

Influence of magnesium hydrosilicate on the properties plantar rubber

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Abstract

The properties of rubber products are determined by the nature and content of caoutchoucs, vulcanizing systems and other ingredients. Among them, fillers play an important role. The most common fillers are carbon black and silicas. Recently, in connection with the increasing operational requirements for rubber products, additives of special fillers began to be introduced into rubber mixtures. Among them, silicates are of practical interest, the use of which allows not only to reduce the cost, but also to give qualitatively new useful physical and mechanical properties to rubbers. Improving the physical and mechanical properties of rubbers directly depends on the particle size of the fillers. Fillers with a smaller particle size have a larger surface area and have a significant effect on the physical and mechanical properties of rubbers. The highly developed surface of powdered magnesium hydrosilicate suggests its use as a filler for rubber compounds. In this regard, it is of interest to study the effect of magnesium hydrosilicate on the properties of rubbers. This article explored the possibility of using magnesium hydrosilicate in plantar rubber based on a combination of nitrile butadiene SKN-4055, methyl styrene butadiene SKMS-30ARK and isoprene SKI-3 caoutchoucs. The rheometric properties were investigated for the rubber mixture, and the physical and mechanical properties, hardness, resistance to thermal aging and the action of aggressive media were determined for vulcanizates. As a result of the studies, it was found that the best rheometric, physico-mechanical and operational properties are possessed by the vulcanizate of the rubber compound, in which the silicon-acid filler of rossil 175 was partially replaced by magnesium hydrosilicate. This rubber can be used in the production of oil and petrol resistant soles of rubber shoes.

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