



DOTP – FROM IMPORTS TO EXPORTS

Russia's first facility for the production of dioctyl terephthalate (DOTP), a phthalate-free plasticiser, is scheduled to open at SIBUR-Khimprom in Q2 2019. Once it reaches its full capacity, the plant will change the plasticiser market in Russia for good.

Keeping abreast of the industry

IN 2005, THE MARKET SHARE OF PHTHALATE-FREE PLASTICISERS AMOUNTED TO A SHEER 10%, RISING TO 19% IN 2016, AND INCREASING FURTHER TO 27% IN 2018.

Unlike phthalate plasticisers, phthalate-free products do not emit toxic substances, providing for a much wider application in a variety of areas. Stringent restrictions on the use of phthalate plasticisers in children's toys, packaging, hygiene and beauty products have been in place for over a decade now in the US, Europe, and many other countries. On top of that, mandatory labelling requirements have been introduced for PVC and other plastics.

These measures have had a major impact on the global plasticiser market, shifting the consumer and producer focus towards safer solutions.

In 2005, the market share of phthalate-free plasticisers amounted to a sheer 10%, rising to 19% in 2016, and increasing further to 27% in 2018. In 2017, plasticiser production reached 7 mtpa, and kept growing in 2018. Today, the phthalate-free DOTP accounts for 15% of the market.

Of all plasticisers, DOTP ranks third globally by the volume of consumption, with demand for it rising at an average pace of 7% per year. According to the industry experts, DOTP is now outperforming the plasticiser segment as a whole.



Many countries impose stringent restrictions on the use of phthalate-containing plasticisers in children's toys.

Plasticisers in Russia

DOTP RANKS THIRD GLOBALLY BY THE VOLUME OF CONSUMPTION, WITH DEMAND FOR IT RISING AT AN AVERAGE PACE OF 7% PER YEAR.

The picture is somewhat different in Russia, with local manufactures having sourced some 140 ktpa of plasticisers in 2012–2014, according to the Rupec think tank. The economic slowdown reduced Russian consumption to 135 ktpa in 2015. With the first signs of industry recovery in 2016, demand for plasticisers rebounded to 168 ktpa in 2018, including 33 kt of imports from Europe and Asia.

Today, Russian producers mostly use phthalate plasticisers dioctyl phthalate (DOP) and diisononyl phthalate (DINP), which account for 55.3% and 33.6% of the market, respectively, while the share of phthalate-free plasticisers stands at around 10%.

There are two main reasons for that. First, the use of harmful chemicals is not clearly regulated in Russia. Second, until recently there has been no major local producer of phthalate-free plasticisers. Regulatory gaps and lack of locally available alternatives left Russian manufacturers no other other choice but to use phthalate-containing products. With the launch of a large DOTP facility, the situation in the Russian market is about to change.



In 2018, consumption of plasticisers in the Russian industrial sector stood at 168 kt.

Choice of location comes as no accident

DIOCTYL PHTHALATE (DOP) AND DIISONONYL PHTHALATE (DINP) ACCOUNT FOR 55.3% AND 33.6% OF THE RUSSIAN MARKET, RESPECTIVELY, WHILE THE SHARE OF PHTHALATE-FREE PLASTICISERS STANDS AT AROUND 10%.

With construction, assembly and commissioning works fully completed, the facility is expected to come on stream in Q2 2019. Investments in the production site totalled RUB 6.9 bn, with the Perm Territory, Russian Ministry of Industry and Trade and SIBUR-Khimprom having signed a special 8-year investment contract to implement the project.

The plant was built under an international licence from Aekyung Petrochemical, with product quality confirmed by the REACH certificate. Boasting 100 kt in annual output, SIBUR's DOTP site is Russia's first facility designed under an international licence and Europe's largest plasticiser producer. It is expected to reach its full capacity as early as in 2020.

NIPIgaspererabotka, a leading Russian research centre for facility design, procurement, logistics, and construction, was chosen as the general designer to develop the design and engineering solutions.

