

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

- Most chemical and petrochemical companies reported sharp rises in revenues in first quarter
- Not all petrochemical producers reported rises in net profits, but refinery margins much higher
- MOL is taking advantage of cheaper Russian oil for refining and petrochemical margins
- Ethylene production at Plock rose in the first quarter to 122,800 tons from 97,200 tons in 2021
- Export revenues for PTA from PKN Orlen amounted to €146.8 million in the first quarter from €76.0 million in Q1 2021. By volume exports rose to 119,121 tons from 102,171 tons
- Exports of methanol from Poland amounted to 85,660 tons in the first quarter against 44,458 tons. Poland started in March supplying Hungary, Romania and Slovakia
- In the first quarter in 2022 the PCC Rokita Capital Group recorded a net profit of zł 123.9 million (€26.6 million), 78.2% higher than in 2021

Russian chemical production

- Russian chemical and petrochemical production rose by around 5% in in the first quarter
- Russian ethylene production totalled 1.162 million tons in the first quarter in 2022 against 1.134 million tons in the same period in 2021
- Russian propylene production amounted to 769,400 tons in the first quarter in 2022 against 784,800 tons in 2021
- Russian styrene production fell from 202,500 tons in the first quarter in 2021 to 187,500 tons in January to March 2022
- Russian caprolactam production amounted to 97,700 tons in January to March 2022 against 94,300 tons in the same period in 2021

Russian chemical trade

- Propylene exports from Russia amounted to 40,800 tons in the first quarter in 2022 against 10,400 tons in the same period 2021
- Methanol exports to Finland declined from 262,800 tons in January to March 2021 to 222,900 tons this year.

Project news

- In recent weeks questions have emerged over the polyethylene project at Ust Kut
- For the EP-600 ethylene project at Nizhnekamskneftekhim all the equipment has been already delivered but the pace of construction has dropped significantly
- Despite project uncertainty regarding completion of the Amur Gas Chemical Complex SIBUR has completed a large amount of work on the electricity sub-stations
- Both Linde and Maire Tecnimont are withdrawing completely from Russian market, affecting a wide range of projects

CENTRAL and SOUTH EAST EUROPE

PKN Orlen's Petrochemical Division (€ billion)			
	Q1 22	Q1 21	Q1 20
Segment revenues	1.603	0.793	0.795
Profit/(Loss) from operations	0.058	0.145	0.104
Sales (thousand tons)	1.367	1.271	1.303

PKN Orlen Petrochemical Margins (€/ton)		
Product	Q1 22	Q1 21
Ethylene	664	559
Propylene	679	515
Toluene	155	126
Benzene	333	306
Butadiene	410	335
Paraxylene	262	243

In the petrochemical sector ethylene prices rose by 43% and propylene prices by 52% in the first quarter this year which helped the petrochemical division record revenues of €1.603 billion in the first three months. This measures against €793 million in the same period in 2021 and €795 million in 2020. Ethylene margins rose in the first three months from €559 per ton in the same period in 2021 to €664 in 2022 whilst propylene rose from €515 per ton to €679. Butadiene margins showed the largest rise from the olefins, moving from €335 per ton to €410, whilst benzene recorded the highest rise in the aromatics from €147 per ton to €419.

PKN Orlen Product Revenues (€ million)		
Product group	Q1 22	Q1 21
Monomers	304.8	176.0
Polymers	258.7	166.7
Aromatics	110.6	56.9
Fertilisers	136.8	55.4
Plastics	196.5	75.1
PTA	146.3	76.0

Revenues from ethylene, propylene and butadiene rose from €176.0 million to €304.8 million in the first quarter this year, with polymers rising from €166.7 million in January to March 2021 to €258.7 million in 2022. Despite the rise in revenues and margins, profits in

PKN Orlen Production (unit-kilo tons)		
Product	Jan-Mar 22	Jan-Mar 21
Ethylene	122.8	97.2
Propylene	114.9	87.3
Butadiene	17.5	12.5
Toluene	2.1	2.9
Phenol	13.1	11.9
Polyethylene	82.9	65.3
PVC	80.5	67.6
Polypropylene	92.7	73.1
PTA	171	143

PKN Orlen Group Chemical Sales (unit-kilo tons)		
Product group	Q1 22	Q1 21
Monomers	250	215
Polymers	173	149
Aromatics	112	87
Fertilisers	251	305
Plastics	116	78
PTA	169	141

Orlen Group Q1 2022

Total sales revenues of the Orlen Group for the first quarter this week amounted to zł 45,447 million (€9.816 billion), which was 81% higher or by zł 20,885 million (€4.496 billion) in the same period in 2021. The increase of sales revenues for PKN Orlen were driven on higher volume sales of 15% in all operating segments and higher crude oil prices by 67%.

Sales volume of the Orlen Group increased by 7% to 10.564 tons, mainly as a result of 10% higher volumes in the refining sector. Conversely petrochemical sales decreased by 7% versus Q4 2020 as a result of lower volumes from fertiliser and PTA shipments in Poland although higher sales took place in the Czech and Lithuanian market.

Orlen petrochemical production Q1 2022

Ethylene production at Plock increased from 482,700 in January to March 2021 to 348,700 tons in 2022, whilst propylene rose from 441,700 tons to 349,400 tons and butadiene from 60,500 tons to 43,100 tons. Phenol production at Plock increased from 44,200 tons in the first quarter in 2021 to

45,600 tons in the same period in 2022. PTA production rose from 143,000 tons to 171,000 tons.

PKN Orlen & Linde Air Separation Unit

PKN Orlen signed a contract with Linde Engineering on 17 May 2022 for building of the new Air Separation Unit III at Plock. The annual production capacity of the unit will amount to 38,500 Nm³/h of oxygen and 75,000 Nm³/h of nitrogen. The investment is necessary is important to secure oxygen gas and nitrogen gas for the Olefins III complex at Plock which is under construction. Additionally, the Investment will enable to extend Orlen's scope of

for offering products with high-margin liquid gas, and also there will be achieved savings due to improved operation and processing efficiency. The completion of the Investment is planned for the beginning of 2025.

Polish gas supply and PKN Orlen

Polish gas company PGNiG announced that Gazprom had suspended gas supplies on 27 April to Poland. PGNiG is the main gas supplier to the Orlen Group companies operating in the Polish market, and no disruptions are reported. As of 26 April 2022, gas storage facilities in Poland were 76% full, and the Polish government has already taken steps to diversify gas supplies to Poland.

By 2030, PKN Orlen aims to be able to cover around 20% of its demand from its own gas fields. The company has just announced the launch of two mines in the Kujawsko-Pomorskie Voivodeship on the Bajerze and Tuchola deposits. The company wants to produce about 125,000 MWh of electricity annually from the extracted gas.



Gas pipeline opened between Poland and Lithuania

The gas interconnector between Poland and Lithuania (GIPL) was formally commissioned on 1 May this year, helping to strengthen energy security in the region by connecting the Baltic and Finnish with the Polish markets. The interconnector already allows Lithuanian LNG to flow to Poland. The project increases the possibilities of using the Klaipėda LNG terminal in Lithuania and the Świnoujście LNG Terminal in Poland.

The new gas interconnector has the capacity to transport gas from Lithuania to Poland up to 1.9 billion cubic metres per annum. Further projects will follow in the region, such as the Baltic Pipe (due to come online in October), and the Polish-Slovak interconnector to be finalised later this year. Moreover, the expansion of the Latvian-Lithuanian interconnector is scheduled in 2023 and the upgrade of the Inčukalna underground storage in Latvia expected in 2025 will further increase the energy security in the region. As reported Finland has now had its gas from Russia disconnecting and thus has already entered the Baltic energy sphere.

Polish PTA Exports (unit-kilo tons)		
Country	Jan-Mar 22	Jan-Mar 21
Belarus	2.156	2.453
Germany	93.572	86.660
Lithuania	11.113	10.221
Switzerland	3.001	1.104
Others	9.279	1.733
Total	119.121	102.171

Polish PTA sales Jan-Mar 2022

Orlen sold a total of 169,000 tons of PTA in the first quarter in 2022 for both shipments on the domestic market and for export, measured against 141,000 tons in the same period in 2021.

Orlen Unipetrol Polyolefin Exports		
HDPE	Jan-Mar 22	Jan-Mar 21
Vol (ktons)	95.0	77.0
Value (€ mil)	145.3	94.7
PP	Jan-Mar 22	Jan-Mar 21
Vol (ktons)	66.7	75.4
Value (€ mil)	111.9	89.4

PTA exports from Poland amounted to 119,121 tons in the first quarter in 2022 against 102,171 tons in the same period in 2021. Average prices for Polish PTA exports in the first quarter amounted to €853 per ton. Germany remained the main customer for Polish PTA, taking 93,572 tons in 93,572 in January to March 2022 against 86,660 tons in the same period in 2021. Lithuania was the second largest destination for PTA export shipments, taking 11,113 tons.

Orlen Unipetrol Jan-Mar 22

Orlen Unipetrol increased revenues by 71.1% in the first quarter in 2022 to Kc 42.6 billion (€1.732 billion) whilst also recording an increase of gross operating result by around a third to Kc 1.1 billion (€44.7 million). The volume of processed crude oil by Orlen Unipetrol increased slightly to 1.7 million tons, compared to 1.64 million tons in the first quarter of last year.

The increase in gross operating profit by Kc 240 million was partly attributable to the refinery sector even if operating costs increased significantly. The costs of purchasing energy, especially natural gas, electricity and coal, were much higher rising by Kc 1.3 billion (€52.8 million).

Czech Petrochemical Exports (unit-kilo tons)		
Product	Jan-Mar 22	Jan-Mar 21
Ethylene	4.239	7.365
Propylene	0.011	0.012
Butadiene	0.079	0.033
Benzene	18.278	11.493
Toluene	3.329	2.781
Ethylbenzene	29.259	30.909

In terms of export activity Orlen Unipetrol increased HDPE exports from 77,000 tons in the first quarter in 2021 to 95,000 tons in the same period in 2022 with revenues rising from \$94.7 million to \$145.3 million. Polypropylene exports from Orlen Unipetrol dropped from 75,400 tons in the first three months in 2021 to 66,700 tons in January to March this year whilst values rose from \$89.4 million to \$111.9 million.

Investments amounted to Kc 2.4 billion, up by Kc 1.0 billion on 2021. Orlen Unipetrol's key investment projects in the first quarter included the modernisation of the Kralupy refinery, the ongoing construction of a liquid hydrocarbon production unit and work to increase the yield of the ethylene unit by installing an eleventh cracking furnace.

Czech Petrochemical Imports (unit-kilo tons)		
Product	Jan-Mar 22	Jan-Mar 21
Ethylene	11.138	1.332
Propylene	7.666	13.502
Butadiene	16.242	22.261
Benzene	18.846	20.783
Toluene	2.011	1.971
Styrene	5.569	13.365

Czech petrochemical trade, Jan-Mar 22

Ethylene exports from the Czech Republic dropped from 7,365 tons in the first quarter in 2021 to 4,239 tons in the same period this year. Export data shows that 1,186 tons of ethylene was sent to India and 1,426 tons to Slovakia. Czech imports of ethylene rose from 1,332 tons in the first quarter last year against 11,138 tons in the same period. Germany provided 11,117 tons via the Boehlen Litvinov pipeline for a cost of €12.264 million.

Propylene imports dropped from 13,502 tons in the first quarter in 2021 to 7,666 tons in the same period in 2022. Czech imports of butadiene dropped from 22,261 tons in January-March 2021 to 16,846 tons in the same period in 2022. Czech exports of ethylbenzene amounted to 29,259 tons in the first quarter in from 30,909 tons in the same period in 2022. All the ethylbenzene was shipped from Kralupy to Oswiecim, all within the structures of the Synthos Group.

Benzene exports from the Czech Republic rose in the first quarter this year to 18,278 tons against 11,493 tons in the same period in 2021. Germany was the primary market for Czech benzene, accounting for

Czech DINP/DOP Trade (unit-kilo tons)		
	Jan-Mar 22	Jan-Mar 21
Exports	9.423	11.959
Imports	2.318	3.376

17,521 tons for 17.063 million. Imports of benzene dropped slightly from 20,783 tons to 18,546 tons. Czech benzene imports were sourced in the first quarter this year from Poland (12,686 tons for €12.181 million), Serbia (3,187 tons for

€2.85 million) and Hungary (2,973 tons for €2.918 million).

