DISTRIBUTION OF ACID-BASE SITES ON THE SURFACE OF THE FILLER MODIFIED WITH URETHANE RUBBERS

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Modification of the filler surface by high-molecular compounds in most cases improves its dispersion in the polymer matrix and increases the strength of the adhesive contact at the interface, contributing to the improvement of the strength properties of the composite material. In this regard, it is important to create science-based principles of directional regulation of adhesion interaction at the interface.

In this paper, an indicator method of distribution of active sites by acid-base type on the surface of a nitramine filler with a six-membered heterocycle modified by polyurethane rubbers of grades SKU-8A and SKU-8TB was used to study the possible centers of adhesion interaction at the interface.

It is established that the composition of the active sites is partially preserved and is determined by the mutual influence of the contacting surfaces when the polymer-modifier is applied to the surface of the crystal filler.

It is noted that the filler of nitramine type in the modification of the investigated HMWC is characterized by the appearance of additional basic and acid sites, the type of which is determined by the nature of the polymer-modifier.

The use as a polymer-modifier of rubber grade SKU-8A contributes to the formation of an additional stronger base site – oxygen atom (-O:), than, apparently, due to a higher level of strength characteristics of nitrate cellulose compositions containing a filler modified SKU-8A.

To ensure the adhesion interaction, the requirements for the polymer modifier in terms of the possibility of interaction of active centers due to the formation of communication by the donor-acceptor mechanism, their strength and type are formulated.