

Evaluation of the Mechanical and Microstructural Properties of Sustainable Concrete Exposed to Acid Solution

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Abstract : Limestone powder is a natural material that is available in many parts of the world. In this research self-compacting concrete was designed and prepared using limestone powder. The resulted concrete was exposed to the hydrochloric acid solution and compared with reference concrete. Mechanical properties of both fresh and hardened concrete have been evaluated. Scanning Electron Microscopy "SEM" has been unitized to analyse the morphological development of the hydration products. In sulphuric acid solution, a large formation of gypsum was detected in both samples of self-compacting concrete and conventional concrete. The Higher amount of thaumasite and ettringite was also detected in the SCC sample. In hydrochloric acid solution, monochloroaluminate was detected.

Keywords : self-compacting concrete, mechanical properties, Scanning Electron Microscopy, acid solution

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