病象。

(5)轮胎在滚动过程中滚动阻力集中分布在胎冠花纹沟底部、胎肩以及胎圈三角胶部位,胎面占到整个轮胎滚动阻力的大部分,因此设计低滚动阻力轮胎时应重点关注胎面胶低滚动阻力配方的改进。

(6)在侧倾滚动条件下,随着外倾角的增大,轮胎的滚动温度场与滚动阻力场分布越来越不对称,最高点的温度与整体的滚动阻力也相应提高,因此轮胎应尽量避免在倾斜不良路面上长时间行驶。

参考文献:

[1] 张岩,李庆领. 滚动轮胎温度场分布以及温度控制研究进展[J]. 橡胶工业,2014,61(4):251-255.

[2] Noor A K, Tanner A. Advances and Trends in the Development of Computational Model Fortires[J]. Computers and Structures, 1988, 20(3):517-533.

[3] 吴宝国,高雁,杜星文. 子午胎三维非线性有限元分析[J]. 固体力学学报,1993,14(3):228-235.

[4] Kaga H, Okamoto K, Tozawa Y. Stress Analysis of a Tire under Vertical Load by a Finite Element Method[J]. Tire Science and Technology,1977,5(2):102-118.

[5] 冯琳阁,辛振祥. 不对称带束层11. 00R20全钢载重子午线轮胎有限元分析[J]. 青岛科技大学学报,2012,33(2):177-182.

[6] 王友善. 轮胎有限元分析与优化系统[J]. 轮胎工业,2009,29(1):21-23.

[7] 朱艳峰,刘锋,黄小清,等. 橡胶材料的本构模型[J]. 橡胶工业,2006,53(2):119-125.

[8] 蒋中凯,危银涛,向宗义,等. 带束层结构对子午线轮胎侧偏特性的影响[J]. 轮胎工业,2011,31(7):394-398.

[9] 丁剑平,贾德民,周小舒,等. 子午线轮胎滚动阻力的数值模拟[J]. 汽车技术,2005(3):23-25.

[10] 蒋辰飞,左曙光,李勇,等. 滚动轮胎有限元建模及温度场仿真分析[J]. 计算机仿真,2012,29(10):348-352.

第8届全国橡胶工业用织物和骨架材料技术研讨会论文

Finite Element Analysis of 245/70R16 Tire

WANG Jun, LI Liang, SUN Lin, SHA Changxin

(Double Coin Group Shanghai Tyre Research Institute Co., Ltd, Shanghai 200245, China)

Abstract: Based on Abaqus, a finite element model of 245/70R16 tire was established to study the influence of load, camber angle and slip angle on the statics and dynamics performance, distribution of temperature and rolling resistance field. The results showed that, with the increase of load, the tire integral deformation and contact area increased which was unfavorable to the contact performance, the strain energy density of shoulder and bead area increased, the lateral stiffness of tire decreased slightly, the longitudinal stiffness and radial stiffness increased slightly, the rotational stiffness increased significantly, and the highest temperature of the shoulder and bead area increased. With the increase of camber angle, the distribution of rolling temperature and resistance field tended to be asymmetric, and the rolling resistance and rolling resistance coefficient increased.

Key words: tire; finite element analysis; cornering; rolling; rolling temperature field; rolling resistance field

一种轮胎钢丝圈包胶

中图分类号:TQ336.1;U463.341 文献标志码:D

由风神轮胎股份有限公司申请的专利(公开号 CN 105462009A,公开日期 2016-04-06)“一种轮胎钢丝圈包胶”,涉及的轮胎钢丝圈包胶配方为:天然橡胶(NR) 20～80,丁苯橡胶(SBR) 20～80,软质炭黑 80～100,白炭黑 5～10,间苯二酚给予体 1～3,甲基给予体 2～5,酚醛类增粘树脂 5～10,硫黄 4～8,促进剂 1～2,其中NR/SBR质量比为1/4～4/1。该配方胶料具有定伸应力和硬度大,与钢丝粘合性能和加工性能好等特点,应用于全钢子午线轮胎钢丝圈部位,不仅可以改善加工粘性,还可提高胎圈耐久性能。

(本刊编辑部 马 晓)