

70 years of ULTRASIL® precipitated silica from Evonik – Pioneering work that impacts the future

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- Invented in 1951, precipitated silica has become an indispensable additive in the tire and rubber industry
- ULTRASIL® VN 3 active filler has enabled the development of modern high-performance tires
- Evonik has expanded production capacity for ULTRASIL® in all regions of the world over a five-year period

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Essen. ULTRASIL® VN 3 active filler, invented by one of Evonik's predecessors, has enabled the continuous improvement of tires and mechanical rubber goods for 70 years. "This additive has been essential in the development of super-wet-grip winter tires to increase safety, as well as for "green tires" with lower rolling resistance to reduce fuel consumption and therefore CO₂ emissions", says Claudine Mollenkopf, Senior Vice President Silica at Evonik.

On the occasion of ULTRASIL®'s 70th anniversary, Evonik is inviting customers and partners to a digital journey both back in time and into the future: The [anniversary website](#) demonstrates how – following the decisive breakthrough in the production of precipitated silica – a filler brand was created that has become irreplaceable in many rubber goods, has put modern sports shoes on track, and has set milestones in the development of high-performance tires. An outlook reveals how ULTRASIL® can continue to make an important contribution to sustainable mobility in the future.

Invention of "white carbon black"

Since the 1940s, research had been conducted on silica as a substitute for carbon black as an active filler for tires. The success story began in March 1951 in Wesseling (Germany), when chemist Dr. Hans Verbeek (1908 – 1996) and his laboratory assistant, Peter Nauroth, created precipitated silica for the first time. This was the invention of "white carbon black".

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From 1953 on, the product was sold as ULTRASIL® VN 3, quickly becoming a substitute for filler carbon black and enabling the creation of colored rubber compounds. The granulated version, ULTRASIL® VN 3 GR, is still the most widely used silica in the tire and rubber industry worldwide.

Revolutionary impact on tire performance

In the 1970s, ULTRASIL® revolutionized tire production in tandem with silanes as a coupling agent. Silanes enable hydrophilic silica to be chemically coupled to the rubber polymer. Evonik's Silica/Silane system is the benchmark for passenger car tire tread performance, particularly when it comes to improving the wet traction behavior and reducing the rolling resistance. Using silica as a filler in place of carbon black can lower fuel consumption – and therefore also CO₂ emissions – by up to eight percent.

Even today, Evonik is the only chemical company in the world that manufactures both silica and silanes, which are still the key ingredients for sustainable “green tires”, and which has the required research expertise to continue developing these products so that they are ideally matched to each other.

Further sites opened and capacities increased

Over the last 70 years, the ULTRASIL® family has grown continuously. Under this brand name, Evonik offers a large portfolio of highly dispersible silica with high and low surface areas that are customized for a broad spectrum of applications.

ULTRASIL® is highly valued by the tire industry for use in the production of high-performance tires. It also serves as a reinforcing filler for industrial rubber goods that require enhanced performance, such as timing or conveyor belts and seals, as well as for everyday items such as shoe soles and bicycle tires.

ULTRASIL® is currently produced in 10 sites on three continents – providing a global production platform combined with regional

customer proximity. Wesseling, where Dr. Hans Verbeek and Peter Nauroth invented ULTRASIL® VN 3 70 years ago, is now one of the world's largest production sites for precipitated silica. Over the past five years, Evonik has increased the production capacity for ULTRASIL® in all regions of the world.

During this period, the silica specialists have developed further innovative ULTRASIL® grades which are tailored to the technological progress and future challenges in the tire and rubber industries.

The latest product development is ULTRASIL® 4000 GR, the first low surface area silica (LSA silica) with high dispersibility. The unique product design enables very high filling levels, which allow the production of winter tires that have even better traction in wet, muddy and snowy conditions, for example.

For the challenges of the future

“The silica filler loading will continue to increase. In May 2021, a new EU tire label was launched which has had the effect of increasing competition amongst tire manufacturers, as every one of them is striving to attain the best ratings. And countries outside the EU will also follow soon,” predicts Bernhard Schäfer, senior Vice President for Rubber Silica at Evonik.

Tires with a low rolling resistance will become even more important in the future of sustainable mobility, as they can help extend the range of electric cars. “A combination of ULTRASIL® active filler and the Si 363™ silane can reduce the rolling resistance by up to 35 percent and significantly improve wet grip, all while retaining the same good wear values”, says Roland Krafczyk, Vice President Global Applied Technology Tire & Rubber at Evonik.

Sustainability plays an important role in Evonik’s future developments. One target is to improve the abrasion resistance of tires, which helps extend their life and saves valuable resources. In addition to this, alternative and sustainable raw materials, combined with green energy sources are under evaluation at

Evonik with the intent of further reducing the carbon footprint of our products.

The potential of ULTRASIL® is therefore far from being exhausted. Evonik's silica business line is already researching further innovative silica/silane products for the next milestones in tire development – all in the spirit of our claim “We will keep our customers running with our products. Whatever it takes.”

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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 Smart Materials

The Smart Materials division includes businesses with innovative materials that enable resource-saving solutions and replace conventional materials. They are the smart answer to the major challenges of our time: environment, energy efficiency, urbanization, mobility and health. The Smart Materials division generated sales of €3.24 billion in 2020 with about 7,900 employees.

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