UNIVERSITI TEKNOLOGI MARA

PHYSICAL PROPERTIES OF THERMOPLASTIC MADE FROM TACCA LEONTOPETALOIDES STARCH

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ABSTRACT

Abstract – Usage of thermoplastic made from renewable sources from plants has been a focus in research in recent years due to the potential of the product being usable in variable of method and industries because it is biodegradable and is seen as one of the possible method of reducing the amount of waste in landfills. This research focuses on the physical properties of tacca leontopetaloides/ethylene thermoplastic blend properties which are the shear stress and tensile strength respectively

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INTRODUCTION

1.1 Research Background

As human civilization progress, the amount of discoveries that yields new resources increases and as more and more resources are being discovered, the amount of usage from those resources increase. Plastics for example, is one of the most commonly used materials used in the world. Commonly made from petroleum processing, they have multiple usage due to its workability and ease of use. This also means that products made from plastic is commonly available to the consumers which in turn will cause the garbage produced from them will contain mostly products made from plastics. From the increasing amount of garbage to the landfills being barely able to cope with the amount of waste generated each day, more and more people are focusing more on ways to circumvent this situation. Over half of the landfills in China are filled with plastic waste (Zhou et al. 2014), and the call for a sustainable and environmental friendly substitute for commodity plastics that are mostly made out of non-renewable petroleum sources. This added to the fact that the growing shortage of the petroleum sources makes this desirable as ever as to find the replacement for the commodity plastics (Zhang et al. 2012).

Throughout the years, a lot of discoveries have been made that allows the production of plastics from renewable materials such as starch and cellulose, which are a product of agriculture that is easily available around the world. They are naturally carbohydrate polymers that can be easily processed from crops and has a low cost compared to the synthetic polymers. Starch are nowadays being researched as a replacement of synthetic polymers to make water soluble detergent and insecticide pouches, flushable liner bags and medical delivery system and devices. They can also be made into edible bags for soups and noodle ingredients(Fishman et al. 2000). Cellulose is also has been used as reinforcement in plastic materials as it is the alternative and is made and used in automotive components, aerospace parts, sporting goods and building industry (Jumaidin et al. 2017).

Bioplastics are plastic products that contains polymers that are made from natural resources in a certain controlled environment. By adding these materials, it also helps in