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Microstructure Observation and Analysis on Hybrid Composite of Basalt Fiber with Titanium Oxide, Barium Sulphate and Silicon Carbide

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Abstract : Modern microscopes are widely used in scanning a microscopically sharp probe across surfaces. Microscopes can be used not only for imaging in two or three dimensions, but for measurement of physical and chemical properties by diffraction, spectroscopy and other specialized methods. This paper briefly describes the microscope technique used to investigate fibre structure, including an overview of fibre identification. Today a significant growth is observed in the manufacturing of composite materials. Intensively developed polymer composite materials (PCM) are used in different sectors of industry and technology. They are successfully replacing traditional construction materials and also permit the conditions that exclude use of metals. By industrial production of basalt fibers on the basis of new technologies their cost is equal and even less than cost of glass fiber, moreover basalt fibers and materials on their basis have the most preferable parameter, a ratio of quality and the price in comparison with glass & carbon fibers, and other types of fibers. Though Basalt fiber has good wear resistance still increasing the wear resistance, decreasing friction coefficient, and increasing the hardness also gives more applications to basalt fiber like car brakes, interior decorations, car headliner, etc. more over increase in basalt fiber's tensile strength will give more applications to basalt fiber like bridges, underground tunnels, etc. From the results, it can be concluded that adding titanium oxide, silicon carbide and barium sulphate to the fiber matrix shows the increase in the above said properties, thus the above said mixture are added to the basalt fiber. The wear testing was conducted on the Pin on disc machine to predict the performance of material.

Keywords : Basalt fiber, microstructure analysis, wear behavior, pin on disc machine, wear resistance.

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