

POLITECHNIKA ŚLĄSKA W GLIWICACH

Wydział Mechaniczny – Technologiczny



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***Ocena wytrzymałości mechanicznej
laminatów na podstawie pomiarów
przewodności cieplnej.***

ROZPRAWA DOKTORSKA

Promotor

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Absrtact

Title: Mechanical properties evaluation in GFRP based on thermal conductivity.

In this work the correlation between mechanical and thermal properties of GFRP was investigated. To achieve this goal the nondestructive method of examination has been used. The influence of powder filler on composite and laminate properties was tested. The laminates were made by wet lay-up method, because of the powder filler influence on resin viscosity.

The process of thermal destruction of laminate was made, simulating the one side heating process. During the heating process, the loss of adhesion between the resin and the fiber occurred resulting the delamination of GFRP. After thermal destruction of the laminate, picture of delaminated areas has been shown, to visualize the destruction progress.

Influence of powder filler and the type of fiber glass on mechanical properties was examined by HDT and flexural strength. These examination and thermal conductivity tests ware the base of evaluation the degree of correlation between the mechanical properties and thermal conductivity of samples.

It has been proved that there is a correlation between mechanical and thermal properties, and it can be used to forecast the level of destruction of the laminate, using the nondestructive method tests.