

**CORROSION INHIBITION OF ALUMINUM ALLOY 1100 BY HARUMANIS
MANGO LEAF EXTRACT IN DIFFERENT ACID**

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ABSTRACT

CORROSION INHIBITION OF ALUMINIUM ALLOY 1100 BY HARUMANIS MANGO LEAF EXTRACT IN DIFFERENT ACID

Corrosion of aluminum alloy is widely occurring in industries. In order to control and prevent corrosion from occurring, the organic corrosion inhibitors are preferable used. The objectives of this study are to determine chemical compounds present in Harumanis mango leaf extract (HMLE) and to investigate corrosion rate of aluminum alloy 1100 in different acid in the presence of mango leaf extract. Fourier Transform infrared spectroscopy (FT-IR) and ultraviolet-visible spectrophotometry (UV-Vis) reveal the presence of many active components with aromatic and oxygen-containing functional groups in HMLE. From this work, the corrosion test analysis in 0.1 to 0.5 g/L of HMLE gives the inhibition efficiency in 0.1M, 0.25M and 0.5M of HCl ranges from 50% to 98%. A study in H₂SO₄ depicts the HMLE is also an effective corrosion inhibitor for aluminum alloy, AA1100. In the 0.5M H₂SO₄ HMLE has an efficiency of 25% to 75%, 0.25M H₂SO₄ has an efficiency of 40% to 80% and 0.1M of H₂SO₄ has an efficiency of 57% to 86%. Surface morphology analysis on the AA1100 surface shows that uninhibited alloy exhibits severe damaged, uneven surface structure, cracked, and rougher than the inhibited surface. The surface damage significantly decreased as the concentration of HMLE from increased from 0.1 g/L to 0.5 g/L in both HCl and H₂SO₄ acid medium. The difference in acidic medium particularly types of anions influence the corrosion inhibitors. From this research, the potential of mango leaf extract could be explored more. The identification of substances found in mango leaf will give insight on the corrosion inhibition mechanism of aluminum alloy.

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