ABSTRAK

EFEKTIVITAS EKSTRAK DAUN SIRSAK SEBAGAI INHIBITOR PADA BAJA KARBON API 5L DALAM LARUTAN NaCl 3%

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Telah dilakukan penelitian mengenai efektivitas ekstrak daun sirsak sebagai inhibitor pada baja karbon API 5L dalam larutan NaCl 3%. Perendaman baja karbon API 5L dalam larutan NaCl 3% dilakukan selama 144 jam dengan variasi konsentrasi penambahan inhibitor ekstrak daun sirsak 0%, 5%, 10%, 15%, 20%, 25%, 30%, dan 35%. Pengujian laju korosi dilakukan dengan metode kehilangan berat dan metode elektrokimia. Hasil penelitian menunjukkan semakin besar konsentrasi inhibitor ekstrak daun sirsak yang digunakan maka laju korosi akan semakin berkurang dan kemampuan menginhibisi korosi akan meningkat. Efektivitas korosi yang paling besar terjadi pada konsentrasi 35% pada lingkungan NaCl 3% dengan efektivitas adalah 86,16%. Hasil karakterisasi X-*Ray Diffraction* (XRD) memperlihatkan bahwa fasa yang terbentuk adalah Fe murni. Karakterisasi *Scanning Electron Microscopy* (SEM) memperlihatkan *cluster* (gumpulan) tidak merata dan ukuran lebih kecil, lubang (*hole*) dan retakan (*crack*) juga lebih sedikit dengan inhibitor 35% dibandingkan dengan inhibitor 0% ekstrak daun sirsak. Karakterisasi *Energy Dispersive Spectroscopy* (EDS) pada sampel dengan inhibitor 0% didapatkan unsur Cl.

Kata kunci: Baja karbon API 5L, ekstrak daun sirsak, inhibitor korosi, dan NaCl.

ABSTRACT

THE EFFECTIVENESS OF SOURSOP LEAVES EXTRACT AS INHIBITORS ON CARBON STEEL API 5L IN NaCl 3%

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The effectiveness of soursop leaves extract as inhibitor on carbon steel API 5L in NaCl 3% had been researched. Carbon steel API 5L submersion used NaCl 3% had been done for 144 hours with various concentrations of soursop leaves extract inhibitor adding 0%, 5%, 10%, 15%, 20%, 25%, 30%, and 35%. The research of corrosion rate was done by weight loss and electrochemistry methods. The result showed that the higher percentage of soursop leaves extract inhibitor used, the corrosion rate will decrease and capability of inhibit corrosion will increase. The greatest effectiveness of corrosion occurred at concentration of 35% in NaCl 3% and the effectiveness is 86,16%. The X-Ray Diffraction (XRD) characterization result showed that the phase formed is pure Fe. Scanning Electron Microscopy (SEM) characterization showed uneven clusters and smaller size, fewer holes and cracks too with soursop leaves extract inhibitor 35% than soursop leaves extract inhibitor 0%. Energy Dispersive Spectroscopy (EDS) characterization on sample with inhibitor 0% obtained Cl element.

Key words: Carbon steel API 5L, corrosion inhibitor, NaCl and soursop leaves.