Chemical Market Analytics
BY OPIS, A DOW JONES COMPANY



# Global Polyurethane Feedstocks - Monthly Market Report - Issue 64

02 Jul 2024

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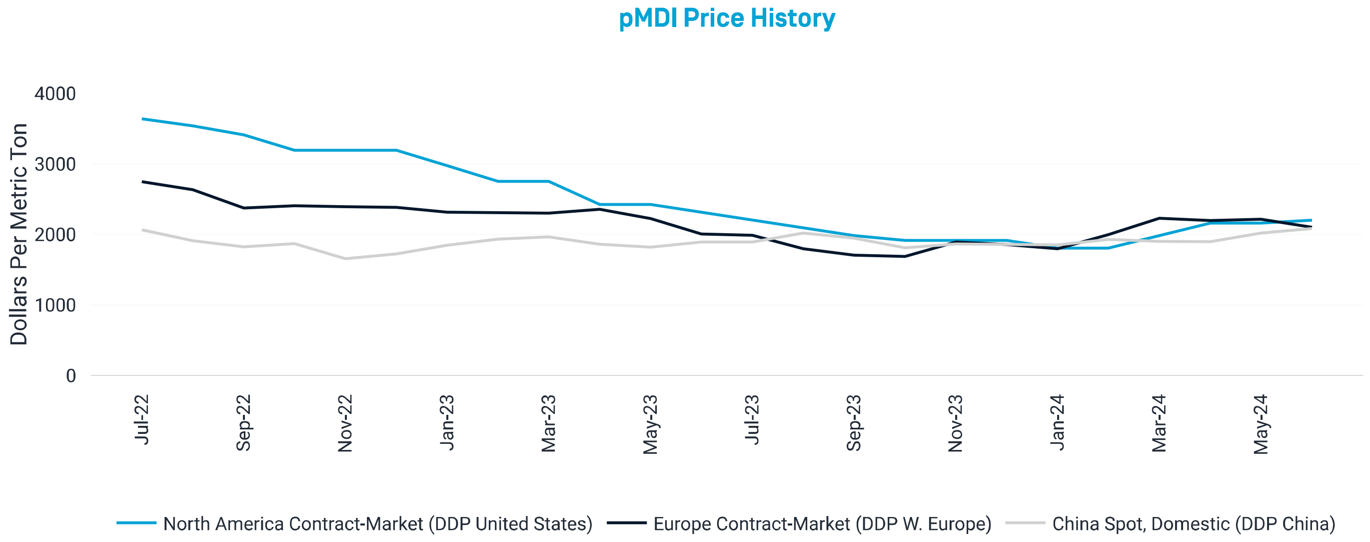
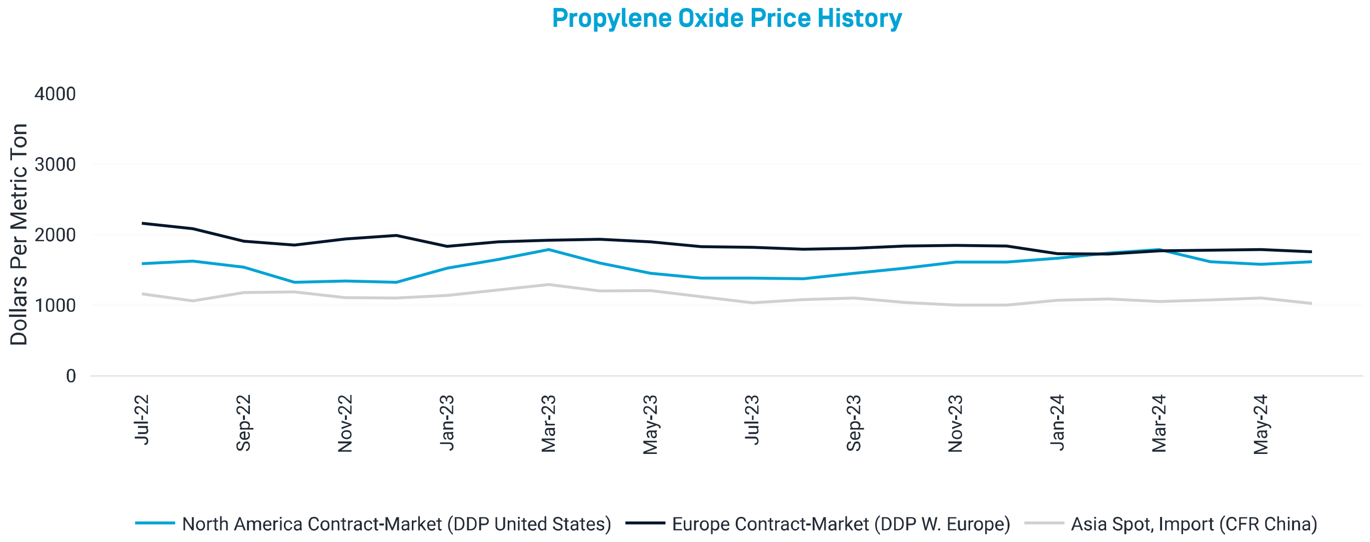
## Graphical Summary



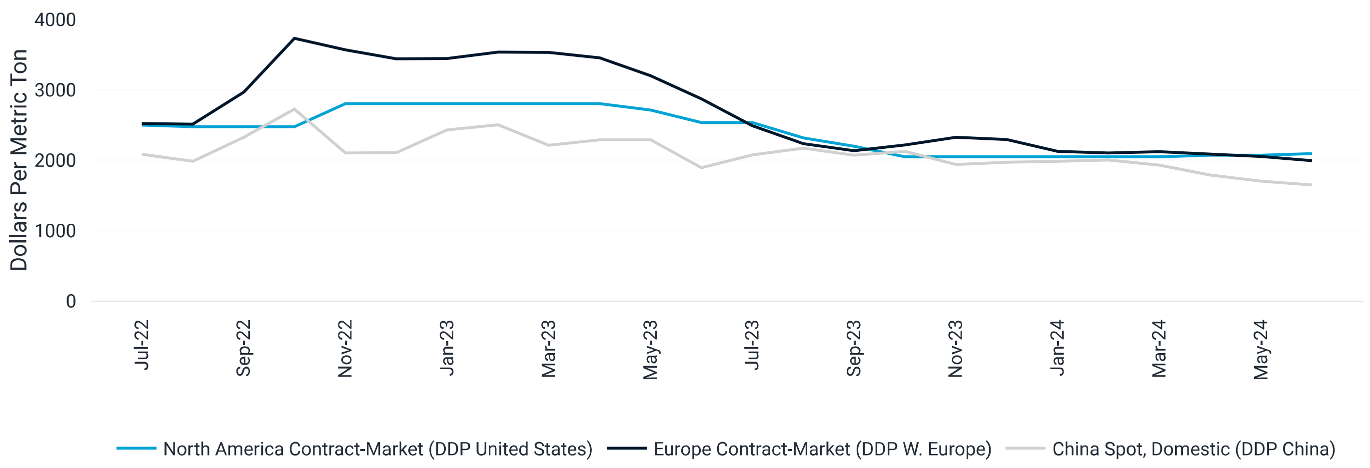

Source: Chemical Market Analytics by OPIS






Source: Chemical Market Analytics by OPIS

## TDI Price History

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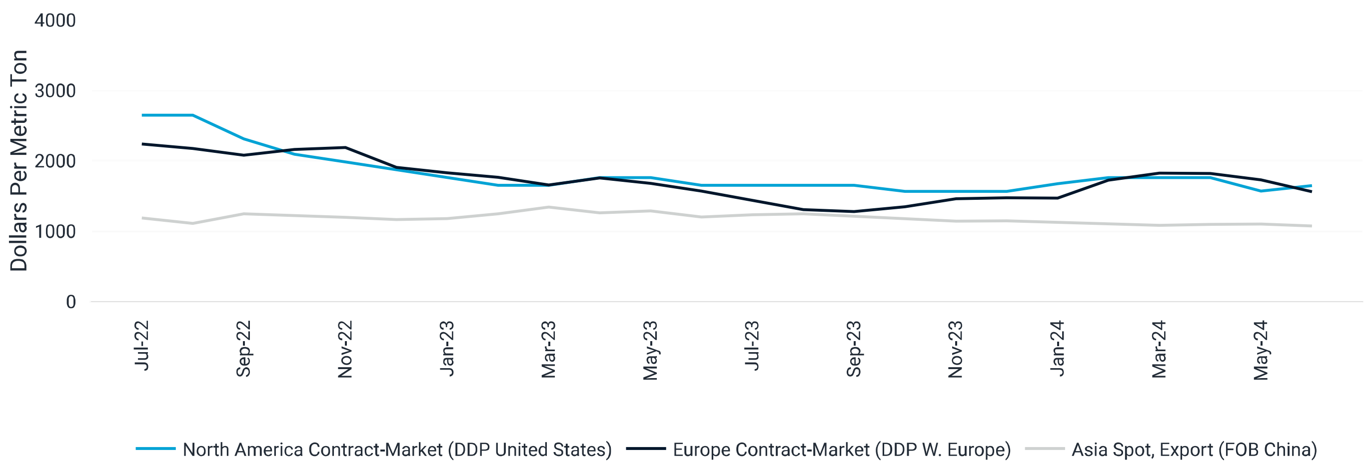
## Flexible Polyether Polyols Price History




Source: Chemical Market Analytics by OPIS



# Global Polyurethane Feedstocks Monthly Price Table

| | | May-24 | | | Jun-24 | | | Change | | | Jul-24 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Low | | High | Low | | High | Low | | High | Trend |
| **pMDI** | | | | | | | | | | | |
| United States | $ per mt, DDP | 2,160 | - | 2,300 | 2,204 | - | 2,425 | 44 | - | 125 | ↑ |
| | cts/lb, DDP | 98 | - | 104 | 100 | - | 110 | 2 | - | 6 | ↑ |
| West Europe | € per mt, DDP | 2,050 | - | 2,200 | 1,950 | - | 2,050 | -100 | - | -150 | ↗ |
| | $ per mt, DDP | 2,216 | - | 2,378 | 2,101 | - | 2,209 | -115 | - | -169 | ↗ |
| Middle East | $ per mt, CFR | 1,850 | - | 2,300 | 2,050 | - | 2,200 | 200 | - | -100 | |
| China | RMB per mt, DDP | 16,780 | - | 17,520 | 17,425 | - | 18,075 | 645 | - | 555 | ↘ |
| Southeast Asia | $ per mt, CFR | 2,000 | - | 2,060 | 2,075 | - | 2,125 | 75 | - | 65 | |
| **mMDI** | | | | | | | | | | | |
| United States | $ per mt, DDP | 2,425 | - | 2,535 | 2,205 | - | 2,425 | -220 | - | -110 | |
| | cts/lb, DDP | 110 | - | 115 | 100 | - | 110 | -10 | - | -5 | |
| West Europe | € per mt, DDP | 2,200 | - | 2,550 | 2,150 | - | 2,450 | -50 | - | -100 | |

| | | May-24 | | | Jun-24 | | | Change | | | Jul-24 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $ per mt, DDP | 2,378 | - | 2,757 | 2,317 | - | 2,640 | -61 | - | -117 | |
| China | RMB per mt, DDP | 18,300 | - | 18,860 | 18,475 | - | 18,825 | 175 | - | -35 | |
| **TDI** | | | | | | | | | | | |
| United States | $ per mt, DDP | 2,070 | - | 2,180 | 2,094 | - | 2,206 | 24 | - | 26 | ↗ |
| | cts/lb, DDP | 94 | - | 99 | 95 | - | 100 | 1 | - | 1 | ↔ |
| West Europe | € per mt, DDP | 1,900 | - | 2,000 | 1,850 | - | 1,950 | -50 | - | -50 | ↗ |
| | $ per mt, DDP | 2,054 | - | 2,162 | 1,993 | - | 2,101 | -61 | - | -61 | ↗ |
| Middle East | $ per mt, CFR | 1,850 | - | 2,000 | 1,800 | - | 1,900 | -50 | - | -100 | |
| China | RMB per mt, DDP | 14,260 | - | 15,080 | 13,850 | - | 14,650 | -410 | - | -430 | ↘ |
| Southeast Asia | $ per mt CFR | 1,906 | - | 1,960 | 1,850 | - | 1,900 | -56 | - | -60 | |
| **Propylene Oxide** | | | | | | | | | | | |
| United States | $ per mt, DDP | 1,580 | - | 1,680 | 1,615 | - | 1,715 | 35 | - | 35 | ↘ |
| | cts/lb, DDP | 72 | - | 76 | 73 | - | 78 | 1 | - | 2 | ↘ |
| West Europe | € per mt, DDP | 1,655 | - | 1,755 | 1,631 | - | 1,731 | -24 | - | -24 | ↘ |
| | $ per mt, DDP | 1,789 | - | 1,897 | 1,757 | - | 1,865 | -32 | - | -32 | ↘ |
| China | RMB per mt, EXW | 9,186 | - | 9,286 | 8,715 | - | 8,848 | -471 | - | -438 | ↗ |
| | RMB per mt, DDP | 9,490 | - | 9,646 | 9,025 | - | 9,138 | -465 | - | -508 | ↗ |
| China, Import | $ per mt, CFR | 1,100 | - | 1,138 | 1,025 | - | 1,070 | -75 | - | -68 | ↑ |
| **Polyether Polyols** | | | | | | | | | | | |
| USA, Flexible | $ per mt, DDP | 1,570 | - | 1,800 | 1,650 | - | 1,875 | 80 | - | 75 | ↘ |
| | cts/lb, DDP | 71 | - | 82 | 75 | - | 85 | 4 | - | 3 | ↘ |
| USA, Rigid | $ per mt, DDP | 2,028 | - | 2,138 | 2,028 | - | 2,138 | 0 | - | 0 | |
| | cts/lb, DDP | 92 | - | 97 | 92 | - | 97 | 0 | - | 0 | |
| W. Europe, Flexible | € per mt, DDP | 1,600 | - | 1,700 | 1,450 | - | 1,550 | -150 | - | -150 | ↗ |
| | $ per mt, DDP | 1,730 | - | 1,838 | 1,562 | - | 1,670 | -168 | - | -168 | ↗ |
| W. Europe, Rigid | € per mt, DDP | 2,100 | - | 2,400 | 2,000 | - | 2,300 | -100 | - | -100 | |
| | $ per mt, DDP | 2,270 | - | 2,595 | 2,155 | - | 2,478 | -115 | - | -117 | |
| Middle East, Rigid | $ per mt, CFR | 1,450 | - | 1,550 | 1,450 | - | 1,550 | 0 | - | 0 | |
| China, Flexible | RMB per mt, DDP | 9,020 | - | 9,300 | 8,800 | - | 9,125 | -220 | - | -175 | ↗ |
| | $ per mt, FOB | 1,103 | - | 1,137 | 1,074 | - | 1,113 | -29 | - | -24 | |
| China, Rigid | RMB per mt, DDP | 9,840 | - | 9,900 | 9,513 | - | 9,663 | -327 | - | -237 | |
| | $ per mt, FOB | 1,203 | - | 1,211 | 1,161 | - | 1,179 | -42 | - | -32 | |
| Exchange rates = 1.0775 $/€; 7.2700 RMB/$ (June 2024) | | | | | | | | | | | |

Asia's published prices are forecasts based on the average of the weekly prices already discovered within the current month up to the date of publication.  The finalised price will be an average of the full month's weekly discovered prices within the relevant monthly period. The finalised price for the current month will be available for download from the Chemical Market Analytics Connect platform in the first week of the next month and will also be published in next month's report.

Source: Chemical Market Analytics by OPIS



# Benzene

## Summary

***North America***

The June contract price (CP) for benzene was settled split at $3.9850 ($1,192 per mt) in late May. This was the fourth month in row that the CP settled at a similar level with little volatility evident.

At the time of writing, the July CP window is open, and the volume weighted average price (VWAP) is trending downward at $3.92 per gallon ($1,173 per mt) with 350,000 barrels having been traded. Daily spot prices across the three prompt months of June, July, and August have moved down to nearer $3.70 per gallon ($1,107 per mt).

From a supply and demand perspective, the US Energy Information Administration (EIA) has reported that refineries have been operating at nearer 95% for the past few weeks and gasoline inventories have been built up. Reformer economics are positive, albeit reduced, as gasoline prices are much lower this year than last. Nevertheless, operating rates are high implying more benzene should be available domestically as styrene units have all returned to operation and hence consuming more benzene, except for Styrolution, Sarnia, Canada.

Imports typically close the balance and South Korea continues to ship to the US Gulf Coast. Since January, South Korea has shipped no less than 75 kt of benzene which has helped keep the market balanced. June volumes for benzene exports are similar, totalling 76 kt through to 20 June.

***Europe***

The European benzene contract price (CP) for June was settled at €1,152 per mt CIF ARA, an increase of €35 per mt compared with the May settlement. The June CP was effectively set by a flurry of prompt trades done early in the CP trading window. Spot levels had dropped to below $1,200 per mt by the day of negotiation and continued to lose ground through June. AT the time of writing, July deals below $1,100 per mt were being confirmed.

The domestic supply/demand outlook has been moving towards the longer side of balanced this month. The biggest pressure is coming from weak styrene demand more than increased production, although the end result is still one where excess benzene has been noted in Europe. Some small export business may be completed before the end of June if trade needs to shift prompt length.

Feedstock availability remains constrained by low steam cracker operating rates and there has been no incremental imports noted in June, with nothing fixed for July either. This, combined with stable demand from the other benzene derivatives should offer some support for the short-term market. Europe will also look to the United States for direction and hope that gasoline demand becomes more supportive going forward.

***Asia***

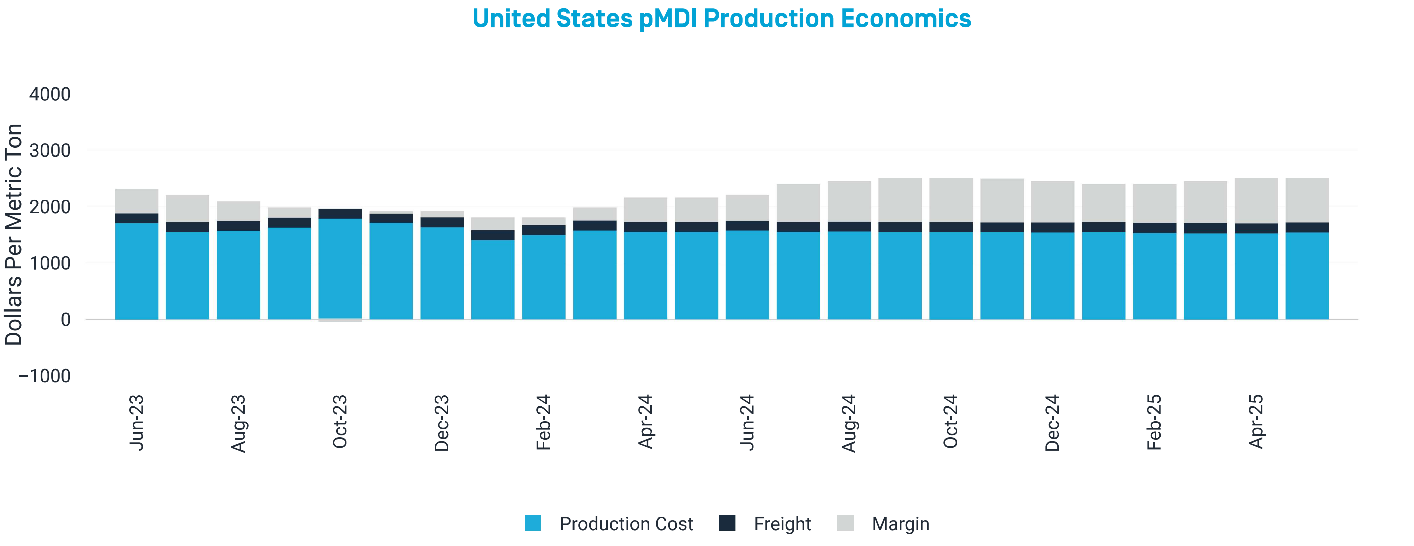
The average benzene price has been weaker at $1,037 per mt FOB South Korea in June 2024, down by $21 per mt from $1,058 per mt FOB South Korea in May. Prices started at approximately $1,088 per mt and declined to $1,001 per mt by the end of last week. In mainland China, the average domestic benzene price by the fourth week of June was RMB9,419 per mt, or import parity of $1,150 per mt CFR mainland China. This was $56 per mt higher than the level seen in May.

Going forward, the short-term market will be largely balanced to long due to a recovery in supply after completed maintenance shutdowns and increasing aromatics operations amid the slower-than-expected gasoline market.

The short-term price trend will be stable to weak and will fluctuate in line with energy prices and US benzene prices.

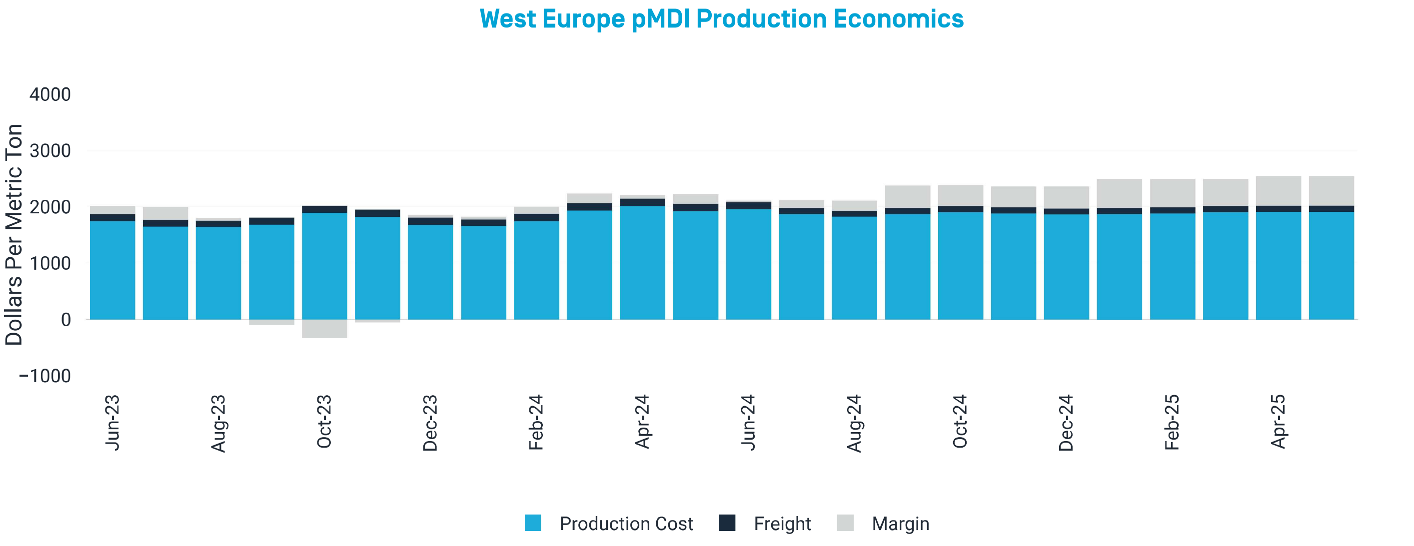
## MDI

### Economics



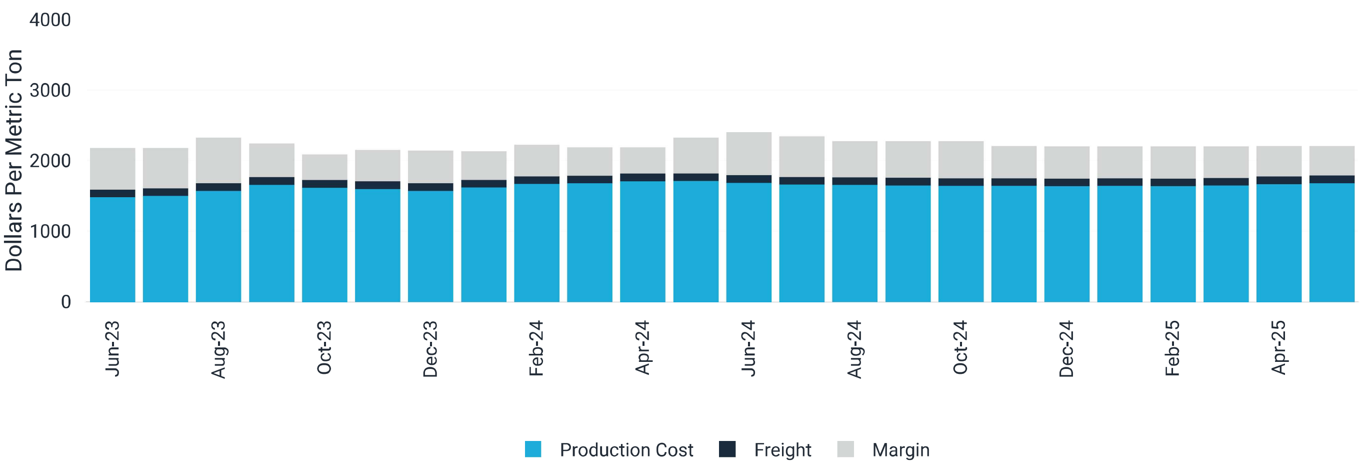

Source: Chemical Market Analytics by OPIS






Source: Chemical Market Analytics by OPIS

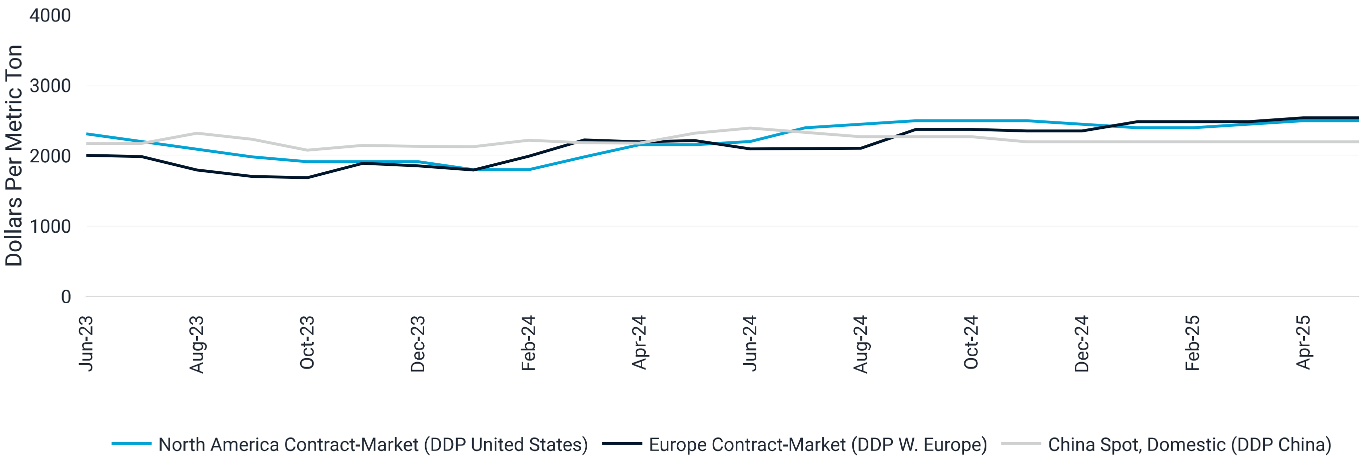
## Mainland China pMDI Production Economics




