

ANALISIS KETAHANAN LAJU KOROSI MATERIAL AL 7075-T651 DENGAN VARIASI PELAPISAN INHIBITOR

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ABSTRAK

Aluminium 7075-T651 banyak diaplikasikan luas pada industri pesawat terbang karena memiliki keunggulan ringan, keuletan tinggi, dan tahan korosi. Salah satu cara untuk meningkatkan ketahanan korosi aluminium adalah dengan penambahan inhibitor pada permukaan aluminium. Terdapat beberapa jenis inhibitor yang digunakan dalam dunia perawatan pesawat terbang sesuai consumable material data (CMD) antara lain: LPS 3, CRC SP400, dan ARDROX AV30. Penelitian ini bertujuan mempelajari dan mengetahui ketahanan laju korosi material aluminium 7075-T651 dengan variasi pelapisan inhibitor.

Metode penelitian dilakukan dengan proses variasi pelapisan inhibitor menggunakan LPS 3, CRC SP 400, dan ARDROX AV30 pada setiap spesimen uji. Proses pengujian korosi menggunakan teknik perendaman (immerse) dan mengacu pada standar ASTM G52 dan ASTM G1. Dengan media korosif air laut dan asam kuat HCL konsentrasi tinggi.

Dalam penelitian ini didapatkan hasil bahwa variasi pelapisan inhibitor mempengaruhi laju korosi pada material aluminium 7075-T651. Nilai laju korosi pada aluminium 7075-T651 dalam media korosif air laut spesiemen uji tanpa pelapisan inhibitor diperoleh nilai sebesar 0,314 mdd dan spesiemen uji ditambahkan variasi pelapisan inhibitor LPS3, CRC SP 400, dan ARDROX AV30 diperoleh 0 mdd yang artinya tidak terjadi korosi. Dan efisiensi inhibitor terhadap laju korosi aluminium 7075-T651 dalam media korosif air laut memiliki nilai prosentase optimal 100%. Sedangkan nilai laju korosi material 7075-T651 dalam media korosif asam kuat HCL konsentrasi tinggi, spesiemen uji tanpa pelapisan inhibitor diperoleh nilai sebesar 1837,785 mdd dan laju korosi pada spesiemen uji dengan ditambahkan inhibitor ARDROX AV30 mampu menghambat laju korosi sebesar 1217,04 mdd dibandingkan laju korosi pada spesiemen uji ditambahkan CRC SP400 sebesar 1248,393 mdd dan LPS 3 sebesar 1289,74 mdd. Sedangkan efisiensi inhibitor pada aluminium 7075-T651 dalam media korosif asam kuat HCL konsentrasi tinggi, inhibitor ARDROX AV30 memiliki prosentase tinggi sebesar 33% dibandingkan nilai efisiensi inhibitor CRC SP400 32% dan LPS 29%.

Kata kunci : *Aluminium 7075-T651, Korosi, Inhibitor*

ANALYSIS RATE OF CORROSION RESISTANCE MATERIAL AL 7075-T651 COATING WITH VARIATION INHIBITORS

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ABSTRACT

Aluminum 7075-T651 been applied widely in the aircraft industry because it has the advantages of lightweight, high ductility, and corrosion resistance. One way to improve the corrosion resistance of aluminum is by the addition of inhibitor on the aluminum surface. There are several types of inhibitors are used in the world of aircraft maintenance in accordance consumable material Data (CMD), among others: LPS 3, CRC SP400, and ARDROX AV30. This research aims to study and determine the rate of corrosion resistance of aluminum 7075-T651 material variation inhibitor coating.

The research method is the inhibitor coating process variation using LPS 3, CRC SP 400, and ARDROX AV30 on each test specimen. Corrosion testing process using immersion techniques (Immerse) and based on ASTM standards ASTM G52 and G1. With seawater corrosive media and high concentrations of strong acid HCL.

In this study showed that variation affects the rate of corrosion inhibitor coating on aluminum 7075-T651 material. Values corrosion rate of aluminum 7075-T651 in seawater corrosive media test specimens without coating inhibitor obtained a value of 0.314 mdd and test specimens are added variation LPS3 inhibitor coating, CRC SP 400 and AV30 ARDROX obtained 0 mdd, which means no corrosion occurs. And the efficiency of corrosion inhibitors on the rate of aluminum 7075-T651 in seawater corrosive media have optimal percentage value of 100%. While the rate of corrosion of the material value of 7075-T651 in the media corrosive strong acid HCL high concentrations of test specimens without coating inhibitor obtained a value of 1837.785 mdd and the rate of corrosion on test specimens with added ARDROX AV30 inhibitor capable of inhibiting the corrosion rate by 1217 04 mdd than the rate of corrosion of the test specimens are added CRC SP400 amounted to 1248.393 mdd and LPS 3 of 1289.74 mdd. While the inhibitor efficiency on aluminum 7075-T651 in the media corrosive strong acid HCL high concentrations of inhibitors ARDROX AV30 has a high percentage of 33% compared to the value of the CRC SP400 inhibitor efficiency of 32% and 29% of LPS.

Keywords : 7075-T651 Aluminum, Corrosion, Inhibitor