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High performance green concrete

Darshak B Raijiwala and **Sankalp**

Sardar Vallavbhai National Insitute of Technology, Surat, Gujarat

This paper aims at making and studying the different properties of geopolymer concrete using this fly ash and the other ingredients which is available locally. Potassium hydroxide and sodium hydroxide solution were used as alkali activators in different mix proportions. The actual compressive strength of the concrete depends on various parameters such as the ratio of the activator solution to fly ash, molarity of the alkaline solution, ratio of the activator chemicals, curing temperature, etc. The amount of the carbon dioxide released during the manufacture of OPC due to the calcinations of limestone and combustion of fossil fuel is in the order of one ton for every ton of OPC produced. In addition, the extent of energy required to produce OPC is only next to steel and aluminum. Attempts to reduce the use of Portland cement in concrete are receiving much attention due to environment-related. Fly ash -based geopolymer concrete is a 'new' material that does not need the presence of Portland cement as a binder. The role of Portland cement is replaced by low calcium fly ash. Geopolymer is an inorganic alumino-hydroxide polymer synthesized from predominantly silicon (Si) and aluminum (Al) materials of geological origin or byproduct materials such as fly ash. The term geopolymer was introduced to represent the mineral polymers resulting from geochemistry. The process involves a chemical reaction under highly alkaline conditions on Si-Al minerals, yielding polymeric Si-O-Al-O bonds in amorphous form.

Biography

Darshak B Raijiwala has completed his PhD at Sardar Vallavbhbhai National Institute of Technology, India. He is the Professor of Applied Mechanics Department since 41 years. His area of specialization is Geopolymer Concrete & Bacterial Concrete.

dbr@amd.svnit.ac.in

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