Source: Chemical Market Analytics by OPIS



## pMDI Price Forecast




Source: Chemical Market Analytics by OPIS



**Regional pMDI Production Economics**
Dollars Per Metric Ton

| | History | | | Forecast | | History | | | Forecast | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Apr-24 | May-24 | Jun-24 | Jul-24 | Aug-24 | 2021 | 2022 | 2023 | 2024 | 2025 |
| **United States** | | | | | | | | | | |
| Production Cost | 1,556 | 1,556 | 1,575 | 1,555 | 1,558 | 1,669 | 2,053 | 1,695 | 1,550 | 1,561 |
| Margin | 429 | 428 | 453 | 670 | 717 | 1,315 | 1,190 | 401 | 741 | 845 |
| | | | | | | | | | | |
| **West Europe** | | | | | | | | | | |
| Production Cost | 2,011 | 1,917 | 1,954 | 1,867 | 1,819 | 1,823 | 2,541 | 1,851 | 1,868 | 1,863 |
| Margin | 59 | 168 | 15 | 131 | 179 | 1,183 | 65 | 65 | 198 | 564 |
| **Mainland China** | | | | | | | | | | |
| Production Cost | 1,712 | 1,713 | 1,689 | 1,663 | 1,660 | 1,605 | 1,862 | 1,627 | 1,666 | 1,648 |
| Margin | 365 | 504 | 603 | 573 | 507 | 1,295 | 523 | 444 | 478 | 452 |

Note: Production cost includes variable and fixed costs, by-product credits; freight is accounted for in margin calculation (if applicable); price basis low end of monthly price range (DDP United States, DDP W. Europe, DDP China).

Source: Chemical Market Analytics by OPIS

## Prices & Economics

Cost pressures increased for sellers through June due to increases in natural gas pricing and the cost of ocean freight. All sellers announced price increases for June, in the range of 7-18 cents per pound (cpp), against a backdrop of domestic production unreliability, multiple force majeure declarations and the perception, at least, of product shortages.

That said, the fundamentals are little changed. Benzene prices remained flat through Q2 and are currently forecasted to decline slightly over the remainder of this year. Overall methyl diphenyl isocyanate (MDI) demand has been boosted by seasonal demand for construction and operating rates have increased marginally, mainly to recover from the various production disruptions.

Chemical Market Analytics assesses the prices for polymeric MDI in June at 100-110 cpp, approximately $2,315 per mt for bulk supplies. Product availability at the lower end of the pricing range has dried up, with relatively small volumes still being traded in the mid-90s cpp range.

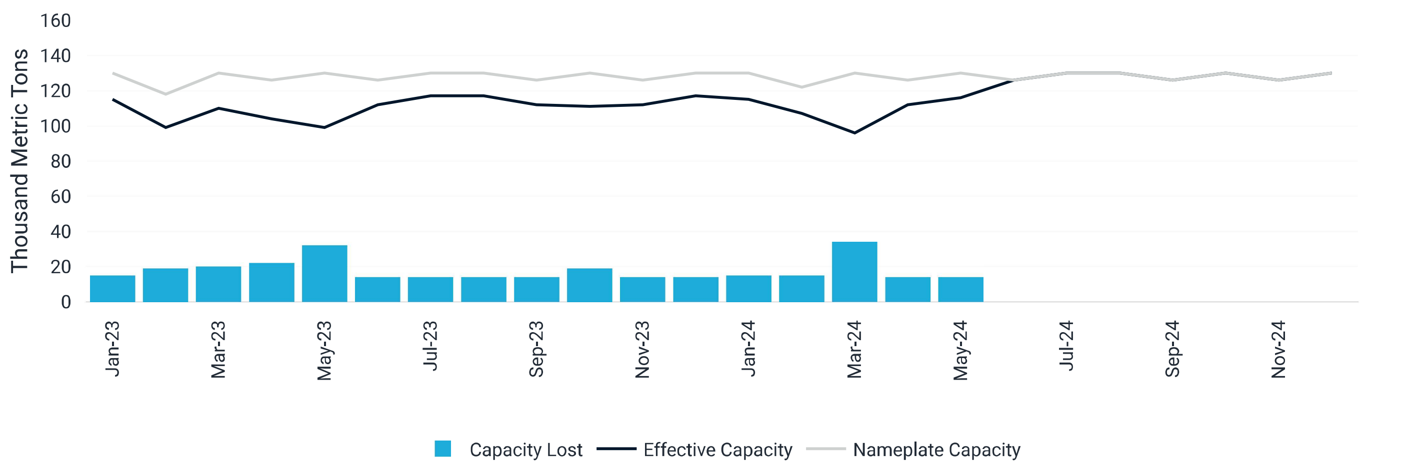
Looking at the fundamentals, the June contract price (CP) for benzene was settled at $3.985 per gallon ($1,192 per mt) in late May. This was the fourth month in a row that contract prices settled at a similar level with little volatility evident. The prices for MDI in mainland China have risen significantly, as has ocean freight. Therefore, the offered prices for imported mainland Chinese MDI must rise to avoid charges of dumping in the US.

At the time of writing, the July CP window is open, and the volume weighted average price (VWAP) is trending downward at $3.92 per gallon ($1,173 per mt) with 350,000 barrels having been traded. Daily spot prices across the three prompt months of June, July, and August have moved down to nearer $3.70 per gallon ($1,107 per mt).

Since January, South Korea has shipped no less than 75 kt of benzene which has helped keep the market balanced. June volumes for benzene exports are similar, totalling 76 kt up until 20 June.

Meanwhile, natural gas prices have continued their upward trend. Henry Hub natural gas prices have strengthened markedly through June and are now approaching $3 per mm BTU. Chemical Market Analytics is forecasting the gas price will continue to rise through the remainder of the year, approaching $4 per mm BTU by year-end, which will maintain some upward cost pressure for MDI producers. One reason for the increase in gas prices has been the record levels of LNG exports, much of the volume going to Europe.

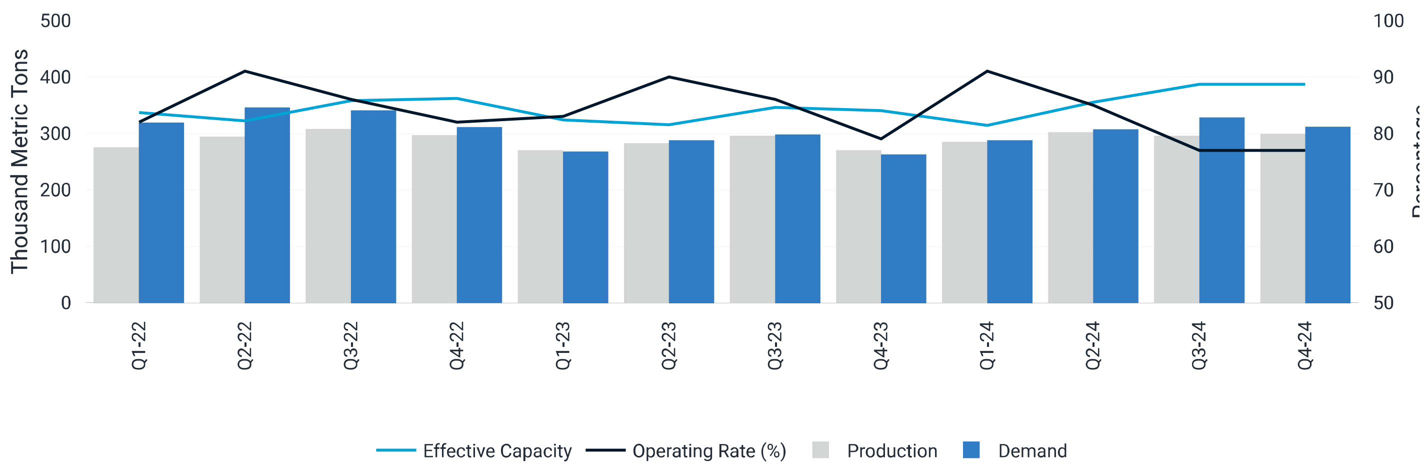
### North America: MDI Capacity Lost




Source: Chemical Market Analytics by OPIS

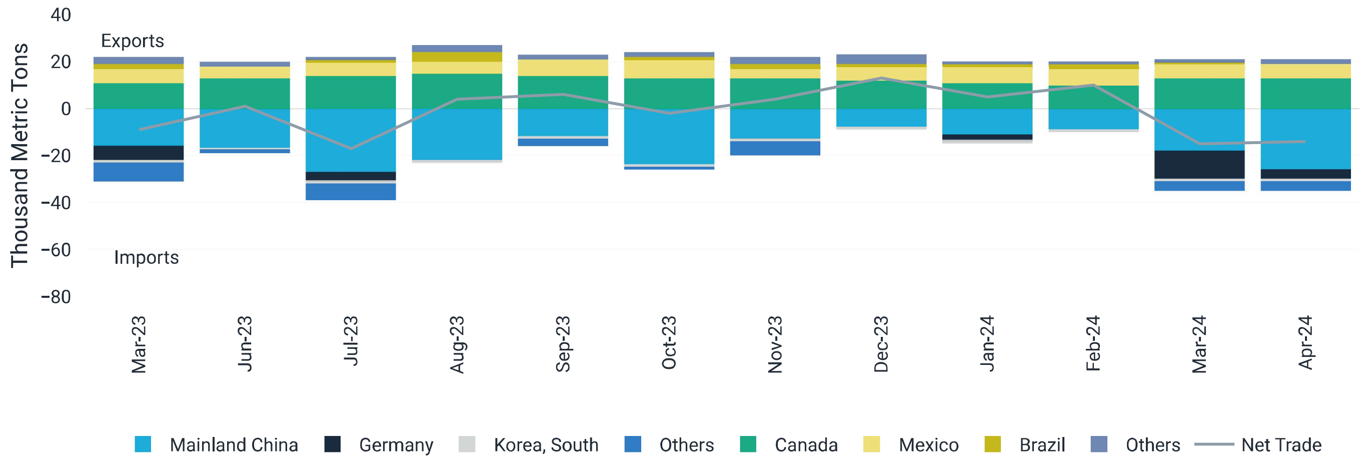


### United States: MDI Quarterly Supply & Demand




Source: Chemical Market Analytics by OPIS

## United States: MDI Trade




Source: Chemical Market Analytics by OPIS



## Supply / Demand

Overall methyl diphenyl isocyanate (MDI) demand in June has been boosted by seasonal demand for construction and operating rates have increased marginally, mainly to recover from the various production disruptions.

According to the American Chemical Council, total MDI sales for May (the latest figures available) were 291.5 million (mm) lbs, an increase of 3.6% over 2023. Of this total, 246.6 mm lbs was for domestic sales, a 4.3% increase year over year. The balance of 44.9 mm lbs was exported. For May, the total domestic MDI production was 214.8 mm lbs, an increase of 11.3% over the same month in 2023.

Imports made up the difference, totalling approximately 76.7 mm lbs from all sources. MDI trade statistics are quite variable month to month. However, through to the end of April, total imports to the United States of MDI totalled 96.1 kt. Of this, 64.9 kt was imported from mainland China, 18.9 kt from Germany, with smaller quantities coming from Spain, South Korea and Japan. Notably, South Korean imports jumped significantly in April to 3 kt for the month, reportedly due to the recent startup of the expansion of the Kumho Mitsu Chemicals MDI facility. MDI exports from the United States, through to the end of April, totalled 81.9 kt. Of this, 46.8 kt was exported to Canada, 25.8 kt to Mexico, 3.8 kt to Brazil, 2.5 kt to Columbia and 1.7 kt to India.

May and June were marked by disruptions to domestic MDI production. However, by the end of June, only Dow remained on force majeure for supplies from their plant in Freeport, Texas. The curtailment of carbon monoxide supplies from Air Products has limited MDI production throughout June, but this should be lifted in July with domestic production returning to normal. In the meantime,

Despite the supply-side turbulence, buyers have been able to source all of their MDI requirements, with the exception being in Columbia where bulk stocks were depleted and buyers needed to try and find alternative supplies.
Before year-end, we forecast that one, possibly two, of the domestic MDI trains will take a maintenance turnaround during the slow season and in the cooler autumn months. As these are planned events, we expect that sellers will have made the necessary arrangements to cover their sales commitments for the duration. That said, buyers should be alert to any changes to supply source points and possible variations in product analysis.
Reporting from the North American Foam Expo, the business climate is cautiously optimistic. At the halfway point of the year, 2024 is showing some improvement in demand over 2023 but it remains patchy. Polyurethane (PU) converter operating rates remain well below full capacity utilisation. Most industry participants are looking forward to a better 2025, with broad-based growth, once interest rates begin to come down and after the US presidential elections.

Spray foam for building insulation has remained the most resilient sector in MDI. New home building rates continue to trend downwards, however, the slack appears to have been taken up with home renovations and new construction of big box stores, warehouses, data centres, and government buildings.
Automotive sales have trended up through April and May. Even so, production rates were reduced due to a run-up in unsold inventories. In March domestic auto production was 150,000 units reducing to 123,000 units in April.
Furniture and home furnishings have been on a gradual decline through all of 2023 and into Q1 of 2024. However, sales statistics published by the St. Louis FED and comments from industry participants suggest that most recently, there has been a slight increase in sales, at least in dollar terms. Hopefully this marks the start of an improving trend, albeit starting from a low base. Reportedly the 'high end' of the furniture and bedding market has fared the best in a very price-competitive market.

## Forecast

The latest forecast from Oxford Economics (OE), issued in June, reduced the GDP growth for the United States from 2.6% to 2.4%, reflecting a "higher for longer" interest regime from the Federal Reserve and with the economy heading for a soft landing (though not the recession that many had feared). Even though inflation rates remain above target, a number of reserve banks have commenced cutting rates (e.g. Canada, ECB) and OE expects the US Federal Reserve to start cutting rates in September, albeit in small increments. For the US Chemicals sector as a whole, OE is forecasting steady growth rates of 3.0% in 2024 and 2.8% in 2025. Unfortunately, in the near term, the continuing high interest rates weigh heavily on the demand for PU-containing products. There is some limited demand recovery, as the industry returns to trend following the COVID years. However, growth will remain muted until there is a meaningful reduction in interest rates for the consumer, possibly not until the New Year.

Going into July, the North American construction season should be in full swing. Unfortunately, US permits for new residential construction, both single and multi-family units have been in decline since the beginning of 2024. Total commercial building spending has also been in decline over the same period. This lack of new building impacts all of the PU segments including insulation, furniture, appliances and CASE materials used in construction (Coatings/Adhesives/Sealants/Elastomers). Any significant improvement in the construction sector must now await the spring of 2025.
New auto production rates have been dialled back in Q2, to avoid a costly run-up in unsold inventories. However, over a longer period, production rates have remained steady at 140,000-150,000 units per month, so we can expect a small improvement in auto-related PU demand in Q3.

The increase in the price of MDI in mainland China, together with increased ocean freight rates and tariffs, is likely to result in higher prices for imported Chinese material. It will be important to monitor the Chinese market price over the next few months.

The forecasted increase in natural gas prices through until the end of 2024 is a real cost driver for isocyanate producers. The sellers will be compelled to increase prices to at least recoup the increase in energy costs.

Towards the end of the year, Chemical Market Analytics expects some of the domestic MDI units to shut down for planned maintenance. Buyers should check with sellers on their turnaround plans and make sure that adequate inventories are available to cover any outages, including some allowance, in case the maintenance work goes over schedule.
Lastly, note that an antidumping case has been filed with the US Department of Commerce, concerning the importation of certain fire-retardant materials from mainland China, of importance for the rigid foam industry. A determination will not be made until later in the year, but there are already some concerns regarding the availability and cost of fire-retardant additives going forward.

## Prices & Economics

Prices for methyl diphenyl isocyanate (MDI) have fallen in June. The markets in Europe for all products appear to have slowed down this month and the MDI market is no exception. June has seen a drop in demand and aggression by some producers and traders that has led to prices falling, most notably in polymeric MDI. Imports from Asia have had an impact and the producers who had issues in May have pushed hard to regain share. There were no attempts to increase prices and the reductions have been notable at some accounts. The MDI market is in a better position than the flexible polyurethane one where price falls have been much larger. Most customers in Europe have seen MDI prices fall by between €50 and €150 per mt in a very flat market.

With most producers in Europe talking about wanting to restore margins at the end of May, consumers were anticipating a round of increases. However, despite the contract price for benzene increasing, producers and traders looked to increase share at the expense of price, with the inevitable price falls for little volume gains. Margins for MDI are now close to breakeven throughout Europe and one producer has said they have a limit to how much lower they can go. Fortunately, energy costs were mixed in June, but overall, the cost of production has increased whilst prices have slipped. Prices in the Middle East and Africa have also slipped back as importers looked to gain share, although the bottom of the range has remained steady.

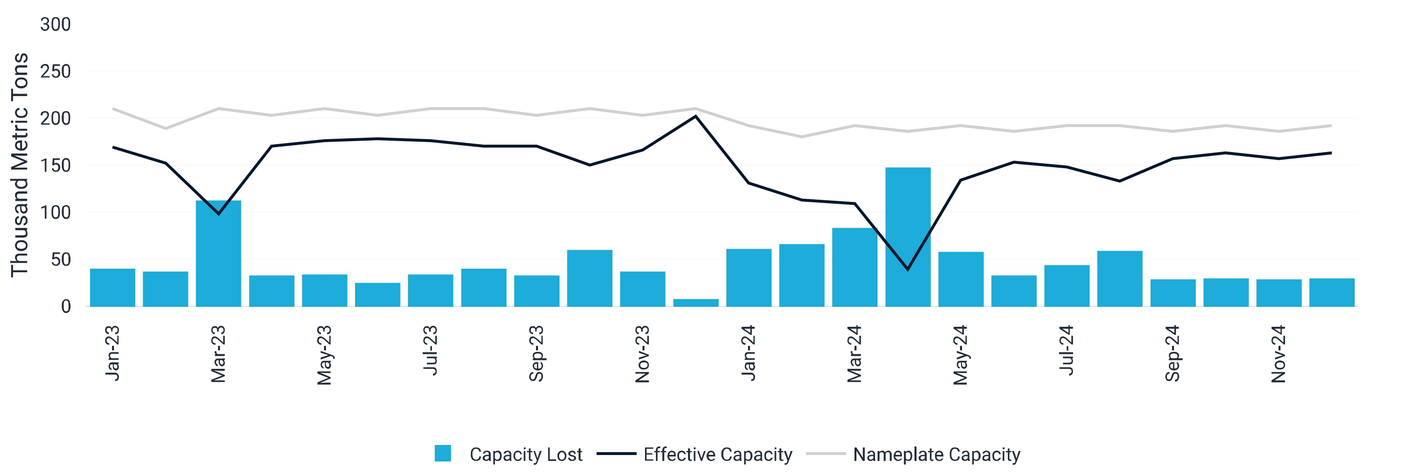
Polymeric MDI prices in Europe moved downwards throughout the month. Decreases were noted across the board and most producers were determined to have the last shout on price. Chemical Market Analytics has the European polymeric MDI contract price range for June 2024 at €1,950–2,050 per mt DDP (Delivery Duty Paid), a drop of €100 per mt on the low end of the range and a fall of €150 per mt off the high end seen in May. Monomeric MDI pricing also fell as the market demand dropped off. Product was more readily available and the price range for monomeric in June has fallen €50 per mt off the low end and €100 per mt off the high end compared to May's range. Overall, the Chemical Market Analytics European monomeric MDI price for June is published at €2,050-2,450 per mt DDP Europe. Producers are confident that they will not see further erosion in July and will be looking to hold prices steady through the summer.

The Middle East and Africa had seen MDI prices rise rapidly in May when supply became tight. This changed in June and prices fell back off the high end of the range. Demand has improved, but with more product available prices slipped. The polymeric MDI price for June in the Middle East is published by Chemical Market Analytics at $2050–2,200 per mt CFR Middle East, down $50 per mt off the high end of the range seen in May.

The contract price for benzene moved up in June, however the spot price for benzene has moved down markedly. The average benzene spot price was at $1,088 per mt in June, down just under €108 per mt from May. Natural gas has moved up throughout June, although well below the highs seen in 2023. The average natural gas price in June was €34.50 per megawatt hour (ICE TTF 1 Month Futures basis) up €2.68 per megawatt hour on May. Brent crude moved down in June by just under $1 per barrel, closing at just over $82 per barrel, however, at the end of June Brent crude was once again moving upwards.

All producers have revealed that they are under pressure to restore profitability and have been looking closely at July pricing, however the appetite from consumers is limited and imported material is having a major impact on holding prices low.

