

# CIREC monthly NEWS

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

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## Countries

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

Issue No: 371, 22 October 2021

## Key points from Issue 371

### Central European petrochemical markets

- Orlen Unipetrol expanding its ethylene capacity at Litvinov
- PKN Orlen and PCC Rokita reach new long-term agreement for ethylene oxide from 2024
- Grupa Azoty's fertiliser margins tight due to gas prices, export activity reduced
- Orlen to start propylene glycol plant in November
- PKN Orlen closer to fusion with Lotos and subsequently PGNiG
- Paraxylene imports into Poland increased to 58,000 tons in the first eight months in 2021 against 9,500 tons in the same period in 2020

### Russian chemical production

- The production of chemicals and chemical products in Russia increased by 8.2% in the first eight 2021 compared to January-August 2020
- Russian ethylene production totalled 2.988 million tons in the first eight months in 2021 against 2.781 million tons in the same period in 2020.
- Russian propylene production increased by 13% in the first eight months of 2021 to 2.048 million tons
- Russia produced 2.886 million tons of methanol in the first eight months in 2021 against 2.987 million tons in same period in 2020

### Russian chemical trade

- Russian chemical and polymer trade balance narrowed slightly in first eight months of 2021, driven partly by the increase in the exports of plastics
- Export shipments of Russian methanol from producers totalled 1.266 million tons in the first eight months in 2021 against 1.472 million tons in the same period last year
- Russian exports of synthetic rubber amounted to 745,700 tons in the first eight months in 2021, up from 602,200 tons in the same period in 2020
- PTA imports into Russia amounted to 181,200 tons in the first eight months in 2021 versus 196,200 tons in the same period in 2020
- Paraxylene tightness in Russia has led to Polief purchasing PX from Kazakhstan and possibly other sources before the end of 2021

### Project news

- Shchekinoazot launched its third methanol plant (M-500) on 8 October. This raises the company's capacity to 1.4 million tpa.
- Work starts on the Ust Luga gas processing and gas-chemical projects
- Irkutsk Polymer Plant had achieved 37% of construction schedule in October for the 650,000 tpa polyethylene plant at Ust Kut
- SIBUR agrees to cooperation with KazMunaiGaz on the Atyrau petrochemical projects, reviving the polyethylene investment and taking involvement in the polypropylene plant which is close to completion

## CENTRAL & SOUTH EAST EUROPE

### Orlen-Unipetrol, ethylene expansion

Following the completion of the polyethylene unit (PE3) at Litvinov, Orlen Unipetrol is now concentrating on increasing yields from the steam cracker by adding an eleventh furnace. This is costing more than Kc 700 million (€27.5 million) and will be commissioned in 2022. The furnace is being constructed by Technip Energies. The ethylene plant at Záluží near Litvinov was put into operation in 1979 starting with a production capacity of 435,000 tpa which was later increased to 485,000 tpa in 2001. The capacity was expanded to 545,000 tpa in 2007 and later upgraded in 2016 where the refurbishment project involved the construction of four new pyrolysis furnaces. The current construction of the eleventh furnace will allow expanding the steam cracker's production capacity up to 585,000 tpa of ethylene in 2022.

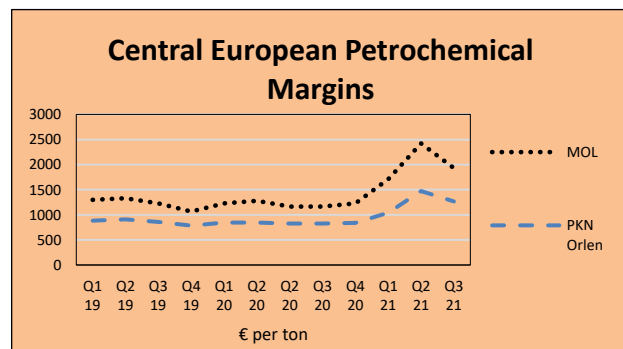
Ethylene Cracker at Záluží	
Year	Capacity (tpa)
1979	435,000
2001	485,000
2007	545,000
2022 (est)	585,000

PKN Orlen Production (unit-kilo tons)		
Product	Jan-Aug 21	Jan-Aug 20
Ethylene	175.4	331.1
Propylene	185.5	302.8
Butadiene	21.6	41.2
Toluene	7.8	6.7
Phenol	33.0	29.0
Polyethylene	118.5	242.6
PVC	120.7	186.8
Polypropylene	175.0	232.3
PTA	289	291

The petrochemical segment already represents a third of Orlen Unipetrol's production and more than half of the company incomes. The overall aim of the group is to increase petrochemical production from around 0.9 million to around 1.4 million tpa by 2030. The first challenge of the investment strategy is to expand the capacity of the steam cracker which will provide the basis for the production increase.

### Orlen petrochemical margins

The fall in petrochemical production by the Orlen Group at Plock this year has been offset to some extent by the high margins. Whilst the Orlen Group's model petrochemical margin fell in September to €1,267 per ton from €1,321 per ton in August earlier but even so the model petrochemical margin in the third quarter increased by €490 per ton over Q3 2020 to €1,318 per ton.



### Polish propylene imports, Jan-Aug 2021

Propylene imports into Poland amounted to 162,100 tons in the first eight months in 2021 against 88,900 tons in the same period in 2020. Lower propylene production from the cracker by PKN Orlen has been the cause of higher imports this year. Germany supplied 71,400 tons of propylene to the Polish market in January to August 2021, up from 1,054 tons, followed by Ukraine which was down from 51,500 tons to 48,000 tons. Propylene import costs for Poland rose to €988 per ton in August raising the average monthly cost in 2021 to €861 per ton. Exports of propylene out of Poland increased this year to 36,400 tons from 18,500 tons.

Polish Propylene Imports (unit-kilo tons)		
Country	Jan-Aug 21	Jan-Aug 20
Lithuania	6.4	13.4
Germany	71.4	1.1
Russia	36.3	17.7
Ukraine	48.0	51.5
Others	0.0	5.3
Total	162.1	88.9

### PKN Orlen-energy fusion and refinery projects

PKN Orlen is currently in the advanced stages of merging with Grupa Lotos with PGNiG also looking likely. The creation of a multi-energy giant under the wings of Orlen is underway which is hugely significant for the Polish oil and fuel market, completely remodelling its structure. Moreover, the merger is to open up new business segments for Orlen, new revenue areas that will allow Orlen to implement the green

transformation of the company. A set of documents concerning the planned acquisition of Grupa Lotos is to be submitted to the European Commission by mid-November 2021. The finalisation of all procedures will take another three months, so the connection can be expected to be completed in mid-2022.

PKN Orlen has outlined plans to invest €641 million at the Orlen Lietuva refinery at Mazeikiai in Lithuania. Construction will start soon on a project to build deep-crude conversion units enabling the production of larger volumes of high-margin products. The deep crude conversion project will help eliminate production of high-sulphur heavy fuel oils. Although not yet merged with Orlen, Grupa Lotos concluded a contract in October with Kinetics Technology S.p.A for the construction of a new HBO unit to produce high-quality base lubricating oils by 2025. The value of the investment is over zł 1.4 billion (€306 million). The aim of

Grupa Azoty First Half of 2021 Financial Performance		
Product Group	Revenues	EBITDA
Fertilisers	zł 3.661 billion	zł 415 million
Chemicals	zł 1.712 billion	zł 181 million
Plastics	zł 842 million	zł 33 million
Energy	zł 168 million	zł 56 million

key segments (fertilisers, chemistry and plastics) and higher sales volume in the chemicals and plastics segments. The negative impact on the results was caused by the price of gas, phenol, propylene and benzene. Grupa Azoty's rise in revenues of 15.6% in the first half of 2021 over the same

Polish Chemical Production (unit-kilo tons)		
Product	Jan-Aug 21	Jan-Aug 20
Caustic Soda Liquid	222.8	247.4
Caustic Soda Solid	55.0	47.3
Caprolactam	109.1	103.2
Acetic Acid	3.7	3.6
Polystyrene	48.1	43.3
EPS	68.3	69.2
Synthetic Rubber	185.2	183.8
Ammonia (Gaseous)	1734.0	1531.2
Ammonia (Liquid)	70.8	67.7
Pesticides	47.5	47.4
Nitric Acid	1616.0	1588.0
Nitrogen Fertilisers	1391.0	1377.0
Phosphate Fertilisers	341.8	281.8
Potassium Fertilisers	232.9	253.4

#### Polimery Police-project update

By the middle of October, the Polimery Police project had achieved 76% of the detailed construction schedule. Assembly of the handling and storage terminal for internal tanks of both propane have started. In addition, welding of the bottom plates in the ethylene tank was continued. At the beginning of September, a post-reaction gas compressor was installed on the foundation. Polimery Police's propylene and polypropylene investments are the largest project for Grupa Azoty and is being undertaken by the special purpose vehicle Grupa Azoty Polyolefins.

over 350 tons of pure hydrogen per annum will be put into operation before the end of 2021. For ecological propylene glycol Orlen Południe will produce 30,000 tpa which is 10,000 tons more than the only installation of this type in Europe, located in Belgium. Propylene glycol is used in medicine, cosmetics, food and pharmaceutical industries.

The annual production of hydrogen at Trzebinia will amount to 16 million Nm<sup>3</sup> of which around 75% will be used to produce glycol. The remaining 25% (4 million Nm<sup>3</sup>) will be used as fuel in transport. Orlen Południe will produce approximately 45 kg/h of fuel-quality hydrogen. PKN Orlen is also establishing several other hydrogen hubs as part of its Hydrogen Eagle programme. One of the main hubs will be established at Włocławek where a distribution centre is being set up.

the HBO Project is to further improve the economics of crude oil processing.

#### Grupa Azoty-gas prices

Grupa Azoty's EBITDA in the first half of 2021 was influenced by higher prices of almost all products in period in 2020 was offset by a rise in raw material costs by 24%. Although propylene prices have been higher this year Grupa Azoty ZAK at Kedzierzyn-Kozle has been able to absorb costs in oxo alcohol selling prices. In the second quarter of 2021, the Oxoplast division at Kedzierzyn recorded sales revenues of zł 269 million and an EBITDA margin of 19% which meant an increase of zł 129 million over 2020 and a 13% margin increase.

Despite record gas prices, Grupa Azoty has maintained fertiliser production and is taking all possible measures to provide Polish farmers with fertilisers necessary for their agricultural production. This has included restricting export activity. The prices of other energy carriers, namely crude oil and coal have also risen.

Over the third quarter the gas price has tripled, from about €30 in June to around €100 per megawatt hour in September 2021. To these prices should also be added a significant increase in the cost of CO<sub>2</sub> emission allowances, which increased by about 80%, from €33 to €60.

#### Orlen Południe-propylene glycol & hydrogen

The new propylene glycol plant for Orlen Południe is expected to start production in November. As part of this investment, Orlen is establishing its first hydrogen hub in Poland where it is offering high-purity hydrogen to power fuel cells. The production capacity of

#### PCC Exol-PKN Orlen, long-term ethylene oxide contract

PCC Exol and PKN Orlen concluded cooperation agreement in October regarding the resale and management of transport of ethylene oxide belonging to the warehouses of PCC Rokita. The agreement will last from 1 January 2024 to 31 December 2048 and the agreement currently binding the PKN Orlen and PCC Rokita will expire. In the first eight months in 2021 Poland imported 20,700 tons of ethylene oxide against 6,200 tons in the same period in 2020, indicating the rise in demand from the PCC Group. PCC Rokita's agreement with Orlen provides for delivery of 24,000 tons of ethylene oxide in the whole of 2024 rising to 46,000 tons in 2028.

#### Chimcomplex-propylene oxide shutdown

Chimcomplex Borzesti closed its propylene oxide plant at Ramnicu Valcea on 2 October for scheduled maintenance, lasting until 18 October. The company's plant capacities include 110,000 tpa of propylene oxide and 9,000 tpa of propylene glycol. Earlier in 2021 Chimcomplex reduced the utilisation of the propylene oxide production at Ramnicu Valcea by 20% due to a shortage of propylene feedstock.

