

The Thermal Conductivity of the Textured Composite with Anisotropic Ellipsoidal Inclusions

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Based on the developed mathematical model of heat transfer in a composite with anisotropic inclusions in the form of a triaxial ellipsoid, the procedure for calculating the effective thermal conductivity tensor components of the textured composite has been offered. The option of anisotropic inclusions, whose main axis of the thermal conductivity tensor coincides with the symmetry axes of the ellipsoids, is considered. The settlement ratios for conic texture taking into account its possible dispersion are given. The results presented here can be used to predict the effective thermal conductivity coefficients of the composites modified by nanostructured elements (including carbon nanotubes). Owing to electrothermal analogy these results are applicable for the calculation of characteristics of conductivity and dielectric permeability of the textured composite with ellipsoidal inclusions.

Keywords: *textured composite, anisotropic ellipsoidal inclusions, effective thermal conductivity.*

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