CIREC MONTHLY news

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

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

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Key points from this issue:

Central European petrochemical markets

- ABB, working alongside Hyundai Engineering and Técnicas Reunidas, has been employed to install a key control system at the new Olefin III complex at Plock
- In response to sanctions on Russian butadiene rubber Synthos has decided to expand its capacity by 50% at Kralupy and Schkopau
- The Polimery Police project in northern Poland is set for completion by August 2023
- PTA exports from Poland amounted to 158,554 tons in the first four months of 2022 against 127,207 tons in the same period in 2021
- In the Polish polyethylene sector imports totalled 498,075 tons in the first four months in 2022 against exports of 124,942 tons

Russian chemical production

- The production of polymers in Russia amounted to 3.557 million tons in the first four months in 2022 against 3.552 million tons in January to April 2021
- Polyethylene production fell from 1.146 million tons to 1.132 million tons in the first four months in 2022
- More than half of the olefin and polyolefin production in Russia is undertaken by plants belonging to the SIBUR and TAIF groups which merged in 2021
- Russian ethylene production totalled 1.453 million tons in the first four months in 2022 against 1.489 million tons in the same period in 2021
- Russian propylene production amounted to 999,000 tons in the first four months in 2022 against 1.063 million tons in the same period in 2021

Russian chemical trade

- Propylene exports from Russia amounted to 51,800 tons in the first four months in 2022
- Russian producer exports of methanol rose in the first four months from last year from 642,500 tons to 792,500 tons this year despite
- Sales of phenol on the domestic market totalled 43,600 tons in the first four months in 2022 against 44,800 tons in the same period this year

Russian project news

- Progress in the installation of the pyrolysis unit for Amur Gas Chemical Complex had achieved 86% of the schedule
- SIBUR has terminated the contract with Gemont LLC for the construction of the EP-600 ethylene unit at Nizhnekamskneftekhim, and is seeking an alternative contractor to complete the project
- The completion of the maleic anhydride project at Tobolsk is SIBUR's largest investment project for the development of medium-tonnage and low-tonnage chemistry in Russia

CENTRAL and SOUTH EAST EUROPE

Feedstock uncertainty in Central Europe

The sixth round of sanctions finally agreed within the EU were applied from 31 May 2022, but only related to seaborne shipments and excludes deliveries made by the pipeline Druzhba. In 2021 a total of 34.2% of the crude oil processed in Germany came from Russia of which two-thirds came via the Druzhba pipeline, the rest by sea. The eastern parts of Germany are supplied with Russian oil almost exclusively via the Druzhba pipeline.

MOL-olefin shutdown completed

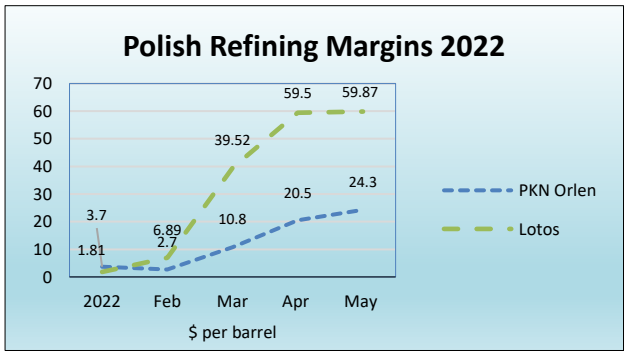
The MOL Group completed its overhaul of its cracking unit at Tiszaújváros at the end of May. The company operates two ethylene plants with a capacity of 380,000 tpa and 300,000 tpa and can also produce 220,000 tpa of propylene and 135,000 tpa of butadiene at the Tiszaújváros site.

Hungary was cited as the main objector to a full oil ban, but other countries also in Central Europe are not in a position operate refineries fully without pipeline deliveries. TotalEnergies, which operates the Leuna refinery, stated that it had cut Russian imports into the plant by more than 60% from October 2021 to May 2022 by bringing in additional volumes through the Polish port of Gdansk. Further cuts are expected through the end of the year and the refinery aims to cut all Russian imports in 2023.

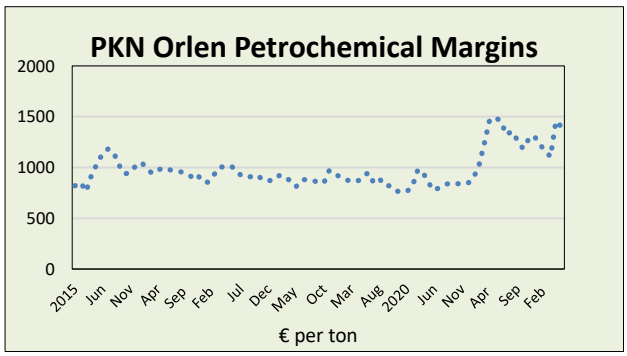
In theory both east German refineries at Schwedt and Leuna can import oil from the Polish terminal Gdansk Naftoport, but accordingly it meets around only half of required volumes. Thus, the construction of the second line of the Płock-Gdansk oil pipeline is becoming more likely.

Refining and petrochemical margins Central Europe

PKN Orlen's model refining margin increased to $24.3 per barrel in May versus $20.5 in April, $10.8 in March and $2.7 in February. Lotos increased margins by even greater numbers, rising to $59.9 in May against $6.9 in February. MOL continues to suppress its margins for essentially political reasons; the last record was published in March.



Petrochemical margins for PKN Orlen in May amounted to €1399 per ton, down from €1456 in April, but still much higher than historical comparisons.



Gas supplies and chemical production Central Europe

Gas supply from Russia to Europe has become tighter, posing threats to chemical production in some countries. From 11 July to 21 July Nord Stream 1 is down for annual maintenance and there are concerns over the restart.

In late June Germany stressed that the use of gas for energy production and industry will be reduced due to supply fluctuations and uncertainty. The filling of storage facilities will be a priority in the face of winter. The chemical industry accounts for around 15% of all natural gas requirements in Germany whilst a third of the oil imports in Germany have come from Russian sources. The gas supply to Germany is mainly covered by the Nord Stream 1 pipeline.

Alternatives to gas for chemical producers
The problems and uncertainty over gas supply from Russia is expected to speed up the transition to other energy sources, both renewable and non-renewable. A combination of LNG and coal is likely to form the basis for the short-term strategy whilst longer term wind power from the Baltic could become more significant and some producers are considering nuclear reactors using with SMR (Small Modular Reactor) technology.

Thus, the reduction from Russia in June due to a combination of political and technical reasons is causing German chemical companies to monitor gas supplies closer than normal.

BASF has to date been securing sufficient amounts of natural gas to keep its European sites running but is preparing for a potential supply squeeze which could happen any time. Germany has announced a fresh package of measures to cut gas consumption, including restarting old coal-fired power plants, to help offset lower gas supplies from Russia.

Czech gas grid operator Net4Gas observed an overall reduction in gas transit in June but has said supplies to the country itself had been sufficient. Czech imports of natural gas from Russia increased in April to 851,002 tons against 503,330 tons in March with expenditure rising from €705.915 million to €1.106 billion. Bulgaria has already been disconnected from Russian gas supply but will be able to receive Azerbaijani gas in July when the Bulgarian-Greek interconnector starts operating.

PKN Orlen Production (unit-kilo tons)

Product	*Jan-Apr 22*	*Jan-Apr 21*
Ethylene	162.5	99.4
Propylene	155.7	96.4
Butadiene	23.5	13.3
Toluene	3.6	3.9
Phenol	17.2	16.2
Polyethylene	112.9	62.9
PVC	101.3	72.6
Polypropylene	119.3	89.9

Poland had its gas supply directly from Russia stopped in May but is in a better position for gas supply than other European countries and has been able to buy some reverse gas from Germany. Grupa Azoty is the largest consumer of natural gas in Poland and has hitherto received normal volumes. Of the 20 billion cubic metres of gas that Poland consumes annually Zakłady Azotowe in Puławy takes about 1 billion cubic metres.

PKN Orlen-petrochemical production Jan-Apr 2022
PKN Orlen increased petrochemical production in the first four months at Plock, reducing the requirement for imports of propylene and butadiene compared to 2021. Ethylene production at Plock totalled 162,500 tons in the first four months against 99,400 tons in the same period in 2021 when renovations were being carried out, whilst propylene production rose from 96,400 tons to 155,700 tons. Butadiene production increased from 13,300 tons to 23,500 tons.

PKN Orlen-investments in Czech Republic
PKN Orlen has invested Kc 2.4 billion (€96.9 million) in Orlen Unipetrol aimed at the ongoing modernisation of production technologies in both refineries located at Litvinov and Kralupy nad Vltavou. This included work on the hydrogen partial oxidation unit, the construction of a new unit for the production of liquid hydrocarbon DCPD, and the construction of the eleventh cracking furnace of the ethylene unit.

PKN Orlen-Olefin 111 project approval & ABB contract
Key developments have taken place regarding PKN Orlen's Olefin 111 project in the past month. Firstly, the Mazovian Voivode (administration) has approved the construction project and granted a building permit for the Olefin III complex at Płock. The decision is immediately enforceable. Olefin III is being developed to increase production capacity at Plock by approximately 60% and represents a $3 billion investment, expanding the existing site by 100 hectares.

Secondly ABB solutions has been commissioned to support PKN Orlen's goal of reducing CO2 emissions by 30% per ton in the production of ethylene and propylene. ABB control and advanced automation systems is to be used by PKN Orlen to optimize production efficiency, increasing yield, analysing raw material consumption, monitoring energy use and ensuring product quality.

PKN Orlen signed a contract for the construction of the Olefin III installation complex at its main plant in Płock in June 2021 with Hyundai Engineering and Técnicas Reunidas. ABB, now working alongside Hyundai Engineering and Técnicas Reunidas, has been employed to install their market leading distributed control system at the new Olefin III complex at Plock. Integrating control architecture across the entire mega development, PKN Orlen will be able to constantly monitor and analyses plant productivity, maximizing asset performance, managing power consumption, ensuring product quality, and optimizing process efficiency in real time.

The construction schedule is planned for completion in the first quarter of 2024, and the production launch of the Olefin III complex is expected at the beginning of 2025. The completion of the project will contribute to an increase in operating EBITDA by around zl 1 billion (€212 million) per annum. it also means that carbon dioxide emissions per ton of product are to be reduced up to 30%.

Czech Petrochemical Imports (unit-kilo tons)		
Product	***Jan-Apr 22***	***Jan-Apr 21***
Ethylene	11.161	1.404
Propylene	11.541	16.376
Butadiene	23.958	28.286
Benzene	27.035	28.017
Toluene	2.655	2.539
Styrene	7.758	15.689

Czech Petrochemical Exports (unit-kilo tons)		
Product	***Jan-Apr 22***	***Jan-Apr 21***
Ethylene	5.039	11.623
Propylene	0.014	0.016
Butadiene	0.114	1.032
Benzene	18.278	15.072
Toluene	3.845	3.293
Ethylbenzene	38.854	39.070

Polish Imports of Aromatics (unit-kilo tons)		
Product	***Jan-Apr 22***	***Jan-Apr 21***
Caprolactam	2.079	7.035
Ethylbenzene	38.864	44.958
Paraxylene	20.389	17.868
Phenol	40.001	13.130
Phthalic Anhydride	10.432	9.637
PTA	0.823	21.937
Styrene	34.365	35.751
TDI	26.486	26.929
Toluene	7.651	7.447

Polish Organic Chemical Imports (unit-kilo tons)		
Product	***Jan-Apr 22***	***Jan-Apr 21***
Acetic Acid	15.938	14.401
Acetone	2.453	1.472
Adipic Acid	4.004	2.754
Butadiene	31.352	37.753
DEG	10.227	9.317
DINP/DOP	9.403	7.526
Ethyl Acetate	5.295	4.900
Ethylene Glycol	17.881	17.429
Ethylene Oxide	6.070	9.836
Isopropanol	3.657	3.026
Maleic Anhydride	4.513	4.940
Melamine	8.362	7.552
Methanol	313.069	228.283
Propylene	64.361	88.179
Propylene Glycol	7.476	7.996
VAM	6.931	6.532

Czech petrochemical trade, Jan-Apr 2022

Czech exports of ethylbenzene declined in the first four months in 2022 to 38,854 tons from 39,070 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.

