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## Finite Element Analysis on Strength of 295/80R22.5 Truck and Bus Radial Tire

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**Abstract:** The strength of 295/80R22.5 truck and bus radial tires was simulated and analyzed by using Abaqus software. The linear elastic and Marlow hyperelastic constitutive models were used to establish the models for the ordinary and high-impact steel cord, respectively, and the steel cord spacing was accurately described and input. The results showed that, according to the change trend of the steel cord force in the first half of the strength test, it could be predicted that the steel cord force in the second half of the strength test was linear. Therefore, the maximum range of the strength test was obtained and the probe pressure could be calculated by using the minimum breaking force of the steel cord. The error of the tire strength between the simulation calculation and test results met the engineering requirements. The simulation calculation could be used as one of the verification means of tire strength design.

**Key words:** truck and bus radial tire; steel cord; strength; linear; finite element analysis

### 神马帘子布公司新品新增销量5 100 t

2022年以来,中国平煤神马集团帘子布(简称神马帘子布)公司开发客户需求型特制产品130余种,研发帘布新产品50个规格,新产品新增销量5 100 t,创造了可观的经济效益。

2022年以来,神马帘子布公司以“揭榜挂帅”和项目研发为抓手,在细旦丝、高端差异化工业丝、新能源汽车骨架材料、连续聚合高强度工业丝、空气弹簧用布等重点项目的技术上取得新突破,产品品质得到进一步提升。

与国际知名企业产品相比,国内聚酰胺66工业丝存在纤维强度小、单线产能低和生产能耗高等问题,难以满足高端应用领域的迫切需求。为攻克这些技术难题,神马帘子布公司充分发挥产学研优势,协同攻关,开发出具有自主知识产权的

万吨级高强度聚酰胺66工业丝连续聚合多头直纺技术、高强度聚酰胺66帘布产业化成套技术,成功应用于航空航天和特种轮胎制造等高端领域;研发的锦纶66原液着色地毯丝、芳纶胎圈和再生纤维等新产品填补了国内空白。

此外,神马帘子布公司还以科技创新为支点,不断优化产品结构,增加高利润产品占比。该公司研发的锦纶66细旦丝广泛应用于绿色能源风力发电、航空航天、汽车安全气囊生产等领域。为确保细旦纤维利润最大化,该公司对现有设备进行调整,通过技术改造,将12个工业丝的纺丝位改为生产细旦纤维。2022年4月投产后,产品质量稳定,各项指标均控制在优等品水平,产销率达100%。

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