MOL's Olefin & Polyolefin Production (unit-kilo tons)		
Product	Jan-Mar 22	Jan-Mar 21
Ethylene	204	207
Propylene	105	109
Butadiene	20	25
Raffinate	33	38
Product	Jan-Mar 22	Jan-Mar 21
LDPE	65	67
HDPE	92	90
PP	137	137

Deza-plasticizer shutdown

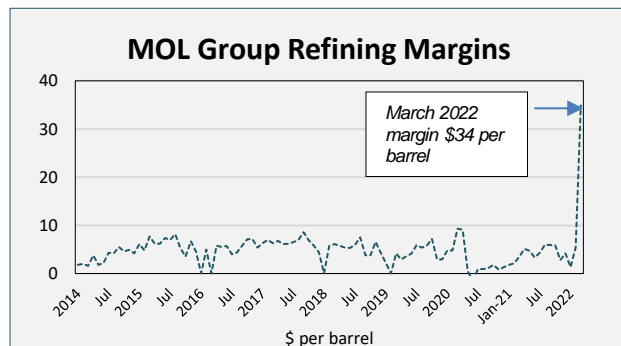
Czech plasticizer producers Deza has scheduled a stoppage for the production of diisononyl phthalate (DINP) in July for maintenance. Downtime will begin on 8 July and will last until 8 September. The capacity of the plant for the production of plasticizers is 50,000 tpa. In the first three months in 2022, exports of DINP amounted to 9,423 tons against 11,459 tons in the same period last year. Most of the shipments from Deza are sold in Central European region.

MOL Q1 2022

MOL Group reported an EBITDA of \$833 million in Q1 2022, on the back of the very high oil and gas prices. However, results were down by 6% compared to the previous quarter. Up stream's performance drove the results, whilst downstream was influenced by volatile feedstock and energy prices. The greatest challenges in the short term consist of energy supply security whilst maintaining profitability. The upstream EBITDA of \$504 million in Q1 2022 represented

an increase by 104% compared to last year's Q1 result. The good performance was driven by the continuously higher oil and gas prices.

The downstream EBITDA came in at \$254 million, unchanged from last year in the same period as volatile external environment influenced the results both positive and negative ways. The petrochemical contribution was outweighed by higher refining profits.



A greenfield investment of a 100,000 tpa of green hydrogen propylene started in the second quarter, acquisition of ReMat, a market leading plastic recycler in Hungary was completed in this quarter.

Refined crude for the MOL Group totalled 3.952 million tons in the first quarter in 2022 against 3.504 million tons in the same period in 2021. Ethylene production for MOL's two sites at Tiszaújváros and Bratislava amounted to 204,000 tons in 2022 versus 207,000 tons in 2021 whilst propylene decreased from 109,000

tons to 105,000 tons.

Butadiene production at Tiszaújváros decreased from 25,000 tons in January to March 2021 to 20,000 tons in the same period in 2022 whilst raffinate production dropped from 38,000 tons to 33,000 tons. In the polyolefin division the MOL Group produced 137,000 tons of polypropylene unchanged from 2021 and 92,000 tons of HDPE against 90,000 tons.

MOL Group buys recycling company

MOL Group has acquired Hungary's ReMat, a plastic recycling company with a processing capacity of 25,000 tpa. ReMat Zrt. operates production plants located at Tiszaújváros and Rakamaz in Hungary, and a logistics hub in Bratislava in Slovakia. The acquisition will enable MOL Group to develop tailor-made virgin and recycle solutions to meet the growing demand of its customers for circular materials.

The polyol project at Tiszaújváros had achieved 96% completion by the end of Q1 2022 after achieving 93.6% at the end of Q4 and 89% at the end of Q3 2021. MOL aims to complete the 200,000 tpa polyol project in the second quarter in 2022, together with the propylene glycol and propylene oxide plants. Also in 2022, the group aims to focus more on investment on small-to-mid-size projects (e.g., metathesis, maleic anhydride). MOL already produces maleic anhydride at Szazhalombatta.

Central European Refining Volumes (unit-mil tons)		
Company	Q1 22	Q1 21
INA	0.8	0.9
Lotos	1.9	2.4
Lukoil Bourgas	0.5	1.1
Lukoil Ploiesti	0.7	0.6
MOL	2.6	3.5
NIS	0.9	0.8
Orlen-Lietuva	2.1	1.5
Orlen-Plock	3.9	2.4
Petrom	1.1	1.2
Rompetrol	1.0	1.4
Slovnaft	0.6	0.9
Orlen Unipetrol	1.6	1.3
Total	17.9	17.9

Crude supplies and possible EU sanctions

To date the EU has not been able to agree on imposing sanctions on Russian oil, although buyers in West Europe and some in Central Europe have been making extensive efforts to avoid purchasing Urals crude. Currently, MOL can use up to 35% of other types of crude oil. The Danube Refinery could be converted to process 100% alternative crude oil, but the lead time could be up to 2-4 years, with risks being kept to a minimum, and would involve huge investment.

An embargo on Russian crude oil would have a significant impact on the refinery's operations and security of supply, with the different quality of the blend causing a reduction in output and refinery breakdowns. MOL says that they have so far invested \$170 million to reduce the share of Russian crude oil being processed in Hungary, increased the capacity of the Adria pipeline, and expanded maritime transport options.

Whilst these technical issues act as reasons for Hungary rejecting the EU ban at the same time MOL refineries at Szazhalombatta and Bratislava are both benefiting from heavily discounted Russian crude. Refinery margins increased almost ten-fold for the MOL Group in March over February, also helping

petrochemical margins to a much smaller degree. MOL did not publish margins for the month of April, figures which have been reported since 2012. Slovnaft reported a refinery margin of \$35.1 per barrel in March against \$4.3 in February, whilst MOL reported \$33.7 in March up from \$3.4. Overall, the MOL Group reported a refinery margin of 12% in the first quarter this year against a margin of 6% for the Orlen Group.

CE Refining Net Profits (€ million)		
Company	Q1 22	Q1 21
INA	77.8	6.6
Lotos	259.4	75.3
MOL	137.8	80.7
NIS	132.8	12.8
Orlen-Lietuva	125.0	23.6
Orlen-Plock refining	552.5	-66.0
Petrom	353.5	115.9
Rompetrol	-95.9	-11.8

Most of the refineries in Central and South East Europe reported sharp rises in margins for the first quarter and in some cases record profit levels, even if processing volumes were unchanged from 2021. Grupa Lotos achieved a refining margin of \$17.2 per barrel, around seven-fold higher than in the same period last year. The group expects lower processing volumes this year due to extended maintenance after processing 1.945 million tons in the first quarter. OMV Petrom's refining margin increased sharply from \$2.8 per barrel in Q1 last year to \$18.3 which is reflected elsewhere with other refiners.

Rompetrol Rafinare was the exception to other refining groups reporting a loss of €95.9 million in the first quarter. Despite lower production the gross turnover of Rompetrol's petrochemical division increased by 50% in the first quarter, from \$46.8 million in Q1 2021 to \$70.3 million in Q1 2022. In the first quarter of 2022, the total polymer production of the petrochemical division was 28,200 tons, slightly higher than in the same period of last year.

Polish Imports of Propylene (unit-kilo tons)		
Country	Jan-Mar 22	Jan-Mar 21
Lithuania	0.000	5.444
Germany	12.674	37.253
Russia	14.637	9.186
Ukraine	19.020	18.346
Others	3.467	0.001
Total	49.798	70.230

Polish propylene imports, Jan-Mar 22

Poland imported 49,798 tons of propylene in the first three months against 70,230 tons in the same period in 2021. imports were lower in the first quarter due partly to higher production at Plock. Average prices for propylene imports into Poland rose from €784 per ton in January to March 2021 to €1167 in the first quarter in 2022. Germany supplied 12,674 tons of propylene to Poland in the first three months against 37,253 tons in 2020 whilst imports from Ukraine rose from 18,346 tons

to 19,020 tons. Russia increased shipments to 14,637 tons from 9,186 tons.

Grupa Azoty Q1 2022

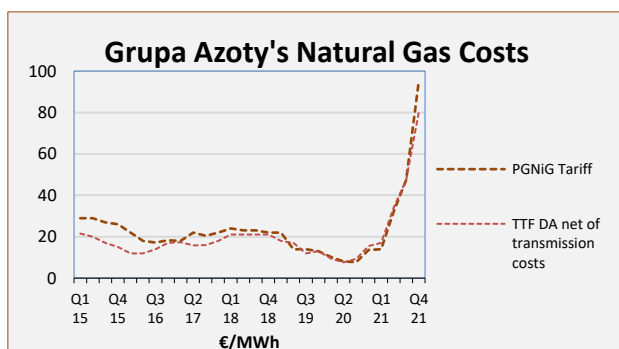
In the first quarter this year Grupa Azoty operated under heavy pressure from both high prices of products and raw materials, and in particular more than 500% increase in the price of natural gas which is the main feedstock. Furthermore, the Russian attack on Ukraine has culminated in additional problems with the availability of raw materials used by Azoty.

Polish Chemical Production (unit-kilo tons)		
Product	Jan-Mar 22	Jan-Mar 21
Caustic Soda Liquid	111.2	93.6
Caustic Soda Solid	21.8	21.5
Caprolactam	43.4	41.4
Acetic Acid	0.6	1.5
Ammonia (Gaseous)	620.0	716.0
Ammonia (Liquid)	29.8	27.0
Pesticides	19.4	21.9
Nitric Acid	595.0	675.0
Nitrogen Fertilisers	510.0	569.0
Phosphate Fertilisers	80.7	118.1
Potassium Fertilisers	71.7	87.6

In the first quarter of 2022, Grupa Azoty recorded consolidated net revenues of zł 6.827 billion (€1.477 billion), while the EBITDA amounted to zł 1.33 billion (€290 million). For the agro segment, there was an increase in the prices of all raw materials necessary for production, including in particular the prices of natural gas, which increased by 5 times.

In the chemical sector there was an increase in prices and raw materials, with the largest fluctuations seen in urea, melamine and sulphur. The availability of some products has also been a problem because imports from

Russia were blocked by the introduction of sanctions and from Ukraine due to the blocking of exports by Black Sea ports. In the plastics division, the increase in Azoty's product prices was determined by the market valuations of benzene and phenol.



Grupa Azoty gas supply and prices

Grupa Azoty has stated that Russia's suspension of gas transmission to Poland does not pose a threat to the company's production. However, there may be problems in the group managing the rise in gas prices and their impact on profitability.

Poland is already quite well diversified in terms of directions of gas supply. The supplier of raw material to the company is PGNiG. High product prices translate into lower market

demand. Grupa Azoty has placed the produced volume of fertilisers on the domestic market due to lower imports.

The prices of the main energy raw materials (gas, coal, electricity), petroleum raw materials (benzene, phenol, propylene) and CO₂ emission allowances account for about 70% of the group's operating costs. Poland can obtain gas from various directions, through gas connections on the western and southern borders and the LNG terminal at Świnoujście. The balance sheet is complemented by domestic gas extraction and high fuel reserves accumulated in Polish gas storage facilities. Grupa Azoty consumes about 2.3 billion cubic metres of natural gas per annum of which around 40% is consumed at Pulawy.

Polish Polypropylene Trade		
Exports	Jan-Mar 22	Jan-Mar 21
Vol (kilo tons)	202.4	180.9
Value (€ million)	289.1	180.8
Imports	Jan-Mar 22	Jan-Mar 21
Vol (kilo tons)	183.6	171.5
Value (€ million)	306.0	217.3

Grupa Azoty ranks second in the EU in the production of nitrogen and compound fertilizers, and products such as melamine, caprolactam, polyamide, OXO alcohols and titanium white also have a strong position in the chemical sector, finding application in many industries. Its consolidated sales revenues reached zł 15.9 billion in 2021.

Polimery Police project update

The Polimery Police project being undertaken by Grupa Azoty has appeared from the outset to represent a sound investment

taking into account the deficit in Poland's polypropylene trade. The investment has been moreover bolstered by the market changes taking place in Europe in conjunction economic and political isolation of Russia.

Polimery Police-Project Progress	
Month	% Progress
January 22	83%
Feb 22	85%
Mar 22	87.5%
Apr 22	90%

The state of the Polimery Police project was estimated at 90% at the end of April compared to 83% at the end of 2021. At the beginning of 2022, Grupa Azoty Polyolefins concluded an annex to the agreement with Hyundai Engineering increasing fees by €72.48 million and extended the project implementation schedule by 6 months. Aside Grupa Azoty's main control over Grupa Azoty Polyolefins, a minor stake of 17.3% is held by Grupa Lotos. The integrated chemical complex of Polimery Police will include

installations for the production of propylene and polypropylene, a transshipment and storage terminal and logistics infrastructure. The total estimated budget of the project is over €1.5 billion making it the largest investment in the Polish chemical industry. The completion of the investment is currently planned for 2023.

