



# INFLUENCE OF SHOT PEENING ON FATIGUE BEHAVIOR OF ALUMINUM SILICON CARBIDE GRAPHITE HYBRID COMPOSITE

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## ABSTRACT

*Present work evaluates the influence of shot peening on fatigue behavior of Aluminum Silicon Carbide Graphite hybrid composite, a potential material for automotive and aerospace applications owing to its tailor made enhanced hardness, solid lubrication imparted by silicon carbide and graphite. Aluminum Silicon Carbide Graphite hybrid composite was fabricated through stir casting process. Hybrid composite fatigue specimens were subjected to shot peening at Almen intensities 8A and 12A by using steel shots of 0.4mm. Surface damage caused by shot peening at different intensities was assessed by surface roughness measurements. Three stress level fatigue testing on peened and unpeened specimens were carried out to arrive at corresponding stress life curves using rotating beam fatigue testing machine after estimating number of specimens to be tested at each stress level through statistical approach. Comparison of stress life curves of unpeened and shot peened specimens at intensity 8A, reveals that fatigue resistance of the hybrid composite specimens shot peening treated is superior to untreated specimens. Plastic deformation and residual stresses induced by shot peening attributes to enhanced fatigue property. Fatigue property of shot peened specimens at 12 A was found to be inferior to unpeened specimens. Detrimental effect of surface roughness over beneficiary effect of compressive residual stresses results in inferior fatigue resistance.*

**Key words:** Aluminum hybrid composite, Shot peening, Stress life curve, Micro hardness, Surface Roughness.