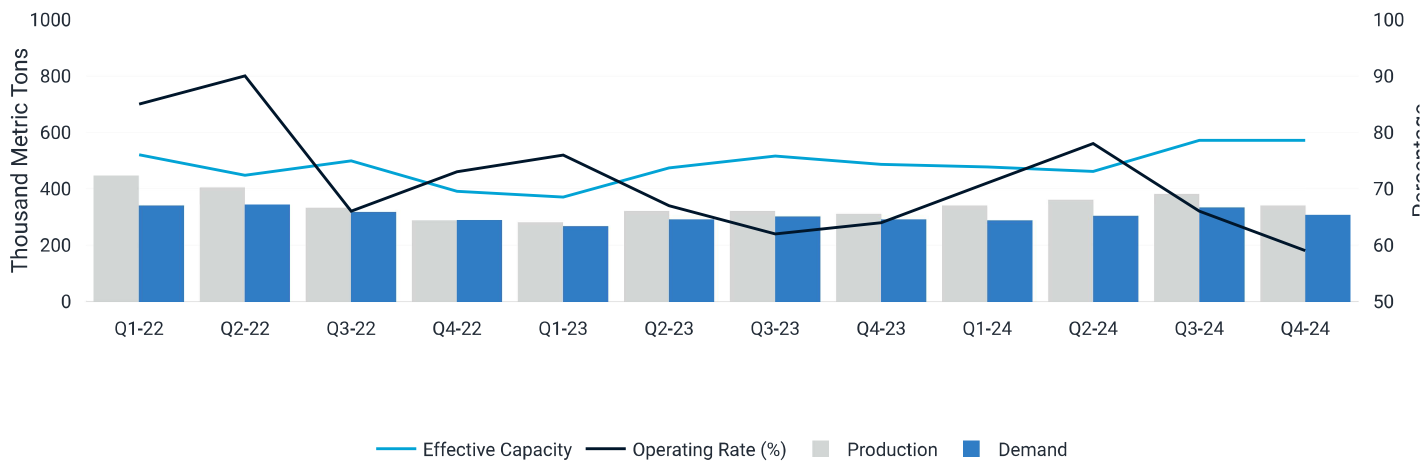
### Europe: MDI Capacity Lost




Source: Chemical Market Analytics by OPIS

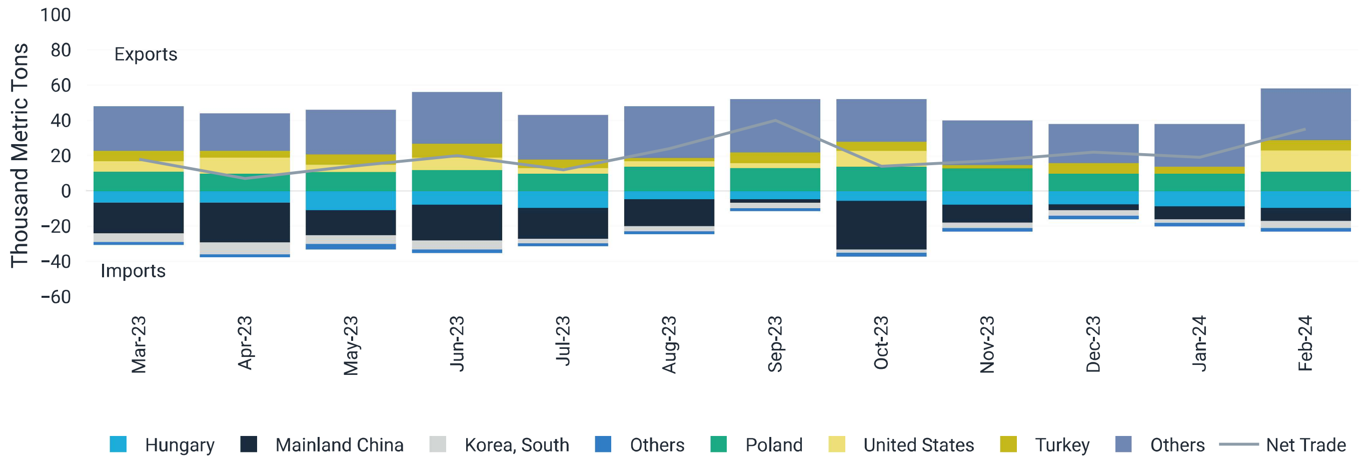


### West Europe: MDI Quarterly Supply & Demand




Source: Chemical Market Analytics by OPIS

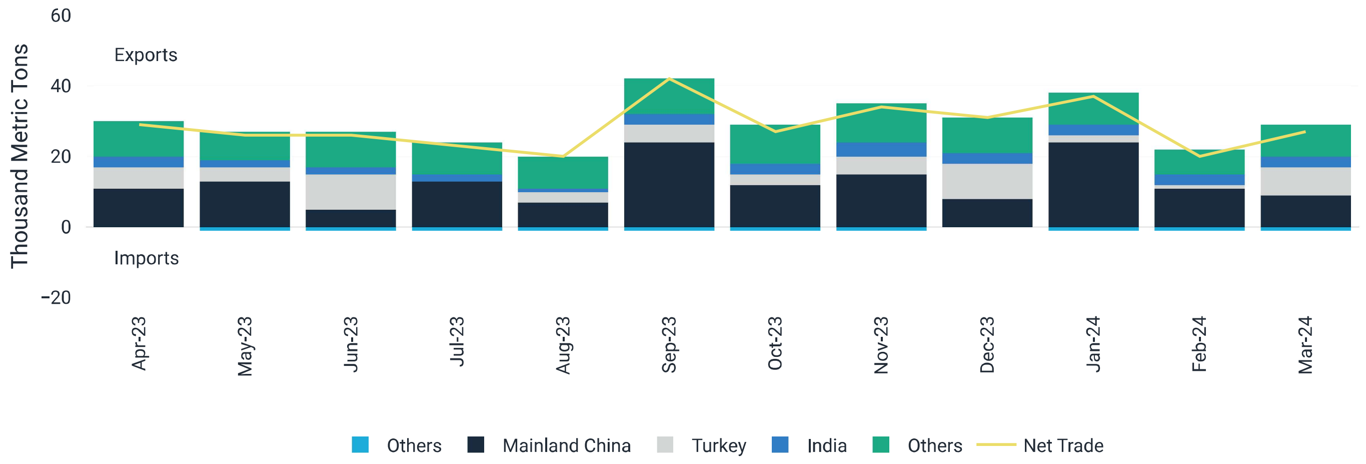
## West Europe: MDI Trade




Source: Chemical Market Analytics by OPIS



## Saudi Arabia: MDI Trade




Source: Chemical Market Analytics by OPIS



## Supply / Demand

Demand dropped off in June just as all producers are back producing. Imports have been arriving and with the lack of demand, producers and traders have been cutting prices in a vain attempt to gain share. There have been no reports of shortages in Europe or in the Middle East and Africa. The Red Sea issues have all but been discounted and importers are accustomed to the longer transit times, however, the higher costs have had an impact on future deliveries and it is anticipated that there will be fewer imports in July and August. 2024 had started brightly and until this month the polyurethanes market was in a positive mood. Demand faltered in June and several of the players believe Q1 was better than Q2. There is better demand in 2024 year-to-date than that seen in 2023, but the growth has come to a halt in June. Production throughout Europe for MDI has returned following several outages and supply is described as long. Several orders were cancelled in June, an indication that the recovery has stalled somewhat. End users are not expecting a pickup in sales in July or August.

There have been no reported outages in June and although there have been reports of one producer having issues with a range of products, there have been no shortages noted. Other rumours state one producer running at reduced rates. Borsodchem, Hungary, will take a long turnaround in July, but this will not impact the market as they have been building inventory. Overall, European producers are running at less than optimal rates. Material was scarce in the Middle East in May but that changed with the arrival of several parcels of material in June. Demand has been particularly strong in Africa in the last month.

There has been continued better demand from automotive. However, appliance sectors remain weak. Construction is mixed with renovation and wood products performing above expectations. Demand from data centres and batteries is strong but new construction is very weak. There is a continued lack of demand from coatings, adhesives, sealants and elastomers. Systems House demand has recovered but demand in this normally recession resilient part of the market is still well down on previous years, an indication that the market is still a long way from a full recovery. Several end users have commented that demand in Q2 was down on Q1 and that they fear Q3 could be similar if not worse than Q2.

## Forecast

There is little hope for an improvement in demand in July. The holiday season is now upon Europe and demand is expected to remain down. The Europe Central Bank has cut interest rates but the market has not reacted positively having already discounted the well-anticipated cut. Even though inflation across Europe is down, consumers are still choosing to spend on services rather than consumer durables. Imports are expected to slow as freight rates have increased and prices in Asia are now higher than those in Europe.

The contract price for benzene is expected to fall and give some relief to producers and this will help margins positively, unfortunately, both natural gas and Brent oil are rising, and this will have a detrimental impact on margins. The pressure is on for producers to increase prices and restore margins however the risk of losing sales will almost certainly hold prices flat through July.

The news that Adnoc and Covestro have begun meaningful takeover discussions could lead to a new order in global polyurethane. In the meantime, the market is set for a quiet period and the hope is that by September the demand from construction will have recovered slightly and improvements in other segments will help Q3 be at least as good as Q2. MDI is expected to remain plentiful in July despite Borsodchem's turnaround, as their inventories are said to be high.

## Asia

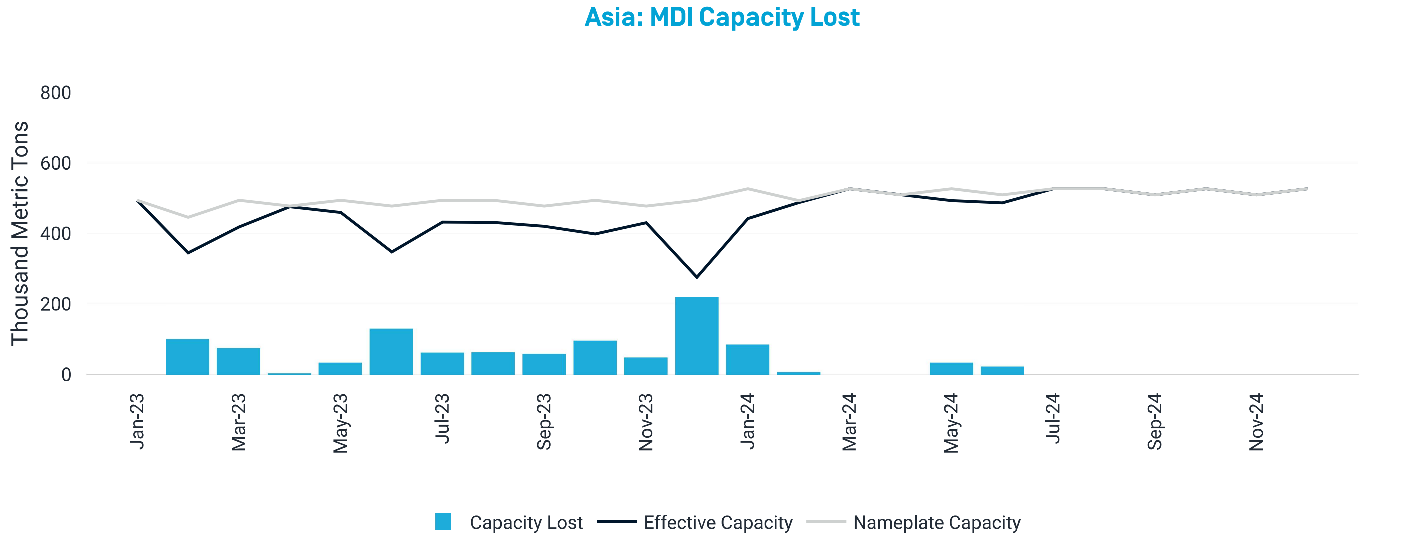
# Prices & Economics

In June, the methyl diphenyl isocyanate (MDI) market continued to trend higher, supported by the strengthening benzene prices. Early in the month, Wanhua announced its June listing price at RMB20,000 per mt, unchanged from its previous announcement. BASF announced its June listing at RMB21,000 per mt, again, the same as the previous month. Meanwhile, Huntsman announced its June listing price at RMB21,000 per mt.

In June, the monthly average for polymeric MDI (pMDI) increased by 3% month on month. By the end of June, pMDI prices were up by RMB600 per mt at RMB17,750 per mt DDP East China. The year-to-date average price of pMDI in the mainland Chinese market is RMB16,530 per mt, up by RMB1,131 per mt from the same period last year. Meanwhile, the average pMDI price in Southeast Asia for June increased by $70 per mt to $2,100 per mt.

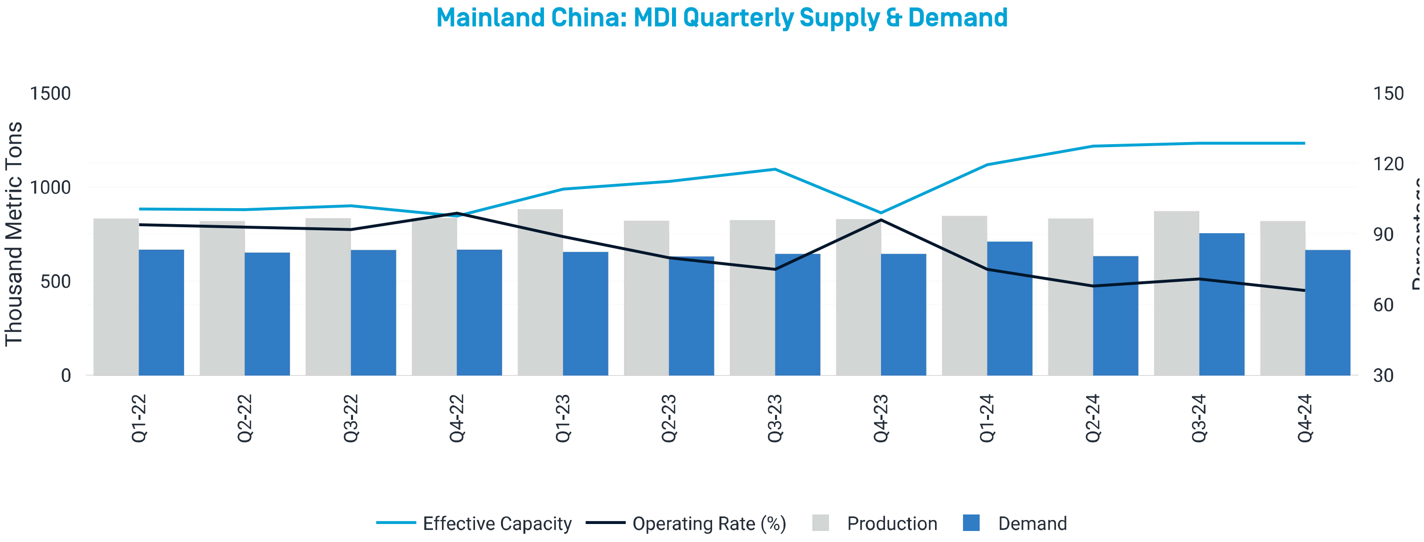
Throughout June, the monomeric MDI (mMDI) market was weak as demand from downstream sectors remained tepid. The month-to-date average mMDI price increased by RMB70 per mt to RMB18,650 per mt DDP East China. The year-to-date average price of mMDI in mainland China is RMB19,455 per mt, up by RMB749 per mt from the same period last year.

The benzene price fell by $15 per mt to $1,041 per mt FOB South Korea, while the mainland Chinese domestic benzene price rose by 6% or RMB510 per mt to RMB9,415 per mt. Therefore, the Chemical Market Analytics calculated margin in mainland China has increased by 25% to RMB4,566 per mt.



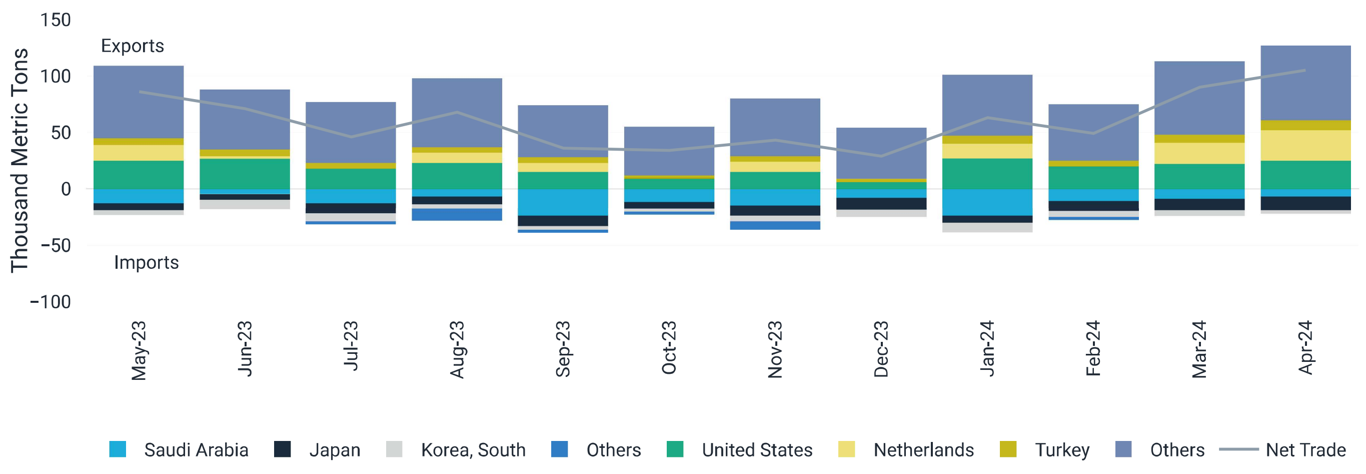

Source: Chemical Market Analytics by OPIS






Source: Chemical Market Analytics by OPIS

## Mainland China: MDI Trade




Source: Chemical Market Analytics by OPIS



## Supply / Demand

In June, demand from downstream sectors gradually improved, primarily driven by increased demand from outdoor insulation projects, helped by the warmer weather, as well as a steady demand for spray foam and piping insulation. Meanwhile, there were signs of softening in domestic demand for refrigerators and freezers. Demand for mMDI across various sectors remained subdued, however, mainly due to high inventory levels of finished products. The thermoplastic polyurethane (TPU) sector continued to exhibit weak demand, prompting producers to hesitate in raising operating rates due to shrinking profit margins. Additionally, demand from the spandex sector showed no significant change. In the shoe sole production sector, producers operated at 40% capacity due to tight profit margins. Demand from the synthetic leather sector remained largely unchanged.

In the first five months of 2024, the production output of home refrigerators increased by 8.3% compared to the same period last year. The total January to May output of home refrigerators was 4.2 million units. In April, that figure was approximately 0.93 million units while in May it was 0.89 million units. Despite the month on month decline, the industry maintained a strong performance compared to the same period last year where the total output was 3.8 million units. These figures suggest that while there may have been some short-term variability, the overall trajectory of the home refrigerator market is positive, reflecting sustained demand and production levels.

The latest automotive data points to slightly more optimistic signals in the region with regard to MDI demand into that sector. Mainland China's light vehicles (LV) production in April reached 2.3 million units, representing a year on year increase of 14%. The total number of passenger vehicles (PV) was 2.0 million units, representing a year on year increase of 15%. Exports accounted for 21% of passenger car production, playing a significant role in boosting overall production levels. The total number of light commercial vehicles (LCV) was 285,000 units, representing a year on year increase of 7%. Given that mainland China accounts for the bulk of demand, the data points to a stable outlook.

On the supply side, BASF shut down its splitter unit in Shanghai for maintenance on 24 May, with the turnaround expected to continue until mid-June. Meanwhile, Wanhua has announced reduced operating rate for its Ningbo unit from 26 April to 26 July due to an ongoing debottlenecking process. The company is increasing the unit's capacity from 1.2 million tons per year to 1.8 million tons per year. Outside of mainland China, Tosoh encountered an unplanned shutdown on 25 June. The duration of the shutdown was unknown at the time of writing.

## Forecast

Looking ahead, a slight downward trend in pMDI prices is anticipated along with a softer feedstock cost forecast. Benzene, the primary raw material for MDI, is projected to weaken to $1,006 per mt in July. Following the drop in crude oil prices in June, the market is expected to see an upward correction next month, supported by increased demand. OPEC+ production cuts will remain in place in the short term and hence the market should not be severely oversupplied. The dated Brent price is projected to see an increase from $81.2 per barrel in June to $82.5 per barrel in July.

Market demand is projected to remain stable in July, supported by firm demand from outdoor insulation projects. Similarly, demand for spray foam is expected to gradually improve. Demand for refrigerators and freezers is forecast to remain stable. However, the spandex industry is expected to see a decline as the market enters its off-peak season. Meanwhile, demand for synthetic resin and shoe soles is anticipated to remain lukewarm.

On the supply side, all MDI units are expected to be operating normally. As mentioned, Wanhua may potentially shut its Yantai's unit at the end of July for turnaround.

# Toluene

## Summary

***North America***

Toluene spot prices saw double-digit losses in the first few days of the month, reaching a trough on 4 June. On a notional basis, nitration grade toluene (NGT) prices fell to $3.125 per gallon that day, while commercial grade toluene (CGT) prices fell to $3.00 per gallon. Prices have slowly recovered, with NGT reaching $3.27 per gallon and CGT reaching $3.24 per gallon at the time of writing. The spot market remained quiet for most of the month, with only one fixed price deal done for June NGT on 20 June at $3.27 per gallon. A handful of deals were done for gasoline blending, but premia over RBOB fell to 65-75 cpg, which is down from 80-90 cpg in recent months.

Estimated toluene disproportionation (TDP) and selective toluene disproportionation (STDP) economics remained positive this month, although a recent softening in benzene spot prices has squeezed margins. Marathon's Texas City STDP is believed to have restarted earlier this year when economics improved. Originally there was doubt as to whether it would be able to remain operational through the summer with increased octane demand, but it now appears that a shutdown is unlikely in the short term. Other operators are waiting for a clearer signal that there won't be a surge in octane demand in the second half of summer, which could lead to an increase in toluene prices and threaten STDP profitability. For many, this will likely mean waiting on the sidelines and assessing economics in August or September.

***Europe***

Chemical Market Analytics was unable to confirm the May European contract price (ECP) as settled according to the Chemical Market Analytics published methodology. The month-to-date average spot price for June is $974 per mt FOB ARA, a significant decrease of $116 per mt over the prior month. Chemical premia have been eroded with values for all toluene, including for toluene diisocyanate (TDI) falling to gasoline blend value, following another month of weakening Eurobob oxygasoline (Ebob)which fell to $68 per mt month-to-date average compared to last month's average.

The European toluene market lengthened in June. Supply was ample, whilst solvents and TDI demand were stable at low levels with no major upside expected in the coming months. Demand into the gasoline sector was weaker than expected for this time of the year with a lack of support from the United States which has seen high refinery utilisation rates and high inventories of gasoline and octane components, further supported by Asian imports. The arbitrage to the United States for European toluene remains closed.

With supply expected to remain sufficient in the coming months and no major upside in demand in the short-term outlook, toluene pricing is expected to trail close to gasoline blend values. Though toluene conversion units' margins improved in June from earlier this year, this is expected to be short lived and margins in the coming months are expected to remain negative.

*Asia*

The Asian naphtha market has retreated amid a weaker energy market. Gasoline blending demand has weakened, and the CFR Japan price is estimated to average $662 per mt in June, down by $14 per mt. The naphtha crack has risen, averaging $64 per mt this month.

The regular gasoline price is estimated to average $85.8 per barrel, down by $5.3 per barrel from May. The regular gasoline crack spread against Brent crude has fallen further to an average of $6.6 per barrel in June.

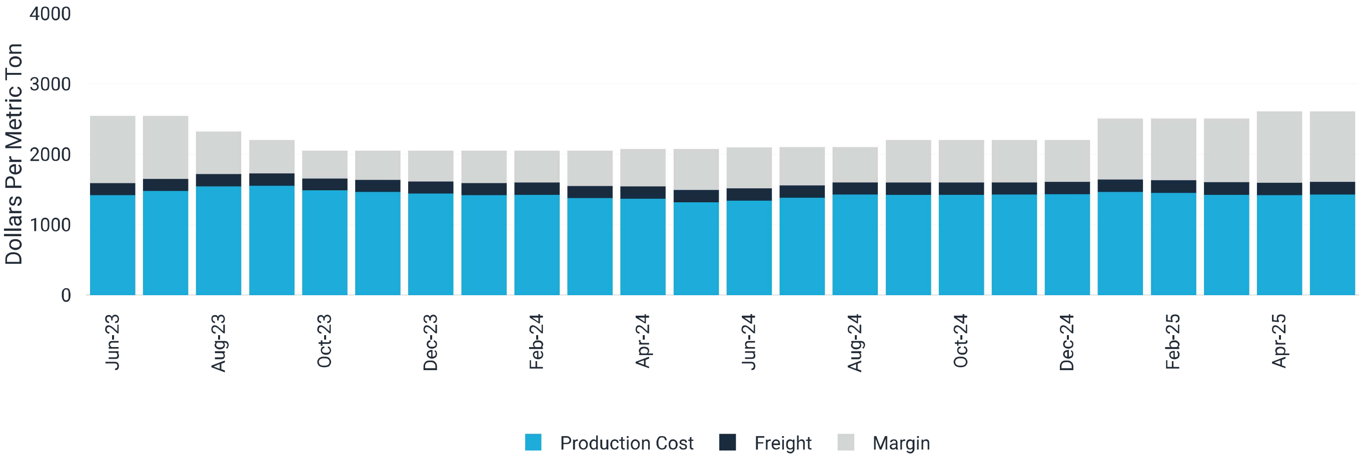
The Asian toluene price has seen some fluctuations this month as there has been a lack of liquidity, and producers have seized the opportunity to increase margins by raising offers. Despite rising market prices, it continues to be attractive to purchase toluene from the market to run selective disproportionation units.

The Asian toluene spot price is estimated to average at $914 per mt FOB South Korea in June, up $21 per mt from May. The price spread between the United States and Asia has contracted to $70 per mt, and the arbitrage window is currently closed on paper.

