

Title: The effect of superplasticisers on the workability and compressive strength of concrete made with fine recycled concrete aggregates

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Abstract: The reuse of structural concrete elements to produce new concrete aggregates is accepted as an alternative to dumping them and is favourable to the sustainability of natural reserves. Even though the construction sector is familiar with the use of coarse recycled concrete aggregates, the recycled concrete fines are classified as less noble resources. This research sets out to limit the disadvantages associated with the performance of concrete containing fine recycled concrete aggregates through the use of superplasticisers. Two types of latest generation superplasticisers were used that differ in terms of water reduction capacity and robustness, and the workability, density and compressive strength of each of the compositions analysed were then compared: a reference concrete, with no plasticisers, and concrete mixes with the superplasticisers. For each concrete family mixes with 0%, 10%, 30%, 50% and 100% replacement ratios of fine natural aggregates (FNA) by fine recycled concrete aggregates (FRA) were analysed. Concrete with incorporation of recycled aggregates was found to have poorer relative performance. The mechanical performance of concrete with recycled aggregates and superplasticisers was generally superior to that of the reference concrete with no admixtures and of conventional concrete with lower performance superplasticisers. (C) 2011 Elsevier Ltd. All rights reserved.

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