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Computation of the Protection...

Numerical Computation of the Protection Performance Data of Moringa and Green Tea Extracts on 1070 Aluminum Alloy

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Abstract:

Gravimetric and statistical analysis was utilized to assess the inhibition performance of extracts of green tea and moringa on 1070 aluminum in 0.5M H₂SO₄ solution. Data output showed green tea extract performed more effectively than moringa extract, and at all concentrations studied with optimal inhibition efficiency value of 95.08% compared to moringa which performed effectively at only one concentration with optimal value of 72.38%. Inhibition efficiency values for both extracts varied significantly with reference to exposure time and extract concentration. The optimal mean inhibition value for green tea and moringa extracts are 88.71% and 66.65%. However, the least standard deviation value of 6.22 was obtained for green tea extract with highest inhibition value indication stable inhibition and thermodynamic stability with reference to exposure time. Statistical data showed 90.5% of inhibition output for green tea extract and 9.52% of inhibition output for moringa extract were above 70% inhibition efficiency at margin of error of +12.6. Analysis of variance showed exposure time is the only statistically relevant variable influencing the inhibition output of green tea with statistical value of 78% while exposure time and moringa extract concentration are the both statistically relevant variables influencing the inhibition output of moringa with values of 61.02% and 24.02%.

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