CIREC MONTHLY NEWS

Chemical Industry Reporting for Russia, regional partners, and Central Europe

Edited by Andrew Sparshott CIREC Limited
Telephone: +441202 959770 Email: support@cirec.net **Web:** www.cirec.net

Russia-Ukraine-Belarus-Kazakhstan-Uzbekistan-Azerbaijan Czech Republic-Hungary Poland-Romania-Serbia-Slovakia

Issue No: 385, 5 January 2023

Key points from this issue:

Central European petrochemical markets

- PKN Orlen increased ethylene production in the first ten months in 2022 to 352,800 tons against 266,700 tons in the same period in 2021
- Ukraine is seeking to increase its transit fee for oil flowing through the Druzhba which would act to costs of importers using this route
- Work has started on MOL's new 100,000 tpa propylene plant at Tiszaujvaros where structures are being established by the construction company Merkbau Zrt
- Poland imported 84,555 tons of styrene in the first ten months in 2022 versus 90,497 tons in the same period last year. The Netherlands reduced shipments to 49,213 tons

Central European polymer and organic chemical markets

- Propylene copolymer exports from Hungary dropped from 80,634 tons in Jan-Oct 2022 to 65,914 tons but homo grade PP increased from 76,410 tons to 80,887 tons
- Hungarian exports of HDPE dropped from 196,578 tons in the first three quarters in 2022 to 151,472 tons in the same period in 2021. LDPE exports declined from 87,867 tons to 69,632 tons
- Poland imported 512,793 tons of polypropylene homo grade in the first ten months in 2022 for a total value of €893.118 million
  Grupa Azoty Polyolefins has concluded a propane purchase agreement with Trafigura Pte. The value of benefits under the agreement will amount to approximately $250 million, in which supplies will secure over 50% of the company's demand for raw material in the period December 2022 to December 2024

Russian chemical production

- Russian ethylene production decreased slightly in the first ten months from 3.615 million tons in 2021 to 3.613 million tons whilst propylene dropped from 2.508 million tons to 2.267 million tons
- Russian propylene production dropped from 2.048 million tons to 1.886 million tons
- Russian production of synthetic rubber dropped to 1.271 million tons in the first ten months in 2022 from 1.414 million tons in the same period in 2021
- Russia produced 3.693 million tons of methanol in the first ten months in 2022 against 3.570 million tons in the same period in 2021

Eurasian chemical trade

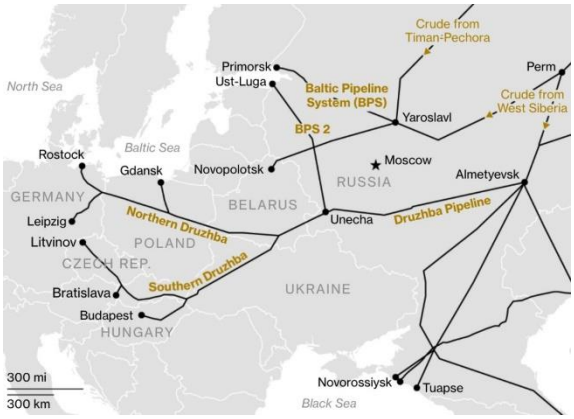
- The introduction of sanctions by the EU against Russian methanol exports to the region states that all transactions need to be completed by 8 January 2023
- Polyethylene accounted for 26% of SIBUR's respective revenues in 2022
- Exports of HDPE from Russia to China fell in value terms from $294.9 million in the first ten months in 2021 to $209.6 million in the same period in 2022
- Russian normal butanol production rose in the first ten months in 2022 to 122,900 tons
- Methanol exports from Azerbaijan totalled 409,281 tons in Jan-Oct 22 for $112.892 million

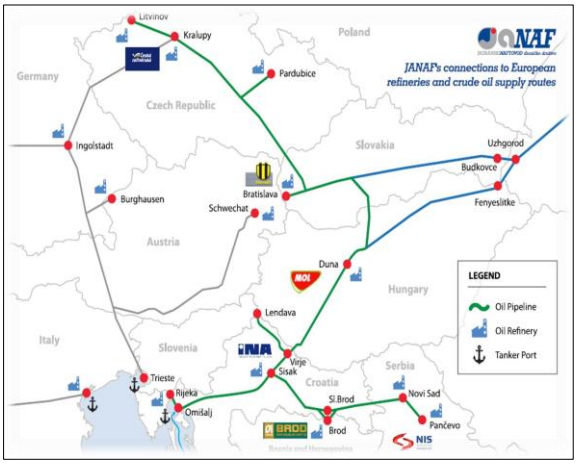
CENTRAL and SOUTH EAST EUROPE

Central European crude feedstock supplies

Crude pipeline tariffs & deliveries

Ukraine has announced that it plans to increase rates for the transit of Russian oil via the Druzhba pipeline by 18% in 2023. The local oil pipeline operator, Ukrtransnafta, stated that this was the result of increased costs resulting from the war in the country and the destroyed energy infrastructure. Oil is transported through Ukraine to the Czech Republic, Hungary and Slovakia. Tariffs are to increase by €2.1 per ton, to €13.6 compared to €11.5 from April last year and the price before that €8.6. The increase will be felt mostly by MOL and Orlen Unipetrol. Regarding the northern section of the Druzhba Belarus may also be willing to raise rates, following the example of Ukraine.





The southern branch of Druzhba pumps about 1-1.5 million tons of oil per month. In 2021 12 million tons were transported via this route, of which 5.2 million tons were received by Slovakia and 3.4 million tons each by the Czech Republic and Hungary.

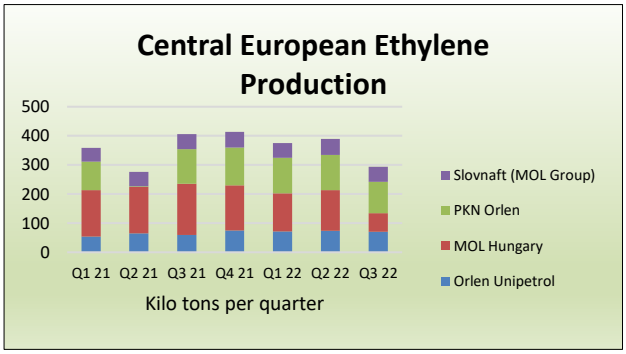
Germany and Poland have signed a deal aimed at securing the supply of oil to the Schwedt refinery after ending reliance on Russian oil. Berlin aims to eliminate imports of oil from Russia and has for months been working with Poland to try secure supply for Schwedt, which provides 90% of Berlin's fuel.

Both sides want to ensure Polish refineries in Gdansk and Plock as well as German refineries in Schwedt and Leuna are adequately supplied with crude oil, ministers from both countries said in a joint declaration. This did not provide any details on how the supply to Schwedt would be guaranteed. Schwedt is currently under German trusteeship but belongs to Rosneft.

Croatia's sole pipeline operator, JANAF, has signed a two-year contract with Serbia's NIS, majority owned by Gazprom Neft, for transporting crude oil to Serbia, despite previously announcing it would halt such transport as the EU tightened restrictions on Russian oil imports. Under the deal, valid for 2023 and 2024, NIS reserved JANAF's capacity for 6.2 million tons of crude. According to Croatian data, JANAF carried 2.3 million tons of crude to Hungary in 2021 but only 0.95 million in 2022, and Croatian officials say that Hungary has not expressed any formal interest in using the pipeline's full capacity.

In South East Europe a plan to build the Bourgas-Alexandropoulos oil pipeline could be revived by Bulgaria which has been supported by Lukoil. Sofia abandoned the Bourgas-Alexandropoulos oil pipeline in 2011, following a local referendum over environmental concerns.

Central European Olefins



Central European ethylene production

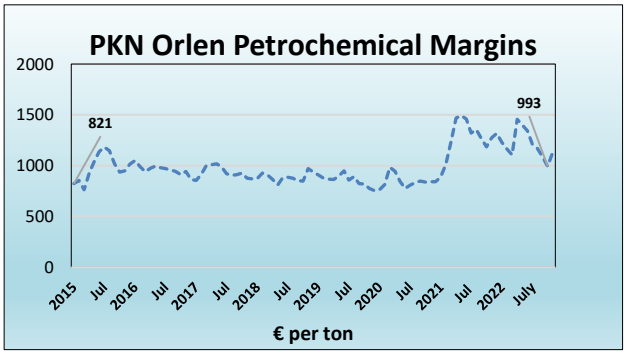
Ethylene production in the four countries that comprise the Visegrad Group region fell in the third quarter in 2022. This was mainly due to maintenance, mainly conducted at MOL's plants in Hungary and Slovakia. Production for the four countries totalled 293,600 tons in the period July to September 2022 against 389,200 tons in the second quarter and 405,700 tons in the same quarter in 2021. The second quarter in 2021 saw extended maintenance by PKN Orlen which resulted in a regional total production of 276,200 tons.

PKN Orlen Production (unit-kilo tons)		
Product	***Jan-Oct 22***	***Jan-Oct 21***
Ethylene	384.9	266.7
Propylene	352.8	271.0
Butadiene	53.0	32.3
Toluene	7.4	9.2
Phenol	36.0	37.7
Polyethylene	271.0	181.8
PVC	228.7	177.1
Polypropylene	274.5	240.6

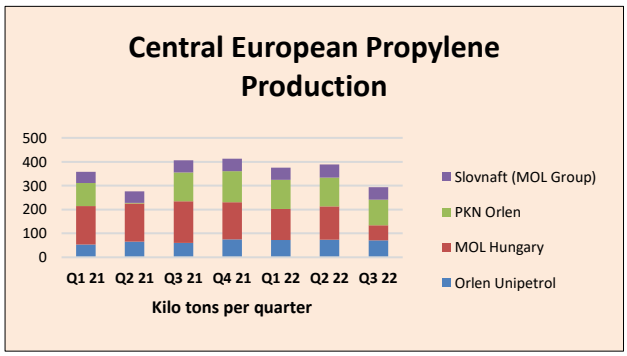
PKN Orlen-petrochemical production Jan-Oct 2022

PKN Orlen increased ethylene production in the first ten months in 2022 to 352,800 tons against 266,700 tons in the same period in 2021, whilst propylene rose from 271,000 tons to 352,800 tons.

The increase in olefin production enabled an increased in polymer production at Plock, including a rise in polyethylene output to 271,000 tons from 181,500 tons in January to October 2021 and for polypropylene from 240,600 tons to 274,500 tons. PVC production at Wloclawek increased from 177,100 tons to 228,700 tons.



Petrochemical margins for PKN Orlen remain relatively high despite the weaker performance in the third quarter. Positive margins help to offset the high energy costs which are affecting European petrochemical producers and represents one of the main concerns entering in 2023. PKN Orlen's model refining margin fell to $19.9 in November 2022 from $31.4 in October.



Central European propylene production

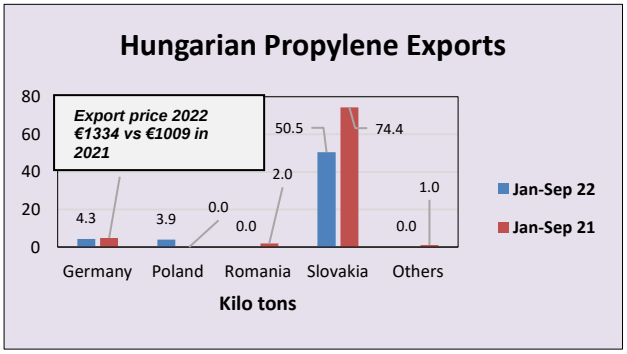
Propylene production in the Visegrad Group region fell slightly in the third quarter to 265,800 tons from 273,300 tons in the second quarter and 298,700 tons in the period July to September 2021. Despite the cracker shutdown at PKN Orlen in 2021 the production of propylene at the Metathesis plant helped reduce the impact of lower production of by-product propylene. Feedstock stability and energy costs will continue to represent the primary concerns at least for the first half of 2023.

MOL's Olefin Capacity	
Product	***Ktpa***
Ethylene	890
Propylene	550
Butadiene	130

MOL's new propylene plant

Work has started on MOL's new 100,000 tpa propylene plant at Tiszaujvaros where structures are being established by the construction company Merkbau Zrt. The propylene plant is being constructed on an area of about three hectares at the site of MOL Petrochemicals at Tiszaújváros. The plant will fit into the existing production infrastructure, providing raw materials for the polyol

plant, thus expanding the company's chemical production capacity. MOL Petrochemicals' new propylene plant will significantly cover MOL's chemical raw material needs.



Central European propylene trade

In the first three quarters in 2022 MOL's propylene export price rose to €1334 per ton against €1009 per ton in the same period in 2021. By volume exports fell in the first nine months to 58,666 tons versus 82.140 tons in January to September 2021, whilst due to the higher sales price meant revenues only dropped slightly to €76.215 million from €79.166 million. Spot prices of propylene rose 29% in the first quarter and then rose again in the second quarter before starting to soften in the third quarter. Exports to Slovakia are the main focus of Hungarian outward shipments of propylene, where volumes dropped from 74,400 tons in the first three quarters in 2021 to 50,500 tons in the same period in 2022. Propylene production by Slovnaft is not sufficient to maintain high utilisation rates for polypropylene and additional supplies need to be purchased.

Polish propylene imports Jan-Oct 2022

Imports of propylene into Poland dropped in the first ten months to 113,001 tons against 180,306 tons in the same period in 2021. This was due mostly to the higher production undertaken at Plock. Average prices increased from €902 per ton in January to October 2021 to €1290 per tons in the same period in 2022. Although propylene monomer has not been sanctioned by the EU, Russia has exported only small volumes to Poland in the past few months.

Polish Imports of Propylene (unit-kilo tons)		
Country	***Jan-Oct 22***	***Jan-Oct 21***
Lithuania	0.000	6.415
Bulgaria	6.019	0.000
Croatia	5.905	0.000
Germany	49.158	76.522
Russia	23.132	41.519
Ukraine	19.020	55.838
Hungary	3.918	0.000
Others	5.849	0.012
Total	113.001	180.306

To compensate for the drop in imports from Russia due to sanctions and Ukraine where production was suspended following the Russian invasion, Poland started to receive deliveries from Bulgaria, Croatia and Hungary. The propylene from Bulgaria came from the Bourgas refinery which is owned by Lukoil and has somehow avoided the effects of sanctions even if it is a Russian company. Shipments from Croatia and Hungary were coordinated by MOL. Propylene production at INA's Rijeka refinery in Croatia, which is a sub-division of MOL, started in late 2020 with a capacity of 84,000 tpa.

