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Tensile and Wear Behaviour of Precipitation Hardened AA7xxx Alloy

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Abstract

In the present study, tensile and wear behaviour of AA 7xxx alloy were studied. Casting process was used to produce AA 7xxx alloy. AA 7xxx alloy reveals distribution of both soluble and insoluble intermetallic compounds in the α-aluminium matrix. In order to improve the mechanical properties and condition the microstructural features, precipitation hardening treatment was carried out by keeping temperature and time as variables. Ageing treatment was carried out at 120°C with varying time interval. Tensile and hardness studies were carried out on the aged alloys. There is a greater increment in strength and hardness at precipitation alloy. Wear behavior of the alloy was studied using the pin-on-disc technique with varying load and keeping sliding speed and time as constant. Precipitation hardened alloy shows better wear resistance than that of cast and solutionized alloy.

Keywords: AA 7xxx alloys, Precipitation Hardening, Micro structure correlation, and TEM analysis and corrosion behaviour.