



**KLOKNER  
INSTITUTE  
CTU IN PRAGUE**

## Abstract

Textile Reinforced Concrete is a relative new, very attractive and especially highly load-bearing cement-based composite material revealed in the last decade. It is consisted of two main components. The components are mainly the previous mentioned cement composite often of the kind of ultra-high performance concrete (always fine-grained concrete with  $D_{max} \leq 4$  mm) and a textile reinforcement (glass, carbon, basalt etc.) that is sometimes also called a non-conventional reinforcement. The result of the joining of these two components is a material that provides high compressive and bending strength, ductility, tensile strength, absorbs a big amount of energy and is enormously resistant to aggressive and degradation impacts of the environment even in the case of very thin and subtile products. With regard to the possibilities of the production of textiles that enables to wave also geometrically complicated woven fabrics (2D or 3D) and the properties of the concrete matrix, it is possible to manufacture various elements, even of unusual or complex shapes. However, there is no set of standards managing the production of elements or structures made from TRC in these days.

The dissertation thesis describes a TRC composite from the point of view of its partial components, it means properties such as compressive strenght, tensile strenght, tensile strenght in bending, modulus od elasticity, resistance to aggressive environment but also from the point of view of technological, manufactural and utility properties.