INVESTIGATION ON THE SYNERGETIC EFFECT BETWEEN HALIDE IONS AND INTERNAL CORROSION INHIBITOR FOR HCl ACID AND SIMULATED NaCl SEA WATER

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ABSTRACT

This research is about investigation on the synergetic effect between halide ions and internal corrosion inhibitor (iCI) on hydrochloric (HCl) acid and simulated sodium chloride (NaCl) seawater. Halide ions have proven to be good corrosion inhibitor intensifiers in acidic media for steel and halides ions themselves acts as corrosion inhibitor.The study was done using immersion testing (weight loss test) to investigate the inhibition efficiency of three condition (H_2O, HCl and NaCl) for two different soaking time (72 hours and 144 hours) and its synergestic effect with potassium iodide (KI) on the corrosion of low carbon steel in HCl and NaCl solution. The inhibition efficiency increase with the presence of KI. The iCI was characterized using fourier transform infrared (FTIR) spectroscopy and shown that C-O, OH, -COOH, C-N and N-H functional group are present. The viscosity of iCI as tested using Brookfield viscometer is 673.4 cP.

ABSTRAK

Satu kajian mengenai penyiasatan ke atas sinergi antara ion halida dan *internal corrosion inhibitor* (iCI) dalam asid hidroklorik (HCl) dan simulasi nitrium klorida (NaCl) air laut telah dilakukan. Ion halida telah terbukti sebagai perencat kakisan yang baik dalam asid untuk keluli karbon dan ion halida sendiri sebagai perencat kakisan. Kajian telah dilakukan menggunakan ujian rendaman (*weight loss test*) untuk mengkaji kesan perencatan kakisan pada tiga keadaan (H_2O, HCl and NaCl) pada dua tempoh rendaman berbeza (72 dan 144 jam) dan kesan sinergi kalium iodide (KI) terhadap perencat kakisan ke atas keluli karbon di dalam HCl dan NaCl. Kecekapan perencatan meningkat dengan kehadiran KI. Perincian iCI telah dijalankan menggunakan fourier inframerah (FTIR) dan menujukkan kehadiran kumpulan berfungsi C- O, OH, -COOH, C-N dan N-H. Kelikatan iCI seperti yang diuji mengunakan Brookfield viscometer adalah 634.7 cP.