# TDI

## Economics

United States TDI Production Economics

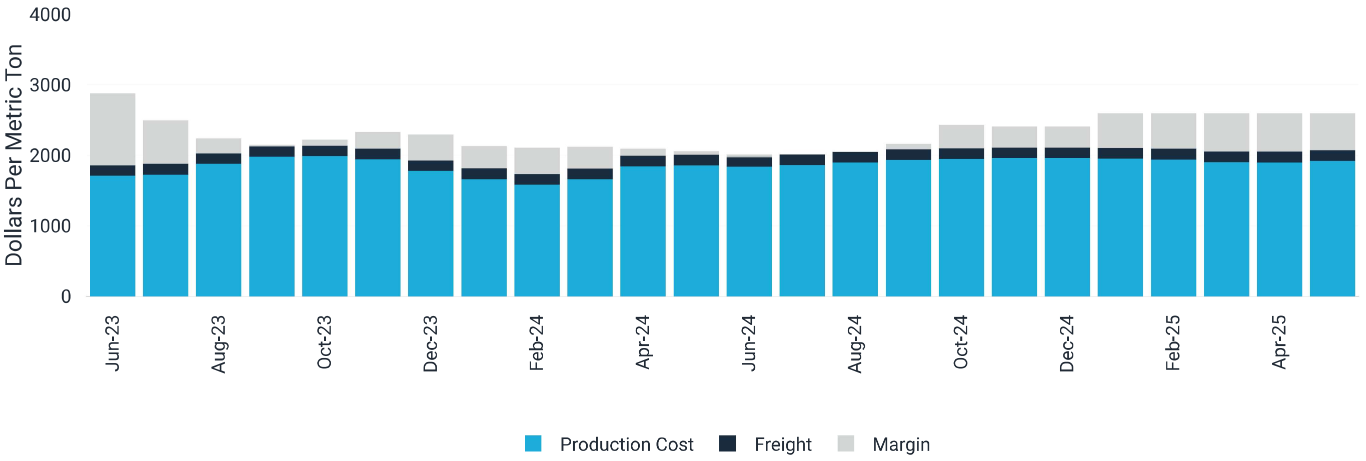



Note: Based on low end of monthly price range (DDP United States).

Source: Chemical Market Analytics by OPIS



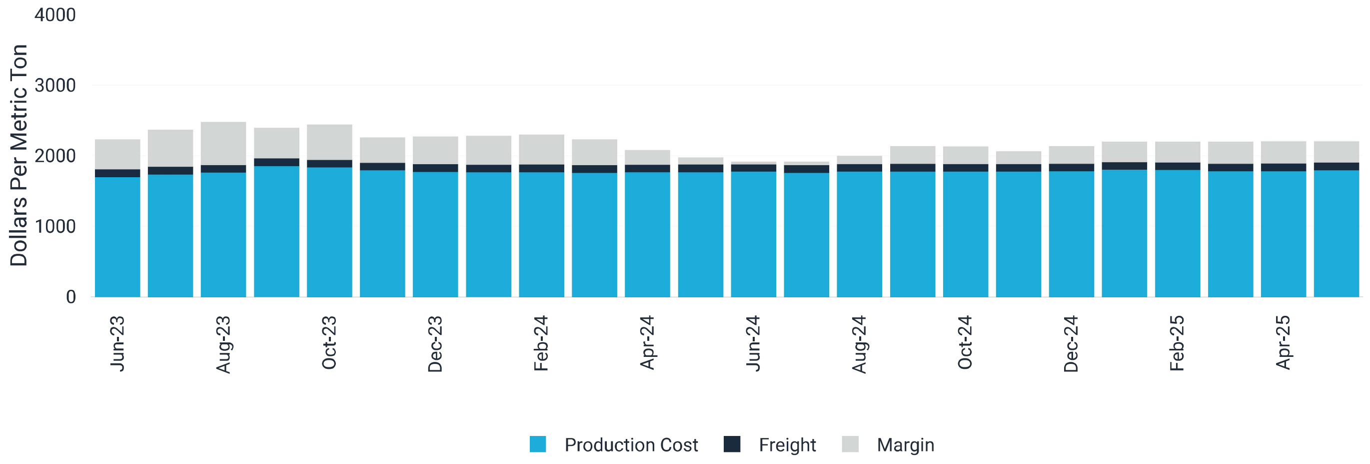
West Europe TDI Production Economics




Note: Based on low end of monthly price range (DDP W. Europe).

Source: Chemical Market Analytics by OPIS

## Mainland China TDI Production Economics

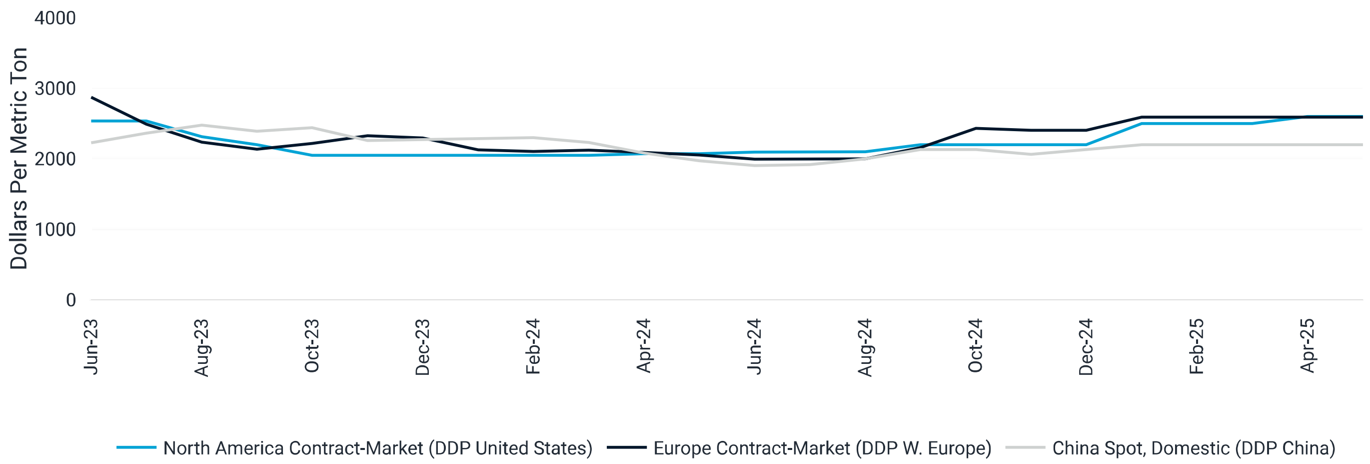



Note: Based on low end of monthly price range (DDP China).

Source: Chemical Market Analytics by OPIS



## TDI Price Forecast




Note: Based on low end of monthly price range.

Source: Chemical Market Analytics by OPIS



**Regional TDI Production Economics**
Dollars Per Metric Ton

| | History | | | Forecast | | History | | | Forecast | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Apr-24 | May-24 | Jun-24 | Jul-24 | Aug-24 | 2021 | 2022 | 2023 | 2024 | 2025 |
| **United States** | | | | | | | | | | |
| Production Cost | 1,375 | 1,324 | 1,346 | 1,388 | 1,432 | 1,492 | 1,986 | 1,503 | 1,405 | 1,506 |
| Margin | 519 | 571 | 573 | 537 | 493 | 1,974 | 734 | 797 | 539 | 843 |
| | | | | | | | | | | |
| **West Europe** | | | | | | | | | | |
| Production Cost | 1,843 | 1,856 | 1,837 | 1,859 | 1,896 | 2,022 | 3,222 | 1,917 | 1,833 | 1,849 |
| Margin | 100 | 47 | 6 | -11 | -48 | 934 | -248 | 747 | 174 | 600 |
| **Mainland China** | | | | | | | | | | |
| Production Cost | 1,768 | 1,770 | 1,777 | 1,761 | 1,776 | 1,743 | 2,141 | 1,840 | 1,772 | 1,786 |
| Margin | 205 | 98 | 23 | 48 | 116 | 319 | 390 | 540 | 217 | 313 |

Note: Production cost includes variable and fixed costs, by-product credits; freight is accounted for in margin calculation (if applicable); price basis low end of monthly price range (DDP United States, DDP W. Europe, DDP China).

Source: Chemical Market Analytics by OPIS



## North America

## Prices & Economics

The 2 major variable cost drivers for toluene diisocyanate (TDI) production are the cost of toluene and natural gas. Toluene spot prices saw double-digit losses in the first few days of the month, reaching a trough on 4 June. On a notional basis, nitration grade toluene (NGT) prices fell to $3.125 per gallon that day, while commercial grade toluene (CGT) prices fell to $3.00 per gallon. Prices have slowly recovered, with NGT reaching $3.27 per gallon and CGT reaching $3.24 per gallon at the time of writing. The spot market remained quiet for most of the month, with only one fixed price deal done for June NGT on 20 June at $3.27 per gallon. A handful of deals were done for gasoline blending, but premia over RBOB fell to 65-75 cents per gallon (cpg), which is down from 80-90 cpg in recent months.

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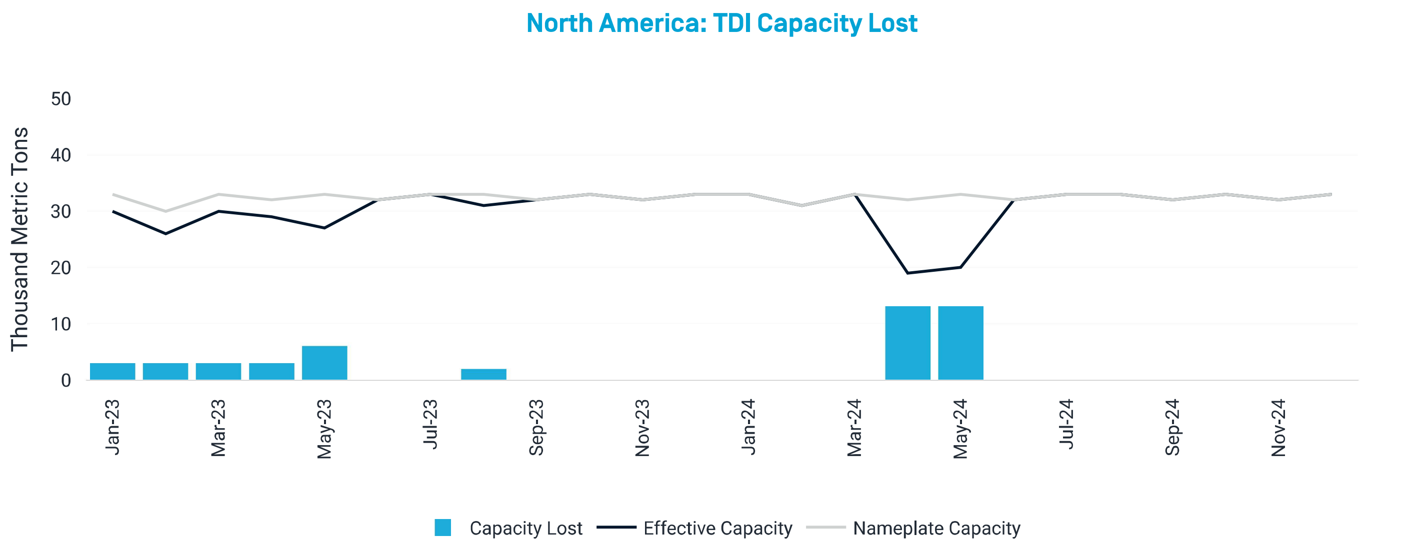
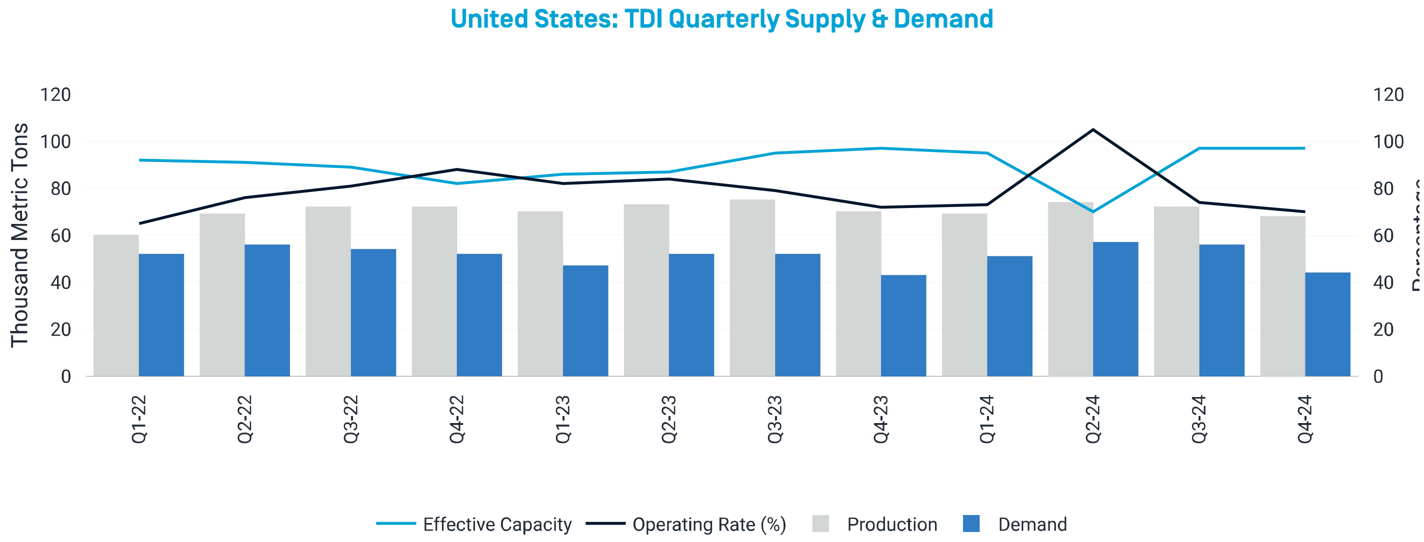
Natural gas prices have been trending upward in recent weeks, as discussed in the methyl diphenyl isocyanate (MDI) section, which is adding some upward pressure on pricing. Natural gas is important as it supplies the chemical energy for the nitration, hydrogenation and phosgenation steps, prior to the production of TDI. Natural Gas prices are currently approaching $3 per mm BTU and we forecast the price to approach $4 per mm BTU by the end of 2024.
TDI prices for June remained largely unchanged. Chemical Market Analytics assesses the price to be in the range of 95-100 cpp or approximately $2,150 per mt for bulk supplies.



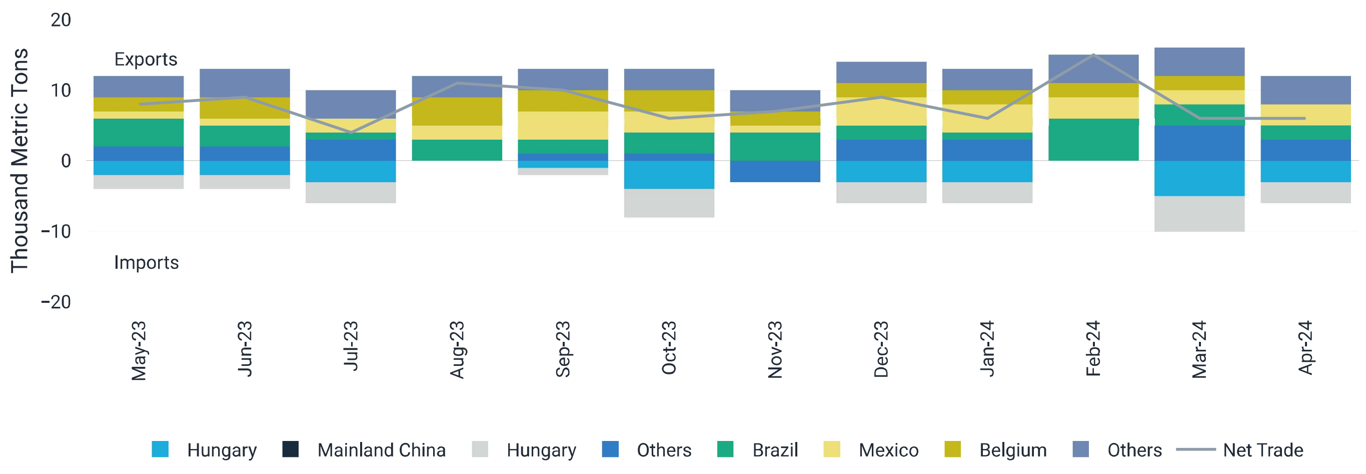

Source: Chemical Market Analytics by OPIS






Source: Chemical Market Analytics by OPIS

## United States: TDI Trade




Note: HS Code 2929101500

Source: Chemical Market Analytics by OPIS



## Supply / Demand

Despite disruptions to the supplies of carbon monoxide, which have impacted MDI production, there have been no reported impacts on TDI production or supplies with buyers reporting that they could secure all their demand.

TDI trade data is currently available through to April of 2024. Total TDI imports year-to-date have been 12 kt, nearly all of which came from the BorsodChem/Wanhua plant in Hungary.
Exports of TDI year-to-date amount to 45 kt. The major export destinations are Mexico 12.5 kt, Brazil 12 kt, the EU 5.6 kt, and Canada 5 kt with most of the balance spread throughout Latin America.

## Forecast

Toluene prices are forecasted to remain at approximately the current level for the remainder of 2024. Conversely, natural gas prices are forecasted to continue to increase until the end of the year. Chemical Market Analytics assesses that the natural gas price will approach $4 per mm BTU by the end of the year, which will add to TDI production cost pressures. Most TDI is consumed in the manufacture of slabstock foams for furniture and bedding. Demanding in this sector has been slowly declining since early 2023. However, the latest available data and market feedback suggests that there has been a recent uptick in demand. Hopefully, this signals the end of the declining cycle, however, until there are significant reductions in interest rates, we are unlikely to see broad-based robust growth.

For the time being, modest demand and ample supply are likely to keep the market balanced, and prices are likely to continue to trade within a relatively small range.

## Europe & Middle East

## Prices & Economics

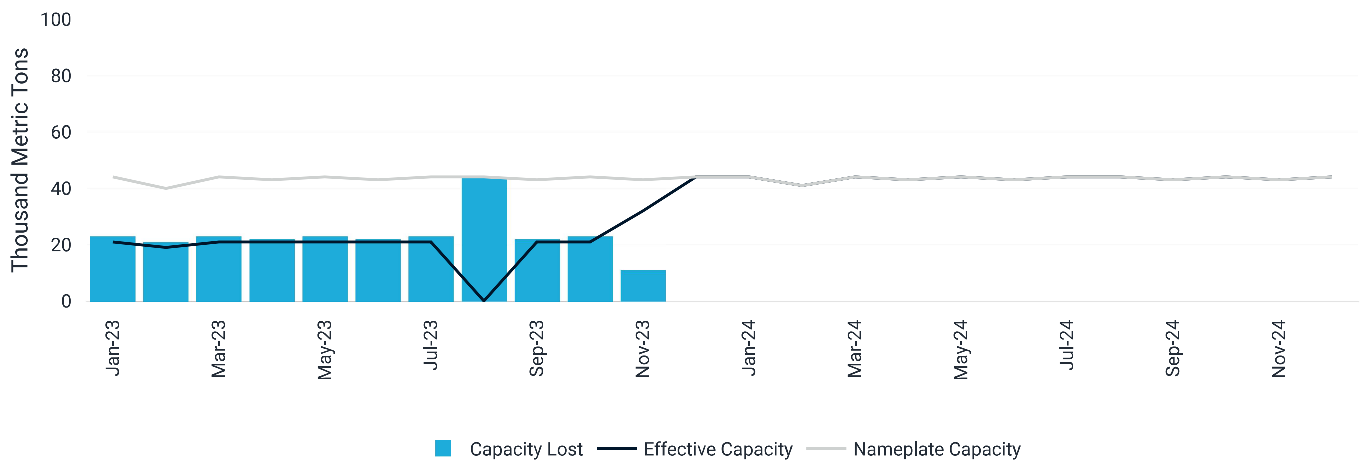
Toluene diisocyanate (TDI) prices have been under increasing pressure in June and have moved down once again. Producers have reported that margins are fast approaching breakeven and that this is not sustainable. Importers and traders have been offering large discounts in a down market and this has accelerated the drag on prices. The European Central Bank has cut interest rates and this was hoped to act as a stimulus, however, any benefit will not be felt until after the summer, though a second cut will almost certainly spark a revival in the construction market. Currently, consumers are choosing to spend any discretionary money on services and entertainment. Sales of mattresses, furniture and bedding are not seeing the usual boost that occurs in the run-up to summer and despite large discounts, consumers are not being tempted to spend.

There has been aggressive pricing throughout Europe, the Middle East, and Africa in June as producers and traders look to take and then protect share. Margins continue to be under pressure and despite further falls in toluene and Brent crude, the price cutting has been substantial. Prices have now been in steady decline since October 2022 and are now €2,000 per mt below those levels. Energy costs have been mixed once again in June. Natural gas prices have been slowly climbing since the end of March, and this continued into June. For natural gas the average TTF 1 Month Futures price in June was €34.50 per megawatt hour (ICE TTF 1 Month Futures basis) an increase of €2.68 per megawatt hour on the average for May.  Brent crude moved down in June by $0.75 per barrel from the average price seen in May, with the average June price closing at $82.34 per barrel. The average monthly price in June for toluene decreased by $104 per mt over the May average and closed at $970 per mt. Raw material and energy prices towards the end of June were moving upwards and putting further pressure on margins.

Prices for TDI have slipped between €50 and €150 per mt in June following some aggressive actions by some producers and traders. With weak demand, the move to take share has only resulted in lower prices. Chemical Market Analytics has calculated the range for TDI in Europe for June to have fallen to €1,850-1,950 per mt DPP Europe. This represents a fall of €50 per met off the low end of the range and €150 per mt off the high end.  Prices in the Middle East and Africa have also slipped. Demand has picked up but supply is more than plentiful. The range moved down in the Middle East by $50 per mt on the low end and the high end fell $100 per mt. The Chemical Market Analytics Middle East TDI price for June 2024 is published at a range of $1,800–1,900 per mt CFR Middle East.

With a poor outlook, the TDI chain is also seeing worrying signs on credit, not just furniture and bedding manufacturers but some foamers too. With prices falling in June and energy and raw material prices set to increase in July, the normal reaction would be for price increases. However, with weak demand, it's difficult to see how increases can be achieved before the end of the summer.

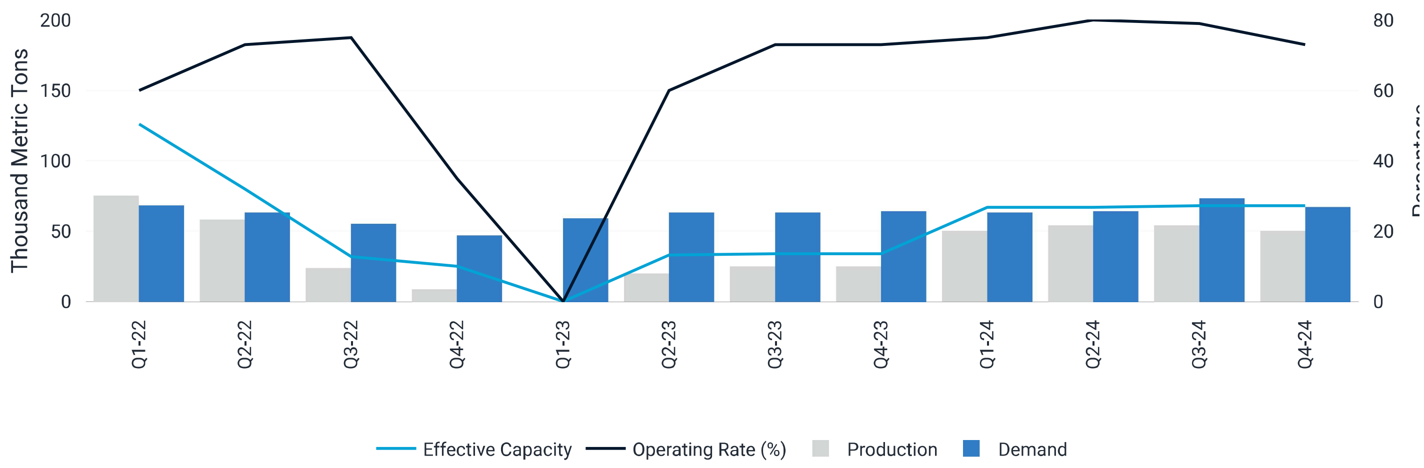
## Europe: TDI Capacity Lost




Source: Chemical Market Analytics by OPIS



## West Europe: TDI Quarterly Supply & Demand




Source: Chemical Market Analytics by OPIS



## Supply / Demand

Demand appears to be following a pattern of, buy until full, then when inventories are depleted start buying again. June is a month when inventories are full and foamers do not expect a pickup until late August or September. Most foam producers have started to run their lines for just three or even two days a week as the oversupply and lack of orders from the furniture and bedding market starts to hit. Consumption into those sectors has been disappointing over the past quarter with many foamers saying Q1 was better than Q2 and that they expect Q3 demand to be worse again. As summer approaches demand is expected to fall as private households tend not to spend on big ticket items in these months. Technical foams are performing better, however, this is fast becoming an overcrowded market.

