Concrix®

The new Bi-component fibre Concrix®

- strong together
- made for concrete

Initial position

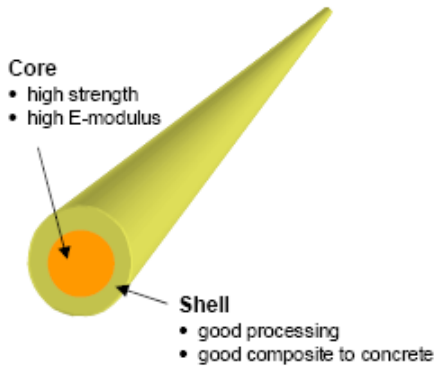
Both national and international regulations and demands which are made to fibrous concrete increase constantly. The development therefore points clearly in the direction of new synthetic fibres which show analogous or better performance features as steel fibres and contains in addition known advantages of synthetic fibre concrete.

Problem definition

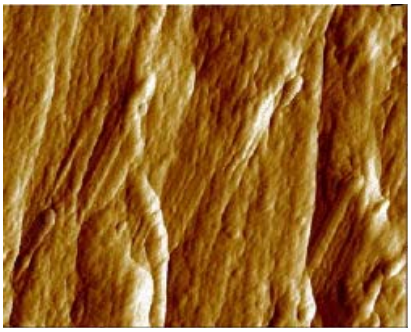
Synthetic fibre concrete shall provably have a broad power spectrum. This includes a high flexural strength, a guaranteed post-crack behaviour bearing capacity as well as excellent processing properties. These benefits will be achieved through optimum fibre dosages to fulfill quality and efficiency requirements.

Product description

All these demands were considered in the development of Concrix®. The result is a Bi-component synthetic macrofibre, based on polyolefins (∅ ≥ 0.30 mm), consisting of core and shell. Concrix® has a high tensile strength and offers simultaneous a high compound strength to the concrete matrix. The core material has, thanks to the high E-modulus, excellent tensile strength properties. The shell material, due to the structuring of the surface and other surface activating additives, assures the desired composite properties to the cement/concrete.



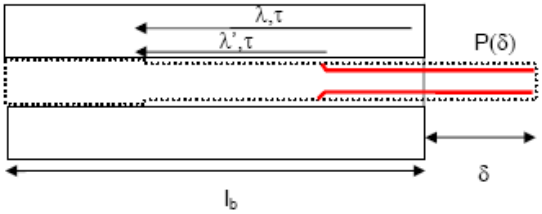
The composition of the fibre surface was developed like this to allow an optimal compound to the concrete matrix, but no disadvantage results by the surface structure in the workability of the Concrix®-fibre concrete. In a large number of experiments, the rheology of fibre concrete with fibre dosages up to 2% volume carried out without any problems.



Features of Concrix®

Compund strength to the concrete

The optimum fibre length in dependence on the surface structure has been created in a variety of tests. The obtained fibre matrix/compound strength of Concrix® surpasses the one of polyolefin-based competitors' products around a multiple one (factor between 8 and 10).

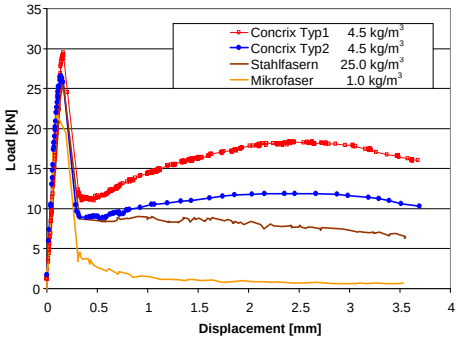


Post-crack behaviour

By adding Concrix® arise a significant improvement of the post-crack behaviour of concrete which exceeds those of steel fibre concrete and which fulfills the international requirements requested for shotcrete. The excellent values with respect to the post-crack behaviour of Concrix® fibre concrete enable the broad and economic use in the tunnel respectively mining area and offer a real alternative to high charged steel fibre concrete.

Comparison with competing products

Concrix® is also considerably superior in direct comparison with other makro synthetic fibres available on the market. Already fibre concretes with a dosage rate of 4,5 kg Concrix® per m^3 surpass markedly the capacity of 30 kg steel fibres in the crucial issues.

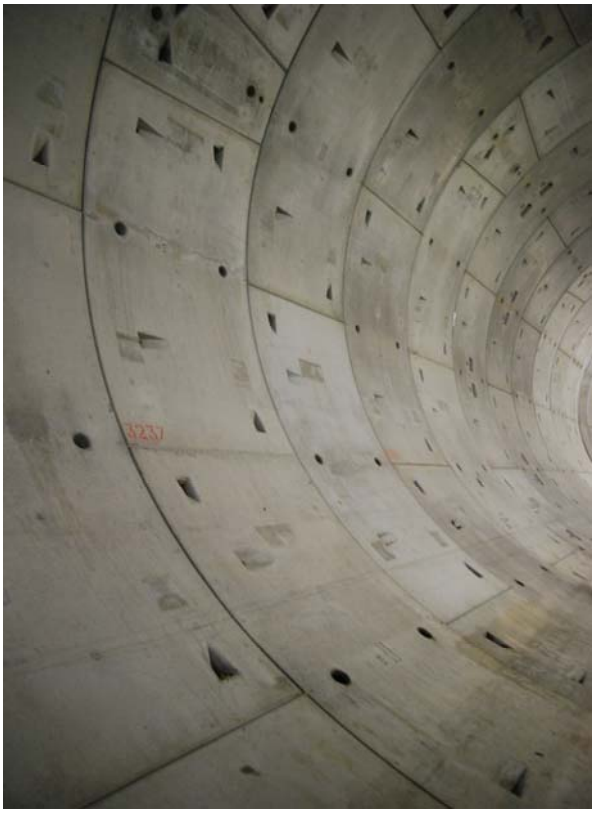


Further advantages of Concrix®

Concrix®-fibres are alkali-resistant, don't rust and are flexibel, prevents (in opposite to steel-fibres) risk of injury and preserve equipment (mixer, pump etc.) during processing. By the low density result smaller dosage weights (transport costs) and regardless a very high number of individual fibres, leading to small spreading in the fibre concrete properties. The bundle form of Concrix® (image) allows a simple, accurate and homogenous fibre dosage (no formation of pockets!)

Field of application of Concrix®

- Shotcrete (tunnel, mining etc.)
- Prefabricated parts (tubbing, formed parts etc.)
- Joint reduced industrial floors
- Foundation plates and walls
- Trafficable areas (streets, airport etc.)
- Port facilities



Bibliography:

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