



INTISARI

Bambu telah memiliki sejarah yang panjang dan mapan sebagai bahan bangunan di seluruh dunia baik di daerah tropis maupun sub-tropis. Akan tetapi sebagian besar penggunaan bambu sebagai bahan konstruksi hanya digunakan secara konvensional dan diajarkan secara turun temurun. Untuk memperoleh hasil yang optimal, maka sebaiknya sifat fisika dan mekanika suatu bahan dipahami secara pasti. Pemahaman yang menyeluruh tentang sifat fisika dan mekanika dapat mengoptimalkan pemakaian bambu sebagai bahan konstruksi. Tujuan penelitian ini adalah untuk melengkapi database yang berhubungan dengan sifat fisika dan mekanika bambu Apus dan hubungan antara sifat fisika dan mekanika bambu Apus. Bambu Apus yang digunakan pada penelitian ini berasal dari daerah Seyegan.

Penelitian secara eksperimental mengacu pada ISO 22157-1 : 2004 mengenai manual laboratorium : *“Bamboo-Determination of physical and mechanical properties - Part 1 : Requirement”*, ISO/TR 22157-2 : 2004 mengenai manual laboratorium : *“Bamboo – Determination of physical and mechanical properties – Part 1 : Laboratory Manual”*. Sifat mekanika yang dicari adalah kuat tekan, kuat tarik, kuat lentur, dan kuat geser. Pengujian kuat tumpu baut mengacu pada ASTM D 5764-97a *Standard Test Method for Evaluating Dowel-Bearing Strength of Wood and Wood-Based Products*.

Hasil penelitian menunjukkan sifat fisika bambu Apus diperoleh kadar air 14,60% dan kerapatan 546,28 kg/m³. Sedangkan sifat mekanika bambu Apus diperoleh kuat tekan 40,89 MPa, kuat tarik 223,36, MPa, kuat lentur 60,07 MPa, kuat geser dengan ruas 5,46 MPa, kuat geser tanpa ruas 4,84 MPa, $f_{e \text{ maks.}}$ 17,07 MPa, $f_{e \text{ 5\%}}$ 16,56 MPa, E_{tekan} 12.102 MPa, E_{tarik} 20.893 MPa, dan E_{lentur} 15.464 MPa. Hasil penelitian tersebut menunjukkan bahwa sifat mekanika bambu Apus mengalami kenaikan seiring dengan meningkatnya kerapatan bambu dan mengalami penurunan dengan meningkatnya kadar air bambu.

Kata kunci : Sifat fisika, Sifat mekanika, bambu Apus, Seyegan



ABSTRACT

Bamboo has a long and well-established history as a building material in the tropic and sub-tropic world. However, Bamboo is conventionally used as a construction material and is passed down from generation. For the optimum use of bamboo, it should be well understood for its physical and mechanical properties. A thorough understanding of physical and mechanical properties can optimize the use of bamboo as a construction material. The purpose of this study is to complete the database associated with the physical and mechanical properties of bamboo Apus and its relationship between the two properties. Bamboo Apus is used in this experiment came from the area Seyegan.

The study experimental was conducted based on ISO 22157-1: 2004 concerning laboratory manual: "Bamboo-Determination of physical and mechanical properties - Part 1: Requirements", ISO / TR 22157-2: 2004 regarding laboratory manual: "Bamboo - Determination of physical and mechanical properties - Part 1: Laboratory Manual ". The mechanical properties sought is compression strength, tensile strength, static bending strength, shear strength with a node, and shear strength without a node. The study experimental dowel-bearing strength was conducted based on ASTM D 5764-97a Standard Test Method for Evaluating Dowel-Bearing Strength of Wood and Wood-Based Products.

The findings of the experiment that showed physical properties of bamboo Apus has 14,60 percent of the moisture content and the density of 546,28 kg / m³. Meanwhile, the mechanical properties of bamboo Apus was obtained the compression strength 40,89 MPa, the tensile strength 223,6, MPa, static bending strength 60,07 MPa, the shear strength with a node 5,46 MPa, the shear strength without a node 4,84 MPa, $f_{e \text{ maks.}}$ 17,07 MPa, $f_{e \text{ 5\%}}$ 16,56 MPa, $E_{\text{Compression}}$ 12.102 MPa, E_{Tensile} MPa 20.893 and $E_{\text{static bending}}$ 15.464 MPa. Furthermore, the experiment showed that the mechanical properties of bamboo increases along with the increase density of Bamboo's mass density and it decreased with the increased moisture content of Bamboo's.

Keywords: Physical properties, mechanical properties, bamboo Apus, Seyegan