Evaluasi Balok Beton Dry Mix K250 dan beton ringan beragreat polipropilena fc’ 20 MPa terhadap pengujian four points loading = Evaluation of Dry Mix Concrete K250 and Lightweight Fc’ 20 MPa as an Aggregate on Four Loading Test

Rahadyan Prabowo, author

Abstrak

Mutu beton yang diterapkan pada pengujian ini menggunakan target mutu K250 dan fc’ 20,7 MPa untuk beton beragregat polipropilena. Variasi tulangan pada balok beton tersebut terbagi menjadi A, B, C dan D. Balok jenis A merupakan beton polos, balok B beton dengan tulangan tarik, balok C menggunakan tulangan tarik dan sengkang U dan balok D menggunakan tulangan tekan, tarik dan sengkang lengkap. Jumlah sampel balok sebanyak 4 buah balok beton normal dan 4 buah balok beton ringan, sampel silinder sebanyak 3 silinder beton normal dan 3 silinder beton ringan. Material agregat kasar polipropilena dan agregat halus pasir Subang. Pengujian agregat yang dilakukan adalah analisis saringan agregat, specific gravity dan kadar organik. Mencari kuat tekan beton fc’ dengan uji tekan silinder dan menggunakan UPV. Metode uji lentur yang digunakan adalah lentur murni. Data yang akan diperoleh berupa besar lendutan (mm), besar beban luar (kg) dan pola retak. Kemudian, output yang dicari berupa pola retak balok beton, grafik kekakuan, blok tegangan beton dan grafik momen kurvatur. Dari hasil perbandingan antara balok beton normal dan ringan, diperoleh bahwa kekakuan balok beton ringan lebih besar dibandingkan balok beton normal, dan koefisien nilai k balok beton normal tidak dapat digunakan oleh beton ringan.

..... In this opportunity, the writer attempts to do a flexural test on different variation of reinforced concrete beams. This flexural test requires K250 concrete quality and fc’ 20 MPa for lightweight concrete. The variation of reinforced concrete beams are divided into 4 types, that is A, B, C and D. The A beam is a concrete beams without any steel reinforcements, B is a concrete beam using tensile steel reinforcement, C is a concrete beam using tensile steel reinforcement with an additional shear reinforments U shaped and D as a full reinforced concrete with compression and tensile steel reinforcements using full shear reinforcements. There are 8 samples of concrete beams that are used in this test. Four of them are concrete beams using dry mix concrete and the rest are lightweight concrete beams using polypropylene, and there are 3 samples of concrete cylinders using lightweight concrete and 3 samples using normal concrete. Polypropylene is used as coarse aggregate and Subang sand as fine aggregate. Aggregate tests include sieve analysis, specific gravity and organic impurities test. Cylinder concrete samples are tested using compressive test and non destructive test using UPV to find the value of fc’. The method that is used in this flexural test is pure bending. The output datas of this test are deflection (mm), external load (N) and crack pattern. The components that need to be find are crack pattern, force - displacement curve, stress distribution and curvature moment. The results from the comparation of both concretes indicates that lightweight concrete is more rigid than normal concrete, and the coefficients of stress distribution of normal concrete cannot be used to calculate lightweight concrete.