Synthos Production (unit-kilo tons)		
Product	Jan-Mar 22	Jan-Mar 21
Polystyrene	18.4	18.6
EPS	25.7	20.7
Synthetic Rubber	72.3	62.7

Synthos-production Jan-Mar 22

Synthos reduced production of general polystyrene at Oswiecim in the first quarter from 18,600 tons in 2021 to 18,400 tons in 2022, whilst expandable polystyrene increased from 20,700 to 25,700 tons.

Synthetic rubber production rose from 62,700 tons to 72,300 tons. Regarding raw materials Synthos imported 23,899 tons of butadiene in the first quarter versus 26,759 tons in the same period last year.

Supply sources are divided mostly between Austria, Germany and Hungary. Synthos has recently started its bio-butadiene project with Lummus.

Styrene imports into Poland totalled 27,597 tons in the first quarter for a total cost of €38.729 million. The Netherlands supplied 17,032 tons to Poland in the first quarter in 2022, most of which went to Synthos.

Ciech Group Soda Capacities (ktpa)		
Division	Soda Ash	Sodium Bicarbonate
Ciech Soda Polska	1450	90
Ciech Soda Deutschland	610	110
Ciech Soda Romania	540	0

Ciech Group forecast for 2022

Sanctioned Russian products which Ciech produces include sodium bicarbonate, sodium silicates and polyurethanes. Despite concerns over the economic fallout from the sanctions and global economic challenges the Ciech Group

forecasts an improved zł 740-780 million EBITDA in 2022 against zł 4,300-4,500 million of revenues. In 2021, the EBITDA of the group amounted to zł 727 million, and revenues amounted to zł 3.46 billion. In 2022, the company aims to continue the development of its agro business, which generated zł 115 million of EBITDA in 2021 (compared to zł 41 million in 2020). Also, the foam segment, which recorded a record EBITDA result last year (zł 65.3 million), is targeted by Ciech for improving its position as a supplier of polyurethane foams.

PCC Exol Q1 2022

Sales revenue for PCC Exol increased in the first quarter to €64.039 million from €40.978 million in the same period last year, with net profits rising from €2.486 million to €8.4 million. Revenues rose in accordance with higher prices for ethylene oxide. Sales of surfactants for the first three months of this year amounted to 27,500 tons which was 1,300 tons higher than in 2021. The increase in sales volume is mainly an effect of commissioning of the new installation for the production of oxyalkylates which took place in the second half of 2021.

PCC Exol's sales (unit-kilo tons)		
Product Group	Q1 22	Q1 21
Surfactants for detergents and cosmetics	18.9	18
Surfactants for industry	8.7	8.3
PCC Exol's sales (€ million)		
Product Group	Q1 22	Q1 21
Surfactants for detergents and cosmetics	29.3	16.9
Surfactants for industry	22.8	13.8

Almost 50% of PCC Exol's revenues are sales of so-called green chemistry products. At the end of 2021, the green offer included more than 100 different products, including chemical raw materials and additives for various types of cosmetics and detergents.

PCC Rokita Q1 2022

In the first quarter in 2022 the PCC Rokita Capital Group recorded a net profit of zł 123.9 million (€26.6 million), 78.2% higher than in 2021. The chlorine division was one of the main drivers for the increased profits combined with lower financial costs. Prices of the main base raw materials for the production of polyols polyethers, propylene and ethylene, increased significantly from February this year. Costs of materials and energy accounted for 60.7% of all PCC Rokita's costs and amounted to zł 306.2 million (€65.76 million). This is a cost level higher by zł 106.0 million (€22.77 million) than in the first quarter last year. The increase was mainly caused by higher costs for propylene oxide, ethylene oxide and benzene.

PCC Rokita Product Sales (unit-kilo tons)		
Product Group	Q1 22	Q1 21
Polyurethanes	24.6	25
Chloralkalis	102	98
Chemical	8.3	7.1
PCC Rokita Product Sales (€ million)		
Product Group	Q1 22	Q1 21
Polyurethanes	71.5	60.5
Chloralkalis	52.7	26.7
Chemical	12.7	8.3

Higher costs were very difficult to pass on to the end-user which affected profitability of sales. Sales in February and March were still good level, as it resulted in large part from new products. Delays in sea shipments are related to the logistical problems in maritime transport, including a shortage of containers and booking places on ships. In Europe polyols are broadly in surplus, which makes it harder for producers to increase prices. Thus, despite a relatively successful first quarter PCC Rokita may expect lower demand for the rest of the year.

Polish Organic Chemical Imports (unit-kilo tons)		
Product	Jan-Mar 22	Jan-Mar 21
Acetic Acid	12.167	10.661
Acetone	1.894	1.209
Adipic Acid	3.007	1.631
Butadiene	23.900	26.758
DEG	7.684	6.649
DINP/DOP	7.561	6.323
Ethyl Acetate	4.071	4.100
Ethylbenzene	29.269	36.797
Ethylene Glycol	21.501	11.241
Ethylene Oxide	4.693	6.811
Isopropanol	2.942	2.336
Lysine	15.841	14.087
Maleic Anhydride	3.411	3.815
Melamine	6.502	5.531
Methanol	220.119	172.244
Paraxylene	13.779	12.566
Phenol	29.596	8.842
Phthalic Anhydride	10.409	6.580
Propylene	49.923	70.237
Propylene Glycol	3.195	6.226
Propylene Oxide	0.509	1.649
PTA	0.655	16.003
Styrene	27.597	29.665
TDI	20.717	20.760
Toluene	6.188	5.204

In the first quarter in 2022, the PCC Rokita Capital Group generated EBITDA of zł 203.8 million (€44.0 million), which increased by 50.3% compared to the first quarter of 2021. Greater an increase by about 78.2% compared to the comparative period recorded a consolidated net profit, reaching the level of zł 123.9 million (€26.810 million).

Chlorine derivatives with EBITDA for the first quarter of 2022 year amounted to zł 107.5 million (€23.268 million) and was higher by over 277% than the same period of the previous year. Impact on higher the results in the analysed period were mostly close 130% increase in the average price of caustic soda and over 88% increase in the average price of soda lye.

PCC Rokita's polyurethane segment for the first three months of 2022 closed with an EBITDA profit of zł 64.4 million (€13.935 million), lower by almost 27% compared to 2021. Polyol prices in the first quarter were affected by propylene and ethylene, while the possibilities of polyol price increases have been and are limited or sometimes impossible. At the same time, large numbers are noted increases in production costs which had an impact on the decline in profitability.

Polish organic chemical trade Q1 2022

Imports of organic chemicals into Poland amounted to €1.338 billion in value in the first quarter this year against €902 million in 2021, whilst export values rose from €361 million to €606 million. For both imports and exports high energy prices played a key role in driving up values.

Polish Organic Chemical Trade		
Exports	Jan-Mar 22	Jan-Mar 21
Vol (mil tons)	439	382
Value (€ million)	606	381
Imports	Jan-Mar 22	Jan-Mar 21
Vol (mil tons)	822	759
Value (€ million)	1338	902

Poland is a large-scale importer of methanol in addition to olefin and aromatic monomers. Phenol imports into Poland increased sharply in the first quarter, rising from 8,842 tons in January to March 2021 to 29,596 tons. From this amount 8,152 tons was supplied by Russia in the first quarter, but phenol has now been placed on the EU sanctions list.

Export activity in the organic chemical sector is led by PTA, methanol and benzene. Caprolactam and acetone are also of significance. Benzene exports of 142,000 tons in 2021 were divided between Germany and Czech Republic taking 69,666 tons and 67,615 tons respectively.

Chimcomplex, Q1 2022

Chimcomplex operated its polyol plant at Ramnicu Valcea at 94% utilisation in the first quarter. Chimcomplex reported an increase in turnover of 23.2% in the first quarter of 2022 to €123.7 million but

Chimcomplex Product Sales Q1 2022	
Product Group	Share of Turnover
Polyols	60%
Chloralkalis	34%
Oxo Alcohols	3%

a net profit fell 38% to €14.6 million. This rise in revenues was determined by the sales prices that increased for most of the finished products, but profitability was affected due to higher production costs. The prices of the outputs did not increase at the same rate as the costs of raw materials and utilities. The investment plan for the current year includes the modernisation and increase of the capacities for the propylene oxide and polyols. Both chemical platforms at

Borzesti and Ramnicu Valcea are claimed by Chimcomplex to be using on only part of their capacities.

Chimcomplex Borzesti plans a capital increase by €225 million as part of the 2022-2030 Strategic Plan worth €2.5 billion in total. Initial capital is intended to begin the strategic investments of relaunching the chemical products lines in conservation.

Czech MDI imports (unit-kilo tons)		
Country	Jan-Mar 22	Jan-Mar 21
China	0.625	0.748
Belgium	3.060	3.278
Germany	2.850	4.532
Hungary	1.352	1.571
Netherlands	0.921	0.591
Others	0.224	0.308
Total	9.033	11.029

Polish MDI Imports (unit-kilo tons)		
Country	Jan-Mar 22	Jan-Mar 21
Germany	13.476	12.896
Netherlands	3.974	3.151
Hungary	11.368	11.635
Belgium	6.174	7.014
Others	4.328	1.578
Total	39.319	36.274

Czech Methanol Imports (unit-kilo tons)		
Country	Jan-Mar 22	Jan-Mar 21
Germany	2.026	3.832
Russia	9.348	12.101
Poland	8.869	6.112
Others	0.441	0.402
Total	20.952	22.448

Polish Methanol Imports (unit-kilo tons)		
Country	Jan-Mar 22	Jan-Mar 21
Belarus	0.000	1.295
Finland	17.184	25.049
Lithuania	0.489	1.629
Germany	27.967	21.596
Netherlands	0.000	25.619
Norway	7.989	0.000
Russia	166.466	96.290
Others	0.023	0.756
Total	220.119	172.233

Poland Methanol Exports to Central Europe				
Country	March (€ mil)	March (ktons)	Q1 22 (€ mil)	Q1 22 (ktons)
Austria	2.1	5.0	8.0	20.0
Czech	4.3	9.9	8.2	19.5
Germany	4.0	9.4	11.2	27.5
Romania	1.5	3.5	1.5	3.5
Slovakia	2.8	6.4	2.8	6.5
Ukraine	0.1	0.3	0.2	0.3
Hungary	2.3	5.8	2.3	5.9
Total	17.8	42.0	35.6	85.7

Central European isocyanates, Jan-Mar 22

MDI imports into the Czech Republic totalled 9,053 tons in the first quarter in 2022 against 11,029 tons in the same period in 2021. Total costs for MDI imports dropped from €22.110 million in January to March 2021 to €21.973 million in the same period in 2022, with average prices rising from €1.999 per ton to €2.750.

MDI imports into Poland totalled 39,319 tons in the first quarter in 2022 against 36,274 tons in the same period in 2021. Costs rose from €74.268 million to €99.902 million, meaning that average prices increased from €2.059 per ton to €2.623 in January to March 2022. Germany was the largest supplier to the Polish market followed by Hungary. TDI imports into Poland amounted to 19,876 tons in the first quarter in 2022 against 20,790 tons in the same period in 2021. Values in 2021 amounted to €55.032 million, equating to €2.647 per ton, against €54.691 million in the first three months in 2022 when prices averaged €2727 per ton.

Central European methanol trade Jan-Mar 22

Czech imports of methanol amounted to 20,952 tons in the first quarter against 22,448 tons in the same period in 2021. Russia accounted for 9,348 tons in the first quarter down from 12,101 tons last year, according to Czech statistics. Prices per ton for methanol imports into the Czech Republic increased from €340 in the first quarter in 2021 to €423 in the same period in 2022.

Imports of methanol into Poland totalled 220,119 tons in 2021 against 172,233 tons in 2020. Russia increased exports from 96,290 tons to 166,466 tons whilst Finland reduced shipments from 25,049 tons to 17,184 tons. Germany increased exports to Poland in the first three months to 27,967 tons from 21,596 tons in the previous year. Import prices averaged €363 per ton in the first quarter this year.

Exports of methanol from Poland amounted to 85,660 tons in the first quarter against 44,458 tons. Poland started in March supplying Hungary, Romania and Slovakia which have had their normal rail transit routes from Russia disrupted by the war in Ukraine. Methanol exports from

Poland rose to 41,959 tons in March, most of which was Russian origin. Even some small amounts were delivered to Ukraine.