Ethylene exports from the Czech Republic amounted to 5,039 tons in the first four months against 11,623 tons in the same period 2021 whilst imports rose from 1,404 tons to 11,161 tons. Propylene imports dropped from 16,376 tons in January to April 2021 to 11,541 tons in the same period this year. Czech imports of butadiene dropped from 28,286 tons in the first four months in 2021 to 23,958 tons in the same period in 2022.

Polish organic chemical imports Jan-Apr 2022

In the first four months in 2022 Polish trade in organic chemicals comprised €810.3 million for exports and €1.796 billion in imports.

In the aromatics sector phenol recorded a large increase in the first four months to 40,001 tons, of which 10,879 tons came from Russia. In other product areas, styrene imports amounted to 34,365 tons in the period January to April 2022 versus 35,751 tons in 2021 whilst ethylbenzene imports dropped from 44,958 tons to 38,864 tons. Paraxylene imports into Poland amounted to 20,839 tons in January to April 2022 against 17,868 tons in 2021. Imports were divided between France and Russia for supply.

Imports of propylene into Poland dropped in the first four months to 64,361 tons against 88,179 tons in the same period last year, which was due mostly to the higher production undertaken at Plock.

A similar trend followed for butadiene, dropping from 37,753 tons to 31,352 tons. The largest increase in imports this year has been for methanol where volumes rose to 313,069 tons in the first four months in 2022 from 228,283 tons. 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.

Polish polyolefin trade Jan-Apr 2022

Poland imported 228,615 tons of polypropylene homo grade in the first four months in 2022 for a total value of €397.650 million. Russia was the largest supplier, providing 46,400 tons for €68.500 million. Imports

from Russia are expected to fall in the second half of 2022 in line with sanctions. Exports of polypropylene homo grade amounted to 73,647 tons for €125.497 million. The largest destination for Polish exports was Germany, shipping 20,384 tons for €34.126 million.

For propylene copolymers Poland imported 111,399 tons in the first four months in 2022 for €221.576 million whilst exports amounted to 31,610 tons for €62.199 million. Germany was the largest source of imported propylene copolymers, shipping 31,788 tons to Poland for €62.678 million.

Polish Polyethylene Trade Jan-Apr 2022 (unit-tons)		
Product	***Import***	***Export***
LDPE & LLDPE	221,557	27,757
HDPE	170,990	86,213
EVA copolymers	6,390	949
EAO olefin copolymers	77,449	7,875
Other ethylene	21,689	1,749
Total	498,075	124,942

In the polyethylene sector imports into Poland totalled 498,075 tons in the first four months in 2022 against exports of 124,942 tons. Import costs amounted to €904.277 million in January to April 2022 against export revenues of €202.634 million.

LDPE and LLDPE comprised the largest category of imports, totalling 221,557 tons of which LLDPE amounted to 91,558 tons for €162.386 million. Imports of LLDPE were sourced mostly from West Europe.

Polish Imports of PP Homo Jan-Apr 2022		
Country	***Ktons***	***€ million***
Saudi Arabia	10.3	14.3
Austria	9.0	16.1
Belgium	11.1	21.6
Czechia	19.6	34.0
Denmark	1.0	1.9
Egypt	6.4	10.3
Finland	1.1	2.4
France	4.8	9.6
Spain	1.4	2.7
Netherlands	8.0	15.2
South Korea	18.6	30.9
Lithuania	1.8	3.1
Germany	45.9	86.7
Oman	2.9	4.6
Russia	46.4	68.5
Slovakia	13.1	23.7
Hungary	5.5	10.7
Vietnam	1.6	2.7
Italy	11.7	24.1
Others	8.6	14.3
Total	228.7	397.6

HDPE is the largest export category from Poland, shipping 86,213 tons in the first four months in 2022 for €135.542 million. Imports still outstripped exports though, amounting to 170,990 tons in the first four months for €284.479 million. Germany has been the largest source of imports of HDPE this year and also the largest destination for exports, with inward shipments totalling 47,645 tons against outward shipments of 39,470 tons. Poland imported 12,044 tons of HDPE from Russia in the first four months.

Polimery Police achieves more than 90% of construction schedule by end-April

The Polimery Police project in northern Poland is now more than 90% completed overall with sub-projects such as the assembly of key devices and apparatus as well as flyovers and pipelines underway.

The target production capacity of the Polimery Police complex, i.e., after obtaining full production capacity, will be 429,00 tpa of propylene and 437,000 tpa of polypropylene. This investment will enable the diversification of Grupa Azoty's business activities and strengthen the competitive position of Polish on the European market of plastics producers. The scope of the project also includes a gas port, a transhipment and storage terminal, providing the possibility of obtaining the raw materials necessary for the production by sea.

Other parts of the project include the cryogenic separation system necessary to separate hydrogen from the post-reaction mixture in the PDH (propane dehydrogenation) process. The separated hydrogen will be subject to further purification and will be used for the internal needs of the PDH process. It will also be sent to Grupa Azoty Zakłady Chemiczne Police. At the transhipment and storage terminal, the assembly of two propane tanks with a total capacity of 80,000 cubic metres and an ethylene tank with a capacity of 12,000 cubic metres has been completed. On the PDH propane dehydrogenation installation, the assembly work of the torch has been completed.

Polish Imports of Propylene (unit-kilo tons)		
Country	*Jan-Apr 22*	*Jan-Apr 21*
Lithuania	0.000	5.444
Germany	20.784	44.753
Russia	20.132	13.786
Ukraine	19.020	24.346
Others	4.424	0.012
Total	64.360	88.341

In addition to the dependency on propylene monomer imports, Poland has in recent years been increasing its imports of polypropylene and propylene copolymers. Thus, a significant part of the volume of the production under Grupa Azoty Polyolefins will be directed to domestic customers. At the end of April 2022, the material progress in the implementation of the project amounted to 91%.

Lukoil-Neftochim-polypropylene project

The position for the Lukoil refinery at Bourgas is yet to be clarified under EU sanctions regarding the polypropylene project and whether the Russian ownership prevents it from operating as a normal entity. Some proposals have been put forward inside the EU for the refinery to be nationalised, but it is not clear if Lukoil wants to sell its assets in south east Europe.

Lukoil-Bourgas PP & propylene production						
	2016	*2017*	*2018*	*2019*	*2020*	*2021*
Polypropylene	60.0	73.4	61.1	77.8	69.9	70.0
Propylene	33.2	26.4	13.8	21.6	10.1	15.2

The polypropylene project which is a key part of Lukoil's strategy in Bulgaria is under review from all sides. Lukoil signed a contract with Lummus Technology's Novolen division in 2020 to provide licensed technology for a new polypropylene plant at the Bourgas site. The project also includes basic design, personnel training, and the supply of catalysts. The capacity of the proposed plant was proposed at 280,000 tpa. Lukoil-Neftekhim has already held a tender for construction and installation of the new polypropylene production facility. Polypropylene production already exists at Bourgas with average output running at around 70,000 tpa.

HIP Petrohemija-review by NIS

Serbian refining company NIS is undertaking a tender for a detailed energy audit of all facilities of HIP-Petrohemija, including its polyethylene facilities. This involves the preparation of energy consumption balance and drawing up plans for HIP's strategic goal for reducing energy consumption and increasing energy efficiency. Other activities include examination of the type of consumers, and how the company should develop its marketing programme. NIS currently holds around 90% of Petrohemija's shares after completing the purchase in 2021. Polyethylene export revenues from Petrohemija amounted to $187.8 million in 2021 against $122.7 million in the same period in 2020.

Chimcomplex-higher revenues and costs

Chimcomplex posted rises in revenues and exports in the first five months of the year, helped in particular by export prices. At the same time high energy costs are affecting profits margins. Chimcomplex is currently undertaking a 2022-2030 Strategic Plan worth €2.5 billion in total. Investments into existing and new lines are aimed at increasing annual turnover €10 billion by the end of the decade.

Some of the projects include a new plasticizer plant of DOTP 20,000 tpa will integrate products resulting from the chemical recycling of PET plastic waste. In addition to this investment package, up to €725 million is being allocated to promote the relaunch of the manufacture of VCM/PVC facilities and photovoltaic panels for renewable energy. Other projects that could be included comprise recycling of PET and polyurethanes, and the production of green methanol by syngas.

Polish PTA Exports (unit-kilo tons)		
Country	*Jan-Apr 22*	*Jan-Apr 22*
Belarus	2.156	2.602
Germany	124.776	108.675
Lithuania	15.544	12.366
Switzerland	3.521	1.476
Turkey	1.496	0.000
Others	11.062	2.088
Total	158.554	127.207

As part of its development in May Chimcomplex purchased 94.4% of the share capital of Sistemplast S.A. Ramnicu Valcea which provides integrated solutions for mechanics, design, construction, verification, and monitoring of industrial works.

Polish PTA sales Jan-Apr 2022

PTA exports from Poland amounted to 158,554 tons in the first four months of 2022 against 127,207 tons in the same period in 2021. Average prices for Polish PTA exports amounted to €888 per ton against €763 in the same period in 2021. Germany remained the main customer

for Polish PTA, taking 124,776 tons in January to April 2022 against 108,675 tons in the same period in 2021. Lithuania was the second largest destination for PTA export shipments, taking 15,544 tons versus 12,366 tons.

Russian Butadiene Rubber Exports to EU (unit-kilo tons)		
Country	***2021***	***2020***
Austria	1.1	0.8
Czech	11.3	10.1
Belgium	1.2	0.2
Estonia	0.0	0.0
Finland	0.9	0.8
France	3.5	2.8
Germany	8.2	8.5
Hungary	13.4	10.2
Latvia	0.7	0.4
Lithuania	0.5	0.2
Poland	22.0	17.7
Romania	16.8	14.3
Slovakia	12.0	10.7
Spain	9.4	5.9
Total	101.0	82.5

Synthos-rubber projects

The deficit in the supply of butadiene rubber is creating difficulties for tyre producers in Europe. Much of the material was previously imported from Russia, which European tyre manufacturers now have difficulties in sourcing. In the first four months in 2022 Poland imported 42,358 tons of synthetic rubber from Russia at a total cost of €81.810 million. Volumes in April amounted to 8,869 tons, the lowest amount in the first four months.

Butadiene rubber exports from Russia to the EU amounted to $165.4 million in 2021, with the largest recipient countries including Poland, Hungary, Romania and Slovakia. Already consumers are negotiating with alternative suppliers.

In response to the lack of Russian butadiene rubber Synthos has decided to expand its butadiene rubber capacity by 50% which will help to address ongoing market shortages of the material. The programme involves projects at the group's facilities at Schkopau and Kralupy.

