PAPER ID:2

TRIBOLOGICAL BEHAVIOUR OF CARBON FIBER REINFORCED POLYESTER COMPOSITES

M.V. Sai Kumar[1] and Y.N.V. Sai Ram[2]

[1] Post Graduation, RVR&JC college of Engineering, India
[2] Assistant Professor, RVR&JC college of Engineering, India

ABSTRACT

In the past few years, a transition in research from metals to composite materials has been triggered by of the global need for low cost, high performance and good quality materials. High fuel consumption made from legacy alloys by automotive and aerospace vehicles has been a major challenge for global design and material engineers. In this present study polyester matrix is reinforced with carbon fiber to enhance the mechanical and tribological properties. Average grain size of carbon particles dispersed in polyester matrix is 85µm. To achieve uniform dispersion, the carbon particles are combined with polyester resin by mechanical stirring. The reinforcement additions increased from 4% to 12% at 4% interval. To ensure proper mixing of carbon fibers micro structural analysis was carried out with the aid of scanning electron microscope (SEM). Thereby evaluation of tribological properties is carried out on prepared wear pins. Wear rate is severe for pure polyester and goes on decreasing with increase in reinforcement percentage. Wear resistance of 12% reinforced carbon fiber PMC is three times better than that of pure polyester. Micro hardness is calculated using Vickers hardness test and it was found that hardness goes on increasing with addition of carbon particles in polyester matrix.

Keywords: Polyester, SEM, Vickers hardness