EFFECT OF SOIL BURIED TO MECHANICAL PROPERTIES OF REINFORCED KENAF CORE FIBRE IN THERMOPLASTIC POLYURETHANE COMPOSITES.

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ABSTRACT.

The aim of this research is to study the effect of soil buried to compressive strength properties of Kenaf fiber reinforced thermoplastic polyurethane (KFTPU) composite. Pulverized kenaf core particles was sieved into 3 sizes namely <123µm, 125-300µm and >300µm. Pulverized kenaf core particles reinforced TPU composite was prepared with 3 different percent of kenaf loading of 5wt%, 10wt% and 15wt%. The compressive strength of the composite was tested by using Compressive test machine. The samples were test to see which one have the highest compressive strength and low density. The results of compressive strength at 60% deformation show that sample 125-300µm and 10wt% kenaf loading have the best strength and low density. Thus, the composite with pulverized kenaf core particles size 125-300µm and 10wt% kenaf loading was buried into the soil. The buried sample was divided into two categories which at the presence of water and petrol oil. The compressive strength was determined after 1, 2, and 3 weeks. The weight gains by the samples after soil buried were recorded every on 1 week. The compressive strength of the buried composite during the presence of water increased from 2722.75 kPa to 4269.33 kPa for week 1 and week 3 respectively. While the compressive strength of the buried composite during the presence of petrol oil decreased from 3287.47 kPa to 1964.9 kPa for week 1 and week 3 respectively.

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CHAPTER 1

INTRODUCTION

1.1 Background Study

Composite material is formed from combination of two different materials which have different properties. The two materials when combine together will be form the composite (D. Verma et. al. 2012). These combinations of two materials are form on purpose to obtain the new properties that only can be obtain through these combination of 2 material. The composite formed is not naturally happened (Nikhil R et. al., 2015). The two materials usually use are polymers (matrix) and filler (reinforce material). As Verma et. al. (2012) claimed, that the composite is actually consisting of discontinuous and continuous phase that combine together to from the composite material. The discontinuous is known as reinforce and continuous known as matrix. The combination of these two different phases was separate by a distinct interface (Nikhil R et. al., 2015).

Natural fiber reinforcement composite is deriving from the renewable resources. Nowadays, there are so many products that can give bad impact and cause problem to our environment. The product produce is not so environmental friendly. Thus, industry was asked to produce the product that more environmental friendly. So that the environmental problem causes by the product from the industry sector can be decrease. The uses of plastics are increasing in every sector from day to day. The plastics used are one of the products that can cause problem to the environment. That is why the research towards eco-composite or environmental friendly composite are getting expands.

Natural fibers have many advantages as compared to the synthetic fibers (Janusz Datta, et. al., 2015). The most important advantage for the natural fiber reinforcement in composite is low cost and biodegradability. The cost of producing natural fiber