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Influence of Mixer Rotor Speed on Properties of Silica-reinforced SSBR

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Abstract: The molecular structure of SSBR5025-2, 2564S and 72612S was analyzed, and the influence of the mixer rotor speed on the interaction between high dispersion silica and SSBR, as well as the physical and dynamic mechanical properties of the vulcanizates, were investigated. The results showed that, with the increase of rotor speed, the physical properties of the vulcanizates with different SSBR showed different change trends. The tensile and tear strength of the 72612S were significantly reduced. The wet skid resistance of 5025-2 or 2564S was improved and the rolling resistance was reduced, while the wet skid resistance and the rolling resistance of 72612S showed the best performance as the rotor speed was 80 r · min^{-1}. With the increase of rotor speed, both the G' value and $\Delta G'$ ($G'_0 - G'_{100\%}$) of the vulcanizates decreased, the filler dispersion was improved, and the Payne effect decreased. It was also found that the increase of shear effect of 72612S was not as obvious as that of the other two. Under the same rotor speed, compared with that of 5025-2 and 2564S, the $\Delta G'$ of 72612S filled with high dispersion silica was lower, and the dispersion of silica was better.

Key words: SSBR; silica; rotor speed; interaction; dynamic property

低成本绝缘橡胶电缆料及其制备工艺

中图分类号:TQ336.4+2　　**文献标志码**:D

由江苏亨通电力电缆有限公司申请的专利(公开号　CN 103232629A,公开日期　2013-08-07)“低成本绝缘橡胶电缆料及其制备工艺”,涉及的低成本绝缘橡胶电缆料配方为:氯化聚乙烯　8～14,乙烯-辛烯共聚物弹性体(辛烯单体的质量分数大于 0.20)　15～21,改性煅烧陶土　15～31,800# 石蜡基橡胶油　5～8,活性氧化镁　0.5～1,活性氧化锌　1～2,超细滑石粉　4～7,环保稳定剂　0.3～0.6,微晶蜡　1～2,钛白粉　0.5～1,4,4′-双(α,α-二甲基苄基)二苯胺　0.5～0.8,过氧化二异丙苯　1～2,三聚氰酸三烯丙酯　1～1.5。该发明有利于无机粉体添加均匀,连续硫化温度在 190～210 ℃时所得绝缘橡胶电缆料产品仍然保持较高的拉断伸长率,同时成本大幅降低。

(本刊编辑部　赵　敏)