion
Neste	California, US	3Q 2019	NA	Group III	Conversion
ExxonMobil	Jurong, Singapore	2Q 2019	100,000 t/yr	Group II	Expansion
Hengli Petrochemical	Dalian, China	Apr 2019	600,000 t/yr	Group II and III	New

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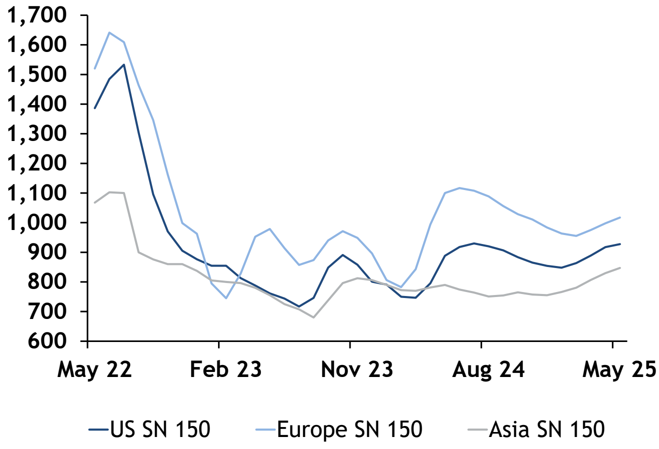
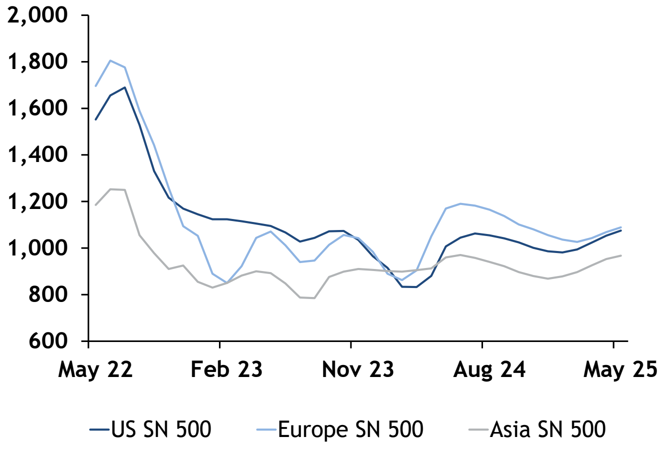
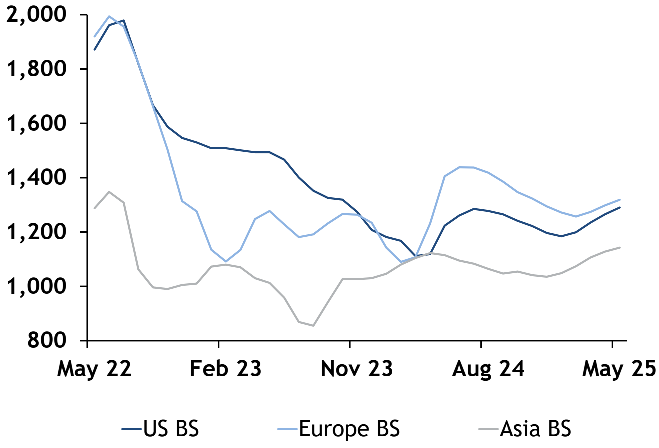
Group I SN 150 fob export $/t



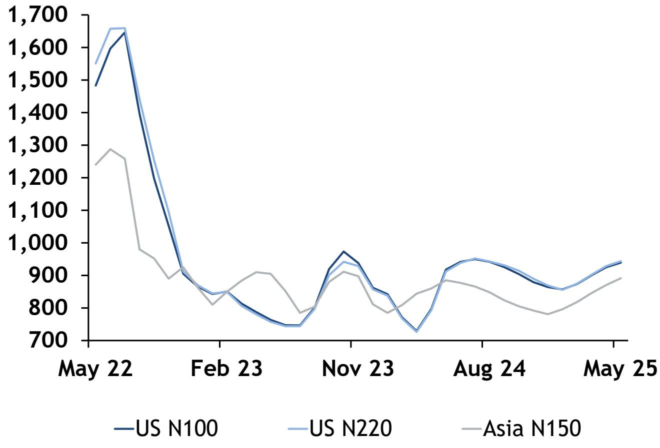
Group I SN 500 fob export $/t



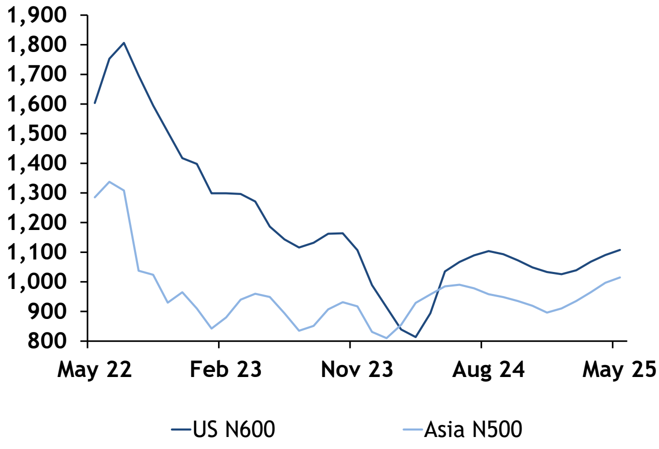
Group I bright stock fob export $/t



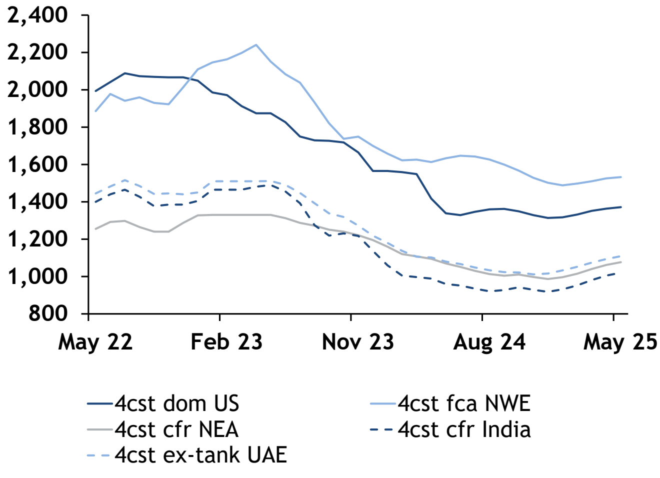
Group II N100 & N150 & N220 fob export $/t



Group II N500 & N600 fob export $/t



Group III 4cst $/t



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