

ABSTRAK

ANALISIS EFEKTIVITAS CAMPURAN METIL ESTER TURUNAN MINYAK BIJI KARET (*Hevea brasiliensis*) DENGAN DIETANOLAMINA SEBAGAI INHIBITOR KOROSI BAJA LUNAK DALAM MEDIUM YANG MENGANDUNG KARBON DIOKSIDA (CO₂)

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Penelitian ini dilakukan untuk menguji efektivitas campuran dietanolamina dan metil ester turunan minyak biji karet sebagai inhibitor korosi baja lunak dalam medium larutan garam yang mengandung CO₂. Metil ester dibuat dengan transesterifikasi minyak biji karet menggunakan metanol dengan katalis zeolit-A. Serangkaian campuran dibuat dengan mencampur dietanolamina dan metil ester dengan perbandingan 0:5; 1:4; 2:3; 3:2; 4:1; dan 5:0. Percobaan inhibitor korosi dilakukan dalam larutan NaCl 3% jenuh dengan CO₂ menggunakan metode *wheel test* dan morfologi atau sampel permukaan logam dianalisis menggunakan SEM. Hasil yang diperoleh menunjukkan bahwa persentase proteksi tertinggi sebesar 60,11% diperoleh dari percobaan menggunakan larutan inhibitor dengan perbandingan dietanolamina terhadap metil ester 3:2. Proteksi inhibitor juga ditunjukkan oleh morfologi permukaan sampel yang dilihat dengan SEM.

**Kata Kunci : Inhibitor korosi, baja lunak, metil ester, minyak biji karet,
wheel test.**

ABSTRACT

ACTIVITY OF MIXED DIETHANOLAMINE AND FATTY ACID METHYLESTERS OF RUBBER SEED OIL AS CORROSION INHIBITOR FOR MILD STEEL IN CARBON DIOXIDE CONTAINING MEDIUM

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This research was conducted to study the ability of mixed diethanolamine and rubber seed oil-derived methyl esters as corrosion inhibitor of mild steel in CO₂ containing brine solution. Methyl esters were prepared by transesterification of rubber seed oil using methanol in the presence of zeolite-A as catalyst. A series of mixtures were prepared by mixing methyl esters and diethanolamine with the ratios of 5:0; 4:1; 3:2; 2:3; 1:4; and 0:5. Corrosion inhibition experiments were conducted in a 3% NaCl solution saturated with CO₂ using wheel test method, and the morphology of the metal sample was analyzed using Scanning Electron Microscope (SEM). The results obtained indicate that the highest percent of protection of 60.11% was obtained from the experiment using the inhibitor solution with the ratio of methyl esters to diethanolamin to of 3:2. The protection of the inhibitor was also indicated by surface morphology of the sample as seen by SEM.

Keywords: Corrosion inhibitor, mild steel, rubber seed oil methyl ester,
wheel test.