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Effect of Addition Level of Coupling Agent Si69 on Property of Silica Filled Compound

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Abstract: The effects of the addition level of coupling agent Si69 on the properties of silica filled compound were studied. The results showed that with the increasing of the addition level of coupling agent Si69, the Mooney viscosity of the compound decreased, Payne effect was weakened, t_{90} was shortened, the content of bound rubber increased rapidly to the maximum and then decreased slightly, and the silica dispersion was improved. However, with more coupling agent Si69, the capillary extrusion swell ratio increased, and the surface of extrudate became worse. When the coupling agent Si69 amount increased, the modulus of the vulcanizate increased, the reinforcing index increased at first, reached the highest value with the coupling agent Si69 amount at 8% of silica and then decreased. The rebound value increased gradually, and the compression heat build-up decreased gradually. The abrasion index first increased rapidly and then became stable. The maximum loss factor at 60 °C decreased rapidly first, and then ultimately tended to become stable. The comprehensive properties of the compound was the best when the addition level of coupling agent Si69 was 6%~8% of the addition level of silica.

Key words: coupling agent Si69; silica; processability; curing characteristics; capillary extrusion; Payne effect; loss factor

防偏磨轮胎胎面弧结构

由江苏通用科技股份有限公司申请的专利(公开号 CN 110014791A, 公开日期 2019-07-16)“防偏磨轮胎胎面弧结构”, 包括一体连接在轮胎胎体上的肩部胎面弧形块, 其顶面具有行驶面与防偏磨斜面, 防偏磨斜面位于行驶面外侧,

且防偏磨斜面外端部低于其内端部。本发明减少了轮胎肩部早期损坏以及肩部不规则磨损、肩部掉块的隐患, 可以改变轮胎肩部的受力分布, 尤其是减小轮胎负载后在行驶过程中胎肩受力点的受力, 减少肩空现象, 延长轮胎使用寿命。

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