

PENGARUH VARIASI NILAI FAS PADA BETON DENGAN METODE PRACAMPUR (*PREMIXED*) TERHADAP KUAT TEKAN BETON $f'c$ 20 MPa

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ABSTRAK

Beton merupakan material utama dalam konstruksi yang harus memiliki mutu yang konsisten. Pada praktik di lapangan, penambahan air yang tidak tepat sering mengubah nilai Faktor Air Semen (FAS) sehingga menurunkan kuat tekan beton. Penelitian ini bertujuan merancang komposisi beton pracampur (*premixed*) mutu $f'c$ 20 MPa dalam kemasan 50 kg, menentukan kebutuhan air yang optimal, serta menganalisis pengaruh variasi FAS terhadap workability dan kuat tekan beton sebagai acuan penggunaan beton kemasan di lapangan. Metode yang digunakan adalah eksperimen laboratorium dengan variasi penambahan air 0% (normal), +5%, +10%, dan +15%. Benda uji berbentuk silinder berdiameter 15 cm dan tinggi 30 cm, sedangkan pengujian slump dan kuat tekan dilakukan pada umur 7, 14, dan 28 hari. Hasil penelitian menunjukkan bahwa penambahan air meningkatkan nilai slump, tetapi menurunkan kuat tekan beton. Pada umur 28 hari, kuat tekan beton normal sebesar 23,80 MPa, variasi +5% sebesar 21,04 MPa, +10% sebesar 19,53 MPa, dan +15% sebesar 17,30 MPa. Beton normal dan variasi +5% masih memenuhi mutu rencana $f'c$ 20 MPa, sedangkan variasi +10% dan +15% tidak memenuhi mutu tersebut. Disimpulkan bahwa variasi FAS berpengaruh terhadap workability dan kuat tekan beton pracampur, dengan komposisi paling optimal pada kondisi normal dan toleransi penambahan air maksimum 5%.

Kata Kunci : Beton pracampur (*premixed*), faktor air semen (FAS), *workability*, kuat tekan, $f'c$ 20 MPa.

THE EFFECT OF VARIATION OF FAS VALUE IN PREMIXED CONCRETE ON THE PRESSING STRENGTH OF F'C 20 MPA CONCRETE

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ABSTRACT

Concrete is the primary material used in construction and must have consistent quality. In practice, improper water addition during mixing often changes the Water-Cement Ratio (WCR), resulting in a reduction in concrete compressive strength. This study aimed to design a 50 kg packaged premixed concrete mixture with a target compressive strength of f'c 20 MPa, determine the optimum water requirement, and analyze the effect of WCR variations on the workability and compressive strength of concrete as a reference for the use of packaged concrete in the field. The research employed a laboratory experimental method with water addition variations of 0% (normal), +5%, +10%, and +15%. The specimens were cylindrical with a diameter of 15 cm and a height of 30 cm, while slump and compressive strength tests were conducted at curing ages of 7, 14, and 28 days. The results showed that increasing the water content increased the slump value but decreased the compressive strength of concrete. At 28 days, the compressive strengths were 23.80 MPa for the normal mixture, 21.04 MPa for +5%, 19.53 MPa for +10%, and 17.30 MPa for +15%. The normal mixture and the +5% variation met the target compressive strength of f'c 20 MPa, whereas the +10% and +15% variations did not. It can be concluded that WCR variations significantly affect the workability and compressive strength of premixed concrete, with the optimum mixture achieved under normal conditions and a maximum allowable water addition tolerance of 5%.

Keywords : Premixed concrete, water-cement ratio (WCR), workability, compressive strength, f'c 20 MPa.