

表5 3种钢丝帘线及其胶料用量

| 项 目                            | 3×0.22/9×<br>0.20CCUMT | 3×0.22/9×<br>0.20CCUT | 3×0.24/9×<br>0.225CCHT |
|--------------------------------|------------------------|-----------------------|------------------------|
| 最小破断力/N                        | 1 550                  | 1 445                 | 1 445                  |
| 压延密度/<br>(根·dm <sup>-1</sup> ) | 56                     | 60                    | 60                     |
| 帘布厚度/mm                        | 2.0                    | 2.0                   | 2.3                    |
| 钢丝帘线质量指数                       | 75                     | 80                    | 100                    |
| 胶料质量指数                         | 89                     | 88                    | 100                    |
| 帘布质量指数                         | 82                     | 84                    | 100                    |

18%,从而能够进一步减小轮胎质量,减少资源消耗。

## 5 结论

(1)采用UMT1和UMT2进口盘条,设计了相同的半成品直径,所制钢丝帘线用钢丝的抗拉强度均大于4 000 MPa,且扭转性能优异。

(2)经设计制得的3×0.22/9×0.20CCUMT钢丝帘线的破断力达到1 580 N,满足设计要求。

(3)采用3×0.22/9×0.20CCUT钢丝帘线替代3×0.24/9×0.225CCHT钢丝帘线,可降低钢丝

帘线和胶料的用量,减小帘布质量;而采用更高质量的3×0.22/9×0.20CCUMT钢丝帘线可进一步减小帘布质量,实现轮胎轻量化。

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## Development of 3×0.22/9×0.20CCUMT Steel Cord

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**Abstract:** The qualified 3×0.22/9×0.20CCUMT steel cord could be produced by using two kinds of imported wire rods with different carbon content and adopting a reasonable heat treatment process and wet drawing process for semi-finished products. The results showed that, compared with the 3×0.22/9×0.20CCUT and 3×0.24/9×0.225CCHT steel cord, 3×0.22/9×0.20CCUMT steel cord had higher monofilament tenacity, smaller cord diameter and higher breaking force. Using it as an alternative in the tire carcass, the thickness of the cord ply could be decreased, and the amount of steel cord and rubber compound could be reduced to achieve lighter tires.

**Key words:** steel cord; ultra high tenacity; production process; tire carcass; lightweight

### 一种带束层钢帘线用橡胶组合物

由万达集团股份有限公司申请的专利(公布号 CN 111440360A, 公布日期 2020-07-24)

“一种带束层钢帘线用橡胶组合物”,涉及钢帘线技术领域,公开了一种带束层钢丝帘线胶配方,为橡胶 100,硫黄 2.5~4,间苯二酚-甲醛树脂

0.5~5,三聚氰胺甲醛树脂 0.3~3,新葵酸钴(以钴用量计) 0.05~0.8。该配方减小了胶料老化后的断裂性能下降率,提高了与金属材料的粘附力,尤其是抑制了轮胎行驶时胶料与钢丝帘线的分层。

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