Chimcomplex concluded financing contracts at the end of September for €56.7 million which will be used for the polyol expansion amongst other projects. The company is considering starting investment projects with an effect in reducing the carbon footprint and increasing energy efficiency: this includes the construction of a high-efficiency cogeneration capacity for gas and hydrogen (installed power of 55 MWe 4 turbines); and the modernisation of the electrolysis plants that will strengthen the company's position as a national leader in the production of hydrogen from water.

#### Serbian Chemical Exports (unit-kilo tons)

Product	Jan-Jul 21	Jan-Jul 20
Polyethylene	62.6	52.4
Polypropylene	15.3	7.4
Styrene Butadiene Rubber	10.7	9.5
Methanol	69.3	65.9
Acetic Acid	46.2	50.4

#### NIS sole bidder for Petrohemija

Serbian oil processing company NIS, owned by Gazprom Neft, placed the sole bid in a tender for HIP Petrohemija in October. A proposal for further steps will be sent to the government by the commission in charge of managing the

process which started on 9 September. The strategic partner is required to inject €150 million (\$177 million) in the capital of HIP Petrohemija, acquiring a stake of up to 90% in the company's capital. The Serbian government owns a 75.27% stake in the capital of HIP Petrohemija, whilst NIS currently owns 20.86% and Lukoil 3.09%.

#### Ciech Selected Revenues (€ million)

Product group	Jan-Jun 21	Jan-Jun 20
<b>Soda segment, including:</b>	4.9	4.7
Dense soda ash	2.3	2.6
Light soda ash	0.7	0.6
Sodium bicarbonate	0.5	0.4
Calcium chloride	0.1	0.0
Agro products	1.3	1.0
Polyurethane foams	0.9	0.5
Sodium silicates	0.5	0.3
<b>Total</b>	<b>7.7</b>	<b>6.7</b>

#### Ciech to reduce costs of soda ash production

Despite a successful first half of 2021 the Ciech Group is now facing rising prices of raw materials and in order to maintain margins it will be necessary to increase its prices. Ciech is the second largest soda producer in Europe after Solvay and exports a significant part of the production. In addition to rising raw material costs high gas and energy costs are pressing Ciech to reevaluate in regard to soda ash production.

micro modular reactors in plants producing soda ash. Currently, Ciech uses coal as fuel, but the aim is to gradually move away from this raw material in favour of obtaining energy from natural gas, thermal waste processing or nuclear energy. The Ciech Group is undertaking a decarbonisation plan within the framework of the ESG strategy objectives: by 2026 it intends to reduce carbon dioxide

emissions by approximately 33% (compared to 2019), and in 2033 to stop using coal in energy production processes. In the most energy-intensive plants of the Group producing soda ash, i.e., in Inowroclaw and Janikowo, coal-fired combined heat and power plants are currently operating.

#### Polish Exports of PTA (unit-kilo tons)

Country	Jan-Aug 21	Jan-Aug 20
Belarus	10.9	19.2
Germany	241.5	188.3
Lithuania	20.5	9.3
Switzerland	3.1	5.0
Others	5.4	17.4
<b>Total</b>	<b>281.400</b>	<b>239.324</b>

#### PKN Orlen-PTA & paraxylene trade Jan-Aug 2021

PKN Orlen's exports of PTA rose in the first eight months to 281,400 tons against 239,324 tons in the same period in 2020.



Polish Imports of Paraxylene (Jan-Aug 21)		
Country	Ktons	€ mil
France	18.3	12.8
India	11.2	8.7
Russia	28.5	20.2
Total	58.0	41.8

Shipments to Germany increased to 241,500 tons from 188,300 tons in January to August 2020. Other destinations for Polish PTA include Lithuania and Belarus, with volumes rising in 2021 to Lithuania and dropping for Belarus. Imports of PTA into Poland rose to 34,200 tons in the first eight months in 2021 against 23,500 tons in the same period in 2020. Paraxylene imports into Poland amounted to 58,000 tons in the first eight months in 2021 against 9,500 tons in the

same period in 2020. Imports supplement paraxylene production at Wloclawek.

Czech Petrochemical Imports (unit-kilo tons)		
Product	Jan-Aug 21	Jan-Aug 20
Ethylene	3.2	3.2
Propylene	27.7	30.1
Butadiene	52.8	40.5
Benzene	54.4	53.6
Toluene	4.7	3.9
Styrene	51.0	39.4

#### Czech petrochemical trade, Jan-Aug 2021

Butadiene imports into the Czech Republic totalled 52,844 tons in the first eight months in 2021 versus 40,519 tons in the same period in 2020. For other monomers, propylene imports in the first six months dropped from 30,080 tons to 27,665 tons whilst styrene imports rose from 30,322 tons to 41,641 tons. Benzene imports increased to 50,208 tons. Regarding export activity, the Czech Republic increased benzene shipments in the first eight months to 30,022 tons from 10,215 tons whilst ethylbenzene exports rose from 42,053 tons to 83,429 tons. All of the ethylbenzene is exported to Poland.

Polish TDI Imports (unit-kilo tons)		
Country	Jan-Aug 21	Jan-Aug 20
Germany	14.6	17.3
Netherlands	5.7	8.4
Hungary	26.2	17.6
Saudi Arabia	1.8	3.2
Others	5.8	8.0
Total	54.1	54.5

#### Central European isocyanate imports, Jan-Aug 2021

MDI imports into the Czech Republic totalled 30,538 tons in the period January to August 2021 up from 20,744 tons in the same period in 2020. Import costs rose in the first eight months this year to €70.542 million against €28.145 million in the period January to August 2020. TDI imports into the Czech Republic rose from 4,066 tons in January to August 2020 for €12.131 million to 4,671 tons in the same period in 2021 for €15.586 million.

Czech MDI Imports (unit-kilo tons)		
Country	Jan-Aug 21	Jan-Aug 20
China	1.8	2.1
Belgium	8.4	5.8
Germany	11.4	8.2
Hungary	5.5	2.0
Netherlands	1.6	1.4
Others	1.8	1.2
Total	30.5	20.7

TDI imports into Poland amounted to 54,086 tons in the first eight months in 2021 against 54,500 tons in the same period in 2020. Costs of imports in the first eight months in 2021 totalled €138.283 million, equating to €2538 per ton. Germany and Hungary were the two largest suppliers providing 14,579 tons and 26,188 tons in January-August 2021 respectively.

#### Central European methanol trade, Jan-Aug 2021

Polish methanol imports amounted to 461,677 tons in the first eight months in 2021 from 465,990 tons in the same period in 2020 whilst exports fell from 104,600 tons to 95,000 tons. As a non-producer Poland re-exports methanol to Austria, the Czech Republic and Germany. Russia is the major supplier to the Polish market and reduced shipments to 305,286 tons in January to August 2020 from 332,800 tons in the same period last year.

Polish Methanol Imports (unit-kilo tons)		
Country	Jan-Aug 21	Jan-Aug 20
Belarus	2.6	6.0
Finland	50.0	34.7
Lithuania	6.2	7.5
Germany	52.2	5.1
Netherlands	25.7	0.0
Norway	6.3	25.6
Russia	305.3	332.8
Others	13.4	54.3
Total	461.7	466.0

Prices of methanol have risen sharply this year averaging €302.3 per ton in the first eight months, almost double the average prices recorded in 2020. Major consumers of methanol in Poland include formaldehyde resin producers Lerg and Kronospan.

Methanol imports into the Czech Republic amounted to 62,000 tons in the first eight months in 2021 against 58,600 tons in same period in 2020. Russian shipments into the Czech Republic rose from 24,300 tons to 37,600 tons, whilst at the

same time volumes from Poland dropped from 23,800 tons to 15,000 tons.

## RUSSIA

Russian Chemical Production (unit-kilo tons)		
Product	Jan-Aug 21	Jan-Aug 20
Caustic Soda	853.1	846.6
Soda Ash	2,233.0	2,193.0
Ethylene	2,987.6	2,780.8
Propylene	1,803.6	2,047.6
Benzene	865.6	906.7
Xylenes	381.7	331.7
Styrene	503.6	483.5
Phenol	171.5	171.4
Ammonia	13,300.0	13,100.0
Nitrogen Fertilisers	7,528.0	7,426.0
Phosphate Fertilisers	2,816.0	2,969.0
Potash Fertilisers	7,186.0	6,508.0
Plastics in Bulk	7,307.0	6,632.0
Polyethylene	2,347.0	2,266.0
Polystyrene	364.3	381.4
PVC	664.1	632.0
Polypropylene	1,387.5	1,208.5
Polyamide	132.0	103.4
Synthetic Rubber	1,127.0	979.0
Synthetic Fibres	134.2	93.4

### Russian chemical production, Jan-Aug 2021

The production of chemicals and chemical products in Russia increased by 8.2% in the first eight months of 2021 against the same period in 2020. The production of rubber and plastic products increased by 16.2% overall whilst synthetic fibres rose by over 30%. For the eight months of 2021, 17.5 million tons of fertilisers were produced amounting to 7.4% more than in January-August 2020.

For the eight months of 2021, the production of plastics in primary forms amounted to 7.307 million tons, which is 12.8% more than in January-August 2020. Production of synthetic rubbers amounted to 1.127 million tons, which is 18.3% more than in January-August 2020.

In line with the global market Russia's petrochemical industry has seen a rapid increase this year in prices for both raw materials and final products. Possibly prices have risen by a slightly smaller amount as raw materials in Russia remain cheaper than in the rest of the world. On the other hand, being a net importer of chemicals means that Russia is vulnerable to the rise in global prices in particular for low-tonnage products.

Individual products, components, substances and final products are imported into the country, and for these items the deficit and price increase is directly transmitted to the domestic

market. This affects a wide range of pharmaceutical intermediates, polyurethane intermediates such as TDI and MDI and more mid-range products such as PTA.

### Main Features of Russian chemical trade, Jan-Aug 2021

- The share of exports of chemical industry products in January-August 2021 amounted to 7.4% up against 7.3% in January-August 2020.
- Overall chemical imports increased by 21% in the first eight months, accounting for 11.9% of total Russian imports against 12.8% in 2020.
- Compared to January-August last year, the value of exports of chemicals increased by 43.5% even if by physical volume the increase was only by 8.0%.
- The product sectors that reported increases in physical volumes of exports included plastics which increased by 30.4%, rubber by 22.0%, fertilisers by 10.8% and soap and detergents by 4.5%.
- Exports of pharmaceutical products decreased by 15.4%. By contrast imports of pharmaceuticals rose by 7.8%.

### Russian petrochemical projects

#### Irkutsk Polymer Plant-project update

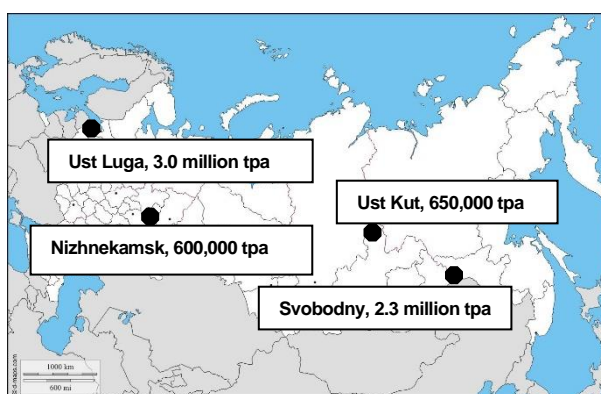
The Irkutsk Polymer Plant, under construction at Ust Kut in the Irkutsk Oblast, has now installed 44 units at the site which had been delivered in 2020 from South Korea. The most difficult installation took place for the polyethylene plant where 500-ton purge hopper was raised to a height of 60 metres.

