ABSTRAK

EFFECT OF THE VOLUME FRACTION OF FIBER TENSILE STRENGTH COMPOSITE LEATHER TRUNK MELINJO (GNETUM GNEMON) - EPOXY RESIN

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Bast fibers melinjo is a natural fiber derived from trees melinjo, and can be degraded naturally and cheaper than synthetic fibers. Composite is one alternative to produce a material of better mechanical properties than other materials. The aim of this study was to determine the tensile strength fiber composite melinjo tree bark with a volume fraction of 5%, 10% and 15%.

Melinjo bast fibers are used as filler composites, because the price is relatively cheap compared to synthetic fibers. Fibers used as reinforcement given 5% NaOH alkaline treatment for 2 hours. The method used in the making is a method of hand lay-up by mixing epoxy resin and hardener in the ratio 1: 1 mixture refers to ASTM D638. Furthermore, the direction of fibers arranged randomly with a volume fraction of 5%, 10% and 15%. Then do the tensile test for composites with a volume fraction of 5%, 10%, 15%. Photo regions fault with Scanning Electron Microscope (SEM) is used to see the fracture mechanics of composites.

From the test results and analysis of data showed that the tensile strength composite bast fibers melinjo 15% higher than the volume fraction of 10% and 5%, with a tensile strength of 15.99 MPa and the strain of 4433%. Analysis of data using observations SEM in cross fault, can know the failure of composites such as fiber pullout, matrix cracking, fiber breaking, and the former pullout. From the data analysis, it is known that the more the volume fraction, the higher the tensile strength. This shows that the connective power between the matrix and fiber are quite good, but the distribution of fibers in the matrix is uneven resulting in optimum composite tensile strength can not be achieved.

Keywords: composite, melinjo bast fibers, epoxy resin, tensile strength, SEM.