Polimery Police-propane agreement

Grupa Azoty Polyolefins has concluded a propane purchase agreement with Trafigura Pte. The value of benefits under the agreement will amount to approximately $250 million, in which supplies will secure over 50% of the company's demand for raw material in the period December 2022 to December 2024.

The plant with a production capacity of 0.5 million tpa of PP will soon be in the start-up phase. Along with the PP installation, the gas terminal will be launched. The first delivery from the US to the Police gas terminal arrived just before Christmas. The Guadalupe Explorer tanker delivered its 22,000 tons of propane to the port of Świnoujście in northern Poland with the first cargo for Polimery Police.

Czech Petrochemical Exports (unit-kilo tons)		
Product	***Jan-Oct 22***	***Jan-Oct 21***
Ethylene	11.094	19.725
Propylene	0.033	4.017
Butadiene	1.100	2.453
Benzene	30.256	39.211
Toluene	5.120	7.320
Ethylbenzene	92.081	106.783

Other recent developments that could help Polimery Police was the creation of the West Pomeranian Hydrogen Valley in November last year. Grupa Azoty, the largest producer of hydrogen in Poland, is strongly involved in the project.

Czech petrochemical trade, Jan-Oct 2022

Propylene imports into the Czech Republic dropped from 37,804 tons in January to October 2021 to 31,336 tons in the same period this year. Costs of propylene imports rose to €47.525 million against €36.338 million, with average prices rising from €1168 per ton in 2021 to €1517 in 2022. Czech exports of ethylbenzene declined in the first ten months in 2022 to 92,081 tons from 106,783 tons in the same period in 2021. All the ethylbenzene was shipped from Kralupy to Oswiecim in Poland, all within the structures of the Synthos Group. Benzene imports are required to cover ethylbenzene production and amounted to 64,665 tons in January to October 2022. Imports were largely shipped from Poland

Czech Imports of Propylene (unit-kilo tons)		
Country	***Jan-Oct 22***	***Jan-Oct 21***
Germany	17.413	13.747
Poland	4.931	11.056
Romania	5.253	3.099
Russia	1.220	0.000
Slovakia	0.993	5.770
Ukraine	0.524	3.388
Others	1.002	0.104
Total	31.336	37.704

Ethylene exports from the Czech Republic amounted to 11,094 tons in the first ten months last year against 19,725 tons in the same period 2021 whilst ethylene imports rose from 3,194 tons to 16,034 tons. Germany supplied 15,898 tons to the Czech Republic in January to October 2022, supplied from the Boehlen plant to Litvinov.

Czech Petrochemical Imports (unit-kilo tons)		
Product	***Jan-Oct 22***	***Jan-Oct 21***
Ethylene	16.034	3.194
Propylene	31.336	37.704
Butadiene	56.319	66.125
Benzene	64.665	65.986
Toluene	5.864	6.027
Styrene	13.407	57.195

Germany was the leading supplier of propylene to the Czech market in 2022, supplying 17,413 tons in the first ten months for €25.764 million. Other suppliers included Romania which shipped 5,251 tons from the Petromidia refinery for €7.528 million, followed by Poland shipping 4,931 tons for €6.155 million.

Czech imports of butadiene dropped from 66,125 tons in the first ten months in 2021 to 56,319 tons in the same period in 2022. Germany shipped 54,530 tons to the Czech market in January to October 2021, dropping to 46,637 tons in the same period in 2022.

Polish Styrene Imports (unit-kilo tons)		
Country	***Jan-Oct 22***	***Jan-Oct 21***
Belgium	8.251	7.048
Czech Republic	7.904	1.111
Finland	0.620	0.957
Netherlands	49.213	72.434
Germany	16.630	7.093
Others	1.938	1.854
Total	84.555	90.497

Central European styrene trade

Poland imported 84,555 tons of styrene in the first ten months in 2022 versus 90,497 tons in the same period last year. The Netherlands reduced shipments from 72,434 tons to 49,213 tons whilst imports from Germany rose from 7,093 tons to 16,630 tons.

Costs averaged €1591 per ton in the first ten months this year. The main importer of styrene monomer into Poland is Synthos which was fined in November by the European Commission for cartel arrangements for styrene purchases between 2016 and 2018.

Czech Styrene Imports (unit-kilo tons)		
Country	***Jan-Oct 22***	***Jan-Oct 21***
Belgium	1.694	16.287
Germany	0.180	3.059
Netherlands	9.441	34.900
Poland	1.724	2.918
Others	0.069	0.183
Total	13.407	57.195

Styrene imports into the Czech Republic saw a large drop in 2022, falling from 57,195 tons in January to October 2021 to 13,407 tons. At the same exports of styrene monomer from the Czech Republic increased from 1,019 tons in 2021 to 7,690 tons in January to October 2022.

Hungarian styrene imports (unit-kilo tons)		
Country	***Jan-Sep 22***	***Jan-Sep 21***
Germany	3.846	0.363
Italy	66.410	73.280
Netherlands	2.062	2.799
Others	0.000	0.070
Total	72.318	76.512

The emergence of exports since August 2022 is largely connected with lower rubber production at Kralupy. In September Synthos stated that it was reducing its production of ESBR at Kralupy and Oswiecim due to high energy costs.

In Hungary imports of styrene monomer totalled 72,318 tons in the period January to September 2022 against 76,512 tons in the same period in 2021. Italy supplied 66,410 tons this year which is directed by Versalis to its polystyrene plant in Hungary, down from 73,280 tons in January to September 2021.

Central European polyolefins

Polish PP Exports (unit-kilo tons)		
Type	***Jan-Oct 22***	***Jan-Oct 21***
PP homo	165.909	161.477
Polyisobutylene	0.263	0.478
Propylene copolymers	75.712	62.212
Other	5.107	2.847
Total	246.990	227.015
Polish PP Imports (unit-kilo tons)		
Type	***Jan-Oct 22***	***Jan-Oct 21***
PP homo	512.793	608.154
Polyisobutylene	3.080	3.718
Propylene copolymers	249.797	275.727
Other	17.282	20.495
Total	782.953	908.094

Polish polyolefin trade Jan-Oct 2022

Poland imported 512,793 tons of polypropylene homo grade in the first ten months in 2022 for a total value of €893.118 million. Russia provided 52,203 tons for €76.920 million, which was exceeded by Germany with 115.096 tons for €206,696. Imports from Russia were last undertaken in July following the imposition of EU sanctions. In 2021 Poland imported 155,805 tons of polypropylene homo grade from Russia for a total grade €198.656 million. Shipments from Russia accounted for 21% of total Polish imports.

Homo grade PP imports into Poland dropped from 608,154 tons in January to October 2021 partly due to higher production at Plock. Copolymer imports also fell from 275,727 tons to 249,797 tons, although price rises meant that costs rose from €459.485 million to €489.256 million. Germany was the largest supplier of propylene copolymers to the Polish market last year transporting 70,529 tons for €135.519 million.

Polish PE imports (unit-kilo tons)		
Type	***Jan-Oct 22***	***Jan-Oct 21***
LDPE	238.361	284.309
LLDPE	203.252	185.778
HDPE	377,236	353.624
EVA	14.683	16.151
EAC	162.183	150.225
Other	51.103	35.760
Total	1117.299	1025.847

Exports of polypropylene homo grade from Poland amounted to 165,909 tons in the first ten months in 2022 for €233.331 million. The largest destination for Polish exports was Germany, taking 37,359 tons for €61.544 million.

In the polyethylene sector imports into Poland totalled 1.117 million tons in the first ten months in 2022 against exports of 292,719 tons. Import costs amounted to €2.012 billion in January to October 2022 against export revenues of €485.450 million.

Polish PE Exports (unit-kilo tons)		
Type	***Jan-Oct 22***	***Jan-Oct 21***
LDPE	52.358	55.595
LLDPE	18.359	14.372
HDPE	197.582	172.183
EVA	3.052	1.882
EAC	17.237	17.972
Other	4.130	4.266
Total	292.719	225.197

LDPE and LLDPE comprised the largest category of imports, totalling 497,798 tons of which LLDPE amounted to 203,251 tons for €350.066 million. Imports of LLDPE were sourced mostly from West Europe, including France, the Netherlands and Germany. LDPE imports totalled 294,547 tons in the first ten months in 2022 for €542.342 million.

HDPE is the largest export category from Poland, shipping 197,582 tons in the first ten months in 2022 for €310.189 million. Imports still outstripped exports though, amounting to 377,236 tons in the first ten months for €636.022 million. Germany was the largest origin source of imports of HDPE into Poland last year and also the largest destination for exports.

Hungarian Exports of Polymers (unit-kilo tons)		
Product	***Q1-Q3 22***	***Q1-Q3 21***
LDPE	69.632	87.867
HDPE	151.472	196.578
EVA	0.087	0.074
EAO	0.279	2.599
Other PE	3.560	2.599
PP-Homo grade	80.887	76.410
Propylene Copolymers	65.914	80.634

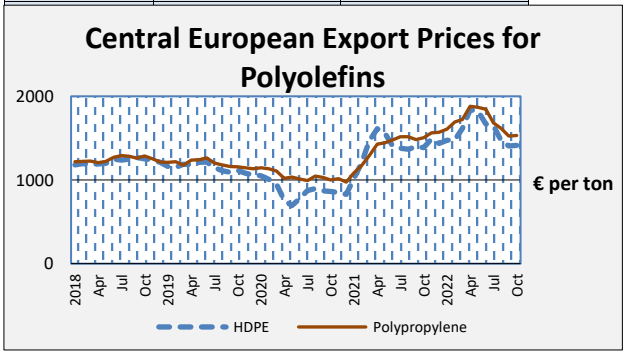
Hungarian polyolefin exports Q1-Q3 2022

Hungarian exports of HDPE dropped from 196,578 tons in the first three quarters in 2022 to 151,472 tons in the same period in 2021. LDPE exports declined from 87,867 tons to 69,632 tons. Polyethylene

exports were affected by MOL's lengthy maintenance undertaken in Q2 and Q3 2022. MOL reduced HDPE production at Tiszaujvaros in the first three quarters to 222,000 tons from 301,000 tons in the same period in 2021, which meant that exports dropped 68% of total production in 2021 to 65% in 2022.

Propylene copolymer exports from Hungary dropped from 80,634 tons to 65,914 tons but homo grade PP increased from 76,410 tons to 80,887 tons.

Czech Polyethylene Exports (unit-kilo tons)		
Product	***Jan-Oct 22***	***Jan-Oct 21***
LDPE	26.515	32.651
LLDPE	3.321	3.032
HDPE	301.857	274.803
EVA	2.720	5.057
Other	11.587	8.595
Total	346.000	324.138
Czech Polyethylene Imports (unit-kilo tons)		
Product	***Jan-Oct 22***	***Jan-Oct 21***
LDPE	104.146	106.097
LLDPE	18.656	20.157
HDPE	101.260	117.406



Czech polyethylene trade Jan-Oct 2022

Polyethylene and polypropylene values started to see some stability towards the end of 2022 with greater stability in the feedstock situation. Weakening demand fundamentals in the Central European region also exerted a bearish pressure on prices.

Polyethylene exports from the Czech Republic totalled 346,000 tons in the first ten months in 2022 against 324,100 tons in the same period in 2021.

Imports dropped slightly from 288,700 tons to 267,400 tons. HDPE exports increased from 274,800 tons to 301,900 tons whilst imports remain dropped from 117,400 tons to 101,300 tons. Export revenues rose from €462.3 million in the period January to October 2021 to €578.3 million in the same period in 2022, with HDPE revenues rising from €377.8 million to €477.2 million.

Polypropylene exports from Orlen Unipetrol dropped from 276,298 tons in the first ten months in 2021 to 259,503 tons in January to October in 2022 whilst values rose from $401.509 million to $456.298 million.

Central European Rubber Markets

MOL's Butadiene Exports (unit-kilo tons)		
Country	***Jan-Sep 22***	***Jan-Sep 21***
Czech Republic	4.088	9.572
Germany	5.035	17.312
Poland	28.190	35.835
Russia	0.0	1.752
Total	37.313	64.571

Polish Butadiene Imports (unit-kilo tons)		
Country	***Jan-Oct 22***	***Jan-Oct 21***
Austria	25.922	34.839
Czech Republic	0.952	5.076
France	3.439	0.000
Germany	19.034	0.000
Hungary	30.247	41.049
Others	0.005	0.000
Total	79.599	103.017

Butadiene trade Central Europe

In the Central European region Hungary is the only net exporter with most countries dependent on imports. MOL's butadiene exports dropped from 64,371 tons in the first three quarters in 2021 to 37,313 tons in the same period this year. Exports were down mostly due to lower production at Tiszaujvaros and internal processing.

Both Poland the Czech Republic are net importers of butadiene, with Synthos acting as the main buyer in both countries.

Czech imports of butadiene dropped from 52,814 tons in the first eight months in 2021 to 48,329 tons in the same period in 2022. Germany shipped 44,377 tons in January to August 2021, dropping to 41,613 tons in the same period in 2022.

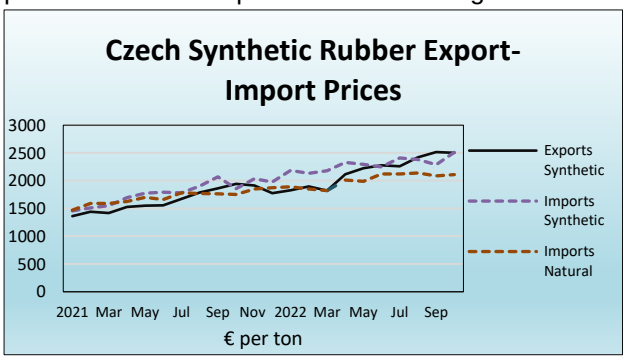
Butadiene imports into Poland dropped from 103,017 tons in the first ten months in 2021 to 79,599 tons, the fall largely due to increased production at Plock. Demand for butadiene at Oswiecim was expected to fall in September and October due reduced production by Synthos to higher production costs.