Two cranes with a carrying capacity of 1,600 tons and 750 tons were used to install the bunker. Currently, the dismantling of large-capacity crane equipment is being carried out in order to open subsequent fronts of work. Work on the installation of large-sized heavy equipment at the Irkutsk Polymer Plant began in June 2021 and was carried out in accordance with the established schedule.



Irkutsk Polymer Plant is the third and final stage of INK's own gas project involving 650,000 tpa of polyethylene. The current progress in the construction of the plant is 37% (as of 13 October) and 71 billion roubles have already been financed.

Project costs have risen above initial estimates of 201 billion roubles (\$2.822 billion) to around 250 billion roubles (\$3.510 billion). Initial estimates have increased due to the rise in the cost of materials, construction and installation work. The entire INK gas project also includes two helium plants, the Ust-Kut gas processing plant, facilities for the production, treatment, transportation and processing of gas. Irkutsk Polymer Plant is expected to become the first ethane polymer plant in East Siberia in 2024 and will use its own raw materials which differs from the Amur Gas Chemical Complex which may come onstream in 2025 and rely on feedstocks supplied from Gazprom's gas processing plant.



### Ethylene expansions in Russia

Russian ethylene capacity is currently set up to increase from 4.942 million tpa in 2021 to 11.702 million tpa based on the projects that are currently in various stages of construction. Russia's share in ethylene production currently amounts to only 2% of total world production but will increase to between 4 to 5% by 2025 after the completion of the Nizhnekamsk project combined with other projects at Svobodny, Ust Kut and Ust Luga.

The impact of the pandemic on Russian oil and gas sales in 2020 has contributed to speeding up investment in capacities for hydrocarbon processing and polymer production. The drop in oil and gas sales in 2020 due to global lockdowns provided a forebearer of what can be expected in Europe when alternative zero-carbon policies have been introduced.

The main risk of new gas chemical projects is associated with dependence on the import of modern technologies as aside the possibility of new sanctions being imposed foreign currency fluctuations can affect project costs significantly. The capacity of the Russian domestic market of polymer products, although rapidly expanding, remains small which means that Russian producers need to consider export markets. Even though the Baltic Gas Chemical Complex at Ust Luga may benefit in cost advantages over European producers there is concern that if under pressure from imports the EU will

introduce trade measures to protect domestic suppliers.

### Yamal gas for Ust Luga petrochemicals

Gas producers of Yamal began commissioning the Semakovsk natural gas field, intended for supply to the Ust Luga gas processing and gas-chemical investments. This will be the first step towards the development of the Tambey field with reserves of 4 trillion cubic metres. Gas production will be handled by Ruskhimalliance, a joint venture between Gazprom and RusGazDobycha. This gas source is expected will become a resource base for the gas chemical cluster in Ust-Luga, which could be the most expensive and large-scale LNG project to date in Russia. Gas transportation will go through specially allocated for ethane-containing gas main gas pipelines. This means that natural gas with a deliberately high ethane content will be pumped into the gas pipelines.

### Ruskhimalliance-Ust Luga gas processing and gas chemical

The Baltic Gas Chemical Complex, being undertaken by Gazprom subsidiary Rusgazdobycha, has set a target to start production at the petrochemical plant by mid-2024. Part of the production will be aimed at selling on the domestic market, but the main focus will be on exports to Europe, Asia, Latin America and Africa.

The first equipment for the construction of the Baltic Gas Chemical Complex at Ust Luga was delivered in October 2021, which represents the start of the project schedule for Russia's largest petrochemical

complex. The Baltic Gas Chemical Complex will be bigger than Amur Gas Chemical Complex and marks an important development away from wholesale gas sales to the West.

The construction of a gas processing complex at Ust Luga with a capacity of 2.9 million tpa of polyethylene at Ust-Luga exceeds the capacity the Amur Gas Chemical Complex which is 2.7 million tpa. The complex at Ust-Luga will be oriented in the western direction, while the Amur Gas-Chemical Complex is almost entirely focused on China.

<b>Gazprom-Baltic Project Outline</b>	
Gas processing	45.0 billion cubic metres per annum
Methane	19.0 billion cubic metres per annum
LNG	13.0 million tpa
LPG	2.0 million tpa
Ethane	4.0 million tpa
Ethylene	2.9 million tpa
Polymers	3.0 million tpa
HDPE	1.6 million tpa
LLDPE	1.3 million tpa

The gas-chemical project is being developed in two stages. The first facility with a capacity of 1.5 million tpa will be commissioned by mid-2024, and the second with the same capacity from 2025. The first stage is aimed at reaching mechanical completion by the end of 2023, and the group aims to complete all commissioning work by mid-2024. The second line will be in the stage of mechanical completion by the end of 2024, and production will begin in 2025. The Baltic Gas Chemical Complex will produce 1.6 million tpa of high-density polyethylene, and 1.3 million tpa of linear low-density polyethylene and low-density metallocene linear PE. Ethane supply to the gas-chemical complex is expected to amount to around 3 million tpa with a similar capacity for polymer production. Rusgazdobysha, Gazprom and Linde have created an engineering company Gazprom Linde Engineering on the basis of the design institute Salavatgazoneftekhimproekt. From the About 18 billion cubic metres of gas after processing will be sent to Gazprom's gas transportation system.

The first part of the Ust Luga site consists of an integrated natural gas processing and liquefaction complex (Ruskhimalliance, Gazprom JV and Rusgazdobysha). The second is the interlinked gas-chemical complex Baltic Chemical Complex which is a subsidiary of Rusgazdobysha. Lummus has been commissioned to supply a total of fourteen furnaces whilst a number of license agreements for polyolefin capacities have already been signed.

#### **Other petrochemical projects under consideration in Russia**

- Construction of polyethylene plant at Astrakhan (300,000 tpa) faces local opposition
- Novatek outlines plans for ammonia and hydrogen complex on Ob River in West Siberia

#### **Nizhnekamskneftekhim-ethylene expansion**

The new EP-600 olefin plant at Nizhnekamsk will be capable of processing up to 1.8 million tpa of naphtha in order to obtain ethylene in addition to propylene 273,000 tpa, benzene

249,000 tpa and butadiene 88,000 tpa. By the end of September 2021, a total of 425 units of equipment had been installed at the site. Particular attention is being paid to ensuring environmental safety in the EP-600 project. To reduce the formation of nitrogen oxides, modern effective burners with two combustion zones will be used, and effective deoxidation cyclones will help to exclude the ingress of suspended particles and coke into the atmosphere.

The complex includes local treatment facilities that will provide zero consumption of industrial wastewater. In addition, the water after purification will be returned to the process, thereby reducing the recharge of river water from the Kama River. The construction of the EP-600 at Nizhnekamsk is scheduled to be completed in 2023 although this may run into 2024.

#### **Nizhnekamskneftekhim-polypropylene plant**

Besides adding 273,000 tpa of new propylene capacity from the EP-600 complex, Nizhnekamskneftekhim is constructing a new plant for the production of polypropylene with a capacity of 400,000 tpa. In early August 2021, Nizhnekamskneftekhim and China's China Machinery Engineering Corporation (SMES) signed three contracts for the construction of a polypropylene production facility based on Spheripol technology. The current design capacity of polypropylene production at Nizhnekamskneftekhim is 180,000 tpa even though production has exceeded this figure in the past two years. Commissioning of the new unit is scheduled for 2024. This means that Nizhnekamskneftekhim will almost triple the production of polypropylene. The company intends to allocate around 15% of its own funds to finance the construction of the new plant. The rest of the financing is planned to be provided at the expense of credit funds.



## Russian petrochemical production

Russian Ethylene Production (unit-kilo tons)		
Producer	Jan-Aug 21	Jan-Aug 20
Angarsk Polymer Plant	130.2	129.1
Kazanorgsintez	403.3	424.0
Stavrolen	232.7	226.7
Nizhnekamskneftekhim	432.2	440.1
Novokuibyshevsk Petrochemical	31.5	28.9
Gazprom N Salavat	198.0	252.0
SIBUR-Kstovo	272.6	242.8
SIBUR-Khimprom	36.7	37.4
Tomskneftekhim	193.5	191.6
Ufaorgsintez	56.8	83.5
ZapSibNeftekhim	1000.2	724.8
Total	2987.7	2780.9

to 56,800 tons against 83,500 tons in January to August 2020. Gazprom neftekhim Salavat reduced production slightly from 252,000 tons to 198,000 tons, partly affected by the maintenance outage in August.

Russian Propylene Production (unit-kilo tons)		
Producer	Jan-Aug 21	Jan-Aug 20
Angarsk Polymer Plant	72.4	71.1
Kazanorgsintez	33.4	31.6
Lukoil-NNOS	159.7	155.0
Stavrolen	92.6	88.6
Nizhnekamskneftekhim	214.4	210.8
Novokuibyshevsk Petrochemical	46.1	22.7
Omsk Kaucuk	19.9	22.1
Polyom	131.8	122.4
Gazprom n Salavat	73.7	108.9
SIBUR Kstovo	117.7	105.8
SIBUR-Khimprom	39.3	36.5
Tomskneftekhim	103.3	107.3
SIBUR Tobolsk	3.0	278.5
Ufaorgsintez	118.2	128.0
ZapSibNeftekhim	822.3	273.6
Total	2047.6	1762.7

against 135,567 tons in July. Overall, for the first eight months Russian production of gas liquids totalled 7.65 million tons which was 92,100 tons higher than in 2020. Aside ZapSibNeftekhim which accounts around three quarters of gas liquid purchases other important petrochemical plants using liquids include SIBUR-Kstovo which took 427,373 tons in the first eight months this year.

### Russian propylene production, sales & exports, Jan-Aug 2021

Russian propylene production totalled 2.048 million tons in the first eight months in 2021 versus 1.763 million tons in the same period in 2020. The Tobolsk two-plant hub controlled by SIBUR produced 825,300 tons of propylene against 552,100 tons in January to August 2020.

At Kstovo in the Nizhniy Novgorod region Lukoil-NNOS increased production from 155,000 tons to 159,700 tons in the first eight months this year and SIBUR-Kstovo increased production from 105,800 tons to 117,700 tons. In Bashkortostan Ufaorgsintez reduced production from 128,000 tons to

### Russian ethylene production, Jan-Aug 2021

Russian ethylene production totalled 2.988 million tons in the first eight months in 2021 against 2.781 million tons in the same period in 2020. ZapSibNeftekhim produced exactly 1.0 million tons of ethylene up from 724,800 in January to August 2020. Other Siberian producers include Tomskneftekhim, which increased production from 191,600 tons to 193,500 tons and Angarsk Polymer Plant which rose slightly to 130,200 tons.

In Tatarstan Nizhnekamskneftekhim reduced ethylene production from 440,100 tons to 432,200 tons whilst Kazanorgsintez reduced production from 424,000 tons to 403,300 tons. In Bashkortostan Ufaorgsintez reduced ethylene production due an enforced stoppage

Production at Novokuibyshevsk increased in the first eight months in 2021 to 31,500 tons from 28,900 tons whilst SIBUR-Khimprom at Perm produced 36,700 tons against 37,400 tons. In the Nizhniy Novgorod region SIBUR-Kstovo produced 272,600 tons of ethylene in the first eight months in 2021 against 242,800 tons in the same period in 2020. In the Stavropol region Stavrolen produced 232,700 tons of ethylene versus 226,700 tons in January to August last year.

Due to the fire at the de-ethanizer unit at the Urengoy plant at the start of August Russian production of wide fraction of light hydrocarbons (gas liquids) dropped by 62,900 tons in August compared to July, down to 934,000 tons. Gazprom's Surgut ZSK produced only 9,700 tons of liquids compared to 79,410 tons in July and 65,800 tons in June. Almost the entire volume of gas liquids from Surgut is sent through the pipeline for processing to ZapSibNeftekhim. Having redirected feedstocks from other sources, mainly from the Astrakhan gas plant, ethylene production at ZapSibNeftekhim amounted to 132,162 tons in August

118,200 tons in January to August 2021, which was down due the outage in February whilst in Tatarstan Nizhnekamskneftekhim increased production slightly from 210,800 tons to 214,400 tons.

