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Modification of Four Layer through the Thickness Woven Structure for Improved Impact Resistance

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Abstract : In the current research, the four layers, orthogonal through the thickness, 2D woven, 3D fabric structure was modified to improve the impact resistance of 3D fabric reinforced composites. This was achieved by imparting the auxeticity into four layers through the thickness woven structure. A comparison was made between the standard and modified four layers through the thickness woven structure in terms of auxeticity, penetration and impact resistance. It was found that the modified structure showed auxeticity in both warp and weft direction. It was also found that the penetration resistance of modified sample was less as compared to the standard structure, but impact resistance was improved up to 6.7% of modified four layers through the thickness woven structure.

Keywords : 2D woven, 3D fabrics, auxetic, impact resistance, orthogonal through the thickness
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