

**MECHANICAL PROPERTIES OF COCONUT HUSK FILLED
POLYPROPYLENE**

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ABSTRACT

MECHANICAL PROPERTIES OF COCONUT HUSK FILLED POLYPROPYLENE

Composite is fabricated to improve mechanical properties of a product such as strength, stiffness, toughness and high temperature performance. The most significant type of composite that is widely used nowadays is polymer composite. An example of a polymer composite is coconut husk filled polypropylene composite, where polypropylene was used as the matrix and coconut husk was used as filler in this composite. The mechanical properties of coconut husk filled polypropylene composite can be determined by mechanical testings such as tensile test, flexural test, and impact test such as Izod impact or falling weight impact test. Silane coupling agent was added in the composite in order to enhance the performance of the mechanical properties of the composite. The filler loading was varied from 5% to 20% by weight. Dispersion mixer was used to compound the composite and compression moulding machine was used to make the samples for mechanical testings. The composites samples were divided into two groups which were the silane treated composite and non-silane treated composite. In this study, it was found that the mechanical properties of the silane treated composite is slightly higher than the non-silane treated composite. There were also other testings carried out such as density test, water absorption test and melt flow index test.

CHAPTER 1

INTRODUCTION

1.1 Background

Composite is fabricated to improve mechanical properties such as strength, stiffness, toughness and high temperature performance. The strengthening mechanism strongly depends on the geometry of the reinforced. The most significant type of composite that is widely used nowadays is polymer composite. Polymer composite is commonly used in transportation applications, marine applications, aerospace and military applications construction applications, electrical applications and sports applications. Composite consists of matrix or binder which is the polymeric material and reinforcement which is the fibre or filler. The binder can be from the thermoplastic or thermoset group of plastic, while the reinforcement can be natural filler such as coconut husk, sugarcane waste or rice husk, or synthetic filler such as silica and carbon black. But there is also problem in producing composite where there might be less adhesion between polymer matrix and the filler and inhomogeneity of filler in the polymer blend. Therefore a coupling agent could be used in order to bond the filler or fibre to organic resins to form or promote a stronger bond at the interface[1].