Synthos stated that it could no longer operate its ESBR production at full capacity due to unsustainable and unpredictable utility costs and was therefore reducing utilisation by around 30%.

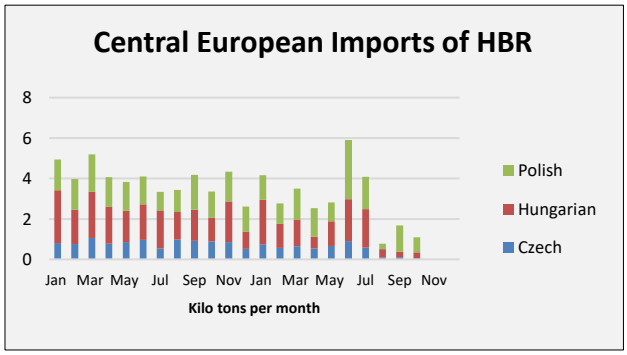
In order to develop greater integration Synthos is working on its contract concluded with Air Liquide Engineering and Construction in 2021 in order to construct a new butadiene extraction unit at Plock with a capacity of 120,000 tpa. Furthermore, for 2026 Synthos is building project to build a 40,000 tpa bio-butadiene plant at Oswiecim. The project is aligned with Synthos goals to transition from the current 100% fossil-based to 100% bio-based synthetic rubber, in line with market requirements.

Central European rubber trade

After a gradual rise in synthetic rubber prices for the Central European region from the start of 2021 prices in the fourth quarter started seeing noticeable declines, partly due to feedstock factors and partly due to demand patterns. Synthetic rubber prices dipped in December as butadiene continued to fall in price, particularly affecting styrene butadiene rubber. Nitrile butadiene rubber was the only commodity where prices remained stable. Although synthetic rubber prices had risen above natural rubber prices for large parts of 2022, as illustrated in the graphic opposite, towards the end of the year the reverse trend was developing with natural rubber prices starting to rise.



Prices for synthetic rubber have come under pressure or at least stopped rising despite the introduction of EU sanctions on Russia which has traditionally been an important supplier to Central Europe. Those products affected mostly include butadiene rubber and particularly halogenated butyl rubber (HBR) where Russia has dominated most of the market share in Central Europe over the past decade. Poland had previously depended almost exclusively on Nizhnekamskneftekhim for supplies of HBR, purchasing 10,424 tons in the first ten months from a total 10,917 tons.



The Czech Republic has been slightly more diverse in suppliers of halogenated butyl rubber, but still imported 3,571 tons from Russia of the total 4,934 tons imported in January to October last year. From August to October specifically the Czech Republic imported only 286 tons of HBRs, none of which came from Russia, whilst 198 tons of the total 275 tons imported by Poland came from Russia.

Polish Synthetic Rubber Imports (unit-kilo tons)		
Product	***Jan-Oct 22***	***Jan-Oct 21***
ESBR	11.600	18.762
Block SBR	35.950	52.068
S-SBR	12.165	12.753
Butadiene Rubber	50.810	37.586
Butyl Rubber	3.134	2.835
HBR	12.433	14.214
NBR	11.919	12.923
Isoprene Rubber	26.704	32.193
EPDM	39.112	32.193
Others	103.759	80.264
Total	307.586	295.791

Imports of butadiene rubber from Russia into Poland in the first eight months totalled 19,969 tons for €35.692 million, from a total of 50,729 tons for a total of €108.722 million. Imports from Russia for October amounted to 1,556 tons from a total of 6,209 tons, although the Russian sources should theoretically not be present. Butadiene rubber sources are far more diverse than halogenated butyl rubber as it is a much larger market by volume.

The Czech Republic imported a total of 25,603 tons of butadiene rubber in the period January to October 2022 for a total of €63.184 million, of which Russia supplied 10,199 tons for €19.892 million. The Czech Republic is much larger exporter of butadiene rubber, shipping 90,795 tons in the first ten months last year for €190.200 million, up from 88.192 tons in January to October 2021 for €135.619 million. The largest destination for Czech exports of butadiene

rubber is India to where 19,261 tons was shipped in the first ten months in 2022 against 18,217 tons in the same period in 2021.

Hungarian Exports of Synthetic Rubber (unit-kilo tons)		
Product	***Q1-Q3 22***	***Q1-Q3 21***
SBR	21.112	9.654
HBR	8.083	11.000

Hungary imported a total of 33,204 tons of butadiene rubber in the first nine months in 2022 for a total value of €69.805 million, of which Russia supplied 13,102 tons for €25.004 million. Imports of halogenated rubber totalled 11,133 tons in the period January to September 2022 for a total value of €31.116 million, of which Russia supplied 9,378 tons for €25.837 million.

Czech Exports of Butadiene Rubber (unit-kilo tons)		
Country	***Jan-Oct 22***	***Jan-Oct 21***
China	1.819	1.944
Germany	4.531	2.594
Spain	2.866	1.505
France	4.495	4.178
Hungary	4.887	4.355
India	19.261	18.217
Italy	4.275	2.572
South Korea	4.510	6.002
Poland	12.489	12.251
Romania	2.955	2.001
Slovakia	8.100	8.892
Turkey	4.390	4.706
US	4.821	4.206
Serbia	2.935	1.291
South Africa	1.758	2.677
Others	6.704	10.803
Total	90.795	88.192

Whilst Poland and Hungary have traditionally purchased large volumes of halogenated butyl rubber (HBRs) from Nizhnekamskneftekhim it has also exported large volumes. Hungary exported 8,083 tons of HBRs in the first three quarters in 2022 for €22.890 million, thus accounting for 73% of the imported volumes. Hungarian exports were previously shipped to Germany, Italy, China, the US, etc but these trading links have now been broken.

Although Nizhnekamskneftekhim as the sole Russian producer of HBRs is selling less product to the EU, the impact has not yet been significant on production rates.

Synthos 2023 prospects

Rising electricity and gas prices, coupled with slowing economic growth and supply constraints, could translate into declining prices in the styrene market and tighter butadiene spreads. Although gas prices have fallen from the middle of the year and are forecast to fall further in 2023, those numbers will be at least three times higher than in 2021.

Synthos Production Oswiecim (unit-kilo tons)		
Product	***Jan-Oct 22***	***Jan-Oct 21***
Polystyrene	58.6	58.8
EPS	85.1	89.7
Synthetic Rubber	225.1	230.2

In the first ten months in 2022 Synthos produced 225,100 tons of synthetic rubber at its Oswiecim plant against 230,200 tons in the same period in 2021. Following the reduction in capacity utilisation at its ESBR plants, total production of synthetic rubber by Synthos in Poland dropped to 17,100 tons in October which was the lowest volume since 2017.

The competitive position of Synthos is underpinned by an integrated production chain, which provides access to competitively priced feedstock, and self-sufficiency in electricity and steam in Poland and the Czech Republic.

Excluding operations in Germany, Synthos sources approximately 35% of butadiene needs from its jv with Unipetrol and around half of its styrene supply from Synthos Kralupy, and Synthos Dwory. A further 19% of butadiene is supplied by PKN Orlen and the benefits of integration will increase with ongoing investment in Plock.

Polish synthetic rubber trade, Jan-Oct 2022

Imports of synthetic rubber into Poland increased in the first ten months to 307,586 tons against 295,791 tons in the same period in 2021. Butadiene rubber imports rose from 37,856 tons to 50,810 tons and

EPDM increased imports from 32,193 tons to 39,112 tons. Import costs for synthetic rubber increased from €607.387 million to €741.361 million in January to October 2022, including an increase in butadiene rubber costs from €58.551 million to €108.722 million and EPDM costs increased from €60.063 million to €86.757 million.

Polish Exports of ESBR (unit-kilo tons)		
Country	***Jan-Oct 22***	***Jan-Oct 21***
Brazil	11.522	18.536
China	1.666	10.426
Czech Republic	1.769	1.593
Finland	2.490	1.928
France	2.788	3.290
Spain	8.161	4.113
Hong Kong	1.573	5.047
India	32.805	31.284
Japan	1.096	3.118
Germany	4.452	5.154
South Africa	9.437	9.832
Romania	1.511	2.804
Serbia	2.726	2.974
Thailand	1.698	5.547
Turkey	7.232	9.419
Hungary	3.752	3.132
Italy	2.283	5.196
Others	13.344	20.709
Total	110.306	144.103

Imports of synthetic rubber from Russia dropped sharply in the second half of 2022 due to sanctions, with halogenated butyl rubber most affected.

Synthetic rubber exports from Poland totalled 250,469 tons in the period January to October 2022 for revenues of €508.235 million. Volumes in 2022 dropped from 335,892 tons in the first ten months in 2021 for €521.484 million with prices rising from €1560 per ton to €2038 per ton.

ESBR exports amounted to 110,306 tons in the first ten months in 2022 dropping from 144,103 tons in January to October 2021. Only 8,143 tons was exported from Poland in October after Synthos reduced operating rates at Oswiecim in response to high energy costs. Average prices for ESBR increased in 2022 to €1982 per ton against €1496 per ton in the previous year.

The largest destination for Polish exports is India which rose from 31,284 tons to 32,805 tons followed by Brazil which dropped from 18,536 tons to 11,522 tons whilst China reduced inward shipments from 10,426 tons to 1,666 tons.

Central European Organic Chemicals

Polish Organic Chemical Imports (unit-kilo tons)		
Product	***Jan-Oct 22***	***Jan-Oct 21***
Acetic Acid	38.024	37.028
Acetone	6.000	9.255
Adipic Acid	9.700	8.734
Butadiene	91.075	102.691
DEG	20.422	23.437
DINP/DOP	18.644	18.833
Ethyl Acetate	12.534	19.292
Ethylene Glycol	43.783	44.443
Ethylene Oxide	10.457	22.280
Isopropanol	9.224	9.652
Maleic Anhydride	10.845	13.068
Methanol	807.856	562.252
Propylene	113.030	199.306
Propylene Glycol	17.300	21.467
Propylene Oxide	1.830	4.191
VAM	14.853	16.522

Polish organic chemical imports Jan-Oct 2022

In the first ten months in 2022 Polish trade in organic chemicals comprised €1.907 billion for exports and €4.304 billion in imports. Due to higher prices rather a significant change in volumes the deficit in organic chemical trade rose from €1.918 billion in January to October 2021 to €2.396 billion in 2022. Some products saw declines in 2022, such as propylene, butadiene, and ethylene oxide, all of which were due to higher production by PKN Orlen.

The largest increase in imports of organic chemicals this year has been for methanol where volumes rose to 807,856 tons in the first ten months in 2022 from 562,252 tons in the same period in 2021.

This significant rise was attributed directly to the war in Ukraine which has meant that Poland has been used as a transit route for Russian origin methanol for delivery to South East Europe. Aside methanol, most imported organic chemicals in the table opposite are consumed inside Poland.

Export revenues comprise less than 50% of import costs with few product areas where Poland maintains a net export position. PTA was one where export shipments totalled 351,374 tons in the first ten months in 2022 against 315,836 tons in the same period in 2021.

Polish Imports of Aromatics (unit-kilo tons)		
Product	***Jan-Oct 22***	***Jan-Oct 21***
Ethylbenzene	89.117	112.876
Paraxylene	34.150	70.771
Phenol	87.700	34.464
Phthalic Anhydride	26.887	30.709
PTA	1.864	58.416
Styrene	84.556	90.498
TDI	62.229	68.414
Toluene	20.047	19.528

Polish Phenol Imports (unit-kilo tons)				
Country	***Q4 21***	***Q1 22***	***Q2 22***	***Q3 22***
Finland	1.815	2.288	3.838	2.705
Germany	5.444	15.948	16.641	15.252
Russia	3.376	8.534	4.949	1.332
Spain	0.649	0.123	0.147	2.642
Total	11.284	26.893	25.575	21.931

Polish aromatic chemical trade Jan-Oct 2022

In the aromatics sector phenol imports into Poland recorded a large increase in the first ten months to 87,700 tons, of which 14,106 tons came from Russia. Supplies from Russia have however now been sanctioned by the EU and from August no deliveries were made to Poland. In the period August to October Imports from Spain started to fill the gap left by Russian exporters.

On a quarterly basis phenol imports amounted to 21,931 tons in the third quarter against 25,575 tons in the second quarter and 26,893 tons in the first quarter. Germany is the main supplier of phenol to the Polish market, shipping 15,252 tons in the third quarter.

In other product areas, styrene imports amounted to 84,556 tons in the period January to October 2022 versus 90,498 tons in 2021 whilst ethylbenzene imports dropped from 112,876 tons to 89,117 tons. Nearly all of the ethylbenzene imports come from the Czech Republic.

Paraxylene imports into Poland totalled 34,150 tons in the first ten months last year, down from 70,771 tons in January to October 2021. Russia's last shipment of paraxylene to Poland took place in April, amounting to 3,251 tons and taking the total for the year to 6,905 tons. Imports from Russia were replaced last year by inward shipments from Turkey, which amounted to 7,552 tons for the first ten months. Overall, for the period January to October 2022 imports of paraxylene from France into Poland totalled 16,584 tons.

Caprolactam was previously exported commodity from Poland but due to increased processing has now become a marginal net importer. In the first ten months in 2022 imports of caprolactam totalled 8,896 tons for €23.921 million, nearly all of which came from Germany.

Spolana Caprolactam Exports (unit-kilo tons)		
Country	***Jan-Oct 22***	***Jan-Oct21***
Belgium	5.437	4.478
Germany	7.509	12.627
Italy	12.792	12.888
Slovenia	3.043	2.902
Switzerland	2.246	1.592
Others	0.304	0.281
Total	31.330	34.769

Poland is a major exporter of benzene shipping 142,294 tons in the first ten months in 2022 against 84,157 tons in January-October 2021. Germany and the Czech Republic were the two largest destinations for Polish exports in 2022.

