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Chapter 29

Investigation of Mechanical Properties in Silicon Carbide-Filled Carbon Fiber Composites



Monika Khurana, J. K. Purohit, R. Gupta, and Bhuvnesh Bhardwaj

Abstract The main aim of the present research is to investigate the mechanical properties (hardness, tensile strength, tensile modulus, flexural strength, flexural modulus, inter-laminar shear strength, and impact strength) of unfilled carbon reinforcement fiber composites and SiC-filled carbon reinforcement fiber composites and to identify the best combination in terms of wt% of filler, matrix, and reinforcement for best mechanical properties. The results revealed that SiC-filled carbon reinforcement fiber composite with 10 wt% of SiC particulates has been exhibited by the better mechanical properties among all fabricated unfilled carbon reinforcement fiber composites and SiC-filled carbon reinforcement fiber composites.

Keywords CFRP · SiC · Mechanical properties · Hand layup technique

29.1 Introduction

Recently, fiber-reinforced polymer (FRP) composites commonly used material in automobile and aerospace industries due to its excellent mechanical and tribological properties. In these composite, reinforcement and matrix largely maintain their properties which are the combination of the properties of constituents [7]. In the present scenario, carbon fiber-reinforced polymer (CFRP) composites are widely used in different manufacturing applications due to their better strength to weight and excellent

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