

## **Nanosilica filled Kevlar fiber/EPDM hybrid nanocomposites: Mechanical and thermal properties**

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### **ABSTRACT**

Hybrid nanocomposites have been evolving as promising materials that can be utilized for various applications. The present work deals with the fabrication of nanosilica reinforced kevlar/EPDM hybrid nanocomposite. Tensile strength, elongation-at-break, density of the developed nanosilica/kevlar/EPDM hybrid nanocomposites were evaluated and compared. Dispersion of nanosilica in the hybrid composites has been explored via TEM analysis. The ability of the hybrid nanocomposite to resist the temperature conduction has been probed with thermal conductivity measurement and their stability in thermal atmosphere was studied with thermogravimetric analysis. The results demonstrated that nanosilica reinforced EPDM has shown significant enhancement for the tensile strength and modulus, thermal stability and thermal conductivity of EPDM while maintaining a lower density. The strategic methodology adopted in our study utilizes a low consumption of nanomaterial which can evocatively communicate the thermal insulation system.

*Keywords: EPDM/KF hybrid nanocomposites; nanosilica; thermal conductivity; thermal stability.*