Higher caprolactam prices Jan-Oct 2022

Spolana exported 31,330 tons of caprolactam from the Czech Republic in the first ten months last year against 34,769 tons in the same period in 2021. Revenues from caprolactam exports increased from €62.308 million to €81.407 million, after average prices rose from €1792 per ton to €2612 per ton. Italy was the largest destination for Spolana's exports in 2022, with volumes to Germany reduced from 12,627 tons in January to October 2021 to 7,509 tons.

Hungarian imports of acrylonitrile (unit-kilo tons)		
Country	***Jan-Sep 22***	***Jan-Sep 21***
Belarus	0.000	***2.724***
Germany	1.999	***0.000***
France	6.017	***4.270***
Netherlands	19.912	***17.057***
Russia	1.985	***0.965***
Others	0.477	0.000
Total	30.390	25.015

Hungarian organic chemical trade 2022

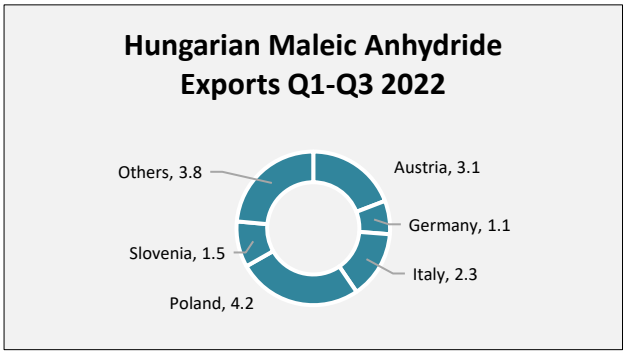
Hungary exports a range of organic chemicals including propylene, isocyanates, maleic anhydride, etc, whilst imports include styrene, methanol, acrylonitrile, etc.

Hungarian aniline imports (unit-kilo tons)

Country	*Jan-Sep 22*	*Jan-Sep 21*
Belgium	11.716	4.162
China	0.000	71.658
Czech Republic	62.085	74.618
Others	0.000	2.654
Total	73.801	153.092

Acrylonitrile imports into Hungary increased in the first nine months to 30,390 tons against 25,015 tons in the same period in 2021. Costs increased from €43.082 million to €67.150 million. The largest supplier of acrylonitrile to Hungary in the first three quarters last year was the Netherlands, accounting for 19,912 tons for €48.532 million.

Aniline imports into Hungary dropped in the first three quarters in 2022 to 73,801 tons from 153,092 tons in the same period in 2021. Imports of aniline from China amounted to 71,658 tons in the first three quarters in 2021 but long-haul imports have stopped since the start-up of BorsodChem's new aniline plant at Berente. Imports from BorsodChem's Ostrava plant continue to be imported for MDI production in Hungary.



Hungarian maleic anhydride exports Q1-Q3 2022

Maleic anhydride export prices from Hungary averaged €2.281 per ton in the first three quarters in 2022 against €1.565 for the same period in 2021.

Revenues from sales of 15,988 tons in January to September 2022 totalled €35.116 million versus 14,136 tons in the same period in 2021 for €23.148 million. Poland was the largest consumer of Hungarian maleic anhydride which is produced at Szazhalombatta. Continuing high costs of freight and overall logistics problems gave rise to both import and export constraints. The European market continued to experience logistics problems caused by the pandemic.

Polish imports of chemicals & polymers from Russia (unit-tons)			
Product	*Jan-Dec 21*	*Jan-Jul 22*	*Aug-Oct 22*
Methanol	467.624	551.932	191.793
PP-homo	155.805	52.623	0.049
Propylene	48.512	22.433	0.000
Paraxylene	40.085	6.905	0.000
Isoprene rubber	37.821	21.446	3.003
HDPE	32.442	13.670	3.069
Butadiene rubber	18.254	16.022	2.041
Halogenated butyl rubber	14.474	10.226	1.322
LDPE	13.746	6.013	0.000
Phthalic anhydride	12.280	4.576	0.160
Phenol	9.746	14.105	0.000

Polish chemical and polymer imports from Russia

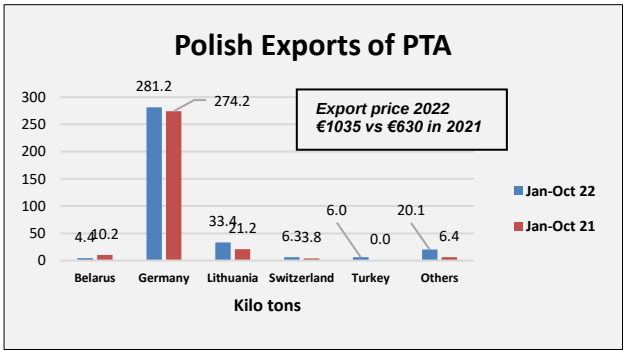
Imports of chemicals and polymers from Russia into Poland dropped in most product areas after July-August last year following the introduction of official sanctions by the EU, self-sanctioning by companies together with resulting logistical issues. Methanol shipments from Russia were one of the few product areas that actually increased in the second half of 2022, with Poland increasing its role as a trading link to South East Europe.

However, methanol will come under EU sanctions from 8 January and thus direct purchases from Russia will be no longer possible.

Polish PTA Exports (unit-kilo tons)		
Country	*Jan-Oct 22*	*Jan-Oct 21*
Belarus	4.409	10.198
Germany	281.180	274.202
Lithuania	33.382	21.227
Switzerland	6.275	3.797
Turkey	5.984	0.000
Others	20.144	6.411
Total	351.374	315.836

Polish PTA sales Jan-Oct 2022

PTA exports from Poland amounted to 351,374 tons in the first ten months in 2022 against 315,836 tons in the same period in 2021. PTA imports into Poland dropped in the first ten months to 1,864 tons versus 37,975 tons in the same period last year. Due to higher production at Wloclawek Poland reduced imports of PTA in the first ten months to 1,864 tons against 58,416 tons in January to October 2021.



Average prices for Polish PTA exports amounted to €1035 per ton in the first ten months against €630 in the same period in 2021. Germany remained the main customer for Polish PTA, taking 281,180 tons in January to October 2022 against 274,202 tons in the same period in 2021. Lithuania was the second largest destination for PTA export shipments, taking 33,382 tons versus 21,227 tons.

Polish solvent imports, Jan-Oct 2022

Isopropanol imports rose from 9,652 tons in January-October 2021 to 9,224 tons in 2022s year, with Germany providing the largest volume of 2,387 tons. Russia supplied 671 tons in the first four months in 2022, but similarly to some other products trading has been phased out.

Polish Imports of Acetic Acid (unit-kilo tons)		
Country	***Jan-Oct 22***	***Jan-Oct 21***
Austria	1.190	1.110
China	5.267	1.322
Germany	6.487	1.959
Norway	0.728	0.648
Serbia	0.000	12.527
UK	13.027	6.435
US	10.118	11.021
Others	1.208	2.004
Total	38.024	37.026

Acetic acid imports into Poland amounted to 38,024 tons in the first ten months in 2022 versus 37,028 tons in the same period in 2021. Import sources for 2022 included the UK with 13,027 tons for €15.248 million, the US with 10,118 tons for €12.332 million, and Germany with 6,487 tons for €7.817 million.

Ethyl acetate imports declined from 19,292 tons in January to October 2021 to 12,534 tons in 2022. Supplies were diversified between Belgium, Germany, UK and the Netherlands. Vinyl acetate imports dropped from 16,522 tons in January to October 2021 to 14,853 tons in 2022 for costs of €31.197 million.

Polish solvent exports, Jan-Oct 2022

Solvent exports from Poland are concentrated mostly on acetone and normal butyl acetate. Acetone exports in the first ten months in 2022 amounted to 15,749 tons against 14,894 tons in the same period in 2021. Exports in 2022 were spread largely though Europe, including the Czech Republic, Germany, Hungary, Italy and Romania.

N-butyl acetate export increased from 13,363 tons in January to October 2021 to 15,102 tons in the same period in 2022. Germany was the largest destination for Polish butyl acetate exports last year, amounting to 7,970 tons in January to October followed by Italy with 3,411 tons. N-butyl acetate is produced in Poland by Solvent Wistol at Oswiecim.

Central European Isocyanates

Central European isocyanates, Jan-Oct 2022

MDI imports into the Czech Republic totalled 29,662 tons in the first ten months in 2022 against 36,374 tons in the same period in 2021. Total costs for MDI imports dropped from €85.456 million in January to October 2021 to €81.587 million in the same period in 2022, with average prices rising from €2330 per ton to €2725.

TDI imports into Poland amounted to 62,470 tons in the period January to October 202 against 66,842 tons in the same period in 2021. Average prices increased from €2581 per ton to €2861.

Czech MDI Imports (unit-kilo tons)		
Country	***Jan-Oct 22***	***Jan-Oct 21***
China	2.538	2.232
Belgium	10.038	10.517
Germany	7.033	12.962
Hungary	6.625	6.328
Netherlands	3.063	2.197
Others	0.365	2.138
Total	29.662	36.374

Hungary remained the largest supplier to the Polish market, shipping 30,763 tons versus 31,558 tons in January to October 2021 whilst Germany reduced shipments from 18,600 tons to 16,050 tons. South Korea started supplying TDI to Poland in 2022, shipping 4,212 tons for €11.452 million. Other

important European markets for Hungarian TDI exports include Romania and Germany. Although European demand is faced by recessionary trends and slowly declining feedstock costs global capacity constraints may help to sustain prices.

Polish TDI Imports (€ million)		
Country	***Jan-Oct 22***	***Jan-Oct 21***
Belgium	4.195	2.522
Germany	44.475	46.812
Hungary	87.256	79.446
Netherlands	14.182	21.066
Saudi Arabia	6.957	7.165
South Korea	11.452	0.000
Others	10.381	15.513
Total	178.900	172.524
Ktons	62.470	66.842
Av price per ton	2864	2581

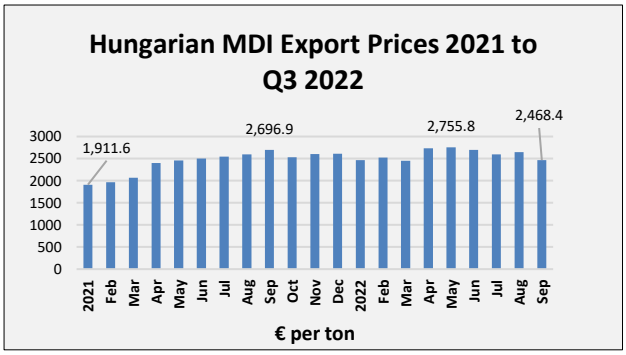
MDI imports into Poland dropped from 157,567 tons in the first ten months in 2021 to 123,068 tons in the same period in 2021. Import sources were diversified largely between Germany, the Netherlands, Hungary and Belgium. Despite the fall in import volumes costs increased to €323.672 million against €306.666 million, increasing the average price from €2349 per ton to €2593 per ton in 2022.

In terms of price direction MDI numbers started softening towards the end of the third quarter, dropping from the peak of €2755.8 per ton in May to €2468.4 per ton in September. For the same month September in 2021 prices had climbed to €2696.9 per ton due to post-pandemic growth but with a very different picture in 2022 prices have started to drop slightly.

Polish MDI Imports (€ million)		
Country	***Jan-Oct 22***	***Jan-Oct 21***
Germany	81.827	94.909
Netherlands	53.163	40.024
Hungary	83.373	87.568
Belgium	66.908	52.062
Saudi Arabia	6.606	8.137
Others	31.795	23.967
Total	323.672	306.666
Ktons	123.068	157.567
Av Price	2.630	1.946

Feedstock costs are falling also but demand is key concern. Due to this factor Covestro has paused development of a $1.5 billion MDI plant project originally intended for the US, with short-term demand expectations weakening due to slowing global GDP growth.

At the same time Covestro AG is going ahead with the construction of a new aniline plant at Antwerp. The plant is scheduled provisionally in early 2025. The expansion of aniline production is part of Covestro's global MDI strategy.



The aim is to strengthen the production network for MDI in view of a further increase in demand. In Brunsbüttel, Germany, Covestro already commissioned a new plant for the production of MDI using the particularly energy-efficient AdiP technology in 2020.

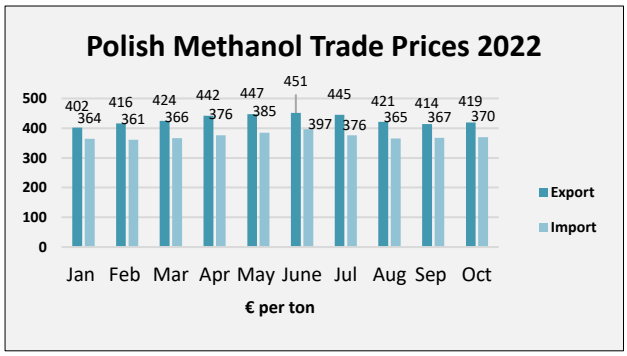
Central European Methanol

Polish Methanol Exports (unit-kilo tons)		
Country	***Jan-Oct 22***	***Jan-Oct 21***
Austria	63.880	22.371
Czech	65.786	51.832
Germany	99.614	73.997
Romania	40.362	0.000
Slovakia	44.498	3.499
Ukraine	15.181	0.402
Hungary	41.732	0.215
Others	10.873	0.484
Total	381.926	152.800

Central European methanol trade Jan-Oct 2022

Exports of methanol from Poland totalled 381,926 tons in the first ten months in 2022 for €164.054 million, based on an average price of €434 per ton. This compares against 152,800 tons in the same period in 2021 for $55.179 million at an average price of €361 per ton.

The transformation in the market dynamics has been quite significant with Poland developing large market shares from virtually nothing in Slovakia, Hungary and Romania and increasing market shares in countries such as Germany, the Czech Republic and Austria. Ukraine has also started to purchase methanol from Poland with 15,181 tons purchased in the period June to October last year. Even if the price is higher than Russian sources Ukraine will prefer to buy from the other suppliers. Although Poland exported a record amount in 2022 and should be able to maintain some of the new buying links in South East Europe, the EU sanctions mean that Polish traders need to seek out alternative sources.



