

VARIASI PENAMBAHAN *SILICA FUME* TERHADAP BETON MUTU TINGGI *SELF COMPACTING CONCRETE* (SCC)

Yuda Nuraha
1002532

ABSTRAK

Self Compacting Concrete (SCC) merupakan beton yang dapat memadat sendiri dengan *slump* yang tinggi, mampu mengisi ruang cetakan (*formwork*) tanpa mengalami segregasi dan mencapai kepadatan tertingginya. Untuk menghasilkan beton mutu tinggi SCC diperlukan bahan tambah (*admixture*) lain untuk melengkapi kinerja semen. Penambahan *admixture* tersebut berupa *superplasticizer* dan *silica fume*. *Superplasticizer* yang digunakan dalam penelitian ini yaitu tipe Nexco P1 dengan dosis tetap untuk semua variasi campuran yaitu sebesar 1.4%. Penelitian ini dilakukan untuk mengetahui pengaruh penambahan *silica fume* terhadap kuat tekan beton SCC. Pengujian yang dilakukan yaitu meliputi *slump flow test*, *segregation resistance test*, *filling ability test* dan uji kuat tekan pada usia beton 3, 7, 14 dan 28 hari. Terdapat lima variasi campuran *silica fume* yang ditambahkan yaitu 1.4%, 1.7%, 1.9%, 2.1% dan 2.3% dari berat semen. Penambahan *silica fume* berpengaruh pada peningkatan kuat tekan beton. Kuat tekan tertinggi didapat dari komposisi beton dengan campuran *silica fume* sebanyak 1.9% dan hasil kuat tekan pada usia 28 hari mencapai 64.51 MPa. Sedangkan hasil kuat tekan terendah didapat dari komposisi beton dengan campuran *silica fume* sebanyak 2.3% dan hasil kuat tekan mencapai 60.36 MPa. Untuk melengkapi hasil penelitian, dapat dilakukan pengujian *slump loss* pada beton segar serta pengujian kuat geser dan lentur pada beton yang telah mengeras.

Kata kunci : *Admixture, superplasticizer, silica fume*, beton, kuat tekan.

VARIETY OF SILICA FUME ADDITION ON HIGH STRENGTH SELF COMPACTING CONCRETE (SCC)

Yuda Nuraha
1002532

ABSTRACT

Self Compacting Concrete (SCC) is a concrete that can be solid by its own with the high slump, it is capable of filling the mold (formwork) without having segregation and reaching its highest density. To produce the high strength concrete, SCC needs other supporting materials (admixture) to complete the performance of cement. The addition of admixture are superplasticizer and silica fume. Superplasticizer that is used in this research is type Nexco P1 with constant dose for all variant as many as 1.4%. This research is conducted to now the influence of the addition of silica fume on SCC compressive strength. The data are analysed by using slump flow test, segregation resistance test, filling ability test, and examining the strength of concrete tense of age 3, 7, 14, and 28 days. There are five variants of the mixture of silica fume addition, they are 1.4%, 1.7%, 1.9%, 2.1%, 2.3% of the cement weight. The addition of silica fume has influence on the increase of compressive strength. The highest strength of the test is obtained from concrete composition, with the mixture of silica fume as many as 1.9% and the compressive strength in age 28 reach 64.51 Mpa. While the result of the lowest compressive strength is obtained from the concrete composition with silica fume addition as many as 2.3% and reaches 60.36 Mpa. To complete the research result, slump loss test can be used on the fresh concrete and also shear strength and flexural strength test on the concrete that has been hard.

Kata kunci :Admixture, superplasticizer, silica fume, concrete, compressive strength.