Revenues from Polish exports of methanol rose from €15.480 million in January to March 2021 to €44,458 million in 2022, with export prices averaging €416 per ton against €347 per ton last year.

RUSSIA

Changes to Russian chemical markets and production

Sale of Western assets in Russia, logistics and trade

As widely reported many Western companies in the chemical industry have withdrawn from the Russia market since the war in Ukraine started, and some have those companies have been trying to offload assets where possible. Active companies in the Russian market such as BASF, Dow, Henkel and Kemira, to name a few, have outlined withdrawal procedures which will affect supply chains, product availability, etc. The sale of assets may create some opportunities for Russian chemical companies, i.e., Kuibyshevazot bought out shares from DSM in two small jvs, and mostly foreign companies are having to consider any offers in order to pull out of the market. Already some domestic producers have been able to fill gaps left in some product areas by the exodus of foreign companies. Some components in the pharmaceutical industry can be replaced through imports from China or India, although at higher prices. Other products may be difficult to replace.

Top 10 countries for chemical imports into Russia 2021		
Country	Value (\$ billion)	Share of Imports
Germany	5.34	14.9%
China	4.21	11.7%
France	2.7	7.5%
US	2.57	7.2%
Italy	2.16	6%
Switzerland	1.68	4.7%
Ireland	1.52	4.2%
India	1.24	3.4%
UK	0.987	2.7%
Ukraine	0.839	2.3%

Sanctions have had a significant effect on logistics and the Russian Ministry of Transport is examining new export routes in the south of Russia such as Makhachkala and Astrakhan.

Russia is a net importer of chemical industry products and around 40% of import sources in 2021 came from countries which have imposed sanctions. Imports of chemicals from Germany into Russia fell by 40% in March from February to €158.7 million. In 2021 Germany was the largest source of chemical product imports by value, accounting for 14.9% of total imports followed by China with 11.7%.

Russian Chemical Production (unit-kilo tons)		
Product	Jan-Mar 22	Jan-Mar 21
Caustic Soda	327.0	329.4
Soda Ash	919.0	874.0
Ethylene	1,161.8	1,134.2
Propylene	769.4	784.8
Benzene	361.0	356.2
Xylenes	96.7	144.0
Styrene	187.5	202.5
Phenol	75.1	71.0
Ammonia	4,900.0	5,200.0
Nitrogen Fertilisers	3,056.0	2,951.0
Phosphate Fertilisers	1,076.0	1,086.0
Potash Fertilisers	2,437.0	2,737.0
Plastics in Bulk	2,772.0	2,728.0
Polyethylene	915.0	897.0
Polystyrene	149.3	146.9
PVC	275.0	278.7
Polyamide	50.2	49.9
Synthetic Rubber	431.0	447.0
Synthetic Fibres	50.1	50.1

Russian chemical production, Jan-Mar 22

Production levels for Russian chemical and polymer producers were stable in the first quarter despite the challenges faced by supply chains, raw materials, product sales, etc. Petrochemical production has generally exceeded volumes in the first quarter last year, although some products such as styrene and xylenes have run into export difficulties. Ethylene production totalled 1.162 million tons in the first three months against 1.135 million tons in January to March 2021, whilst propylene slipped from 784,800 tons to 769,400 tons.

Russian polymer producers increased the production of polymers by 1.2% in the first three months compared to the same period in 2021 to 2.8 million tons. Polymer production rose 0.2% in March over February to 914,000 tons but this was 4.7% lower than in March last year. The production of polyethylene in the first quarter increased by 2% and polystyrene by 1.1%.

Russian synthetic rubber sales started to feel the effects of economic isolation in Europe in March, and this impacted on production which fell 3.7% from February to 141,000 tons.

Overall, for the first quarter Russian synthetic rubber production fell from 447,000 tons to 431,000 tons. In the base chemical sector, ammonia production fell from 5.2 million tons in the first quarter last year to 4.9 million tons this year. This was due to the lack of shipments through the Togliatti-Odesa pipeline.

Russian refineries and naphtha sales

Although the EU has yet to agree on sanctions for Russian oil, Germany has outlined its own plans for eliminating all purchases from Russia by the end of 2022. Russian crude and naphtha exports have already been badly affected by self-sanctioning, some through moral reasons and some from concern that there could be some side-effect from US sanctions.

On average Russia exports around 725,000 tons of naphtha per month, from which around a third goes to South Korea, followed by 14% to Belgium and a further 12% to the Netherlands. The problem for Russian exporters is that Asian buyers are looking for other sources in fear of US and other sanctions which could affect their other business.

Until now the refineries most affected by reduced purchases are managed by Rosneft, including the Ufimsky refinery at Ufa, Ryazan and Angarsk. TAIF-NK at Nizhnekamsk was forced to stop processing on 4 April not due to oil product sale problems but due to lower petrochemical sales by Nizhnekamskneftekhim. TAIF-NK restarted in May but may be forced to stop processing again.

SIBUR launches programme for catalyst and additive production

In reaction to Russia's new market environment SIBUR has launched a large-scale programme to adapt alternative catalysts and additives for the petrochemical industries. Due to restrictions on the supply of multiple chemical components from Western countries, necessary for the production of polymer products, Russian companies have been compelled to seek out alternatives. Replacing many products is feasible, but the main challenges include the time required for developing products. Current domestic inventory is low and catalyst consumers were unprepared for isolation. SIBUR intends to focus on basic and functional additives that are necessary for the production of catalysts.

For catalysts themselves around 90% of catalysts used in Russian petrochemicals production are sourced domestically. The exception is for polyethylene and polypropylene production, where they were traditionally imported, and this appears to be the biggest challenge. Ethylene oxide is also affected as Russia has to date not produced domestic catalysts for this product. All catalysts, in principle, can be replaced by domestic production or imports from say China, but the main problems entail matching quality and safety.

companies now fall under the group title SIBUR-RT. Feedstock issues and fears of bankruptcy was the main underlying reason why TAIF sold its petrochemical business to SIBUR, in addition to plants Kazanorgsintez and Nizhnekamskneftekhim being unable to compete against SIBUR's flagship complex ZapSibNeftekhim at Tobolsk.

The integration of Nizhnekamskneftekhim and Kazanorgsintez into the SIBUR Group has resulted in tighter management rules for industrial safety including an increase in penalties for violations. It is hoped that fires and fatal accidents at both these complexes will help to reduce accidents.

SIBUR's challenges from isolation and TAIF merger

SIBUR feedstock pricing and China

SIBUR has requested the Russian government to limit prices for feedstock prices for the production of petrochemical products. Naphtha has risen in price by 25% since the beginning of the year and in March exceeded \$1120 per ton, which particularly affects group plants Nizhnekamskneftekhim and Tomskneftekhim. Associated gas has moreover risen in price by between 10-15% since the beginning of the year, which directly affects ZapSibNeftekhim at Tobolsk. Feedstock costs amounted to around 55% of total costs for SIBUR in 2021 and thus paramount for the group's profitability.

Regarding product sales to China SIBUR is trying to promote offshore yuan trade to circumvent the restrictions on dollar trade. This scheme would offer local customers greater payment flexibility, which in turn would help SIBUR strengthen market positions. The company has extensive dealings with China over product groups such as polyolefins and rubber and offers delivery to several inland destinations.

Overall Russian chemical exports to China increased from \$892 million in 2020 to \$1.270 billion in 2021. Polymer exports amounted to \$682 million in 2021 against \$699 in 2020, while rubber exports dropped from \$255 million to \$247 million.

Russia's imports of chemicals from China vastly outweigh imports, totalling \$4.210 billion in 2021 against \$3.350 billion in 2021. Imports are spread over a wide range of products including commodities such as PTA and trichloroethylene, in addition to more speciality products such as amides, sulphonamides and vitamins. Trade with China is expected to increase following the fall in European import and export shipments, but it could take many months to establish new supply chains and new customer sales lines.

SIBUR-TAIF takeover and integration

SIBUR's takeover of TAIF, announced as a merger on 23 April 2021, has led to a gradual realignment of the chemical plants in the group which has been particularly important for Kazanorgsintez and Nizhnekamskneftekhim. Both these former TAIF

Tatneft would have represented a more logical buyer for TAIF rather than SIBUR, which would have meant creating a sole company in Tatarstan. This did not happen for various reasons. SIBUR was claimed at the time to have paid less than the market value for TAIF, but some of the issues that have arisen at Nizhnekamskneftekhim have started to make the deal look fair from TAIF's perspective. The construction of the EP-600 unit at Nizhnekamsk is lagging behind schedule due to the problems with the Turkish contractor company Gemont. Other discoveries for SIBUR include a long-term disadvantageous feedstock contract for Nizhnekamskneftekhim with TAIF-NK, in addition to unexpected debts. Notwithstanding,

SIBUR's main problem stems from the war in Ukraine, and specifically the impact of sanctions upon product sales and technology purchases.

Kazanorgsintez-improved feedstock position

Feedstock issues have represented a long-term problem for Kazanorgsintez but integration into the SIBUR Group has improved the position significantly. Currently Kazanorgsintez is receiving enough feedstock to operate the petrochemical facilities at full capacity, although the company faces problems with export sales. The future of Kazanorgsintez now depends on the completion of the EP-600 project at Nizhnekamsk, which SIBUR cites as one of the company's priorities. This will allow Kazanorgsintez to make the most of the possibilities of the ethylene pipeline between Nizhnekamsk and Kazan.

TAIF-NK & SIBUR feedstock agreement

TAIF-NK agreed to ship naphtha from its nearby refinery at Nizhnekamsk to Nizhnekamskneftekhim in May at a price of up to 30,000 roubles (\$524) per ton which compares against a European price of \$894. The agreement with Nizhnekamskneftekhim allowed a restart of the 8 million tpa refinery. This is considered to represent a fair price considering that the domestic market of petroleum products is now overstocked, and export supplies are faced with significant difficulties.

TAIF and SIBUR are both in an equally difficult position, since sanctions against Russia complicate the work of all domestic companies as foreign buyers are cautious about further cooperation. SIBUR's takeover of Nizhnekamskneftekhim affected TAIF-NK's oil refining facilities, which now operate only if there is demand from the petrochemical complex. Although the companies agreed on the supply of naphtha from TAIF-NK to Nizhnekamskneftekhim at reduced prices in May, SIBUR has found alternative suppliers should the price disagreement reoccur.

Russian petrochemical projects

Irkutsk Polymer Plant main characteristics	
Ethylene licensor	Toyo
Licence for PE Plant	Unipol
Capacity	Ethylene 650 ktpa
Capacity	Polyethylene 650 ktpa

Irkutsk polymer project-doubts regarding completion

The Irkutsk Oil Company was previously confident it could complete construction its polyethylene project at Ust Kut, but in recent weeks questions have emerged over both the project contractor Toyo and finance. Japanese bank JBIC also may withdraw from the project where 95 billion roubles (\$1.6 billion) have been already invested. To complete the project by 2024, about 137 billion roubles (\$2.4 billion) more is needed. Although

slower than US and European countries, Japan is applying sanctions to Russia which may result in preventing completion of the Irkutsk Polymer Plant.

Nizhnekamskneftekhim pyrolysis unit main characteristics	
Licensor	Linde
Contract management	Gemont
Capacity	Ethylene 600 ktpa including six furnaces
Capacity	Propylene 272.8 ktpa
Naphtha Processing	1.798,500 million tpa
Equipment deliveries 2020	264 units

Nizhnekamskneftekhim EP-600 project continues despite contractor dispute

For the EP-600 ethylene project at Nizhnekamskneftekhim all the equipment has been already delivered but the pace of construction has dropped significantly. The contractor Gemont has not been satisfied with the payment of salaries which were affected following the invasion and now there is a criminal case opened

against Gemont on tax evasion for 1 billion roubles. Although the pyrolysis equipment has been delivered US sanctions may affect the supply of licences for Nizhnekamskneftekhim for derivative projects. In addition to ethylene Nizhnekamskneftekhim's overall project strategy including construction of units to produce 250,000 tpa of ethylbenzene using EBOne technology, 250,000 tpa of styrene via the Classic SM process, and 150,000 tpa of polymer-grade propylene via olefins metathesis. All these projects were agreed with US company Lummus Global which now is restricted by US sanctions.

