

EXPERIMENTAL STUDY ON FLY-ASH BASED GEOPOLYMER CONCRETE MADE WITH GRANITE POWDER AS PARTIAL REPLACEMENT OF SAND

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Geopolymer serves as a replacement for cement material, providing increased strength and durability while reducing carbon emissions associated with concrete production. In geopolymer, alkaline activators serve as a substitute for cement and operate as a binding agent, contributing to increased strength. The current study involves the production of geopolymer concrete (GPC) using fly ash as the main ingredient. The fine aggregates are partially substituted with granite powder at varying percentages of 0%, 5%, 10%, and 15%. The essential characteristics of concrete, such as its capacity to be easily worked with, its ability to withstand compression, and its ability to resist splitting under tension, are evaluated. The workability of concrete decreased as the accumulation of granite powder increased. After evaluating the compressive and split tensile strength, it has been determined that the optimal replacement percentage is 10%. Additional substitution of granite powder decreases strength.