ABSTRACT

In the world of building and infrastructure construction, concrete is the most widely used construction material compared to other construction materials such as wood, aluminum, and others. The demand for concrete volume over time is increasing due to the development of infrastructure development in Indonesia in the last 10 years. In concrete mixtures coarse aggregate fills the space ranging from 60-70% of the weight of cement and sand, for example, mix design for concrete fc`30 MPa per m^3, required cement 400 kg, fine aggregate (sand) 792 kg, coarse aggregate (gravel) 1011,48 kg and water 140,28 kg. The tests carried out in this study were testing fine and coarse aggregates, compressive strength, and abrasion. The molarity used to make the sample was 6M. In the graph of the test results, it is stated that FA aggregate has the best performance with a very low percentage of crushed weight, which is only about 7% to 8%. This durability indicates that FA has a dense material structure, with minimal porosity. The abrasion value of SP, which ranged from 84% to 85%, SF showed the lowest durability and was relatively brittle compared to FA with SP. These aggregates most likely lack structural cohesion or have a higher degree of porosity. In this research, of the three samples tested, artificial coarse aggregate with a mixture of 100% *fly ash* has an average specific gravity of 3,05 g/cm^3 water absorption of 4.5% and a fineness of 92%, these results show that the material does not meet the SNI 2417: 2008 standard and in testing the compressive strength of geopolymer mortar reaches the highest compressive strength at FA of 10 Mpa with a *curing* temperature of 80^oC and SF reaches 8,4 Mpa with a *curing* temperature of 80^oC.

Keywords: Mortar, Coarse Aggregate, *curing*