Amur Gas Chemical Complex electricity sources

Despite project uncertainty regarding project completion SIBUR has completed a large amount of work on the electricity sub-stations at the Amur Gas Chemical Complex. Minority shareholder Sinopec has frozen its interest in the project whilst the impact of sanctions on Western technology licensors and engineering providers may result in a total freezing of the project. The aim of SIBUR is to continue construction until such a time when new sanctions could be lifted, more out of hope than expectation, or if they can find other solutions. In 2020 Linde was awarded a contract to provide engineering, procurement and site services for the Amur Gas Chemical Complex, based on its proprietary technology for the cracker unit. Linde is in the process of withdrawing all business from Russia and thus SIBUR needs to find a new company to manage the project, whilst the position on the cracker and other technologies remains uncertain.

Amur Gas Chemical Complex Technology			
Company	License	Product	Capacity
Linde	Steam-cracking	Ethylene	2.3 million tpa
LyondellBasell	Spheripol	Polypropylene	400,000 tpa
Univation	Unipol	Polyethylene	1.8 million tpa
Engineering Providers			
Linde, Maire Tecnimont			

Last year an extra-large-sized pyrolysis column weighing 1540 tons and 80.6 metres long was delivered by barge to the Svobodny site, using the Amur and Zeya rivers. In addition, last July the demethanizer unit in order to provide LPGs and ethane for petrochemical production. Although large parts of the equipment have already been delivered there is still more under order required for the complex.

The navigation period for the delivery of equipment this year was scheduled to start in May, but no details have been released yet. SIBUR hopes that equipment deliveries might start sometime before August although there is no indication of that being possible under current conditions. Linde is also involved in the construction of the Amur Gas Processing Plant near Svobodny, a project which is much closer to the completion and this plant could possibly operate. However, part of its configuration is linked to the Amur Gas Chemical Complex which in the best-case scenario looks delayed but possibly frozen for some time.

Siemens withdrawing from Russia

Siemens announced the curtailment of business in Russia in connection with the war in Ukraine. The company has begun the procedure for curtailing its production activities and all industrial activities. Siemens had suspended all new operations and international supplies to Russia and Belarus. International sanctions and potential countermeasures affect the company's activities in Russia, in particular, railway maintenance and repairs. Siemens has been heavily involved in Russian gas processing and SIBUR's petrochemical projects either completed or ongoing in recent years.

Linde suspended all Russian business

Linde has suspended any development of business and new projects in Russia, stopping deliveries to some customers and starting the process of selling industrial assets in order to reduce its presence in the country. In 2021 Linde's industrial gases business in Russia accounted for about 1% of the company's consolidated sales. As of 31 March 2022, Linde's obligations under contracts related to engineering projects in Russia amounted to about \$2 billion including ethylene projects for Nizhnekamskneftekhim and Amur Gas Chemical Complex. Linde was also in the early stages of an EPC with Ruskhimalliance in

constructing a gas processing complex at Ust Luga.

Maire Tecnimont expects to stop all Russian projects end of Q2 unless position changes

Maire Tecnimont SpA expects to discontinue its involvement in the Russian market by the end of June. As of 30 April 2022, Maire Tecnimont's order book related to projects under construction in Russia was approximately €1.1 billion, or about 12% of the total order book. Under normal conditions, this portfolio of orders would have been fulfilled during the period 2022-2024. It is expected that all operational activities will be gradually suspended by the end of the first half of this year.

Maire Tecnimont is one of the largest foreign EPC contractors in Russia, working with Gazprom, SIBUR, Kazanorgsintez, Rosneft, Kuibyshevazot, and Evrokhim. Tecnimont has been active in the Russian market over the past decade involving the construction of the PDH polypropylene project at Tobolsk, a large-scale ammonia project for Evrokhim and the Amur Gas Processing Plant at Svobodny. The largest project on its current order book involves the construction of the Amur Gas Chemical Complex, but Tecnimont is compelled to pull out of this project at least whilst the war continues.

Russian petrochemical markets

Russian Ethylene Production (unit-kilo tons)		
Producer	Jan-Mar 22	Jan-Mar 21
Angarsk Polymer Plant	59.1	58.0
Kazanorgsintez	171.8	146.5
Stavrolen	82.7	87.4
Nizhnekamskneftekhim	158.5	161.2
Novokuibyshevsk Petrochemical	12.6	14.4
Gazprom n Salavat	78.8	93.6
SIBUR-Kstovo	102.6	99.9
SIBUR-Khimprom	14.3	14.7
Tomskneftekhim	72.8	73.7
Ufaorgsintez	32.5	20.8
ZapSibNeftekhim	375.8	364.0
Total	1161.8	1134.2

NGL deliveries to Russian petrochemical plants (unit-kilo tons)		
Company	Jan-Mar 22	Jan-Mar 21
Angarsk Polymer Plant	9.6	25.8
Nizhnekamskneftekhim	12.5	0.0
Novokuibyshevsk Petrochemical	18.3	20.6
SIBUR-Kstovo	150.5	136.0
SIBUR-Khimprom	0.0	25.8
Tomskneftekhim	20.5	0.0

Russian Propylene Production (unit-kilo tons)		
Producer	Jan-Mar 22	Jan-Mar 21
Angarsk Polymer Plant	33.3	32.8
Kazanorgsintez	14.2	12.1
Lukoil-NNOS	80.5	49.8
Stavrolen	32.5	34.9
Nizhnekamskneftekhim	82.3	81.0
Novokuibyshevsk	9.5	10.2
Omsk Kaucuk	13.7	3.1
Polyom	49.7	48.6
Gazprom n Salavat	35.6	41.3
SIBUR Kstovo	46.5	45.3
SIBUR-Khimprom	22.1	15.2
Tomskneftekhim	39.7	39.4
SIBUR Tobolsk	0.0	3.0
Ufaorgsintez	44.2	45.3
ZapSibNeftekhim	265.6	322.7
Total	769.4	784.8

Russian Propylene Exports (unit-kilo tons)		
Producer	Jan-Mar 22	Jan-Mar 21
Lukoil-NNOS	25.5	7.6
SIBUR-Kstovo	8.4	2.8
Angarsk Polymer Plant	6.6	0.0
Stavrolen	1.0	21.1
Total	40.8	10.4

Russian ethylene production, Jan-Mar 22

Russian ethylene production totalled 1.162 million tons in the first quarter in 2022 against 1.134 million tons in the same period in 2021. ZapSibNeftekhim at Tobolsk produced 375,800 tons in January to March 2022, up from 1.134 million tons from January to March 2021. Nizhnekamskneftekhim produced 158,500 tons of ethylene in the first quarter against 161,200 tons in 2021, whilst Kazanorgsintez increased from 146,500 tons to 171,800 tons.

Other important ethylene producers included SIBUR-Kstovo which produced 102,600 tons versus 99,900 tons. In Bashkortostan Gazprom neftekhim Salavat produced 78,800 tons against 93,600 tons, whilst Ufaorgsintez increased production from 20,800 tons to 32,500 tons. Stavrolen at Budyennovsk reduced ethylene production in the first quarter to 82,700 tons against 87,400 tons in 2021.

SIBUR and TAIF-NK agreed to supply naphtha in May at reduced prices. The cost of production was fixed for a month in accordance with the recommendations of the FAS on the decoupling of prices from export parity. SIBUR purchases around 1.3 million tpa of naphtha for Nizhnekamskneftekhim but due to disagreements on the price, it reduced consumption to a minimum.

Russian propylene production, sales and exports, Jan-Mar 22

Russian propylene production amounted to 769,400 tons in the first quarter in 2022 against 784,800 tons in the same period in 2021. The ZapSibNeftekhim and SIBUR Tobolsk plants reduced production from 325,700 tons in the first quarter 2021 of t265,600 tons.

In Tatarstan Nizhnekamskneftekhim produced 82,300 tons of propylene in the first quarter in 2022 against 81,000 tons in 2021 whilst Kazanorgsintez increased production from 12,100 tons to 14,200 tons.

In Bashkortostan Gazprom neftekhim Salavat produced 35,600 tons versus 41,300 tons whilst Ufaorgsintez reduced production from 45,300 tons to 44,200 tons. In the Nizhny Novgorod region SIBUR-Kstovo increased production of propylene from 45,300 tons to 46,500 tons. SIBUR-Kstovo sells most of its propylene on the domestic market in addition to exports. Lukoil-NNOS at Kstovo increased production from 49,800 tons to 80,500 tons. Lukoil-NNOS is trying to build a polypropylene plant at the Kstovo refinery.

Russian Propylene Domestic Sales (unit-kilo tons)		
Company	Jan-Mar 22	Jan-Mar 21
Angarsk Polymer Plant	4.6	12.8
SIBUR-Kstovo	41.5	36.6
Lukoil-NNOS	48.0	41.7
Others	14.6	2.4
Total	108.7	93.5

Russian propylene exports and domestic sales Jan-Mar 22

Propylene exports from Russia amounted to 40,800 tons in the first quarter in 2022 against 10,400 tons in the same period 2021. Lukoil-NNOS increased export shipments from 7,600 tons to 25,500 tons whilst the Angarsk Polymer Plant shipped 6,600 tons for export against no activity in 2021.

Russian Propylene Domestic Purchases (unit-kilo tons)		
Consumer	Jan-Mar 22	Jan-Mar 21
Saratovorgsintez	45.7	46.1
Volzhskiy Orgsintez	3.0	3.1
Akrilat	11.5	0.0
SIBUR-Khimprom	8.3	12.0
Omsk-Kaucuk	3.6	0.7
Tomskneftekhim	1.1	0.6
ZapSibNeftekhim	31.0	18.6
Moscow Refinery	0.6	1.2
Ufaorgsintez	3.5	3.5
Khimprom Kemerovo	2.1	1.2
Plant of Synthetic Alcohol	0.3	5.7
Others	0.2	0.0
Total	110.8	94.5

Russian sales of propylene on the domestic merchant market amounted to 108,700 tons in the first quarter in 2022 against 93,500 tons in the same period last year. The largest propylene supplier to the domestic market was Lukoil-NNOS, shipping 48,000 tons against 41,700 tons in January to March 2021 followed by SIBUR-Kstovo which increased from 36,600 tons to 41,500 tons.

ZapSibNeftekhim increased merchant propylene purchases from 18,800 tons in January to March 2021 to 31,000 tons in the same period this year. Saratovorgsintez reduced purchases of merchant propylene from 46,000 tons to 45,700 tons which was largely due to an extended maintenance outage between May and August last year. Regarding other consumers, SIBUR-Khimprom reduced purchases from 12,000 tons to 8,300 tons

Russian Styrene Production (unit-kilo tons)		
Producer	Jan-Mar 22	Jan-Mar 21
Nizhnekamskneftekhim	80.4	80.9
Angarsk Polymer Plant	10.0	11.2
SIBUR-Khimprom	38.2	36.0
Gazprom n Salavat	45.9	52.9
Plastik, Uzlavaya	13.0	21.5
Total	187.5	202.5

Russian styrene production, sales and exports, Jan-Mar 22

Russian styrene production fell from 202,500 tons in the first quarter in 2021 to 187,500 tons in January to March 2022. Nizhnekamskneftekhim reduced production from 80,900 tons to 80,400 tons where most of the styrene is used internally for polystyrene and synthetic rubber output. Gazprom neftekhim Salavat reduced production from 52,900 tons to 45,900 tons.

Russian Styrene Exports (unit-kilo tons)		
Producer	Jan-Mar 22	Jan-Mar 21
Angarsk Polymer Plant	0.0	1.4
Gazprom neftekhim Salavat	17.4	25.5
Nizhnekamskneftekhim	0.0	1.0
SIBUR-Khimprom	3.0	0.3
Total	20.3	28.2

Following the problems in sending rail cars to Finland, which have been temporarily resolved, Russian exports of styrene resumed on 11 April, and up to 26 April a total of 6,723 tons was shipped to Finland, Turkey and Uzbekistan. Styrene has been sanctioned by the EU which means that all deals need to complete by 10 July. This is leading to a surplus in the Russian market.

Russian Styrene Domestic Sales		
Producer	Jan-Mar 22	Jan-Mar 21
Angarsk Polymer Plant	7.3	6.7
Plastik	0.4	0.2
Gazprom n Salavat	18.0	16.9
SIBUR-Khimprom	8.5	11.2
Nizhnekamskneftekhim	0.0	1.0
Total	34.3	36.0

Russian styrene exports amounted to 20,300 tons in the first quarter in 2022 against 28,200 tons in the same period in 2021. Gazprom neftekhim Salavat reduced exports from 25,500 tons to 17,400 tons whilst SIBUR-Khimprom increased export shipments from 300 tons to 3,000 tons. Domestic merchant sales of styrene dropped slightly from 36,000 tons in the first quarter last year to 34,300 tons in the first quarter in 2022.

