

ANALISIS KUAT TEKAN DAN KUAT LENTUR BETON MENGUNAKAN AGREGAT CAMPURAN DAN BAHAN TAMBAH SIK A VISCOCRETE-3115 N BERDASARKAN PERUBAHAN BERAT ISI BETON

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ABSTRAK

Pemanfaatan agregat daur ulang dalam beton menjadi solusi untuk mengurangi penggunaan agregat alami dan meminimalkan dampak lingkungan industri konstruksi. Namun, sifat fisik agregat daur ulang yang memiliki berat isi rendah dan daya serap air tinggi dapat menurunkan mutu beton secara signifikan. Penelitian ini bertujuan menganalisis pengaruh penggunaan agregat kasar daur ulang dan bahan tambah *Sika ViscoCrete-3115 N* terhadap kuat tekan, kuat lentur, dan berat isi beton. Penelitian dilakukan secara eksperimental di laboratorium menggunakan metode *comparative analysis* dengan beton mutu $f'c$ 20 MPa. Tiga variasi campuran digunakan: beton normal, beton dengan agregat daur ulang 20%, dan beton dengan agregat daur ulang ditambah *Sika ViscoCrete-3115 N* sebagai *superplasticizer*. Semua spesimen direndam dalam air laut untuk mengevaluasi *durabilitas* hingga umur 56 hari dengan pengujian berkala setiap 7, 28, dan 56 hari. Hasil penelitian menunjukkan bahwa kuat tekan tertinggi sebesar 37,8 MPa diperoleh pada beton dengan agregat daur ulang dan *Sika ViscoCrete-3115 N* pada umur 56 hari, melampaui mutu rencana. Namun, kuat lentur justru mengalami penurunan akibat *workability* berlebihan yang menyebabkan segregasi dan bleeding (keluarnya air semen) dari cetakan. Penelitian menunjukkan bahwa *Sika ViscoCrete-3115 N* efektif meningkatkan kuat tekan agregat daur ulang, namun memerlukan kontrol *workability* optimal untuk mempertahankan kuat lentur dan *homogenitas* campuran.

Kata kunci: Berat Isi , Beton Daur Ulang, Kuat Tekan, Kuat Lentur, *Sika ViscoCrete-3115 N*

**ANALYSIS OF COMPRESSIVE STRENGTH AND FLEXURAL STRENGTH
OF CONCRETE USING MIXED AGGREGATES AND SIKA VISCOCRETE
3115N ADDITIVE BASED ON CONCRETE UNIT WEIGHT CHANGES**

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ABSTRAK

The utilization of recycled aggregates in concrete serves as a solution to reduce the use of natural aggregates and minimize the environmental impact of the construction industry. However, the physical properties of recycled aggregates, which have a low specific weight and high water absorption, can significantly decrease the quality of concrete. This study aims to analyze the effect of using coarse recycled aggregates and the additive Sika ViscoCrete-3115 N on the compressive strength, flexural strength, and specific weight of concrete. The research was conducted experimentally in the laboratory using a comparative analysis method with concrete of quality f_c 20 MPa. Three mixture variations were used: normal concrete, concrete with 20% recycled aggregates, and concrete with recycled aggregates plus Sika ViscoCrete-3115 N as a superplasticizer. All specimens were immersed in seawater to evaluate durability up to 56 days, with periodic testing at 7, 28, and 56 days. The results showed that the highest compressive strength of 37.8 MPa was achieved in concrete with recycled aggregates and Sika ViscoCrete-3115 N at 56 days, exceeding the target quality. However, the flexural strength experienced a decrease due to excessive workability, which caused segregation and bleeding (the release of mixing water) from the mold. The study indicates that Sika ViscoCrete-3115 N effectively enhances the compressive strength of recycled aggregates but requires optimal workability control to maintain flexural strength and mixture homogeneity.

Keywords: *compressive strength, flexural strength, recycled concrete, Sika ViscoCrete-3115 N, unit weight*