

**ADHESION AND CORROSION PROPERTIES OF POLYESTER FILLED  
CALCIUM GLUCONATE VIA IMMERSION IN SALT SOLUTION AS  
PRIMER COATINGS APPLICATION**

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## AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

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## **ABSTRACT**

### **ADHESION AND CORROSION PROPERTIES OF POLYESTER FILLED CALCIUM GLUCONATE VIA IMMERSION IN SALT SOLUTION AS PRIMER COATINGS APPLICATION**

This study was performed to determine the adhesion properties and corrosive properties of the polyester filled calcium gluconate as primer coating application. The number of loadings of calcium gluconate was varied from 0-40% and to determine the adhesion properties of the coating, adhesion test such as hardness test, contact angle test, and peel off test was performed. Corrosion properties were measured with immersion test to determine the corrosion rate occurred on the metal plate coated. Formulation 5 (PE-CG 40%) have optimum result for adhesion test, as the hardness value is 4H which was the most hardest and no water penetration occurred in contact angle test as the angle is above 90° which is, 98.51°. The result obtained in peel off test for formulation 5 (PE-CG 40%) was positive, as it shown 0% of area removed. It is because, the higher the calcium gluconate content in the formulation, the higher the strength of adhesion between the steel plate and the primer coating layer. The corrosion immersion was done in seawater and Nacl solutions. In both solutions, mild steel plate for formulation sample 5 (PE-CG 40 %) was the highest corrosive resistance as there was no corrosion at all on the surface of the steel plate. In addition, the was no flaking and blistering occurred due to the higher percent of calcium gluconate loading that suitable enough to prevent corrosion from occur. From this study, it was concluded that the number of calcium gluconate loadings that was used in the primer coating application affected the adhesion strength as well as corrosion resistance of coatings. The optimum results for both adhesion testing and corrosion testing was formulation 5 (PE-CG 40%).

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