

Mechanical Properties of Fibre Reinforced High Performance Concrete

Authors : Laura Dembovska, Diana Bajare, Vitalijs Lusi, Genadijs Sahmenko, Aleksandrs Korjakins

Abstract : This study focused on the mechanical properties of the fibre reinforced High Performance Concrete. The most important benefits of addition of fibres to the concrete mix are the hindrance of the development of microcracks, the delay of the propagation of microcracks to macroscopic cracks and the better ductility after microcracks have been occurred. This work presents an extensive comparative experimental study on six different types of fibres (alkali resistant glass, polyvinyl alcohol fibres, polypropylene fibres and carbon fibres) with the same binding High Performance Concrete matrix. The purpose was to assess the influence of the type of fibre on the mechanical properties of Fibre Reinforced High Performance Concrete. Therefore, in this study three main objectives have been chosen: 1) analyze the structure of the bulk cementitious matrix, 2) determine the influence of fibres and distribution in the matrix on the mechanical properties of fibre reinforced High Performance Concrete and 3) characterize the microstructure of the fibre-matrix interface. Acknowledgement: This study was partially funded by European Regional Development Fund project Nr.1.1.1.1/16/A/007 "A New Concept for Sustainable and Nearly Zero-Energy Buildings" and COST Action TU1404 Conference grants project.

Keywords : high performance concrete, fibres, mechanical properties, microstructure

Conference Title : ICMT 2018 : International Conference on Materials and Testing

Conference Location : Kyoto, Japan

Conference Dates : April 26-27, 2018