

### **ABSTRAK**

*Research on natural fiber composites based on Polymethyl Methacrylate (PMMA) has been widely developed in the industrial and health fields for example such as the manufacture of denture base materials and coating materials on aircraft. However, many researches on natural fiber composites are still carried out with various methods to increase the mechanical strength. One such method is modifying the surface of the fiber with alkalization. The purpose of this study was to determine the effect of alkalization time differences on sisal / PMMA composite bending properties.*

*Before being fabricated into sisal fiber composite, alkalization process was carried out on sisal fibers with varying immersion times, ie 4 hours, 24 hours and 40 hours, while the ratio of volume variation to matrix was 80:20. Fabrication method for making composite is done manually with cold press machine at a pressure of 120 kg / cm<sup>2</sup>. Specimens were tested using the ASTM D790 standard. Composite surface after bending is analyzed using an optical microscope to determine the fiber distribution in the matrix.*

*The results of this study indicate that the composite bending test using 4 hour alkalization sisal with a value of 92.196 MPa is higher than the 24 hour alkalization sisal of 90.562 MPa. This is strengthened based on optical photo analysis on the surface of sisal composite with 4 hours soaking time is the best and based on optical photo analysis shows the distribution of fibers in the matrix that is not evenly distributed in the composite with 40 hours alkalization. This is what might cause the bending compressive strength with the 40 hour alkalization to be the lowest.*

*Keywords: sisal fiber, PMMA, composite, bending properties.*