

ABSTRAK

PEMANFAATAN LIMBAH SERAT KELAPA SEBAGAI BAHAN TAMBAHAN PEMBUATAN *PAVING BLOCK*

BY

PATRICE KEVIN MARCUS

Indonesia merupakan salah satu negara penghasil buah kelapa terbesar di dunia. Menurut data Badan Pusat Statistik Provinsi Lampung memiliki lahan perkebunan kelapa sebesar 91,8 ribu hektar dengan hasil produksi sebesar 81,9 ribu ton pada tahun 2021. Salah satu penggunaan serabut kelapa adalah penggunaan serabut kelapa sebagai bahan pencampur *paving block porous*. Penelitian ini bertujuan untuk membuat *paving block porous* dengan bahan tambahan serat sabut kelapa dan mengetahui karakter fisik *paving block* dengan campuran serat sabut kelapa. Penelitian ini menggunakan rancangan acak lengkap yang terdiri dari 4 perlakuan dan 5 ulangan dengan jumlah sampel 40 buah yang terbagi untuk uji *destructive* dan *non-destructive*. Metode pembuatan *paving block* pada penelitian yaitu serabut dicampur dengan adonan semen dan pasir kemudian dicetak dan mengalami pengkondisian selama 28 hari. Sampel penelitian mengalami pengujian yaitu uji tampak, uji resapan air, uji infiltrasi, uji densitas dan uji kuat tekan. Hasil penelitian menunjukkan bahwa penambahan serat sabut kelapa kedalam campuran *paving block* berpengaruh terhadap hasil pengujian *paving block porous*.

Pada pengujian Tampak *Paving block* memiliki warna cokelat keabu-abuan, tidak mudah rapuh dan berbentuk segi-enam dengan rata-rata tinggi 6,8 cm. Rentang nilai rata rata pengujian resap air yaitu 31,15% untuk P1 hingga 50,39% untuk P4. Pada pengujian laju infiltrasi nilai P1 sebesar 0,59 mm/s dan mengalami peningkatan sejalan penambahan serat kelapa. Nilai uji densitas dipengaruhi serat sabut kelapa seperti nilai P1 dengan penambahan serat paling sedikit menghasilkan nilai 1191,73kg/m³ dan P4 dengan penambahan paling banyak memperoleh nilai 768,11 kg/m³. Pengujian kuat tekan penelitian ini menghasilkan nilai P1 hingga P4 sebesar 1,64 MPa, 1 MPa, 0,71 MPa, 0,32 MPa. Penambahan serat sabut kelapa berpengaruh terhadap semua nilai pengujian yang telah dilakukan terhadap *paving block* yang dihasilkan.

Kata kunci : *Paving block*, Ruang Pori, Serat Kelapa, Ulet (*Ductile*), Deformasi.

ABSTRACT

UTILIZATION OF COCONUT FIBER WASTE AS AN ADDITIONAL MATERIAL FOR *PAVING BLOCK* PRODUCTION

By

PATRICE KEVIN MARCUS

Indonesia is one of the largest coconut-producing countries in the world. According to data from the Central Statistics Agency, Lampung Province has 91.8 thousand hectares of coconut plantations with a production yield of 81.9 thousand tons in 2021. One of the uses of coconut fiber that has been applied in general is the use of coconut fiber as a mixture for *porous paving block* paving. . This study aims to make *porous paving blocks* with additional ingredients of coco fiber and to know the physical characteristics of *paving blocks* with a mixture of coco fiber. This study used a completely randomized design consisting of 4 treatments and five repetitions with a total sample of 40 which were divided into *destructive* and *non-destructive* tests. The method for making *paving blocks* in this study was by the provisions of SNI-03-0691-1996 concerning concrete bricks (*paving blocks*) and several tests were carried out, namely the visible test, water absorption test, infiltration test, density test, and compressive strength test. The results showed that the addition of coco fiber into the *paving block* mixture affected the results of the *porous paving block* test.

In the test it appears that the *paving block* has a grayish-brown color, is not easily brittle, and is hexagonal in shape. The average value range of the water absorption test was 31.15% for treatment P1 to 50.39% for treatment P4. In testing the infiltration rate, the P1 value was 0.59 mm/s and it increased in line with the addition of coconut fiber. Density test values were influenced by coco fiber, such as the value of P1 with the least addition of fiber yielded a value of 1191.73, and P4 with the most additions obtained a value of 768.11. The compressive strength test of this study resulted in P1 to P4 values of 1.64 MPa, 1 MPa, 0.71 MPa, 0.32 MPa. The addition of coco fiber affects all the values of the tests that have been carried out on the resulting *paving blocks*.

Keywords: *Paving block*, Pore Space, Coconut Fiber, *Ductile*, Deformation.