ABSTRAK

EFEKTIVITAS EKSTRAK DAUN BELIMBING WULUH (*Averrhoa bilimbi L.)* SEBAGAI INHIBITOR PADA BAJA KARBON St37 DALAM MEDIUM KOROSIF NaCl 3%

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Efektivitas ekstrak daun belimbing wuluh sebagai inhibitor pada baja karbon St37 dalam medium korosif NaCl 3% telah diteliti dalam konsentrasi inhibitor ekstrak daun belimbing wuluh yang digunakan sebesar 0%, 3%, 5% dan 7% dengan waktu perendaman 4 hari dan 8 hari. Pengujian laju korosi dilakukan dengan metode kehilangan berat. Hasil penelitian pada masing-masing waktu perendaman, menunjukkan bahwa konsentrasi optimum dari ekstrak daun belimbing wuluh untuk menghambat korosi yaitu sebesar 5% dan semakin lama waktu perendaman mengakibatkan penurunan laju korosi pada baja karbon St37. Efektivitas inhibitor maksimal terdapat pada konsentrasi 5% dengan waktu perendaman 8 hari yaitu sebesar 78,57%. Hasil karakterisasi *Scanning Electron Microscopy* (SEM) permukaan baja pada sampel St37-8-5 dan St37-4-5 lebih halus dengan lapisan berwarna putih. Tanin dalam ekstrak daun belimbing wuluh telah teradsorpsi pada permukaan baja. Sedangkan permukaan baja pada sampel St37-4-0 dan St37-8-0 berwarna hitam disertai lubang dan retakan. Hasil karakterisasi *Energy Dispersive Spectroscopy* (EDS) pada sampel St37-8-0 dan St37-4-0 menunjukkan bahwa kandungan unsur oksigen lebih besar dan unsur Fe lebih kecil dibandingkan pada sampel St37-8-5 dan St37-4-5.

Kata Kunci: Baja karbon St37, daun belimbing wuluh, inhibitor, NaCl.

ABSTRACT

THE EFFECTIVENESS OF BILIMBI LEAVES EXTRACT AS INHIBITORS ON CARBON STEEL St37 IN NaCl 3% CORROSIVE MEDIUM

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The effectiveness of belimbing wuluh leaves extract as an inhibitor of St37 carbon steel in a corrosive medium of 3% NaCl had been researched. The concentration of belimbing wuluh leaves extract inhibitor was used 0%. 3%. 5% and 7% with immersion time of 4 and 8 days. Corrosion rate testing was done by weight loss method. The results of the research at each immersion time, showed that the optimum concentration of leaves belimbing wuluh extract to inhibit corrosion is 5% and the longer time immersion resulted in decreasing corrosion rate on St37 carbon steel. The maximum effectiveness of inhibitor occurred at 5% concentration with 8 days immersion time which is 78.57%. Characterization using Scanning Electron Microscopy (SEM) showed that the surface of steel looks smoother with white on sample St37-8-5 and St37-4-5 showing that tannin in belimbing wuluh leaves extract has been adsorbed on the steel surface while St37 carbon steel on St37-8-0 and St37-4-5 has a black steel surface with holes and cracks. Characterization using Energy Dispersive Spectroscopy (EDS) obtained oxygen element on sample St37-8-0 St37-4-0 greater concentration and Fe element smaller on sample St37-8-5 and St37-4-5.

Key words: *Carbon steel St37, belimbing wuluh leaves, corrosion inhibitor, NaCl.*