

Elaboration and Characterization of Self-Compacting Mortar Based Biopolymer

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Abstract : Lignin is a molecule derived from wood and also generated as waste from the paper industry. With a view to its valorization and protection of the environment, we are interested in its use as a superplasticizer-type adjuvant in mortars and concretes to improve their mechanical strengths. The additives of the concrete have a very strong influence on the properties of the fresh and / or hardened concrete. This study examines the development and use of industrial waste and lignin extracted from a renewable natural source (wood) in cementitious materials. The use of these resources is known at present as a definite resurgence of interest in the development of building materials. Physicomechanical characteristics of mortars are determined by optimization quantity of the natural superplasticizer. The results show that the mechanical strengths of mortars based on natural adjuvant have improved by 20% (64 MPa) for a W/C ratio = 0.4, and the amount of natural adjuvant of dry extract needed is 40 times smaller than commercial adjuvant. This study has a scientific impact (improving the performance of the mortar with an increase in compactness and reduction of the quantity of water), ecological use of the lignin waste generated by the paper industry) and economic reduction of the cost price necessary to elaboration of self-compacting mortars and concretes).

Keywords : biopolymer (lignin), industrial waste, mechanical resistances, self compacting mortars (SCM)

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