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# COMPARISON ANALYSIS OF NORMAL CONCRETE PRESSURE STRENGTH WITH ALUMINUM POWDER MIXED CONCRETE

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## ABSTRACT

One of the most important elements in a building is concrete. High workability concrete is an innovation in making concrete in an effort to create concrete that has better performance than conventional concrete. Aluminum is a waste product from aluminum work that is not used if not processed can pollute the environment. Replacement of some sand using aluminum powder is one of the efforts to make concrete more environmentally friendly. This study aims to determine the effect of using aluminum powder as a substitute for some sand in terms of the compressive strength of concrete. This study uses an experimental method with a total of 16 tests. Test specimens in the form of cubes 15x15x15 cm and using variations of aluminum powder composition 5%, 10% and 15%. Each type of concrete mixture is made of 4 specimens. The planned concrete quality is fc '= 29.05 MPa. The compressive strength test was carried out at 28 days.

Normal concrete compressive strength is less than 100% at 28 days (326kg/cm$^2$ <350kg / cm$^2$). Decreasing the compressive strength of concrete with a variety of replacement materials 5% 28 days old (111,359kg/cm$^2$ <350kg/cm$^2$). The decrease in compressive strength occurs in concrete with a variation of replacement material 10% 28 days old (71,612kg/cm$^2$<350kg/cm$^2$), and a decrease in the compressive strength of concrete with a variation of 15% is (9,69kg/cm$^2$<350kg/cm$^2$). From the results of the compressive strength test it can be concluded that the use of aluminum powder substitute materials can not increase the compressive strength of the concrete and instead make the concrete become brittle. The value of concrete slump decreases with increasing levels of use of substitute materials. The biggest slump value obtained is 11 cm in normal concrete with 0% level. From the results of the compressive strength test it can be concluded that the use of substitute materials can not increase the level of ease of work or concrete workability.

Keywords: Analysis, Press Strength, Concrete, Aluminum Powder