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Argus Hydrocarbon Resins Annual 2018

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Summary

This report presents a global and regional view of the hydrocarbon resin business for 2017 and what we can expect in 2018. It covers feedstock supplier capability and competitive and co-product materials outlooks. This annual explains the key drivers behind greatly increased resin former supply availability, the regional economic factors that influence supply and demand and the importance of feeds and resins supplied from Asia-Pacific.

Late 2016 and 2017 have been marked by a large number of capacity addition announcements of hydrogenated hydrocarbon resins (HHCR). When added up, by 2020 we expect to almost double the current installed capacity. While some expansions were follow-ups to previously-announced but delayed projects, there are a number of notable new entries into the market. Combined with electrification of mobility and expected reduced demand growth for gasoline and a relatively stable crude, naphtha and gasoline prices, there is more incentive for producers to upgrade the value of the molecules which are currently being used in gasoline blending pools, and expand downstream.

The shale gas revolution in North America has made abundant and cheap gas available to the market, especially ethane. North American ethylene units began to switch to gas feeds in early 2008, and this trend continues to this day. Utilization of liquid feeds in the US set a new record low in early 2018. The reduction of liquid cracking directly correlates to a similar reduction in monomers used to produce tackifiers and isoprene (for SIS), especially in the US and Europe.

For years North America has had an abundance of raw materials for adhesives and sealants, tapes and labels, inks and others, based on a relatively heavy cracking slate. As a consequence of the shale exploration revolution, there has been a significant reduction in feed supply to make the resins and polymers. The significance of the reduction has been masked by various economic downturns, but in general had limited feedstock availability. By 2015, North America had increased its dependency on imports from Asia-Pacific and became a net importer of key monomers needed to produce resins and polymers. In addition, we are seeing a continued increase in resin and polymer imports into North America, mainly from Asia-Pacific.

The US shale exploration revolution also put pressure on the European market to remain competitive based on ethylene production costs. As crude prices stayed up for most of 2015, European ethylene crackers, especially coastal units, had to install facilities equipped to use cheaper feeds to remain relevant and competitive. Crude prices collapsed at the beginning of 2016 and then stabilized higher towards second half of the year, and so European ethylene crackers still have to “lighten up” to remain competitive with cheap feedstock basis in the US. Europe was dependent on imports for most of its C5 monomers and polymers even before this latest turn of events, so its monomer supply and demand balance continues to worsen. While Europe still relies on heavy cracking, the region is characterized by its lack of extraction capacity to produce monomers. Most of the feeds are not recovered and end up in the gasoline blending pool or are cracked. Like North America, Europe has excess polymer capacity and is dependent on imports of feeds and finished products.

Asia-Pacific and Brazil currently produce all surplus monomers that go into hydrocarbon resins production. These regions’ ethylene production is dependent on heavy cracking, which produces an abundance of necessary crude streams. Brazil has not invested in the downstream production. In China, streams are being recovered and purified at Chinese state-owned and private enterprises. In the past three years, producers in Taiwan and South Korea have built similar C5 isoprene extractive distillation (IED) units to upgrade their crude C5 streams into dicyclopentadiene (DCPD), piperylenes and isoprene.

The relationship between natural and synthetic rubber markets is essential to understanding why we have such a C5 monomer capacity overbuild. Nearly 60pc of the global rubber demand goes into tire manufacturing, which can be produced by using either natural or synthetic (isoprene, but primarily butadiene-based) rubber. Polyisoprene rubber can be used as a replacement for natural rubber in most applications, but installed polyisoprene capacity is 1/8 that of natural rubber demand. In 2011 there was a shortage of natural rubber and prices skyrocketed. At that time, Asia-Pacific producers decided to invest in isoprene extractive distillation units, which is the cheapest way to produce isoprene for polyisoprene production for tires and take advantage of a very large market short of a critical raw material. When natural rubber market prices collapsed, Asia-Pacific was left with an excess of C5 monomers. This was before three additional isoprene extraction facilities were built.

These three C5 molecules produced by the isoprene extractive distillation process are the monomers (incoming raw materials) for a large portion of the hydrocarbon resin (HCR) business and related polymers. Thus, the need for isoprene to produce polyisoprene has led to a surplus of isoprene, dicyclopentadiene and piperylenes on the global market after natural rubber prices collapsed to a point that polyisoprene rubber cannot compete. However, even with additional capacity, isoprene capacity is dwarfed by demand for natural rubber, and recovery of natural rubber prices could mean an instantaneous tightening of isoprene molecules as we saw in the winter of 2016-2017. But alas, no such recovery is expected as last growth natural rubber trees are just now starting to get tapped, extending overcapacity by at least four to five years.

In the meantime, 2017 saw tightening of DCPD supply due to an upturn in the demand in the UPR sector. However, with anticipated start-ups of new units in China as integrated producers turn their attention to downstream enterprises, supply of C5 molecules from Asia-Pacific is expected to be balanced to long and Asia -Pacific will continue to be the net exporter and supplier of C5 monomers and polymers for the forseeable future.

Under steady conditions, most of the markets where tackifying resins are used are heavily influenced by the current state of the economy and tend to grow at a premium to GDP. However, we are experiencing an unprecedented growth and market share shifts within the tackifying resin industry spurred by readily available feeds and hydrogenation technology and continued decline in Chinese gum rosin production. Increased demand in the tire applications segment may add yet another facet in the years ahead.

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Appendix C: Argus C5 and hydrocarbon resins expert

Vitaly Rogachevsky

Vitaly Rogachevsky, Vice President, C5 Monomers and Polymers has been with Argus Media since 2015 and has previous 27 years of experience in the adhesives business. He worked for H.B. Fuller Company, a $3bn global adhesive company. Vitaly served in multiple roles at H.B. Fuller, including 20 years sourcing raw materials for the hot melt business. As a part of his strategic procurement duties, his responsibilities exposed him to many raw material suppliers and developed his knowledge on upstream and downstream operations. Vitaly is an expert on adhesive raw materials, including waxes, technology, suppliers, product slates and downstream sales for formulated adhesives.

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Houston
2929 Allen Parkway
Suite 700
Houston, TX 77019
United States
Tel: + 1 713 968 0000

London
Lacon House
84 Theobald's Road
London
WC1X 8NL
Tel: + 44 20 7780 4200

Singapore
50 Raffles Place
10-01 Singapore Land Tower
Singapore
048623
Tel: + 65 6496 9966

Email: moreinfo@argusmedia.com
Web: www.argusmedia.com
Twitter: @argusmedia

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