**ABSTRACT**

**UTILIZATION OF FIBER AND SHELL PARTICLES PALM OIL AS SUBSTITUTE MATERIALS IN PRODUCING ETERNITE CEILING**

By

Dwi Kurniawan Saputra

Assessment of science and technology in the field of materials engineering and the development of environmental issues require new breakthroughs in the provision of high quality materials and environmentally friendly. Nonmetallic materials Composite especially natural fibers that are more lightweight, malleable, corrosion resistance, low price and easy to obtain. research purposes to determine the mechanical properties of composite fiber and palm shell particles by measuring tensile strength, hardness and bending.

In this study, the materials used are such as cement, fiber and oil palm’s shell, and using tools such as mold, ruler, sieve, balance sheets, and others. Composite fibers arranged randomly on the variation of particle mass fraction of 40% coconut oil, 35% of particles and 5% palm fiber, 30% particles and 10% fiber and 25% palm oil and 15% of particles of oil palm fiber. Pull Testing was conducted with reference to DIN 50 125, flexure testing with standard DIN 1101. Both tensile testing and flexural testing were conducted to determine the mechanical properties of the composite.

 The highest value of flexure test result is in the composite content of 25% particles and 15% fiber particles is equal to 2:44 N/mm2 and the lowest value of bending test result is the composite content of particles 40% of palm oil is equal to 1365 N/mm2. While for the tensile test results, the highest value is in the composite content of 30% and 10% of particles of oil palm fiber at 0.479 N/mm2, and for the lowest drag value is on the particle content of 35% composite and 5% palm fiber at 0.15 N/mm2 . As for the highest value in hardness test is in the composite content of 30% and 10% of particles Fiber HRH palm of 36.5, and the lowest value is 26.5% HRH the composite contains of 35% particle and 5% palm fiber.

Key words: Composite, fiber and palm shell particles, mechanical strength, tensile test, hardness test and bending test.