Polish imports of synthetic rubber from Russia 2022				
	Jan	***Feb***	***Mar***	***Apr***
Kilo tons	9.268	10.427	13.794	8.869
€ million	17.163	19.639	26.198	18.810
Czech imports of synthetic rubber from Russia 2022				
	Jan	***Feb***	***Mar***	***Apr***
Kilo tons	2.737	2.721	3.128	2.386
€ million	5.074	4.788	5.706	4.183

By the end of 2022, Synthos will add 20,000 tpa of new capacity for butadiene rubber production at Kralupy after debottlenecking. At the start of 2023, Synthos plans to restart a 30,000 tpa plant at Schkopau which was formerly operated under Trinseo. Designed for the production of nickel/neodymium BR, the former

Trinseo plant at Schkopau was idled in 2020. For the Trinseo acquisition itself Synthos estimates that it will add around €80-100 million per annum to the group EBIDTA. Moreover, the plant at Schkopau possesses research and development facilities, which will increase the group's capabilities.

Czech MDI Imports (unit-kilo tons)		
Country	***Jan-Apr 22***	***Jan-Apr 21***
China	0.697	1.064
Belgium	4.352	4.338
Germany	4.070	6.141
Italy	0.022	0.010
Hungary	2.055	2.454
Netherlands	1.159	0.591
Others	0.500	0.573
Total	12.754	15.171

Polish MDI Imports (unit-kilo tons)		
Country	***Jan-Apr 22***	***Jan-Apr 21***
Germany	16.731	17.496
Netherlands	6.278	4.851
Hungary	15.127	18.235
Belgium	10.761	8.814
Others	4.224	2.478
Total	53.120	51.874

Central European isocyanates, Jan-Apr 2022

MDI imports into the Czech Republic totalled 12,743 tons in the first four months in 2022 against 15,171 tons in the same period in 2021. Total costs for MDI imports increased from €31.588 million in January to April 2021 to €31.952 million in the same period in 2022, with average prices rising from €2.056 per ton to €2.505.

MDI imports into Poland totalled 53,120 tons in the first four months in 2022 for a total value of €137.566 million. Average prices amounted to €2.690 per ton, with April numbers amounting to €2718. TDI imports into Poland amounted to 26,839 tons in the first four months in 2022 at an average price of €2763 per ton.

Significant supply shortages were felt on the polyols and TDI market in 2021 and the situation for 2022 is also challenging due

to the rising costs of raw materials based on the increase in oil and gas prices. The situation in Russia and Ukraine could also influence supply chains for raw materials, whilst consumption of polyurethanes could come under pressure as inflation erodes purchasing power. Polish polyurethane producers reported reasonable results for the first quarter this year but the view from companies such as PCC Rokita and Ciech that sales of polyurethane foams should see softening as the year progresses.

Polish Methanol Exports 2022		
Country	***Jan-Apr (ktons)***	***Jan-Apr (€ million)***
Austria	26.6	10.9
Czech	26.6	**11.5**
Germany	36.4	**15.2**
Romania	5.2	**2.2**
Slovakia	14.4	**6.3**
Ukraine	1.1	**0.7**
Hungary	11.8	**4.7**
Others	2.5	1.5
Total	124.6	52.8

Polish Methanol Imports (unit-kilo tons)		
Country	***Jan-Apr 22***	***Jan-Apr 21***
Belarus	0.044	1.295
Finland	17.184	25.049
Lithuania	0.579	2.716
Germany	38.026	26.992
Netherlands	0.000	25.619
Norway	16.787	4.299
Russia	240.237	141.470
Others	0.287	0.756
Total	313.144	228.196

Czech Methanol Imports (unit-kilo tons)		
Country	***Jan-Apr 22***	***Jan-Apr 21***
Germany	2.353	5.330
Russia	12.697	16.420
Poland	10.924	8.420
Others	0.932	0.507
Total	26.906	30.682

Polish Chemical Production (unit-kilo tons)		
Product	***Jan-Apr 22***	***Jan-Apr 21***
Caustic Soda Liquid	142.3	115.0
Caustic Soda Solid	27.8	28.9
Caprolactam	57.4	55.5
Polystyrene	24.7	24.7
EPS	34.0	29.6
Synthetic Rubber	97.1	86.7
Ammonia (Gaseous)	862.0	947.0
Pesticides	25.2	28.4
Nitric Acid	805.0	883.0
Nitrogen Fertilisers	690.0	749.0
Phosphate Fertilisers	112.0	154.5
Potassium Fertilisers	100.3	113.5

Central European methanol trade Jan-Apr 2022

Exports of methanol from Poland amounted to 39,000 tons in April as the south-Central European countries continued to be unable to import directly from Russia. Slovakia imported 7,900 tons of methanol from Poland in April against 6,400 tons in March whilst Hungary imported 6,000 tons against 5,800 tons. In total exports of methanol from Poland totalled 124,600 tons in the first four months for €52.8 million,based on an average price of €424 per ton.

In order to facilitate an increase in export activity in March and April this year Poland has had to increase imports, rising in the first four months from last year from 228,196 tons to 313,144 tons. Costs totalled €114.852 million in January to April. The average price for Polish imports comprised €366 per ton in the first four months this year, and for Russia in particular €364. Polish traders are trying to diversify methanol sources in case producers from Russia are forced to be reduced or to even stop completely.

Russia increased exports to Poland from 141,470 tons to 240,037 tons whilst Norway increased shipments from 4,299 tons to 16,787 tons. Germany increased exports to Poland in the first four months in 2022 to 38,026 tons from 26,992 tons in the same period last year.

Czech imports of methanol amounted to 26,096 tons in the first four months in 2022 against 30,682 tons in the same period in 2021. Russia accounted for 12,697 tons in January-April 2022, followed by Poland with 10,924 tons. Prices per ton for methanol imports into the Czech Republic increased from €337 in the first four months in 2021 to €430 in 2022.

Ciech Group-decarbonisation plan

The Ciech Group is undertaking a decarbonisation plan within the framework of the ESG strategy objectives: by 2026 it intends to reduce carbon dioxide emissions by approximately 33% (compared to 2019), and in 2033 to stop using coal in energy production processes.

At present, however, the production of chemical products using coal is cheaper than using natural gas which complicates the strategy in the short term. Coal-fired combined heat and power plants are currently operating at the Inowrocław and Janikowo soda ash plants. Ciech's aim is to gradually move away coal in favour of obtaining energy from natural gas, thermal waste processing or nuclear energy (through SMRs).

RUSSIA

Russian Chemical Production (unit-kilo tons)		
Product	***Jan-Apr 22***	***Jan-Apr 21***
Caustic Soda	435.0	446.4
Soda Ash	1,226.0	1,159.0
Ethylene	1,452.8	1,489.0
Propylene	999.0	1,062.5
Benzene	462.0	455.2
Xylenes	194.0	196.9
Styrene	243.8	260.5
Phenol	95.8	92.0
Ammonia	6,200.0	6,800.0
Nitrogen Fertilisers	4,035.0	3,927.0
Phosphate Fertilisers	1,461.0	1,457.0
Potash Fertilisers	2,863.0	3,551.0
Plastics in Bulk	3,557.0	3,552.0
Polyethylene	1,132.0	1,146.0
Polystyrene	198.0	197.0
PVC	359.2	372.5
Polyamide	67.0	66.8
Synthetic Rubber	568.0	595.0
Synthetic Fibres	67.0	68.2

Russian chemical production Jan-Apr 2022

Production volumes in the mainstream Russian chemical industry in the first four months appear similar to numbers in 2021, but the underlying trend for many products is slowing. Projects under construction face more challenges than normal due to sanctions whether official or self-sanctioning and at least most will be delayed if not frozen.

As inventories accumulate and logistical bottlenecks intensify producers could be forced to reduce utilisation rates in the second half of the year. Ethylene production decreased in the first four months from 1.489 million tons in 2021 to 1.453 million tons whilst propylene dropped from 1.063 million tons to 999,000 tons. Demand for olefins for the production of derivatives came under pressure in the second half of the second quarter, as the impact of sanctions start to feed into the market.

According to Rosstat, the Russian government statistics department, industrial production in April declined by 1.8% following a 1.1% decline in March. Chemical production specifically fell 6% in April against March which was caused mainly by restrictions on the export of certain types of fertilisers. Also, the shortage of some imported components affected production of the Russian paint and varnish industry in April (12.7% down) and household chemicals, perfumes and cosmetics which was 13.6% down.

The production of polymers in Russia amounted to 3.557 million tons in the first four months in 2022 against 3.552 million tons in January to April 2021. Polyethylene production fell from 1.146 million tons to 1.132 million tons in the first four months in 2022. More than half of the olefin and polyolefin production in Russia is undertaken by plants belonging to the SIBUR and TAIF groups which merged in 2021. Replacing polyethylene imports for sectors such as food packaging and gas pipes may help SIBUR to sustain production levels at various plants belonging to the group. It is not clear though how much access SIBUR has to flame retardants, dyes, stabilizers, etc, that are used in the final stages of polyethylene production and allows sale to customers.

Russian plants produced 568,000 tons of synthetic rubber in the first four months in 2022, versus 595,000 tons in 2021. In view of the dependence of exports for synthetic rubber producers in Russia, and the sanctions imposed on products such as butadiene rubber and butyl rubber, the forecast for production in 2022 is much lower than in 2021. In the base chemical sector Russian ammonia production dropped to 6.8 million tons whilst caustic soda dropped from 446,400 tons to 435,000 tons.

Product gaps for Russian chemical producers

In the immediate term chemical producers are striving to fill some of the product gaps left with the exit of Western suppliers, whilst looking more eastward for sales and raw materials. There may be some other routes for European raw materials to enter Russia. Every effort will be made to develop products and technologies which were previously imported, but there are significant limits to what is possible.

Sanctions from 10 July

After 10 July imports of a wide range of chemicals into Russia from the EU will cease. The total volume of prohibited products has not yet been estimated, but the impact is expected to be widespread. Moreover, logistics are complicated by the ban on the handling of Russian cargo in European ports adding to the mounting challenges for business. The supply of resins, special polymers, additives to plastics, oils, solvents, surfactants, catalysts, etc, have been banned whilst several European suppliers have even refused to supply even non-sanctioned products. The severity of the sanctions will place extreme pressure on the chemical industry as with other industries.

Speciality chemicals where Russia seeks new sources
Chemical plant protection products
Catalysts, initiators, inhibitors
Surfactants, chemical reagents and solvents
Chemicals for food additives
Adhesives and sealants, pigments
Additives to fuels and lubricants

Oil sanctions and market transition for chemical production

The main focus of the sixth round of sanctions was on oil and the ban on seaborne trade. At the same time the EU has expanded its list of goods subject to export restrictions, including 80 chemicals that could be used to manufacture chemical weapons. Products include antimony, calcium carbide, ethanol, white and yellow phosphorus, chemical precursors for nerve agents, continuous flow reactors, etc. Russian chemical companies are searching for alternative suppliers in China, Korea and other countries in the Asia-Pacific region.

Russian Chemical Catalyst Import Sources 2021	
Country	*Share*
US	34.7%
Germany	10.6%
Japan	9.1%
Italy	8.6%
France	7.6%
Denmark	6.7%
India	5.9%
Belgium	4.1%
China	3.1%
UK	3%

Catalyst shortages for Russian chemical production

Chemical plants have begun to experience a shortage of raw materials for the production of sulphuric acid. The problem is the supply of special vanadium catalysts to produce sulphuric acid on which Russia is almost completely dependent on imports. Traditional suppliers of catalysts, BASF, DuPont and other suppliers have previously announced the termination of their activities in Russia. Because of this, there were interruptions in the supply of raw materials to the plants.

Domestic chemical companies concede that it will be extremely difficult to replace European vanadium catalysts. Currently, there are two plants in Russia for the production of vanadium catalysts at Samara and Shchelkovsky, but there are doubts about reliability as Russian analogues is fraught with accidents and explosions at plants.

Attempts were made to replace imported vanadium catalysts were made in the days of the Soviet Union, but even then, it was impossible to completely do without imported raw materials. One of the options for getting out of the situation is the re-equipment of production but this process is expensive. Without financial state support, rearmament will take up to ten years.

