

Comparative Sulphate Resistance of Pozzolanic Cement Mortars

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Abstract : This is report on experiment out to compare the sulphate resistance of sand mortar made with five different pozzolanic cement. The pozzolanic cement were prepared by blending powered burnt bricks from the Adamawa, Makurdi, Kano, Kaduna and Niger bricks factories with ordinary Portland cement in the ratio 1:4. Sand & pozzolanic cement mortars of mix ratio 1:6 and 1:3 with water-cement ratio of 0.65 and 0.40 respectively were used to prepare cubes and bars specimens. 150 mortar cubes of size 70mm x 70mm x 70mm and 35 mortar bars of 15mm x 15mm x 100mm dimensions were cast and cured for 28 days. The cured specimens then immersed in the solutions of K_2SO_4 , $(NH_4)_2SO_4$ and water for 28 days and then tested. The compressive strengths of cubes in water increased by 34% while those in the sulphate solutions decreased. Strength decreases of the cubes, cracking and warping of bars immersed in K_2SO_4 were less than those in $(NH_4)_2SO_4$. Specimens made with Niger and Makurdi pulverized burnt bricks experienced less effect of the sulphates and can therefore be used as pozzolan in mortar and concrete to resist sulphate.

Keywords : burnt bricks powder, comparative, pozzolanic cement, sulphates

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