Evonik focuses on additives for plastics and rubber recycling

- In testing: Olefin–based additive for recycling packaging films
- In development: Alkoxides break PET bottles down into monomers
- In the marketplace: Process additive turns old tires into rugged work material

Essen, Germany. Evonik is engaged in research and development work to come up with solutions for recycling plastics and rubber. As a specialty chemicals company, the Group can count on extensive know-how in the area of specialties and additives to support this effort. While developers are working on solutions for mechanical and chemical recycling of plastics, the company portfolio already includes a process additive for efficiently processing rubber waste, such as used tires, to generate a rugged work material.

Mechanical recycling involves separating and cleaning synthetic materials to directly reuse them as polymers. The challenge is, however, that this process affects the quality of the recycled material. Evonik is currently working with a large disposal company to optimize the recycling of polyethylene, which is processed in large quantities, especially in packaging films. The Evonik additive Vestoplast®, an amorphous polyolefin that is primarily used in hot–melt adhesives, may be the key to making that possible. It can specifically improve the impact strength or flow properties of polyethylene, which may be helpful for reusing recycled plastic, for example in injection molding.

Another problem involves unpleasant odors, both in the recycling process and in products made from recycled substances. The odor–absorbing products of the TEGO Sorb® brand may offer a solution for neutralizing such smells.

In contrast to mechanical approaches, chemical recycling involves breaking plastics down into their individual components, meaning
that polymers are turned back into monomers. These monomers can then be converted to polymers of the desired quality to close the materials cycle. Evonik is currently examining the feasibility of solvolysis based on alkoxides for PET plastics. The process breaks these materials down into the two monomers ethylene glycol and dimethyl terephthalate. PET plastics are used, for example, in beverage bottles. Evonik is already offering the alkoxides that would enable this chemical recycling as part of its product range for manufacturing biodiesel.

Evonik's VESTENAMER® process additive is successfully established in the market. It allows for the efficient processing of rubber waste, for example from used tires, into a rugged work material. VESTENAMER®, a polyoctenamer, improves the flowability of the rubber compound and optimizes the crosslink density between the rubber particles. This makes rubber waste much easier to process and gives the recycled materials several desirable mechanical properties. Product applications include road construction, but also stable mats for farm animals.

Company information

Evonik is one of the world leaders in specialty chemicals. The focus on more specialty businesses, customer-oriented innovative prowess and a trustful and performance-oriented corporate culture form the heart of Evonik’s corporate strategy. They are the lever for profitable growth and a sustained increase in the value of the company. Evonik benefits specifically from its customer proximity and leading market positions. Evonik is active in over 100 countries around the world. In fiscal 2018, the enterprise with more than 32,000 employees generated sales of €13.3 billion and an operating profit (adjusted EBITDA) of €2.15 billion from continuing operations.

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