Paraxylene-PTA-PET

Russian paraxylene production & exports Jan-Mar 22

Russian paraxylene production was stable in the first quarter after protracted scheduled repairs were undertaken in the fourth quarter last year at the Ufaneftkhim plant and the Kirishi refinery. This resulted in an overall decline of paraxylene production from 258,000 tons in 2020 to a total of 184,157 tons in 2021. In

Russian Paraxylene Production 2022 (unit-kilo tons)			
Company	Jan	Feb	Mar
Gazprom Neft	13.682	9.474	10.589
Ufaneftkhim	4.160	14.986	11.427
Kirishinefteorgsintez	5.418	5.174	4.15
Total	23.260	29.634	26.166

March this year production amounted to 26,166 tons of which Ufaneftkhim produced 11,427 tons and Gazprom Neft 10,589 tons. For the first quarter this year Russia produced 79,060 tons of paraxylene, including 33,745 tons from Gazprom Neft, 30,573 tons from Ufaneftkhim and 14,742 tons from Kirishinefteorgsintez. Exports declined from 29,900 tons in the first three months in 2021

to 18,800 tons in the same period this year.

Russian Paraxylene Exports (unit-kilo tons)		
Producer	Jan-Mar 22	Jan-Mar 21
Gazprom Neft	14.4	13.2
Kirishinefteorgsintez	4.4	16.7
Ufaneftkhim	0.0	0.0
Total	18.8	29.9

Polief-PTA production Jan-Mar 22

MEG purchases made by Polief amounted to 14,600 tons in the first quarter against 19,600 tons in the same period in 2021, whilst acetic acid purchases dropped from 6,100 tons to 5,200 tons. MEG purchases are made jointly from Nizhnekamskneftekhim and SIBUR-Neftekhim which are now part of the same group, whilst acetic acid is purchased from Russia's sole producer Azot at Nevinnomyssk. In 2021 Nizhnekamskneftekhim supplied 29,200 tons of MEG to Polief and SIBUR-Neftekhim supplied 40,400 tons. Azot at Nevinnomyssk supplied 24,700 tons of acetic acid last year to the Polief plant.

Polief Domestic Raw Material Purchases (unit-kilo tons)		
Product	Jan-Mar 22	Jan-Mar 21
MEG		
Nizhnekamskneftekhim	14.3	7.8
SIBUR Neftekhim	0.3	11.8
Acetic Acid		
Azot Nevinnomyssk	5.2	6.1

PET recycling Russia

At present there are 23 enterprises for PET recycling located inside Russia, with a total capacity of 233,000 tpa. Total capacity for processing polymer waste in Russia is currently estimated at 890,000 tpa most of which can be repurposed to recycle PET. The

main obstacle to using this capacity is the lack of PET waste. Many regions in Russia are collecting PET bottle waste now to be sent for recycling but investments are required in the infrastructure and logistics of moving this waste to plants.

All of the PET producers in Russia are striving to utilise more recycled waste. The general aim of Ekopet at Kaliningrad is to increase recycling over the next two years. Ekopet intends to move to the industrial production of high-quality fibre PET. The volume of production will depend on the demand of the market. The demand of the Russian market for such brands is low: Titan-Polymer produces about 70,000 tpa, Flex Films Rus about 30,000 tpa. Prior to this, the Kaliningrad enterprise had already produced small trial batches of fibre polyethylene terephthalate which has been tested out by Mogilevkhimvolokno and Retal.

Ekopet produced 234,000 tons of PET in 2021 and started 2022 with the aim of producing 242,000 tons. Ekopet is the largest producer of polyethylene terephthalate in the Russian Federation. The share of the company's products in the Russian market is 37%. The design capacity of the PET production plant is 220,000 tpa. However, Ekopet has been operating for two years at a 110% capacity utilisation.

PET-PTA import duties zeroed by Eurasian Economic Commission

The Council of the Eurasian Economic Commission (EEC) approved the zeroing for one year of the import customs duty rate in respect of polyethylene terephthalate (PET). This grouping covers Russia, Belarus and Kazakhstan

This follows a recent decision to apply a zero rate of customs duty on the import of PTA and its salts into the territory of the EAEU. The new measure was introduced until March 2024 and replaces the previous duty at zero which expired at the end of 2021. The measure on PTA is introduced to fill the deficit in raw materials in the domestic market of the Eurasian Economic Union and meet the needs of enterprises engaged in the production of PET.

Aromatics

Russian Benzene Production (unit-kilo tons)		
Producer	Jan-Mar 22	Jan-Mar 21
Angarsk Polymer Plant	22.8	24.3
Gazprom Neft	26.6	26.0
LUKoil-Neftekhim	20.3	0.0
LUKoil-Permnefteorgsintez	12.9	14.1
Magnitogorsk MK	12.1	10.5
Nizhnekamskneftekhim	76.2	76.0
Novolipetsk MK	2.3	0.7
Gazprom neftekhim Salavat	46.9	51.4
Severstal	9.4	7.4
SIBUR-Holding	22.8	21.4
Slavneft-Yaroslavlorgsintez	15.1	18.1
Surgutneftegaz	1.1	11.3
Ryazan RN Holding	7.6	9.4
Ufaneftekhim	22.3	25.0
Ural Steel	2.4	2.5
Uralorgsintez	20.8	25.0
Zapsib	17.2	18.2
Novokuibyshevsk Petrochemical	6.4	5.5
Total	345.2	346.8

Russian Benzene Consumers (unit-kilo tons)		
Consumer	Jan-Mar 22	Jan-Mar 21
Kuibyshevazot	45.9	39.3
Azot Kemerovo	36.1	37.2
Shchekinoazot	14.7	18.2
Kazanorgsintez	18.6	19.7
Omsk Kaucuk	19.0	0.7
Novokuibyshevsk Petrochemical	9.4	13.5
Zapsib	9.5	9.9
SIBUR-Khimprom	25.4	24.3
Ufaorgsintez	6.1	0.0
Uralorgsintez	12.1	19.0
Total	215.1	196.0

benzene purchases from 170,600 tons to 150,500 tons, partly due to improved technology which lowered benzene consumption in the production of caprolactam. Other caprolactam producers included Azot at Kemerovo which increased purchases from 107,800 tons to 123,900 tons and Shchekinoazot which reduced

Russian Caprolactam Production (unit-kilo tons)		
Producer	Jan-Mar 22	Jan-Mar 21
Kuibyshevazot	51.5	47.1
Shchekinoazot	15.3	13.3
SDS Azot	31.0	33.9
Total	97.7	94.3

Russian caprolactam production amounted to 97,700 tons in January to March 2022 against 94,300 tons in the same period in 2021. Kuibyshevazot increased production from 47,100 tons to 51,500 tons whilst SDS Azot at Kemerovo reduced production slightly to 31,000 tons from 33,900 tons.

Russian benzene production Jan-Mar 22

Russian benzene production amounted to 345,200 tons in the first quarter in 2022 against 346,800 tons in the same period in 2021. Nizhnekamskneftekhim increased benzene production slightly from 76,000 tons to 76,200 tons, whilst Gazprom neftekhim Salavat reduced production from 51,400 tons to 46,900 tons.

Extended shutdowns at the aromatics' complexes both at Kirishinefteorgsintez and Ufaneftekhim impacted on the domestic supply/demand balance in the first quarter. Neither of those plants sell much benzene on the merchant market, but these outages mean that product was redirected from other suppliers creating bottlenecks. Of some help to the market is the restart of Stavrolen at Budyennovsk in December which meant that production amounted to 20,300 tons in the first quarter against zero activity in 2021.

Benzene sales from domestic producers and importers on the Russian domestic market to 215,100 tons in the first quarter against 196,000 tons the same period in 2021. Imports started to disappear from the market in March as Ukrainian producers stopped operating whilst Belarussian refineries were forced to reduce operating rates after sanctions from the EU. Angarsk Polymer Plant reduced sales from 13,400 tons to 13,200 tons whilst SIBUR-Kstovo increased sales from 19,100 tons to 22,500 tons.

Gazprom Neft at Omsk increased sales from 22,900 tons to 26,800 tons whilst Gazprom neftekhim Salavat increased from 7,700 tons to 10,700 tons. Russian benzene exports increased in the first quarter from 13,200 tons to 17,200 tons.

Amongst the consumers Kuibyshevazot reduced shipments from 77,300 tons to 69,500 tons. In the phenol sector Kazanorgsintez reduced purchases from 65,300 tons to 60,300 tons whilst Omsk Kaucuk increased purchases from 23,600 tons to 40,700 tons. For styrene production SIBUR-Khimprom reduced purchases from 99,700 tons to 96,700 tons.

Russian caprolactam production, Jan-Mar 22

Kuibyshevazot buys assets from DSM

Kuibyshevazot bought control in two joint ventures from DSM (Netherlands) including Togliatti companies Volgalon Ltd and Volgaplast Compounding Ltd. Kuibyshevazot has become the 100% owner of both companies. Previously, DSM's division, Engineering Plastics International B.V., owned 51% and 80%, respectively. Kuibyshevazot decided to buy out 51% of Volgalon Ltd from the partner at a price of up to \$7.3 million, and 80% of Volgaplast Compounding Ltd at a price of up to \$1.8 million. Volgaplast Compounding produces compounds of engineering plastics at the Kuibyshevazot industrial site where capacity is 15,000 tpa. Volgalon sells the basic polymer polyamide-6 and engineering plastics based on it in the Russian Federation and other CIS countries.

Russian Orthoxylene Production 2022 (unit-kilo tons)			
Orthoxylene	Jan	Feb	Mar
Gazprom Neft	10.900	9.500	11.381
Ufaneftekhim	8.383	3.858	3.876
Kirishinefteorgsintez	5.640	5.385	4.320
Total	24.923	18.743	19.577

quarter in 2022 against 14,100 tons in the same period in 2021. Gazprom Neft increased domestic shipments from 8,000 tons to 8,900 tons whilst Ufaneftekhim increased shipments from 600 tons to 4,500 tons. Orthoxylene exports from Russia totalled 37,200 tons in 2021 against 10,400 tons in 2020. Last year Kirishinefteorgsintez was the main exporter, shipping 23,600 tons.

Russian Toluene Production (unit-kilo tons)		
Producer	Jan-Mar 22	Jan-Mar 21
Kinef	0.0	6.5
Gazprom N Salavat	4.9	10.4
Slavneft-Yaros	9.1	10.4
LUKoil-Perm	9.5	11.3
Gazprom Neft	22.0	15.2
RN Holding	9.7	10.0
Ufaneftekhim	24.8	5.9
Others	3.8	7.8
Total	83.8	77.5

Russian toluene production totalled 83,800 tons in the first term of 2022 against 77,500 tons in the same period in 2021. Gazprom Neft increased production from 15,200 tons to 22,000 tons whilst Ufaneftekhim increased production from 5,900 tons to 24,800 tons.

Russian phenol market, Jan-Mar 22

Russian phenol production amounted to 75,100 tons in the first quarter in 2022 against 68,600 tons in the same period in 2021. Novokuibyshevsk Petrochemical produced 18,600 tons of phenol against 19,300 tons whilst Ufaorgsintez reduced production from 16,400 tons to 16,300 tons.

Russian Phenol Production (unit-kilo tons)		
Producer	Jan-Mar 22	Jan-Mar 21
Ufaorgsintez	16.3	16.4
Kazanorgsintez	19.7	19.7
Novokuibyshevsk Petrochemical	18.6	19.3
Omsk Kaucuk, Omsk	20.5	13.2
Total	75.1	68.6

Kazanorgsintez maintained production at 19,700 tons whilst Omsk Kaucuk increased production from 13,200 tons in the first quarter in 2021 to 20,500 tons in 2022.

Russian Domestic Market Phenol Sales by Supplier (unit-kilo tons)		
Producer	Jan-Mar 22	Jan-Mar 21
Omsk Kaucuk	9.4	4.1
Novokuibyshevsk Petrochemical	13.0	13.8
Ufaorgsintez	11.8	13.8
Total	34.4	33.8

Sales of phenol on the domestic market totalled 34,400 tons in the first quarter in 2022 against 33,800 tons in the same period in 2021 with Ufaorgsintez reducing shipments from 13,800 tons to 11,800 tons. Omsk Kaucuk increased shipments from 4,100 tons to 9,400 tons after recovering from technical problems earlier in the year whilst Novokuibyshevsk Petrochemical reduced sales from 13,800 tons to 13,000 tons.

