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Reuse of Refractory Brick Wastes (RBW) as a Supplementary Cementitious Materials in a High Performance Fiber-Reinforced Concrete

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Abstract : The main purpose of this study is to evaluate the reuse of refractory brick wastes (RBW) as a supplementary cementitious materials (by a total replacement of silica fume) to produce a high performance fiber-reinforced concrete (HPFRC). This work presents an experimental study on the formulation and physico-mechanical characterization of ultra high performance fiber reinforced concretes based on three types of refractory brick wastes. These have been retrieved from the manufacturing unit of float glass MFG (Mediterranean Float Glass) after their use in the oven basin (ie d. they are considered waste unit). Three compositions of concrete (HPFRC) were established based on three types of refractory brick wastes (finely crushed), with the dosage of each type of bricks is kept constant, similar the dosage of silica fume used for the control concrete. While all the other components and the water/binder ratio are maintained constant with the same quantity of the superplasticizer. The performance of HPFRC, were evaluated by determining the essential characteristics of fresh and hardened concrete.

Keywords : refractory bricks, concrete, fiber, fluidity, compressive strength, tensile strength
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