ABSTRACT

The development in the field of construction requires the existence of innovations as a solution of the problems. Today, Self Compacting Concrete (SCC) continues to be developed as an alternative in the implementation of concrete casting. Self Compacting Concrete (SCC) is a concrete that can flow under its own weight, unable to meet or fill begisting (formwork) and reached its highest density. In addition to mineral Admixture require a superplasticizer that has a high viscosity, Self Compacting Concrete (SCC) also requires the composition of cement more than the normal concrete. It aims to meet the required flowability. Therefore, it is necessary also additional cement substitute materials as concrete composition of innovation to realize the Self Compacting Concrete (SCC) are economical.

In this study, will be used volcanic ash that the eruption of Mount Bromo is a waste as cement replacement material in the mix design. Trial mix is performed to determine all the
composition variations to meet the requirements of filling ability, passing ability, flow ability and segregation at the time of fresh concrete. Tests using a slump cone filling ability, passing ability to use L-box, while the flow ability and segregation using the V-funnel. The variables of this study is the comparison of cement and volcanic ash taken from the optimum value of the previous studies, ie 100%: 10%, 90%: 10%, 85%: 15%, and 80%: 20%. Each composition will be given additional superplasticizer viscoscreete 10 with a dose of 0.5-1.8% and Glenium C-351 with a dose 0.6-2.0% by weight of cement in accordance as required by Sika Indonesia and BASF Indonesia. In the harsh conditions of the concrete compressive strength tests will be done at the age of 3, 7, 14, 21, and 28 days, and split tensile strength tests, porosity tests, and shrinkage tests.

The results showed that the workability is strongly influenced by the amount of superplasticizer dosage were added to the concrete mix. The use of superplasticizer Glenium C-351 provides better workability compared with Viscocrete 10 at the time of testing fresh concrete. The amount of the addition of volcanic ash had no significant effect on workability, but the effect on the results of compressive strength. Optimum compressive strength resulting from the addition of volcanic ash as much as 15%.

**Keywords:** Innovation, Self-compacting Concrete (SCC), Volcanic Ash, Viscocrete 10 Glenium C-351, Workability, Compressive Strength