

Studi sifat mekanik Paving Block terbuat dari adukan beton dan serbuk kaca = Study of mechanical properties Paving Block made from concrete sludge waste and glass waste powder

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Abstrak

Limbah sisa adukan beton dan limbah kaca seringkali menjadi sampah dan berpotensi merusak lingkungan karena sifatnya yang sulit terurai. Padahal kedua bahan tersebut mempunyai potensi untuk dimanfaatkan, salah satunya sebagai pengganti agregat dan semen pada paving block. Tujuan penelitian ini adalah mengetahui seberapa besar pengaruh penambahan limbah adukan beton dan serbuk kaca terhadap sifat-sifat mekanik paving block. Pembuatan paving block dibuat dari limbah adukan beton, semen PC type I, dan serbuk kaca yang berasal dari sisa botol heinkein dan anker bir. Benda uji penelitian dibuat dengan perbandingan komposisi semen dan agregat 1:4,5 dengan 4 perlakuan substitusi serbuk kaca yaitu 0%, 10%, 20%, dan 30% dari berat semen. Pengujian kuat tekan dan kuat lentur dilakukan pada hari ke-7, 14, 28 sedangkan pengujian penyerapan air dilakukan pada hari ke-14, 28, 49 dan 56.

Dari hasil pengujian, didapatkan bahwa penambahan serbuk kaca 10% dari berat semen mempunyai komposisi terbaik untuk menghasilkan kekuatan yang optimum. Dimana kuat tekan paving block pada umur 28 hari mencapai 13,625 Mpa dan mengalami peningkatan sebesar 25,86% dari paving block tanpa menggunakan campuran serbuk kaca.

<hr><i>Residual concrete sludge waste and glass waste is often a waste and potentially damaging to the environment because it is difficult to unravel. Yet, both materials have the potential to be used, as a substitute for aggregate and cement on paving block for example. The purpose of this study was to determine how much impact from the addition of waste concrete and glass powder on the mechanical properties of paving block. Paving blocks were made of concrete waste, Portland Cement type I, and glass powder taken from the rest of heinkein and Anker beer bottles. Research specimens were made with cement and aggregate composition ratio of 1:4,5 and different amount of substitution using glass powder. Glass powder ratios are as follow: 0%, 10%, 20%, and 30% of cement weight. Compressive and flexural strength testing were performed on day 7, 14, 28 while the water absorption test were performed on day 14, 28, 49 and 56.

From the test results, it was found that the specimen with the addition of glass powder by 10% of cement weight has the best composition resulted in producing optimum power. Compressive strength of paving blocks at day 28 reached 13.625 MPa, produced an increase by 25,86% compared to the paving block without using mixture of glass powder.</i>