<b>Russian Propylene Domestic Sales (unit-kilo tons)</b>		
<b>Producer</b>	<b>Jan-Aug 21</b>	<b>Jan-Aug 20</b>
Angarsk Polymer Plant	24.2	43.1
SIBUR-Kstovo	83.0	93.1
Akrilat	0.2	2.1
LUKoil-NNOS	88.2	129.2
Tomskneftekhim	0.4	2.0
Nizhnekamskneftekhim	0.0	1.3
Stavrolen	3.6	2.8
Naftan	0.0	4.4
<b>Total</b>	<b>200.8</b>	<b>278.0</b>

suppliers Lukoil-NNOS reduced shipments on the domestic market to 88,400 tons from 129,200 tons in the same period in 2020 whilst SIBUR-Kstovo reduced shipments from 93,100 tons to 83,000 tons.

Sales of propylene on the domestic dropped in the first eight months in 2021 to 200,800 tons versus 278,000 tons in the same period in 2020. Due to maintenance at the acrylonitrile plant on which started on 15 May Saratovorgsintez at Saratov reduced purchases from 95,500 tons to 81,900 tons whilst SIBUR Tobolsk reduced purchases from 63,400 tons in 37,300 tons mainly due to the integration with ZapSibNeftekhim and increased production. SIBUR-Khimprom reduced propylene purchases on the merchant market 41,400 tons to 34,400 tons. Of the

Propylene exports from Russian producers amounted to 100,400 tons in the first eight months in 2021 against 55,600 tons in the same period in 2020. Finland accounted for 36.3% of Russian propylene exports in the first eight months for \$31 million followed by Poland with 27.2% for a total of \$23.3 million.

<b>Russian Propylene Exports (unit-kilo tons)</b>		
<b>Producer</b>	<b>Jan-Aug 21</b>	<b>Jan-Aug 20</b>
Lukoil-NNOS	62.9	44.6
SIBUR-Kstovo	14.4	5.9
Angarsk Polymer Plant	22.1	0.0
Stavrolen	1.0	5.1
<b>Total</b>	<b>100.4</b>	<b>55.6</b>

The Angarsk Polymer Plant exported 22,100 tons of propylene in January to August 2021 against no activity in the same period in 2020, all of which was sent to China. In total China imported 30,300 tons of propylene from Russia in January to August 2021 for a total value of \$18.1 million.

Exports of propylene from Angarsk have contributed to a tight domestic market supply balance in Russia for propylene. Nizhnekamskneftekhim and Gazprom neftekhim Salavat were required to buy monomer on the market over the summer months for internal processing.

<b>Russian Styrene Production (unit-kilo tons)</b>		
<b>Producer</b>	<b>Jan-Aug 21</b>	<b>Jan-Aug 20</b>
Nizhnekamskneftekhim	210.9	205.1
Angarsk Polymer Plant	25.4	22.6
SIBUR-Khimprom	88.0	99.1
Gazprom n Salavat	115.2	127.1
Plastik, Uzlovaya	45.0	30.6
<b>Total</b>	<b>484.6</b>	<b>484.5</b>

#### **Russian styrene production and sales, Jan-Aug 2021**

Russia produced 484,600 tons of styrene in the first eight months in 2021 versus 360,300 tons in the same period in 2020. The largest producer Nizhnekamskneftekhim produced 210,900 tons against 205,100 tons. Gazprom neftekhim Salavat reduced production from 127,100 tons to 115,200 tons and SIBUR-Khimprom dropped from 99,100 tons to 88,000 tons.

Domestic merchant sales for styrene monomer rose from 76,300 tons in the eight months in 2020 to 83,600 tons in the same period in 2021. Nizhnekamskneftekhim consumes most of its styrene monomer in the production of polystyrene and synthetic rubber. Gazprom neftekhim Salavat reduced sales from 40,700 tons to 38,900 tons and SIBUR-Khimprom increased from 24,200 tons to 24,900 tons.

<b>Russian Styrene Domestic Sales (unit-kilo tons)</b>		
<b>Producer</b>	<b>Jan-Aug 21</b>	<b>Jan-Aug 20</b>
Angarsk Polymer Plant	16.6	10.5
Plastik	1.5	0.9
Gazprom n Salavat	38.9	40.7
SIBUR-Khimprom	24.9	24.2
Nizhnekamskneftekhim	1.7	0.0
<b>Total</b>	<b>83.6</b>	<b>76.3</b>

Russian styrene exports were not carried out in August due to maintenance at SIBUR-Khimprom and Gazprom neftekhim Salavat. For eight months in 2021, Russian companies exported 66,700 tons of styrene, which is 35% less than in 2020.

## Bulk Polymers

## Russian PE trade Jan-Aug 2021

Imports of polyethylene to Russia decreased by 11% in January-August 2021 and amounted to 391,900 tons against 464,000 tons in the same period in 2020. HDPE imports amounted to 141,300 tons in the first eight months, which is 23% down. Film grade and blow moulding HDPE accounted for the main reduction in shipments.

Russian Polyethylene Trade (unit-kilo tons)		
Category	Jan-Aug 21	Jan-Aug 20
Exports	938.0	583.0
Imports	418.0	464.0

LDPE imports amounted to 78,900 tons, which is 7% more than in 2020 whilst LLDPE imports dropped 15% to 100,600 tons. Ethylene vinyl acetate polymer imports increased from 63,100 tons to 70,800 tons in the first eight months in 2021.

Russian Polyethylene Trade (unit-\$ million)		
Category	Jan-Aug 21	Jan-Aug 20
Exports	1.050	453.0
Imports	723.0	528.0

Exports of polyethylene from Russia totalled 938,000 tons in the first eight months in 2021 for \$1.050 billion. HDPE exports from Russia increased from 358,000 tons in the first eight months in 2020 to 596,000 tons in the same period in 2021, with revenues rising from \$269 million to \$611 million. China was the largest destination for Russian HDPE, amounting to 495,000 tons against 198,000 tons in the first eight months in 2020.

Regarding production Kazanorgsintez stopped polyethylene production on 14 September for scheduled preventive maintenance. The shutdown lasted until the middle of October. Gazprom neftekhim Salavat undertook a shutdown for the HDPE plant in September and LDPE in October. The annual production capacity is 120,000 tpa and 45,000 tpa respectively.

## Russian polypropylene, Jan-Aug 2021

Imports of polypropylene into Russia increased by 16% in the first eight months compared to 2020 and amounted to 165,800 tons against 143,200 tons. Homopolymer imports increased to 61,400 tons against 60,800 tons.

Russian Polypropylene Trade (unit-kilo tons)		
Category	Jan-Aug 21	Jan-Aug 20
Exports	938.0	271.1
Imports	194.0	169.0

Russian Polypropylene Trade (unit-\$ million)		
Category	Jan-Aug 21	Jan-Aug 20
Exports	1.050	271.1
Imports	356.0	225.0

Imports of propylene copolymers rose from 38,300 tons to 50,100 tons whilst stat copolymer imports increased from 23,400 tons to 27,700 tons. External supplies of other propylene polymers amounted to 26,700 tons against 20,700 tons in January to August 2020.

Regarding production, Ufaorgsintez shut its polypropylene production for a scheduled maintenance on 3 September for around ten days. Polyom at Omsk will take off-stream its production with the capacity of 230,000 tpa for a two-week maintenance on 28 September. Stavrolen shut its 120,000 tpa polypropylene plant on 22 October with for 26 days.

Russian PVC Production (unit-kilo tons)		
Producer	Jan-Aug 21	Jan-Aug 20
Bashkir Soda	176.2	176.2
Kaustik	57.7	50.8
RusVinyl	231.1	216.6
Sayanskkhimplast	199.1	188.7
Total	664.1	632.2

## Russian PVC market Jan-Aug 2021

Russian production of PVC amounted to 664,100 tons in the first eight months, which is 5% more than the same period in 2020 when the total was 632,200 tons. RusVinyl produced 231,100 tons against 216,600 tons for the same period in 2020 whilst Sayanskkhimplast increased production from 188,700 tons to 199,100 tons.

Bashkir Soda Company produced the same amount of PVC in 2021 as in 2020 at 176,200 tons whilst Kaustik at Volgograd increased production from 50,800 tons to 57,700 tons. Russian PVC exports fell from 145,500 tons in the first eight months in 2020 to 127,300 tons in the same period in 2021, whilst imports rose 20% to 42,700 tons.

## Russian Paraxylene-PTA

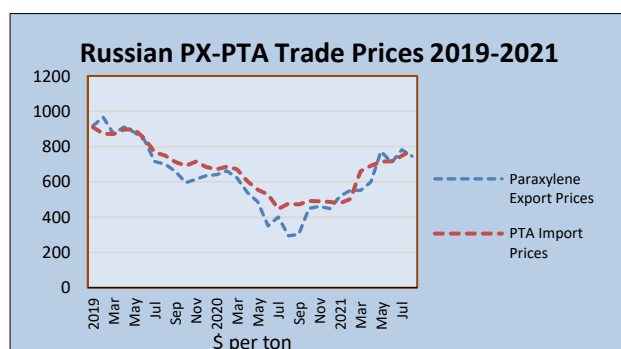
Russian Paraxylene Exports (unit-kilo tons)		
Producer	Jan-Aug 21	Jan-Aug 20
Gazprom Neft	31.0	62.6
Kirishinefteorgsintez	33.1	27.8
Ufaneftkhim	0.0	10.5
Total	64.1	100.9

### Russian paraxylene trade Jan-Aug 2021

Russian paraxylene exports amounted to 64,100 tons in the first eight months in 2021 against 100,900 tons in the same period in 2020. Average prices per ton for Russian exports increased from \$471.9 in the whole of 2020 to \$654 in the first eight months in 2021. Exports in the first eight months were divided between Belarus (6,240 tons for \$5.2 million) and Finland (57,900 tons for \$35.6 million).

For the remaining four months of 2021 paraxylene exports from Russia are expected to be much reduced due to the extended shutdown being undertaken by Ufaneftkhim which started on 10 August and is

expected to last 90-100 days. Gazprom Neft from the Omsk refinery is redirecting most of its production to the Polief PTA plant in Bashkortostan, although it is not yet clear if the Kirishi plant will supply Polief.



At the end of September, supplies of paraxylene from Kazakhstan began to the Polief plant. From 27 September to 4 October 1,100 tons of paraxylene were shipped from the Atyrau refinery to the SIBUR subsidiary. Besides deliveries from Kazakhstan supplies of paraxylene delivered by

sea transport to Polief started in October. Shipments are being carried out from the Latvian terminal Ovi at Riga; the volume of the consignment will be approximately 10,000 tons. Paraxylene may also be imported from Asia in order to maintain PTA production at Blagoveshchensk.

Russian PTA Imports by Country (unit-kilo tons)		
Country	Jan-Aug 21	Jan-Aug 20
Belgium	3.0	8.0
China	177.8	176.4
South Korea	0.0	7.0
Poland	0.0	3.0
Others	0.4	1.9
Total	181.2	196.2

### Russian PTA imports, Jan-Aug 2021

PTA imports into Russia amounted to 181,200 tons in the first eight months in 2021 versus 196,200 tons in the same period in 2020. China was responsible for most of the deliveries in 2021 tons compared to accounting around 90% of imports in 2020. Overall, China shipped 177,800 tons of PTA to Russia in the period January to August 2021 against 176,400 tons in the same period in 2020.

Russian PTA Imports by region (unit-kilo tons)		
Region	Jan-Aug 21	Jan-Aug 20
Kaliningrad	121.7	124.6
Moscow	59.1	65.8
Others	0.4	5.9
Total	181.2	196.3

Average prices for PTA imports into Russia amounted to \$661.7 per ton in January to August 2021 against \$579.9 per ton in the same period in 2020.

