

عنوان مقاله:

Proposing a modified configuration for losipescu shear test fixture

محل انتشار:

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خلاصه مقاله:

In this paper, the design and assembly of the components of the losipescu shear test fixture are studied. In order to discover the reasons for proposed corrections in the literature, the manufacturing steps are done carefully following step by step old and modified configurations. This fixture is used to be able to conduct standard shear test with the pressure test instrument. Determination of inter-laminar characteristics of polymer matrix composite samples is the main application. Some modifications which may not be considered primarily by designer are discussed. They appear as the new requirements during fabrication procedure or conducting the experiment. Neglecting these modifications threatens the accuracy and repeatability of the test results. The roles of ball bushing in decreasing clearance and friction simultaneously as well as the need for application of special components to concentrate shear fracture to the designed region are discussed. In addition, the importance of correct selection of notch angle for uniform distribution of shear stress in the width of samples is considered. As a new design, the number of components is decreased from 33 to 20. This modification increases the manual assembly efficiency up to 9.4%. In addition the reduction in the number of components makes it possible to carry out the experiment with less undesirable clearance in fixture and more accurate results. As a result the pure shear force will be concentrated on the desired zone and the crack nucleates and propagates in the notched zone. Since the cracked zone will be identical, this modification increases the repeatability of the experiment.

کلمات کلیدی:

losipescu shear test fixture, Shear failure mode, Polymer matrix composite, Efficiency of assembly

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