Microstructural Study and Mechanical Properties of Al$_2$O$_3$ Reinforced Al 1100 (Mg) Cast Composites

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Abstract: Aluminum MMCs are considered as conventional materials in the fields of aerospace, automotive and marine applications due to their improved properties like high strength to weight ratio, good wear resistance etc. Al$_2$O$_3$ can be considered as ideal reinforcements, because of their high strength, high aspect ratio and thermo-mechanical properties. The objective of this work is to reinforce Al$_2$O$_3$ particles with Al 1100 (Mg) alloy by melt stirring method. 0, 3, 6, 9 and 12 wt% of Al$_2$O$_3$ particles are added to Al 1100 (Mg) alloy to make aluminum based composites. Microstructural study using Scanning Electron Microscopy and Mechanical properties like tensile strength and hardness will be investigated for cast alloy composites. Variations in microstructures and mechanical properties in different wt% of Al$_2$O$_3$ particles have been compared with each other.

Keywords: AMMCs, Al$_2$O$_3$ Particles, SEM, Hardness, Tensile Properties

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