

## STUDY THE EFFECT OF MOLD DESIGN AND AGGREGATE VARIATION ON FLOATING CONCRETE PERFORMANCE

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### ABSTRACT

*Floating concrete is concrete that has a floating structure and has the same specific gravity as lightweight concrete of  $<1.800 \text{ kg/m}^3$ . This study aims to determine the performance of the floating concrete mold design if applied to water areas. In addition, to determine the effect of variations in aggregate on compressive strength and density in the manufacture of floating concrete. There are 2 methods in this study, the first method is to use a floating concrete mold design measuring  $98 \times 98 \times 22 \text{ cm}^3$  with a thickness of 2 cm, with a cement:sand ratio of 1:3 and a superplasticizer is added as much as 0,3% of the weight of cement. The compressive strength test results obtained at the age of treatment 3, 7, 14, and 28 days respectively were 2,34; 3,11; 6,04; 7,45 MPa. The floating test results are also obtained that the depth of the water in the floating concrete reaches 12 cm, then the density value can be calculated using the Archimedes Law formula so that the resulting density value of  $450 \text{ kg/m}^3$ . The second method in this study is to conduct a journal analysis of the use of aggregate variations in the form of fly ash and coconut shell waste as many as 22 journals. Furthermore, classifying each journal according to the composition of the material used to obtain new conclusions. Based on the compressive strength and density values, the variation of fly ash aggregate shows that optimum fly ash content as an aggregate in lightweight concrete is in the range of 10-45%, the addition of fly ash by 50-90% causes the lightweight concrete to fail or break. Whereas in the aggregate variation using coconut shell, the optimum compressive strength and tensile strength values are in the range 1-5%. Based on the journal analysis process, the variation of aggregate in the form of fly ash and coconut shell, which produces compressive strength and density are more optimum in lightweight concrete, its fly ash aggregate.*

**Key Words:** *fly ash, floating concrete, mould design, coconut shell*