

## ABSTRACT

### **Compressive Strength of Geopolymer Concrete Based On Fly Ash and Coffee Grounds**

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This thesis discusses the compressive strength of geopolymers made from coffee grounds as an additional material with the substitution of fly ash. The research aims to design a geopolymer concrete mix based on coffee grounds and fly ash, determine the compressive strength of geopolymer concrete based on coffee grounds and fly ash, and identify the optimal percentage of coffee grounds in geopolymer concrete production. The study has limitations, such as a concrete strength of 35 MPa, testing at 7, 14, and 28 days, and the use of an alkali activator with a molarity of 8.

- The research method employed involved experiments conducted in the material and concrete laboratory with the variable percentage of coffee grounds ranging from 0% to 20%. The research findings indicate that the designed mix of geopolymer concrete with coffee grounds leads to an improvement in compressive strength. Therefore, this study provides valuable information regarding the addition of coffee grounds to geopolymer concrete, serving as a reference for waste utilization efforts and presenting new, more effective ideas for strengthening geopolymer concrete. The conclusion drawn from this research is that the mix design of geopolymer concrete with the substitution of coffee grounds for fly ash can enhance the compressive strength of concrete. In closing, it is recommended to conduct further analysis on the results of this research.

Keywords: Geopolymer concrete, Coffee grounds, Fly ash, Compressive strength, Material substitution, Optimal percentage, Alkali activator, Concrete strength, Strength improvement.