

ANALISIS KUAT TEKAN BETON MENGGUNAKAN TAMBAHAAN LIMBAH KERAMIK SEBAGAI AGREGAT KASAR

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Abstrak

Pembangunan infastruktur saat ini berkembang pesat, khususnya dalam bidang teknik sipil. Secara umum, sebagian besar prasarana yang ada menggunakan kontruksi beton, misalnya untuk pembuatan bangunan bertingkat seperti halnya gedung, jalan, jembatan, bendungan dan lain sebagainya. Pembangunan infastruktur yang berkembang pesat inilah yang menjadi salah satu penyebab tingginya kebutuhan akan beton. Limbah keramik diprediksi mampu menjadi bahan tambah sebagai agregat kasar pada campuran beton. Penelitian kali ini menggunakan bahan tambah limbah keramik sebagai agregat kasar dan apakah limbah keramik efektif atau layak digunakan sebagai campuran beton struktur, limbah keramik yang digunakan sebagai bahan tambah agregat kasar dengan persentase limbah keramik 0%, 5%, 10% dan 16%, untuk mutu rencana beton yaitu $f_c'25$ MPa, dengan bentuk benda uji silinder berukuran 15 X 30cm, rencana pengujian umur 7hari, 14hari dan 28hari. dari hasil penelitian dihasilkan nilai beton normal yaitu 28.67 MPa, sedangkan untuk nilai beton campuran limbah keramik 5% yaitu 25.37 MPa, untuk nilai campuran beton limbah keramik 10% yaitu 22.82 MPa, dan nilai campuran limbah keramik 16% yaitu 22.82 MPa. Berdasarkan analisa hasil pengujian kuat tekan, variasi persentase penambahan limbah keramik yang paling optimal diantara 5%, 10%, dan 16% yaitu 5%. Persentase paling rendah memiliki kuat tekan paling tinggi dikarenakan bentuk dari limbah keramik yang pipih dan juga sifat dari limbah keramik sangat rapuh, dan permukaannya yang licin membuat daya ikat limbah keramik dengan adukan beton kurang kuat.

Kata Kunci : Keramik, Kuat Tekan, Beton

Abstract

Infrastructure development is currently developing rapidly, especially in the field of civil engineering. In general, most of the existing infrastructure uses concrete construction, for example for the manufacture of high-rise buildings such as buildings, roads, bridges, dams and so on. The rapidly developing infrastructure development is one of the causes of the high need for concrete. If excessive raw materials are taken for the manufacture of concrete, of course, there can be a very significant decrease, and later this will have an environmental impact. Therefore, there must be a material that can replace the aggregate. If a large amount of material will become waste, with that condition, then in this study it will be tried to use ceramic waste material which will be mixed into a coarse aggregate in a concrete mixture. This study aims to find out the effect of ceramic waste on the properties of concrete, in addition to whether ceramic waste is effective or suitable for use as a concrete mixture of structures. In this study, ceramic waste was used as a substitution material from coarse aggregates with a percentage of ceramic waste of 0%, 5%, 10% and 16%, for the quality of the concrete plan f_c '25 MPa, with the form of a slender test object measuring 15 X 30cm, a test plan aged 7 days, 14 days and 28 days. From the results of the study, the normal concrete value was produced, namely 28.67 MPa, while for the concrete value of the ceramic waste mixture 5% which is 25.37 MPa, for the value of the ceramic waste concrete mixture 10% which is 22.82 MPa, and the ceramic waste mixture value 16% which is 22.82 MPa. Based on the analysis of the compressive strength test results, the most optimal variation in the percentage of ceramic waste addition is between 5%, 10%, and 16%, which is 5%. The lowest percentage has the highest compressive strength because the shape of the ceramic waste is flat and also the nature of the ceramic waste is very fragile, and the slippery surface makes the binding power of ceramic waste with concrete mortar less strong.

Keywords : Ceramic, Concrete Compressive, Strength