EU Sanctions imposed on technology sales to Russia From 8 April 2022
Aromatic hydrocarbon production units
Hydrogen generation technology
Naphtha isomerisation units
Polymerisation units
Refinery fuel gas treatment and sulphur recovery technology
Process units for gas cooling in the LNG-process
Cold boxes in the LNG-process

Russian petrochemical project update

Ust Luga gas processing plant, prospects

After the introduction of technology sanctions and announcements by Western contractors and licensors that they were leaving the Russian market, the broad assumption is that most gas-chemical projects will be delayed if not frozen. The Ust Luga (KPEG) project is probably the most affected of the projects already under construction whereby the official withdrawal of Linde should at least stall the investment or prevent it from reaching conclusion. Companies undertaking large gas projects in Russia, including gas liquefaction projects, are considering the possibility of using domestic and Chinese technologies. Neither country has a track record in this type of engineering so more information would be required before these alternative options could be considered tenable.

VAT exemption for imported equipment for gas processing plants

The Ministry of Industry and Trade of Russia has proposed to exempt investors from VAT on the import of equipment for the construction of a gas chemical complex as part of the ethane-containing gas processing complex at Ust-Luga. This measure proposal is seen as largely symbolic as the necessary equipment is sanctioned by Western countries some Asian partners.

Whether sanctions affect petrochemical projects in Russia depends on the status of the project itself. Construction of the petrochemical complex at Ust Luga had only just started, and some foundations may continue to be laid. KPEG is supposed to include two

complexes. The first is the integrated complex for processing and liquefaction of natural gas under Ruskhimalliance and the second is the gas chemical complex under Baltic Chemical Complex, a subsidiary of Rusgazvydobuvannya.

Gazprom is concentrating on how to replace foreign technologies and equipment in order to ensuring Russian LNG projects. The only providers of technologies of large-scale liquefaction of gas include Shell, ConocoPhillips and Linde. Until recently all projects were focused on foreign licensors, in particular Linde which had managed to circumvent loopholes through the sanctions imposed after Russia's occupation of Crimea.

The contract with Linde for technological equipment and lifetime service support was concluded in 2021 and parts of Gazprom believe that without it the project cannot continue. There has been some suggestion that Linde may be able to transfer the technology through its subsidiary Linde Engineering Rus. However, Linde already has withdrawn from the Amur Gas Chemical Complex and also the jv at Severstal where heat exchangers were being produced for the Baltic LNG project at Ust Luga.

Even if the technology transfer was allowed to go ahead the question remains where the equipment will be manufactured. Moreover, It is impossible to ship liquefied gas without special pumps and these are produced only in the US and Japan. Russian companies are looking how to replace such pumps, which could be a lengthy process and may not be successful. China is not expected to provide an alternative as it has no history in these technologies. Such is the strange nature of Russian society in the present day that Gazprom cannot clarify the obvious reasons why this project may be held up.

Amur Gas Chemical Complex-new equipment sought

Progress in the installation of the pyrolysis unit for Amur Gas Chemical Complex had achieved 84% of the schedule by the start of May, and for polymer installations the estimated completion was 86%. The withdrawal of Western partners from the project means that work is necessary to replace foreign equipment with other sources.

Nizhnekamskneftekhim-EP 600 contractor change

SIBUR decided to terminate the contract with Gemont LLC (a subsidiary of the Turkish Gemont) for the construction of the EP-600 ethylene unit at Nizhnekamskneftekhim. The termination is due to SIBUR's concern that the contractor will not be able to carry out work on schedule. To save the project, the holding decided to break the contract with the general contractor, who began the current construction in the midst of the pandemic in 2020. SIBUR is now in the process of arranging a new contractor for the project. The project represents a key investment for Nizhnekamskneftekhim and the petrochemical industry in Tatarstan. All the equipment has been delivered, but it is not clear if completion will be made on schedule.

For the Amur Gas Chemical Complex, a large amount of equipment has been delivered already, having been transported via the Amur and Zeya rivers in 2021, but more equipment is required in 2022 and there is no sign that navigation has started. SIBUR still hopes that some equipment deliveries might start sometime before August although there is no indication of that being possible under current conditions. Rather freeze the projects it is seen as more expedient to continue investing in power sources, infrastructure and base foundations, and hope for solutions either technological or political.

The focus is primarily on the equipment of pyrolysis furnaces, complex compressor and pumping equipment, and proprietary heat exchange equipment. Also, the company is focused on a number of auxiliary packages, which are critical to the project and seem quite complex for the selection of replacements and ensuring comfortable terms for the manufacture of such equipment.

In May the construction of supporting infrastructure comprising water and energy supply facilities for the future complex was carried out. The final stage includes commissioning works at the artesian water intake, the construction of a 500 kV substation and step-down transformer substations is underway.

Russian petrochemical markets

Russian Ethylene Production (unit-kilo tons)		
Producer	***Jan-Apr 22***	***Jan-Apr 21***
Angarsk Polymer Plant	78.3	77.9
Kazanorgsintez	222.5	193.1
Stavrolen	111.1	115.4
Nizhnekamskneftekhim	212.9	214.6
Novokuibyshevsk Petrochemical	16.3	19.1
Gazprom n Salavat	109.5	122.2
SIBUR-Kstovo	137.1	131.2
SIBUR-Khimprom	19.3	19.7
Tomskneftekhim	98.4	95.5
Ufaorgsintez	41.2	26.3
ZapSibNeftekhim	406.2	474.1
Total	1452.8	1489.0

Russian Propylene Production (unit-kilo tons)		
Producer	***Jan-Apr 22***	***Jan-Apr 21***
Angarsk Polymer Plant	43.7	43.7
Kazanorgsintez	18.5	16.5
Lukoil-NNOS	109.8	63.8
Stavrolen	61.9	46.0
Nizhnekamskneftekhim	107.6	107.6
Novokuibyshevsk	11.6	12.6
Omsk Kaucuk	18.4	4.5
Polyom	66.4	65.0
Gazprom Neftekhim Salavat	48.8	53.9
SIBUR Kstovo	61.9	59.2
SIBUR-Khimprom	28.8	20.0
Tomskneftekhim	52.2	52.1
SIBUR Tobolsk	0.0	3.0
Ufaorgsintez	56.7	59.8
ZapSibNeftekhim	312.8	454.6
Total	999.0	1062.5

Russian Propylene Exports (unit-kilo tons)		
Producer	***Jan-Apr 22***	***Jan-Apr 21***
Lukoil-NNOS	34.7	13.4
SIBUR-Kstovo	10.6	6.8
Angarsk Polymer Plant	6.6	0.0
Stavrolen	0.0	14.2
Total	51.8	34.4

Russian Propylene Domestic Sales (unit-kilo tons)		
Company	***Jan-Apr 22***	***Jan-Apr 21***
Angarsk Polymer Plant	11.1	16.3
SIBUR-Kstovo	67.8	45.7
Lukoil-NNOS	61.8	57.7
Stavrolen	10.3	1.8
Others	0.5	0.1
Total	152.6	121.9

Russian ethylene production, Jan-Apr 2022

Russian ethylene production totalled 1.453 million tons in the first four months in 2022 against 1.489 million tons in the same period in 2021. Supply appears to be exceeding demand, with producers under pressure to reduce prices for merchant ethylene. ZapSibNeftekhim at Tobolsk produced 406,200 tons in January to April 2022 down from 474,100 tons in 2021. Nizhnekamskneftekhim produced 212,900 tons of ethylene against 214,600 tons in 2021 whilst Kazanorgsintez rose from 193,100 tons to 222,500 tons.

Other important ethylene producers included SIBUR-Kstovo which produced 137,100 tons versus 131,200 tons. In Bashkortostan Gazprom neftekhim Salavat produced 109,500 tons against 122,200 tons, whilst Ufaorgsintez increased production from 26,300 tons to 41,200 tons. Stavrolen at Budyennovsk reduced ethylene production to 111,100 tons against 115,400 tons in the first four months in 2021.

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

Russian propylene production amounted to 999,000 tons in the first four months in 2022 against 1.063 million tons in the same period in 2021. The combined ZapSibNeftekhim and SIBUR Tobolsk plants reduced production from 457,600 tons in the first four months in 2021 to 312,800 tons in 2021.

In Tatarstan Nizhnekamskneftekhim produced 107,600 tons of propylene in the first four months in 2022 whilst Kazanorgsintez increased production from 16,500 tons to 18,500 tons.

In Bashkortostan Gazprom neftekhim Salavat produced 48,800 tons of propylene versus 53,900 tons whilst Ufaorgsintez reduced production from 59,200 tons to 48,800 tons. In the Nizhny Novgorod region SIBUR-Kstovo increased production of propylene from 59,200 tons to 61,200 tons in 2022. Lukoil-NNOS at Kstovo increased production from 63,800 tons to 109,800 tons.

Russian propylene sales Jan-Apr 2022

Propylene exports from Russia amounted to 51,800 tons in the first four months in 2022 against 34,400 tons in the same period in 2021. Lukoil-NNOS increased export shipments from 13,400 tons to 34,700 tons whilst SIBUR-Kstovo shipped 10,600 tons against 6,400 tons in January-April 2021. In 2021 ZapSibNeftekhim purchased 67,100 tons of propylene on the merchant market against 73,900 tons in 2020. ZapSibNeftekhim is completing the first stage of modernisation of the propane dehydrogenation unit (PDH),

the purpose of which is to increase the capacity of this production by around 4%. This will help purchases of merchant propylene.

ZapSibNeftekhim increased merchant propylene purchases from 22,800 tons in January to April 2021 to 48,200 tons in the same period this year. Russia's largest merchant consumer Saratovorgsintez reduced purchases of merchant propylene from 62,200 tons to 61,800 tons and SIBUR-Khimprom reduced purchases from 13,500 tons to 10,300 tons. Other consumers included Akrilat at Dzerzhinsk which is part of SIBUR-Neftekhim. Akrilat produced 26,700 tons of butyl acrylate and 10,400 tons of 2-ethylhexyl acrylate. Also, about 4,000 tons of acrylic acid of polymer grade were produced.

Russian Propylene Domestic Purchases (unit-kilo tons)

Consumer	*Jan-Apr 22*	*Jan-Apr 21*
Saratovorgsintez	61.8	62.2
Volzhskiy Orgsintez	3.8	3.9
Akrilat	12.7	0.0
SIBUR-Khimprom	10.3	13.5
Omsk-Kaucuk	4.3	1.3
Tomskneftekhim	1.7	1.8
ZapSibNeftekhim	48.2	22.8
Ufaorgsintez	7.5	5.3
Khimprom Kemerovo	2.7	1.8
Plant of Synthetic Alcohol	1.1	5.7
Others	3.0	7.7
Total	157.0	126.1

Russian sales of propylene on the domestic merchant market amounted to 152,600 tons in the first four months in 2022 against 121,900 tons in the same period in 2021. The largest propylene supplier to the domestic market was Lukoil-NNOS, shipping 61,800 tons against 57,700 tons in January to April 2021.

Russian styrene production, sales and exports, Jan-Apr 2022

Russian styrene production declined slightly from 260,500 tons in the first four months in 2021 to 243,800 tons in the same period this year.

Russian Styrene Production (unit-kilo tons)

Producer	*Jan-Apr 22*	*Jan-Apr 21*
Nizhnekamskneftekhim	99.5	100.4
Angarsk Polymer Plant	12.5	15.1
SIBUR-Khimprom	50.9	48.3
Gazprom n Salavat	64.1	70.5
Plastik, Uzlovaya	16.7	26.1
Total	243.8	260.5

Nizhnekamskneftekhim reduced production from 100,400 tons to 99,500 tons where most of the styrene is used internally for polystyrene and synthetic rubber output. Gazprom neftekhim Salavat reduced styrene production from 70,500 tons to 64,100 whilst SIBUR-Khimprom increased 48,300 tons to 50,900 tons.

