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DEVELOPMENT OF CEMENT FREE CONCRETE USING MODERN POZZOLONA

A. RANGANATHAN AND R. MALATHY

Abstract

Portland cement is the basic cementitious material used in normal concrete. The production of cement is energy intensive. The raw materials needed for cement are depleting at a rapid rate. In addition, production of one tonne of cement also leads to release of one tonne of carbon dioxide into the atmosphere leading to increased environmental concerns. Hence, any attempt to decrease the quantum of cement in a major project leads not only to economy but has other advantages as well.

Hence environmental preservation has become a strong driving force behind the search for a new sustainable and environmental friendly cementitious material. Towards this, Fly ash (FA) is being studied as a candidate material. It is no longer a waste product, but a co-product available in abundance from coal fired power plants in India.

In this work low calcium fly ash based geopolymer is used as the binder, instead of Portland or other hydraulic cement paste to produce concrete. The paper discusses about the physical, Mechanical and engineering properties of fly ash in relation to its role and utilization for various engineering purposes.

Keywords: Geopolymers, Fly ash, alkaline solution, strength, pozzolona