CHARACTERIZATION OF MODIFIED SILICONE – DAMMAR RESIN AS COATING AFTER THERMAL PROCESS

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ABSTRACT

Dammar, a local plant resin *(Dipterocaupacea sp)* has been used in coating formulation to produce dammar-modified silicone resin. Dammar and silicone were mixed in various compositions and then were coated onto Aluminum Q-panel by using spin coating method and left to dry by using thermal process. Adhesion property was investigated by using cross-hatch test.There were no significant damage and delaminations were observed at the panel coated with 10 wt.% of dammar that has undergone the cross-hatch test. Hence, the addition of more than 10 wt.% of dammar resulted in large delaminations and cracks on the coating materials. Contact angle measurement of wettability test was also being carried out.The surface coated with dammar-silicone resin was found to be hydrophobic where the contact angle obtained was 70^{o} for the sample containing 10wt% of dammar. Electrochemical impedance spectroscopy (EIS) was successfully applied to study about the corrosion system and has been proven to be a powerful and accurate method for measuring corrosion rates of the coated materials.It shown that (10wt.% dammar cured at $80^{o}C$) have higher coating resistivity and low conductivity.

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CHAPTER 1

INTRODUCTION

1.0 Background

A coating is a covering that is applied to the surface of an object, usually referred to as the substrate. In many cases coatings are applied to improve surface properties of the substrate, such as appearance, adhesion, wetability and corrosion resistance. The coating can be applied by several methods such as dipping, painting, or spraying.

Coatings are mainly applied on surfaces for decorative, protective, or functional purposes, but in most cases it is a combination of these. The term "functional coatings" describes systems which possess, besides the classical properties of a coating (i.e., decoration and protection), an additional functionality (M.Wulf *et al.*,2002). This additional functionality may be diverse, and depend upon the actual application of a coated substrate. Typical examples of functional coatings are self-cleaning (E. Nun *et al.*,2002), easy-toclean (anti-graffiti) (M.Khur *et al.*,2003), antifouling (M.Perez *et al.*,2003), soft feel and antibacterial (K.Lewis *et al.*,2001). Although various mechanisms are involved, as well as numerous applications, adhesion become a common feature that is particular benefit and satisfied most of customers.