Russian Styrene Exports (unit-kilo tons)

Producer	*Jan-Apr 22*	*Jan-Apr 21*
Angarsk Polymer Plant	0.3	1.4
Gazprom Salavat	25.1	34.6
Nizhnekamskneftekhim	0.0	1.0
SIBUR-Khimprom	4.8	0.3
Total	30.2	37.4

Styrene was included on the list of EU sanctions, published on 8 April, which means that Russian producers must conclude all export business to Europe prior to 10 July this year. No contracts could be signed after 9 April.

Domestic merchant sales of styrene reduced from 49,500 tons in the first four months in 2021 to 42,900 tons in the same period in 2022. Angarsk Polymer Plant reduced sales from 9,500 tons to 8,800 tons whilst Gazprom neftekhim Salavat increased sales from 22,400 tons to 22,800 tons.

Russian Styrene Domestic Sales

Producer	*Jan-Apr 22*	*Jan-Apr 21*
Angarsk Polymer Plant	8.8	9.5
Plastik	0.4	0.2
Gazprom n Salavat	22.8	22.4
SIBUR-Khimprom	10.8	16.4
Nizhnekamskneftekhim	0.1	1.0
Total	42.9	49.5

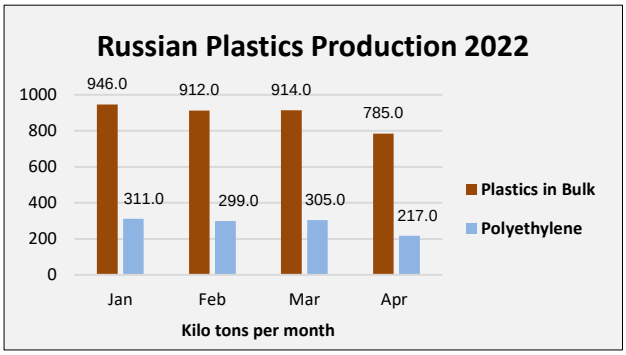
SIBUR-Khimprom reduced sales from 16,400 tons to 10,800 tons. At the beginning of May, producers were faced by large inventories due to the reduction in export deliveries.

Finnish Railways announced the beginning of the termination of contracts for the carriage of goods from the Russian Federation. On the domestic market producers are reducing prices due to oversupply.

Bulk Polymers

Russian polymers under EU sanctions

Russian producers are trying to compensate for sanctions and reduce dependency on other imports for a wide range of industries and applications such as automotive, food packaging, etc. There are numerous product areas where replacements can be created, with the biggest problems likely to be faced in the production of polyolefins. By the end of 2022, the Russian compounding industry, could be able to develop and replace up to 80% of polymeric materials necessary for the production of automotive components.



A wide range of polymers have been placed under EU sanctions, imposed on 8 April, although the main grades of polyethylene and polypropylene can still be traded in Europe. Even if sanctions have been avoided so far logistical challenges have already made sales of HDPE and LDPE to European customers more difficult. Around half of volumes of ethylene-alpha-olefins and propylene copolymers are sourced from West Europe, and it may not be straightforward in replacing these volumes with supplies from other regions.

Nizhnekamskneftekhim expands propylene copolymer production

In May and June Nizhnekamskneftekhim has started to expand the production polypropylene block copolymer brands used in the manufacture of non-pressure storm and domestic sewer systems. The polypropylene brand has successfully passed homologation at the production of Ikazplast, a leading player in the market of polymer pipeline systems in the North-West region of Russia. Previously, when producing sewer pipes, the company used imported European-made polypropylene.

A significant increase in prices for polymers in the EU as well as current logistical restrictions led to a significant rise in price of imported polypropylene, and also limited the possibility of its purchases. Thus, the imported product cost the manufacturer 30-40% more expensive than SIBUR's product. Nizhnekamskneftekhim in April started to see the effects of sanctions and whilst the company is working on trying to sell into other markets so far products accumulate in warehouses.

Tomskneftekhim & Kazanorgsintez new polyethylene grades for food packaging

Tomskneftekhim and Kazanorgsintez have conducted a successful homologation of polyethylene grades for the production of packaging by Danaflex (Russia's largest manufacturer of flexible packaging and films). Previously, in the production of packaging for snacks, Danaflex used polyethylene and components of European production. A significant increase in prices for polymers in the EU, the volatility of foreign currencies against the rouble, as well as current logistical restrictions led to a significant rise in price of imported raw materials, and also limited the possibility of its purchases. The proposed brands allowed Danaflex to completely replace imported products and switch to an alternative production technology with 100% use of domestic components. The use of SIBUR holding's grades also allowed Danaflex to reduce the cost of purchasing raw materials.

SIBUR-pipe grade production at ZapSibNeftekhim

SIBUR plans to launch the production of a more complex pipe grade brand at ZapSibNeftekhim which will make it possible to replace imports of European production by around 50%. SIBUR is ready to supply up to 100,000 tpa of polyethylene for Russia's gasification programme. In June, ZapSibNeftekhim wanted to launch the production of block copolymer of polypropylene PPI003EX, used for the production of corrugated pipes for non-pressure engineering systems. This brand is characterized by high frost resistance, shock resistance, etc. SIBUR and leading manufacturers of pipe products will create a working group to jointly refine the technology and recipe of the brand.

In the third quarter, SIBUR aims to begin production of a black brand of polyethylene HD 03594 RC, resistant to the spread of cracks. In 2023, SIBUR will offer domestic processors HD 03594 RC polyethylene grades in blue and orange colours, which will further expand the range of PE100 class products and allow processors to develop the production of multilayer pipes. The company is developing a brand of polyethylene for in-house water supply pipes and underfloor heating, which can be used at temperatures up to 80 degrees.

Paraxylene-PTA-PET

Russian paraxylene production April 2022

Russian paraxylene exports have been affected over the second quarter through the self-sanctioning by the Finnish railways, blocking shipments to the Finnish ports on and off since the invasion of Ukraine. Russian paraxylene production amounted to 18,375 tons in April against 26,166 tons in March with falls being noted for Gazprom Neft and Kirishinefteorgsintez. Sanctions may have some effect on production volumes of paraxylene, particularly Kirishinefteorgsintez, but probably not affect the PTA chain significantly in the short term.

Russian Paraxylene Production 2022 (unit-kilo tons)		
Producer	***Mar***	***Apr***
Gazprom Neft	10.589	5.616
Kirishinefteorgsintez	11.427	8.402
Ufaneftekhim	4.150	4.357
Total	26.166	18.375

The intention of the Finnish railways is to phase out all business with Russia in the next few months. Paraxylene is included on the list of EU sanctions, published on 8 April, although other products in the PX-PET chain remain have not been included in the official embargo. For paraxylene It means by EU regulations that Russian producers must conclude all export business to Europe prior to 10 July this year and that no contracts could be signed after 9 April.

Sanctions will mean that Russian producers will be unable to benefit from the high paraxylene prices in Europe although some markets in Asia could provide an option. All of the paraxylene from Russia until now has been exported to Finland and Belarus. Russian refineries that produce paraxylene have to find other markets or reduce utilisation rates. China is a huge importer of paraxylene, but logistics represents an issue for Russian exporters.

Polief Domestic Raw Material Purchases (unit-kilo tons)		
Product	***Jan-Apr 22***	***Jan-Apr 21***
MEG		
Nizhnekamskneftekhim	19.5	10.0
SIBUR Neftekhim	0.3	16.0
Acetic Acid		
Azot Nevinnomyssk	5.2	6.1

Russian PTA-PET raw material supplies

Polief increased purchases of MEG from Nizhnekamskneftekhim from 10,000 tons in the first four months last year to 19,500 tons whilst from SIBUR-Neftekhim at Dzerzhinsk purchases dropped from 16,000 tons to 500 tons.

For Ekopet at Kaliningrad, due to shipping problems has prevented deliveries of both PTA and MEG over the second quarter. Most of the PTA into Kaliningrad is sourced from China and has traditionally been supplied by the Danish company Maersk through the Suez Canal. At the ports of Bremerhaven and Gdansk, the polymer is reloaded on other ships. This route has been affected by sanctions and even industrial action. Thus far Ekopet has managed to survive the disruptions to PTA supply but could face production problems in the second half of the year.

Regarding MEG, Ekopet has traditionally purchased supplies from Saudi Arabia through its trading arm Ecopolymer but for the first time for several years there were no deliveries in March and April. Ekopet was able to source MEG through SIBUR-Neftekhim in Russia and was able to resume supply from SABIC in May.

SIBUR-REO PET recycling

SIBUR has concluded an agreement with recycling group REO whereby starting in the third quarter of 2024, REO will supply up to 10,000 tpa of flex for Polief. To fulfill its obligations under the contract, REO implements an investment project for the production of PET flex from used food packaging. It is envisaged that REO will purchase bottles on sorting, send them for recycling and sell the resulting PET flex to SIBUR. The plant where the bottles will be processed is located in the Chelyabinsk region. Transparent and blue flex will be supplied to SIBUR's Bashkir facility Polief for the production of food-grade v-PET (r-PET) granules under the Vivilen brand with a secondary raw material content of up to 25%. This contract provides a third of the company's need for PET flex after reaching the design capacity. Due to the supply of REO to the production of SIBUR, it is planned to send up to 600 million plastic bottles annually for recycling.

Aromatics

Russian Benzene Domestic Sales (unit-kilo tons)		
Producer	***Jan-Apr 22***	***Jan-Apr 21***
Angarsk Polymer Plant	16.5	18.5
SIBUR-Kstovo	29.9	26.4
Severstal	12.6	11.1
Uralorgsintez	22.9	25.6
West Siberian MC	21.0	22.1
Ryazan NPZ	9.0	7.7
Slavneft-Yanos	17.0	21.7
Gazprom Neft (Omsk)	34.3	33.2
Gazprom neftekhim Salavat	12.9	13.3
Stavrolen	13.4	0.0
Nizhnekamskneftekhim	20.3	9.1
Karpatneftekhim	4.6	3.2
Naftan	4.4	11.0
Atyrau	2.0	0.6
Novolipetsk MK	3.0	0.7
Chelyabinsk MK	3.5	5.4
Koks	10.0	8.9
Magnitogorsk MK	14.2	11.5
Nizhny Tagil MK	2.8	2.7
Others	3.5	3.1
Total	257.8	235.8

Russian benzene market and production Jan-Apr 2022

Russian benzene production amounted to 443,600 tons in the first four months in 2022 versus 445,800 tons in the same period in 2021. Nizhnekamskneftekhim increased benzene production from 101,400 tons to 102,500 tons, whilst Gazprom neftekhim Salavat reduced production from 69,400 tons to 63,300 tons.

Benzene sales on the Russian domestic market to 257,800 tons in the first four months in 2022 against 235,800 tons in the same period in 2021. Angarsk Polymer Plant reduced sales from 18,500 tons to 16,500 tons whilst SIBUR-Kstovo increased sales from 26,400 tons to 29,900 tons. Uralorgsintez in the Perm region reduced shipments from 25,600 tons to 22,900 tons.

Gazprom Neft at Omsk increased sales from 33,200 tons in the first four months last year to 34,300 tons whilst Gazprom neftekhim Salavat reduced sales from 13,300 tons to 12,900 tons. Regarding importers, Karpatneftekhim from Ukraine increased shipments to the Russian market to 4,600 tons in the first two months before stopping production on 24 February whilst shipments from Belarus reduced from 11,000 tons to 4,000 tons.

