

THE EFFECT OF INCREASING IRON FIBER OF LATHE ENGINE WASTE IN PRESSURE STRENGTH AND PULL STRENGTH OF CONCRETE SLIT

PENGARUH PENAMBAHAN SERAT BESI LIMBAH MESIN BUBUT TERHADAP KUAT TEKAN DAN KUAT TARIK BELAH BETON

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ABSTRACT

Many research which has been done with a fiber in normal concrete fusion to increase the concrete press strengthespecially on the weakness of concrete quality on tensile strength. In Indonesia, steel and iron fiber utilization (bendrat wire) on concrete fusion not yet to be known. Besides, making fiber suffered high cost especially making steel fiber that is very difficult because they have to be imported. To solve this problem, in this research iron fiber lathe engine waste that easy to find and more economic is used to change the steel and iron fiber utilization. It uses iron fiber lathe engine waste with a lenght of ± 6 cm and diameters of ± 8 mm, with the edges bent and with the presentate of 0%, 2%, 4%, 6%, and 8% to cement weight. For concrete without any improvement of iron fiber classified as the concrete with 0% iron fiber with the pressure trenght on $f'c$ 25 MPa. The test speciment used in this reseach has cylinder shape and has 15 cm diameters and 30 centimeters on high. Test was arranged when it has been 14th and 28th days of curing to know the effect of iron fiber in compressive strength and tensile strength and increment percentage of iron fiber on lathe engine waste that is the most optimum. The result of research shows that the increasing of iron fiber on lathe engine waste on concrete fusion gives the effect of compressive strength and tensile strength, increase compressive strength of concrete on 46,64% on 14th day and 45,45% on 28th and increasing the compressive strength of concrete on 15,07% on 14th day and 23,07 % on 28th, compared with concrete without fiber has 8% on 14th and 28th. On 14th has 12,54 MPa compressive strength and 13,63 MPa on 28th whereas on 14th has 1,45 MPa tensile strength and 1,6 MPa on 28th. Although the result of the test of compressive strength and pulling slit concrete showed an improvement but it has not yet to reach the target valve 25 MPa, because of several factor whether it is on physical factor, building process, maintenance, and the test and its equipment for research that has not to be perfect yet.

Key words: iron fiber, compressive strength, tensile slit strenght

PENDAHULUAN

Beton merupakan bahan konstruksi yang paling sering digunakan dalam struktur bangunan. Beton dipilih karena kemudahan dalam pengerjaannya dan sekarang teknologi material sudah berkembang pesat. Ide-ide untuk menemukan, menggabungkan dan merekayasa suatu meterial telah banyak dilakukan dan diujikan dalam penelitian. Salah satunya adalah perkembangan dalam rekayasa material campuran beton. Penelitian mengenai campuran beton ini sangat menarik, karena dapat mengurangi kelemahan yang ada pada sifat beton yaitu lemah terhadap gaya tarik. Salah satu material tambahan yang dapat digunakan dalam campuran beton adalah serat, yang mana beton ini dinamakan beton berserat (*fiber concrete*).

Adapun tujuan ditambahkan serat ini adalah untuk mencegah retakan-retakan yang terlalu dini akibat pembebanan maupun panas hidrasi, dengan demikian diharapkan kemampuan beton untuk menahan kuat tarik akan meningkat dengan penambahan serat pada campuran beton. Di Indonesia, penggunaan serat baja dan besi (kawat bendrat) pada campuran beton belum terlalu dikenal. Selain itu pengadaan serat tersebut memerlukan biaya yang cukup mahal, terutama pengadaan serat baja yang masih sulit karena harus didatangkan dari luar negeri. Untuk mengatasi hal tersebut maka dalam penelitian ini digunakan serat besi

