

# **Volume Variation of Petung Bamboo Fiber and Injection Molding Temperature on Impact Resistance and Tensile Strength of Biocomposites**

by

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## **ABSTRACT**

Bamboo is very abundant in the tropics, one of which is in Indonesia. This research aims to determine the impact and tensile strength of composite materials using petung bamboo fiber and polypropylene reinforced materials and their application to the visor vehicle body. Research conducted in the Lab. Malang State Polytechnic Mechanical Engineering (POLINEMA) for tensile testing, while impact testing is carried out in the Lab. Material Test, Faculty of Mechanical Engineering, Jember State University. The method used is experimental by using variations in volume fraction between filler and matrix, namely 0:100; 15:85; 25:75; 35:65 with injection temperatures, namely: 180 °C, 210 °C, 240 °C. The fiber used as filler is petung bamboo fiber which is crushed into fine powder. The results showed that the best impact resistance and tensile strength (*ultimate tensile strength*) values of petung bamboo fiber biocomposites were found at a volume fraction of 15% filler + 85% matrix with an injection temperature of 210 °C of 0.082 joules/mm<sup>2</sup> and 20,62 Mpa with a strain value of 3.86%. Petung bamboo fiber is suitable for use on vehicle bodies, it can be seen that from the tests that have been carried out, the resistance and strength test values meet the standard values of JIS A 5905: 2003. The tensile strength values obtained are 6.21 MPa - 20.62 MPa have fulfilled the values the JIS A 5905: 2003 standard, increased by 93.6% - 98.06%, while the impact resistance value obtained was 0.009 - 0.082 joules/mm<sup>2</sup> which met the ABS High Impact quality standard, increased by 99.86% - 99.99%.

**Keywords:** *Composite, Petung Bamboo Fiber, Injection Temperature, Tensile Strength, Impact Resistance*