

## Influence of Titanium Addition on Wear Properties of AM60 Magnesium Alloy

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**Abstract :** This study aimed for improving wear resistance of AM60 magnesium alloy by Ti addition (0, 0.2, 0.5, 1wt%Ti). An electric resistance furnace was used to produce alloys. Pure Mg together with Al, Al-Ti and Al-Mn were melted at 750 <sup>0</sup>C in a stainless steel crucible under controlled Ar gas atmosphere and then poured into a metal mould preheated at 250 <sup>0</sup>C. Microstructure characterizations were performed by light optical (LOM) and scanning electron microscope (SEM) after the wear test. Wear rates and friction coefficients were measured with a pin-on-disk type UTS-10 Tribometer test device under a load of 20N. The results showed that Ti addition altered the morphology and the amount of  $\beta$ -Mg<sub>17</sub>Al<sub>12</sub> phase in the microstructure of AM60 alloy.  $\beta$ -Mg<sub>17</sub>Al<sub>12</sub> phases on the grain boundaries were refined with increasing amount of Ti. An improvement in wear resistance of AM60 alloy was observed due to the alteration in the microstructure by Ti addition.

**Keywords :** magnesium alloy, titanium, SEM, wear

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