

Effectiveness of adding kaolin to Cement and Cement kiln Dust Mortar

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Abstract. The objective of this investigation is to discover a binder material derived from cement kiln bypass dust mixed with kaolin without calcination at ambient temperature. A total of nine groups were fabricated with eighty-one cubes containing different mixtures. These mixtures were primarily based on a cement mortar contained a 50% combination of cement and cement kiln dust, along with varying amounts of kaolin (10%, 15%, and 20% by weight). The impact of these different ratios on the mechanical properties of mortar, as well as the hydration products, was studied using scanning electron microscopy (SEM) and energy-dispersive X-ray spectroscopy (EDX). The findings indicated a positive enhancement in the mortar compressive strength at 10% kaolin, ranging from 70% to 144% after 7 and 28 days of curing, in comparison with the compressive strength of mortar without kaolin.

Keywords: Cement Kiln Dust (CKD), kaolin (K), Compressive Strength, Tensile Strength

