

# ADSORPSI SENYAWA THIADIAZOLE SEBAGAI INHIBISI KOROSI PADA BAJA KARBON DALAM MEDIA ASAM FORMIK DAN ASAM ASETAT

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## ABSTRAK

2-amino-1, 3, 4-thiadiazole (AT), 2-amino-5methyl-1, 3, 4-thiadiazoles (ATM), 2-amino-5ethyl-1,2,3,-thiadiazole (AET) and 2-amino-5-propyl-1,2,3,4-thiadiazoles (APT) adalah senyawa kimia sintesis yang diteliti sebagai inhibitor korosi baja karbon dalam media 20% asam formik dan 20% asam asetat dengan metode penimbangan berat (*weight loss*). *Scanning electron microscopic study (SEM)* digunakan untuk mempelajari morfologi permukaan dari sampel baja karbon yang *ditreatment* dengan inhibitor dan tanpa inhibitor. Efisiensi inhibisi dari semua senyawa inhibitor diperoleh untuk variasi konsentrasi inhibitor, waktu perendaman, temperatur dan konsentrasi asam. Adsorpsi senyawa inhibitor pada permukaan baja karbon diperoleh dengan Langmuir's adsorption isotherm. Parameter termodinamik ( $E_a$ ,  $AG_{ads}$ ,  $AQ$ ,  $AH$ ,  $AS$ ,  $t_{1/2}$ ) dan dihitung untuk mempelajari mekanisme inhibisi korosi.

## ABSTRACT

*2-amino-1, 3, 4-thiadiazole (AT), 2-amino-methyl-1, 3, 4-thiadiazoles (ATM), 2-amino-5-ethyl-1,2,3,-thiadiazole (AET) and 2-amino-5-propyl-1,2,3,4-thiadiazoles (APT) were synthesized. These compounds were evaluated as inhibitors for carbon steel in 20% formic acid and 20% acetic acid by weight loss. Scanning electron microscopic study (SEM) was also used to investigate the surface morphology of inhibited and uninhibited metal samples. The inhibition efficiency of these compounds was found to vary with the inhibitor concentration, immersion time, temperature and acid concentration. The adsorption of these compounds on the steel surface from both acids were found to obey Langmuir's adsorption isotherm. These compounds are mixed type inhibitors in both acid solutions. Various thermodynamic parameters ( $E_a$ ,  $AG_{ads}$ ,  $AQ$ ,  $AH$ ,  $t_{1/2}$ ) have also been calculated to investigate the mechanism of corrosion inhibition.*

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