

## SUMMARY

**Afrredo Trilasetya.A.W**, Department of Mechanical Engineering, Faculty of Engineering, Universitas Brawijaya, in December 2016, *The Effect Of Fiber Orientation on Tensile Strength of Natural Fiber Composite with Polyester Matrix.*, supervisor: Arif Sofyan Setyabudi, Satriya Bayu Wardhana.

*In the manufacture of composite engineering, there is one type ie Composite fiber composites. Developments Composite fibers have been widely used but the fibers used are mostly man-made fibers. Therefore, engineered composites manufacture not only use artificial fibers such as glass fiber, but there are also reinforcing materials of natural fibers or commonly called biocomposites are considered environmentally friendly and readily available in nature Indonesia. One example of natural fibers used as reinforcement fiber composite skin is hibiscus.*

*The purpose of this study was to answer the needs of people who want a more effective and economical in the manufacture of composite materials into thriving and to determine the tensile strength and the strength of polyester reinforced hibiscus (*Hibiscus tiliaceus*) composite fiber treated with alkali 6% and variations in fiber orientation so that we can use of a material that is more precise than the tensile strength properties. This composite material may replace expensive glass fiber as a reinforcing material in the process of making the bannyak in practice today.*

*By doing alkalization fiber leather hibiscus with 6% NaOH solution for 2 hours. In the manufacture of test specimens made of composite test variations using 20 layers of fiber and fiber orientation angle of 0 °, 90 °: -45 °, 45 °; 0 °, 60 °. The test object is made by the method of vacuum. 157 polyester resin matrix used and the type of catalyst MEKPO BTQN concentration of 1%. Photo specimen fracture observed with observation macro shots. mechanical properties obtained from tensile test results of the test. Showed that the tensile strength of the effect of treatment with 6% NaOH alkaline. Polyester fiber reinforced composite specimens hibiscus with 6% NaOH for 2 hours is the greatest tensile strength first is the orientation 0 °, 60 ° is 120 MPa; and 0 °, 90 ° to 96.5 MPa the two is the smallest force is: -45 °, 45 ° to 51 MPa. From this research in getting that big semakain orientation based on the direction of fiber orientation direction at yield strength of the material will be small otherwise if unidirectional fiber direction degan style that is given the power that produced large semakain.*

**Keywords:** composite, hibiscus fiber, fiber orientation and tensile strength test.