

STATE OF THE ART IN ALUMINUM MATRIX COMPOSITES USING FLY ASH

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Abstract

Owing to its unique characteristics – like morphology and chemical composition, fly ash has been identified as a potential reinforcing phase for the manufacture of metal matrix composites (MMCs). Moreover, the recent literature shows that mostly it has been used as a second reinforcement in dually reinforced aluminum matrix composites. In the case of Al/SiCp composites, essentially it offers two major benefits; namely, to protect SiC from being attacked by liquid aluminum during processing, and enhance mechanical properties. Incorporation of fly ash within aluminum matrices with proper Mg content gives place to the formation of secondary phases like magnesium aluminate spinel ($MgAl_2O_4$), which could also act as reinforcement. As for mechanical behavior, cenosphere fly ash promises to enhance the energy absorption capabilities and damage tolerance of composites subjected to impact. The aim of the current contribution is to present a critical review on the use of fly-ash in aluminum-based MMCs.

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