The Russian domestic market for benzene has become complicated due to the artificial rouble rate. Sellers have been advised by the Federal Advisory Service (FAS) not to use European quotations and foreign exchange rates when setting selling prices. Regarding current supply, Uralorgsintez started a maintenance shutdown at the start of April which should last until the end of the month. Kirishinefteorgsintez is also reported to be down in April which should affect overall production volumes.

Russian Caprolactam Production (unit-kilo tons)		
Producer	***Jan-Apr 22***	***Jan-Apr 21***
Kuibyshevazot	67.4	62.9
Shchekinoazot	19.9	18.4
SDS Azot	40.8	45.1
Total	128.1	126.5

Lukoil continues to export benzene to foreign markets through its Stavrolen division, in particular to European countries where benzene trade is not under sanctions. In the first four months in 2022 Russian benzene exports amounted to 23,400 tons, which was slightly up on the same period last year.

Russian caprolactam production, Jan-Apr 2022

Russian caprolactam production amounted to 128,100 tons in January to April 2022 against 126,500 tons in the same period in 2021. Kuibyshevazot increased production from 62,900 tons to 67,400 tons whilst SDS Azot at Kemerovo reduced production to 40,800 tons from 45,100 tons. Caprolactam was placed under EU sanctions from the fifth round adopted on 8 April 2022. Exports are not likely to be affected significantly as most of the Russian caprolactam goes to Asia, particularly China and Taiwan.

Russian caprolactam exports dropped from 200,000 tons in 2020 to 159,500 tons in 2021. Although Shchekinoazot increased exports from 45,400 tons to 59,400 tons, SDS Azot at Kemerovo reduced shipments from 101,200 tons to 80,700 tons and Kuibyshevazot reduced shipments from 53,400 tons to 19,300 tons. Overall caprolactam exports dropped from 237,300 tons in 2020 to 196,700 tons in 2021. Main

export markets for Russian caprolactam remain China and Taiwan which took 87,600 tons and 58,800 tons in 2021 respectively.

Russian Orthoxylene Domestic Sales (unit-kilo tons)		
Producer	***Jan-Apr 22***	***Jan-Apr 21***
Gazprom Neft	34.6	35.7
Ufaneftekhim	13.8	16.1
Kirishinefteorgsintez	7.8	13.5
Total	56.2	65.3

Russian orthoxylene-toluene, Jan-Apr 2022

Both orthoxylene and toluene have been listed under EU sanctions applied from 8 April 2022, although trade volumes for each product are relatively small.

Orthoxylene domestic sales in Russia amounted to 56,200 tons in the first four months in 2022 against 65,300 tons in the same period in 2021. Gazprom Neft reduced domestic shipments from 35,700 tons to 34,600 tons whilst Ufaneftekhim reduced shipments from 16,100 tons to 13,800 tons. Kirishinefteorgsintez reduced domestic shipments of orthoxylene from 13,500 tons to 7,800 tons.

Russian Toluene Production (unit-kilo tons)		
Producer	***Jan-Apr 22***	***Jan-Apr 21***
Kinef	0.0	7.3
Gazprom N Salavat	6.4	12.6
Slavneft-Yaros	9.7	13.5
LUKoil-Perm	11.0	14.7
Gazprom Neft	29.2	21.7
RN Holding	13.1	10.3
Ufaneftekhim	38.0	6.7
Others	5.1	9.0
Total	112.6	95.7

Russian toluene production totalled 112,600 tons in the first four months in 2022 against 95,700 tons in the same period in 2021. Gazprom Neft reduced production from 21,700 tons to 29,200 tons whilst Ufaneftekhim increased from 6,700 tons to 38,000 tons.

Russian phenol market, Jan-Apr 2022

Phenol was included on the list of EU sanctions, published on 8 April, which means that Russian producers must conclude all export business to Europe prior to 10 July this year and that no contracts could be signed after 9 April. Russian phenol exports rose from 6,400 tons in January to April 2021 to 17,300 tons.

Russian Phenol Production (unit-kilo tons)		
Producer	***Jan-Apr 22***	***Jan-Apr 21***
Ufaorgsintez	20.3	21.3
Kazanorgsintez	26.8	26.7
Novokuibyshevsk Petrochemical	22.2	25.7
Omsk Kaucuk, Omsk	26.5	16.5
Total	95.8	90.1

Sales of phenol on the domestic market are larger which means that producers are not over dependent on export activity. Sales of phenol on the domestic market totalled 43,600 tons in the first four months in 2022 against 44,800 tons in the same period this year with Ufaorgsintez reducing shipments from 20,700 tons to 15,900 tons.

Russian Phenol Exports by Supplier (unit-kilo tons)		
Producer	***Jan-Apr 22***	***Jan-Apr 21***
Omsk Kaucuk	10.9	0.8
Novokuibyshevsk Petrochemical	3.5	3.6
Ufaorgsintez	3.0	2.0
Total	17.3	6.4

Kazanorgsintez cumene modernisation

As Russia's most integrated phenol producer Kazanorgsintez has concluded the first stage of modernisation of its cumene unit linked to its polycarbonate production chain. Cumene capacity is expected to remain unchanged at 110,000 tpa. Using a solid zeolite catalyst, the plant is able to work for several years without replacement.

Russian Domestic Market Phenol Sales by Supplier (unit-kilo tons)		
Producer	***Jan-Apr 22***	***Jan-Apr 21***
Omsk Kaucuk	11.4	5.5
Novokuibyshevsk Petrochemical	16.2	18.7
Ufaorgsintez	15.9	20.7
Total	43.6	44.8

As the sole producer of polycarbonates in Russia, Kazanorgsintez, provides itself with most of the necessary raw materials, including cumene. Benzene is purchased on the merchant market whilst propylene comes from the company's naphtha-based cracker production. This completes the chain through phenol and acetone to Bisphenol-A through to polycarbonate. The production of polycarbonates at Kazanorgsintez has also recently been modernised, increasing capacity from 77,000 tpa to 100,000 tpa which just about meets domestic demand.

Synthetic rubber

Russian Butadiene Production (unit-kilo tons)				
Producer	***Jan***	***Feb***	***Mar***	***Apr***
ZapSibNeftekhim	28.125	24.000	28.468	21.88
Nizhnekamskneftekhim	21.635	19.110	20.800	17.095
Togliattikaucuk	4.390	2.920	5.250	4.845
Sterlitamak Petrochemical Plant	3.040	3.851	1.800	2.589
Omsk Kaucuk	2.325	3.445	2.845	3.445
Total	59.515	53.326	59.163	49.854

Russian rubber production Jan-Apr 2022

Russian synthetic rubber production totalled 568,000 tons in the first four months in 2022 against 595,000 tons in the same period in 2021. Export destinations for Russian synthetic rubber producers is being forced to change in view of EU sanctions.

Butadiene production dropped in April to 49,854 tons against 59,163 tons March. ZapSibNeftekhim reduced production from 28,468 tons to 21,880 tons, whilst Nizhnekamskneftekhim reduced production to 17,095 tons against 20,800 tons.

Russian Tyre Production (unit-kilo tons)		
Product	***Jan-Apr 22***	***Jan-Apr 21***
Car Tyres	119.0	112.8
Lorry tyres	14.4	18.6
Agricultural tyres	4.7	3.3
Total	138.1	134.6

Consumption of rubber in the production of tyres amounted to 138,100 tons in January to April 2022 against 134,600 tons in the same period last year. Tyre exports from Russia to the EU have now been sanctioned, which has opened some doors to other markets such as China. Effectively any foreign owned tyre plant inside Russia is limited to the domestic market. Consumption of rubber for tyre manufacturers comprise both natural and synthetic, with natural rubber being purchased from countries such as Indonesia, Malaysia, Thailand, etc.

Efremov Synthetic Rubber Plant-new markets

As a non-integrated rubber producer Efremov Synthetic Rubber Plant is facing higher costs from butadiene prices which is struggling to pass on to a slowing market. Efremov Synthetic Rubber Plant is one of the largest Russian producers of high molecular weight polyisobutylene. The company's share of export from sales increased to 76.3% against 55.9%.

The main problem facing Efremov Synthetic Rubber Plant is that 43% of exports of polyisobutylene went to Germany last year, with 12% going to the UK, and thus in the face of sanctions the company needs to find new markets. Last year the company was able to pass on higher costs to the market and revenues rose 2.2 times to 4.65 billion roubles. Net profits rose by 2.8 times to 312.5 million roubles in 2021.

Sterlitamak Petrochemical Plant-rediredcing exports

Sterlitamak rubber plants started plant maintenance on 18 June which will last until later July. Sterlitamak Petrochemical Plant and its adjacent plant Sintez-Kaucuk export isoprene rubber and SBR. Isoprene rubber exports have had to change course as Ukraine was its largest export destination in 2021, taking around 15% total shipments. Overall whilst the Sterlitamak rubber plants are better set up to redistribute their sales to Europe than Nizhnekamskneftekhim it will require time to find new customers. On the production side, maintenance started on the rubber plants on 18 June lasting until July.

Sterlitamak Synthetic Rubber Exports (€ million)		
Category	***2021***	***2020***
SBR	54.8	34.4
Isoprene	68.3	48.1
Others	0	0.2
Total	123.1	82.7

Tatneft sold its tyre business to KAMA

Tatneft sold its tyre business Nizhnekamskshina to Tatneftekhiminvest-holding in June. Nizhnekamskshina has been experiencing difficulties with the production of tyres due to problems with the supply of imported components for rubber compounds.

Despite having taken over Togliattikaucuk in 2019 Tatneft lacks its own petrochemical base to complete the integration into the tyre business. The tyre complex of Tatneft in 2021 produced more than 12 million pieces of tyres, an increase of 8.6% compared to the previous year which was due to the restoration of the production of passenger and light truck tyres.

Methanol

Russian Methanol Production (unit-kilo tons)		
Producer	***Jan-Apr 22***	***Jan-Apr 21***
Shchekinoazot	515.5	331.1
Gazprom Methanol	277.5	337.8
Metafrax Chemicals	433.8	421.7
Akron	37.0	35.0
Azot Novomoskovsk	51.4	97.9
Angarsk Petrochemical	12.9	15.8
Azot Nevinnomyssk	39.4	38.1
Tomet	241.8	163.3
Ammoni	35.1	45.5
Totals	1644.6	1486.1

Russian methanol production Jan-Apr 2022

Russia produced 1.645 million tons of methanol in the first four months in 2022 against 1.486 million tons in the same period in 2021. Metafrax Chemicals at Gubakha produced 433,800 tons against 421,700 tons in January-April 2021, whilst Gazprom Methanol at Tomsk reduced production from 337,800 tons to 277,500 tons.

Tomet produced 241,800 tons of methanol in the first four months in 2022 against 163,300 tons in the same period in 2021.

Shchekinoazot produced 515,500 tons in the first four months in 2022 against 331,100 tons in January to April 2021, the increase due to the addition of new capacity. Also, in the Tula Oblast Azot at Novomoskovsk reduced production from 97,900 tons to 51,400 tons. Ammoni in Tatarstan reduced methanol production from 45,500 tons in the first four months in 2021 to 35,100 tons in the same period this year. Effectively the difference in the production volumes this year can be attributed to the restart of the second line at Tomet and the start of the third plant at Shchekinoazot. Producer sales from domestic and export shipments totalled 1.364 million tons 1.208 million tons in the same period in 2021.