### Polief-PTA production and paraxylene purchases

PTA production at Blagoveshchensk totalled 201,321 tons in the first eight months in 2021 against 156,000

tons in the same period in 2020. Higher production of PTA at Polief has enabled its owning group SIBUR to export small volumes this year. Around 60% of construction of Polief's first solar power plant has been completed including the installation of photovoltaic power modules which is expected to start soon. The design capacity of the power plant will be about 4.9 MW, which will represent around 7.1% of the capacity of all operating solar power plants in Bashkortostan.

### Ekopet-PTA imports 2021

Tatneft's subsidiary Ekopet at Kaliningrad imported 121,700 tons of PTA in the first eight months in 2021 against 124,600 tons in the same period last year. Costs for PTA purchases amounted to \$75.2 million for PTA purchases in the first eight months from \$71.5 million in January to August 2020. China has been the main supplier of paraxylene to Ekopet this year with MEG supplied from Saudi Arabia.



## Aromatics

Russian Benzene Production (unit-kilo tons)		
Producer	Jan-Aug 21	Jan-Aug 20
Angarsk Polymer Plant	52.6	52.3
Gazprom Neft	72.3	74.1
LUKoil-Neftekhim	0.0	24.4
LUKoil-Permnefteorgsintez	29.4	31.4
Magnitogorsk MK	22.4	28.0
Nizhnekamskneftekhim	205.4	202.6
Novolipetsk MK	5.1	0.6
Gazprom neftekhim Salavat	116.4	135.7
Severstal	21.7	22.9
SIBUR-Holding	59.2	52.3
Slavneft-Yaroslavlorgsintez	44.8	45.4
Surgutneftegaz	11.5	42.4
Ryazan RN Holding	22.1	22.9
Ufaneftkhim	56.2	60.5
Ural Steel	6.1	6.6
Uralorgsintez	60.2	56.1
Zapsib	45.0	41.6
Novokuibyshevsk Petrochemical	12.5	10.4
Total	842.8	910.2

Russian Benzene Sales (unit-kilo tons)		
Producer	Jan-Aug 21	Jan-Aug 20
Angarsk Polymer Plant	30.1	33.8
SIBUR-Kstovo	57.8	51.6
Severstal	22.6	22.8
Uralorgsintez	58.4	54.3
Kirishinefteorgsintez	2.7	1.8
West Siberian MC	44.5	40.8
Ryazan NPZ	21.6	21.6
Slavneft-Yanos	44.2	39.5
Gazprom Neft (Omsk)	66.3	51.0
Gazprom neftekhim Salavat	24.9	24.0
Stavrolen	0.0	24.4
Nizhnekamskneftekhim	13.2	20.2
Ufaneftkhim	0.2	4.1
Karpatneftekhim	8.2	1.5
Naftan	19.4	3.7
Atyrau	4.9	24.6
Novolipetsk MK	3.4	0.0
Chelyabinsk MK	11.1	6.3
Altay-Koks	2.9	17.3
Koks	19.0	14.1
Magnitogorsk MK	23.3	29.9
Nizhny Tagil MK	6.0	10.9
Ural Steel	1.5	0.2
Total	486.2	498.4

## Russian benzene production Jan-Aug 2021

Russian benzene production totalled 842,800 tons in the first eight months in 2021 versus 910,200 tons in the same period in 2020. Nizhnekamskneftekhim produced 205,400 tons against 202,600 tons whilst Gazprom neftekhim Salavat reduced production from 135,700 tons to 116,400 tons. Reductions were reported by a number of producers, the largest of which was Gazprom Neft at the Omsk refinery dropping from 74,100 to 72,300 tons.

Sales of benzene on the Russian domestic market, including imports, amounted to 369,400 tons versus 394,400 tons in the same six months in 2020. A number of factors contributed to the lower sales volumes on the domestic market this year including plant outages and increased internal processing.

SIBUR-Kstovo increased sales from 51,600 tons in the first eight months in January to August 2020 to 57,800 tons in the same period in 2021, whilst Stavrolen at Budyennovsk did not produce benzene in the first eight months in 2021 after shipping 24,400 tons in January to August last year. Severstal at Cherepovets stopped work at the benzene plant on 20 September and resumed on 25 October.

Exports of benzene amounted to 8,900 tons in the first eight months against 39,900 tons in January to August 2020. Exports this year have been affected by the long-term repairs taking place at the Kirishi plant which started in March and are expected to continue to the end of 2021.

Regarding import activity, the Atyrau refinery in Kazakhstan reduced benzene sales on the Russian market to 4,900 tons in the first eight months in 2021 against 24,600 tons in the same period in 2020. The Atyrau refinery encountered technical problems in the first quarter which has since restricted exports of benzene and paraxylene. The Belarussian refineries increased deliveries to the Russian market to 19,400 tons in the first eight months in 2021 against 3,700 tons in January to August 2020 whilst from Ukraine Karpatneftekhim increased shipments from 1,500 tons to 8,200 tons.

For caprolactam producers Kuibyshevazot reduced benzene purchases from 109,300 tons to 103,200 tons in January to August this year whilst Azot at Kemerovo increased purchases from 71,700 tons to 82,500 tons. Shchekinoazot reduced purchases from 53,500 tons to 49,200 tons.

For the production of cumene Kazanorgsintez purchased 42,800 tons of benzene in January to August 2021, versus

45,500 tons in the same period in 2020. Kazanorgsintez buys benzene from a range of suppliers including

Nizhnekamskneftekhim. Other phenol producers included Omsk Kaucuk which reduced purchases from 23,400 tons to 21,300 tons and Novokuibyshevsk Petrochemical which reduced from 34,300 tons to 30,700 tons. In the styrene sector SIBUR-Khimprom at Perm purchased 64,600 tons of benzene in January-August 2021 against 70,900 tons in the same period in 2020.

**Russian Caprolactam Production (unit-kilo tons)**

Producer	Jan-Aug 21	Jan-Aug 20
Kuibyshevazot	129.1	128.6
Shchekinoazot	37.1	39.1
SDS Azot	77.8	74.7
Total	244.0	242.3

**Russian caprolactam production, Jan-Aug 2021**

Russian caprolactam production amounted to 244,000 tons in January to August 2021 against 242,300 tons in the same period in 2020. Kuibyshevazot increased caprolactam production from 128,600 tons to 129,100 tons whilst SDS Azot at Kemerovo increased production from 74,700 tons to 77,800 tons. In August, repair work was carried out at two caprolactam plants. This included Shchekinoazot whereby production was stopped on 15 August for eight or ten days. At the Kemerovo Azot, repair work lasted from 1 August to 20 August.

**Russian Orthoxylene Domestic Sales (unit-kilo tons)**

Producer	Jan-Aug 21	Jan-Aug 20
Gazprom Neft	67.9	55.4
Ufaneftkhim	30.2	41.8
Kirishinefteorgsintez	22.6	8.7
Total	120.7	105.9

**Russian orthoxylene & toluene market, Jan-Aug 2021**

Orthoxylene domestic sales on the Russian market rose in the first eight months in 2021 to 120,700 tons from 105,900 tons in the same period in 2020. Gazprom Neft increased shipments to 67,900 tons against 55,400 tons in the same period in 2020 whilst Ufaneftkhim reduced sales from 41,800 tons to 30,200 tons. Kirishinefteorgsintez increased domestic sales from 8,700 tons to 22,600 tons in January to August 2021.

**Russian phthalic anhydride Jan-Aug 2021 and phthalic modernisation**

Kamteks-Khimprom increased phthalic anhydride production to 57,300 tons from 50,300 tons whilst Gazprom neftekhim Salavat increased production from 7,000 tons to 15,900 tons. In addition, the Roshalsky Plasticizer Plant started the production of phthalic anhydride in 2021, producing 4.400 tons in the first eight months.

**Russian Phthalic Anhydride Production (unit-kilo tons)**

Consumer	Jan-Aug 21	Jan-Aug 20
Gazprom neftekhim Salavat	15.9	7.0
Kamteks-Khimprom	57.3	50.3
Roshalsky Plasticizer Plant	4.4	0.0
Total	77.6	57.3

Kamteks-Khimprom has outlined plans to install a new phthalic anhydride production reactor as part of an equipment replacement project. The company entered into a sale and purchase agreement with MAN Energy Solution from Augsburg to provide the design, manufacture and delivery of the reactor system to the place of delivery.

According to the terms of the contract, the equipment needs to be delivered by April 2023.

**Russian Phenol Production (unit-kilo tons)**

Producer	Jan-Aug 21	Jan-Aug 20
Ufaorgsintez	51.1	38.1
Kazanorgsintez	51.6	47.0
Novokuibyshevsk Petrochemical	42.8	39.6
Omsk Kaucuk, Omsk	25.8	22.1
Total	171.4	146.8

**Russian phenol market, Jan-Aug 2021**

Russian phenol production amounted to 171,400 tons in the first eight months in 2021 against 146,800 tons in the same period in 2020. Novokuibyshevsk Petrochemical produced 42,800 tons of phenol against 39,600 tons in 2020 whilst Ufaorgsintez increased production from

38,100 tons to 51,100 tons. Kazanorgsintez increased production from 47,000 tons to 51,600 tons. Omsk Kaucuk produced 25,800 tons against 22,100 tons. The modernisation of cumene production at Omsk has led to a reduction in the volume of pollutant emissions into the atmosphere by more than 85%.

From 2 August to 25 August phenol production at Kazanorgsintez was stopped for maintenance whilst Omsk Kaucuk is hoping to return to full production in the third quarter but is facing challenges at present to comply with domestic safety regulations. Ufaorgsintez may have needed to reduce capacity utilization in August due to the suspension of benzene production at Ufaneftkhim. It is expected that Ufaorgsintez will receive aromatic raw materials from other Rosneft plants. The need to supply benzene by rail is due to the start of reconstruction at the Ufaneftkhim aromatics production complex which could last around three months.

## Synthetic rubber

Russian Synthetic & Natural Rubber Market (unit-kilo tons)		
	Jan-Aug 21	Jan-Aug 20
Production	1127.0	979.0
Exports	745.8	606.5
Imports	153.4	130.3
Supply/Demand Balance	534.6	502.8

## Russian rubber production and market balance Jan-Aug 2021

Synthetic rubber production in Russia totalled 1.127 million tons in the first eight months in 2021 against 979,000 tons in the same period in 2020. Both exports and imports of rubber increased in 2021 whilst overall domestic consumption of rubber amounted to 534,600 tons versus 502,800 tons in the first eight months in 2020.

Russian Synthetic Exports by Destination (unit-kilo tons)		
Country	Jan-Aug 21	Jan-Aug 20
Belarus	24.3	19.2
Brazil	20.5	14.6
China	113.7	159.6
Czech	22.0	16.3
Germany	26.7	19.9
Hungary	35.5	18.3
India	69.9	61.4
Mexico	28.0	16.0
Poland	78.6	53.3
Romania	25.5	17.0
Serbia	9.5	9.4
Slovakia	25.1	20.2
Turkey	64.9	35.0
Ukraine	19.7	11.6
US	38.1	21.8
Others	144.1	108.6
Total	745.8	602.2

## Russian synthetic rubber exports, Jan-Aug 2021

Russian exports of synthetic rubber amounted to 745,800 tons in the first eight months in 2021, up from 602,200 tons in the same period in 2020. Average prices for Russian synthetic rubber exports rose from \$1638 per ton in January to August 2020 to \$1274 in the same period in 2021.

Exports to China amounted to 113,700 tons in the first eight months in 2021 against 159,600 tons in the same period in 2020. This was followed by Poland, rising from 53,300 tons to 78,600 tons, and India rising from 61,400 tons to 69,900 tons. In terms of revenues Russian rubber exports to China totalled \$176.6 million in the first eight months from \$170.4 million whilst to Poland revenues increased from \$75.1 million to \$130.9 million.

