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VESTAMID® turns 50: Polyamide 12 by Evonik continues to blaze trails for innovative applications

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At the K' 63 plastics tradeshow, the former Chemische Werke Hüls AG of Düsseldorf introduced polyamide 12, which it called VESTAMID®, to a world audience. The material had been manufactured on a laboratory scale by means of a proprietary process. During the year that followed, the predecessor company of Essen, Germany-based Evonik Industries sold eleven metric tons of the material, and the first reactor with an annual capacity of 1,200 metric tons of polyamide 12 became operational in 1966. Within just a few years, demand for the material grew so rapidly that several capacity expansions were required. The first commercial facility for the continuous production of VESTAMID® took up operations in 2000. Evonik has now started basic planning in Singapore on a second plant, which is to be fully back-integrated to butadiene and will possibly come on stream in 2016.

Among the first applications for the high-quality plastic were pipes, films, and coatings. Polyamide 12 coating powder was renamed VESTOSINT® in later years to emphasize the distinction. Over the years Evonik has consistently adapted VESTAMID® to market requirements to create customized solutions for an application spectrum that is so broad that it would be hard to guess it is all based on the same plastic material.

From automotive tubing to offshore piping

While automotive fuel lines made of steel and rubber were initially replaced by simple mono-tubing, which in part was not made entirely of polyamide, the application spectrum changed permanently over the course of the years, as a consequence of stricter legal regulations too. Today, VESTAMID® by Evonik is the most frequently used polyamide 12 for automotive line systems,

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frequently as part of specially developed multi-layer line systems. This development, however, did not end with small-diameter lines. Evonik transferred its extensive expertise in the development of extrusion molding compounds to compounds for thick-walled piping systems, which are being increasingly used more often in the oil and gas industry because of their advantages over existing systems. To give an example, the material has been used at pressures of up to 18 bar in over 400 offshore pipes and gas pipelines that can be installed without a sand bed.

From sausage casings to solar cells

The tubular blown films made from VESTAMID® in early years were used as a replacement for natural casings for certain sausage and ham wrappings, since polyamide 12 has the lowest water absorption rate of all polyamides and the meats were processed in water vapor. This application was eventually replaced when composite films with a barrier layer came on the market. There are continued uses of VESTAMID® as film however, for example, on the backside of photovoltaic modules. In this instance, it represents an easily recycled alternative to other materials that offers environmentally friendly, fluorine-free protection from moisture and other external influences for solar cells and circuit boards. Due to its high surface reflectiveness, VESTAMID® significantly increases the effectiveness of the modules.

VESTAMID® polyamide 12 is also used in many other high-value, innovative products in automotive applications, electrical and electronic items, household appliances, sports equipment, and manufacturing.

Caption:

Base material VESTAMID® polyamide 12: Sausage casing 50 years ago and modern plastic lining in offshore pipes



Company information

Evonik, the creative industrial group from Germany, is one of the world leaders in specialty chemicals. Profitable growth and a sustained increase in the value of the company form the heart of Evonik's corporate strategy. Its activities focus on the key megatrends health, nutrition, resource efficiency and globalization. Evonik benefits specifically from its innovative prowess and integrated technology platforms.

Evonik is active in over 100 countries around the world. In fiscal 2012 more than 33,000 employees generated sales of around €13.4 billion and an operating profit (adjusted EBITDA) of about €2.4 billion (excluding Real Estate in both cases).

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