
Estimating the correctness of experimental data with the aid of identification of the layer properties by the test results of multilayered specimens

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The paper considers the peculiarities of solving the problems of the identification of the characteristics of a constituent layer of multilayered composites, which enable one to estimate the correctness (reliability) of experimental data, these experimental data being used as initial data for solving identification problems (considering applied hypothesis for material deformation and failure). Two examples are given on solving identification problems from tensile and compression test results of carbon fiber reinforced plastics with eleven reinforcing structures. The correctness of used experimental data is presented. The first example gives identification results for engineering constants of the layer identified from experimental data on moduli of elasticity and Poisson's ratios of multilayered laminates. The second example is the analysis of identification results for strength characteristics of the layer; layer strength characteristics were calculated from experimental strength data of multilayered laminates with the use of the maximum stress criterion.

Keywords: laminated composites, elastic properties, strength properties, identification, experiment, reliability.

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