

Investigation on Flexural Behavior of Non-Crimp 3D Orthogonal Weave Carbon Composite Reinforcement

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Abstract : Non-crimp three-dimensional (3D) orthogonal carbon fabrics are one of the useful textiles reinforcements in composites. In this paper, flexural and bending properties of a carbon non-crimp 3D orthogonal woven reinforcement are experimentally investigated. The present study is focused on the understanding and measurement of the main bending parameters including flexural stress, strain, and modulus. For this purpose, the three-point bending test method is used and the load-displacement curves are analyzed. The influence of some weaves' parameters such as yarn type, geometry of structure, and fiber volume fraction on bending behavior of non-crimp 3D orthogonal carbon fabric is investigated. The obtained results also represent a dataset for the simulation of flexural behavior of non-crimp 3D orthogonal weave carbon composite reinforcement.

Keywords : non-crimp 3D orthogonal weave, carbon composite reinforcement, flexural behavior, three-point bending

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