Automotive sales are increasing but the demand for moulded and flexible foam is not reflecting the increases seen. With a lacklustre building and construction market the chances for increased sales for furniture is limited, and the drop in interest rates made by the European Central Bank is not expected to change this market until a second rate cut is seen. The current flexible foam market can be summed up by low margins and tough competition, which are trying to grow and protect market share all at the same time. Demand into several African countries has been strong in June, especially Ethiopia and Kenya. Turkey's demand remains robust but off its highs.

The European Association for the Flexible Polyurethane Industry met in Istanbul in June, where it was stated that Turkey became the largest flexible foam market in the EMEA region. All isocyanates are imported into Turkey and then converted into mattresses, upholstery, and moreover, into a growing automotive sector. The key takeaway during that conference was also that the industry cannot see any major improvement before September.

There are no reports of supply issues in June with both European producers running at less than optimum rates. Imports have increased into Europe and the Middle East. The market appears to be on hold until after the summer and demand is not expected to improve until August when producers will be looking to add to their inventories.

## Forecast

Imports are almost certain to slow as freight rates have moved up sharply, though this is probably too late to impact imports arriving in July. At the Europur Association annual meeting, most market participants were asked to provide their outlook for 2024. Most said that business was more or less stable versus last year, with some indicating a slight increase. This clearly shows how challenging the whole polyurethane industry is with low demand (after the strong post-COVID years) globally and an oversupplied situation driving Asian volumes of intermediates and finished products into Europe as well. Producers have said that many of their customers have revised their forecast for Q3 and Q4 down and the worry is that Q1 could be the best quarter of the year.

There are no maintenance programs planned in June for local TDI producers and supply is expected to be plentiful. Foamers are already gearing up for their summer shutdowns, with most expected to be closed for a longer than normal break. Energy costs look set to continue to move up in July and toluene is expected to move in a similar direction.

July prices are already starting to be negotiated and lower numbers are being sought although domestic producers are holding firm. Traders have a different approach and are already indicating lower prices can be achieved.

Next month will be tough for TDI sellers and their customers. The weaker demand scenario is set to run through the summer months with a return to better demand not expected until late August or September.

## Asia

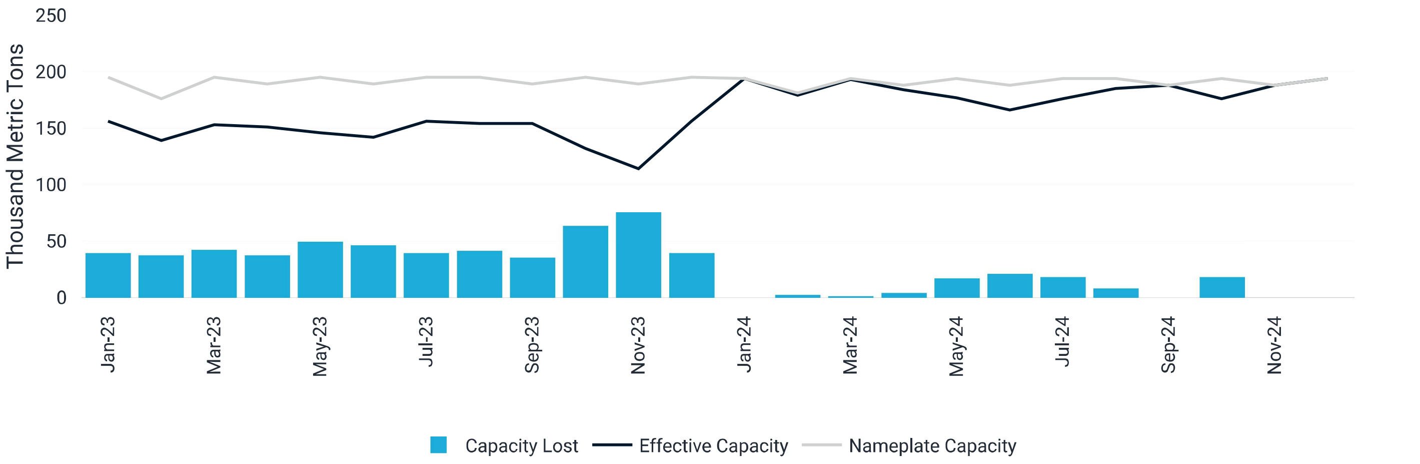
### Prices & Economics

The toluene diisocyanate (TDI) market saw prices continue to tumble throughout the month despite announcements from producers that they would be lifting prices. A strengthening toluene, the key raw material for TDI, provided no support for TDI prices. BASF announced its June listing price at RMB18,000 per mt unchanged from the previous period. Similarly, Wanhua Chemical announced its June listing price at RMB17,500 per mt, also unchanged from last month.

The month-to-date average TDI market price was RMB14,250 per mt DDP East China, down by 3% or RMB420 per mt from May. The year-to-date average price of TDI in the mainland Chinese market is RMB15,702 per mt, down by RMB2,830 per mt from the same period last year.

In the Southeast Asian market, prices fell by $58 per mt month on month and the month-to-date price averaged at $1,875 per mt CFR in June. The monthly average toluene price increased by $15 per mt to $913 per mt FOB South Korea, while the average mainland Chinese domestic toluene price fell by RMB8 per mt to RMB7,551 per mt. Consequently, the Chemical Markets Analytics theoretical margin for TDI has decreased by 63% to RMB260 per mt month on month.

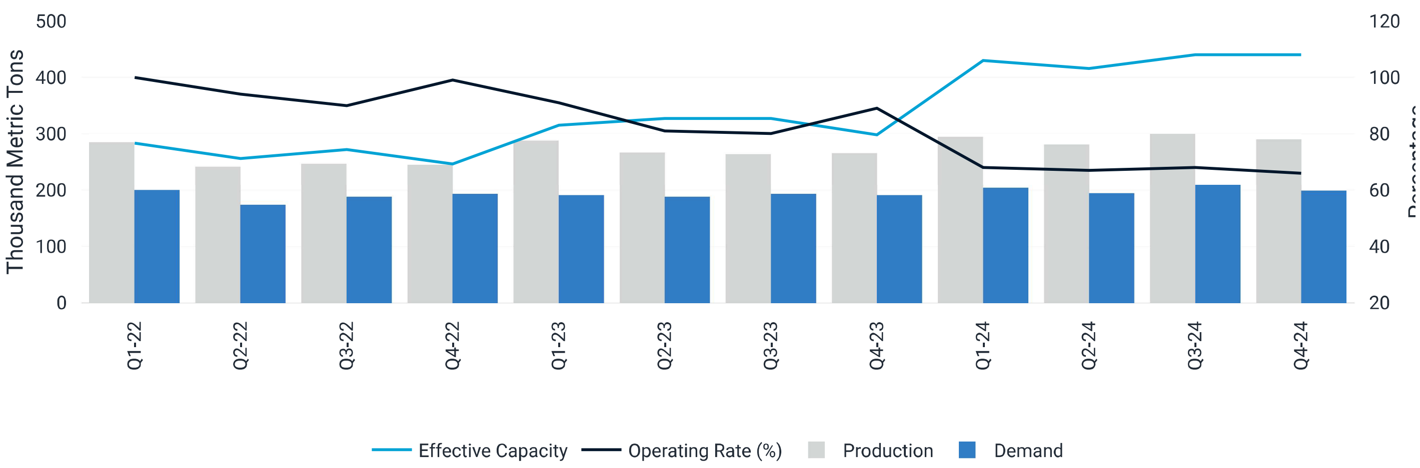
**Asia: TDI Capacity Lost**




Source: Chemical Market Analytics by OPIS

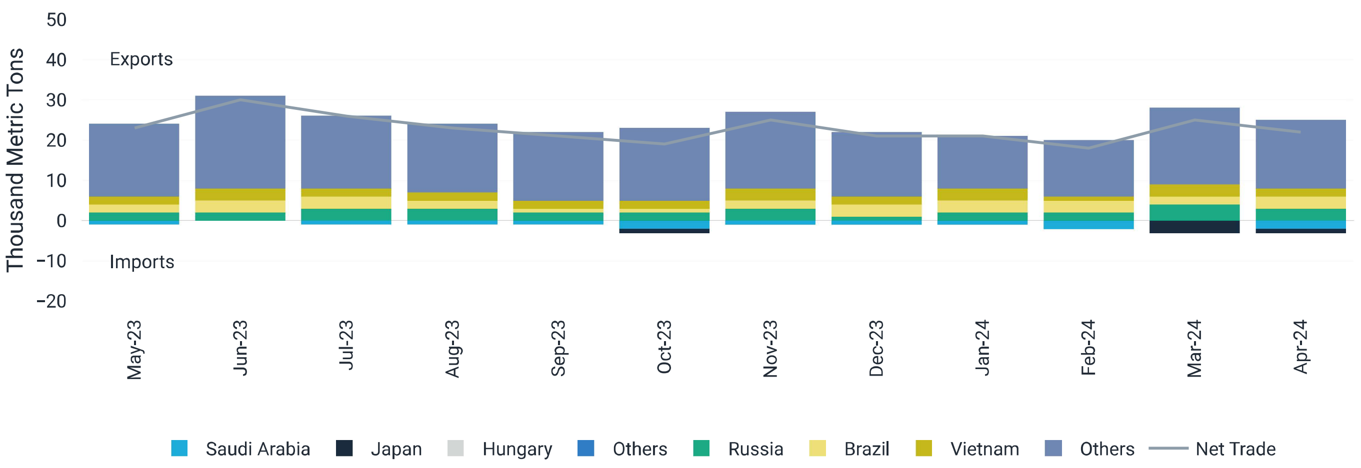


**Mainland China: TDI Quarterly Supply & Demand**




Source: Chemical Market Analytics by OPIS

## Mainland China: TDI Trade




Source: Chemical Market Analytics by OPIS



## Supply / Demand

The Asian TDI market has declined steadily since late March, driven by persistently weak demand from key downstream sectors such as automotive and construction. Buying activities have remained slow, with downstream industries facing no immediate pressure to replenish inventories due to ongoing market uncertainties and a sluggish economic recovery.

Demand from key downstream sectors such as bedding, and furniture remained unchanged. In mainland China, domestic demand in those two sectors remained sluggish as the lull from the property sector persisted. According to the latest statistics released by the National Bureau of Statistics of China, in May 2024 the real estate market in mainland China continued to decline. The accumulated floor space of real estate under construction experienced a decline of 11.6%, while the corresponding growth rate decreased by 10.8% in April 2024.

In the first five months of 2024, mattress exports from mainland China increased by 25.1% compared to the same period in 2023. Similarly, exports to the United States, the main export market, increased by 19.0% during the same timeframe.

In April 2024, Mainland China's light vehicle (LV) production reached 2.3 million units, marking a significant year on year increase of 14%. Passenger vehicle (PV) production made up 2.0 million units of that total, reflecting a 15% increase from the previous year. Notably, exports constituted 21% of passenger car production, substantially contributing to the overall production growth. Light commercial vehicle (LCV) production totalled 285,000 units, representing a 7% year on year increase. As Mainland China continues to dominate demand, these figures indicate a stable market outlook.

Moving onto supply, BASF took its TDI unit down for scheduled maintenance 25 May and resumed operation in the last week of June. Wanhua Xinjiang experienced an unplanned shutdown on 12 June. The unit restarted in the last week of June. Outside of mainland China, Mitsui took its plant down for maintenance on 9 May and resumed operations on 24 June

## Forecast

Looking ahead, monthly average TDI prices are expected to trend higher with margins set to increase by 59%. The current price level is deemed not sustainable for producers. Following the drop in crude oil prices in June, the market is expected to see an upward correction next month, supported by increased demand. OPEC+ production cuts will remain in place in the short term and hence the market should not be severely oversupplied. The dated Brent price is projected to see an increase from $79.2 per barrel in June to $82.5 per barrel in July. Consequently, the Asian toluene price is forecast to drop by $11 per mt to $903 per mt FOB South Korea in July.

It is anticipated that market demand will remain lukewarm in July as the market remains in a seasonal weak period. The furniture and comfort industries are predicted to continue to see weak demand as real estate continues to deteriorate. The latest earnings announcement from top Chinese developers suggests that supply-side risks continue to build up in the country's real estate sector. Nevertheless, TDI demand into the automotive sector is growing steadily into July.

On the supply front, regional supply is expected to be balanced. Gansu Yinguang is reportedly planning for a scheduled turnaround in July. Similarly, Wanhua plans to shut its TDI unit in Yantai for approximately three weeks in July.

Pricing and demand are likely to soften in the Southeast Asian market. Market sentiment is expected to remain lacklustre.

# Propylene

## Summary

***North America***

The June propylene contract price (CP) settled higher with a 2 cents per pound (cpp) increase over May. The settlement was market-wide, and the June propylene CP is 48 cpp for polymer grade and 46.5 cpp for chemical grade. US polymer-grade propylene spot prices increased during the month as supply disruptions tightened the market. As of 24 June, the 45-day spot weighted average price is 45.90 cpp. Prices started the month at 43-44 cpp in a balanced market. During the month, Enterprise's PDH1 experienced delays that extended their maintenance turnaround, and as a result, consumers returned to the spot market, pushing prices higher. Prices peaked at 50.00 cpp, just before PDH1 came back online during the week of 17 June. Subsequently, prices declined by a couple of cents and held firm at that level.

The most consequential event this month was Enterprise's PDH1 delayed start-up following a lengthy maintenance turnaround. The unit went down on 11 March, for a 45-day turnaround, but the delays extended the turnaround to more than 90 days. Inventories are expected to have declined to the lowest level recorded in more than 20 years. Other propylene dehydrogenation (PDH) units also developed small issues, with Invista's going down for one and a half days in mid-June, and Dow's PDH in Freeport going down for a similar period just a couple of days later. Enterprise also had an issue with their RGP Splitter III. All these issues compounded to tighten the market.

***Europe***

The June contract price (CP) settled on 31 May with a €30 per mt decrease resulting in a price level of €1,105 per mt. The lack of change in market dynamics during May left the settlement process to be driven by the change in the naphtha price during the month. The increasing supply of propylene during June allowed spot buyers to be more cautious in their approach to the market. The pressure on some downstream sectors, which are no longer enjoying the same pricing strength in incremental sales, has weakened affordability and reduced the pool of potential buyers. This dynamic has resulted in some upward pressure on discounts. Discounts for spot material were approximately 11-13% below the benchmark at the start of June but drifted up towards the 15% mark by mid-month. Chemical grade markets have been relatively stable with pricing discussions seen on either side of the 20% discount market. These discounts were somewhat location dependent.

The availability of propylene production capacity improved in June with most steam crackers operating as planned, with some exceptions. On-purpose availability has improved after technical issues in May, whilst refinery supply has been stable. Fluid catalytic cracking (FCC) units have been more incentivised to maximize light ends production than earlier in the year. The preference for lighter feedstocks remains, as is usual for Q2, though the move up in propane prices will have narrowed the incentive for steam cracker operators, and most with flexibility will have moved away from maximum propane mode. Ethane cracking remains costly with flex feed crackers focused on alternatives, though the North Sea-based operations are still viable, overall ethane usage remains high. The result has been an increase in propylene supply and a further easing in market balance.

Demand for propylene has been firm in June with polypropylene seeing firm offtake in the first half of the month. Polypropylene buyers are increasingly concerned about the availability of deep-sea supply. The majority of the broader European region is reliant on Middle Eastern and some Far Eastern supply. The current shipping constraints through the Gulf of Aden and the Red Sea have driven up freight rates and introduced major challenges in shipping from the east to the west. The result has been that buyers are now looking to stock up ahead of the summer, a very unusual occurrence, as they fear the market may be following the same trend as seen in Q1. The gradual improvement in retail activity in Europe has also given some support to the market. The result has been relatively firm downstream markets supporting sustained throughput on derivative assets. However, there have been further disruptions to downstream operations, limiting propylene offtake and allowing the market to maintain some degree of balance.

The volatility in energy markets leaves the industry with some uncertainty as to the July price direction. The somewhat improved demand outlook for local supply in the summer, as deep-sea availability of derivatives looks set to decline, may give propylene buyers a little more breathing space over the summer, which sellers will be keen to capitalise on. For sellers, the sharp rebound in oil and naphtha markets will leave them keen to maintain a buffer on margins. In addition, ongoing supply challenges in the United States are also set to ease import price pressure for a few of the derivatives. This leaves the market set up to default to another feedstock-related settlement. Propylene prices are therefore only expected to move slightly, if at all, with a slight decrease looking more likely than an increase.

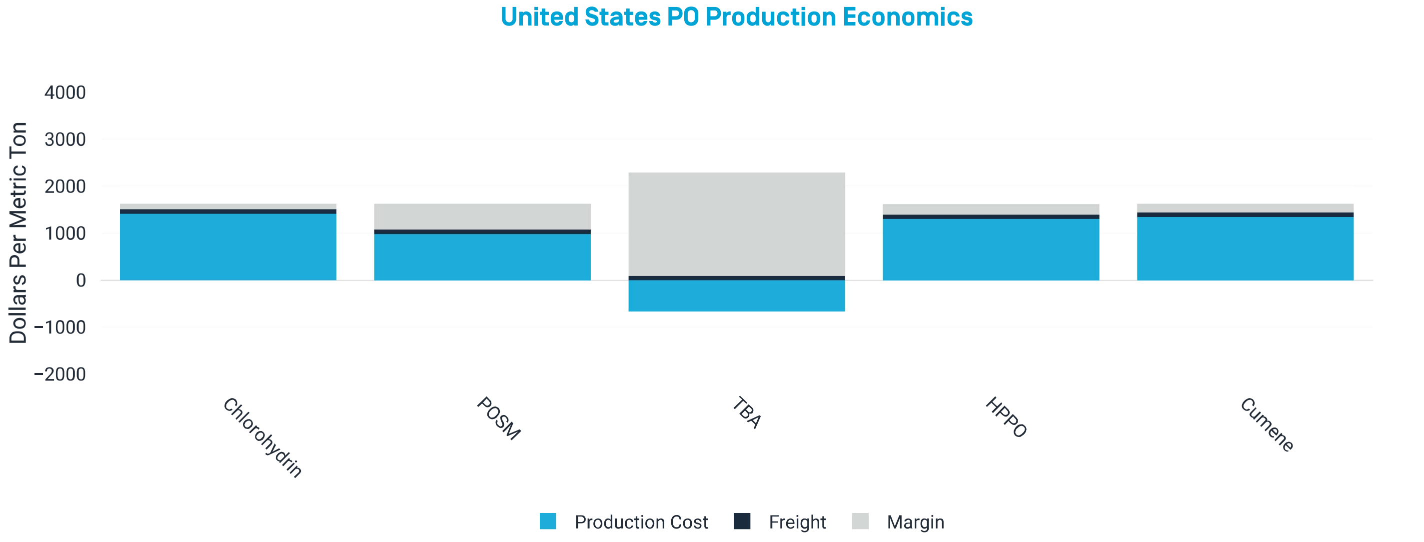
***Asia***

In Northeast Asia, spot propylene market sentiment trended up in June given the tighter supply in the region. Spot supply remained tight in South Korea due to the curtailed operating rate of on-purpose units and robust downstream demand from the polypropylene and acrylonitrile sectors. Few producers were tapping into spot import cargos, and an unplanned fluid catalytic cracking (FCC) unit outage in mid-June further tightened supply and buoyed spot sentiment. In mainland China, domestic supply from propylene dehydrogenation (PDH) units remained ample as operating rates remained elevated, though some appetite for import cargoes was evident. In addition, two new PDH units in Shandong are currently testing equipment and are expected to start up soon. The surging container freight rates and increased uncertainty in delivery schedule could weigh on export demand in the region and cap further upside potential for monomer prices. The latest assessed propylene prices were $880-900 per mt CFR Northeast Asia, $40 per mt higher than prices in late May.

In Southeast Asia, spot propylene sentiment softened in June on the back of ample spot supply availability and overall lengthening supply conditions. Several crackers in the region and a PDH unit in Malaysia came back from planned and unplanned maintenance, adding to the regional supply. Spot supply was ample: a major producer in Malaysia returned to the market with several prompt cargoes released, and a producer in the Philippines whose polypropylene line has been down actively sold several June and July cargoes. While downstream derivative sentiment was firm on the surge in container freight, underlying end-product demand remained weak. These conditions translated upwards to slack monomer demand, further pressuring the spot sentiment. The latest assessed propylene prices were $800-830 per mt CFR Southeast Asia, $20 per mt lower than prices in late May.

## Propylene Oxide

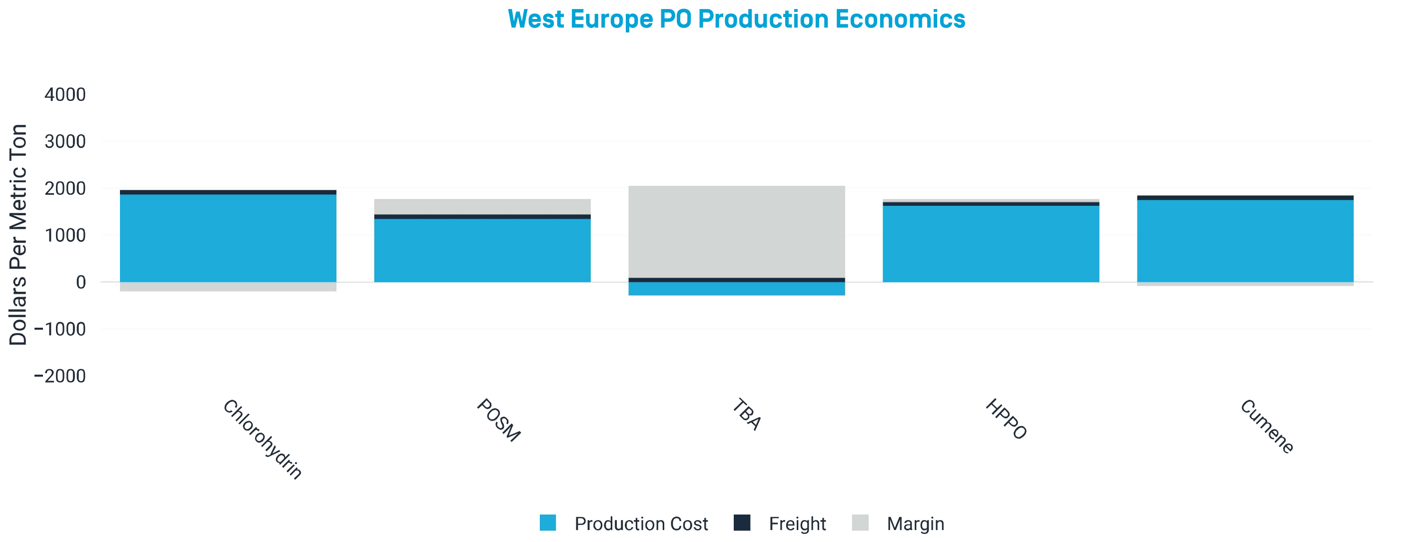
### Economics




Note: Based on low end of monthly price range (DDP United States); current month shown.

Source: Chemical Market Analytics by OPIS

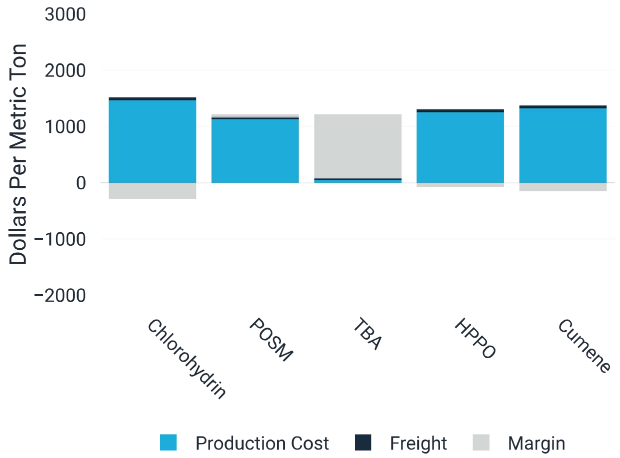





Note: Based on low end of monthly price range (DDP W. Europe); current month shown.

