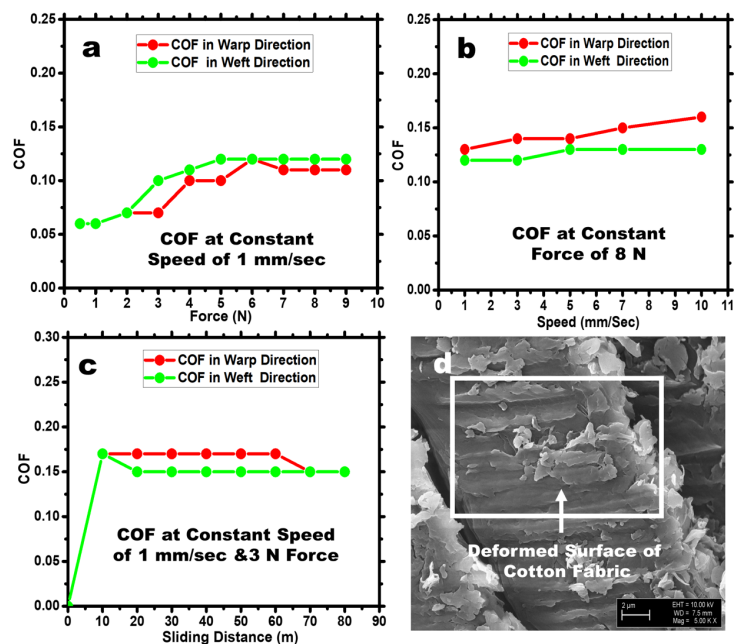


WC TRIBOLOGY FOR CIRCULAR ECONOMY OF MANUFACTURING TEXTILE INDUSTRIES

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In this article, tungsten carbide material is used for tribological investigations. A scanning electron microscope, an optical and mechanical profilometer were used for the analysis of cotton fabric and tungsten carbide ball surfaces [1]. A Tribotester was used to study the coefficient of friction, wear, and deformation. The cotton surface was found damaged and rough. The tungsten carbide balls showed low roughness and high hardness. The mechanical properties of balls were also found suitable for tribological investigations. The dynamic COF values were found at 0.12 to 0.15 in the warp and at 0.11 to 0.17 in the weft directions. The variations of force, speed, time and sliding distance were found to have negligible effects on the COF values. These variations also produced small deformation on the cotton fabric surface. Based on the COF values, deformation, wear, and morphology evaluations, WC ceramic materials could be used operationally for surface alterations of textile machinery parts. The results could also enhance the quality and performance of textile products.



References

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