In recent years, the Dutch company Royal DSM has gained recognition for its sustainability efforts, featuring in Fortune Magazine’s list of ‘Companies that are changing the world’ and topping the Dow Jones Sustainability World Index. Indeed, DSM – which is active in health, nutrition and sustainable living solutions – sees sustainability not only as an opportunity but as a long-term business focus. In March 2019, DSM launched its Uralac® EasyCure resin, P3225, and in April 2019 its low-bake matte superdurable tin-free dry blend, P3233/P3238, for heavy machinery or architectural applications, thereby completing the EasyCure portfolio of powder coating resins for low-temperature and/or fast-cure powder coating applications.

In today’s increasingly competitive coatings industry, there is a growing need for innovative solutions that both deliver final-product performance benefits and make manufacturing quicker and more efficient. Meanwhile, the coatings industry and society at large are increasingly concerned about the environmental impact of our living behaviours and, more than ever, innovative solutions that enable lower carbon footprints offer a competitive commercial edge.

At DSM, we have been pioneers in developing sustainable polyester resins for powder coating applications since the 1950s. Through our ongoing commitment to resin quality, consistency and sustainable growth, we have become the world’s leading supplier of high-quality, consistent powder coating polyester resins. Our Uralac EasyCure portfolio of resins, in particular, enables a lower carbon footprint and can be cured much faster or at lower temperatures than traditional powder coatings, all without compromising on the aesthetic or functional performance.

Meeting the Market’s Demand

Above all, this family of polyester resins has been developed over the past decade to meet the growing market demand. In China, for example, the aluminium profile industry alone accounts for between 140 and 160k tonnes of powder coating resins, while the truck, automotive and agricultural, construction and earth moving equipment (ACE) market for powder coating resins stands at between 35k and 50k tonnes. Low-bake powder coating resins result in reduced curing cycles with lower temperatures and/or faster curing, leading to lower energy costs and improved line efficiency.

Although low-temperature curing powder coating resin technology has been commercially available since the 1990s, it typically has two major drawbacks: poor appearance and flow, as well as blooming. To address these issues, DSM leveraged its deep experience in polymer technology to develop the innovative Uralac EasyCure platform, with the first resins reaching the market in 2010.

Since then, the Uralac EasyCure portfolio has grown and now extends to a wide range of application areas and specialised markets. From industrial, architectural, outdoor and heavy machine high- and low-gloss applications to superdurable, high-gloss and matte coating applications, the Uralac EasyCure portfolio now covers all of the major areas of demand within the coatings industry. As such, coating formulators and applicators can now implement aligned processes that avoid the need to make continued adjustments or complicated equipment changeovers.

A Superior Functional Performance

Unlike early low-cure powder coating resin technology, Uralac EasyCure has become established as a competitive and sustainable alternative because it delivers excellent aesthetic and functional performance across a wide range of application areas. Uralac EasyCure polyester resins offer a unique combination of coating benefits, delivering good appearance, long-term outdoor durability, non-blooming, high gloss consistency and reliable storage stability.

In line with the market demand for mass customisation, Uralac EasyCure resin systems also provide the opportunity to differentiate finished products by offering superior aesthetic qualities in many colours, gloss levels, textures and finishes. What’s more, coatings made with Uralac EasyCure resin systems can be applied across a
range of shapes, including edges, hollows and contours, allowing imaginative new substrate designs and semi-assemblies that cannot easily be finished with liquid coatings.

## FAST, EFFICIENT PROCESSING

The proven benefits of the EasyCure family of resins extend beyond those enjoyed by end customers to the advantages appreciated by parties further back in the value chain. In particular, EasyCure resins offer good news for metal coating producers, whose customers include heavy machinery manufacturers. One of the common bottlenecks in heavy machinery production is the curing process after components have been coated or painted. Traditionally, a larger oven or more ovens have been the only solutions to these bottlenecks when powder coatings are used but these solutions are expensive and are often unworkable due to lack of space in the factory.

Thanks to the unique chemistry behind the EasyCure platform, heavy machinery manufacturers can keep the same oven technology but change the type of powder coating to radically reduce curing times. Specifically, these resins can reduce curing times by up to 50% – from 10-12min to just 5-6min. In this way, manufacturers can significantly increase production output and reduce bottlenecks on the factory floor.

## REDUCING ENERGY USAGE BY UP TO 45%

Alternatively, thanks to EasyCure technology, heavy machinery manufacturers can maintain the same curing time and lower the oven temperature, which can save up to 45% on gas usage and energy costs. While typical curing for powder coatings takes place at 180/200°C for 12min, it is now possible to cure the coatings at just 160°C for 12min. Because of the exponential reduction in energy required to attain higher temperatures in curing ovens, these lower curing temperatures enable a 45% reduction in energy consumption.

As well as delivering a welcome cost reduction, this delivers significant environmental benefits. At a time when regulatory authorities in the Asia Pacific region are increasingly scrutinising the environmental impact of manufacturing – with China, for example, enacting its Environmental Protection Law in 2017 – being able to reduce energy consumption and, therefore, one’s carbon footprint, is a key consideration for manufacturers looking to future-proof their business.

## NEW BUSINESS OPPORTUNITIES

Indeed, the lower environmental impact of coatings enabled by EasyCure resins is opening up a range of new business opportunities for coatings manufacturers. Compared to coatings created with solvent- or water-based resins, EasyCure resins are less toxic, contain fewer volatile organic compounds (VOCs), and have no problem meeting prescribed ISO guidelines. As such, coating manufacturers who adopt the new low bake/faster-cure resins today will be in prime position to capitalise on future legislation tomorrow. Specifically, for manufacturers involved in the coating of heavy-metal substrates in the ACE and truck markets, the low-bake EasyCure technology enables the replacement of solventborne coatings by powder coating, which opens up a new business area for the powder coating industry as well.

In addition, the lower curing temperatures and faster curing times facilitated by the EasyCure resin technology open the door for powder coating of an increasing range of metal substrates, such as in the aluminium profile and heavy machinery industries in China. To be specific, the extra mechanical stresses of longer and higher-temperature curing processes have meant that particularly delicate or thinner substrates can now be effectively and efficiently powder coated, instead of being coated by conventional liquid coatings, for example.

## FURTHER OPTIMISATION ON THE HORIZON

Moving forward, DSM will continue to develop its EasyCure platform of low-bake and/or fast-curing resins in line with market trends and the demands of its customers. However, rather than launching new resin products within this platform, our development efforts will focus on further optimising the technical qualities of these resins, as well as delivering more customisable solutions. In short, with the coatings industry under increasing pressure to deliver sustainable and efficient solutions that improve performance and reduce the impact on the environment, particularly in the Asia Pacific region, the demand for technologies like EasyCure will continue to grow in the foreseeable future. At DSM, we are excited to be building our commercial strategy around sustainability and helping to shape a more sustainable world.

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