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## Study on Properties of Tread Compound of Steel-belted Tire Filled with Multiphase Carbon Black G10

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**Abstract:** The effect of the amount of coupling agent Si69 on the properties of the tread compound of steel-belted tire filled with multiphase carbon black G10 was studied, and the properties of the above tread compound were compared with that of the tread compound filled with carbon black and carbon black/silica. The results showed that compared with carbon black filled compound, the carbon black/silica co-filled compound had a larger Mooney viscosity, longer  $t_{90}$  and shorter  $t_{10}$ . Compared with carbon black/silica co-filled compound, the Mooney viscosity of multiphase carbon black G10 filled compound was significantly reduced,  $t_{90}$  was shortened, the Payne effect of the compound was significantly weakened, the tensile strength of the vulcanizate was increased, the Akron abrasion and DIN abrasion were reduced, the compression heat build-up was significantly reduced, and the dispersion of carbon black in the compound was significantly improved. With the increase of the amount of coupling agent Si69 in the multiphase carbon black G10 filled compound, the vulcanization characteristics and physical properties of the compound changed little, and the loss factor decreased. The compound with the amount of coupling agent Si69 being 8% of the amount of silica had lower heat build-up and better dispersion of the multiphase carbon black G10 in the matrix.

**Key words:** multiphase carbon black; coupling agent Si69; steel-belted tire; tread compound; processing property; physical property; carbon black dispersion

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