Pengaruh variasi temperatur dan persentase volume larutan ethylene glycol (C2H6O2) dalam proses immersion terhadap perhitungan laju korosi aluminium alloy dengan metode weight loss measurement = Effect of temperature and ethylene glycol (C2H6O2) solution volume percentage variation on aluminium alloy corrosion rate calculation in immersion test using weight loss measurement method

Satria Dwi Ananda, author

Abstrak

Perhitungan laju korosi aluminium alloy dilakukan dengan mengukur massa yang hilang dari sampel setelah menjalani proses immersion test selama 120 jam dalam larutan campuran air dan ethylene glycol. Proses immersion test sampel menggunakan media uji dengan persentase volume ethylene glycol pada larutan sebesar 30% dan 70% yang dilakukan pada lingkungan temperatur ruang (30ºC) dan temperatur tinggi (90oC). Pada temperatur ruang, sampel yang mengalami immersion test di larutan ethylene glycol 30% menunjukkan laju korosi yang lebih tinggi daripada sampel pada larutan ethylene glycol 70% dikarenakan larutan yang mengandung lebih banyak air akan lebih bersifat elektrolit. Sedangkan pada temperatur tinggi, sampel-sampel menunjukkan perilaku laju korosi yang berbeda-beda disertai terjadinya peristiwa plating di mana ada penambahan massa pada rentang waktu tertentu akibat pembentukan lapisan protektif pada permukaan aluminium alloy. Pada temperatur tinggi, laju korosi yang ditunjukkan sampel cenderung terus meningkat dan lebih tinggi dibandingkan laju korosi sampel pada temperatur ruang. Hasil SEM menunjukkan adanya indikasi korosi berbentuk lubang/sumuran pada permukaan aluminium alloy setelah immersion test dilakukan.

.....Corrosion rate of aluminium alloy is calculated by measuring the samples weight loss which immersed for 120 hours in ethylene glycol-water mixture. The immersion test processes using solutions that contain 30% and 70% of ethylene glycol are conducted at room temperature (30ºC) and high temperature (90oC). At room temperature, samples which immersed in solution of 30% ethylene glycol show higher corrosion rates than the ones which immersed in solution of 70% ethylene glycol because of the solution which contains more water will act as a better electrolyte than the solution with less water content. However at high temperature, samples show varies corrosion rate behaviour followed by plating occurence where samples gain weight at a particular range of time because of the formation of protective thin layer on the surface of aluminium alloy. At high temperature, the samples' corrosion rate are tend to increased continuously and relatively higher than corrosion rates of samples at room temperature. SEM results indicate there are numbers of pitting corrosion that attack the surface of aluminium alloy after the immersion tests were conducted.