Russian Phenol Exports by Supplier (unit-kilo tons)		
Producer	Jan-Mar 22	Jan-Mar 21
Omsk Kaucuk	10.5	0.8
Novokuibyshevsk Petrochemical	3.5	3.5
Ufaorgsintez	2.0	1.7
Total	16.1	5.9

Russian phenol exports directly from producers amounted to 16,100 tons in the first quarter this year against 5,900 tons in the same period in 2021, with Omsk Kaucuk increasing shipments from 800 tons to 10,500 tons.

Phenol and acetone have both been placed under EU sanctions which means that any transactions to the EU region need to be completed by 10 July.

Synthetic rubber

Russian C4 Purchases (unit-kilo tons)		
Consumer	Jan-Mar 22	Jan-Mar 21
Omsk Kaucuk	17.0	22.8
Nizhnekamskneftekhim	36.5	48.5
Togliattikaucuk	37.7	45.5
Sterlitamak Petrochemical Plant	5.4	5.8
Total	96.6	122.6

Russian Butadiene Production (unit-kilo tons)			
Producer	Jan	Feb	Mar
ZapSibNeftekhim	28.125	24.000	28.468
Nizhnekamskneftekhim	21.635	19.110	24.705
Togliattikaucuk	4.390	2.920	5.250
Sterlitamak Petrochemical Plant	3.040	3.851	1.800
Omsk Kaucuk	2.325	3.445	2.845
Total	59.515	53.326	63.068

January.

Russian rubber feedstocks Jan-Mar 22

C4 rail shipments to the Russian market amounted to 96,600 tons in the first quarter in 2022 against 122,600 tons in the same period in 2021. All synthetic rubber producers purchased less C4s on the market due partly to lower production. A total of 208,600 of C4s were shipped to Nizhnekamsk against 100,500 tons in 2020 whilst Togliattikaucuk reduced purchases from 211,100 tons to 192,500 tons.

Of C4 merchant consumers in Russia Nizhnekamskneftekhim is the largest butadiene producer, producing 24,705 tons in March against 19,110 tons in February. The largest butadiene producer in Russia is ZapSibNeftekhim at Tobolsk which produced 28,468 tons in March versus 24,000 tons in February and 28,125 tons in

Russian rubber production and consumption Jan-Mar 22

Russian production of synthetic rubbers amounted to 431,000 tons in January to March against 447,000 tons in the same period in 2021. The production of tyres in the first quarter amounted to 16 million units, which is 3.5% more than in the same period in 2021. In particular, the production of tyres for passenger cars increased by 5.8%, for buses, trolleybuses and trucks by 2.1%, for agricultural machinery by 4.5%.

Russian Tyre Production (unit-kilo tons)		
Product	Jan-Mar 22	Jan-Mar 21
Car Tyres	92.1	87.3
Lorry tyres	10.1	13.8
Agricultural tyres	3.5	3.3
Total	105.6	104.4

Regarding domestic market sales Russian rubber producers are struggling to pass on costs to end-users, although this has been much the same case over the past few years. Only in April this year Nizhnekamskneftekhim was given a fine of 1.29 billion roubles (\$15.5 million) for violations committed in 2018 in the synthetic rubber market and price conflict with Tatneft.

Russian Hydrogen takes charge of Sterlitamak rubber plants

The company Russian Hydrogen has reached an agreement in principle on entering the operational management of Sterlitamak Petrochemical Plant and Sintez Kaucuk at Sterlitamak. Russian Hydrogen was registered in February 2021 with an authorized capital of 500,000 roubles.

Sterlitamak Petrochemical Plant specialises in the production of high-quality butadiene-styrene rubbers, aviation and sports gasoline, diversified products of low-tonnage chemistry, high-octane additive to fuel MTBE. The company is also the sole Russian producer of phenolic antioxidants Agidol, used for the production of synthetic rubbers, plastics, fibres, lubricating and transformer oils, as well as for the feed, food and cosmetic industries. Sintez-Kaucuk is the only production facility in Russia that produces neodymium isoprene rubbers of SKI-5 and SKI-5PM brands.

Nizhnekamskneftekhim-HBR expansion

Nizhnekamskneftekhim's project to increase the production of halogenated butyl rubber (GBK) from 150,000 tpa to 200,000 tpa has received safety and technical approvals which would allow completion project by the end of 2022. Nizhnekamskneftekhim has been producing halogenated butyl rubber since March 2004 using the domestic technology of the Yarsintez Research Institute. The product is a raw material in the manufacture of tubeless automobile tyres with high characteristics of environmental friendliness and economy. After the imposition of EU sanctions on synthetic rubber Nizhnekamskneftekhim may find it hard to sell its halogenated butyl rubber as with other products so the modernised plant may not be able to run at full capacity.

Methanol

Russian Methanol Production (unit-kilo tons)		
Producer	Jan-Mar 22	Jan-Mar 21
Shchekinoazot	390.8	249.4
Gazprom Methanol	228.3	253.5
Metafrax Chemicals	323.8	314.2
Akron	27.7	26.0
Azot Novomoskovsk	51.4	74.8
Angarsk Petrochemical	8.7	11.6
Azot Nevinnomyssk	32.1	28.6
Tomet	200.6	128.0
Ammoni	26.7	35.9
Totals	1289.9	1121.9

Russian methanol production Jan-Mar 22

Russia produced 1.290 million tons of methanol in the first quarter in 2022 against 1.122 million tons in the same period in 2021. Metafrax Chemicals at Gubakha produced 323,800 tons of methanol against 314,200 tons in January-March 2021, whilst Gazprom Methanol at Tomsk reduced production from 253,500 tons to 228,300 tons.

Tomet produced 200,600 tons of methanol in the first quarter in 2022 against 128,000 tons in the same period in 2021. Production was higher due to both units operating for most of the first quarter whilst in 2021 only one unit worked.

Shchekinoazot produced 390,800 tons in the first quarter in 2022 against 249,400 tons in January to March 2021, the increase due to the addition of new capacity. Also,

Russian Methanol Sales Q1 2022 (unit-kilo tons)					
Month	Export Vol	Planned	Month	Domestic	Planned
Jan	214.8	229.7	Jan	147.7	120.8
Feb	198.1	216.6	Feb	134.0	127.0
Mar	172.7	251.2	Mar	148.4	104.7
Total	585.6	697.5	Total	430.1	352.5

in the Tula Oblast Azot at Novomoskovsk reduced production from 74,800 tons to 51,400 tons. Ammoni in Tatarstan reduced methanol production from 35,900 tons in the first quarter in 2021 to 26,700 tons in 2022.

The head of the administration of Nevinnomyssk was forced to reaffirm that

Nevinnomyssk Azot was not about to close after rumours circulated on social networks. The report that the chemical plant is allegedly closed from 10 April in connection with the difficulties that arose from sanctions. Azot at Nevinnomyssk is a part of Evrokhim with headquarters in Switzerland, the plant did undergo maintenance from the end of March but did restart afterwards.

Russian methanol market overview Jan-Mar 22

For more than half of the first quarter in 2022 business continued normally for Russian methanol producers. The position for export activity underwent a sharp twist after the invasion. Contracts were cancelled, and logistical problems started to emerge from the Finnish railways through to the West European ports.

Russian Methanol Exports by Producer (unit-kilo tons)		
Producer	Jan-Mar 22	Jan-Mar 21
Azot Nevinnomyssk	0.0	2.3
Azot Novomoskovsk	10.1	23.9
Akron	4.3	2.0
Metafrax Chemicals	125.0	116.4
Gazprom Methanol	91.1	122.3
Tomet	79.9	36.7
Shchekinoazot	275.8	179.8
Total	586.2	483.4

Overall, for the period from 24 February to the end of March export shipments were lower than expected but in the context of the war volumes were reasonable. Export volumes for the first quarter totalled 586,200 tons which was higher than in the same period last year when volumes amounted to 483,400 tons. The reason for the higher export estimates was due to the start-up of the third unit M-500 at Shchekinoazot in September 2021.

Export volumes were targeted at 697,500 tons for the first quarter according to orders placed which meant that shipments were down by 111,300 tons. Offsetting the decline in exports domestic merchant sales amounted to 77,600 tons

over the expected order volume for the first quarter, thus comprising 434,200 tons versus the scheduled volume of 352,500 tons. As European customers rejected Russian methanol where possible this resulted in producers asking domestic buyers to take more product and build up inventory.

Russian methanol exports to Belarus increased to 53,100 tons in the first quarter against 30,300 tons last year. Exports to Kazakhstan in January-March 2022 rose to 9,900 tons from 5,600 tons whilst shipments to Poland rose from 75,600 tons to 106,400 tons. Although Romania has not been able to receive methanol

from Russia since the end of February imports still increased in the first quarter to 26,500 tons from 22,100 tons but Slovakia facing the same delivery issues reduced imports from 60,300 to 49,000 tons.

Summary of Russian Methanol Export Destinations (unit-kilo tons)		
Country	Jan-Mar 22	Jan-Mar 21
Belarus	53.1	30.5
Finland	222.9	262.8
Kazakhstan	9.9	5.6
Latvia	3.4	4.6
Lithuania	27.0	25.0
Netherlands	63.5	18.3
Poland	106.4	75.6
Romania	26.5	22.1
Slovakia	49.0	60.3
Turkey	6.6	5.1
UK	8.4	0.0
Ukraine	11.9	16.0
Others	1.2	1.2
Total	589.8	527.0

Methanol exports to Finland declined from 262,800 tons in January to March 2021 to 222,900 tons this year. The decline occurred despite the start by Shchekinoazot to ship product through the Finnish ports in addition to the more established shippers Gazprom Methanol and Metafrax Chemicals.

Russian methanol domestic sales, Jan-Mar 2022

Merchant sales of methanol on the Russian domestic market amounted to 434,200 tons in the first quarter against 446,800 tons in the same period in 2021. The rise in domestic consumption helped offset the decline in export activity. Tomet supplied 111,400 tons in the first quarter, making it the largest provider on the domestic merchant market. The largest consumer for Tomet is Togliattiazot where methanol is used for the production of urea-formaldehyde concentrate.

Russian Methanol Domestic Sales (unit-kilo tons)		
Producer	Jan-Mar 22	Jan-Mar 21
Azot Nevinnomyssk	7.6	4.4
Azot Novomoskovsk	35.0	48.7
Metafrax Chemicals	92.8	110.5
Gazprom Methanol	106.2	121.9
Tomet	111.4	87.7
Shchekinoazot	68.0	49.5
Ammoni (Mendelevsk)	13.3	24.1
Total	434.2	446.8

Gazprom Methanol reduced domestic shipments of methanol from 121,900 tons in the first quarter in 2021 to 106,200 tons in the same period in 2021 whilst Shchekinoazot increased domestic sales from 49,500 tons to 68,000 tons. Metafrax Chemicals reduced merchant shipments to the domestic market from 110,500 tons in 2021 to 92,800 tons in the first quarter this year.

Russian Methanol Purchases by Consumer (unit-kilo tons)		
Consumer	Jan-Mar 22	Jan-Mar 21
Nizhnekamskneftekhim	88.1	90.5
Togliattikaucuk	15.0	34.5
Uralorgsintez	7.8	12.1
SIBUR-Khimprom	0.9	3.9
SIBUR Tobolsk	10.9	7.9
Omsk Kaucuk	26.4	23.8
Novokuibyshevsk NPZ	7.1	7.5
Uralkhimplast	6.2	5.6
Slavneft-Yanos	4.2	3.0
Metadynea	22.0	26.1
Kronospan	25.7	30.2
Gazprom	75.5	50.2
Khimsintez	13.1	4.5
Volzhsky Orgsintez	9.5	2.4
Togliattiazot	34.9	11.2
Others	86.8	133.4
Total	434.2	446.8

Nizhnekamskneftekhim purchased 88,100 tons of methanol in the first quarter against 90,500 tons in the same period in 2021 whilst Gazprom increased purchases from 50,200 tons to 75,500 tons. Togliattikaucuk increased methanol purchases from 11,200 tons in January to March to 34,900 tons mainly due to higher MTBE production. On the basis of the methanol plant at Novgorod, Akron has begun shipping liquefied medical oxygen produced at its site at Novgorod. This product is in demand by medical institutions. The total volume of medical oxygen production will be up to 6 tons per day.

