

ABSTRAK

Penelitian ini bertujuan untuk mengetahui pengaruh penggunaan limbah beton daur ulang sebagai substitusi agregat kasar terhadap kuat tekan beton mutu K-250. Penelitian dilakukan secara eksperimen di Laboratorium Teknologi Beton Universitas Muhammadiyah Jember dengan variasi substitusi limbah beton sebesar 0%, 5%, 10%, dan 20%. Benda uji berbentuk silinder berukuran 15 cm × 30 cm dengan pengujian kuat tekan pada umur 7, 14, dan 28 hari. Hasil penelitian menunjukkan bahwa kuat tekan beton meningkat seiring bertambahnya umur beton. Beton normal memiliki kuat tekan tertinggi sebesar 25,65 MPa pada umur 28 hari, sedangkan variasi substitusi 5% menghasilkan kuat tekan 22,48 MPa dan masih memenuhi mutu rencana K-250. Pada variasi 10% dan 20% terjadi penurunan kuat tekan yang cukup signifikan. Semakin besar persentase limbah beton yang digunakan, maka kuat tekan beton cenderung menurun. Namun, penggunaan limbah beton 5% masih layak diterapkan sebagai substitusi agregat kasar serta dapat membantu mengurangi limbah konstruksi dan penggunaan agregat alam.

Kata Kunci: Agregat Kasar, Beton Daur Ulang, Beton K-250, Kuat Tekan Beton, Limbah Beton

ABTRACT

This study aims to determine the effect of using recycled concrete waste as a coarse aggregate substitute on the compressive strength of K-250 concrete. The study was conducted experimentally at the Concrete Technology Laboratory of Muhammadiyah University of Jember with concrete waste substitution levels of 0%, 5%, 10%, and 20%. The test specimens were cylindrical in shape, measuring 15 cm × 30 cm, with compressive strength testing conducted at 7, 14, and 28 days. The results showed that concrete compressive strength increased with age. Normal concrete exhibited the highest compressive strength of 25.65 MPa at 28 days, while the 5% substitution variant yielded 22.48 MPa and still met the K-250 design strength. Significant decreases in compressive strength were observed at the 10% and 20% substitution levels. As the percentage of concrete waste used increases, the compressive strength of the concrete tends to decrease. However, the use of 5% concrete waste is still feasible as a coarse aggregate substitute and can help reduce construction waste and the use of natural aggregates.

Keywords: *Coarse Aggregate, Recycled Concrete, K-250 Concrete, Concrete Compressive Strength, Concrete Waste.*