

ABSTRACT

This paper reported on the effect of age hardening on the aluminum alloys piston. These studies were carried out to improve the hardness of the aluminum alloys piston by using age hardening method. The AlSiCuMg alloys with 8%Si were used for this purpose. The solution treatment was performed at 500°C for 5h and then quenched. The samples have been aged at 130°C, 170°C and 210°C among 1h to 6h to observe the effect of aging condition on hardness properties. Vickers microhardness tests were performed to determine the mechanical properties of the samples. Microstructure analysis of the samples was carried out using optical microscope equipped with digital camera. The results showed that the aging at 170°C improves the hardness of the aluminum alloy pistons. It is increase 45% from as received. The microstructure of aging at 170°C consist with hardener participate of Mg₂Si, Al₆Cu₃Ni, and β (Al₅FeSi).

Keyword: Age hardening, Hardness, Aluminum alloys piston, AlSiCuMg alloys