OIL PALM EMPTY FRUIT BUNCH COMPOSITE

By:

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CHAPTER 1

INTRODUCTION

Composite is defined as a structural material, which consists of combining two or more constituents. The constituents are combined at a macroscopic level and are not soluble in each other. One constituent is called the reinforcing phase and the one in which it is embedded is called matrix. The reinforcing phase material may be in the form of fibres, particles or flakes which can be used either natural or recycle material. The matrix phase material is generally continuous such as metal, ceramic and plastic.

Composite offer several other advantages over conventional materials. These may include improved strength, stiffness, fatigue and impact resistance, thermal conductivity, corrosion resistance, etc. Besides, it has low mass properties compared to metal material, which requires in technology today especially in aerospace industry. Composite' s market price more cheaper than steel.

Composite material prepared in this project used two types of material. They are polyester resin as a matrix and oil palm empty fruit bunch as a reinforcing fibre. Application of reinforcing fibre is divided into two categories properties; first category

is in the form of short fibre and second category posses of crush fibre. The length of these fibres is measured into 3 cm long relative to short fibre but crush fibre is obtained by pass it threw a crusher. Besides, both categories have five identical proportion of fibre where consist of difference percentages (5%, 8%, 10%, 13%, 15%).

Polyester resin with additional of methyl ether ketone peroxide (MEKP) as a catalyst is used in order chemically cross linked occurred as well as laminated the oil palm empty fruit bunch (fibre) to get a new material which considered as composite material. Hand lay-up technique is used in preparing this composite material since polyester resin posses thermoset plastic behaviors.

1.1 **Objectives**

1. To study the effect of fibre length on the composite.
2. To study the properties of Oil Palm Empty Fruit Bunch (OPEFB) composite.