

Synthesis and Characterization of Epoxy Matrix Composites Reinforced With Various Ratios of TiC.

Abstract

Epoxy matrix composites reinforced with various ratios of Titanium Carbide (TiC) have been synthesized and characterized successfully. Different ratio of (TiC) powder (0 wt%, 5 wt%, 10 wt%, 15wt%, 20wt%, and 25 wt%) has been used as reinforcements in epoxy matrix. The results obtained show improvement in both mechanical and tribological behavior of the composites. Hardness value, impact strength, tensile strength and wear rate was improved by the addition suitable titanium carbide powder ratio. Hardness and tensile strength values show increment with addition of 15 wt% of titanium carbide powder. Impact strength was found to be increased with increasing ratio to 20 wt% of titanium carbide. The wear behavior was investigated using a pin-on-disc wear testing machine with different sliding distance, wear rate improved greatly at 10 wt% of titanium carbide powder. Optical microscope images (OM) were taken for micro-pores that present on the specimens and for specimens after wear test with 2000m sliding distance. The mechanical properties such as hardness, tensile strength, impact, and wear resistance are observed to be increased considerably compared to the matrix composite.

<http://jjmie.hu.edu.jo/vol%2010-4/JJMIE-100-15-01.pdf>

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