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Residual mechanical properties of carbon fibre reinforced thermoplastics with thin-ply prepreg after simulated lightning strike

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ABSTRACT

This study experimentally examined the residual mechanical properties of a carbon-fibre/polyamide-6 laminate and randomly-oriented carbon-fibre strand (ROS) thermoplastic composites with thin-ply prepreg after a simulated lightning strike, and compared the results with those of a carbon-fibre/epoxy laminate fabricated from thick-ply prepreg. The damage was characterized by visual inspection, ultrasonic scanning, and optical microscopy. The residual mechanical properties were evaluated using a four-point flexural test. The flexural strength of the carbon-fibre/epoxy laminate was considerably reduced due to delamination, whereas the carbon-fibre/polyamide-6 laminate with a thin-ply prepreg exhibited improved retention of