Source: Chemical Market Analytics by OPIS

## Mainland China PO Production Economics

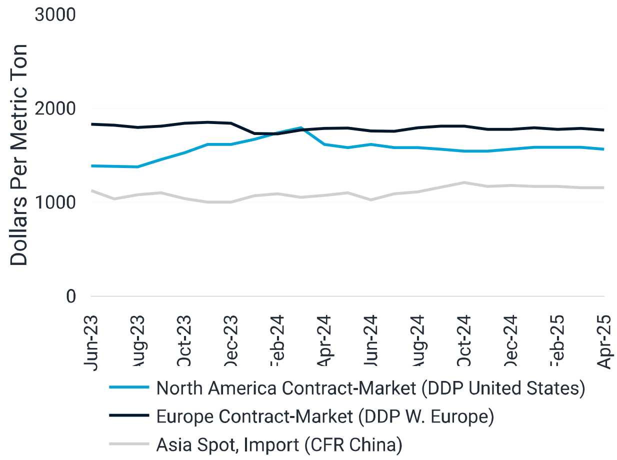



Note: Based on average of monthly domestic price range (Ex Works China); current month shown.

Source: Chemical Market Analytics by OPIS



## Propylene Oxide Price Forecast




Note: Based on low end of monthly price range.

Source: Chemical Market Analytics by OPIS



**Regional Propylene Oxide Production Economics**
Dollars Per Metric Ton

| | | History | | | Forecast | | History | | | Forecast | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Apr-24 | May-24 | Jun-24 | Jul-24 | Aug-24 | 2,021.00 | 2,022.00 | 2,023.00 | 2,024.00 | 2,025.00 |
| United States | | | | | | | | | | | |
| Chlorohydrin | Production Cost | 1,367 | 1,341 | 1,411 | 1,396 | 1,395 | 1,834 | 1,634 | 1,349 | 1,418 | 1,398 |
| | Margin | 155 | 146 | 111 | 90 | 92 | 60 | -65 | 90 | 104 | 62 |
| | | | | | | | | | | | |
| POSM | Production Cost | 604 | 711 | 978 | 937 | 891 | 1,015 | 840 | 899 | 832 | 872 |
| | Margin | 918 | 775 | 544 | 549 | 595 | 880 | 729 | 540 | 690 | 587 |
| | | | | | | | | | | | |
| TBA | Production Cost | -893 | -600 | -666 | -628 | -567 | 572 | -552 | -919 | -649 | -634 |
| | Margin | 2,415 | 2,086 | 2,188 | 2,114 | 2,054 | 1,322 | 2,120 | 2,357 | 2,170 | 2,093 |

| | | History | | | Forecast | | History | | | Forecast | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HPPO | Production Cost | 1,270 | 1,235 | 1,297 | 1,274 | 1,282 | 1,763 | 1,467 | 1,220 | 1,303 | 1,264 |
| | Margin | 251 | 252 | 224 | 213 | 204 | 131 | 102 | 219 | 219 | 196 |
| Cumene | Production Cost | 1,307 | 1,275 | 1,341 | 1,328 | 1,334 | 1,753 | 1,539 | 1,256 | 1,344 | 1,316 |
| | Margin | 214 | 211 | 181 | 158 | 153 | 141 | 30 | 183 | 178 | 144 |
| **West Europe** | | | | | | | | | | | |
| Chlorohydrin | Production Cost | 1,838 | 1,869 | 1,861 | 1,874 | 1,917 | 1,976 | 2,636 | 1,948 | 1,882 | 1,926 |
| | Margin | -148 | -174 | -198 | -215 | -220 | -174 | -560 | -186 | -204 | -244 |
| POSM | Production Cost | 1,156 | 1,107 | 1,343 | 1,299 | 1,185 | 1,255 | 1,910 | 1,245 | 1,224 | 1,351 |
| | Margin | 535 | 588 | 321 | 360 | 513 | 548 | 167 | 517 | 454 | 331 |
| TBA | Production Cost | -660 | -478 | -285 | -250 | -217 | 884 | 254 | -304 | -233 | -27 |
| | Margin | 2,350 | 2,173 | 1,948 | 1,908 | 1,915 | 919 | 1,823 | 2,067 | 1,912 | 1,709 |
| HPPO | Production Cost | 1,602 | 1,624 | 1,617 | 1,631 | 1,710 | 1,854 | 2,453 | 1,665 | 1,649 | 1,715 |
| | Margin | 88 | 71 | 47 | 28 | -13 | -52 | -377 | 97 | 30 | -32 |
| Cumene | Production Cost | 1,728 | 1,744 | 1,745 | 1,756 | 1,795 | 2,020 | 2,719 | 1,786 | 1,757 | 1,812 |
| | Margin | -38 | -49 | -82 | -97 | -98 | -218 | -642 | -23 | -78 | -129 |
| **Mainland China** | | | | | | | | | | | |
| Chlorohydrin | Production Cost | 1,444 | 1,452 | 1,475 | 1,465 | 1,463 | 1,659 | 1,777 | 1,520 | 1,476 | 1,515 |
| | Margin | -186 | -184 | -277 | -248 | -238 | 899 | -276 | -198 | -217 | -138 |
| POSM | Production Cost | 1,206 | 1,178 | 1,143 | 1,127 | 1,112 | 1,216 | 1,466 | 1,207 | 1,166 | 1,081 |
| | Margin | 52 | 90 | 55 | 90 | 112 | 1,342 | 35 | 114 | 93 | 296 |
| TBA | Production Cost | -205 | -7 | 68 | 83 | 26 | 679 | -3 | -91 | 4 | 86 |
| | Margin | 1,463 | 1,275 | 1,130 | 1,133 | 1,199 | 1,880 | 1,504 | 1,412 | 1,255 | 1,291 |
| HPPO | Production Cost | 1,237 | 1,238 | 1,263 | 1,252 | 1,246 | 1,418 | 1,455 | 1,271 | 1,259 | 1,291 |
| | Margin | 21 | 30 | -65 | -36 | -21 | 1,141 | 46 | 51 | 0 | 86 |
| Cumene | Production Cost | 1,309 | 1,313 | 1,336 | 1,321 | 1,315 | 1,494 | 1,564 | 1,346 | 1,330 | 1,357 |
| | Margin | -50 | -45 | -138 | -105 | -91 | 1,065 | -62 | -24 | -70 | 20 |

Note: Production cost includes variable and fixed costs, by-product credits; freight is accounted for in margin calculation (if applicable); price basis low end of monthly price range (DDP United States, DDP W. Europe); price basis average of monthly price range (Ex Works China).

Source: Chemical Market Analytics by OPIS



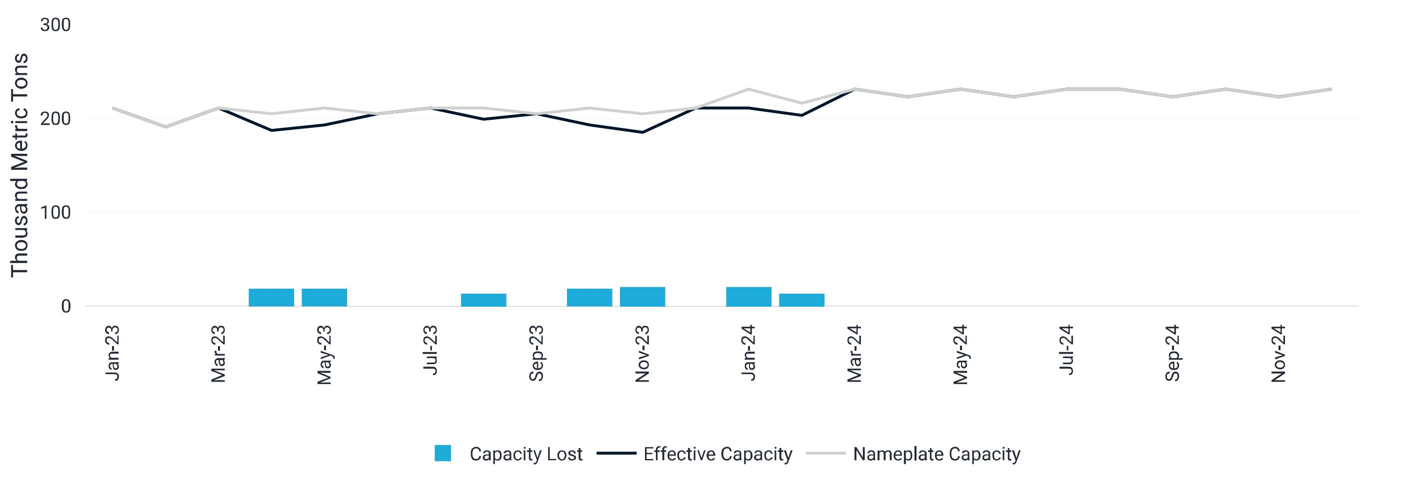
## North America

## Prices & Economics

Most of the propylene oxide (PO) in North America is sold under contract, with monthly adjustments based upon the price of propylene. The June propylene contract price settled higher with a 2 cents per pound (cpp) increase over May. The settlement was market wide, and the June propylene contract price is 48 cpp for polymer grade. The most consequential event this month was Enterprise's PDH1 delayed start up following a lengthy maintenance turnaround, which was one of the causes of the very low Propylene inventories.

Propylene Oxide prices were reported to Propylene plus an adder of 30-40 cents per pound. At current prices all process routes to produce PO are generating positive margin. However, as the accompanying chart makes clear, the chlorohydrin process is the highest cost production method with the lowest margins, effectively setting the floor price. The PO/TBA process is highly favoured, in part due to the high export demand and operating rate.

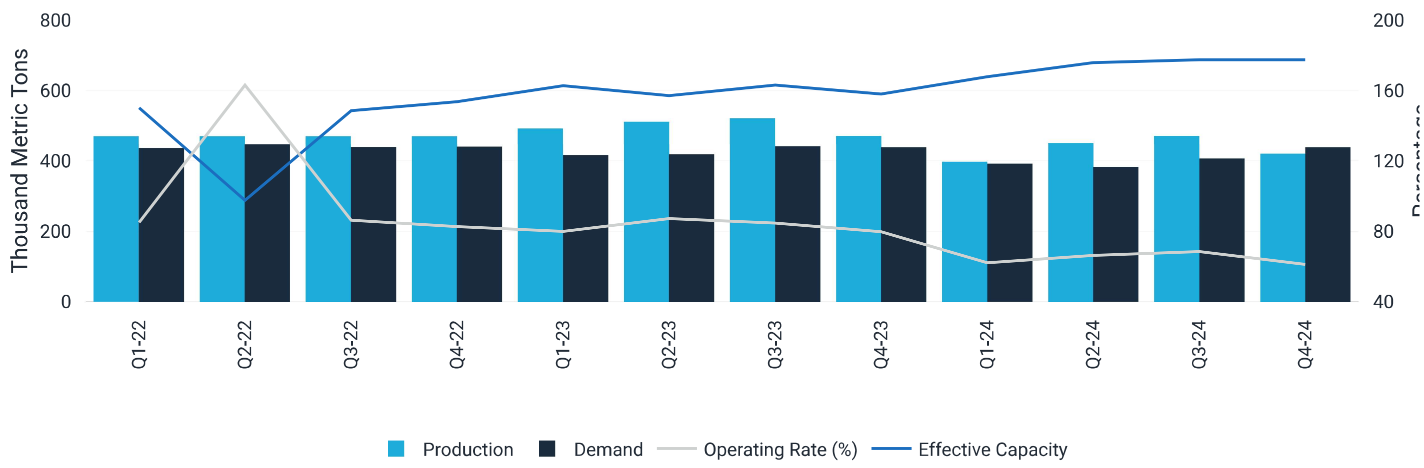
## North America: Propylene Oxide Capacity Lost




Source: Chemical Market Analytics by OPIS



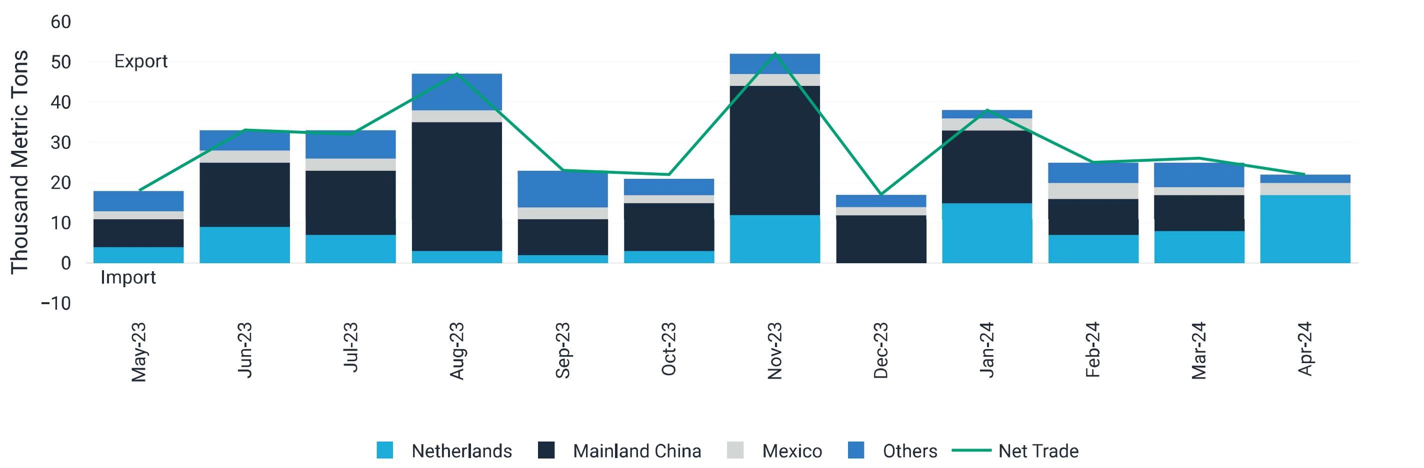
## United States: PO Quarterly Supply & Demand




Source: Chemical Market Analytics by OPIS



## United States: PO Trade




Note: HS Code 291020

Source: Chemical Market Analytics by OPIS

## Supply / Demand

Lyondell were reported to be operating their PO/TBA unit hard, to produce TBA for conversion to MTBE for gasoline blending, most of it going to Mexico.
Conversely, the Lyondell PO/SM units were running at low rates, one unit recently having restarted from a turnaround.
The latest data published by the American Chemical Council indicated that there has been a small uptick in the production of polyether polyols, which are the major derivative of propylene oxide. In particular the production of flexible polyol, which are the largest segment of the polyol market posted a 5.7% increase, year over year, through May 2024. This would suggest some recovery in the home furnishings and beddings markets.

International trade data is available through April 2024. There were no PO imports to the US reported through to the end of April. Total PO exports year to date though to April [the latest data available] was approximately 111 kt. Monthly PO export volumes have been declining. In January, PO exports were 38.2 kt, February 25.5 kt, March 25.6 kt and for April 22.9 kt; suggesting that increasing volumes of PO are being consumed domestically.
The main PO export destinations were the EU 47.5 kt; China 35.6 kt; Mexico 12 kt; Columbia 5.7 kt; Taiwan 5.4kt and Brazil 4.9 kt
Propylene glycol imports to the United States through to the end of April totaled 10.7 kt, much of which came from Korea 6.9 kt, with lesser volumes from Singapore 1.5 kt and China 1.4 kt.
Propylene Glycol exports from the US have been running at approximately 20 kt per month, January to April 2024. The major export destinations being Mexico 19.5 kt; EU 11.6 kt; Singapore 9.8 kt; China 9.5 kt; Canada 8.5 kt; Taiwan 7.3 kt; Brazil 4.9 kt; Columbia 2.5 kt; Korea 1.7 kt.

## Forecast

Propylene prices are forecasted to remain in the 44-46 cpp range for the balance of 2024. Domestic demand for PO derivatives has strengthened as the year has progressed, with seasonal demand for construction and some signs of recovery in the furniture and bedding markets. But operating rates remain well below capacity.

Reportedly, Dow Chemical has been offering buyers propylene glycol sourced from its Thailand facility. This is presumably part of a market development effort, in advance of the closure of the Freeport PO facility in 2025.

Low growth in domestic demand for propylene oxide and derivatives in the United States, combined with access to low-cost propylene, will drive producers of PO and derivatives to seek additional export opportunities throughout the remainder of 2024.

## Europe & Middle East

## Prices & Economics

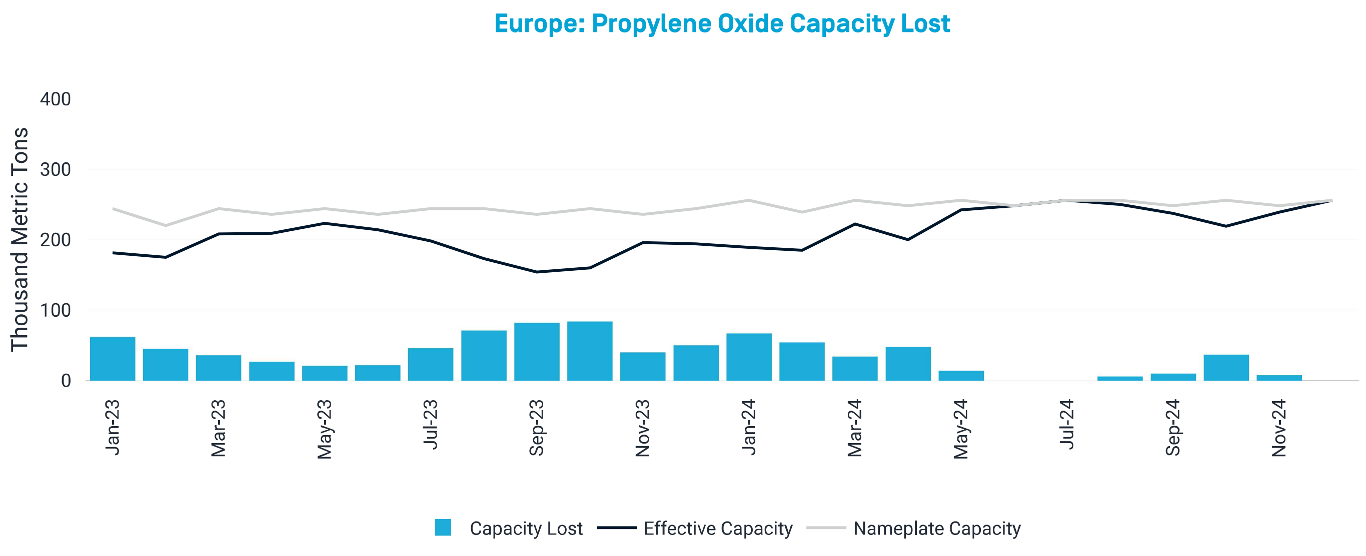
The annual discount level for contractual propylene values widened while the propylene oxide (PO) adder declined, resulting in a shift in the margins for European manufacturers of PO for 2024. Based on this move, the Chemical Market Analytics West Europe contract market price for PO decreased by €24 per mt to €1,681 per mt DDP West Europe (basis of 0.8*propylene + €660 per mt + freight) in June. The main driver here was the propylene contract price decrease of €30 per mt to close at €1,105 per mt.

The trend seen in April and May was also noticeable in June, with natural gas prices rising and averaging €35 per MWh (Dutch TTF Day ahead). Consequently, production costs rose and Europe remains the highest-priced PO region, with most production routes showing only marginal profitability since the summer of 2022.

After market discussions in 2023 and early 2024, Chemical Market Analytics has revised the annual adder for PO in Europe down by another €50-120 per mt compared to the previous year. There are various contracts in place, some for multi-year deals, whilst others are for just one year. The overall merchant PO market historically accounts for less than 10% of nameplate capacity in Europe, while in 2023 it was almost non-existent due to weak demand and high contractually obliged volumes.

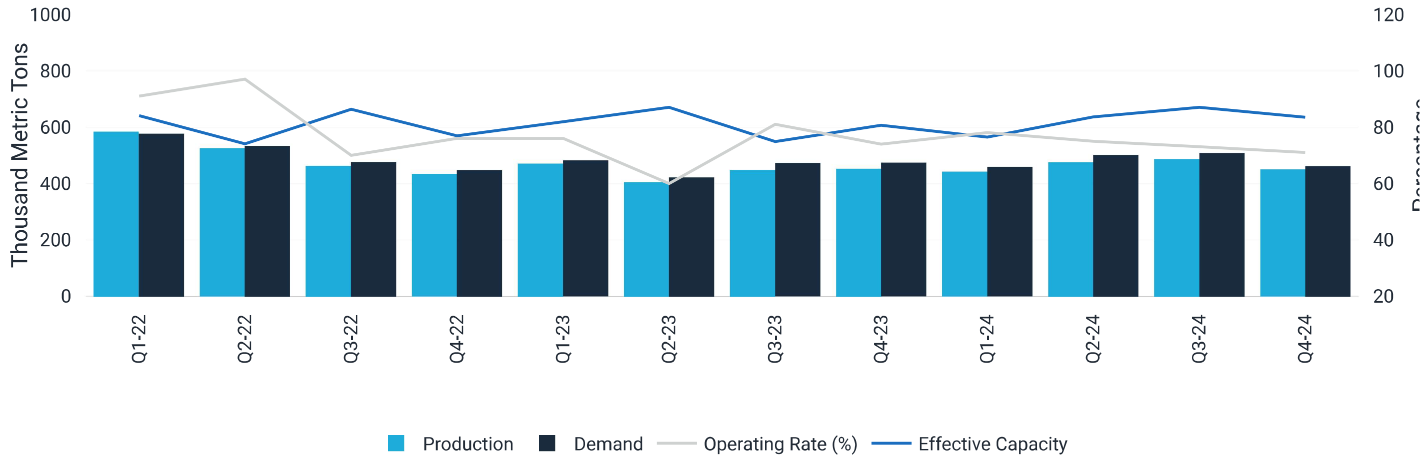
Looking at the economics, all four existing PO routes in Europe experienced weaker profitability due to co-credit changes. Chlorohydrin-based PO economics has deteriorated since April and remains the weakest and most negative. HPPO margins are the second weakest, but positive with a small drop compared to the previous month. Propylene oxide styrene monomer (POSM) margins moved lower as well due to styrene lengthening amid all units being operationally again in Europe. The PO/tertiary butyl alcohol (TBA) route continues to be the most attractive and unique in terms of competitiveness, although that has lost some momentum since April.

The propylene glycol (PG) sector in Europe is clearly in a challenging environment with imports rising and demand declining resulting in lower prices and margins. Chimcomplex, Romania, UPM as well as Orlen, Poland have not been running recently, Europe is long on propylene glycols. Demand into almost all applications and end uses was low in June, and it almost feels like the summer lull already. Consumption of glycols also declined into Turkey while imported volumes from mainland China were still offered at very competitive prices (at approximately $1,120 per mt for monopropylene glycol (MPG), plus the tax of $50 per mt, it is still €100 per mt cheaper than European based product, while USP grades have been offered at $1,500 per mt into this main hub). Profits for integrated PO to PG continue to be very poor these days. All in all, Chemical Market Analytics has assessed the MPG price at €1,150-1,250 per mt FD West Europe, down by €100 per mt on average for June, and the dipropylene glycol (DPG) price at €1,900-2,000 per mt level FD West Europe.




