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EFFECTS OF DIFFERENT NATURAL ANTIOXIDANTS ON TACKINESS AND SHEAR STRENGTH PROPERTIES IN NATURAL RUBBER CUP LUMP BLENDED WITH EPDM RUBBER AS SEALANT

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ABSTRACT

Sealant is commonly made from polymer because polymer is great in term of physical properties and also great in weathering properties. But polymer is non-biodegradable and not environmental friendly. Therefore a new alternative has been done where make a sealant from new materials which is natural rubber (NR). Since the price of latex is expensive, the NR cup lump has been chosen to be used due to cheaper price than latex. Ethylene Propylene Diene Monomer (EPDM) rubber is blended together with the NR to enhance the physical properties and antioxidants is added to improve the weathering properties. The mangosteen and curcumin is the antioxidants used which will be compared which one is much better antioxidants. The NR is diluted in toluene so with the EPDM rubber except chloroform needed to be added to EPDM to diluted the raw materiels and then blended both materials and added the antioxidants. Then the sealant sample is test on the tensile strength and the tackiness test which sample is separated between sealant blended between NR and EPDM and also sealant which is 100% NR content and the sample is prepared for before aging and after aging. From the result obtained, sealant that is made from NR blended with EPDM and curcumin as antioxidant is better where the maximum stress is high even though the sample is undergo aging process. For tackiness, sealant made from 100% content of NR show positive results even though it is undergo aging process. Nevertheless the sealant made from NR blended with EPDM and addition of curcumin also good but not good as sealant with 100% content NR and addition of curcumin. In conclusion, the sealant that is good to be used is depend on the industrial used and from the experiment, the sealant that is blended with NR and EPDM with addition of curcumin is much better in term of physical properties and weathering properties.

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CHAPTER 1

INTRODUCTION

1.0 Natural Rubber

Natural rubber or also can be called as latex can be obtained from rubber tree such as Hevea brasiliensis. Natural rubber has great properties and has well known throughout Europe where natural rubber can give a lot of benefit to them. Latex can be obtained by tapping the rubber trees and the latex will be collected in a cup lump. An efficiency tapping system can affect the production of the latex (Fainleib et al. 2013).

In scientific name, natural rubber also is an unsaturated hydrocarbon called isoprene (2-methyl butadiene). Natural rubber also is an example for the polymers which belong in the one of the type for elastomers (retrieved from www.industrialrubbergoods.com). Elastomers means that the materials can be stretch until a certain point when applied some force on it and the can return to its original shapes. Other than natural rubber, synthetic rubber which is rubber that is manmade, styrene-butadiene rubber (SBR), nitrile-butadiene rubber (NBR) and ethylene propylene diene rubber (EPDM) also examples of polymers that is similar to natural rubber which is also an elastomers.

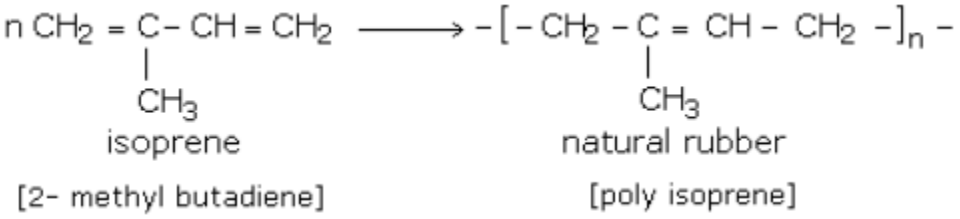

Figure 1.0 Chemical Structure for natural rubber.