Isoprene rubber exports increased from 93,600 tons to 128,600 tons whilst polybutadiene exports increased from 104,800 tons to 128,100 tons. As a result of higher volumes and prices, revenues from synthetic rubber exports rose in total from \$767.3 million in January to August 2020 to \$1221.1 million in January to August 2021.

Russian Synthetic Rubber Exports (unit-kilo tons)		
Product	Jan-Aug 21	Jan-Aug 20
E-SBR	31.8	21.1
Block	53.0	39.4
SSBR	9.5	4.1
SBR	88.0	80.5
Polybutadiene	168.7	142.0
Butyl rubber	91.8	83.7
Halogenated butyl	87.8	76.7
NBR	25.9	20.7
Isoprene	179.4	128.9
Others	9.9	5.1
Total	745.7	602.2

## Nizhnekamskneftekhim-rubber exports Jan-Aug 2021

Nizhnekamskneftekhim's exports of synthetic rubbers rose in the first eight months to 397,800 tons from 339,500 tons in the same period in 2020. Isoprene rubber exports from Nizhnekamsk rose from 104,900 tons to 138,700 tons whilst butadiene rubber exports increased from 99,300 tons to 122,600 tons. Revenues from synthetic rubber exports rose from \$460.7 million to \$660.5 million. Isoprene export revenues jumped to \$217.4 million from \$137.1 million in January to August 2020.

This year Nizhnekamskneftekhim expects sales of rubbers to total around 686,000 tons, which would represent an increase of 16.7% over 2020. The company expects to sell 258,000 tons of isoprene rubbers (SKI, an increase of 31.6%), 211,000 tons of butadiene rubbers (an increase of 17.9%), and 216,000 tons of

butyl and halobutyl rubbers (achieving an increase of 1.4%).

Sales of plastics for Nizhnekamskneftekhim are projected to decline by 3% in 2021 to 714,000 tons, including due to a decrease in polypropylene sales by 8.7%, to 188,000 tons against the background

of a high base last year. Sales of polyethylene will fall by 0.9% to 219,000 tons, and polystyrene and ABS plastics to 308,000 tons (by 0.3%).

<b>Nizhnekamskneftekhim Rubber Exports (unit-kilo tons)</b>		
<b>Product</b>	<b>Jan-Aug 21</b>	<b>Jan-Aug 20</b>
Isoprene Rubber	138.7	104.9
Butyl Rubber	43.3	50.8
HBR	87.8	76.6
Polybutadiene	122.6	99.3
Others	5.4	7.9
<b>Total</b>	<b>397.8</b>	<b>339.5</b>
<b>Nizhnekamskneftekhim Rubber Exports (\$ million)</b>		
<b>Product</b>	<b>Jan-Aug 21</b>	<b>Jan-Aug 20</b>
Isoprene Rubber	217.4	137.1
Butyl Rubber	75.1	65.7
HBR	189.6	152.2
Polybutadiene	164.5	105.7
Others	14.0	11.3
<b>Total</b>	<b>660.5</b>	<b>460.7</b>

Nizhnekamskneftekhim has forecast this year's revenue from rubber sales to comprise around 37% of total revenues followed 36% for plastics and 27% for other petrochemicals.

Nizhnekamskneftekhim's share in the global market for isoprene rubber amounts to around 36.5%, butyl rubbers 11.2% and butadiene rubbers 4.4%.

Nizhnekamskneftekhim reduced its share in the global isoprene rubber market from 43.9% to 37.8% in 2020 but remained the global leader in production. The company's share in the global butyl rubber market decreased from 17.5% to 16.3% in 2020, and for the global butadiene rubber market from 5.3% to 4.7%.

Overall, around 40% of Nizhnekamskneftekhim's revenues stem from rubber sales and around 33% from plastics. In the structure of the company's sales synthetic rubber accounted for 41% of Nizhnekamskneftekhim's revenues in 2020 followed by plastics with 34%. The main share in the structure of sales of synthetic rubbers is in Europe 35.4%, Asia 31.4%, and North America 10.7%.

<b>Togliattikaucuk Rubber Exports (unit-kilo tons)</b>		
<b>Product</b>	<b>Jan-Aug 21</b>	<b>Jan-Aug 20</b>
Isoprene Rubber	13.8	2.3
Butyl Rubber	48.4	32.9
SBR	38.0	23.2
Others	2.3	0.2
<b>Total</b>	<b>102.5</b>	<b>58.6</b>
<b>Togliattikaucuk Rubber Exports (\$ million)</b>		
<b>Product</b>	<b>Jan-Aug 21</b>	<b>Jan-Aug 20</b>
Isoprene Rubber	18.4	4.7
Butyl Rubber	72.1	47.7
SBR	53.0	24.0
Others	3.3	0.3
<b>Total</b>	<b>146.7</b>	<b>76.7</b>

#### **Togliattikaucuk exports Jan-Aug 2021**

Togliattikaucuk exported 102,500 tons of synthetic rubber in the first eight months in 2021 against 58,600 tons in the same period in 2020. Butyl rubber exports rose from 32,900 tons to 48,400 tons which led to increased revenues of \$72.1 million against \$47.7 million. Overall export revenues from synthetic rubber increased from \$76.7 million in January to August 2020 to \$146.7 million in the same period in 2021.

Togliattikaucuk is implementing a long-term comprehensive programme of measures aimed at reducing the impact on the environment. In order to reduce the carbon footprint, the company is applying a number of measures including tackling of emissions, turning waste into products, increasing

the quality of wastewater treatment combined with resource saving.

<b>Togliattikaucuk Production Capacities</b>	
<b>Product</b>	<b>Capacity (ktpa)</b>
Isoprene monomer	90
Butadiene monomer	80
isobutylene-isobutane fraction	165
Isobutylene	60
Isoprene rubber	82
Butyl rubber	75

Togliattikaucuk's owner Tatneft is starting a project the production of butadiene rubbers in Kazakhstan. Tatneft plans to start industrial production of butadiene rubbers in the Atyrau region of Kazakhstan in 2025. The raw materials will be supplied by Tengizchevroil LLP. The estimated production capacity is 186,000 tpa of butadiene rubbers and 170,000 tpa of isobutane. Finished products will be supplied to the KamaTyresKZ tire plant under construction in the

Karaganda region (JV Tatneft and Allure Group), as well as for export.



## Methanol

Russian Methanol Production (unit-kilo tons)		
Producer	Jan-Aug 21	Jan-Aug 20
Shchekinoazot	646.5	651.4
Gazprom Methanol	660.0	601.1
Metafrax	769.2	745.3
Akron	71.5	61.9
Azot, Novomoskovsk	170.3	123.5
Angarsk Petrochemical	20.1	38.0
Azot, Nevinnomyssk	83.6	78.4
Tomet	387.6	626.0
Ammoni	77.4	61.1
Totals	2886.3	2986.7

Nevinnomyssk respectively. Ammoni in

## Russian methanol production Jan-Aug 2021

Russia produced 2.886 million tons of methanol in the first eight months in 2021 against 2.987 million tons in same period in 2020. The decline was due primarily to the lower production from Tomet, which fell from a total of 626,000 tons in January-August 2020 to 387,600 tons in the same period this year. Metafrax produced 769,200 tons of methanol in the first eight months in 2021 against 745,300 tons in the same period in 2020, followed by Gazprom Methanol (Sibmetakhim) rising from 601,100 tons to 660,000 tons and Shchekinoazot dropping from 651,400 tons to 646,500 tons.

The two plants which are owned by the Evrokhim Group produced 170,300 tons at Novomoskovsk and 83,600 tons at Tatarstan increased methanol production from 61,100 tons in January to August 2020 to 77,400 tons.

Russian Methanol Exports by Producer (unit-kilo tons)		
Producer	Jan-Aug 21	Jan-Aug 20
Azot Nevinnomyssk	4.8	2.0
Azot Novomoskovsk	61.4	41.1
Akron	6.1	9.4
Metafrax	256.3	341.5
Gazprom Methanol	349.3	335.4
Tomet	132.9	255.9
Shchekinoazot	454.9	486.2
Ammoni	0.0	0.0
Total	1265.9	1471.6

## Russian methanol exports, Jan-Aug 2021

Export shipments of Russian methanol from producers totalled 1.266 million tons in the first eight months in 2021 against 1.472 million tons in the same period last year. Average prices of Russian exports rose from \$189 per ton in January-August 2020 to \$307 in the same period in 2021. Tomet reduced exports from 255,900 tons in January to August 2020 to 132,900 tons in the same period this year although other producers compensated with higher volumes partly to take advantage of higher prices. Tomet reduced export sales by more than twice than in the same period of 2020, which contributed to an increase in product prices in Russia. It also led to a redistribution of spot volumes of methanol from other producers from export to the domestic market.

Russian Methanol Export Destinations (unit-kilo tons)		
Country	Jan-Aug 21	Jan-Aug 20
Belarus	84.3	70.5
Finland	631.5	677.4
Germany	1.6	1.4
Kazakhstan	16.5	26.1
Latvia	7.9	9.6
Lithuania	55.9	52.5
Netherlands	81.2	152.5
Poland	208.2	251.0
Romania	50.8	47.2
Slovakia	155.1	94.9
Spain	0.0	5.5
Turkey	6.4	23.5
UK	0.0	46.1
Ukraine	43.8	23.1
Others	0.2	15.1
Total	1343.5	1496.6

methanol exports in the first eight months in 2021, with almost all products sent on to other locations after reaching the Hamina-Kotka terminals. The largest end-destination for Russian methanol exports is Poland which accounted for 208,200 tons in the first eight months against 251,000 tons in 2020. Metafrax and Gazprom Methanol are the main exporters via the Finnish ports, using the infrastructure established in the Soviet era, whilst Shchekinoazot until now has exported largely through rail transport. The company is expected to seek out other markets in 2022 from Kotka following the start-up of the M-500 plant.

Metafrax exported 256,300 tons of methanol in the first eight months in 2021 versus 341,500 tons last year, whilst Gazprom Methanol (Sibmetakhim) increased shipments from 335,400 tons to 349,300 tons. Shchekinoazot, Russia's current largest exporter of methanol, reduced shipments from 486,200 tons to 454,900 tons in January-August 2021.

Metafrax Trading International has made its first shipment of methanol in barrels to Africa. Methanol is delivered by sea in standard 200-litre barrels to one of the company's new partners.

Finland accounted for nearly half of Russian

The major destinations for methanol exports from Shchekinoazot include Belarus, Poland and Slovakia, using a number of routes. Earlier this year Shchekinoazot and the Fertilog Group commissioned a new terminal, Tanking Terminal Kotka (TTK), at the port of the Finnish port of Kotka which is intended for usage for the overflow of methanol produced through the new M-500 plant. TTC has the facility to store 20,000 tons of methanol at a time, whilst providing a high rate of discharge of cargo from tanks and a high rate of loading of ships on two berths.

<b>Shchekinoazot Methanol Exports 2021 (unit-kilo tons)</b>					
<b>Country</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>
Belarus	17.7	17.9	14.1	12.6	21.7
Finland	0.0	0.0	8.5	0.0	0.0
Kazakhstan	0.3	0.6	0.5	0.6	1.2
Lithuania	3.5	4.4	2.7	1.2	3.1
Poland	8.9	5.2	6.8	0.8	5.5
Romania	5.6	3.2	5.4	6.6	6.6
Slovakia	19.7	22.1	19.9	18.6	16.6
Ukraine	2.0	3.2	3.0	2.6	2.7
<b>Total</b>	<b>57.6</b>	<b>56.6</b>	<b>60.7</b>	<b>43.0</b>	<b>57.5</b>

Lyshchitsy in the Brest region acts as the main export junction for exports to Belarus from Shchekinoazot, whilst for the Polish market the border crossing Bruzgi is used. The expansion of methanol shipments through the transit point Bruzgi-Kuznitsa has not materialised to date, although the terminal does have the capacity to increase transshipments. For the Romanian market Shchekinoazot exports methanol via Vadul-Siret in southern Ukraine and to Slovakia

through Chop which is located on the western Ukrainian border town.

