

Influence of natural calcium carbonate grain size distribution and technology of PVC composition preparation on the PVC compound properties

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Abstract

The influence of two methods of mixing the components of PVC compositions intended for cable production on their final properties is considered. The peculiarities of the methods consist in the fact that in the first case the loading of all the components was carried out simultaneously, in the second case the polyvinylchloride and the plasticizer were mixed, and then the remaining components were added. It has been found that the mixing method does not have a significant effect on the finished compositions properties. In this case, the first option is more technological. The effect of the natural calcium carbonate extender grain size distribution on the resulting PVC compound characteristics was revealed. It is shown that the use of a calcium carbonate finer fraction makes it possible to obtain higher values in the physical and mechanical tests of PVC compounds and improve frost resistance. It is observed that surface treatment of calcium carbonate with stearic acid or vinyltrimethoxysilane improves the basic physical and mechanical properties, frost resistance, melt fluidity, and dielectric characteristics of polyvinylchloride compounds.

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