

ABSTRAKSI

Berdasarkan komposisi campurannya, beton normal masih mungkin untuk ditingkatkan lagi kinerjanya dengan mengurangi kandungan air dan menambah superplasticizer. Kinerja yang dapat ditingkatkan adalah kelecakan dan kuat tekannya. Pengurangan kandungan air dengan interval 0-30% dari kondisi normal dengan mempertahankan slump antara 150 - 180 mm, tanpa terjadi bleeding dan segregation. Mutu beton yang direncanakan 15 dan 20 MPa yang diuji pada umur 28 hari. Hasil penelitian memperlihatkan bahwa pengurangan air dan penambahan superplasticizer, nilai slump antara 150 - 180 mm dapat tercapai tanpa terjadi bleeding dan segregasi. Kuat Tarik optimum sebesar 3,8667 MPa dan 4,6379 MPa untuk kuat tekan rencana 15 Mpa dan 20 MPa diperoleh pada pengurangan kandungan air 20% dan penambahan superplasticizer 1,91% dan 1,95% dari berat semen. Kuat geser optimum untuk kuat tekan rencana 15 MPa dan 20 MPa sebesar 6,2247 MPa dan 6,8644 MPa diperoleh pada pengurangan kandungan air 20% dan 25% serta penambahan superplasticizer 1,91% dan 2,05% dari berat semen. Kuat Letur optimum untuk kuat tekan rencana 15 MPa dan 20 MPa sebesar 4,9484 MPa dan 4,9106 MPa diperoleh pada pengurangan kandungan air 20% dan 25% serta penambahan superplasticizer 1,91% dan 2,05% dari berat semen. Kecepatan penetrasi terkecil pada beton dengan kuat tekan rencana 15 MPa dan 20 MPa sebesar 0,0042 mm/dtk pada pengurangan air 20% (15 MPa) dan 25% (20 MPa) serta penambahan superplasticizer 1,91% dan 2,05% dari berat semen.

Kata kunci: workabilitas, superplasticizer kuat tarik, kuat geser, kuat lentur, permeabilitas

ABSTRACTION

Based on its mixture composition, it's still possible for normal concrete to increase its performance by reducing the water content and adding superplasticizer. Performances can be increased is the workability and the compressive strength. Reduction of water content in range of 0-30% from normal condition is done by maintaining slump between 150-180 mm, without happened by the bleeding and segregation. Compressive strength concrete planned is 15 and 20 MPa which is tested in age of 28 days. Result of research shows that reduction of water and addition of superplasticizer, slump value between 150-180 mm can be reached without bleeding and segregation. Optimum tensile strength at 3,8667 MPa and 4,6379 MPa for planned compressive strength 15 Mpa and 20 MPa obtained by reduction the water content 20% and addition of superplasticizer 1,91% and 1,95% of cement weight. Optimum shear strength for planned compressive strength 15 Mpa and 20 MPa of equal to 6,2247 MPa and 6,8644 MPa obtained by reduction the water content 20% and 25% and also addition of superplasticizer 1,91% and 2,05% of cement weight. Optimum flexural strength for planned compressive strength 15 Mpa and 20 MPa of equal to 4,9484 MPa and 4,9106 MPa obtained by reduction the water content 20% and 25% and also addition of superplasticizer 1,91% and 2,05% of cement weight. Smallest penetrating speed of water at concrete for planned compressive strength 15 Mpa and 20 MPa at 0,0042 mm dik of reduction the water content 20% (15 MPa) and 25% (20 MPa) and also addition of superplasticizer 1,91% and 2,05% of cement weight.

Key word: workability, superplasticizer, tensile strength, shear strength, flexural strength, permeability