

Upshot of Elevated Temperature on Performance Facet of Fly Ash /OPC Laterized Concrete.

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Abstract

This study investigates the effects of elevated temperature variation on the compressive strength of Fly Ash/Ordinary Portland Cement (OPC) Laterized concrete (LATCON). Cube specimens were cast, cured in water at ambient laboratory temperature and subjected to different temperature regimes before testing. A mix design of 25N/mm² was adopted for this investigation. The laterite content in the fine aggregate was varied from 0 to 30% at 10% interval with the introduction of Fly ash at 10%, 20% and 30% blending with OPC. Specimens cured for 28 and 90 days were subjected to uniaxial compressive loading tests at room temperature of 210C and elevated temperatures of 250, 350, 450 and 5500C. The peak compressive strength value of 20.01 and 24.93 N/mm² at 28 and 90 days hydration period and is recorded for the mix with 30% laterite and 10% Fly ash content at 2500C. This is an indication that the strength of Fly ash/OPC Laterized concrete is generally sufficient for use at elevated temperature not exceeding 5000C.

Keywords: elevated temperature, fly ash, laterite, laterized concrete, compressive strength

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