



MAT-3

Preparation and Characterization of Novel Composite Material Based on Strong Polyamide Fibers and Epoxy Resin Applied in Bulletproof Vests and Shields

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Protection against weapons goes back to ancient ages. Fiber reinforced plastics (FRP) have arisen as a main class of structural materials having high strength and light weight implemented in a large scale of different applications including: protective clothes and ballistic shields. This paper discusses the enhanced physical and mechanical properties of Kevlar 49 fiber against Twaron CT 704 reinforced with epoxy resin to obtain an efficient body armor capable of resisting high speed projectiles (9mm bullets). The response of the two different fiber materials was studied by using a ballistic gun for the penetration test. In addition, indentation and tensile test are also applied to compare between the mechanical response of both fabrics and determine which fabric is better for life protection applications. The final results showed that Twaron is much better than Kevlar in resisting bullets with very small number of layers.