

**INVESTIGATION ON THE ROLE OF TANNIC ACID
AS CORROSION INHIBITOR FOR ALUMINIUM ALLOY
IN CHLORIDE SOLUTION VIA WEIGHT LOSS TEST**

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This Final Year Project Report entitled "**Investigation On The Role Of Tannic Acid As Corrosion Inhibitor For Aluminium Alloy In Chloride Solution Via Weight Loss Test**" was submitted by Nurul Aniqah Binti Saiful Adli in partial fulfilment of the requirements for the Degree of Bachelor of Science (Hons.) Applied Chemistry in the Faculty of Applied Sciences, and was approved by

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ABSTRACT

INVESTIGATION ON THE ROLE OF TANNIC ACID AS CORROSION INHIBITOR FOR ALUMINIUM ALLOY IN CHLORIDE SOLUTION VIA WEIGHT LOSS TEST

In this study, the role of tannic acid was investigated as corrosion inhibitor for aluminium alloy 1100 in chloride solution through weight loss test. The main goals of this study are to determine the corrosion rate and corrosion inhibition efficiency of alloys and to investigate the effect of localised corrosion on aluminium surface by using optical microscope. In this work, tannic acid standard has been used as a corrosion inhibitor and was subjected to three hours of immersion test in 0.1 M, 0.5 M and 1.0 M of HCl. As the results of the study, it clearly shows that as the concentration of inhibitors increases, more inhibitor molecules are adsorbed onto the surface of the tested coupon. Thus, corrosion inhibition efficiency improves. In this study, it shows that the highest inhibition efficiency is at 98.73% with the concentration of 3 g/L tannic acid where the concentration of HCl is 0.1 M and lowest inhibition efficiency is at 96.17% with 4 g/L of tannic acid. The aggressive chloride ion that corrode the surface of the aluminum alloy caused scratches and little brittles to form on aluminium alloy's surface. This corrosion resulted in a dissolving process known as localized corrosion. As a conclusion, the produced ferric tannate worked as a thin protective layer or film that possibly coated the aluminium alloy 1100, and inhibit further corrosion. The outcomes of this study will help to design long-term corrosion protection solutions for aluminium alloys 1100 in chloride environments.

Keywords: tannic acid, corrosion inhibitor, aluminum alloy, chloride solution, weight loss analysis