<b>Russian Methanol Domestic Sales (unit-kilo tons)</b>		
<b>Producer</b>	<b>Jan-Aug 21</b>	<b>Jan-Aug 20</b>
Azot Nevinnomysk	15.5	11.6
Azot Novomoskovsk	106.9	82.8
Metafrax	281.4	206.0
Gazprom Methanol	277.1	199.7
Tomet	224.9	279.0
Shchekinoazot	126.7	101.5
Ammoni (Mendeleevsk)	44.2	33.3
<b>Total</b>	<b>1076.7</b>	<b>914.1</b>

#### **Russian methanol domestic sales, Jan-Aug 2021**

Sales of methanol on the Russian domestic market amounted to 1.077 million tons in the first eight months in 2021 against 914,100 tons in the same period in 2020. Despite a drop in sales by Tomet from 279,000 tons to 224,900 tons, sales from several other producers increased.

Metafrax increased domestic merchant sales from 159,400 tons to 208,200 tons whilst Gazprom Methanol (Sibmetakhim) increased shipments to domestic customers to 159,600 tons from 216,500 tons. Shchekinoazot increased merchant domestic sales from 75,400 tons to 95,900 tons and in Ammoni was able to increase sales from 18,100 tons to 30,800 tons.

<b>Russian Methanol Domestic Buyers (unit-kilo tons)</b>		
<b>Consumer</b>	<b>Jan-Aug 21</b>	<b>Jan-Aug 20</b>
Nizhnekamskneftekhim	204.5	134.0
Togliattikavuk	82.9	98.8
Uralorgsintez	39.0	43.4
SIBUR-Khimprom	18.8	12.4
SIBUR Tobolsk	26.2	28.2
Ektos-Volga	4.7	29.3
Omsk Kaucuk	60.1	53.8
Novokuibyshevsk NPZ	21.2	31.0
Uralkhimplast	16.4	13.0
Slavneft-Yanos	9.8	7.2
Metadynea	62.9	46.9
Kronospan	82.6	58.2
Gazprom	133.9	79.9
Khimsintez	20.3	7.7
Volzhsky Orgsintez	5.1	6.7
Others	281.2	263.7
<b>Total</b>	<b>1079.7</b>	<b>926.7</b>

Nizhnekamskneftekhim increased methanol merchant purchases from 134,000 tons in the first eight months in 2020 to 204,500 tons in the same period in 2021. The rise in purchases was due mainly to increased production of isoprene monomer.

Togliattikavuk, which is owned by Tatneft, purchased 82,900 tons of methanol in the first eight months against 98,800 tons in the same period last year. In September MTBE production at Togliattikavuk was halted for two weeks, which reduced methanol purchases.

Gazprom increased purchases of methanol for gas hydrates in Siberia from 79,900 tons in January-August 2020 to 133,900 tons this year. Most of the methanol purchased by Gazprom is

sourced from Gazprom Methanol.

Russian Formaldehyde Production (unit-kilo tons)		
Producer	Aug-21	Jul-21
Pigment	3.4	3.5
Shchekinoazot	2.9	2.9
Akron	15.3	14.8
Metafrax	36.4	36.1
Sverdlov Plant	2.0	1.8
Khimsintez	5.0	5.5
Uralkhimplast	4.7	5.1
Nizhnokamskneftekhim	6.5	6.6
Gazprom Methanol	6.5	5.5
Metadynea	1.9	1.5
Total	84.7	83.2

In the formaldehyde resin sector Metadynea increased methanol purchases from 46,900 tons to 62,900 tons whilst Kronospan increased purchases from 58,200 tons to 82,600 tons. The Novomoskovsk methanol plant is the major supplier to both Metadynea and Kronospan. Over the next three years Metadynea to increase the production of phenol formaldehyde resins at its Orekhovo-Zuyevo plant by around a third.

Uralkhimplast purchased 16,400 tons of methanol in the first eight months in 2021 against 13,100 tons last year, most of which was supplied by Metafrax. In September Pigment at Tambov reduced methanol processing due to the shutdown of formalin and derivative plants for repairs.

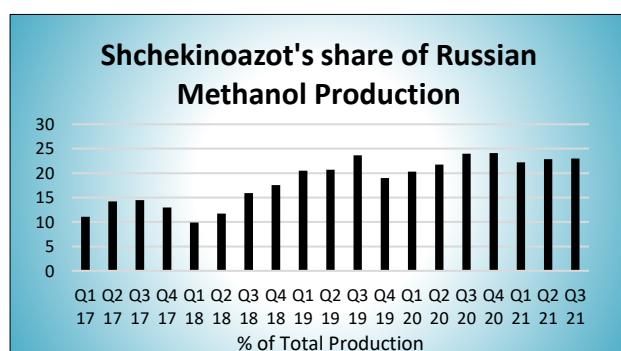
#### Shchekinoazot-methanol M-500 project launched

Shchekinoazot launched its new M-500 methanol unit on 8 October. This is the third methanol production using technologies supplied by Haldor Topsoe and raises capacity to 1.4 million tpa which makes it the largest Russian methanol producer. The launch of the M-500 plant will be followed by the commissioning of the AK-270/AS-340 unit which comprises 270,000 tpa of nitric acid and 340,000 tpa of ammonium sulphate.

The methanol project cost €270 million and has been supported with finance from Russian banks VEB.RF and Gazprombank. In the early 2000s, Shchekinoazot was facing the prospect of bankruptcy and closure and a newly formed management team approved a strategy that would allow the company to stay afloat,

M-500 Parameters Shchekinoazot	
•	Finance Vnesheconombank, Gazprombank
•	Licenser Haldor Topsoe
•	Design NIIK Dzerzhinsk
•	General contractor NZM Volgograd
•	Area-7 hectares

stabilize the situation, and then proceed to growth and diversification. The first methanol plant which had been built in 1966 was replaced in 2011 with the first of the three Haldor Topsoe licensed plants, with a capacity of 450,000 tpa. This replacement of the original 360,000 tpa methanol plant in 2011 which had been characterized by bulky, energy-intensive, and high-pressure methanol synthesis technology represented a major turning point for Shchekinoazot. The M-450 project installed in 2011 brought a serious economic and environmental effect. The volume of emissions into the atmosphere drastically decreased, whilst halving the amount of wastewater supplied to treatment facilities.



The next stage of the company's development comprised the creation of a combined production complex with a capacity of 450,000 tpa of methanol and 135,000 tpa of ammonia. Production started in 2018 and made Shchekinoazot the largest exporter of methanol in

Russia. When the construction of a unique complex of M-450/A-135 units was just entering the active phase, Shchekinoazot was already working on the idea of creating a third methanol plant. In September 2019 Shchekinoazot received the first tranche from its partners Vnesheconombank and Gazprombank for the purchase of equipment for the M-500 of domestic production and by May 2020, more than 90% of the equipment had already been delivered to the factory site.

Currently Shchekinoazot produces around 23-24% of Russian methanol production and when full capacity of the M-500 plant is achieved this share could rise to 32-33%. Although the company is heavy reliant on export activity the aim is to increase processing of methanol into resins. This is seen as a cornerstone strategy in view of the pending export-oriented methanol projects forecast for Russia in the period 2024-2030.

**AEON Volgograd methanol project-design**

The Russian Japanese methanol project at Volgograd, to be built on the former Khimprom site, is moving from the completed design stage to the approval stage which would enable construction to start. The plant is to be constructed with a capacity of 1.0 million tpa and is required to correlate with the current legislation in both industrial safety and environmental protection. The main investor AEON Corporation has put its case forward that the impact on the environment will be minimised and the plant will be nothing like the former industrial giant Khimprom which was forced to close in 2014. Marubeni and Mitsubishi are

supporting the project in terms of sales and construction, whilst Haldor Topsoe will provide the license, basic engineering, catalysts and proprietary hardware for methanol production.

**OTEKO methanol project Taman**

Funds are being collected by residents in the Temryuk district in the Krasnodar Territory to conduct a public environmental assessment of the methanol, ammonia and urea production planned for construction by the OTEKO group of companies. The aim is to submit documents for an examination that will establish whether OTEKO has prepared documents on environmental impact assessment of future methanol production. Thus far the general contractor has tried convincing residents that the plant will meet modern requirements of technical and environmental safety. The use of a closed production cycle will help to protect the environment. Despite these statements local residents still have many questions about the methanol project.

The next stage of the project process that would allow construction to start involves passing public and state environmental expertise. This process has started and despite challenges could move more smoothly compared to some other projects in Russia. The total investment costs for the Volgograd methanol project have been estimated at around 50 billion roubles (\$700.2 million). In

addition to methanol AEON is developing a promising project to produce bioprotein from gas. This is pure protein that can be used as a substitute for fish flour for animal feed, which is an extension of "green" technologies and reducing the load on seas.

**Organic chemicals**

<b>Russian N-Butanol Production (unit-kilo tons)</b>		
	<b>Jan-Aug 21</b>	<b>Jan-Aug 20</b>
Angarsk Petrochemical Company	17.4	14.9
Azot, Nevinnomyssk	10.0	11.1
Gazprom neftekhim Salavat	37.4	39.1
SIBUR-Khimprom, Perm	17.2	19.5
Total	82.0	84.6
<b>Russian Isobutanols Production (unit-kilo tons)</b>		
	<b>Jan-Aug 21</b>	<b>Jan-Aug 20</b>
Angarsk Petrochemical Company	10.3	10.9
Gazprom neftekhim Salavat	20.5	25.5
SIBUR-Khimprom, Perm	21.6	29.7
Total	52.4	66.0

**Russian butanol production Jan-Aug 2021**

Russian normal butanol production totalled 82,000 tons in January to August 2021, against 84,600 tons in the same period in 2020. Gazprom neftekhim Salavat was the largest Russian producer, producing 37,400 tons against 39,100 tons in January to August 2020.

Isobutanol production in Russia dropped from 66,000 tons last year to 52,400 tons in January to August 2021. Gazprom neftekhim Salavat reduced production to 20,500 tons from 25,500 tons, and SIBUR-Khimprom reduced from 29,700 tons to 21,600 tons.

**Russian domestic butanol sales, Jan-Aug 2021**

Merchant normal butanol sales on the Russian domestic market dropped in the first eight months in 2021

<b>Russian Butanol Consumption (unit-kilo tons)</b>		
<b>Consumer</b>	<b>Jan-Aug 21</b>	<b>Jan-Aug 20</b>
Akrilat	12.5	12.5
Dimitrievsky Chemical	9.8	9.9
Volzhskiy Orgsintez	4.7	5.2
Roshalsky Plant of Plasticizers	0.9	1.0
Others	11.3	12.9
Total	39.8	42.6

to 39,300 tons from 42,600 tons in the same period in 2020. The largest butanol buyer was Akrilat at Dzerzhinsk which took 12,500 tons and unchanged from last year whilst Dimitrievsky Chemical reduced purchases slightly from 9,900 tons to 9,800 tons. Angarsk Petrochemical was the largest supplier of normal butanols in the first eight months shipping 17,000 tons versus 17,100 tons in the same period in 2020 whilst SIBUR-Khimprom reduced sales from 16,200 tons to 13,300 tons. Both SIBUR-Khimprom

and Gazprom neftekhim Salavat direct almost the entire volume of n-butanol produced to internal processing.



