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Textile Based Woven Ballistic Composites: A Review

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Abstract—This review compiles the researchers conducted on woven textile reinforced composites that have been designed to bear the ballistic impacts. There has been extensive research in innovating lightweight and high-performance materials that can be designed to facilitate armor for the security. The collective research is evaluated and research gaps for future potentials are highlighted for this area. Materials like aramid fiber, glass fiber, carbon fiber, and UHMWPE are some of the prime reinforcements studied for ballistic composites. Apart from the single type reinforcement, hybrid reinforcements proved to be more useful in absorbing the penetration impact. Moreover, the stacking sequence found to be playing a key role in the impact absorption by ballistic materials. Weave designs and nano-fillers have also shown noticeable improvements in ballistic response. More light weighted and functional designs are expected to appear through recent developments. New natural fiber assemblies are also expected to occupy partial placements in ballistic composites.

Keywords— Composites, Ballistic, Woven, Impact