

**EVALUATION OF RICE HUSK AS FILLER IN NATURAL RUBBER
COMPOUND**

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ABSTRACT

EVALUATION OF RICE HUSK AS FILLER IN NATURAL RUBBER COMPOUND

The effect of different rice husk as filler loading in natural rubber was investigated. The rice husk was grinded using grinding machine and sieved with 100 μ m sieves. The rice husk and natural rubber were mixed using two roll machine with together with other ingredients such as zinc oxide, stearic acid, CBS, TMTD, sulphur, permanax TMQ and ENR 50. The effects of rice husk loading in natural rubber were investigated using several types of testing methods. The differences between unaged and aged also investigated. The tests include tensile test, hardness test, resilience test, abrasion test and swelling test. These tests were conducted to investigate the mechanical properties of natural rubber compounds. The data obtained was analyzed and discussed. It was found that in tensile test the further loading of filler will resulted in reduction of tensile strength. For tensile and resilience test, unaged samples give better result than aged sample but for hardness test it gave better in aged samples than unaged samples. In abrasion test, the increasing of filler loading resulted in decreasing of abrasion resistance index. The optimum loading was determined in this project is 25 phr of rice husk loading.

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

Natural rubber is an elastic hydrocarbon polymer that naturally occurs as a milky colloidal suspension or latex. It is used extensively in many applications and products. Natural rubber is often vulcanized, a process by which the rubber is heated and sulfur, peroxide or bisphenol are added to improve resilience and elasticity, and to prevent it from perishing. Vulcanization greatly improved the durability and utility of rubber. However, as the rubber is vulcanized it will turn into a thermoset. Most rubber in everyday use is vulcanized to a point where it shares properties of both where if it is heated and cooled, it is degraded but not destroyed. [1]

Carbon black is often used as an additive to rubber to improve its strength, especially in vehicle tires. The general effect of carbon black on rubber properties are similar in all rubber, being dominated mainly by surface area, particle size, and aggregate size. High surface area, small particle size carbon blacks impact higher levels of reinforcement as reflected in tensile strength and resistance to abrasion and tearing. Higher hysteresis and poorer dynamic