Design on 18.00R25 E3 All-steel Off-The-Road Radial Tire for Articulated Truck in Underground Mining

WANG Yinzhu, ZHAO Jun, YU Fei, XIE Shiqiang, SUN Xin

[Techking (Qingdao) Special Tire Technology Research and Development Co., Ltd, Qingdao 266100, China]

Abstract: The design of 18.00R25 E3 all-steel off-the-road radial tires for articulated trucks in underground mining was introduced. In the structure design, the following parameters were taken: overall diameter 1 602 mm, cross-section width 490 mm, width of running surface 430 mm, arc height of running surface 20 mm, bead diameter at rim seat 630 mm, bead width at rim seat 330.2 mm, maximum width position of cross section (H_1/H_2) 0.84, the tread pattern was designed with full saturation in the middle of the crown and horn pattern on the shoulder, pattern depth 30 mm, number of pattern pitches 32, and block/total ratio 86.7%. In the construction design, the following processes were taken: using the cutting resistant compound formula for tread and using the low heat build-up compound formula for base, 4-layer structure for the belt, 7×7×0.22+0.15HT steel cord for 1# and 2# belt, 4×6×0.25HE steel cord for 3# and 4# belt, 7×7×0.25+0.15HT steel cord for the carcass, using one-stage building machine to build tires and single-mode steamer type curing press to cure tires. The test results of the finished tire showed that the inflated peripheral dimension, static load performance and durability of the tire met the requirements of the corresponding design and national standards.

Key words: articulated truck in underground mining; all-steel off-the-road radial tire; structure design; construction design; finished tire performance

铁系枝化丁戊橡胶创制技术获奖

日前，第二届“率先杯”未来技术创新大赛总决赛结果揭晓。由中国科学院青岛能源所申报、中国石油化工股份有限公司巴陵分公司（简称巴陵石化）等单位参与的“铁系枝化丁戊橡胶创制关键技术研究”项目获赛事最高奖项——决赛优胜奖。

该项目针对我国合成橡胶依赖进口和石化下游C_4～C_5烯烃转化的重大需求，由中国科学院青岛能源所与巴陵石化、山东玲珑轮胎股份有限公司、青岛森麒麟轮胎股份有限公司、山东昊华轮胎有限公司等企业合作，发展了铁系枝化丁戊橡胶新材料的创制、合成与应用技术。

据介绍，该项目通过设计合成新型铁系金属络合物催化剂，创制铁系枝化丁戊橡胶新材料，研发出高效、高选择性的催化剂技术和催化聚合技术，以及枝化丁戊橡胶微观结构的精准构筑与调控技术。研究团队还突破工程化放大若干技术难题，实现了铁系枝化丁戊橡胶百吨级间歇聚合和连续聚合中试放大试验，万吨级产业化示范项目也正在进行。

该项目还通过研究枝化丁戊橡胶微观结构与宏观性能之间的构效关系，构建其抗湿滑性能、滚动阻力与耐磨性能之间的平衡关系，突破其在高性能轮胎胎面胶方面的应用关键技术，获得高性能抗湿滑胎面胶新材料，有望形成变革性技术产品，解决溶聚丁苯橡胶关键技术难题。

此外，研究团队制造的铁系枝化丁戊橡胶轮胎抗湿滑性能达到欧盟标准A级，缩短了汽车的刹车制动距离，目前正在研建年产100万条高性能轮胎制造示范线。

（摘自《中国化工报》，2022-12-09）