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*Topic of Research: Behaviour of Fly Ash
based Geopolymer Concrete under different
temperature Conditions*

Findings

1. The optimum curing temperature was found to be 90°C, which produced the highest compressive, split tensile, and flexural strengths. Curing beyond this temperature did not result in proportional strength gains and, in some cases, caused a slight reduction due to microcrack formation and moisture loss.
2. Compressive strength increased consistently with curing age under all curing regimes. The rate of strength development was considerably higher for heat-cured specimens than for ambient-cured specimens, demonstrating the effectiveness of thermal activation in fly ash-based geopolymer systems.
3. Durability properties improved with increasing curing temperature up to the optimum level. Water absorption, sorptivity, permeability, and chloride ion penetration decreased as the geopolymer matrix became denser through enhanced geopolymer gel formation.
4. The resistance of fly ash-based geopolymer concrete to aggressive chemical environments was superior to that of conventional cement concrete. The specimens exhibited lower mass loss and better strength retention under sulphate and acid exposure because of the absence of calcium hydroxide and the formation of stable aluminosilicate gel.
5. Heat curing accelerated the dissolution of silica and alumina from fly ash, promoting rapid geopolymerization and improving both mechanical and durability characteristics. However, excessive curing temperatures increased the likelihood of shrinkage-induced microcracks, indicating the need for an optimum curing regime.

Enclosures

1. Summary of Abstract (Only 2 Pages)
2. Soft Copy in PDF Format with Hard Copy