Russian Methanol Exports by Producer (unit-kilo tons)		
Producer	***Jan-Apr 22***	***Jan-Apr 21***
Azot Nevinnomyssk	1.0	3.6
Azot Novomoskovsk	20.6	32.1
Akron	4.9	3.2
Metafrax Chemicals	169.5	150.8
Gazprom Methanol	91.1	167.7
Tomet	119.0	47.7
Shchekinoazot	385.6	237.4
Ammoni	1.0	0.0
Total	792.5	642.5

Russian methanol exports, Jan-Apr 2022

Russian producer exports of methanol rose in the first four months from last year from 642,500 tons to 792,500 tons this year. Tomet exported 119,000 tons of methanol in the first four months up from 47,700 tons in the same period in 2021.

Metafrax Chemicals reduced exports from 150,800 tons in January and April 2021 to 169,500 tons this year whilst Gazprom Methanol reduced exports from 150,800 tons in 169,500 tons. The largest Russian exporter in the first four months was Shchekinoazot shipping 385,600 tons versus 237,400 tons in January to April 2021.

Russian Methanol Exports by Destination		
Country	***Jan-Apr 22***	***Jan-Apr 21***
Belarus	68.6	41.2
Finland	290.2	308.2
Germany	1.0	1.3
Kazakhstan	12.0	7.4
Latvia	17.1	5.8
Lithuania	33.1	30.8
Netherlands	111.9	28.0
Poland	144.1	108.3
Romania	26.5	30.1
Slovakia	49.0	83.2
Turkey	21.8	5.1
UK	8.4	0.0
Ukraine	11.9	21.3
Others	0.5	0.1
Total	796.1	670.9

Destination figures for methanol exports, which can include numbers from previous months, comprised 796,100 tons for the first four months versus 670,900 tons last year. Finland accounted for 290,200 tons of Russian methanol exports in the first four months against 308,200 tons in the same period in 2021. Poland increased deliveries from Russia from 108,300 tons to 144,100 tons whilst exports to the Netherlands rose from 28,000 tons to 111,900 tons. The rise in exports to the Netherlands was due to higher production and transhipment in 2022 from Tomet at Togliatti.

Russian methanol domestic sales, Jan-Apr 2022

Merchant sales of methanol on the Russian domestic market amounted to 572,600 tons in the first four months in 2022 against 565,000 tons in the same period in 2021. Tomet increased sales from 105,300 tons to 135,800 tons whilst Gazprom Methanol reduced sales from 157,000 tons to 141,600 tons. Metafrax Chemicals reduced shipments to the domestic market from 136,100 tons in January to April 2021 to 129,500 tons in the same period this year.

Russian Methanol Domestic Sales (unit-kilo tons)		
Producer	***Jan-Apr 22***	***Jan-Apr 21***
Azot Nevinnomyssk	9.1	5.9
Azot Novomoskovsk	45.6	65.8
Metafrax Chemicals	129.5	136.1
Gazprom Methanol	141.6	157.0
Tomet	135.8	105.3
Shchekinoazot	90.4	64.2
Ammoni (Mendeleevsk)	20.6	30.8
Total	572.6	565.0

In April the domestic market continued to provide opportunities for producers but on a more reduced basis than in March. Both synthetic rubber and phenol-formaldehyde resins, which are major consuming applications of methanol in Russia, have been placed under EU sanctions from its fifth round. Nizhnekamskneftekhim is Russia's largest domestic merchant methanol consumer, already facing pressure on production levels due to the difficulties in selling products to Europe.

Some methanol producers such as Akron at Novgorod are better placed to continue producing at full rates where internal processing accounts for a large part of the usage. From total methanol production of 105,000 tons by Akron last year 91,000 tons was consumed in the production of formalin. Formalin is not listed on EU sanctions, whilst the finished products urea-formaldehyde resins from Akron are shipped largely to Belarus.

Russian Methanol Purchases by Consumer (unit-kilo tons)		
Consumer	***Jan-Apr 22***	***Jan-Apr 21***
Nizhnekamskneftekhim	118.8	104.5
Togliattikaucuk	18.9	42.7
Uralorgsintez	7.8	15.6
SIBUR-Khimprom	1.0	8.5
SIBUR Tobolsk	14.2	11.4
Omsk Kaucuk	38.3	29.3
Novokuibyshevsk NPZ	9.0	10.0
Uralkhimplast	7.2	7.3
Slavneft-Yanos	4.2	4.2
Metadynea	27.6	34.4
Kronospan	34.4	41.8
Gazprom	95.6	71.0
Khimsintez	19.1	6.2
Volzhsky Orgsintez	16.1	3.0
Togliattiazot	45.3	26.2
Others	86.8	162.8
Total	544.3	578.8

Regarding domestic consumers Nizhnekamskneftekhim recorded a rise in methanol purchases from 104,500 tons in the first four months to 118,800 tons whilst Gazprom increased purchases from 71,000 tons to 95,600 tons. Nearly all of the methanol purchases made by Gazprom come from its subsidiary Gazprom Methanol. Togliattikaucuk reduced methanol purchases from 42,700 tons in January to April 2021 to 18,900 tons, the drop being mainly due to lower MTBE production.

In the sector for urea-formaldehyde resins Kronospan bought 34,400 tons of methanol against 41,800 tons in January to April 2021 and Metadynea reduced purchases from 34,400 tons to 27,600 tons. Uralkhimplast at Nizhniy Tagil decreased methanol purchases for resin production from 7,300 tons to 7,200 tons. Khimsintez increased purchases of methanol from 6,200 tons in the first four months last year to 19,100 tons in January to April 2022. Khimsintez is focused on the production of chemical products for technical purposes including formalin and synthetic resins. The company's turnover last year stopped at 4.694 billion roubles and the net profit at 195.235 million roubles.

Tomet could be integrated back into Togliattiazot

Reports indicate that Tomet could be incorporated back into the Togliattiazot, the site where the methanol plant is based. The plant assets were sold off a decade ago and Tomet has operated as a separate entity. As with other parts of Russian industry Tomet has become subject of a corruption enquiry and political intrigue which eventually led to its bankruptcy in 2021. Togliattiazot is one of the world's largest producers of ammonia where there has also been changes at board level and has become dominated by shareholders of Uralkhim. It is also Tomet's largest merchant consumer of methanol.

Tomet Methanol Production & Sales (unit-kilo tons)		
	Jan-Apr 22	***Jan-Apr 21***
Production	241.8	163.3
Exports	119.0	47.7
Domestic Sales	135.8	105.3
Inventory	-13.0	10.3

The sale of a land plot with a production complex for the production of methanol took place in 2010 at a price of 132 million roubles, but the claim is that this was only a fraction of the value of the plant. The problem is that it is difficult to invalidate a transaction completed over ten years ago. The new management team of ToAZ not only tries to return the property through the recognition of transactions as invalid, but also to compensate for losses up to 2020.

Shchekinoazot Methanol Production & Sales (unit-kilo tons)		
	Jan-Apr 22	***Jan-Apr 21***
Production	515.7	331.0
Exports	385.6	237.4
Domestic Sales	90.4	64.2
Inventory	39.7	29.4

Shchekinoazot-methanol processing and cluster

In the first four months in 2022 Shchekinoazot has increased methanol production, exports and sales but as exports start to weaken the company is looking for alternative markets to Europe. Although domestic sales have been higher this year, volumes are relatively small compared to production. Internal processing requirements are very small at this stage for Shchekinoazot, although the company is focused on derivative plants

In May Shchekinoazot received delivery of equipment from China for the construction of its new plant for concentrated low-methanol formalin. The capacity of the plant is 110,000 tpa and is part of the company's strategy to develop downstream processing and to reduce the dependency on merchant sales. The formalin project includes further processing into urea-formaldehyde resins with a capacity of 220,000 tpa.

Shchekinoazot is the most export-oriented of the methanol producers. The company faces short term challenges in maintaining full production even if it possesses medium and long-term plans to focus more on internal methanol processing. Part of these plans include local companies using methanol for resin production. Chinese company Wuxi Huali Petroleum and Chemical Engineering was chosen as the licensor (of the KMMF-110 unit (110,000 tpa of and Bakelite for the licensor of the KMFS-220 unit. Both of these units are intended for completion by the end of 2024 but even then, will only consume around 150,000 tpa of methanol.

Metafrax Chemicals Methanol Production & Sales (unit-kilo tons)		
	Jan-Apr 22	***Jan-Apr 21***
Production	433.8	421.8
Exports	169.5	150.9
Domestic Sales	129.5	136.1
Inventory	134.9	134.8

Metafrax Chemicals completes AKM complex

Metafrax Chemicals is probably the most developed of all the Russian methanol producers due to its downstream processing into formalin and other products, combined with long term arrangements with domestic merchant customers. Exports are still very important and if the European export routes are blocked it is not clear how the company can export elsewhere and still be profitable.

Other than methanol Metafrax Chemicals is completing the construction of the Ammonia-Urea-Melamine complex. Design institute GIAP from Dzerzhinsk has been responsible for the construction of the complex based on technology from the Swiss company Casale. To date, the volume of commissioning work has approached 95%. The complex is planned that it will be put into operation in 2022. As part of the Ammonia-Urea-Melamine complex, Metafrax is building a carbon dioxide extraction plant, which will allow emissions from the main production of Metafrax to be reduced by more than half.

Haldor Topsoe withdrawing from Russian market

Although methanol production technology has not been sanctioned directly by the EU, the US or Japan this has not prevented licensors, contractors and partners withdrawing from the Russian market. Haldor Topsoe is in the process of settling all official liabilities in Russia and Belarus and plans to go out of business within a few months. The company's Moscow office, which currently employs about 80 people, will also be closed. Haldor Topsoe is the world leader in the production of catalysts. The company is also a supplier of low-carbon solutions for the production of petrochemical products, oil refining, and hydrogen. In recent years Haldor Topsoe's SynCOR methanol technology has been selected by a number of Russian companies for projects. Shchekinoazot completed its third plant with Haldor Topsoe in September 2021 and has been working on other plants at the Shchekino site.

Haldor Topsoe Methanol Licenses Awarded by Russian companies		
Producer	***Location***	***Date of Start-up***
AEON	Volgograd	2025
Gaz Sintez	Vysotsk	2025
National Chemical Group	Primorsky Krai	2025
Nizhnekamskneftekhim	Nizhnekamsk	2023
Shchekinoazot	Shchekino	2011, 2018 and 2021

Organic chemicals

Russian N-Butanol Production (unit-kilo tons)		
Producer	***Jan-Apr 22***	***Jan-Apr 21***
Angarsk Petrochemical company	12.6	10.9
Azot Nevinnomyssk	5.1	3.9
Gazprom neftekhim Salavat	18.8	20.0
SIBUR-Khimprom, Perm	8.9	8.1
Total	45.4	42.9
Russian Isobutanol Production (unit-kilo tons)		
Producer	***Jan-Apr 22***	***Jan-Apr 21***
Angarsk Petrochemical Company	8.8	5.7
Gazprom neftekhim Salavat	11.3	11.1
SIBUR-Khimprom, Perm	17.4	8.2
Total	37.5	25.0

Russian butanol production Jan-Apr 2022

Russian normal butanol production rose from 42,900 tons in the first four months in 2021 to 45,400 tons in the same period in 2022. Gazprom neftekhim Salavat was the largest Russian producer, reducing production from 20,000 tons to 18,800 tons in January to April 2021.

Isobutanol production in Russia increased from 25,000 tons in the first four months last year to 37,500 tons in 2022. SIBUR-Khimprom increased production in the first four months from 8,200 tons in 2021 to 17,400 tons. However, SIBUR-Khimprom encountered some production difficulties in March which has affected availability of oxo alcohols for merchant sales. There is little availability from other producers at Salavat, Angarsk and Azot at Nevinnomyssk which uses butanols further processing into solvents. In addition, the plant was still idle at the beginning of April when scheduled repairs were carried out.

