

How polysulfide applications improve coating performance for Chinese producers

Dr. Christian Probst, Nouryon Polysulfide Business Development Manager and chemical expert in polysulfide applications, spoke to China Coatings Journal at China Coat 2018, explaining what Nouryon does and how polysulfide products can improve coating performance.



Dr. Christian Probst

China Coatings: Nouryon may be an unfamiliar name, but we are no stranger to AkzoNobel Specialty Chemicals, which Nouryon used to be called until it became its own independent company in October 2018. With a 400-year heritage, Nouryon is most definitely an emerging powerhouse in the industry, especially with the recent attention it has been getting regarding the application of its polysulfide and derivatives in coatings, and this is just further affirmation of its strength as a global leader in specialty chemicals.

Dr. Christian Probst, would you please tell us a bit about the background of its birth and strategy?

Dr. Christian Probst: While Nouryon was officially formed in October 9, 2018, after its separation from AkzoNobel, its origins go back much further. Our history is that of an intricate web of mergers, acquisitions, and divestments spanning four centuries and locations ranging from the Netherlands to Germany, Sweden, China, the US, and Brazil. Refining our portfolio over time, on which industries worldwide rely in the manufacture of everyday products such as paper, plastics, building materials, food, pharmaceuticals, and personal care items, we have been able to transform into the leader we are today.

Constant innovation is the gene for growth that drives us to stay ahead of the competition. Insisting on innovation-driven growth over the past 400 years, we have been working hard to find innovative and sustainable ways to benefit our customers and partners, because when they grow, we grow. As of now, we hold more than 5,000 patents and invest over €100 million per year in research and development. We believe that being open to the ideas and enthusiasm of outside collaborators will help our company achieve its maximum potential and lead the way to a more sustainable chemical industry.

At the same time, Nouryon is also a leader in and advocate for sustainability, promoting it through a combination of improved energy efficiency, the sustainable use of energy, and reduced carbon emissions. From reducing our environmental impact to developing greener products and processes, collaborating to develop new solutions and help the industry progress, sustainability is the cornerstone of our overall strategy to achieve long-term success.

China Coatings: You oversee polysulfide products, a vital part of Nouryon's portfolio. Given the current concern for high performance, how are these products applied in coatings, and what role do they play in improving coating performance?

Dr. Christian Probst: With the way things are today, one obvious trend is that coatings should develop high performance and functionality. As such, Nouryon's polysulfide products can improve the performance of various resin systems, thus strengthening our coatings' performance. The product series is manufactured in Germany and is positioned for high performance sealants, adhesives and functional coatings, which include G series polysulfide and EPS series polysulfide.

The Thioplast™ G series comprises SH-terminated liquid polysulfide polymers, which are able to offer excellent flexibility as well as chemical, impact, and water vapor resistance when it comes to different resin systems such as epoxy, isocyanate or acrylic resins, with it also improving adhesion and reducing curing shrinkage. It can be used in industrial anti-corrosion coatings, oil-resistant coatings, coatings for offshore wind turbines, submarine oil pipeline coatings, coatings for ship propellers, and many others. The low-viscous grades of the G-series such as Thioplast™ G4 can also serve as an alternative to polyols in two-component polyurethane systems to form coatings of improved chemical and solvent resistance.

Derived from the G series, the Thioplast™ EPS series is epoxy-terminated. It has good chemical compatibility with bisphenol A/F epoxy resins and phenolic epoxy resins and can form epoxy systems with unique self-repairing capabilities. Epoxy-modified EPS resins can be used as a multifunctional toughening agent in solvent-free coatings for excellent chemical resistance and high impact resistance, with it also able to improve resistance to aging and weatherability. Because of its very low water vapor and gas permeability, it is suitable for application to anti-corrosion coatings for steel and concrete. Epoxy-modified EPS resin has been specially used in the development of

high-performance coatings, and it is suitable for a thin coating system, its excellent adhesion helping to facilitate maintenance. Put simply, it can be widely used in flexible coatings for concrete, steel, and wood substrates; surface coatings exposed to corrosive chemicals; and other fields such as floor coatings, primer coatings e.g. for aircrafts or coatings for ship propellers.

China Coatings: In terms of green development, how can polysulfide and its derivatives benefit the environment? What are their application prospects? What is your vision and expectation for their development in the Chinese market?

Dr. Christian Probst: When thinking in terms of the entire life cycle, polysulfide and its derivatives are green. Their water-based manufacturing process, first of all, is environmental-friendly. The products are also green and in compliance with Germany's strict environmental standards.

Today, China's coating industry is moving toward being green and has its eyes set on high performance and functionality, which is in line with our expectations. We believe that polysulfide and its derivatives will help coating products achieve higher performances, and we hope that good cost-effectiveness will answer the needs of the market.

With the implementation of the Made in China 2025 strategy, I am confident that the demand for high-performance coatings will expand, and there will consequently be more opportunities for polysulfide and its derivatives to enter the Chinese market. As the only company offering such a portfolio, Nouryon is poised to grow with our customers. Sharing our technology, expertise and services, we will help Chinese manufacturers strive for excellence and improve customer satisfaction, and we will provide our best possible contribution to support Made in China 2025.

As we adhere to our commitment to innovation and sustainability, I would like to end by saying that Nouryon is and will be your partner in essential chemistry for a sustainable future.