The choice of location for the new plant is no coincidence, as we synthesise 2-ethylhexanol, the primary DOTP component, at our Perm site. Moreover, POLIEF, major producer of another important DOTP component – terephthalic acid (TPA), is located in Blagoveshchensk (Republic of Bashkortostan) in close proximity to the Perm Territory. This choice of location has allowed the Company to enhance its logistical chain and benefit from the region's industrial infrastructure.



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Ambitious plans for the future

The DOTP facility in Perm is a major import substitution project for the Russian petrochemical industry. Foreign-made plasticisers currently account for 40% of the Russian market. According to SIBUR experts, the launch of the new plant will enable local products to replace imports during the first year of the facility's operation and allow the Company to fully meet the needs of the domestic market.

Dmitry Beresnev, head of SIBUR's DOTP and Alcohols Division, commented: "Our plans for the coming years are very ambitious. We expect production to reach a capacity of 70 kt during the first year of operation, rising to the full capacity of 100 kt going forward."

SIBUR is Russia's largest 2-ethylhexanol producer and a major supplier of the product to the domestic and foreign markets. The DOTP facility is a key stepping stone in the Company's strategy to tap into the deep petrochemical conversion market.



Ceremony of laying the foundation stone for the DOTP facility.

SIBUR'S DOTP FACILITY WAS BUILT UNDER AN INTERNATIONAL LICENCE FROM AEKYUNG PETROCHEMICAL, WITH PRODUCT QUALITY CONFIRMED BY THE REACH CERTIFICATE.

The export outlook also seems to be positive for SIBUR. Currently, Europe's only DOTP manufacturer is unable to fully cover the European market needs, with the Asian producers stepping in to fill the gap. What makes SIBUR more competitive compared to them is its own resource base and an extensive logistics network.

According to Pavel Lyakhovich, member of the Management Board and Managing Director of SIBUR, Russia will need some time to complete the homologation process. A quick replacement of phthalate plasticisers with DOTP is hardly possible. At the same time, DOTP is widely used in Europe, and it would make sense to export our products there first. Once there is sufficient demand in Russia for higher quality products, SIBUR will redirect most of its supplies to the domestic market.

Denis Gerber, expert at SIBUR's Plastics, Elastomers and Organic Synthesis Division, said: "There is a clear shortage of plasticisers in the Russian market, with most of the supplies imported from Europe and Asia. SIBUR is the only Russian company with a sufficient resource base to produce a new type of plasticisers and enable a transition from importing to exporting these new products."



POLIEF produces terephthalic acid (TPA), another important DOTP component.

Staying aligned with the global market trends

Today, we are all surrounded by products made with the use of plasticisers. Those include construction and finishing materials, cables, chargers, plastic packaging and other everyday products.

THE DOTP FACILITY IS A KEY STEPPING STONE IN SIBUR'S STRATEGY TO TAP INTO THE DEEP PETROCHEMICAL CONVERSION MARKET.

The use of hazardous phthalates is banned or strictly restricted across the world. In Russia, application of toxic substances is also regulated, with the permissible concentration of phthalates spelled out in the GOST and Customs Union technical requirements. That said, the introduction of more environmentally friendly solutions has been long overdue in Russia. Experts believe that with a large local manufacturer of phthalate-free products in place the Russian government will be more inclined to enhance regulation in the industry in line with the global best practices.

Factors driving the market's transition to new plasticisers are not limited to environmental benefits. They also have to do with DOTP's chemical properties, which are superior to those of phthalate-containing products for a number of reasons:

- Extended end-product life due to the low volatility of the material.
- Low brittleness point resulting in the reduced dosage of expensive special plasticisers (DOA, DOS).
- Extended (from -40 C – +70 C to -45 C – +80 C) temperature range for the use of cable products and increased electrical resistivity of insulating materials.
- Reduced plastisol viscosity, enabling to cut the dosage of expensive viscous depressants or completely abandon them.



Modern eco-friendly solutions will be in high demand in healthcare and pharmaceuticals among other sectors.

In Russia, DOTP is widely used in manufacturing linoleums, cable compounds, vinyl wallpaper and a number of other sectors. Those are just a few of possible application areas for this safe and innovative product. The future looks bright for DOTP. Eco-friendly solutions are well positioned to gain a firm foothold in the industries with stringent health and safety requirements such as healthcare, pharmaceuticals, food packaging, and children's products.