



DIN SPEC 25714

Basalt fibers – Technical delivery conditions

DIN SPEC 25714
CASE STUDY

Uniform test methods for materials of mineral origin

The Background

Basalt fibers belong to the category of high-performance fibers and are well-suited for the production of textiles or as reinforcing fibers for use with plastics and hydraulic dies. These fibers are recovered from volcanic rock basalt. Because basalt fibers are a naturally occurring raw material, the mechanical and thermal properties of the fibers can fluctuate contingent upon geology. However, to use them in industrial applications, reliable statements on the fibers' material properties are necessary. Up until now, no testing methods had been specified for this purpose. Rather, most manufacturers have fallen back on various testing methods for other high-performance fibers such as glass or carbon fibers. As a result, there has not yet been any consistent way of determining the performance of such fibers and thus establishing performance profiles for fibers of different geological origin and irrespective of manufacturer in a realistic, reproducible and repeatable manner.

The DIN SPEC

The DIN SPEC 25714 defines for the first time a standardized, uniform and reproducible method of determining the performance of high-performance fibers of natural mineral origin. It specifies which test methods are to be applied for which material property. In addition, it defines the designation of so-called "rovings", or fiber bundles, and specifies test criteria and tolerances, along with requirements for the marking, packaging and storage of basalt fibers. This DIN SPEC ensures a uniform description of the material as well as the transparency and reproducibility of the results of material tests for

users. In doing so, the DIN SPEC 25714 uses existing methods for carbon and glass fibers.

The Value

By unifying both the test methods and the characteristic values determined by them, the DIN SPEC 25714 increases process safety and reliability and ensures a consistent, comparable quality for manufacturers, designers and consumers. In the future, it will also be possible to compare basalt fibers to other high-performance fibers, such as glass and carbon. Due to its comprehensible and transparent determination of characteristic values, the DIN SPEC 25714 creates the foundation for the success of basalt fibers on the market. Furthermore, it allows users and other interested parties to determine essential fiber properties, their functions and their qualities.

The Process

The DIN SPEC 25714 has been developed according to the PAS (Publicly Available Specification) procedure. The Steinbeis Transfer Center Cetex Processing Machines for Technical Textiles initiated this DIN SPEC and developed it in collaboration with international experts from industry and research. These include representatives from Deutsche Basalt Faser GmbH (DBF), Jilin Tongxin Basalt Technology Co. Ltd in China, Sächsische Textilforschungsinstitut e.V., BASALTEX NV in Belgium, IBRH Ingenieurbüro Rüdiger Herr, Fraunhofer-Institut für Werkzeugmaschinen und Umformtechnik (IWU) and Institut für Strukturleichtbau of TU Chemnitz. "We worked together with leading experts in the sector in order to bring high-value basalt fibers



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of consistent quality to the market”, said Sebastian Nendel, Head of the Steinbeis Transfer Center Cetex. “DIN SPEC 25714 has created a solid foundation to bolster the acceptance of this material on the market and make it more attractive to potential users.”

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