Kronospan bought 25,700 tons of methanol against 30,200 tons in the first quarter last year and Metadynea reduced purchases from 26,100 tons to 22,000 tons. Uralkhimplast at Nizhniy Tagil increased methanol purchases for resin production from 5,600 tons to 6,200 tons. There is no shortage of methanol despite the fact that from 29 March Nevinnomyssk Azot began scheduled repairs at the production of acetic acid and vinyl acetate. The renovation lasted until 17 April 2022. The capacity of this plant includes 160,000 tpa of acetic acid and 22,000 tpa of vinyl acetate.

Russian methanol domestic prices May 2022

Russian methanol producers reduced prices on the domestic market in May in an effort to stimulate greater demand. Export difficulties of Russian producers have increased interest in the domestic market, but demand is limited. Another problem for Russian methanol producers is the return of rail cars which have been tied up much longer than normal at various ports, border crossings, etc. Finland has seized over a thousand Russian rail cars, and it is not clear if any methanol cars are included in this capture.

Overall, producers have accumulated much higher-than-normal inventories as large volumes of exports could not compensate for the decrease in consumption in the external market. Exports of 206,334 tons of methanol took place in April against 173,500 tons in March, but indications for May suggest lower volumes. Although the current rouble exchange rate lacks credibility methanol prices range from 28,000 to 34,000 roubles per ton in the Central region (which includes Moscow) and including 24,000-32,800 roubles per ton for the Volga region. Phenol-formaldehyde resin producers were noted as buying less methanol in May due to lower demand for resins.

Schekinoazot increased production and ammonia installation

In the first quarter Shchekinoazot increased the production of methanol from 249,400 tons to 390,800 tons and exports from 179,800 tons to 275,800 tons. Domestic merchant sales rose from 49,500 tons in the first

Shchekinoazot Methanol Balance (unit-kilo tons)		
	Q1 22	Q1 21
Production	390.8	249.4
Exports	275.8	179.8
Domestic sales	68.0	49.5
Captive/Inventory	47.0	20.1

quarter this year to 68,000 tons, whilst for inventory and internal processing volumes rose from 20,100 tons to 47,000 tons. Shchekinoazot does not process much methanol, but inventory has been higher this year.

The company completed its maintenance in May for urea-formaldehyde concentrate and related plants.

This shutdown was the first of a number of planned outages this year. The next stop on schedule is in early June, for the caprolactam and cyclohexanone plants where it is planned to service the Samsung air compressor in the cyclohexanone workshop and conduct maintenance in the hydroxylamine sulphate workshop. All the main workshops of Shchekinoazot are stopped for major repairs in order of priority, according to a pre-approved schedule, depending on the urgency of repairs and market conditions.

Overhauls at the first methanol and in the ammonia compression and synthesis workshop are scheduled for mid-summer, and the next ones for autumn. Preparations for the summer shutdowns are already underway. In order to replace spare parts of foreign production, if necessary, the company's service is now working on options for interaction with domestic manufacturers in Central Russia, in the Urals. There are many enterprises that are now reorienting themselves to this direction of non-standard spare parts for imported equipment, oil seals, bearings, seals, etc.

Shchekinoazot has started the installation of an ammonia synthesis column where the capacities include 525,000 tpa of ammonia and 700,000 tpa of urea. The project is being constructed by China National Chemical Engineering.

Metafrax Methanol Balance (unit-kilo tons)		
	Q1 22	Q1 21
Production	323.8	314.3
Exports	125.0	116.4
Domestic sales	92.8	110.5
Captive/Inventory	106.1	87.3

Metafrax methanol processing and production

In the first quarter this year Metafrax Chemicals increased production, exports and internal processing, but a decline was noted for merchant sales on the domestic market. Last year Metafrax Chemicals increased its capacity for processing of methanol to 450,000 tpa through the addition of the third and new formalin plant. With exports set to face declines over the next few months Metafrax Chemicals is

trying to focus more the domestic market, either through internal processing and merchant sales. The strategy is nothing new for Metafrax Chemicals as for the many years has involved not only developing the methanol chain in order to reduce the dependency on export sales and the domestic merchant market, but also to diversify its product range. However, this strategy has now become more significant in the face of economic isolation from European countries.

Russian N-Butanol Production (unit-kilo tons)		
Producer	Jan-Mar 22	Jan-Mar 21
Angarsk Petrochemical company	9.5	8.0
Azot Nevinomyssk	4.2	3.8
Gazprom neftekhim Salavat	15.5	18.5
SIBUR-Khimprom, Perm	7.1	7.0
Total	36.3	37.3
Russian Isobutanol Production (unit-kilo tons)		
Producer	Jan-Mar 22	Jan-Mar 21
Angarsk Petrochemical Company	6.8	4.1
Gazprom neftekhim Salavat	8.0	8.8
SIBUR-Khimprom, Perm	14.2	7.1
Total	29.0	20.0

Azot Nevinomyssk Acetic Acid Domestic Sales 2022 (unit-kilo tons)			
Consumer	Jan	Feb	Mar
Polief	0.5	2.1	2.6
Stavrolen	4.0	2.9	2.5
Dmitrievsky Chemical Plant	1.6	0.8	0.8
Sverdlov Plant	0.9	0.7	0.6
Others	0.9	0.9	1.0
Total	7.8	7.5	7.4

trade for Russia, both imports and exports, is relatively small Russia exports VAM in large quantities of around 2,000 tons per month. Most product is shipped from Stavrolen with Turkey representing the largest destination. Some shipments are sent to Finland which may be forced to stop in the next few months.

Russian acetone market Jan-Mar 22

Russian acetone production rose from 40,600 tons in the first quarter in 2021 to 46,700 tons in the same period in 2022. Omsk Kaucuk produced 12,000 tons of acetone in the first three months this year against 3,300 tons whilst Kazanorgsintez increased production from 13,500 tons to 13,800 tons.

Russian Acetone Production (unit-kilo tons)		
Producer	Jan-Mar 22	Jan-Mar 21
Ufaorgsintez	10.6	12.1
Kazanorgsintez	13.8	13.5
Novokuibyshevsk Petrochemical	10.3	11.8
Omsk Kaucuk	12.0	3.3
Total	46.7	40.6

Russian Acetone Exports (unit-kilo tons)		
Country	Jan-Mar 22	Jan-Mar 21
Belarus	0.7	3.2
Netherlands	3.6	4.8
Turkey	0.0	1.2
Lithuania	0.0	1.0
Latvia	0.1	2.0
Others	1.4	3.3
Total	5.7	14.5

a third line for the production of acrylic emulsions, comprising a capacity of 12,840 tpa.

Organic chemicals

Russian butanol production Jan-Mar 22

Russian normal butanol production fell from 37,300 tons in the first quarter in 2021 to 36,300 tons in 2022. Gazprom neftekhim Salavat was the largest Russian producer, reducing production to 15,500 tons against 18,500 tons in January to March 2021.

Isobutanol production in Russia increased from 20,000 tons to 29,000 tons in 2021 during which Gazprom neftekhim Salavat reduced production from 8,800 tons to 8,000 tons, and SIBUR-Khimprom increased production from 7,100 tons to 14,200 tons.

Russian acetic acid market

Aside using acetic acid for the production of butyl acetate and methyl acetate Azot supplies merchant acetic to the Russian domestic market. The two largest customers include Polief which purchases acetic acid for PTA and Stavrolen which uses acetic acid in the production of vinyl acetate monomer (VAM). Azot undertook a shutdown in April affecting supplies to the domestic market. Whilst acetic acid

Acetone exports from Russia totalled 5,700 tons in the first three months against 14,500 tons in the same period in 2021. Lower export activity in the first quarter was due to a range of factors including logistical problems and the war in Ukraine. Acetone has now been placed under EU sanctions and all current transactions need to be completed by 10 July.

Regarding the domestic market a surplus of product has started to rise due in part to low demand. Combined with the decline in demand for Russian-produced acetone in foreign markets low domestic demand means that prices are under pressure. All market players are ready to provide discounts from the price list. Rosneft plants were selling spot volumes of acetone in May at 70,000 roubles per ton, Kazanorgsintez at 73,000 roubles per ton and the Titan Group in the range 75,000-78,000 roubles per ton. Acetone sellers are targeting Pigment at Tambov for increased volumes after it completed

Central Asia

SOCAR methanol Q1 2022

SOCAR produced 147,000 tons of methanol at its plant in Azerbaijan in the first quarter of 2022. At start of April the company's warehouse held 40,300 tons of methanol, intended mostly for export. SOCAR Methanol exported 115,841 tons of methanol worth \$37.691 million in the first quarter. Although the original design of the plant comprised 720,000 tpa current nameplate capacity is rated at 561,000 tpa. The plant produces technical methanol of grade "A" with a purity level of 99.99%. The product also has an international REACH certification, which ensures stable and sustainable dynamics of product sales in European markets.

SOCAR urea Q1 2022

SOCAR's urea plant in the first quarter of 2022 increased the sale of urea in the domestic market by 3.2 times to 53,400 tons. The volume of urea exports for the reporting period increased 8 times in physical terms and 33 times in monetary terms. In the first quarter, the plant exported urea for a total of \$93 million which is around eight-fold higher than in the same period in 2021. SOCAR's urea plant was put into operation in January 2019, uniting three areas: ammonia production; urea production; production of urea granules. The capacity of the plant is 1,200 tons of ammonia and 2,000 tons of urea per day. Azerbaijan's domestic needs for urea amount to 100-150,000 tpa.

In 2021, the plant produced 355,000 tons of urea against about 120,00 tons in 2020. Taking into account the capacity of the plant, capable of producing 650-660,000 tpa of urea, up to 500,000 tpa can be exported without compromising the food security. Moreover, taking into account the steady demand for fertilisers in foreign markets, the issue of building a second urea plant has again become relevant in Azerbaijan.

projects are planned to follow including 1.25 million tpa of polyethylene, 1.0 million tpa of PET and 186,000 tpa of butadiene. The butadiene plant, which is part of the JV with Tatneft, is also intended to be opened in 2024 although it is not yet clear if sanctions on Russia will impact the project.

Kazakh fertiliser production Jan-Mar 2022

The volume of production of nitrogen fertilisers in Kazakhstan in the first quarter of this year amounted to 112,600 tons, 1.9% lower than in the same period in 2021. At the same a 3.8% decrease in the production of phosphate fertilisers was recorded, rising to 48,700 tons. Exports of fertilisers dropped by 40.5% in the first quarter by volume, whilst in monetary terms showed an increase of almost 1.5 times.

Kazakh chemical trade 2021

Chemical product imports into Kazakhstan were valued at \$3.2 billion in 2021 against exports of \$1.06 billion. The country receives the bulk of chemical products from Russia (49.9%), China (13.9%) and the USA (4.2%). The largest share in the total volume of imports of the chemical industry is occupied by polyethylene, herbicides, surfactants, diagnostic or laboratory reagents, other cosmetics, ready-made binders for the production of casting moulds, and PVC.

The main traditional export markets of Kazakhstan's chemical products are Russia (19.7%), Ukraine (8.5%) and Germany (8.0%). As noted above, the bulk of Kazakhstan's chemical exports consist of basic products including yellow phosphorus, sulphur of all kinds, chromium salts, polypropylene, ammonium nitrate, etc.

operations towards the fuel sector. Paraxylene production therefore dropped from 185,000 tons in 2020 to around 82,000 tons in 2021. Provisional forecasts for 2022 suggest production levels of 150-200,000 tons. The capacity of the paraxylene plant at Atyrau comprises 496,000 tpa, although utilisation has not exceeded 50% until now.

The supply of natural gas to the methanol plant is carried out by Azerigaz of SOCAR. The location of the plant also plays an important role in the efficient transportation of products to foreign markets: products from the Garadagh station are sent to the Kulevi seaport in Georgia.

Kashagan gas processing plant and Kazakh chemical projects

The gas processing plant in Kashagan in Kazakhstan is scheduled for launch in 2024.

From the gas processing plant in Kashagan the chemical and polymer projects are planned to follow including 1.25 million tpa of polyethylene, 1.0 million tpa of PET and 186,000 tpa of butadiene. The butadiene plant, which is part of the JV with Tatneft, is also intended to be opened in 2024 although it is not yet clear if sanctions on Russia will impact the project.

The Kazakh polyethylene project that was planned for Atyrau was to be undertaken in conjunction with SIBUR Holding, but due to sanctions, adjustments are being made. According to the butadiene production project with Tatneft, the final configuration of the project is determined, taking into account the terms of supply of raw materials from the Tengiz field.

Kazakhstan reduced paraxylene production in 2021 due to arrangement of problems including electricity supply to the Atyrau refinery for a period combined with a refocusing of refining

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