Russian producers intended to ship 1,500 tons of normal butanol to the domestic market in April, and 2,400 tons to foreign markets. Sales destinations include China and Turkey which should not face complications from sanctions.

The Angarsk petrochemical complex stopped production of butanols on 20 June for scheduled repairs. The plant is expected to be out of action for 40 days. In 2021, production totalled 47,026 tons of butanols, including 27,973 tons of n-butanol (6% less than in 2021) and 19,053 tons of isobutanol (+2%).

Russian Plasticizer Trade 2022 (unit-kilo tons)				
		Exports		
	Jan	***Feb***	***Mar***	***Apr***
DOTP	2.339	1.044	0.542	0.136
		Imports		
	Jan	***Feb***	***Mar***	***Apr***
DOP	0	0	0	0.023
DOTP	0.669	0.483	0.823	0.989
DINP	1.923	2.535	0.907	2.411

Russian plasticizer market 2022

Both imports and exports of plasticizers declined in volume in April against March as transportation and other sanctions take effect. SIBUR-Khimprom has reduced export activity of DOTP due to increased focus on the domestic market, whilst for DOP the producer Gazprom neftekhim Salavat stopped production for scheduled repairs lasting from May to mid-June. Demand for plasticizers in the domestic market is softening and prices are expected to fall in the third quarter.

Impact of EU sanctions on Russian organic chemicals

Oxo alcohols were placed under EU sanctions from 8 April. Although direct trade for butanols and 2-EH is limited with Europe, the sanctions imposed by the EU could affect other derivatives. For the most part oxo alcohols are consumed domestically either through internal processing or merchant market sales and so judged in isolation the sanctions do not create problems.

Due to the side effects of sanctions and logistical route difficulties the downstream market for oxo alcohols is feeling some impact, particularly in the paint industry where missing raw materials have started to emerge. Around 50% of water-dispersion coatings for the Russian market are sourced from Germany, Poland, Finland and Korea. Aliphatic polyurethane paints are not produced in Russia at all and are essential for cars. The problem is also that it will not be possible to accumulate large stocks of paints and varnishes before the introduction of restrictions in July. Suppliers have reserves for two three months

and are actively negotiating with manufacturers from other countries. China is the primary alternative for sourcing, but it is not clear about availability and delivery times.

Russian acetone market Jan-Apr 2022

Russian acetone production amounted to 31,500 tons in the first four months in 2022 against 27,600 tons in the same period in 2021. Omsk Kaucuk produced 15,500 tons of acetone against 3,900 tons whilst Kazanorgsintez increased production from 17,900 tons to 18,400 tons.

Russian Acetone Production (unit-kilo tons)		
Producer	***Jan-Apr 22***	***Jan-Apr 21***
Ufaorgsintez	13.1	16.0
Kazanorgsintez	18.4	17.9
Novokuibyshevsk Petrochemical	12.5	15.8
Omsk Kaucuk	15.5	3.9
Total	59.4	53.6

Acetone was included on the list of EU sanctions, published on 8 April, which means that Russian producers must conclude all export business to Europe prior to 10 July this year and that no contracts could be signed after 9 April. The Netherlands is the largest destination for Russian acetone exports, with Latvia and Lithuania also important. Exports of acetone from Russia totalled 14,100 tons in the first four months in 2022 against 17,400 tons in the same period last year.

Russian Ethyl Acetate Imports (unit-kilo tons)		
Company	***Jan-Apr 22***	***Jan-Apr 21***
Laxmi Organics Industries	248.2	511.8
Ineos	314.1	1420.1
Others	254.5	1457.3
Total	816.8	3389.2

Russian ethyl acetate imports, Jan-Apr 2022

Ethyl acetate imports into Russia dropped by 76% in the first four months in 2022, from 3,389 tons in January to April 2021 to 817 tons. From January to April 2022, Ineos supplied 314 tons against 1,420 tons in the same period last year. The major distributor in the domestic market Ruskhimset did not purchase from Ineos so far this year.

The domestic market for paints and varnishes is witnessing a fall in demand, and at the same time 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.

Russian chemical projects and new products

Russian Imports of Maleic Anhydride (unit-kilo tons)		
Country	***2021***	***2020***
China	6.5	5.5
Germany	0.7	0.6
Taiwan	0.1	0.6
South Korea	0.1	0.4
Others	0.0	0.0
Total	7.4	7.2

Russian Hydrogen Peroxide Imports (unit-kilo tons)		
Country	***2021***	***2020***
Belgium	3.5	5.5
Finland	74.1	68.8
Netherlands	0.8	2.0
Sweden	5.9	4.0
Others	1.6	1.8
Total	85.9	82.2

SIBUR maleic anhydride project completion

The completion of the maleic anhydride project at Tobolsk is SIBUR's largest investment project for the development of medium-tonnage and low-tonnage chemistry in Russia. It is aimed at stimulating non-primary exports and developing the depth of hydrocarbon processing on the basis of its own butane. Maleic anhydride is used in the production of unsaturated polyester resins, Bisphenol A, in addition to a wide range of applications in other industries. The plant's capacity of 45,000 tpa is expected to operational by the end of 2022 but SIBUR needs to find export markets in order to run at 100% utilisation. The launch of production should meet the needs of domestic producers as demand last year was estimated at less than 10,000 tons.

Orgsintez-hydrogen peroxide project

Orgsintez will invest 9.7 billion roubles in expanding the production of hydrogen peroxide at the Khimprom site at Novocheboksarsk. The investment will allow Khimprom to launch the production of highly concentrated 100% hydrogen peroxide with a capacity of 50,000 tpa, which is equivalent to 150,000 tpa of 30% peroxide concentration. The total production volume of 30% of hydrogen peroxide

in 2024 at Khimprom will amount to about 250,000 tpa, which will fully cover the needs of the Russian market.

Russian Sodium Chlorate Imports (unit-kilo tons)		
Country	***2021***	***2020***
Finland	27.4	27.3
Uzbekistan	9.2	9.0
Sweden	0.8	0.5
Total	37.3	36.8

Bashkir Soda-calcium chloride
The Bashkir Soda Company (BSK) has begun designing a new workshop for the production of granular calcium chloride with a capacity of 300,000 tpa. The range of applications of calcium chloride is quite wide, including metallurgy, the construction sector, utilities, the mining and chemical industries, as well as the oil industry.

Orgsintez-sodium chlorate project
Orgsintez is considering a project for sodium chlorate at Novocheboksarsk with a capacity of 50,000 tpa, as well as a project for the second stage of calcium hypochlorite production with a capacity of 15,000 tpa. The new production using advanced technologies and management will replace the import of sodium chlorate by 80%. The sodium chlorate project is scheduled for completion by 2027 and the second calcium hypochlorite project by 2025 so these do represent medium term investments. Khimprom already produces a complex of oxidants including hydrogen peroxide, chlorine, calcium hypochlorite, and sodium hypochlorite.

Siberian Titan-TiO2
Siberian Titan plans in 2023 to begin construction of the production of titanium pigment dioxide based on fluoride technology in the Tomsk region. The estimated production capacity will be 10,000 tpa which corresponds to about 10% of consumption in Russia. The company hopes to receive a construction permit in 2022, and to start construction in 2023.

Akripol-Saratov, increase in reagents
Saratov chemical plant Chemical Plant Akripol has doubled the production of reagents aimed to replace imports. Over the first four months of 2022, the volume of shipments doubled against the same period in 2021. Akripol is the only company in Russia that has introduced its own technology for the production of polymers based on acrylamide and acrylic acid. The company is also engaged in the development of chemical reagents for oil and gas producing companies, mining and processing plants, water utilities, coal industry and agriculture. The US is the largest supplier of reagents to Russia, followed by Germany and the UK.

Central Asia

Azerkhimya-olefin expansion
Azerkimiya (part of SOCAR) plans to complete the modernisation of the Ethylene-Polyethylene plant at Sumgait in the first quarter of 2023. Some new technological installations, new furnaces, tanks and warehouses for storing raw materials were built. Before the modernisation, the capacity of the plant for the production of ethylene was 100-110,000 tpa and propylene 60-65,000 tpa. After the modernisation, the plant's capacity for propylene will rise to 187,000 tpa and ethylene 190,000 tpa or even 210,000 tpa.

The company is also working to update the energy resources of the plant. In the third quarter in 2022, it is planned to put into operation an additional steam turbine generator, which will increase electricity production at the plant by two-fold. Projects for the construction of a new high-voltage substation and the expansion of the existing water-cooling system are in the final stages.

Kazakh PVC & and other projects
The issue of providing raw materials for a prospective PVC plant in Kazakhstan as part of a jv with the Bashkir Soda Company. The aim is to construct a plant for 120,000 tpa at Sastobe near Shymkent in the south of the country. Currently Kazakhstan buys PVC products from China, Russia and Uzbekistan. For the production of PVC, Kazakhstan has access to chlorine and hydrocarbons, but does not yet produce ethylene. In December 2021, Kazakh company Kaustik at Pavlodar and Bashkir Soda Company (BSK) signed an agreement on the establishment of a joint venture for projects totalling up to $1 billion. The companies signed an agreement that implies cooperation between BSK and Pavlodar Kaustik to obtain chlorine-containing products, including import-replacing products such as zirconium oxychloride for which there are rich deposits (mineral zirconide) in Kazakhstan there are rich deposits of raw materials necessary

for the production of zirconium oxychloride. In 2021 BSK supplied 203,000 tons of chemical products to Kazakhstan from which revenues totalled around $44 million. The largest share in the export of products produced by BSK was soda ash, sodium bicarbonate, caustic hard soda, and other products.

Kazazot-investment projects
Kazakh fertiliser producer KazAzot is undertaking six new projects in fertiliser intermediates in Kazakhstan. In particular, KazAzot plans to build a production of carbon ammonium salts with a capacity of 15,000 tpa and ammonium sulphate with a capacity of 40,000 tpa which are scheduled to be completed by 2024.

Uzbek polyethylene demand
Due to a sharp increase in demand in the domestic market in Uzbekistan, the polyethylene products produced by the Shurtan gas chemical complex are fully sold to the domestic market. In 2021, the complex processed 4.2 billion cubic metres of natural gas raw materials, 135,200 tons of polyethylene granules, 3.5 billion cubic metres of purified gas, 117,500 tons of liquefied gas, 103,600 tons of gas condensate, and 1,100 tons of sulphur.

Uzbekneftegaz possesses a total capacity to produce 490,000 tpa of polyethylene and 90,000 tpa of polypropylene. Last year exports of polypropylene amounted to 59,000 tons for $83.960 million and polyethylene exports amounted to $91.470 for 93,000 tons.

Uzbekneftegaz polyethylene expansion
Uzbekneftegaz has confirmed its expansion plans for the Shurtan Gas Chemical Complex, raising polymer capacity to 505,000 tpa by the end of 2024. A new source of raw materials in the form of naphtha is being added from the GTL plant which equates to 430,000 tpa. The new investments for Shurtan include a complex with a capacity of 280,000 tpa of polyethylene grades for pipes, films, blown, and cast as well as 100,000 tpa of homo, cast, and new grades of polypropylene.

Turkmenistan-isobutane plant
Turkmenistan is involved in the construction of a new isobutane plant at a polymer plant the Kiyanly located on the Caspian coast. The polymer plant in Kiyanly was opened in October 2018. The cost of its construction amounted to $ 3.4 billion The project was implemented by the state concern Turkmengaz together with LG International Corp, Hyundai Engineering and Toyo Engineering Corporation. The production of isobutane will be Turkmenistan's contribution to achieving the goals of the Montreal Protocol to the Vienna Convention for the Protection of the Ozone Layer, designed to protect the ozone layer by phasing out ozone-depleting chemicals and replacing them with environmentally friendly substances.

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