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Mechanical investigation of weak regions in a wound oxide-oxide ceramic matrix composite

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Abstract:

The main aim of the investigation was to quantify the influence of production-related cross-lines on static mechanical properties (tensile, flexural and shear) of an oxide-oxide CMC as a comparison between specimens with cross-lines and specimens without cross-lines in tested regions. Investigated material was a weak-matrix oxide-oxide CMC (WHIPOX™) made of Nextel™ 610 fibers (3000 denier) and alumina matrix with a special winding pattern. Mechanical tests at room temperature revealed that cross-lines were local weak regions in a wound component. Spatial separation of the cross-line within the composite (2 mm shift from layer to layer) did not improve the negative influence of the cross-lines on

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