Imports of methanol into Poland totalled 799,181 tons in the first ten months in 2022 versus 559,667 tons in the same period in 2021. Costs totalled €178.813 million in January to October. The average price for Polish imports comprised €373 per ton in the first ten months this year, and for Russia in particular €372 per ton.

From 8 January this year EU sanctions will apply to methanol from Russia and thus major changes are expected in the market structure in the next few months.

Polish Methanol Imports (unit-kilo tons)		
Country	***Jan-Oct 22***	***Jan-Oct 21***
Azerbaijan	1.138	0.000
Belarus	0.044	2.620
Finland	50.816	58.013
Lithuania	0.856	7.514
Germany	87.956	67.166
Netherlands	0.650	25.739
Norway	24.537	18.497
Russia	623.958	368.700
Others	9.227	11.418
Total	799.181	559.667
Av Price Per	372.600	343.000

Russia increased exports to Poland in the first ten months in 2022 to 623,958 tons from 368,700 tons. Norway increased shipments from 18,497 tons to 24,537 tons. Germany increased exports to Poland in the first ten months in 2022 to 87,956 tons from 67,166 tons in the same period last year. The highest price paid for imports and price charged for exports occurred in June at €397 and €451 per ton respectively. The largest residue between the import and export prices occurred in July at €75 per ton.

Czech imports of methanol amounted to 65,123 tons in the first ten months in 2022 against 77,114 tons in the same period in 2021. Russia accounted for 25,060 tons in January-October 2022 against 46,229 tons in the same period last year, followed by Poland which increased from 19,522 tons to 32,380 tons.

Czech Methanol Imports (unit-kilo tons)		
Country	***Jan-Oct 22***	***Jan-Oct 21***
Germany	5.693	9.672
Russia	25.060	46.229
Poland	32.380	19.522
Others	1.202	1.667
Total	65.123	77.114
Av € per ton	471.294	359.027

Prices per ton for methanol imports into the Czech Republic increased from €359 in the first ten months in 2021 to €471 in 2022.

Hungarian imports of methanol totalled 58,298 tons in the first nine months for a total cost of €27.258 million. Prices averaged €468 per ton in the first nine months against €328 per ton in the same period in 2021, when volumes were much higher at 89,946 tons for costs of €29.468 million. Imports from Russia fell from 36,465 tons in the first nine months in 2021 to 10,763 tons in the same period this year.

The drop in exports from Russia was due to war in Ukraine and the difficulties in shipping product by rail. The disruption to rail shipments has also affected imports from Slovakia where volumes declined from 31,187 tons to 11,881 tons and the opening of a new window to the north from Poland where imports increased from just 309 tons in January to September 2021 to 14,702 tons.

Hungarian methanol imports (unit-kilo tons)		
Country	***Jan-Sep 22***	***Jan-Sep 21***
Austria	1.285	2.773
Germany	8.961	1.467
Netherlands	6.233	1.776
Poland	14.702	0.309
Russia	10.763	36.465
Slovenia	3.044	0.457
Slovakia	11.881	31.137
Others	1.429	15.561
Total	58.298	89.946

Despite the logistical problems for South East Europe resulting from the situation in Ukraine, regional methanol capacity at Kikinda in Serbia and Lendava in Slovenia has not been able to make anything from this opportunity. The Kikinda methanol plant has not worked over the past year whilst production out of Lendava has been minimal.

RUSSIA

Russian chemical trade 2022

Imports of chemical products in 2022 into Russia are estimated to have fallen by around 20% against the imports of more than $30 billion In 2021. In many cases it is quite difficult to replace these falling imports. Most of the 79 products that were included in the sixth package of EU sanctions are not produced in Russia. Solving these shortages is only possible with the higher added value development of chemical technologies. Most of the advanced equipment has been imported for many decades in the absence of a proficient domestic chemical engineering sector.

An eighth package of EU sanctions against Russia was introduced on 5 October, including a new range of speciality chemicals but also widening the category of mainstream chemicals to include methanol which had previously been excluded. Methanol is the most important organic chemical exported from Russia by volume and value. Already products from the polymer and synthetic rubber sectors had been sanctioned by the EU in the fifth package, and the eight package has only expanded this list. Benzene is not included, but main derivatives such as caprolactam, phenol and styrene are included. Propylene monomer remains one of the few commodity chemicals in the organic sector which has not been placed under sanctions. Russia exports on average around 100,000 tpa of propylene.

Capability of Russian chemical engineering

Russia inherited a relatively weak chemical engineering sector from the dissolution of the USSR and over the past three decades Russia has not prioritised its development. Under the USSR chemical engineering was seen as a secondary function to chemical R&D and many of the chemical plants constructed performed poorly against Western analogues. In the 1980s numerous licenses were purchased from the West to construct modern chemical plants which provides the basis for Russian technology imports which have predominated ever since. Ethylene plants in Russia that were built using Soviet or East European technology were revamped, modernised, recalibrated, etc to the point where all the original equipment has been replaced.

Russia's chemical engineering sector is capable at this stage only able to use part of these resources. Russia's largest petrochemical complex ZapSibNeftekhim uses licensed Ineos and LyondellBasell technologies simply because there is no domestic alternative. Accordingly, Russia does not produce the stainless steel at the quality required for petrochemical plants and thus it needs to be imported. Much has been said in the past about the need to replace Western technology with the country's own engineering base, and whilst there has been progress its not been enough to displace the value of Western companies. The solution to these problems according to the Russian Ministry of Industry lies in a competent investment policy, the development of integrated logistics solutions, and the development of a research base. These points have been made before though with little impact.

Future for Russian chemicals industry

The ninth package of EU sanctions was introduced on Russia in mid-December, which included the closure of some loopholes for Russian chemical businesses with connections to military activity and some constraints on finances.

Even if the Russian armed forces pull out of Ukraine or driven out, international sanctions for the most part will probably stay in place for the foreseeable future. Self-sanctioning may be an even slower process to reverse as businesses that left Russia last year will have incurred significant losses. Most businesses will want to see a more democratic form of government, or at least one more trustworthy before investing again.

Although the Russian chemical industry performed relatively well overall in 2022, opportunities for growth have been significantly slowed down by constraints resulting from sanctions and loss of traditional markets.

This ranges from developing logistics for new markets to finding vital components for the production processes. In some production cycles at Russian chemical plants Western reagents or catalysts may difficult to replace, even though that might constitute as little as 1% of total costs. Some of the sanctioned fine chemicals or speciality products have been identified for production inside Russia but these plans can take several years to implement.

All of this of course is based on the assumption that Russia is not likely to change for many years, even if Putin is ousted there are no signs that the mindset of the next Russian leadership would be more conciliatory or perhaps less paranoid.

In the short term any slowdown or problems incurred for the Russian chemical industry may be seen in the context of the war in helping to accelerate the end of Russia's presence in Ukraine. In the long term it is surely not beneficial globally for Russia to disappear from the supply chain map, but that seems to be the direction of travel for now.

Russian Petrochemical Production (unit-kilo tons)		
Product	***Jan-Oct 22***	***Jan-Oct 21***
Ethylene	3,613.0	3,614.7
Propylene	2,267.2	2,507.7
Benzene	982.0	1,054.1
Styrene	588.9	591.8
Phenol	190.1	218.3

Russian petrochemical production Jan-Oct 2022

Russian ethylene production decreased slightly in the first ten months from 3.615 million tons in 2021 to 3.613 million tons in the same period in 2022, whilst propylene dropped from 2.508 million tons to 2.267 million tons. Demand for olefins for the production of derivatives came under pressure in the third quarter, as the impact of sanctions feed through to the market.

Russian Polymer Production (unit-kilo tons)		
Product	***Jan-Oct 22***	***Jan-Oct 21***
Plastics in Bulk	8,561.0	9,072.0
Polyethylene	2,867.0	2,866.0
Polystyrene	482.3	457.6
PVC	816.2	840.1
Polyamide	140.3	164.7
Synthetic Rubber	1,271.0	1,414.0
Synthetic Fibres	157.1	167.2

Russian polymer production Jan-Oct 2022

Polyethylene production in Russia followed ethylene production trends closely and edged slightly higher from 2.866 million tons in January to October 2021 against 2.867 million tons in the same period in 2022. Synthetic rubber was the product most affected in 2022 from the closure of European market for categories such as butadiene rubber and butyl rubbers. Hence, production fell from 1.414 million tons from January to October 2021 to 1.271 million tons.

Russian Base Chemical Production (unit-kilo tons)		
Product	***Jan-Oct 22***	***Jan-Oct 21***
Caustic Soda	1,054.5	1,067.1
Soda Ash	2,903.0	2,816.0
Ammonia	14,100.0	16,600.0
Nitrogen Fertilisers	9,766.0	9,373.0
Phosphate Fertilisers	3,527.0	3,504.0
Potash Fertilisers	6,139.0	8,906.0

Components, additives for Russian base chemicals production

Production of chemicals and polymers could become more difficult in 2023 as producers are required to replace key components for technical processes that are only available in countries that have imposed sanctions. Last year producers were largely dependent on usage of stockpiles of additives, catalysts, etc, but some of these supplies are running out and may prove hard to replace. Where replacements from China and Turkey are available prices have increased from suppliers in those countries.

Russian petrochemical project update

Nizhnekamskneftekhim-EP 600 project

The launch date of the new EP-600 complex at Nizhnekamskneftekhim has been reset to 2024 from the original completion date of 2023, which was disrupted by the loss of contractor. In July 2022 SIBUR decided to terminate the contract with Gemont, the Russian subsidiary of the Turkish Gemont, as the general contractor for the construction of the EP-600 complex. At the end of 2022 the project was estimated at around 70% of the construction schedule.

Completion date for Amur Gas Chemical Complex moved to 2026

SIBUR has moved its completion date for the Amur Gas Chemical Complex near Svobodny in the Russian Far East from Q2 2024 to sometime in 2026. Even this date is provisional at this stage; SIBUR's shareholders are linked to the Kremlin and tries to provide public statements that suggest all is well. However, there are non-SIBUR sources that suggest replacing Linde and Maire Tecnimont from the Amur project may be beyond SIBUR.

Since the introduction of sanctions in 2022 the departure of Linde from the construction of the Amur Gas Chemical Complex the project has slowed down in view of some large technical challenges. Equipment deliveries by river have been slower also, with the first batch this delayed from May to August. The first vessel started its river journey from the port of De-Kastri on 5 August, weighing 2,370 tons and originating from China.

Although most of the equipment for the Amur Gas Chemical Complex is fully available, the speed of installation of the pyrolysis unit is moving more slowly than before and reconfiguration is required for many aspects of the production facilities. The construction was set up to be synchronized with the gradual reaching full capacity of Gazprom's Amur GPP, which will supply ethane and LPG. With accurate information scarce it is not clear if these delays are holding up completion of the Amur Gas Processing Plant as the chemical complex was originally a key part of the construction plan.

Russian petrochemical markets

Russian Ethylene Production (unit-kilo tons)		
Producer	***Jan-Oct 22***	***Jan-Oct 21***
Angarsk Polymer Plant	173.1	168.6
Kazanorgsintez	513.7	461.0
Stavrolen	268.3	270.9
Nizhnekamskneftekhim	546.0	502.3
Novokuibyshevsk Petrochemical	34.4	38.9
Gazprom n Salavat	273.2	252.6
SIBUR-Kstovo	301.2	311.3
SIBUR-Khimprom	46.3	44.7
Tomskneftekhim	216.7	244.7
Ufaorgsintez	77.4	74.6
ZapSibNeftekhim	1162.7	1245.0
Total	3613.0	3614.7

Russian ethylene production, Jan-Oct 2022

Russian ethylene production totalled 3.613 million tons in the first ten months in 2022 against 3.615 million tons in the same period in 2021. Supply currently appears to be exceeding demand, with producers under pressure to reduce prices for merchant ethylene in the Volga-Urals region. ZapSibNeftekhim at Tobolsk produced 1.163 million tons in January to October 2022 down from 1.245 million tons in 2021.

Other plants compensated for the lower production at Tobolsk. In Tatarstan Nizhnekamskneftekhim produced 546,000 tons of ethylene against 546,000 tons in 2021 whilst Kazanorgsintez increased from 461,000 tons to 513,700 tons.

Other important ethylene producers included SIBUR-Kstovo which produced 301,200 tons versus 311,300 tons. In Bashkortostan Gazprom neftekhim Salavat increased production from 252,600 tons to 273,200 tons, whilst Ufaorgsintez increased production from 74,600 tons to 77,400 tons. Stavrolen at Budyennovsk reduced ethylene production to 268,300 tons against 270,900 tons in the first ten months in 2021.

Tomskneftekhim completed scheduled stop repairs in September and is switching to an increased overhaul interval from a two-year to a four-year cycle. Investments in the modernisation of equipment amounted to about 1 billion roubles. During the stoppage, Tomskneftekhim continued to implement digital tools, such as an ultrasonic detector for detecting leakage of gas media and video surveillance systems.

SIBUR-Neftekhim, ethylene oxide

SIBUR-Neftekhim expects to receive state support to expand capacities for the production of ethylene oxide and glycols at Dzerzhinsk in the Nizhniy Novgorod region. The company is reconstructing the production of ethylene oxide and glycols to increase its capacity to 1,067 tons per day. The productivity for equivalent ethylene oxide will be increased by 18.6% to 355.670 tpa, and for commercial ethylene oxide by 29% to 168,000 tpa. The production capacity of SIBUR-Neftekhim, as of July 2021, amounted to 130,000 tpa of ethylene oxide, 320,500 tpa of glycols, in addition to 35,500 tpa of acrylic acid.

Ethylene glycol market in Russia

The ethylene glycol market in Russia has undergone significant changes in the past year as a side-effect of Russia's invasion of Ukraine. Both exports and imports have been affected by sanctions, coupled with logistical difficulties resulting from port difficulties, etc.

Until the Russian invasion and occupation SABIC's MEG deliveries had been shipped to Kaliningrad for Ekopet's PET production for several years, but now Ekopet has been forced to purchase from domestic sources and SIBUR-Neftekhim in particular. When Ekopet could not receive MEG from SABIC. SIBUR-Neftekhim quickly replaced the Saudis, establishing monthly deliveries of up to 6,000 tons of the product.

