

Improving the Tribological and Mechanical Properties of an Aluminium Alloy by Deposition of AlSiN and AlCrSiN Coatings

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This paper presents an improvement to the mechanical and tribological properties of aluminium alloys. AlSiN and AlCrSiN coatings (with different Cr content) were deposited on substrates of Al-Cu-Mg alloy by the cathodic arc evaporation method at 400°C. Surface morphology and chemical composition were estimated by a scanning electron microscope equipped with an energy dispersive spectrometer and mechanical profilometer. The increasing chromium content in the coating led to an increase in the coating hardness. The tribological behaviour of the coated and uncoated Al-Cu-Mg alloy samples was examined using the “Ball-on-Disk” method (ASTM G99-95) at a load of 10N using Al₂O₃ ball as a counterpart.

Keywords: AlSiN thin films; Cathodic arc deposition; Aluminium substrate, Coefficient of friction

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