Studi pengaruh kombinasi ekstrak temulawak (curcuma xanthorrhiza) dan bawang dayak (eleutherine americana sebagai inhibitor ramah lingkungan pada baja API 5L x42 dalam larutan HCL 1M = Study effect of combination from curcuma xanthorrhiza extract and eleutherine americana extract as green inhibitor on API 5L x42 in 1M HCL solution

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Abstrak

Kemampuan kombinasi ekstrak temulawak Curcuma Xanthorrhiza dan bawang Dayak Eleutherine Americana sebagai inhibitor ramah lingkungan untuk baja karbon API 5L X42 pada lingkungan HCl 1M diinvestigasi dengan pengujian tafel, weight loss, polarisasi, Electrochemical Impedance Spectroscopy EIS, dan Fourier Transform Infrared Spectroscopy FTIR. Senyawa flavonoid dan antioksidan yang berperan untuk menginhibisi korosi diinvestigasi melalui pengujian FTIR. Selain itu, lapisan yang terbentuk di permukaan logam juga dipelajari dengan menggunakan metode adsorpsi Langmuir isotherm. Campuran ekstrak temulawak dan bawang Dayak merupakan inhibitor jenis campuran, dan dominan pada katodik. Efisiensi inhibisi paling tinggi didapatkan dengan persentase 80 :20 yaitu 91,78. Campuran ekstrak temulawak dan bawang Dayak dapat digunakan sebagai alternatif inhibitor ramah lingkungan untuk baja karbon API 5L X42 pada lingkungan asam.

.....This study aimed to investigate the ability of combination from Curcuma Xanthorrhiza and Eleutherine Americana extract as an environment friendly inhibitor for API 5L X42 steel in 1M HCl environment. Corrosion inhibition ability of this extract was tested using weight loss, tafel polarization, electrochemical impedance spectroscopy methods, and fourier transform infrared spectroscopy. FTIR test was used to investigate flavonoid and antioxidant compound that plays an important role to inhibit corrosion. In addition, formed layer on the metal surface was also studied using Langmuir isotherm adsorption methode. It can be concluded that combination from Curcuma Xanthorrhiza and Eleutherine Americana extract could be used as an alternative and environmental friendly inhibitor for API 5L X42 steel in acidid environment.

Keywords API 5L X42 EIS FTIR green inhibitor polarization.