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EXPERIMENTAL STUDIES OF THE SPECIFIC HEAT OF CRYSTALLIZATION OF POLYMERIC MICROCOMPOSITES BASED ON POLYETHYLENE

Polymeric materials are the optimal solution in different industries and construction due to its wide application possibilities, Among the promising areas of application of polymer microcomposites is the use of their highly heat-conducting modifications [1-8]. In this respect, it is very relevant to conduct in-depth experimental studies of the thermophysical characteristics of composite materials.

The purpose of this work is to establish the dependence of the specific heat of crystallization of composites based on polyethylene filled with copper microparticles on a number of factors, in particular the method for producing composites (method I is based on mixing polymer and filler in dry form; method II is based on mixing components in a polymer melt), mass fraction of the filler and the cooling velocity from the melt.

As a result of the analysis of experimental studies in a relatively wide range of changes in the mass fraction of the filler and the cooling velocity from the melt, it was found that the specific crystallization heat of the composites under consideration significantly depends on the mass fraction of the filler, and its value, all other things being equal, such as a method of producing a composite and the fixed cooling velocity of the composites from the melt is the lower, the greater the mass fraction of the filler.

It was also established that for all studied values of the filler mass fraction and the cooling velocity of the composites from the melt, the specific crystallization heat is higher for the method based on mixing the components in dry form than for the method based on mixing them in the polymer melt.

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