SIBUR-Neftekhim Glycols Production 2021	
Product	***Volume (ktpa)***
MEG	247
DEG	29
TEG	1.5
PEG	0.850

Instead of exporting MEG, SIBUR-Neftekhim is now focused on the domestic market where it is now the major supplier. Ethylene glycols and ethylene oxide from SIBUR-Neftekhim allow supply capabilities even to unplanned large customers.

In the medium term, SIBUR's Dzerzhinsk site will remain the main production plant for ethylene glycol products for the domestic market. Together with plants at Nizhnekamskneftekhim and Kazanorgsintez Russian capacity for ethylene glycols ranges between 400-450,000 tpa. SIBUR-Neftekhim provides about two thirds of the total volume of ethylene glycols produced in the country. This includes MEG,

diethylene glycol, triethylene glycol and polyglycols (DEG, TEG, PEG), as well as ethylene oxide. The latter, in addition to being the raw material for glycols, is sold separately.

Russian Propylene Production (unit-kilo tons)		
Producer	***Jan-Oct 22***	***Jan-Oct 21***
Angarsk Polymer Plant	94.5	93.1
Kazanorgsintez	41.3	38.3
Lukoil-NNOS	234.1	210.6
Stavrolen	124.2	108.6
Nizhnekamskneftekhim	268.0	248.8
Novokuibyshevsk	24.2	53.1
Omsk Kaucuk	43.1	28.5
Polyom	151.7	158.6
Gazprom Neftekhim Salavat	119.9	98.0
SIBUR Kstovo	130.7	149.1
SIBUR-Khimprom	68.1	51.6
Tomskneftekhim	112.5	131.1
SIBUR Tobolsk	0.0	3.0
Ufaorgsintez	123.3	139.0
ZapSibNeftekhim	726.3	996.3
Total	2262.0	2507.7

Russian Propylene Exports (unit-kilo tons)		
Producer	***Jan-Oct 22***	***Jan-Oct 21***
Lukoil-NNOS	60.4	78.0
SIBUR-Kstovo	10.6	15.4
Angarsk Polymer Plant	13.8	4.2
Stavrolen	18.7	29.7
Total	103.4	127.3

Russian Propylene Domestic Sales (unit-kilo tons)		
Company	***Jan-Oct 22***	***Jan-Oct 21***
Angarsk Polymer Plant	23.7	30.5
SIBUR-Kstovo	104.6	110.8
Lukoil-NNOS	146.3	129.9
Stavrolen	25.7	3.6
Others	15.1	1.6
Total	328.6	277.8

Russian Propylene Domestic Purchases (unit-kilo tons)		
Consumer	***Jan-Oct 22***	***Jan-Oct 21***
Saratovorgsintez	138.4	117.0
Volzhskiy Orgsintez	9.7	8.6
Akrilat	20.0	5.2
SIBUR-Khimprom	31.8	43.5
Omsk-Kaucuk	5.5	12.4
Tomskneftekhim	2.2	3.3
ZapSibNeftekhim	90.0	53.6
Ufaorgsintez	10.7	8.3
Khimprom Kemerovo	6.1	5.6
Plant of Synthetic Alcohol	4.0	8.2
Others	7.6	0.8
Total	328.6	277.8

Russian propylene production, sales and exports, Jan-Oct 2022

Russian propylene production amounted to 2.262 million tons in the first ten months in 2022 against 2.508 million tons in the same period in 2021. The combined ZapSibNeftekhim and SIBUR Tobolsk plants reduced production from 999,300 tons in the first ten months in 2021 to 726,300 tons in 2022, the decline occurring due to extended maintenance. In Tatarstan Nizhnekamskneftekhim produced 268,000 tons of propylene in the first ten months in 2022 whilst Kazanorgsintez increased production from 38,300 tons to 41,300 tons.

In Bashkortostan Gazprom neftekhim Salavat produced 119,900 tons of propylene versus 98,000 tons whilst Ufaorgsintez reduced production from 139,000 tons to 123,300 tons.

In the Nizhny Novgorod region SIBUR-Kstovo reduced production of propylene from 149,100 tons to 130,700 tons in 2022. Lukoil-NNOS at Kstovo increased production from 210,600 tons to 234,100 tons.

Russian propylene sales Jan-Oct 2022

Propylene exports from Russia amounted to 103,400 tons in the first ten months in 2022 against 127,300 tons in the same period in 2021. Lukoil-NNOS reduced export shipments from 78,000 tons to 60,400 tons whilst SIBUR-Kstovo shipped 10,600 tons against 15,400 tons in January-October 2021.

Russian sales of propylene on the domestic merchant market amounted 328,600 tons in the first ten months in 2022 against 277,800 tons in the same period in 2021. The largest propylene supplier to the domestic market was Lukoil-NNOS, shipping 146,300 tons against 129,900 tons in January to October 2021. In the first ten months in 2022 ZapSibNeftekhim purchased 90,000 tons of propylene on the merchant market against 53,600 tons in the same period in 2021.

Russia's largest merchant consumer Saratovorgsintez increased purchases of merchant propylene from 117,000 tons last year when the acrylonitrile plant underwent an extended shutdown to 138,400 tons, and SIBUR-Khimprom at Perm reduced purchases from 43,500 tons to 31,800 tons.

Russian bulk polymers

Russian polyethylene production Jan-Oct 2022

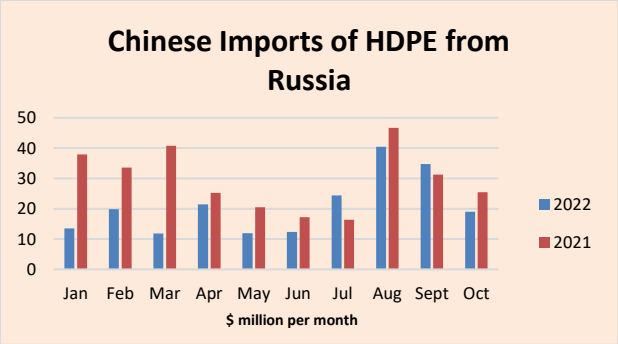
Russian polyethylene production totalled 2.867 million tons in the first ten months in 2022 against 2.866 million tons in the same period in 2021. Even though export activity to the EU countries was strong until July last year production was lower due to outages, particularly ZapSibNeftekhim at Tobolsk.

SIBUR share of polyolefins in total revenues

Polyethylene and polypropylene accounted for around 26% and 12% of SIBUR's respective revenues in 2022. ZapSibNeftekhim (part of Sibur) has commissioned an additional activator of chromium catalysts involved in the production of polyethylene. Subsequently, the company will be able to increase the production of high-tech grades of polyethylene by around 60% to 232,000 tpa. SIBUR also launched the production of a new brand of black pipe polyethylene. Grade PE 100 RC which is resistant to crack propagation.

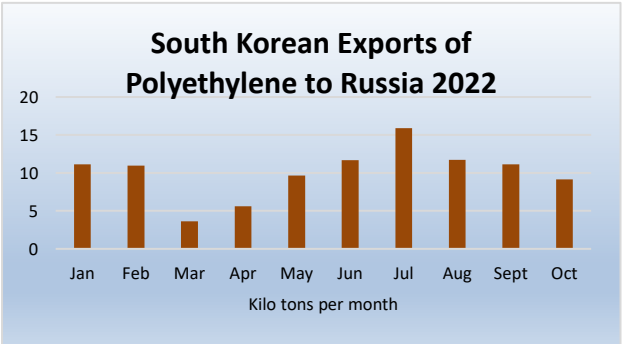
ZapSibNeftekhim increases production of polyethylene pipe grade

ZapSibNeftekhim reported an increase in the third quarter this year by 40% in the production of raw materials for the production of polyethylene pipes. By the end of 2022, SIBUR reported that the volume of production of all pipe grades of polymers rose by just over 50%. Furthermore as SIBUR reports, after passing the brand certification ZapSibNeftekhim will be able to produce up to 40,000 tpa of pipe grade polyethylene.



Russian HDPE exports to China Jan-Oct 2022

Exports of HDPE from Russia to China fell in value terms from $294.9 million in the first ten months in 2021 to $209.6 million in the same period in 2022, with Russia's share dropping from 4.8% of total Chinese imports to 3.3%. Although volumes into China were down overall Russian exporters lost some market share to other producers, largely from the Middle East.



Over 2022 China's HDPE and LLDPE markets have been in the midst of their lowest levels of growth for at least two decades. Thus, any gains for Russian polyethylene producers from extra sales to the EU and Turkey in 2022 were offset by the drop in purchases from China.

Russian imports of polyethylene from South Korea Jan-Oct 2022

Russian imports of polyethylene from South Korea totalled 100,685 tons in the first ten months in 2022 against 78,550 tons in the same period in 2021, with average cost prices rising from $1547 per ton to $1669. Imports rose from South Korea last year due to lower shipments from Europe. South Korea was the largest supplier of LLDPE to Russia in 2021, providing 39.4% of the total 61,000 tons of imported product. Other suppliers included Finland with 24% and the US with 15%, but volumes from both of those sources have declined this year.

Polyethyene and gas processing project at Ust Luga

The timing of the project for the construction of a complex for the processing of ethane-containing gas (KPEG) in Ust-Luga has been shifted due to the exit of Linde. KPEG is a project undertaken by Rusgazvydobuvannya and Gazprom in the Leningrad Region. The main technological processes are

combined at one site from primary gas processing with the separation of valuable components to the production of LNG and the production of polymers.

KPEG was initially intended to comprise Russia's largest gas processing enterprise (45 billion cubic metres per annum) and the largest LNG plant in Europe (13 million tpa), as well as the world's largest single polyethylene production capacity (up to 3 million tpa).

Capacities for Gas Processing and Gas Chemicals at Ust Luga	
Product	***Capacity***
Gas processing	45 bcm
LNG	13 million tpa
Ethane	3.8 million tpa
LPG	2.4 million tpa
Pentane-hexane fraction	0.2 million tpa
Polyethylene (various grades)	3 million tpa

Due to the withdrawal of Linde finding another technology supplier is imperative for the survival of the project. The decision on financing is awaiting clarification based on finding a new licensor. Even though power sources and other units are being installed at the Ust Luga site for a gas processing and gas chemical complex there are doubts whether the entire project can be completed.

Originally it was planned to launch the first stages of the gas processing plant and the LNG plant for liquefying natural gas in late 2023 and late 2024. No new time limits have been set but if there is any prospect of completion 2027 is about the earliest date for completion.

Licensed technology from Linde has been sanctioned which is difficult to replace, and thus whilst officially these projects are proceeding to schedule at the very least, they are likely to incur long delays from the original 2024 target. In the meantime, Ruskhimalliance, a joint venture of Gazprom and Rusgazvydobuvannya, filed an application with the Arbitration Court of St. Petersburg and the Leningrad Region to protect property interests in relation to Linde. That application has since been withdrawn, but it indicates the difficulties faced in undertaking this project which are directly the result of Russia's unprovoked invasion of Ukraine.

South Korean Exports of Propylene Copolymers to Russia		
	Jan-Oct 22	***Jan-Oct 21***
Ktons	27.262	33.977
$ million	45.192	56.593

Russian polypropylene trade Jan-Oct 2022

Russian imports of propylene copolymers from South Korea dropped in the first ten months to 27,262 tons from 33,077 tons in the same period in 2021. This is attributed to partly lower demand inside the Russian market and also a reorientation of Russian polypropylene producers towards the domestic market.

Russian producers are trying to compensate for sanctions and reduce dependency on other polypropylene imports for a wide range of industries and applications such as automotive, food packaging, etc.

The emergence of Azerbaijan as a copolymer supplier in 2021 has helped to reduce the impact of lost EU suppliers. Azerbaijan can produce up to 30,000 tpa of copolymers whilst Russian imports totalled 117,000 tons in 2021 of which EU suppliers provided around 33%.

EU sanctions for more plastic products to take effect on 8 January 2023

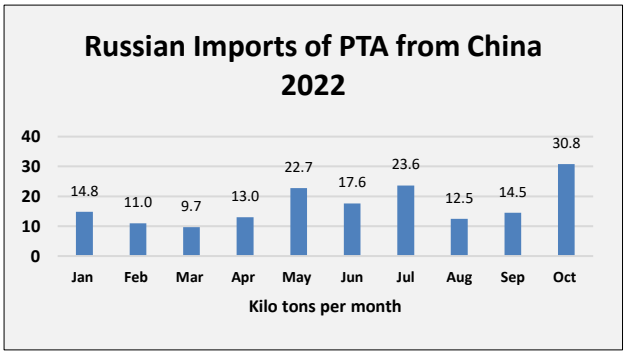
The European Union, as part of the eighth package of sanctions against Russia, banned from early in 2023 the import of primary polymers and products, including plates, sheets, films, tapes, pipes, hoses, etc. In 2021 Russia supplied a total of $948 million worth of these materials to Europe (an average of $80 million per month). The largest category of exports consisted of polymers $327 million, and in second place plates, sheets, films and tapes of plastics ($109 million). In accordance with the new European sanctions, the export of such products can continue until 8 January 2023 under contracts concluded by 7 October 2022.

SIBUR established the domestic market as its chief priority SIBUR for 2022 but as sanctions on sales to EU take effect the group is looking to develop new external markets. The group hopes to increase exports to the countries of East Asia and South East Asia but needs to create transit points and distribution centres.

Russian PET recycling

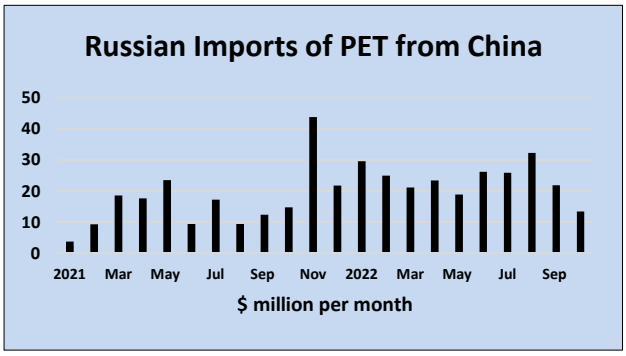
Bashneft increases paraxylene capacity

Bashneft (part of Rosneft) has increased the production of paraxylene and orthoxylene at the Ufaneftekhim refinery after replacing the mineral adsorbent with a synthetic adsorbent of a new generation. Paraxylene capacity has been raised from 165,000 tpa to 260,000 tpa. In 2016, Bashneft and SIBUR signed an agreement which entails that the Ufaneftekhim refinery supplies at least 120,000 tpa of paraxylene until 2036.



