

ABSTRACT

STUDY THE EFFECT OF ASH ON THE COMPRESSIVE STRENGTH OF SORGHUM, SPLITTING- TENSILE STRENGTH AND FLEXURAL STRENGTH OF CONCRETE

By

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Utilizing industrial waste and use environmentally friendly materials as a substitute for concrete forming material, but still have a fairly good compressive strength, is a wise step in this issue. This study was conducted to obtain a new alternative in concrete technology is to replace a portion of cement with ash residue of sorghum, sorghum making use of ash residue is expected to produce concrete compressive strength is approximately equal to the normal concrete but eco-friendly. The purpose of this study was to determine the effect of ash on the compressive strength of sorghum, split tensile strength and flexural strength of concrete as a partial replacement of cement by weight percentages of 0%, 5%, 10%, 15%, and 20% in the binding of 28 and 56 days.

Mix-design method performed by ACI method. Test object is cylindrical with a diameter of 100 mm and height of 200 mm to test compressive strength, split tensile strength, and beam (100 mm x 100 mm x 400 mm) for flexural strength test. ACI method is tested on compressive strength, split tensile strength and flexural strength by the addition of several sorghum ash at 28 and 56 days.

From the results of laboratory tests it can be concluded: (1) Compressive strength, split tensile strength and flexural strength of concrete on the variation of the percentage of ash sorghum reached the highest value at a percentage of 20% at the age of 56 days with 20.7644 MPa compressive strength, split tensile strength of 1.8047 MPa and 4.6638 MPa flexural strength. (2) The use of partial replacement of cement with ash in the concrete mix sorghum able to increase the slump of concrete, so that the percentage increase in sorghum are used ashes then increased the slump of high value so as to improve the workability of concrete.

Keywords: concrete, sorghum ash, compressive strength, split tensile strength, flexural strength