

Investigation of the effect of the ratio of technical carbon and silica in the tread of the automobile tires on its technological, vulcanization and performance properties

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Abstract

In the work, it is shown that partial substitution of carbon black with silica has a positive effect on most of the technological and vulcanization properties of the tread rubber mixture. Furthermore it is established that the introduction of silica in the tread together with carbon black increases the tire resistance, dynamic endurance, grip with dry road at medium and high speeds. It is found that the wear is a complicated function of the tire. In severe conditions, wear increases with the content of silica dioxide and in mild conditions, on the contrary, decreases. In the case of traction on the ice, the introduction of silicon dioxide has a positive effect in the range of temperatures $-5^{\circ} \div -25^{\circ} \text{C}$.