

Evaluation of the Inhibitive Effect of *Asparagus setaceus L* + Mn²⁺ System in Neutral Medium on Carbon Steel

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Abstract : This research work is concerned with the development of new ecofriendly inhibitor system which functions efficiently as green inhibitor for the corrosion control of carbon steel in aqueous environment. The objective of the present set of studies has been framed to investigate in detail, the mutual influence and the compatibility of plant extract which are locally available in plenty using different techniques under different experimental conditions as inhibitor system.

The inhibition efficiency of corrosion of carbon steel in neutral, aqueous environment containing 180 ppm of Cl⁻ ions in DD water by leaf extract of plant *Asparagus setaceus.L* which contains active constituents that exhibit synergistic property with Mn²⁺ ions has been investigated. 200 ppm of the leaf extract worked in conjunction with 10 ppm of Mn²⁺ ions in controlling the corrosion of carbon steel immersed in 180 ppm of chloride ion solution is the best system. A film is formed on the surface of the carbon steel immersed in the inhibitor system containing the extracts of the plant *Asparagus setaceus. L* and Mn²⁺ ions. In order to investigate the nature of the protective film, UV-visible spectroscopy, scanning electron microscopy, FTIR spectroscopy and electrochemical studies have been used in the present study. Polarisation techniques have been used to determine the nature of inhibitor. Based on the results obtained from the mass-loss method, polarisation studies, surface analysis, UV, FTIR, electrochemical studies and temperature studies, a suitable mechanism for the corrosion inhibition has been proposed.

Key Words : Carbon Steel, Inhibitor, Inhibition Efficiency.

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