

INTISARI

Wood Plastic Composite (WPC) merupakan salah satu bahan alternatif pengganti kayu. Penelitian ini menggunakan WPC yang terbentuk dari campuran tepung kayu Jati dan plastik daur ulang HDPE (*High Density Polyethylene*) sebagai syarat struktural. Pengujian kuat tumpu dilakukan untuk mengetahui kemampuan struktural WPC Jati digunakan sebagai dinding geser dan bagian struktural lainnya.

Prosedur pengujian kuat tumpu WPC Jati mengacu pada ASTM 5764 dengan konfigurasi *half-hole method*. Persiapan benda uji berupa WPC Jati sejumlah 40 buah. Baut yang digunakan memiliki diameter nominal 6 mm, 8 mm, 10 mm, dan 12 mm. Pengujian dilakukan dengan menggunakan *Universal Testing Machine* dan menghasilkan data berupa beban (kg) dan defleksi (mm).

Nilai kuat tumpu tertinggi dicapai ketika pengujian dilakukan dengan menggunakan baut diameter 6 mm. Nilai kuat tumpu metode offset 5% menghasilkan kuat tumpu berkisar 64,874 MPa, sedangkan metode maksimal menghasilkan kuat tumpu berkisar 66,053 MPa. Dari hasil penelitian didapatkan hubungan antara nilai kuat tumpu 5% offset terhadap diameter baut yaitu, $F_{e5\%} = -2.2353D + 80.344$ dan hubungan kuat tumpu maksimal terhadap diameter baut yaitu, $F_{eMax} = -2.1859D + 81.249$, dimana D merupakan diameter baut yang digunakan.

Kata Kunci : *High Density Polyethylene*, tepung kayu Jati, *Wood-Plastic Composite*, kuat tumpu.

ABSTRACT

Wood Plastic Composite (WPC) is one of the alternative building materials as a substitute for wood / timber. This research uses WPC with the mixture of Teak wood flour and recycled HDPE (*High Density Polyethylene*) plastics as structural requirements. Embedment strength test is conducted on the Teak WPC to know its capability for usage such as shear-walls and other structural part of a building.

Test procedures on Teak WPC is referred to ASTM 5764 with half-hole configuration. Teak WPC as many as 40 samples is prepared for the test. The bolts used in the test varies from 6 mm, 8 mm, 10 mm to 12 mm. Embedment test is conducted using Universal Testing Machine dan produces force (kg)-stroke (mm) data. The data then proceed to be calculated and analyzed using ANOVA.

The highest embedment strength is reached when the test is conducted with the usage of 6 mm bolt. Embedment strength with 5% offset method produces 64.874 MPa. On the other hand, embedment strength with maximum method produces 66.053 MPa. From the test results, equations are acquired referring to embedment strength and bolts diameters as a variable, as follows : $F_{e5\%} = -2.2353D + 80.344$ for yield strength and $F_{eMax} = -2.1859D + 81.249$ for maximum strength, whereas D is the bold diameter.

Keywords: *High Density Polyethylene*, Teak wood flour, *Wood-Plastic Composite*, embedment strength.