

ABSTRAK

PENGARUH *SUPERPLASTICIZER* DAN SERAT SINTETIS MAKRO TERHADAP KUAT TEKAN BETON *SELF COMPACTING CONCRETE* (SCC)

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Self Compacting Concrete (SCC) merupakan salah satu inovasi dalam teknologi beton modern yang dirancang memiliki kemampuan mengalir, mengisi rongga, dan memadat secara mandiri tanpa memerlukan proses pemadatan mekanis, seperti penggunaan vibrator. Penelitian ini bertujuan untuk mengetahui pengaruh penambahan *superplasticizer* (Sika Viscocrete) dan serat sintetis makro terhadap kuat tekan beton SCC. Variasi campuran yang digunakan meliputi *superplasticizer* sebesar 0,5% dan 1,0% serta serat sintetis makro sebesar 0,20% dari berat semen. Pengujian yang dilakukan meliputi karakteristik beton segar, yaitu *slump flow*, *V-Funnel*, dan *L-Box*, serta pengujian kuat tekan beton pada umur 7, 14, dan 28 hari. Hasil penelitian menunjukkan bahwa seluruh variasi campuran memenuhi kriteria beton SCC berdasarkan parameter beton segar yang dipersyaratkan. Penambahan serat sintetis makro menyebabkan penurunan nilai *workability*, namun masih berada dalam batas standar SCC. Pada pengujian kuat tekan, peningkatan kadar *superplasticizer* dan penambahan serat sintetis makro memberikan pengaruh positif terhadap kuat tekan beton. Nilai kuat tekan tertinggi diperoleh pada campuran BSSS 1,0% sebesar 27,27 MPa pada umur 28 hari. Berdasarkan hasil penelitian, dapat disimpulkan bahwa penggunaan *superplasticizer* dan serat sintetis makro mampu meningkatkan kuat tekan beton SCC dibandingkan beton normal serta menghasilkan mutu beton yang sesuai dengan kebutuhan konstruksi.

Kata kunci: *Self Compacting Concrete*, *superplasticizer*, serat sintetis makro, kuat tekan.

ABSTRACT

THE EFFECT OF SUPERPLASTICIZER AND SYNTHETIC FIBER MACRO ON THE COMPRESSIVE STRENGTH OF SELF-COMPACTING CONCRETE (SCC)

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Self Compacting Concrete (SCC) is an innovation in modern concrete technology designed to have the ability to flow, fill voids, and compact independently without requiring mechanical compaction processes, such as the use of vibrators. This study aims to determine the effect of the addition of superplasticizer (Sika Viscocrete) and macro synthetic fibers on the compressive strength of SCC concrete. The mixture variations used include superplasticizers of 0.5% and 1.0% and macro synthetic fibers of 0.20% of the cement weight. Tests conducted include the characteristics of fresh concrete, namely slump flow, V-Funnel, and L-Box, as well as concrete compressive strength testing at the ages of 7, 14, and 28 days. The results showed that all mixture variations met the criteria for SCC concrete based on the required fresh concrete parameters. The addition of macro synthetic fibers caused a decrease in workability values, but was still within the SCC standard limits. In the compressive strength test, increasing the superplasticizer content and the addition of macro synthetic fibers had a positive effect on the compressive strength of concrete. The highest compressive strength value was obtained in the 1.0% BSSS mixture at 27.27 MPa at 28 days. Based on the research results, it can be concluded that the use of superplasticizer and macro synthetic fibers can increase the compressive strength of SCC concrete compared to normal concrete and produce concrete quality that meets construction needs.

Keywords: Self Compacting Concrete, superplasticizer, macro synthetic fiber, compressive strength.