Russian Butanol Domestic Sales (unit-kilo tons)		
Producer	Jan-Aug 21	Jan-Aug 20
Gazprom n Salavat	5.3	4.6
SIBUR-Khimprom	13.0	16.2
Angarsk Petrochemical Company	17.0	17.1
Azot Nevinnomyssk	0.3	1.8
Totals	35.7	39.7

105,000 tons in the same period in 2020. Omsk

Russian Acetone Production (unit-kilo tons)		
Producer	Jan-Aug 21	Jan-Aug 20
Ufaorgsintez	32.0	26.1
Kazanorgsintez	33.4	33.6
Novokuibyshevsk Petrochemical	26.4	28.8
Omsk Kaucuk	16.0	16.5
Total	107.9	105.0

Russian Acetone Exports (unit-kilo tons)		
Country	Jan-Aug 21	Jan-Aug 20
Belarus	8.2	7.3
Netherlands	18.3	10.4
Turkey	3.6	6.4
Lithuania	1.4	0.0
Latvia	7.6	1.0
Others	6.3	8.7
Total	45.4	33.7

production of cosmetics and perfumes. In 2020 Russia imported 8,970 tons of ethyl acetate which

Russian Isopropyl Alcohol Production (unit-kilo tons)			
Producer	Jun	Jul	Aug
Sintez-Acetone	0.0	0.6	0.0
Khimprom	0.1	0.1	0.2
Plant of Synthetic Alcohol	0.0	0.0	2.8
Omsk Kaucuk	0.0	1.3	4.2
Total	0.1	1.9	7.2

Russian TDI Imports (unit-kilo tons)		
Country	Jan-Aug 21	Jan-Aug 20
Belgium	0.7	0.3
China	12.9	2.6
France	0.8	0.1
Germany	3.2	10.2
Hungary	4.8	6.6
Netherlands	1.3	1.0
Saudi Arabia	1.1	4.1
South Korea	9.0	2.4
Turkey	0.2	0.2
US	4.4	1.1
Others	0.6	2.8
Total	39.0	31.5

period in 2020, whilst Hungary reduced shipments from 6,600 tons to 4,801 tons. Germany reduced sales

The Angarsk Petrochemical Plant does not supply isobutanol to the free domestic market and finds it more economical to ship almost all products for export.

### Russian acetone production & exports, Jan-Aug 2021

Russian acetone production amounted to 107,900 tons in the first eight months in 2021 against 105,000 tons in the same period in 2020 due to technical problems. Conversely, Ufaorgsintez increased production from 26,100 tons to 32,000 tons whilst Kazanorgsintez reduced from 33,600 tons to 33,400 tons.

Exports of acetone from Russia amounted to 32,600 tons in the first eight months in 2021 against 28,800 tons in the same period in 2020. The Netherlands was the major destination for Russian acetone exports in the first eight months this year, accounting for 18,300 tons, followed by Latvia with 7,600 tons.

### Russian ethyl acetate project

The Plant of Experimental Technologies (ZET) in Bashkortostan is building a plant for ethyl acetate production using the technology of a continuous method of ethanol esterification with acetic acid which corresponds to modern global production trends and has a minimum impact on the environment. ZET is involved in the

### Russian isopropanol production rises in August

The production of isopropyl alcohol in Russia increased sharply in August with the increase in utilisation rates at the new Omsk Kaucuk plant, leading to 4,200 tons being produced against 1,900 tons in July. Due to the increase in production in August exports increased to 2,339 tons, most of which was sold to Egypt.

### Russian TDI-MDI Imports

#### Russian TDI-MDI imports, Jan-Aug 2021

Russian TDI imports amounted to 39,039 tons in the first eight months in 2021 against 31,502 tons in the same period in 2020. Values of Russian TDI imports rose from a total of \$61.224 million in January to August 2020 to \$100.600 million in the same period in 2021, with average prices per ton rising from \$1691 to \$2577. The upward trend in pricing started in the third quarter last year and averaged \$2564 per ton in the first two quarters versus \$1664 in the same period in 2020. China supplied 12,866 tons to Russia in the first eight months in 2021 against 2,577 tons in the same

to Russia to 3,220 tons from 10,231 tons and Saudi Arabia reduced shipments from 4,131 tons to 1,141 tons.

<b>Russian Imports of MDI (unit-kilo tons)</b>		
<b>Country</b>	<b>Jan-Aug 21</b>	<b>Jan-Aug 20</b>
Belgium	14.6	9.9
China	29.9	18.1
Germany	13.6	11.1
Hungary	4.1	2.1
Japan	1.5	1.0
Netherlands	25.9	15.6
Portugal	3.5	0.0
Saudi Arabia	26.6	24.4
South Korea	1.5	0.5
Others	2.9	0.2
<b>Total</b>	<b>123.3</b>	<b>82.8</b>

MDI imports into Russia rose to 86,049 tons in January to August 2021 from 65,694 tons in the same period in 2020. Values of Russian MDI imports amounted to \$292.316 million in the first eight months rising more than double from the \$125.704 million in the same period last year. Values were boosted by the increase in both volumes imported and average prices per ton which rose from \$1339 to \$2312.

The Netherlands shipped 25,936 tons of MDI to Russia in the first eight months against 15,569 tons last year, whilst Saudi Arabia increased shipments from 24,428 tons to 26,603 tons. Germany and Belgium are also major suppliers to the Russian market. The largest region for Russian MDI imports remains the Vladimir Oblast followed by Moscow.

For the remainder of 2021 prices for both TDI and MDI may hold current levels and could be forced higher due to feedstock costs driven by high crude. Moreover, logistical issues are impacting on chemical producers globally with Europe in particular facing supply side bottlenecks. This is affecting the market in some cases in raw material or finished product deliveries and it appears that there is no real sign of the logistics conundrum improving at least until into 2022.

## **Ukraine-Belarus**

### **Ukrainian polymer imports & production, Jan-Aug 2021**

Polyethylene imports into Ukraine amounted to 171,100 tons in the period January to August 2021 against 182,400 tons a year earlier. HDPE imports amounted to 55,400 tons against 66,600 tons for the same period in 2020, whilst LDPE imports dropped by 4% to 52,300 tons. LLDPE imports dropped by 2% to 50,800 tons and other imports rose from 9,300 tons to 12,600 tons.

<b>Ukrainian Polymer Imports (unit-kilo tons)</b>		
<b>Product</b>	<b>Jan-Aug 21</b>	<b>Jan-Aug 20</b>
PVC	18.5	25.1
LDPE	52.3	57.0
LLDPE	50.8	52.0
HDPE	55.4	66.6
Polypropylene	82.7	88.7

Polypropylene imports into the Ukrainian market amounted to 82,700 tons in January to August 2021 against 88,700 tons in the same period in 2020. The total supply of polypropylene homo grade amounted to 61,400 tons, which is 10% less than in 2020, whilst imports of propylene block copolymers dropped from 8,800 tons to 8,100 tons. Imports of random copolymers increased from 10,200

tons to 10,900 tons. The total volume of supplies of other propylene copolymers amounted to just over 2,300 tons.

In the first eight months of this year, PVC imports dropped by 26% to 18,500 tons against 25,100 tons. Export sales of PVC, produced by Karpatneftekhim, increased by 17% compared to last year from 111,000 tons to 129,700 tons.

<b>Karpatneftekhim Petrochemical Exports (unit-kilo tons)</b>		
<b>Product</b>	<b>Jan-Aug 21</b>	<b>Jan-Aug 20</b>
Propylene	71.2	66.3
Benzene	56.5	43.0

### **Karpatneftekhim Jan-Aug 2021**

Karpatneftekhim increased purchases of LPG in January-June by 33,500 tons, to 61,900 tons, due to more attractive prices compared to naphtha. Karpatneftekhim exported 71,200 tons of propylene in the first eight months in 2021 against 66,300 tons in the same period in 2020, whilst benzene imports rose from 43,000 tons to 56,500 tons. The largest share of propylene shipments was exported to Poland. The trading company chartered the YM Mars tanker to transport 5,000 tons of Ukrainian benzene to Italy. The

loading was carried out on 25 September and 26 September in the port of Chornomorsk. The tanker is now heading to Porto Marghera. The cargo is probably destined for Versalis.

### **Mogilevkhimvolokno paraxylene and methanol purchases 2022**

Mogilevkhimvolokno undertook two raw material tenders in October for paraxylene and methanol deliveries in 2022. Up to 75,000 tons of paraxylene are required next year, delivered in volumes of 19,500 tons for the first, third and fourth quarters and 16,500 tons for the second quarter. Mogilevkhimvolokno has also placed a tender for 6,000 tons of methanol to be supplied in 2022.

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## **Central Asia/Caucasus**

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### **SIBUR-petrochemical projects in Kazakhstan**

SIBUR, Samruk-Kazyna and KazMunayGaz signed agreements in October regarding the basic terms of cooperation on petrochemical projects at Atyrau. In particular, SIBUR is interested in replacing Borealis which dropped out of the 800,000 tpa polyethylene project in 2019 at Atyrau of 1.25 million tpa, as well as

#### **Kazakh polypropylene plant market targets**

KazMunayGaz (KMG) and Tengizchevroil (TCO) have agreed to supply propane from the Tengiz field to the polypropylene plant in Karabatan. The agreement with Tengizchevroil was signed on 10 September for raw materials to the polypropylene plant at Atyrau. The volume of delivery by rail will be 550,000 tpa. At the plant, the raw materials will be processed at the propane dehydration unit to obtain propylene, and then at the polymerisation unit will receive granular polypropylene.

As completion of the polypropylene project at Atyrau is expected in early 2022 attention is turning to where the 500,000 tpa plant can send its output. The Kazakh market consumes about 40-45,000 tpa of polypropylene which would account for around 10% of the capacity of the new plant. KazMunayGaz sees the polypropylene plant as a win-win stating that polypropylene could be worth ten times more than the price of gas from Kazakhstan's oil and gas fields. According to Kazakh data, the cost of propane in the domestic market is about \$130 per ton, when as export prices for polypropylene vary in the corridor \$1,000-1,500 per ton. The most likely export markets would appear to be China where consumption is estimated at 3.5-4 million tons and Turkey which is a strong trade partner of Kazakhstan.

taking a share in the polypropylene plant which is close to completion with a capacity of 500,000 tpa. SIBUR's stake in both joint ventures will be 40%. The launch of the polypropylene plant is scheduled for early 2022. The next stage of total investment strategy involves the project for the production of polyethylene which is probably where SIBUR's expertise is required most of all.

Besides the plants for polyethylene and polypropylene other projects for Atyrau include butadiene and synthetic rubber, as well as a plant for the production of polyethylene film.

### **SOCAR Methanol Jan-Aug 2021**

SOCAR produced 197,200 tons of methanol in the first eight months in 2021 which is 39.7% less than in the same

period in 2020. Revenues from methanol exports amounted to \$9.7 million in August which is \$5 million more than in the same month in 2020. This follows exports worth \$11.3 million in July which was \$2.9 million more than in last August. As of 1 September, this year, methanol stocks at the SOCAR methanol plant amounted to 31,900 tons.

### **Shurtan Gas Chemical Complex-German banks lend €1.1 billion for expansion**

Three German banks have agreed to allocate €1.1 billion to expand the capacity of the Shurtan Gas Chemical Complex. Deutsche Bank will allocate €500 million, Landesbank Baden-Wuerttemberg €300 million and Landesbank Hessen-Thüringen Girozentrale €300 million. The expansion project of the Shurtan Gas Chemical Complex gives an additional production of 280,000 tpa of bimodal polyethylene, 100,000 tpa of polypropylene and 50,000 tpa tons of pyrolysis distillate. The raw material base for the projected expansion facilities will be synthetic naphtha which is to be produced at the new GTL plant.

### **Uz-Kor Gas Chemical-shutdown**

Uz-Kor Gas Chemical, the JV established by the National Holding Company Uzbekneftegaz and the investment consortium of Korean companies resumed production of polyolefins after scheduled maintenance of capacities. Uz-Kor Gas Chemical undertook a shutdown between 4 September to 4 October. The complex provides processing of 4.5 billion cubic metres of natural gas per annum and includes the production of HDPE and polypropylene with respective capacities of 386,000 tpa and 80,000 tpa.

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