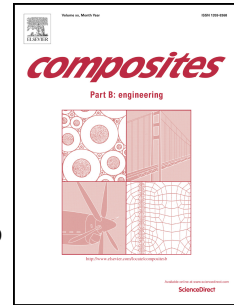


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## TRANSVERSE IMPACT RESPONSE OF FILAMENT WOUND BASALT COMPOSITE TUBES

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**Keywords:** A. Polymer matrix composites (PMCs); A. Glass fibres; B. Impact  
behaviour; E. Filament winding; Basalt tubes

**ABSTRACT.** The aim of this study was to determine the effect of impact energy and impactor size on basalt filament wound composite tubes with different winding angles. Tubes with four different winding angles  $[\pm 45^0]_3$ ,  $[\pm 55^0]_3$ ,  $[\pm 65^0]_3$  and  $[\pm 75^0]_3$  were subjected to various impact energy levels, 4, 6, 8 and 10 J, using four different impactor diameters, 6.35, 10, 12.7 and 15.9 mm. The results obtained revealed the significant effect of energy levels, despite the limited range purposely studied. In particular, not only maximum damage diameter (MDD) but also the geometry of damage area is influenced by impact energy. MDD also increases the higher the winding angles. In addition, basalt tubes with higher winding angles absorb less energy than the tubes with

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