STUDI EKSPERIMENTAL PENGARUH TINGKAT KEKERASAN AGREGAT KASAR TERHADAP KUAT TEKAN BETON

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INTISARI

Beton adalah bahan bangunan yang telah lama dikenal di Indonesia. Telah banyak penelitian tentang beton yang dilakukan. Adapun penelitian kali ini bertujuan untuk mengetahui bagaimana pengaruh tingkat kekerasan agregat kasar terhadap kuat tekan beton pada umur 28 hari. Penelitian ini menggunakan metode eksperimen untuk mendapatkan data-data hasil penelitian yang diperlukan untuk keperluan pembahasan masalah yang ada. Perhitungan perancangan adukan beton menggunakan metode SNI 03-2834-2000. Penelitian ini dilakukan di laboratorium Fakultas Teknik, Universitas Wijayakusuma Purwokerto. Jenis pengujian meliputi pengujian kekerasan agregat diperiksa dengan metode Rudeloff dan keausan agregat diperiksa menggunakan mesin *Los Angeles*. Berdasarkan pengujian menggunakan metode Rudeloff ini didapat kekerasan agregat asal Kemangkon Purbalingga (Serayu) = 15,96%, sedangkan agregat dari Singasari Karanglewas kekerasannya = 17,96%, sedangkan agregat asal Mandiraja Banjarnegara kekerasannya = 18,11%, sedangkan kekerasan agregat asal Bantarkawung Bumiayu = 19,46% dan pengujian menggunakan mesin *Los Angeles* ini didapat keausan agregat asal Kemangkon Purbalingga (Serayu) = 15,58%, sedangkan agregat dari Singasari Karanglewas keausannya = 20,02%, sedangkan agregat asal Mandiraja Banjarnegara keausannya = 22,86%, sedangkan keausan agregat asal Bantarkawung Bumiayu = 26,28%. Dari hasil tersebut maka diperoleh hasil yang berbanding lurus, semakin kecil prosentase yang didapat maka batu tersebut semakin keras. Berdasarkan data yang diperoleh dari pengujian kuat tekan beton pada umur 28 hari kuat tekan rata-rata beton Kemangkon Purbalingga (Serayu) mencapai 22,27 MPa, kuat tekan rata-rata beton Singasari Karanglewas mencapai 21,51 MPa, kuat tekan rata-rata beton Mandiraja Banjarnegara mencapai 18,48 MPa, kuat tekan rata-rata beton Bantarkawung Bumiayu mencapai 17,73 MPa. Kuat tekan beton optimal dapat diperoleh pada agregat asal Kemangkon Purbalingga (Serayu). Dari data pengujian kuat tekan beton tersebut semakin keras agregat kasar yang didapat maka semakin tinggi kuat tekan beton yang dihasilkan.

Kata Kunci : Agregat Kasar, Kuat Tekan Beton, Kekerasan Agregat

EXPERIMENTAL STUDY ON THE EFFECT OF HARDNESS LEVEL OF COARSE AGGREGATE ON COMPRESSIVE STRENGTH OF CONCRETE

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ABSTRACT

Concrete is a building material that has long been recognized in Indonesia. Many studies have been conducted on concrete. The research this time aims to find out how the effect of the level of hardness of coarse aggregate on the compressive strength of concrete at the age of 28 days. This research uses the experimental method to obtain the research data needed for the discussion of existing problems. Calculation of concrete mix design using the SNI 03-2834-2000 method. This research was conducted in the laboratory of the Faculty of Engineering, Wijayakusuma University Purwokerto. The types of testing include aggregate hardness testing examined by the Rudeloff method and aggregate wear examined using a Los Angeles machine. Based on the test using the Rudeloff method, the hardness of the aggregate from Kemangkon Purbalingga (Serayu) = 15.96%, while the aggregate from Singasari Karanglewas the hardness = 17.96%, while the aggregate from Mandiraja Banjarnegara the hardness = 18.11%, while the hardness of the aggregate from Bantarkawung Bumiayu = 19, 46% and the test using Los Angeles machine obtained the wear of aggregate from Kemangkon Purbalingga (Serayu) = 15.58%, while the aggregate from Singasari Karanglewas the wear = 20.02%, while the aggregate from Mandiraja Banjarnegara the wear = 22.86%, while the wear of aggregate from Bantarkawung Bumiayu = 26.28%. From these results, the results obtained are directly proportional, the smaller the percentage obtained, the harder the stone. The average compressive strength of Kemangkon Purbalingga (Serayu) concrete at the age of 28 days reached 22.27 MPa, the average compressive strength of Singasari Karanglewas concrete reached 21.51 MPa, the average compressive strength of Mandiraja Banjarnegara concrete reached 18.48 MPa, the average compressive strength of Bantarkawung Bumiayu concrete reached 17.73 MPa. The optimum concrete compressive strength can be obtained on aggregates from Kemangkon Purbalingga (Serayu). It is important to note that the average concrete strength of a concrete mix is not the same as the average concrete strength of a concrete mix.

Keywords: Coarse Aggregate, Concrete Compressive Strength, Aggregate Hardness