

Innovative manufacturing process simplifies dispersion of AEROSIL® silicas

- Novel process for production of fumed silicas
- New AEROSIL® product group is easier to disperse
- Additional production plant increases capacities

Essen, Germany. Evonik's Coating Additives business line has used an innovative process technology at its Hanau site to develop four new fumed silicas from the AEROSIL® family that are much easier to disperse: The new product group consisting of AEROSIL® E 805, AEROSIL® E 812, AEROSIL® E 972 and AEROSIL® E 9200 is such that formulators can omit the time-consuming and costly grinding step, for example with a bead mill, when incorporating them into paints or coatings.

All the proven properties of the corresponding standard additives AEROSIL® R 805, AEROSIL® R 812, AEROSIL® R 972 and AEROSIL® R 9200 are retained.

The specialty chemicals group's four new easy-to-disperse (E2D) products – like their alternatives in the standard range – are suitable for rheology control in both pigmented and clear coating formulations. The main applications are wood, plastic, automotive, and general industrial coatings. AEROSIL® E 972 is more universally applicable, while the other silicas are intended for specific applications – for example, AEROSIL® E 812 and AEROSIL® E 805 are suitable for automotive OEM clear coats, and AEROSIL® E 9200 is used primarily for special scratch resistance.

New AEROSIL® E additives simplify complex production process

The rheological properties of both product groups are the same – with considerably simplified dispersion of the new AEROSIL® E products. To manufacture them, the company is already producing commercial quantities at the Hanau site and has started construction of a new production plant for fumed silica in Rheinfelden. This will significantly increase capacities to meet the high level of market interest.

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The dispersion process for rheological additives – such as fumed silica – used to be complex and time-consuming. Paint manufacturers had to grind the silicas in a long and intensive grinding step using a bead mill to ensure that they were homogeneously dispersed in the formulation and could thus develop their full rheological potential.

Now, if the formulator uses the new AEROSIL® E products, the use of an energy-intensive bead mill is no longer necessary. "We have relieved our customers of this additional work," says Maximilian Morin, head of the Industrial & Transportation Coatings market segment. "This is because the new silicas can be dispersed in just a single grinding step using a dissolver." This proves to be a clear advantage, especially in the production of clear coatings.

Subsequent control of rheological coating properties

This easier dispersibility of additives reduces processing times, lowers energy consumption in production, and cuts the amount of manpower and materials needed for machine maintenance and cleaning. Processes thus become more efficient and sustainable. Another advantage is that the formulator can also add the new E2D products to the finished coating at a later stage. "This allows the formulator to control and adjust the rheology at any time," says Maximilian Cornelius, Head of Application Technology AEROSIL®. "This is unique."

He added that the newly developed manufacturing process should not be limited to these four new AEROSIL® E products. "Therefore, our goal is to use the innovative technology to offer customers other additives that are easier to disperse in the future."

Technical, regulatory, and safety data sheets for AEROSIL® E 805, AEROSIL® E 812, AEROSIL® E 972 and AEROSIL® E 9200 can be found at www.coating-additives.com.

Evonik is one of the world's leading manufacturers of silica. In addition to the precipitated silica-based matting agents under the brand name ACEMATT®, the precipitated silicas ULTRASIL®, SIPERNAT®, ZEODENT® and SPHERILEX®, Evonik also produces

fumed silica AEROSIL® and other fumed metal oxides under the brand name AEROXIDE®. In total, the company has a global capacity of around 1,000,000 metric tons per year for all silicas.

Company information

Evonik is one of the world leaders in specialty chemicals. The company is active in more than 100 countries around the world and generated sales of €12.2 billion and an operating profit (adjusted EBITDA) of €1.91 billion in 2020. Evonik goes far beyond chemistry to create innovative, profitable and sustainable solutions for customers. About 33,000 employees work together for a common purpose: We want to improve life today and tomorrow.

About Specialty Additives

The Specialty Additives division combines the businesses of versatile additives and high-performance crosslinkers. They make end products more valuable, more durable, save more energy and simply better. As formulation experts in fast growing markets such as coatings, mobility, infrastructure and consumer goods, Specialty Additives combines a small amount with a big effect. With its 3,700 employees the division generated sales of €3.23 billion in 2020.

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