ABSTRAK

Vivinella Sitohang, 4203240008 (2024), Pengaruh Penambahan Abu Cangkang Kemiri dan Zat Aditif *Superplasticizer* Terhadap Kuat Tekan Beton

Semakin berkembangnya teknologi beton, semakin banyak pula inovasi untuk meningkatkan mutu beton, dan salah satu inovasi tersebut adalah dengan memasukkan sebagian bahan pengganti (subtitusi) ke dalam campuran penyusun beton. Fungsi dari bahan pengganti campuran beton bertujuan untuk memodifikasi sifat-sifat dan karakteristik beton itu sendiri diantaranya adalah untuk memudahkan pengerjaan (*workability*), *durability*, penghematan biaya dan waktu pengerasan beton. Penelitian ini bertujuan untuk mengetahui pengaruh penambahan abu cangkang kemiri dan zat aditif *superplasticizer* terhadap kuat tekan beton mutu tinggi, sehingga dapat diketahui berapa persen abu cangkang kemiri yang optimum yang dapat menghasilkan kuat tekan beton maksimal. Perencanaan campuran beton pada penelitian ini menggunakan metode uji coba dengan mengambil empat variasi abu cangkang kemiri mulai dari 0%, 3%,6%, dan 9% dari berat semen dan empat variasi penambahan zat aditif s*uperplasticizer* mulai dari 0%, 0,4%, 0,8%, dan 1,2% dari berat air. Pengujian kuat tekan beton sebanyak 12 benda uji dilakukan pada umur 28 hari. Berdasarkan hasil penelitian dapat disimpulkan bahwa nilai tekan optimum beton terdapat pada abu cangkang kemiri 6% dan zat aditif *superplasticizer* 0,8% dengan kuat tekan rata-rata sebesar 26,03 MPa. Dari hasil penelitian ini dapat disimpulkan bahwa penggunaan abu cangkang kemiri dan zat aditif *superplasticizer* dapat meningkatkan kuat tekan beton mutu tinggi.

Kata Kunci: Kuat tekan, abu cangkang kemiri, Zat Aditif *Superplasticizer*, XRD.

ABSTRACK

Vivinella Sitohang, 4203240008 (2024), Effect of Pecan Shell Ash Addition and Superplasticizer Additive on Concrete Strength

As concrete technology develops, there are more and more innovations to improve the quality of concrete, and one of these innovations is to include some substitute materials in the concrete mixture. The function of substitute materials for concrete mixtures aims to modify the properties and characteristics of the concrete itself, including facilitating workability, durability, cost savings and concrete hardening time. This research aims to determine the effect of adding candlenut shell ash and superplasticizer additives. The aim is to find out how much influence the addition of candlenut shell ash and superplaticizer additives has on the compressive strength of high quality concrete, so that it can be known what is the optimum percentage of candlenut shell ash that can produce compressive strength. maximum concrete. Concrete mix planning in this study used a trial method by taking four variations of candlenut shell ash starting from 0%, 3%, 6%, and 9% of the cement weight and four variations of adding superplasticizer additives starting from 0%, 0.4% , 0.8%, and 1.2% by weight of water. The concrete compressive strength test of 12 test specimens was carried out at the age of 28 days. Based on the research results, it can be concluded that the optimum compressive value of concrete is found in 6% candlenut shell ash and 8% superplasticizer additive with an average compressive strength of 26.03 MPa. From the results of this research it can be concluded that the use of candlenut shell ash and superplasticizer additives can increase the compressive strength of high quality concrete.

Keywords: Compressive strength, candlenut shell ash, Superplasticizer Additives, XRD.