

Application of End-Functionalized SSBR in Tread Compound of High Performance Passenger Car Radial Tire

CAI Shang-mai¹, CHEN Ming-xing¹, ZHOU Zhi-feng¹, CAI Qi-da², TAN Chan-juan³, WEI Jing-xun³

(1. Beijing Research and Design Institute of Rubber Industry, Beijing 100143, China; 2. TSRC Corporation, Taipei 10601, Taiwan Province, China; 3. Guangzhou South China Rubber and Tire Co., Ltd., Guangzhou 511400, China)

Abstract: The application of oil-extended end-functionalized SSBR2466 and oil filled SSBR2430 in the tread compound of high performance passenger car radial tire was studied. The results showed that, the characteristics of end-functionalized SSBR filled with silica filler were different from that of ESBR; the modulus was higher, and the elongation at break was lower. Thus the ingredients in the formula and processing needed to be appropriately adjusted to provide high performance tread compound. It was found that when appropriate formula was applied for tire manufacture, the compound showed good processing properties, the appearance and dimensional stability of the extruded parts were good, the physical properties of the vulcanizates met the requirements, and the dynamic viscoelastic properties were excellent. The high speed performance of trial tire was improved significantly, and the rolling resistance decreased obviously.

Key words: end-functionality; SSBR; passenger car radial tire; tread compound; rolling resistance; wet skid resistance

玲珑轮胎成果转化项目通过验收

中图分类号: TQ336.1 文献标志码: D

近日, 山东玲珑轮胎股份有限公司(以下简称玲珑轮胎)承担的两个山东省自主创新成果转化项目——“绿色高性能轿车子午胎关键技术研发及产业化”和“超低断面抗湿滑低噪声乘用车子午线轮胎”顺利通过了山东省科技厅组织的专项验收。

“绿色高性能轿车子午胎关键技术研发及产业化”项目开发了有限元轮胎滚动阻力仿真技术, 应用溶聚丁苯橡胶和改性纳米白炭黑/炭黑复合材料技术, 解决了纳米白炭黑难分散的技术难题, 形成轮胎滚动阻力及磨耗性能检测研究手段; 建成国内轮胎行业首个具有国际先进水平的室内噪声试验室, 开发了低噪声花纹设计技术; 建设轮胎专业试验场, 形成了轮胎操控性能的仿真及试验研究手段; 以环保材料取代轮胎生产或使用过程中能产生亚硝胺等致癌物的原材料; 所有轮胎产品中多环芳烃及目前列出的全部53种高关注物

质含量均符合欧盟 REACH 法规要求。该项目应用产品轮辋尺寸不小于 28 英寸(711.2 mm), 具有耐磨、节油、低滚动阻力等特点, 达到了世界知名轮胎产品水平。

“超低断面抗湿滑低噪声乘用车子午线轮胎”项目中, 玲珑轮胎首创高反包胎体结构, 发明了一种低断面制造工艺, 掌握了低断面轮胎胎侧制造工艺这一关键性技术, 同时, 在噪声、操控等轮胎性能方面也都有所建树。

两个自主创新科技项目已取得国内外专利 20 项, 获国家科技进步二等奖 1 项, 省部级科技进步一等奖 2 项, 制定国家标准 6 项。产品经国家轮胎质量监督检验中心、西班牙 IDIADA、美国 Standards Testing Labs 检测, 各项性能指标全部通过中国、欧盟及美国相关法规, 轮胎湿路面抓着性和滚动阻力等性能均优于国际知名品牌。此次两个项目顺利通过验收, 标志着玲珑轮胎创新能力建设和科技成果转化又迈上了新台阶。

(山东玲珑轮胎股份有限公司 王妍)