

- 橡胶工业, 2016, 63 (10): 609-614.
- [4] 管迪华, 彭会, 范成建. 轮胎模态试验分析的研究[J]. 汽车工程, 2005, 27 (6): 691-695.
- [5] 朱新静, 朱作勇, 赵鹏翔, 等. 轮胎带束层结构变化对固有频率的影响研究[J]. 轮胎工业, 2017, 37 (5): 259-263.
- [6] Kim Seong-rae, Sung Ki-deug, Lee Dong-woo, et al. Cavity Noise Sensitivity Analysis of Tire Contour Design Factors and Application of Contour Optimization Methodology[J]. Journal of Central South University of Technology, 2012, 19 (8): 2386-2393.

收稿日期: 2020-09-30

## Study on Correlation between Structure and Modal Characteristics of Tire

TIAN Ying, ZHU Zhenhua, WANG Jianzhong, WANG Jianbo, ZHANG Min

(Zhongce Rubber Group Co., Ltd, Hangzhou 310018, China)

**Abstract:** Taking 225/45ZR17 smooth tire as an example, an orthogonal test was designed to study the effect of tire structure on the natural frequency and damping of tire. Based on design experience, seven structural design factors were selected: tread compound modulus, tread thickness, crown ply form, 1<sup>#</sup> belt width, belt angle, sidewall compound modulus and apex height. The modal characteristics of tire such as radial frequencies and damping were obtained through the modal test. The significance of the influence of each factor on the modal frequency and damping and the change trend of the modal characteristics caused by the change of the factors were determined. The results showed that the tread compound modulus, tread thickness and 1<sup>#</sup> belt width had significant influence on the frequency and damping of the first six modes of the tire.

**Key words:** tire; structure; modal characteristic; orthogonal test; variance analysis

### 2020(第十三届)中国年度车轮揭晓

日前, 汽车族传媒对全球发布了消费者期待许久的“2020(第十三届)中国年度车轮评选”的最终结果。此次评选是中国专业汽车传媒对乘用车轮胎产品全面、系统的年度盘点。专业评审团历经近3个月的专业测评, 最终11款轮胎在严苛测试和重重考验中脱颖而出, 分别摘得2020中国年度车轮11个不同奖项的桂冠(见表1)。

本届入围参评的轮胎必须是2019年7月—2020年7月期间上市且未曾参加过年度车轮评选的轮胎; 同时, 参评轮胎必须是全新花纹或旧花纹增加的新规格; 另外, 轮胎不存在安全隐患、不在召回之列, 同时满足各项法规, 准许上市销售。

本届中国年度车轮评选的测试车队由上海汽车通用有限公司别克威朗和凯迪拉克CT5、全新奥迪Q3三款车型组成。根据评选规则, 为确保评选的公正客观, 测试团队赴江苏宜兴普利司通轮胎测试场进行为期10余天的场地测试, 并在苏州、上海、北京等地展开日常道路主观评价测试。在场地测试环节, 每款参评轮胎都按标准完成了包括安全性、动力性、操控稳定性、舒适性、噪声、滚动阻力等专业指标的测试, 测试结果作为评审的重要依据和参考。在道路主观评价测试环节, 参评的轿车轮胎和SUV轮胎都进行了包括城市、高速公路、乡村道路等多种工况的测试。

(摘自《中国汽车报》, 2020-12-21)

表1 2020(第十三届)中国年度车轮获奖名单

奖 项	轮胎牌号
2020中国年度舒适轮胎	佳通 SynergyE1
2020中国年度操控轮胎	德国马牌 ComfortContact CC6
2020中国年度安全轮胎	双星 金刚狼KUMKANG KH06
2020中国年度安全轮胎	玛吉斯 M36+
2020中国年度运动轮胎	朝阳 ZRT RP76
2020中国年度节油环保轮胎	玲珑 CM121
2020中国年度安全SUV轮胎	固特异 鹰驰F1 Asymmetric 3 SUV
2020中国年度均衡轮胎	统帅 MARSHAL MU12
2020中国年度舒适SUV轮胎	普利司通 ALENZA 遨然者001
2020中国年度SUV车轮	锦湖 翼驰达ECSTA PS71
2020中国年度车轮	普利司通 TURANZA 泰然者T005