Ekopet raw materials

PTA imports from China continue to provide the main basis for feedstock supplies for Ekopet at Kaliningrad. Realistically there are not many alternatives. Regarding MEG supplies the Ekopet plant has been unable to receive MEG from SABIC since last spring, which until Russia invaded Ukraine had been the traditional supplier over the past few years. SIBUR-Neftekhim promptly replaced the Saudis by setting up monthly deliveries of up to 6,000 tons of the product.



Russian PET market and imports from China

The Russian PET market in 2022 experienced a trend where domestic companies were forced to develop than expected in order to replace international brands. Russia remains a net importer of PET, with China providing over 80% of imports. Russia imported 194,000 tons of PET from China in 2021 for $195 million, and whilst in 2022 volumes declined slightly values increased due to increased prices. An important trend in the consumer market is the fall in incomes of the population which may affect consumption this year.

Russian PET recycling and impact on PET market

Primary PET consumption in Russia is yet to show an impact from recycling in terms of volume mainly because recycled PET is being used in other areas of polymer production rather than PET bottles. Its main feature is of environmental benefit. In September last year Polief started to produce Vivilen rPET from secondary raw materials and after reaching its design capacity, the company will be able to produce up to 144,000 tpa of such granules.

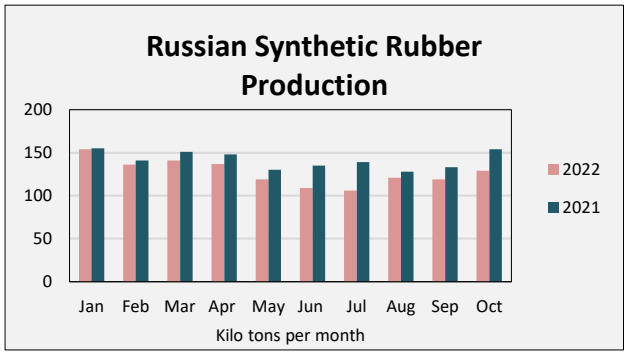
The reconfiguration of the Polief plant will increase its total capacity to 254,000 tons, thereby providing the domestic market with an additional 34,000 tpa and helping to meet the demand of local processors. Production of 34,000 tpa of flex is equivalent to around 1.7 billion used plastic bottles. Raw materials for the production of flex and its involvement in the granule Vivilen rPET can only be plastic transparent blue bottles from under the drinks, which undergo special processing.

PET-flex consumption market in Russia is estimated at 200-220,000 tpa of secondary raw materials. Due to the low volumes of collection and processing of secondary raw materials, the cost of such raw materials in Russia is higher than abroad. Regional operators have developed certain approaches to the selection of bottles that can be sent for recycling. For example, suitable bottles are processed at waste sorting complexes, as a rule, sorted by colour, and illiquid fractions (PET household chemicals) are also extracted from the PET container stream. The collected bottle in bales is sent for processing to flex suppliers.

Russian synthetic rubber

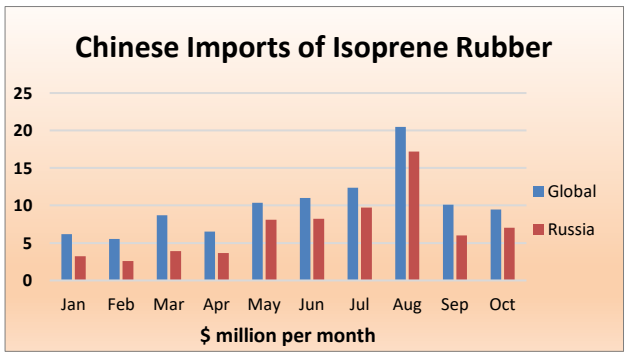
Russian rubber production and consumption Jan-Oct 2022

Russian production of synthetic rubber dropped to 1.271 million tons in the first ten months in 2022 from 1.414 million tons in the same period in 2021. Production has declined since the introduction of EU sanctions. October production levels stabilised after the declines in the summer months but was still down on the same month last year.

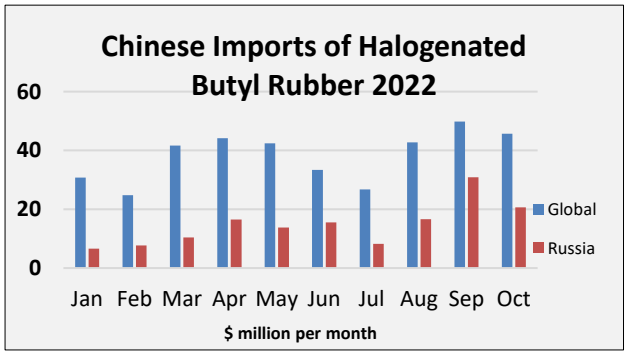


Russian exports of synthetic rubber

The US International Trade Commission (USITC) announced that it will not impose anti-dumping duties on butadiene-styrene rubbers from Russia and the Czech Republic. The USITC decided that the sale of these products in the US at current prices does not cause material damage to American industry.



As Russian exports of butadiene rubber and halogenated rubber to Central Europe are affected by logistics and sanctions, other regions such as China and Asia become more important for these products. Although not falling under EU sanctions, isoprene rubber exports to China from Nizhnekamskneftekhim have risen sharply last year by values and volume. Exports of halogenated butyl rubber to China also rose in 2022 as Nizhnekamskneftekhim tried to compensate for the loss of European business with more sales in the East.



Nizhnekamskneftekhim-supply concerns

After an incident at the synthetic rubber complex in mid-December at Nizhnekamskneftekhim, the market raised fears of a possible decrease in the supply of products for the domestic market and for exports to China. However, partly due to the problems encountered with European exports Nizhnekamskneftekhim had built up a reasonable inventory of isoprene rubbers and thus the market probably was not expected to recognise any shortages during the repairs. In addition, Nizhnekamskneftekhim itself reported the availability of warehouse stocks and the imminent launch of reserve capacities.

Russian leading producers of Synthetic Rubber

Country	*2021 (ktons)*	*2021 (%)*
Nizhnekamskneftekhim	704	47
Voronezhsintezkaucuk	346	23
Togliattikaucuk	197	13
Others	220	17
Total	1550	100

Nizhnekamskneftekhim is the largest producer of synthetic rubber in Russia, and isoprene rubber in the world. Production in 2022 amounted to 704,000 tons which accounted for 47% of total Russian production. The second place is occupied by Voronezhsintezkaucuk with 23% or 346,000 tons and thirdly Togliattikaucuk which produced 197,000 tons or 13% of total production. Other producers included the Sterlitamak based where isoprene rubber and SBR are produced, the Krasnoyarsk Synthetic Rubber Plant which produces nitrile butadiene rubber and Efremov Synthetic Rubber Plant which produces polyisobutylene rubber.

Russian Methanol Production (unit-kilo tons)		
Producer	***Jan-Oct 22***	***Jan-Oct 21***
Shchekinoazot	1273.9	814.4
Gazprom Methanol	573.1	688.8
Metafrax Chemicals	966.0	989.0
Akron	79.9	86.8
Azot Novomoskovsk	191.9	213.3
Angarsk Petrochemical	24.7	25.4
Azot Nevinnomyssk	96.0	106.7
Tomet	404.9	546.6
Ammoni	82.6	99.1
Totals	3693.2	3570.2

Russian Methanol Exports by Producer (unit-kilo tons)		
Producer	***Jan-Oct 22***	***Jan-Oct 21***
Azot Nevinnomyssk	4.5	5.1
Azot Novomoskovsk	70.3	78.1
Akron	4.9	6.8
Metafrax Chemicals	382.5	337.3
Gazprom Methanol	230.4	349.9
Tomet	120.2	198.1
Shchekinoazot	941.9	563.1
Ammoni	1.5	0.1
Total	1756.1	1538.5

Russian Methanol Exports by Destination		
Country	***Jan-Oct 22***	***Jan-Oct 21***
Belarus	200.728	105.820
China	81.552	0.000
Finland	631.998	656.956
Kazakhstan	31.959	19.971
Latvia	60.943	8.544
Lithuania	50.959	70.866
Netherlands	137.072	111.304
Poland	379.279	251.035
Romania	26.488	67.762
Slovakia	49.035	185.856
Turkey	96.885	6.423
Ukraine	11.916	49.937
Others	0.677	7.026
Total	1769.656	1543.613

Russian methanol market

Russian methanol production Jan-Oct 2022

Russia produced 3.693 million tons of methanol in the first ten months in 2022 against 3.570 million tons in the same period in 2021. Metafrax Chemicals at Gubakha produced 966,000 tons against 989,000 tons in January-October 2021, whilst Gazprom Methanol at Tomsk reduced production from 688,800 tons to 573,100 tons.

Tomet reduced production from 546,600 tons to 404,900 tons in January to October 2022 whilst Shchekinoazot increased production from 814,400 tons to 1.274 million tons. Shchekinoazot was the only Russian producer to increase production last year.

Also, in the Tula Oblast Azot at Novomoskovsk reduced production from 213,300 tons to 191,900 tons. Ammoni in Tatarstan reduced methanol production from 99,100 tons in the first ten months in 2021 to 82,600 tons in the same period this year.

Russian methanol exports, Jan-Oct 2022

Russian producer exports of methanol rose from 1.539 million tons in the first ten months in 2021 to 1.756 million tons in January to October 2022. Tomet exported 120,200 tons of methanol in the first ten months down from 198,100 tons in the same period in 2021.

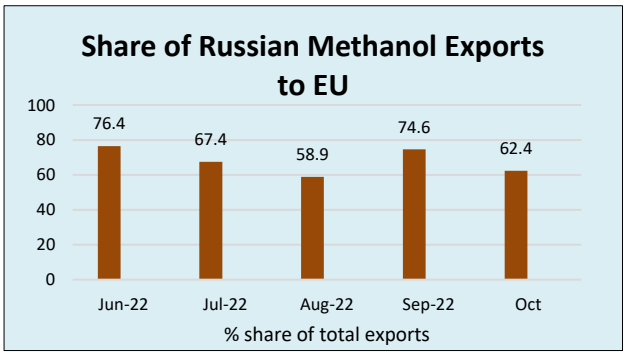
Metafrax Chemicals increased exports from 337,300 tons in January to October 2021 to 382,500 tons in 2022 whilst Gazprom Methanol reduced exports from 349,900 tons to 230,400 tons. The largest Russian exporter in the first ten months was Shchekinoazot shipping 941,900 tons versus 563,100 tons in January to October 2021.

Destination figures for methanol exports comprised 1.770 million tons for the first ten months versus 1.544 million tons last year. Finland accounted for 631,998 tons of Russian methanol exports in the first ten months against 656,956 tons in the same period in 2021. Poland increased deliveries from Russia from 251,035 tons to 379,279 tons whilst exports to the Netherlands rose from 111,304 tons to 137,072 tons. The overall rise in exports to the Netherlands was due to higher production and transhipment in 2022 from Tomet at Togliatti but these shipments stopped in the second half of the year. Direct exports to Hungary, Romania, Slovakia and Ukraine stopped earlier in 2022. Most of the methanol purchases made by those countries last year started in Poland. The largest Ukrainian purchaser Ukrgasvydobuvannya (which uses methanol in the extraction and transportation of gas) has stressed that the product has to be of non-Russian origin. From 8 January onwards Polish traders will be unable to access Russian methanol due to the introduction of EU sanctions.

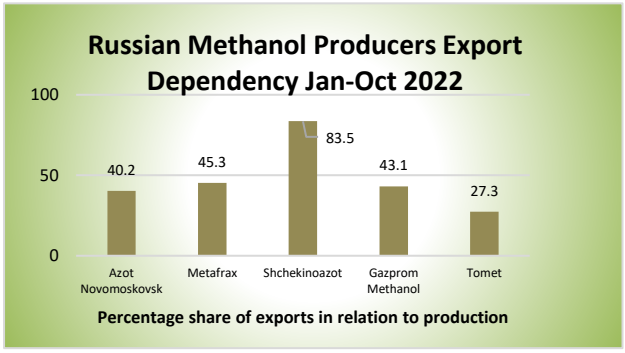
Market overview & sanctions

The introduction of sanctions by the EU against Russian methanol exports states that all transactions for contracts concluded prior and to 7 October 2022 need to be completed by 8 January 2023. This would clearly be a major setback for Russian producers, and the overall Russian market which is heavily

dependent on exports to the European countries. On average around 70% of exports are directed monthly to the EU. It is not feasible to be able to replace this trade, at least in the short term and probably even the medium term considering the geographical locations of the plants. New destinations for Russian exports this year have included China and Turkey, but volumes to both countries are limited by logistical hurdles. Most plants in Russia are located in the western parts of the country that make selling to China or the Far East difficult logistically and economically.



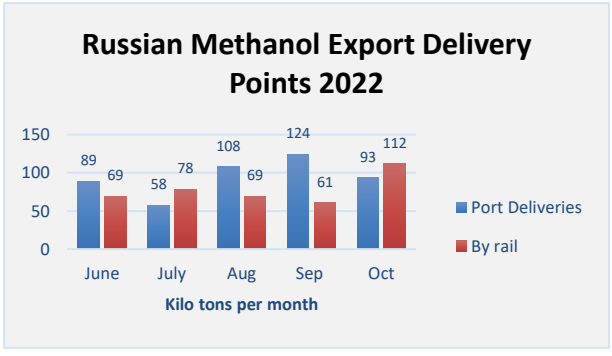
The share of the country's methanol exports to the EU remained significant last year measured against total exports, despite the situation in Ukraine. Although dropping to 58.9% of total exports in July, shipments to the EU rebounded in August following a resumption of deliveries to Finland. European markets provide the best profitability for Russian producers, the shortest lead-times, etc, but self-sanctioning has turned away some consumers particularly where alternative sources are available. Polish traders became very active in 2022 in sourcing Russian methanol for redistribution in Central and South East Europe.