Source: Chemical Market Analytics by OPIS

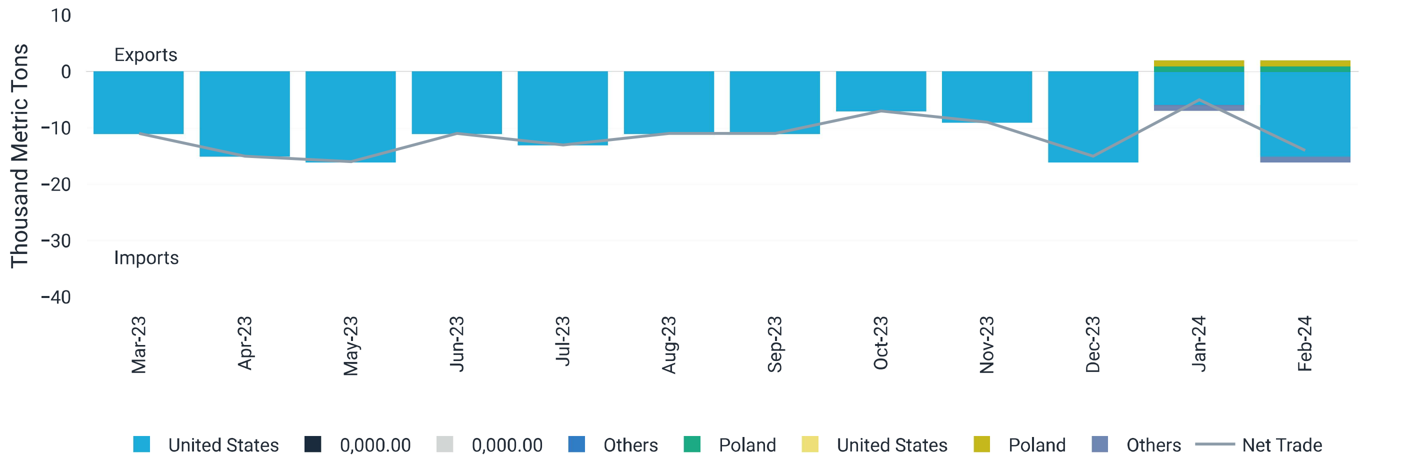
## West Europe: PO Quarterly Supply & Demand




Source: Chemical Market Analytics by OPIS



## West Europe: PO Trade

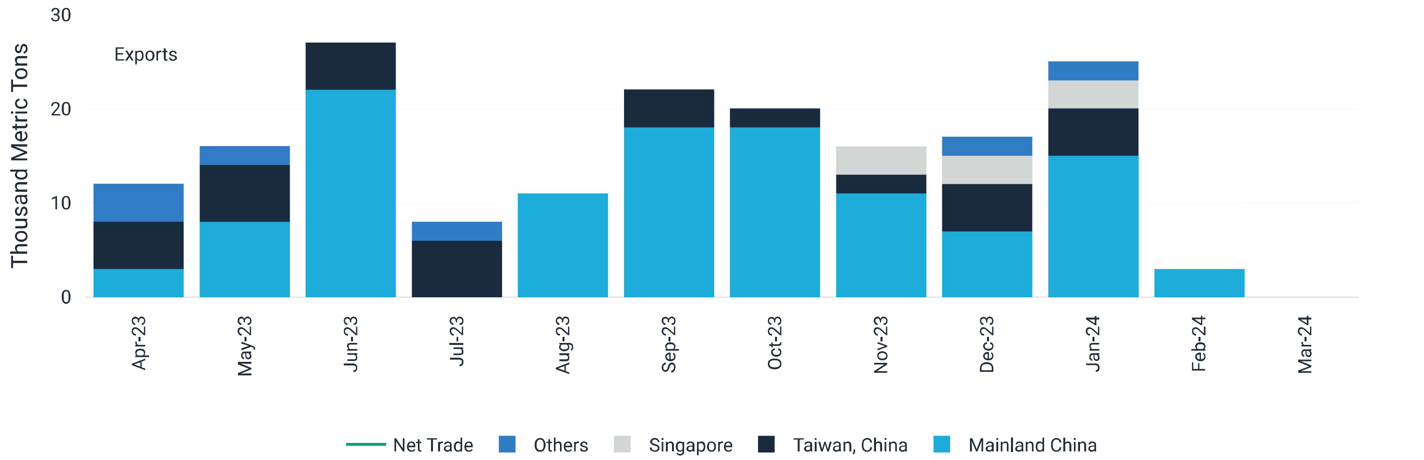



Note: HS Code 291020

Source: Chemical Market Analytics by OPIS



## Saudi Arabia: PO Trade




Note: HS Code 291020

Source: Chemical Market Analytics by OPIS

## Supply / Demand

The supply of PO in Europe and the Middle East improved further in June without major disturbances or unplanned outages. From a planned maintenance perspective, no producer has taken its unit down this month. The new HPPO unit from MOL in Hungary is still not operational, however, according to our understanding, which is therefore not feeding downstream derivatives. The rumours around a potential temporary or permanent closure of Maasvlakte in the Netherlands continue without any formal confirmation or rebuttal. Last, but not least, Petro-Rabigh has only sporadically operated its PO unit this year, first due to the Red Sea issue and recently due to FCC propylene restrictions. A couple of exports were concluded, all to Asia, while the producer is not in a position to ship into the Mediterranean. PO TBA units in Europe were the ones with the highest run rates, while POSM has lowered its output again on an abundance of co-product styrene.

Shipping PO derivatives from the Far East and Asian countries has increased in recent months, however, going forward this trend may decline again due to rising container/bulk prices and lower availability. PO shipments from the United States into Europe will continue though, and we foresee a similar volume compared to 2023 arriving in Europe, which will be driven by internal movements as well as one trader having a global position.

Switching the focus towards demand, consumption of PO has been lower versus May, and certainly weaker than in the surprisingly strong Q1. This is because a mild winter meant the construction sector could start earlier than usual, while all indicators for the economy and productivity in Q2 point to stagnation or a decline. The interest rate drop has not yet spurred any major growth for durable goods or PO driven applications. Polyether polyols, propylene glycols as well as surfactants and detergents all experienced a weaker Q2 and despite rising incomes, private consumption is still low. Competitive imports of all those products have also played a role.

Passenger car registration numbers for Europe have been released for May 2024 showing another decrease, 3% down versus last year. Year-to-date though, car registrations rose by 4.6%, reaching almost 4.6 million cars sold, which is in line with our forecast although annually we foresee only a modest growth of just above 2%. On the commercial vehicle front, the final numbers for Q1 were published showing a mixed bag. Busses rose by a strong 23.3% and van sales by 12.6%, but truck sales declined by 4%.

## Forecast

The crude oil market has been bumpy in recent weeks with more upsides developing due to a combination of rising geopolitical tensions in the Middle East, stronger demand from mainland China and lower oil inventories around the globe. In particular, US stocks for distillates and gasoline dropped sharply due to lower refinery run rates in late June. Despite expected higher operations at refineries, global oil supply and demand balances are forecast to see deficits in the second half of 2024 amid remaining voluntary OPEC+ cuts and seasonally stronger demand. This may change quickly next year if OPEC+ countries start to unwind the cuts. In short, Chemical Market Analytics is foreseeing Brent averaging $85 per barrel and West Texas Intermediate (WTI) at $81 per barrel in the remaining months of 2024.

Transferring this into the underlying olefins forecast, the pricing curve looks at a rollover or smaller decline into July before the market undergoes a mild contango until the year-end. In autumn, cracker and refinery planned maintenance will take out supply, and demand tends to increase after the summer vacation. Further to that, and this is something to consider for all PO downstream sectors, is that the saving ratios of private European households have seen a record high value in Q1 which is driving hope and a potential upswing in Q3. Further expected interest rate cuts by the European Central Bank gives hope for a stronger second half of 2024 as well. For PO itself, we are forecasting a long to balanced supply situation with weak consumption over the summer period before a likely increase will help eat into the length. Planned shutdowns from September onwards add to the puzzle while temporary and permanent closures remain a hot topic in Europe and across the globe.

So far in 2024, most PO players have seen a modest recovery in demand versus 2023, but that is a difficult year to compare against. Against historical levels, or 2019 for example, we are still far behind reasonable operating rates and thus profitability profiles. Rising imports of PO derivatives and finished goods are a constant topic. Private consumption is still key for this industry and more certainty around political or geopolitical directions will likely result in higher spending after the summer break, and especially from 2025 onwards. Nevertheless, the propylene to PO competitiveness remains a topic in Europe and we should not be surprised if companies take a different approach or direction which will change the current market landscape.

## Asia

## Prices & Economics

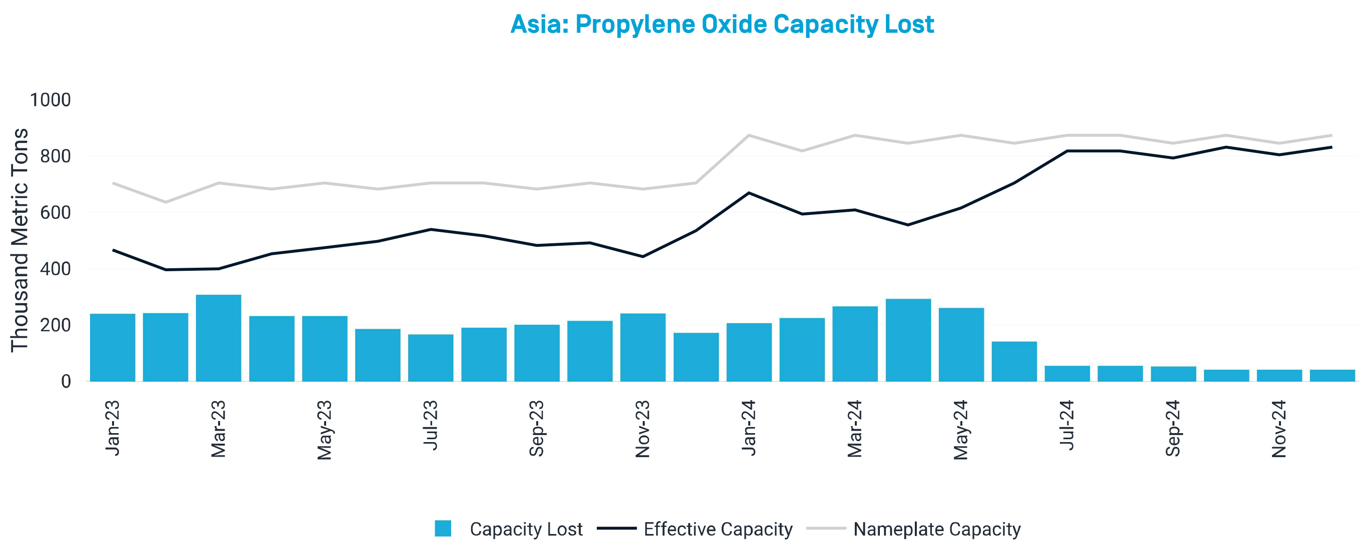
The Asian propylene oxide (PO) market lost its upward momentum and started the month on a softer note. The temporary supply shortage of PO in East China has gradually eased after plants resumed from prolonged turnarounds. In June, the month-to-date average PO price in mainland China is RMB455 per mt lower than in May, at RMB8,781 per mt ex-tank. The year-to-date average price of PO in mainland China was RMB9,010 per mt, down by RMB574 per mt from the same period last year.

The month-to-date average propylene price (ex-Shandong) increased by RMB245 per mt to RMB7,025 per mt. In June, the average liquid chlorine price was at RMB200 per mt. The month-to-date PO price was notionally assessed to be $1,048 per mt CFR mainland China in June. Propylene prices increased by $30 per mt on a CFR Northeast Asia basis in June and the PO to propylene spread fell by 22%, averaging $344 per mt in June.

In mainland China, chlorohydrin-based PO producers account for a significant portion of total capacity. With the softening in PO prices, these producers experienced an improvement in margins. According to standard industry calculations, margins for the chlorohydrin route declined by 30 % month on month. The mainland Chinese merchant chlorine market was oversupplied, and prices declined in the first half of June. Although the average operating rates of chlor-alkali plants declined, and merchant chlorine supply declined compared with the end of May, chlorine downstream demand also declined given the off-season. Merchant chlorine prices in the main production regions all declined compared with the end of May, with the low-end prices in Jiangsu province declining back to negative values. For downstream sectors, demand from the main sector, polyvinyl chloride (PVC), remained weak due to oversupply. Demand from other sectors, including chloromethanes, and epichlorohydrin, declined as they were negatively impacted by the hot weather.

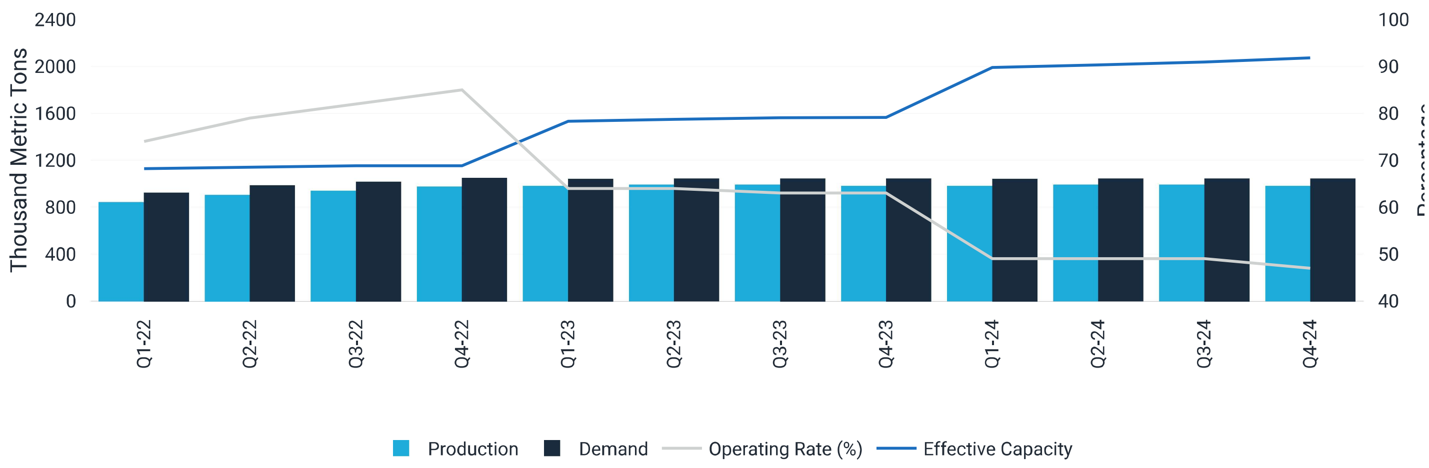
In South Korea and Japan, PO demand is covered by contracts. South Korean contract prices are usually settled using a formula referencing the average CFR mainland China price. Spot business is negotiated with reference to the CFR mainland China price, plus a premium. Due to weak demand from downstream sectors, there were no reported discussions on imported PO.

In South Korea and Japan, PO demand is covered by contracts. South Korean contract prices are usually settled using a formula referencing the average CFR mainland China price. Spot business is negotiated with reference to the CFR mainland China price, plus a premium. A shipment of 2,000 mt of PO was concluded for arrival at Ulsan in June.




Source: Chemical Market Analytics by OPIS

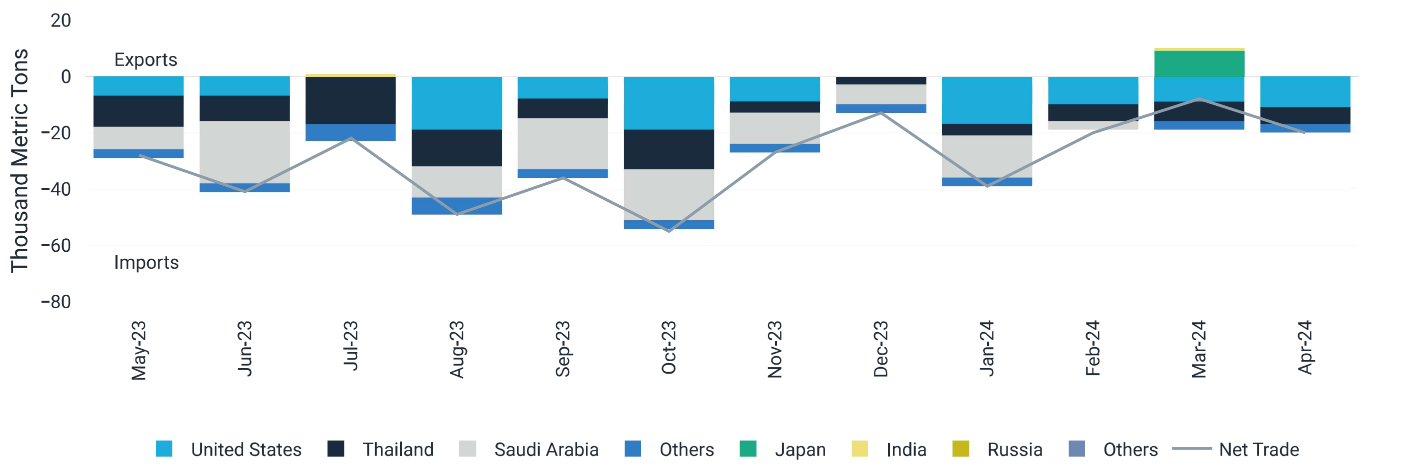
## Mainland China: PO Quarterly Supply & Demand




Source: Chemical Market Analytics by OPIS



## Mainland China: PO Trade




Note: HS Code 291020

Source: Chemical Market Analytics by OPIS



## Supply / Demand

The resumption of operations after prolonged maintenance shutdowns, coupled with the arrival of imported PO from Saudi Arabia, has significantly alleviated supply constraints in East China. However, demand for polyether polyols remains subdued, with insufficient support from downstream sectors. Similarly, the propylene glycol (PG) market, which is the second-largest consumer of PO, continues to encounter difficulties as demand from the industrial-grade unsaturated polyester resin (UPR) sector remains weak.

Demand from key downstream sectors such as bedding and furniture remained unchanged. In mainland China, domestic demand in those two sectors remained sluggish as the lull from the property sector persisted. According to the latest statistics released by the National Bureau of Statistics of China, in May 2024 the real estate market in mainland China continued to decline. The accumulated floor space of real estate under construction experienced a decline of 11.6%, while the corresponding growth rate decreased by 10.8% in April.

In the first five months of 2024, mattress exports from mainland China increased by 25.1% compared to the same period in 2023. Similarly, exports to the United States, the main export market, increased by 19.0% during the same timeframe.

In April 2024, Mainland China's light vehicle (LV) production reached 2.3 million units, marking a significant year on year increase of 14%. Passenger vehicle (PV) production made up 2.0 million units of that total, reflecting a 15% increase from the previous year. Notably, exports constituted 21% of passenger car production, substantially contributing to the overall production growth. Light commercial vehicle (LCV) production totalled 285,000 units, representing a 7% year on year increase. As Mainland China continues to dominate demand, these figures indicate a stable market outlook.

It is worth noting that Jishen Chemical in mainland China remains shut and has yet to announce any plans to restart operations. Sinopec Tianjin restarted successfully at the end of May and is operating at 75% operating rate. On 25 June, Tianjin Bohua was hit with two explosions at its hydrogen peroxide unit and it is reported that the propylene oxide styrene monomer (POSM) unit has been shut following the incident.

Jincheng Petrochemical shut its plant in July 2023 and has not indicated plans to restart. Shandong Daze has remained shut since September 2023. Shandong Xinyue is operating at approximately 70% of plant capacity. In South China, Sinochem Quanzhou has restarted from its turnaround and is operating at 80% of capacity.

In Jiangsu, Jiangsu Yida has been shut since July last year. The company has recently indicated that it plans to restart the unit in June but there has been no news of the exact restart date yet. Nanjing Hongbaoli has been shut since the end of April 2022 for debottlenecking. The project is expected to be completed this year, with an addition of 40 kt per year to the existing 120 kt per year PO capacity. Jiangsu Ruiheng shut its plant for unplanned maintenance on 31 March. The plant was originally slated to restart on 1 May but the restart was delayed to 10 June. Zhejiang Petrochemical is running at 50% operating rate. In April, Lihuayi started its 300 kt per year HPPO unit successfully. The plant was shut again shortly after for maintenance, but restarted in mid-June.

In Southeast Asia, Shell Singapore's POSM unit has remained shut since early October 2023 following a fire. In South Korea, SKpic's POSM unit is currently operating at 90% of capacity. Meanwhile, the producer shut its HPPO unit at the end of March due to a shortage of raw material. The plant resumed production at the end of April but was shut again on 9 May.

## Forecast

In July, the outlook for the PO market is set to remain lacklustre. Regarding the by-product, styrene, prices are expected to be stable to weak in the short term in line with a softer forecast for feedstock benzene prices. However, substantial declines in styrene prices are not expected due to ongoing production controls amid heavily negative production economics.

HPPO based producers are expected to keep production at a minimum as current price levels have fallen below breakeven levels. Producers are expected to push prices higher to maintain a cash cost level.

It is anticipated that market demand will remain weak in July as the downstream sectors remain largely unchanged. Meanwhile, Chemical Market Analytics expects demand from the furniture and comfort industries to remain sluggish. The automotive sector is expected to experience stable growth month-on-month.

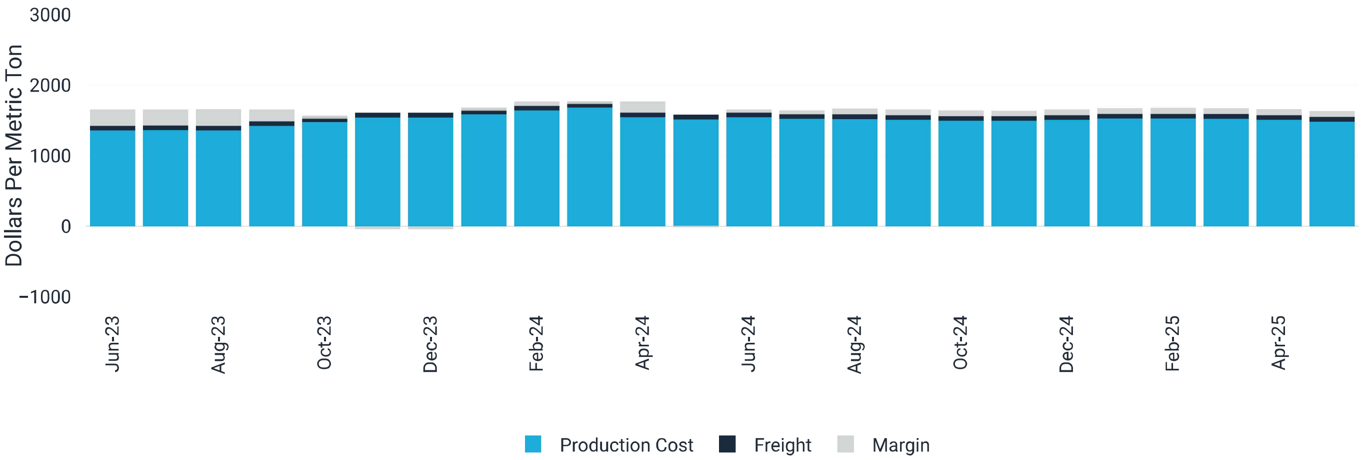
Fundamentally, the supply situation in mainland China is expected to remain long, despite the incident of Tianjin Bohua. The volume loss from that unplanned shutdown is likely to be balanced by Sinopec Tianjin's resumption. Outside of mainland China, PO is forecast to tighten following ongoing maintenance work and producers cutting back operating rates. Overall, supply in the region is sufficient to cover downstream requirements.

With the current market outlook, Chemical Market Analytics is forecasting the PO price to trend lower, hovering at approximately RMB9,000 per mt ex works Shandong.

# Polyether Polyols

## Economics

United States Flexible Polyether Polyols Production Economics

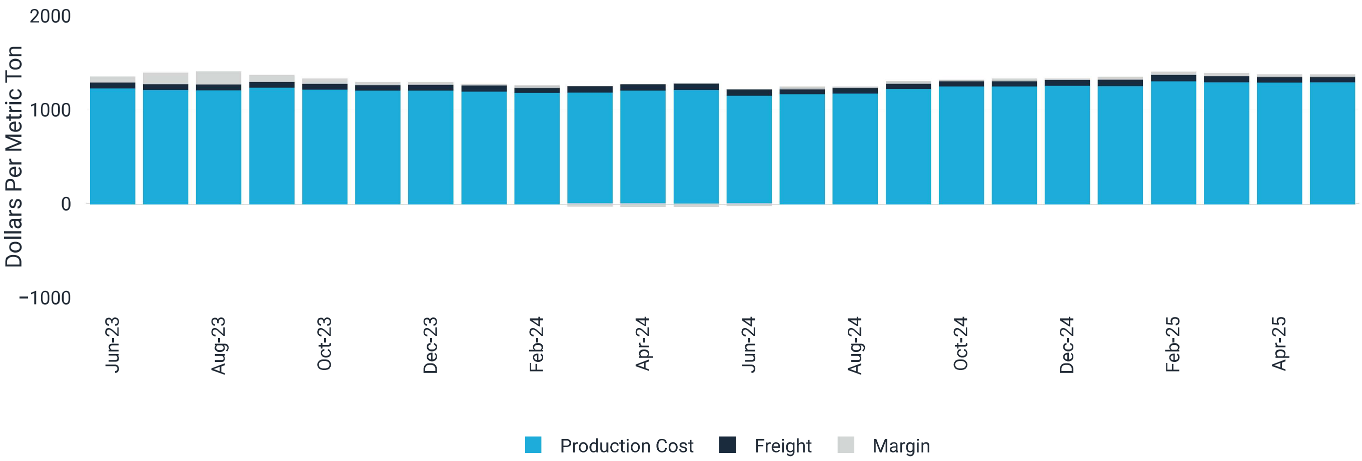



Note: Based on low end of monthly price range (DDP United States).

