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Adhesion Problematic for Novel Non-Crimp Fabric and Surface Modification of Carbon-Fibres Using Oxy-Fluorination

Authors : Iris Käppler, Paul Matthäi, Chokri Cherif

Abstract : In the scope of application of technical textiles, Non-Crimp Fabrics are increasingly used. In general, NCF exhibit excellent load bearing properties, but caused by the manufacturing process, there are some remaining disadvantages which have to be reduced. Regarding to this, a novel technique of processing NCF was developed substituting the binding-thread by an adhesive. This stitch-free method requires new manufacturing concept as well as new basic methods to prove adhesion of glue at fibres and textiles. To improve adhesion properties and the wettability of carbon-fibres by the adhesive, oxyfluorination was used. The modification of carbon-fibres by oxyfluorination was investigated via scanning electron microscope, X-ray photo electron spectroscopy and single fibre tensiometry. Special tensile tests were developed to determine the maximum force required for detachment.

Keywords : non-crimp fabric, adhesive, stitch-free, high-performance fibre
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