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The properties of cement-based mortar using grinding waste pottery powder and gypsum

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The industrial and economic growth witnessed in recent decades has brought with it an increase in the generation of different types of waste (urban, industrial, construction, etc.) despite the waste management policies which have been adopted nationally and internationally. Recycling industrial waste not only brings huge economic benefits but also greatly helps the distribution of resources in the country. When waste material is managed correctly it can be converted into a resource which contributes to savings in raw materials, conservation of natural resources and complies with strategies for sustainable development. Ceramic goods are produced from natural materials containing a high proportion of clay minerals. And pottery can be used as an active additive thanks to their pozzolanic properties, or as recycled aggregate in the manufacture of mortars and concrete. This research studied the effect of grinding waste hygienic pottery proportions on binder in cement mortar. Experiments were conducted to determine the optimal replacement content and particle type to ensure that the quality of concrete products is maintained. The results indicate that the use of grinding waste pottery powder as an admixture for cement mortar was efficient in increasing compressive strength, workability and in reducing alkali silica reaction expansion due to the increased amount of calcium silicate hydrates created by pozzolanic reaction.

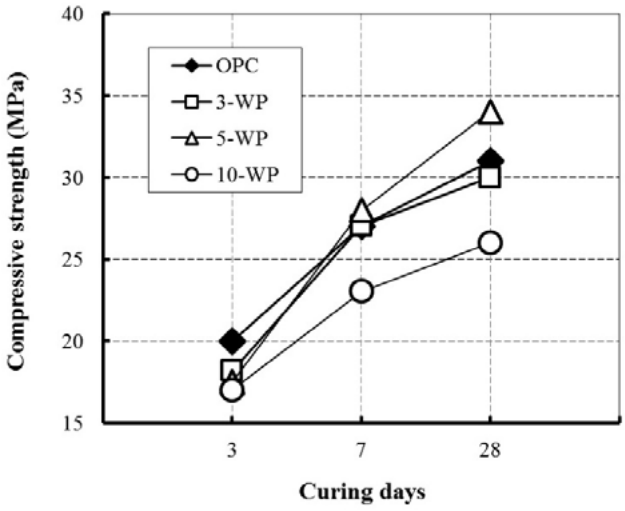

Figure 1: TEM micrograph of dendrites edges in a basalt glass-ceramic from Tenerife melted in reduced atmosphere (sample VRTF1)

Biography

Seungyoung So is an Associate Professor in the Department of Architectural Engineering and Head of Research Center of Industrial Technology at Chonbuk National University, South Korea. His research interests include the hydration gas of concrete and development of clean concrete.

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