Russian methanol exports and prospects for 2023

For the first ten months the Russian methanol market performed relatively under the conditions of war, sanctions and difficulties in doing business generally.

Domestic demand has held up on the surface, but consumption is showing signs of slowing and together with internal processing cannot provide a substitute for export activity. Production at Russian methanol plants weakened over the summer due to shutdowns, notably Metafrax. Although August saw higher volumes the industry is now faced with challenges in the face of EU sanctions.



Russian Methanol Supply/Demand Balance (unit-kilo tons)		
	Jan-Oct 22	***Jan-Oct 21***
Production	3693.2	3570.2
Exports	1754.0	1416.8
Domestic	1325.3	1344.2
Market Balance	613.9	809.3

Shchekinoazot is the methanol producer most vulnerable to restrictions on exports to the EU. Overall, the company exported 73.7% of its production in the first ten months in 2022, with Poland receiving the largest amount of its exports by rail. Shchekinoazot does use methanol for formaldehyde and resin derivative production, but this accounts for only a small percentage of its market sales. New units for formaldehyde derivatives are planned to start construction shortly, but If exports fall as expected the company will most probably have to shut at least one of its three plants.

Metafrax Chemicals exported 44.9% of its production in the first eight months in 2022. Although still important the company also processes large volumes internally in addition to selling on the domestic merchant market. In the event of reduced exports or restrictions to exports Metafrax will most probably adjust its utilisation rate downwards. To what degree would depend on how the domestic market performs.

Metafrax completion of paraformaldehyde plant

Metafrax Chemicals has completed the construction and installation of the paraformaldehyde unit at Gubakha. Commissioning and preparation of the facility for commissioning are underway. The production capacity of the plant is 30,000 tpa. The unit will produce paraformaldehyde intended for the manufacture of plastics, paints, resins, adhesives, and insulating materials. The product is also widely used in the production of chipboard and MDF, in the manufacture of herbicides in agriculture and antiseptics in animal husbandry. Most of the paraformaldehyde production is intended for sale on the domestic market. Paraformaldehyde has been listed under EU sanctions.

Russian Methanol Domestic Sales (unit-kilo tons)		
Producer	***Jan-Oct 22***	***Jan-Oct 21***
Azot Nevinnomyssk	16.1	19.3
Azot Novomoskovsk	111.7	133.4
Metafrax Chemicals	344.0	358.1
Gazprom Methanol	294.9	309.2
Tomet	275.1	311.1
Shchekinoazot	240.0	155.2
Ammoni (Mendeleevsk)	42.1	57.5
Total	1323.8	1343.9

Shchekinoazot delayed formalin project

The timing of the Shchekinoazot project has been delayed for the construction of the second unit of concentrated low-methane formalin KMMF-110, with a capacity of 110,000 tpa and the production of urea and melamine-formaldehyde resins KMFS-220, with a capacity of 220,000 tpa. The largest part of the main equipment has arrived from Shanghai, but the project is being delayed over market uncertainties even if the builders have already begun to install the foundation for the reactor of the formalin installation.

Russian methanol domestic sales, Jan-Oct 2022

Merchant sales of methanol on the Russian domestic market amounted to 1.324 million tons in the first ten months in 2022 against 1.344 million tons in the same period in 2021. Tomet reduced sales from 311,100 tons to 275,100 tons whilst Gazprom Methanol reduced sales from 309,200 tons to 294,900 tons. Metafrax Chemicals reduced shipments to the domestic market from 358,100 tons in January to October 2021 to 344,000 tons in the same period in 2022.

Russian Methanol Purchases by Consumer (unit-kilo tons)		
Consumer	***Jan-Oct 22***	***Jan-Oct 21***
Nizhnekamskneftekhim	230.7	260.2
Togliattikaucuk	50.5	99.6
Uralorgsintez	52.5	49.7
SIBUR-Khimprom	1.5	19.4
SIBUR Tobolsk	37.3	34.3
Omsk Kaucuk	86.5	72.7
Novokuibyshevsk NPZ	24.5	29.9
Uralkhimplast	15.9	19.3
Slavneft-Yanos	10.8	12.9
Metadynea	57.8	80.3
Kronospan	76.5	97.1
Gazprom	197.6	152.4
Khimsintez	34.9	29.0
Volzhsky Orgsintez	46.1	15.1
Togliattiazot	104.9	66.2
Others	295.7	305.2
Total	1323.7	1343.3

Nizhnekamskneftekhim recorded a slight fall in methanol purchases in the first ten months from 260,200 tons to 230,700 tons whilst Gazprom increased purchases from 152,400 tons to 197,600 tons. Nearly all of the methanol purchases made by Gazprom come from its subsidiary Gazprom Methanol. Togliattikaucuk reduced methanol purchases from 99,600 tons in January to October 2021 to 50,500 tons, the drop being mainly due to lower MTBE production.

In the sector for urea-formaldehyde resins Kronospan bought 76,500 tons of methanol against 97,100 tons in January to October 2021 and Metadynea reduced purchases from 80,300 tons to 47,700 tons. Uralkhimplast at Nizhniy Tagil reduced methanol purchases for resin production from 19,300 tons to 15,900 tons. Khimsintez increased purchases of methanol from 29,000 tons in the first ten months last year to 34,900 tons in January to October 2022. Khimsintez is focused on the production of chemical products for technical purposes including formalin and synthetic resins.

Russian organic chemicals

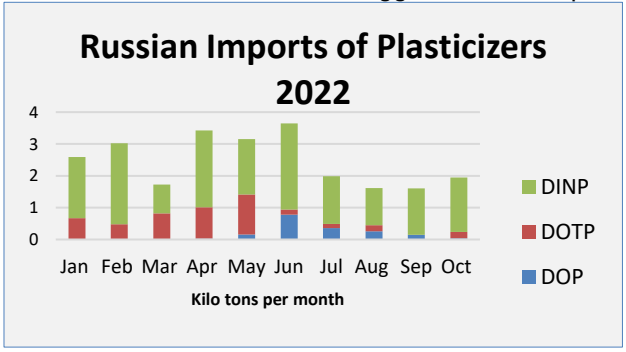
Russian N-Butanol Production (unit-kilo tons)		
Producer	***Jan-Oct 22***	***Jan-Oct 21***
Angarsk Petrochemical company	26.4	21.8
Azot Nevinnomyssk	14.5	12.0
Gazprom neftekhim Salavat	56.9	43.4
SIBUR-Khimprom, Perm	25.1	23.6
Total	122.9	100.8
Russian Isobutanol Production (unit-kilo tons)		
Producer	***Jan-Oct 22***	***Jan-Oct 21***
Angarsk Petrochemical Company	18.5	13.5
Gazprom neftekhim Salavat	28.1	24.6
SIBUR-Khimprom, Perm	47.6	29.9
Total	94.3	68.0

Russian butanol production Jan-Oct 2022

Russian normal butanol production rose from 100,800 tons in the first ten months in 2021 to 122,900 tons in the same period in 2022. Gazprom neftekhim Salavat was the largest Russian producer, increasing production from 43,400 tons to 56,900 tons in January to October 2022.

Isobutanol production in Russia increased from 68,000 tons in the first ten months in 2021 to 94,300 tons in 2022. SIBUR-Khimprom increased production in the first ten months from 29,900 tons in 2021 to 47,600 tons.

Production of butanols increased last year due to the higher internal processing whilst the merchant market remained sluggish. Consumption of paints in Russia remains weak following the exodus of foreign producers.



Russian plasticizer market Jan-Oct 2022

DOTP and DOP import shipments into Russia continue to fall and only DINP remains above a thousand tons per month. Imports of DINP amounted to 18,046 tons in January to October 2022 whilst DOTP imports amounted to 4,898 tons and DOP 1,757 tons. Over half of the of the imports are being sourced from South Korea where previously they were supplied mostly from European companies. The main feature of the market in 2022 was the change in supply sources from Central and West European sellers to sources from Turkey, South Korea and China.

Russian acetone market Jan-Oct 2022

Russian acetone production amounted to 118,400 tons in the first ten months in 2022 against 137,400 tons in the same period in 2021. Omsk Kaucuk produced 23,300 tons of acetone against 23,500 tons whilst Kazanorgsintez increased production from 41,900 tons to 42,400 tons. Novokuibyshevsk Petrochemical Combine reduced production from 33,800 tons to 25,500 tons.

Russian Acetone Production (unit-kilo tons)		
Producer	***Jan-Oct 22***	***Jan-Oct 21***
Ufaorgsintez	27.2	38.2
Kazanorgsintez	42.4	41.9
Novokuibyshevsk Petrochemical	25.5	33.8
Omsk Kaucuk	23.3	23.5
Total	118.4	137.4

Russian ethyl acetate imports, Jan-Oct 2022

Ethyl acetate imports into Russia dropped by 75.5% in the first ten months in 2022, dropping from 5,290 tons in January to October 2021 to 1,296 tons. From January to October 2022, Ineos supplied 334 tons against 925 tons in the same period last year. The major distributor in the domestic market Ruskhimset did not purchase from Ineos so far this year. Imports increased from the second quarter onwards from Turkey and Uzbekistan in order to compensate for the loss of Western suppliers.

Russian Ethyl Acetate Imports (unit-kilo tons)		
Company	***Jan-Oct 22***	***Jan-Oct 21***
Laxmi Organics Industries	248.2	2697.8
Ineos	334.2	956.7
Others	714.02	1636.1
Total	1,296.2	5290.7

The domestic market for paints and varnishes in Russia witnessed a fall in demand during 2022, and at the same time manufacturers producers are affected by the lack of individual raw materials for the production of coatings. The exit of some European companies from the Russian market also had an impact on the decline in sales figures.

Central Asia & Azerbaijan

Azerbaijan Polyolefin Revenues ($ million)		
	Jan-Oct 22	*Jan-Oct 21*
Polyethylene	76.9	80.2
Polypropylene	81.3	94.0

Azerbaijan Methanol Market (unit-kilo tons)		
	Jan-Oct 22	*Jan-Oct 21*
Production	449.3	291.4
Exports	409.3	252.5

SOCAR Methanol Jan-Oct 2022

SOCAR Methanol produced 449,300 tons of methanol in the first ten months in 2022, which is 54.2% times higher than in the same period in 2021. Methanol exports from Azerbaijan totalled 409,281 tons in the first ten months for a total value of $112.892 million.

The share of methanol in the total volume of exports from Azerbaijan amounted to 4.73% of non-oil product exports. Inventory is held at around 40,000 tons at the start of each month.

Turkmenistan tender for methanol project

Turkmengaz has re-announced an international tender for the construction of a gas chemical plant for the production of methanol and ammonia. Other products include methyldiethanolamine, diethylene glycol and triethylene glycol. The project investment is planned to be located at the Bagadzha gas condensate field in the Lebap velayat in north-east Turkmenistan.

Kazakh methanol project West Kazakhstan

Efforts have been made to revive a previous project for the production of methanol in the West Kazakhstan region. Kazakh government has in contact with Chinese companies CITIC Construction and China Huanqiu Contracting & Engineering (Shanghai). As a consequence Kazakh company Zhaik Petroleum signed an EPC contract in December with these Chinese companies. The framework of this contract describes plans to build a gas chemical complex for the production of methanol with a capacity of 130,000 tpa. The total cost of the project is estimated at $140 million.

After construction of the methanol project, it is planned to implement the second stage of the project for the production of ammonia and urea. KazAzot is considering plans to construct a new ammonia-urea complex on the territory of the FEZ in the Mangystau region. The project includes the production of ammonia with 660,000 tpa nitric acid 395,000 tpa; urea 577,000 tpa and ammonium nitrate 500,000 tpa.

Kazakh PTA-PET complex

A feasibility study has been completed for the construction of a PTA-PET complex in the Atyrau region, using the paraxylene from the existing 496,000 tpa plant at the refinery. Around $1 billion has been estimated for the project costs and negotiations are underway with potential strategic partners. Project capacities include 600,000 tpa of PTA and 430,000 tpa of PET. Construction of the plant is aimed for 2023-2024 with start-up earmarked for 2026-2027.

Butadiene project Kazakhstan

The first stage of construction and installation work has begun at the site of the new Kazakh-Russian butadiene production plant in Kazakhstan. KazMunayGaz and Tatneft established a jv Butadien in 2021 to implement a project to create a butadiene rubber production site with a completion date of 2025. At the moment, design work is underway and technology licensors have been involved.

The estimated production capacity is 186,000 tpa of butadiene rubbers and 170,000 tpa of isobutane. **T**he plant will produce five different types of products including styrene-butadiene-styrene-rubber, divinyl-styrene synthetic rubber, butadiene, and isobutane-isobutylene fraction. In November 2022, Butadien signed a butane purchase and sale agreement with Tengizchevroil for feedstocks. The supply volume will be 380,000 tpa of butane. The launch of production is scheduled for 2026 on the territory of the National Industrial Petrochemical Technopark in the Atyrau region.

Kazakh polyethylene project-Chevron Phillips

KazMunaiGaz and Chevron Phillips Chemical signed a license and design agreements for the delayed polyethylene project in Kazakhstan, which is to be located near Atyrau. The contract involves the development of project documentation for the production of polyethylene using MarTECH® ADL technology and the provision of an appropriate license for the production of the first line of 625,000 tpa.

Technology from Chevron Phillips Chemical will allow the Kazakh plant to produce a wide range of products, including premium high-density polyethylene.

Kazakhstan polypropylene production and sales
Kazakhstan Petrochemical Industries had produced 23,000 tons of polypropylene by 1 December. The company has been forced to refute allegations that it has been selling polypropylene from other suppliers, particularly SIBUR.

For the second 625,000 tpa plant negotiations with another licensor are reported to be close to completion. Thus, the aim is to construct two technological installations as part of one single complex with a total capacity of 1.250 million tpa. 2027 has been set as a provisional start-up date for the whole complex.

Contents from Issue No 383