

ABSTRAK

Self-fiber compacting concrete merupakan beton berserat yang dapat memadat sendiri. Beton ini dibuat untuk mengatasi masalah pada proses pengecoran beton yang tidak bisa dijangkau oleh *vibrator*. Penelitian ini menggunakan bahan tambah *silica fume* sebagai bahan pengganti semen dengan kadar 0%, 5%, 10%, dan 15% bertujuan untuk meningkatkan nilai kuat tekan dari *self-fiber compacting concrete*, bahan tambah serat *nylon* dengan kadar 1% juga ditambahkan untuk membantu meningkatkan nilai kuat tekan dari *self-fiber compacting concrete*, selain itu *superplasticizer* jenis *Sikament LN* dengan kadar 1,5% digunakan untuk meningkatkan *workability self-fiber compacting concrete*. Sifat segar beton dengan empat metode pengujian telah memenuhi standar *efnarc*, yaitu *slump flow*, *l-box*, *v-funnel*, dan *T50*. Pengujian kuat tekan dilakukan pada umur beton 7, 14, dan 28 hari. Berdasarkan hasil pengujian, *self-fiber compacting concrete* dengan variasi *silica fume* 5% memberikan hasil kuat tekan yang terbaik yaitu sebesar 34 MPa. Semakin tinggi kadar *silica fume* yang ditambahkan pada campuran beton maka tingkat *workability* beton akan semakin berkurang karena sifat *silica fume* yang menyerap air.

Kata kunci: *self-fiber compacting concrete*, *silica fume*, kuat tekan, dan *sikmanent LN*.

ABSTRACT

Self-fiber compacting concrete is fibrous concrete that can compact itself. This concrete is made to overcome problems in the concrete casting process that cannot be reached by a vibrator. This study uses additional material of silica fume as a cement substitute with levels of 0%, 5%, 10%, and 15% which aims to increase the compressive strength of self-fiber compacting concrete. Additional material of nylon fiber with a content of 1% is also added to help increasing the compressive strength of self-fiber compacting concrete, besides that the 1.5% Sikament LN type superplasticizer is used to enhance the workability of self-fiber compacting concrete. The fresh nature of concrete with four testing methods has met the EFNARC standard, namely slump flow, l-box, v-funnel, and T50. The test of compressive strength was carried out at 7, 14 and 28 days of concrete. Based on the test results, self-fiber compacting concrete with a variation of 5% silica fume gives the best compressive strength of 34 MPa. The higher the level of silica fume added to the concrete mixture, the lower the level of workability of the concrete will be. It is because of the fume properties that absorb water.

Keywords: self-fiber compacting concrete, silica fume, compressive strength, and sikmanent LN.