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Study on Mechanical Properties of Aircraft Tire Carcass Cord under Complex Conditions

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Abstract: Based on the geometric size and material parameters of a certain type of aircraft tire, two-dimensional and three-dimensional finite element models of the tire were established by using finite element method. The carcass cord stress and tire deformation under different inflation pressures and loads were investigated. The results showed that, with the increase of inflation pressure, the stress of carcass cord increased. With the increase of load, the stress of carcass cord increased, and the maximum stress appeared near the shoulder of tire center height. After inflation, the carcass cord was bulged in the middle. With loading, the deformation of the cord away from the ground end was similar to that under further inflation. However, the middle position of the cord close to the ground end fit the road surface, and the sidewall was bulged greatly. The mechanical property of aircraft tire skeleton material could be improved by structural design.

Key words: aircraft tire; carcass cord; inflation pressure; load; stress; finite element analysis

双钱集团自主研发轨道交通轮胎新技术

双钱集团上海轮胎研究所有限公司研发的“新型轮式轨道交通配套轮胎开发”项目近日被列入《2020年度中国石油和化学工业联合会科技指导计划》。

双钱集团根据轨道交通车型的技术要求,开发和引进轨道交通轮胎制造所需的零度缠绕设备,形成轨道交通轮胎产品设计和工艺技术,成功地自主研发制出305/70R22.5, 6.00R9和445/65R22.5轨道交通轮胎。轨道车辆由于转弯半径小,易导致轮胎异常磨损,轮胎的合理设计可以改善异常磨损,这取决于车辆与轮胎匹配动态特性。通过开发抗湿滑的胎面胶配方和胎面新花纹能大大提高轮胎抓着力,保证车辆的行驶安全性。近年来,双钱集团技术中心在企业发展战略的指导下,对企业的技术创新工作进行统一规划,通过与高校搭建产学研合作平台,带动了企业各职能部门科研工作的

开展,为企业开创了技术创新的崭新局面。

(双钱集团上海轮胎研究所有限公司 苏 博)

全钢子午线轮胎胎面橡胶组合物

由三角轮胎股份有限公司申请的专利(公布号 CN 110713632A, 公布日期 2020-01-21)“全钢子午线轮胎胎面橡胶组合物”,涉及的橡胶组合物配方为天然橡胶(NR) 100, 炭黑 15~25, 白炭黑 25~40, 硅烷偶联剂 1.5~3, 氧化锌 2~4, 硬脂酸 1~3, 高效偶联活性剂 2~5, 防护蜡 1~2, 防老剂 3~5, 硫黄 1.5~2.5, 促进剂 1.5~2.5。本发明采用了高效偶联活性剂,可以减小硅烷偶联剂的用量,在不损失胶料加工性能和耐磨性能的同时,降低轮胎的滚动阻力;由于增强了NR与白炭黑的相互作用,可以提高胶料的强度,改善填料分散性。

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