STUDY PHYSICAL PROPERTIES OF NATURAL RUBBER FILLED SEASHELL POWDER

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ABSTRACT

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The main objectives of this project are to reutilize seashell on rubber compound to minimize the disposal problems and also for economic reason where the seashell powder is added into new rubber compound formulation to reduce the production cost. Seashell which is rich with the mineral of calcium carbonate is suitable choice as filler in order to replace calcium carbonate commercial function. The effect of addition of seashell on physical properties of new natural rubber compound formulations was investigated by using different loading of seashell that varies from 0, 20, 30, 40 and 50 pphr. The result indicate that the incorporation of seashell rubber compound reduce the cure time. The maximum tensile strength can be obtained at 20 pphr of seashell loading and when higher of seashell added, the tensile strength will be reducing significantly. The hardness increase slightly when seashell loading used. Instead, resilience will decrease slightly when the seashell loading added.

CHAPTER 1

INTRODUCTION

1.1 Background of study

The rubber industry in Europe really started with Charles Macintosh in 1818. Charles Macintosh was an industrial chemist in Glasgow, then a major centre of the chemical industry, and was eager to exploit the waste products of the new coal gasification process. Natural rubber has been widely used material for many applications in industry. It rich with excellent properties that make it is so valuable for the production such as automotive, engineering, adhesives and etc. As a prove, in 1820, Thomas Hancock discovered mastication. He was using rubber in elastic fastenings for gloves, shoes and stockings. In order to developed full potential of rubber, they have to be cross linked by the vulcanization process. This has been recognised by Charles Goodyear.

Besides of that, fillers also play important role in order to to modify the physical properties of rubber compounds and rubber vulcanizates, the other function of filler such as calcium carbonate ($CaCO_3$), clay, talc for cheapen cost while retained the properties of the rubber strength, flexibility, abrasion resistance and etc.(, Vol. 5. Dr. C. Baker, Materials World).