ABSTRAK

ANALISIS PENGARUH *ARTIFICIAL AGING* TERADAP SIFAT MEKANIS PADA ALUMINIUM SERI 6061

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Penelitian proses *artificial aging* terhadap aluminium seri 6061 bertujuan untuk memperbaiki sifat mekanisnya. Aluminium seri 6061 diberi perlakuan panas dengan suhu 450^0C selama 15 menit, kemudian di*quenching* dengan media pendingin berupa oli. Selanjutnya diberi perlakuan panas kembali pada suhu 190^0C dengan variasi *holding time* 1 jam, 5 jam, dan 11 jam, kemudian didinginkan secara lambat dengan suhu ruangan. Hasil uji komposisi kimia menggunakan *Spectromax* menunjukan persentase Mg sebesar 1,41%, Si sebesar 0,911%, dan Al sebesar 96,7%. Hasil uji kekerasan menggunakan *Rockwell Hardness Tester* didapatkan nilai kekerasan bahan tanpa perlakuan panas sebesar 49,4 (HRB), *holding time* 1 jam sebesar 53,8 (HRB), *holding time* 5 jam sebesar 79,6 (HRB) dan *holding time* 11 jam sebesar 50,4 (HRB). Dari hasil uji SEM EDX menggunakan alat *Zeiss Evo* ® MA 10, menunjukan persentase unsur Al dari bahan tanpa perlakuan panas (96,7%) menurun terhadap bahan bahan dengan *holding time* 1 jam (89,55%), dan bahan dengan *holding time* 5 jam (81,58%) penurunan tersebut menunjukan terdapat fasa kedua pada bahan yang diberi perlakuan *artifial aging.*

Kata kunci : Aluminium Seri 6061, *Artificial aging*, Kekerasan, SEM EDX

ABSTRACT

ARTIFICIAL AGING EFFECT ANALYSIS ON MECHANICAL PROPERTIES IN ALUMINUM SERIES 6061

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Research of artificial aging process on aluminum series 6061 is required to improve the mechanical properties of it. Aluminum 6061 series had heat treatment with temperature 450^0C for 15 minutes, then quenching it with medium oil cooler. Furthermore, the aluminum itselves had heat treatment for the second time at 190^0C with aholding time variation of 1 hour, 5 hours, and 11 hours, then cooled slowly with room temperature. The result of chemical composition test using Spectromax showed Mg percentage of 1.41%, Si 0.911%, and Al of 96.7%. Result of hardness test using Rockwell Hardness Tester got hardness value material without heat treatment equal to 49,4 (HRB), holding time 1 hour equal to 53,8 (HRB), holding time 5 hour equal to 79,6 (HRB) and holding time 11 hours of 50.4 (HRB). SEM EDX result showed test using Zeiss Evo ® MA 10 tool, obtained percentage of Al element from material without heat treatment (96,7%) decrease to material with holding time 1 hour (89,55%), and material with holding time 5 hour (81.58%) the decrease indicates that there is a second phase in the artificial aging treated material.

Keywords: Aluminum Series 6061, Artificial aging, Violence, SEM EDX