Evaluation of the mechanical properties of cements with fillers derived from the CO2 reduction of cement plants

Authors
I Cosentino, L Restuccia, GA Ferro, F Liendo, F Deorsola, S Bensaid

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Description
This work introduces a novel method for the development of CO_2 recovery systems derived from the production process of cement in order to obtain $CaCO_3$ nanofiller in cement-based composites. Research was carried out in collaboration between the Department of Applied Science and Technology (DISAT) and the Department of Structural, Construction and Geotechnical Engineering (DISEG) of Politecnico di Torino. The objective of this method was dual. Firstly, it aimed to obtain a precipitated calcium carbonate - nano$CaCO_3$ - with a high degree of purity. Secondly, it aimed to optimize the characteristics of these nanoparticles e.g. additional percentages, morphology, particle size distribution or crystal phase, according to their use in cement-based composites. The synthesized nano$CaCO_3$ particles were subsequently added into the cementitious composites in different percentages according to the weight of the …