Source: Chemical Market Analytics by OPIS



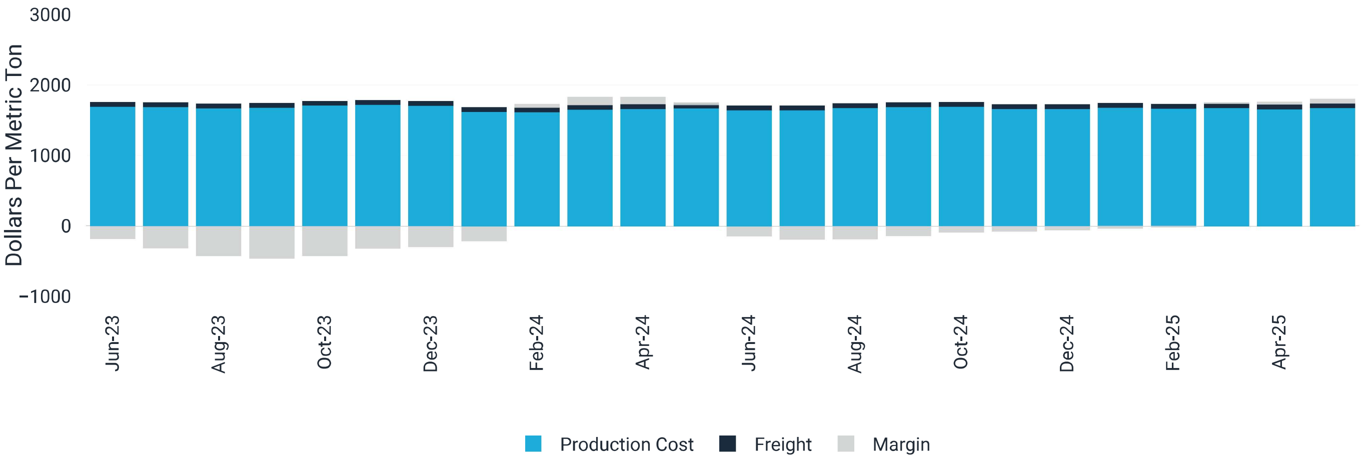
Mainland China Flexible Polyether Polyols Production Economics




Note: Based on low end of monthly domestic price range (DDP China).

Source: Chemical Market Analytics by OPIS

## West Europe Flexible Polyether Polyols Production Economics

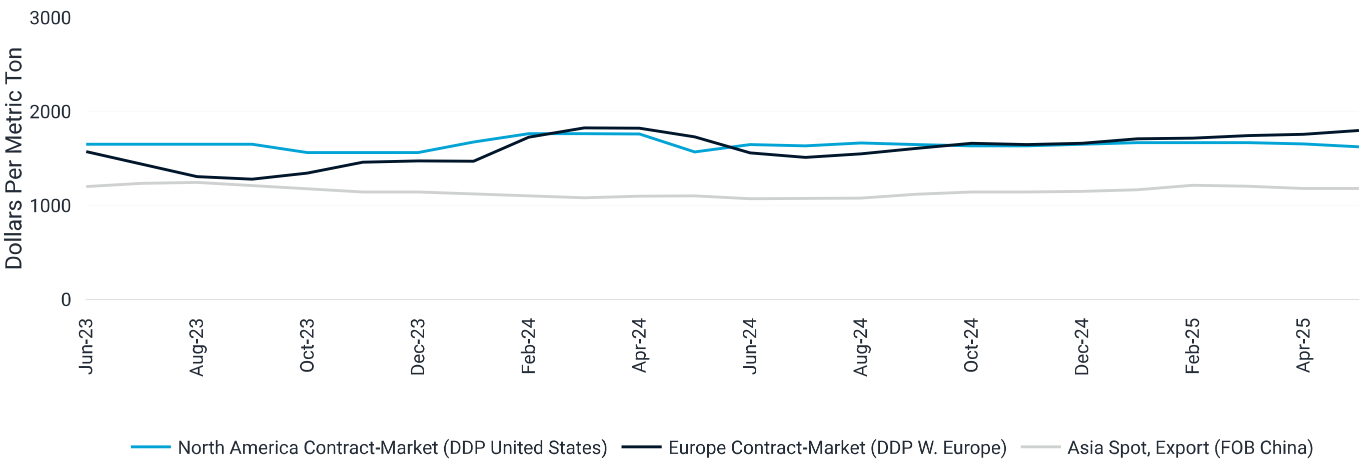



Note: Based on low end of monthly price range (DDP W. Europe).

Source: Chemical Market Analytics by OPIS



## Flexible Polyether Polyols Price Forecast




Note: Based on low end of monthly price range.

Source: Chemical Market Analytics by OPIS



**Regional Flexible Polyether Polyols Production Economics**
Dollars Per Metric Ton

| | History | | | Forecast | | History | | | Forecast | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Apr-24 | May-24 | Jun-24 | Jul-24 | Aug-24 | 2,021.00 | 2,022.00 | 2,023.00 | 2,024.00 | 2,025.00 |
| United States | | | | | | | | | | |
| Production Cost | 1,543 | 1,513 | 1,543 | 1,519 | 1,518 | 1,824 | 1,586 | 1,476 | 1,544 | 1,500 |
| Margin | 155 | -9 | 42 | 51 | 81 | 1,444 | 1,074 | 119 | 62 | 81 |
| | | | | | | | | | | |
| West Europe | | | | | | | | | | |
| Production Cost | 1,657 | 1,663 | 1,637 | 1,636 | 1,668 | 1,768 | 1,996 | 1,717 | 1,651 | 1,661 |
| Margin | 101 | 1 | -141 | -190 | -184 | 1,164 | 307 | -233 | -68 | 65 |
| Mainland China | | | | | | | | | | |
| Production Cost | 1,204 | 1,210 | 1,151 | 1,166 | 1,174 | 2,220 | 1,414 | 1,255 | 1,203 | 1,296 |
| Margin | -28 | -27 | -6 | 9 | 7 | 313 | 62 | 62 | -3 | 17 |

Note: Production cost includes variable and fixed costs, by-product credits; freight is accounted for in margin calculation (if applicable); price basis low end of monthly price range (DDP United States, DDP W. Europe, DDP China).

Source: Chemical Market Analytics by OPIS



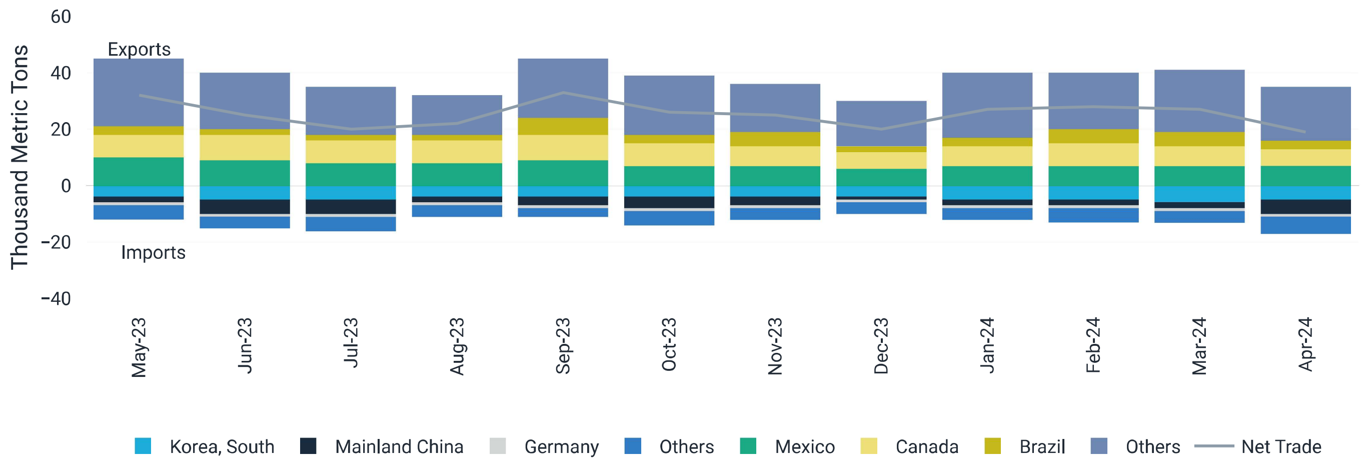
## North America

### Prices & Economics

Formula based polyol pricing will decline from the highs of March and should find a new lower level for the second half of 2024.

Based on feedback from market participants, polyol prices for June are little changed from May. Chemical Market Analytics assessed rigid polyether polyols prices for May ranging between 92-97 cents per pound (cpp) or $2,028-2,138 per mt. Flexible polyether polyols were evaluated within the range of 75-85 cpp or $1650-1875 per mt. Polyester polyol prices were reported to be in the range of 92-97 cpp or $2,028 to $2,138 per mt.

United States: Polyether Polyols Trade




Note: HS Code 390720, 390729

Source: Chemical Market Analytics by OPIS



### Supply / Demand

There is an ample supply of all grades of polyol in the market. It has been reported that Dow Chemical has been offering buyers polyols from the Sadara, Saudi Arabia, complex. This is presumably part of a market development effort, in advance of the closure of the Freeport PO facility in 2025. Supplies of EO containing polyols appear to have recovered from the tightness earlier in the year. But the supply/demand remains finely balanced for these polyols due to the tight supply of high purity Ethylene Oxide e.g. polyols for molding and memory foams.

It was expected that Dow would restart their EO plant in Plaquemine, Louisiana which had been damaged in an explosion and fire, by the end of June. However, there has been no update provided on the plant status and there are concerns that the restart will be delayed. A Chemical Safety Bureau investigation is on-going and may make recommendations impacting plant operations.
So long as this tight situation persists, converters would be well advised to review their inventories of EO containing polyols and maintain adequate buffer stock against possible supply disruptions.

The key polyether polyol production figures published by the American Chemical Council to the end of May, are available. Total production in the NAFTA region was 1,278 mm (million) lbs, an increase of 1% over 2023. Total sales and internal consumption was 1,161 mm lbs, approximately the same as for 2023. Total domestic sales to NAFTA was 979 mm lbs, approximately the same as for 2023. Total exports outside of NAFTA was 182 mm lbs approximately the same as for 2023.

By segments, the domestic sales to NAFTA of flexible polyols was up 5.7% year over year.
Domestic sales to NAFTA of rigid polyols was up 2.0% year over year and non-foam polyol sales contracted by 14.8% year over year.

The latest available data from the St. Louis Federal Reserve Bank (through to April) indicates a slight uptick in sales of furniture and home furnishings. Taken together with the above data for flexible foams, would suggest that some recovery in demand in the furniture and bedding sectors is underway.

Molding polyols for automotive applications are expected to hold at current levels. Demand for rigid polyols for spray foam insulation has been remarkably resilient and should remain so through the remainder of the construction season into late Autumn.

Note that an antidumping case has been filed with the US Department of Commerce, concerning the importation of certain fire-retardant materials from China, of importance for the rigid foam industry. A determination will not be made until later in the year, but there are already some concerns regarding the availability and cost of fire-retardant additives going forward.

### Forecast

The latest production and consumption figures seem to suggest that some recovery underway in the domestic furniture and bedding markets, resulting in increased production of slabstock polyols. This may be a return to the trend line after the COVID years and a disappointing 2023. However, operating rates throughout the value chain remain well below maximum capacity.

Propylene prices are forecasted to be stable for the rest of the year, so the scope for price increases is limited. However, the continuing tightness around EO supplies is likely to result is some above average increases for certain specialty polyols.

## Europe & Middle East

### Prices & Economics

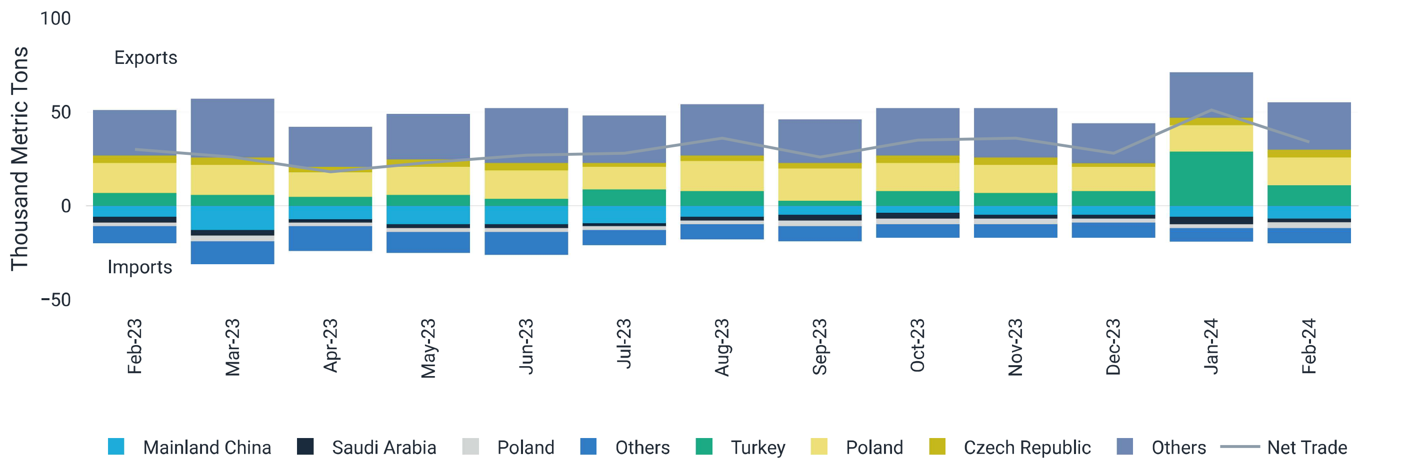
Polyether polyol prices continued their downward trend and for some market participants they fell hard, due to reduced demand and the start of Q3 negotiations. With an abundance of almost all grades of polyols, producers tried to keep market share and sell off products with discounts in order to reduce inventories. Consequently, it is the second month in a row where prices in Europe have fallen. Nevertheless, Europe remains the highest-priced region and very attractive to exporters.

Chemical Market Analytics assessed the pricing for conventional slabstock in a range of €1,450-1,550 per mt, down by €150 per mt in Europe for June, and rigid polyols in a range of €2,000-2,300 per mt, down by €100 per mt. CASE polyols were mostly trading between €1,700-1,900 per mt in June. The arbitrage from Asia declined in June and early offers for August were suggesting higher prices delivered from mainland China and South Korea.

The Middle Eastern polyol market saw stability in terms of prices as well as supply and demand fundamentals. South Korean and mainland Chinese producers and distribution companies continue to offer competitively priced polyols into Saudi Arabia and the GCCs, which is setting the floor price for the region. Demand for polyols locally was stagnant versus May, with the festive season and heat taking any growth momentum out of the market. As a result, Chemical Market Analytics assessed flexible polyether polyols at $1,450-1,550 per mt in June, flat from May.

The polyester polyol market in Europe remains in the doldrums with unchanged stable consumption into most end uses. Construction demand deteriorated in some countries while across Europe it was mostly stagnant. New housing permits as an example declined by 21% in Germany in May this year versus last year. Prices for polyester polyols in Europe have been in a band of €1,600-1,800 per mt for almost two years and show the oligopolist structure in a highly fragmented but stable consumption area. Despite feedstock price increases, in particular from diethylene glycol (DEG), polyester polyol's values were assessed by Chemical Market Analytics at €1,650-1,700 per mt in West Europe in June, down €50 per on the high end of the range, with offers for July showing a marginal decrease following the feedstocks that are expected to decline.

## West Europe: Polyether Polyols Trade

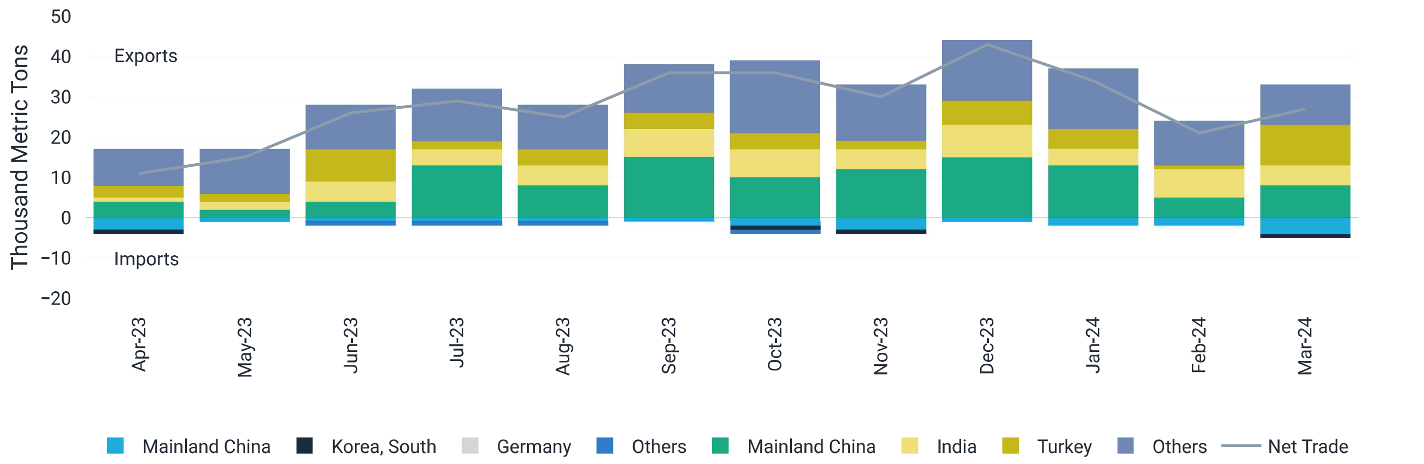



Note: HS Code 39072020, 39072920

Source: Chemical Market Analytics by OPIS



## Saudi Arabia: Polyether Polyols Trade




Note: HS Code 39072020, 39072090, 39072920, 39072990

Source: Chemical Market Analytics by OPIS



## Supply / Demand

The supply side of polyether polyols in the EMEA region moved from short in early spring to long in May and June. Planned outages did not occur and unplanned outages did not play a significant role, as all manufacturers have had an abundance of material, and stocks were described as high. Inventories not only at polyol producers but also downstream into the comfort area were described as more than sufficient. Consumption into the all-important furniture and bedding sectors has been disappointing as private households tend to not shop much in the summer months. Technical foams and to some extent the automotive industry is performing better, while the construction sector has started to cool off again. Renovation and building activities have clearly increased this year, but the drop in interest rates is not yet filtering through, and further drops are potentially required as well as time (usually it takes 6-8 months for effects to be noticeable in this important derivative sector for polyols). Appliances demand is typically stronger in Q2 and this momentum was weaker versus previous years. As imports of polyols from Saudi Arabia, South Korea, and mainland China are all still arriving, local production is certainly hindered. Polyether polyol customers were still in a hand-to-mouth status trying to lower inventories as the price structure has been and still is backwardated, while the low demand profile contributes to that behaviour as well. The flexible foam market is characterised by low margins and tough competition trying to protect market share.

As the European association for the flexible polyurethane industry met in Istanbul in June, it was stated that Turkey became the largest flexible foam market in the EMEA region. All isocyanates as well as polyols are imported and then manufactured into mostly mattresses, upholstery, but also into a growing automotive sector. The key takeaway during that conference was also that the polyols industry has not seen the light at the end of the tunnel, despite Q1 and 2024, in general, having been better versus 2023. Private spending is still hindered while household savings are rising, which should provide a basis for growth after the summer months.

All in all, from conventional slabstock to CASE and rigid polyols, all grades are more or less well supplied in Europe creating a low-performing downstream environment.

## Forecast

At the Europur Association annual meeting, most market participants were asked to provide their outlook for 2024. Most said more or less stable versus last year, with some indicating a slight increase versus 2023. This clearly shows how challenging the whole polyurethane industry is with low demand (after the strong post-COVID years) globally and an oversupplied situation driving Asian volumes of intermediates and finished products into Europe as well. In contrast to other regions though, Europe still shows potential for growth into key areas such as construction (likely with double-digit growth potential from 2025 onwards driven by the European Green deal and the push to use more insulation to lower CO2 emissions in housing, as well the boost for new buildings to due to the growing population across Europe and the lack of investment in 2023 and 2024).

Durable polyurethane (PU) driven goods is another potential growth sector. So far this year, we have mostly seen replacement investments being made, but there is strong pent-up demand in the hospitality sector which has not seen real investment since 2019. Further to that, European household saving ratios are only just behind those in Japan, while in the United States, spending behaviour has been a large contributor to GDP growth so far in 2024, in other words once Europeans start spending there is a lot of money to be spent.

Besides all of these positive aspects, one has to consider the next eight to ten weeks which are clearly offseason months due to summer holidays in Europe and the shift in spending away from manufactured goods towards the service sector. The Euros football tournament is also having a negative impact as it pulls spending away from upholstery or mattresses. Planned maintenance is not expected to reduce foaming or polyol capacity, while inventory levels are described across the polyol to PU industry as more than healthy. Consequently, the pricing curve for polyols is looking further downwards with the incremental ton imported from abroad marking the low end of the pricing idea.

The polyol, and hence the polyurethane, industry in Europe feels like it could be on the brink of a major disruption, with merger and acquisitions, rationalisation, and temporary idling of units and assets being a constant topic. It will be interesting to watch what impact the start-up of MOL's polyol complex in Hungary will have, as well as the private spending of European households which clearly could provide a stronger basis for the second half of 2024.

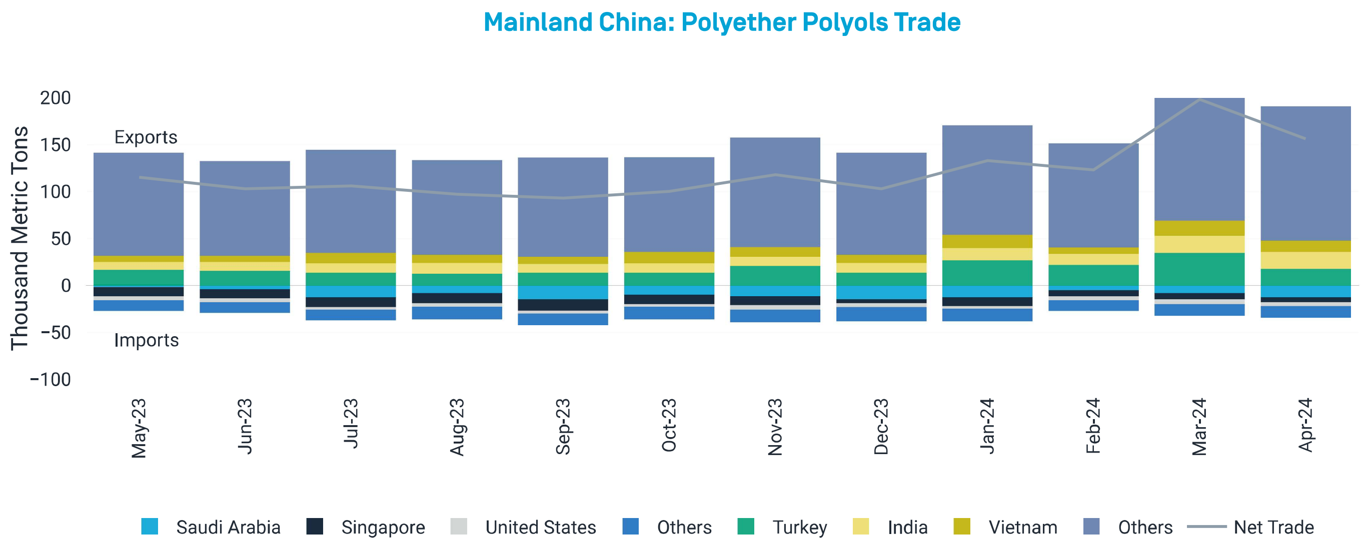
## Asia

### Prices & Economics

In June, the polyether polyols market remained subdued with offer prices declining week on week across the month. Overall market momentum remained bearish and there was little restocking carried out by buyers. Demand remained weak due to the seasonal lull. Sellers adjusted their offers in line with the movement of upstream propylene oxide (PO) prices. PO prices softened throughout most of June.

Domestic prices of flexible polyols in East China started the month at RMB9,050-9,300 per mt on a delivered basis, dropping week on week to RMB8,700-9,000 per mt at the time of writing, which is the lowest level seen in 2024. Meanwhile, the average flexible polyols prices also decreased from $1,105-1,136 per mt FOB mainland China in April to $1,060-1,097 per mt at the time of writing.

The rigid polyester polyols market saw similar momentum, with prices dropping from the beginning of the month at RMB9,700-9,800 per mt to RMB9,350-9,500 per mt DDP East China at the time of writing. FOB prices also decreased from $1,209-1,215 per mt to $1,139-1,158 per mt at the time of writing.




Note: HS Code 39072090, 39072990

Source: Chemical Market Analytics by OPIS



### Supply / Demand

In mainland China, overall market momentum remained bearish, with little restocking activity taking place. The market was in a stalemate with most buyers preferring to wait on the sidelines and replenish minimal inventory at the lower end of the price range. Overall supply was abundant. Sellers adjusted and lowered their offers according to the softening trend in upstream raw material costs and to dispose of higher inventory levels. Demand remained weak due to seasonality.

Dow closed its polyether polyols plant at Nantou, Taiwan, China at the end of April this year. The plant was the only polyether polyols plant in the country with a capacity of 30 kt per year.

### Forecast

Looking forward, prices will likely stay soft amid lower raw material costs and abundant supply in the market. Producers are expected to maintain low operating rates due to high inventories and weak demand. Demand is anticipated to remain weak due to seasonality and persistent high on-hand inventories.

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