- [4] Stalnaker DO, Turner JL. Vehicle and Course Characterization Process for Indoor Tire Wear Simulation[J]. Tire Sci. Technol. 2002, 30(2):100-121.
- [5] Gerrard D, Padovan J. The Friction and Wear of Rubber, Part

 1. Effects of Dynamically Changing Slip Direction and the
 Damage Orientation Distribution Function [J]. Rubber Chemistry and Technology, 2001, 75(1):29-48.
- [6] Gent A N, Pulford C T R. Mechanisms of Rubber Abrasion
 [J]. J. Appl. Polym. Sci., 1983, 28(3):943-960.
- [7] Xu D, Karger-Kocsis J, Schlarb A K. Rolling Wear of EPDM and SBR Rubbers as a Function of Carbon Black Contents Correlation with Microhardness[J]. J. Mater. Sci., 2008, 43 (12):4330-4339.
- [8] Gabriel P, Thomas A G, Busfield J J C. Influence of Interface Geometry on Rubber Friction[J]. Wear, 2010, 268(5-6):747-750.
- [9] Huemer T, Liu W N, Eberhardsteiner J, et al. A 3D Finite Element Formulation Describing the Frictional Behavior of Rubber on Ice and Concrete Surfaces [J]. Eng. Comput., 2001,18(3/4):417-436.

- [10] Hofstetter K, Grohs C, Eberhardsteiner J, et al. Sliding Behaviour of Simplified Tire Tread Patterns Investigated by Means of FEM[J]. Computers and Structures, 2006, 84 (17-18):1151-1163.
- [11] Cho J R, Choi J H, Kim Y S. Abrasive Wear Amount Estimate for 3D Patterned Tire Utilizing Frictional Dynamic Rolling Analysis [J]. Tribology International, 2011, 44 (7-8), 850-858.
- [12] 方庆红. 轮胎胎面胶耐磨性研究[J]. 橡胶工业,2003,50 (7),397-399
- [13] 何涛,李子然,汪洋. 子午线轮胎胎面花纹块滑动磨损有限元分析[J]. 工程力学,2010,27(7);237-243.
- [14] Walter J D, Patel H P. Approximate Expressions for the E-lastic Constants of Cord-Rubber Laminates [J]. Rubber Chemistry and Technology, 1979, 52(4):171-183.
- [15] Heinrich G, Kluppel M. Rubber Friction, Tread Deformation and Tire Traction[1], Wear, 2008, 265(7-8): 1052-1060.
- [16] Gent A N, Walter J D. The Pneumatic Tire[M]. Washington D C; NHTSA, 2005; 64.

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Study on Wear Property of Truck and Bus Radial Tire Based on Friction Power

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Abstract: Taking 12R22. 5 truck and bus radial tire as an example, tire wear was systematically studied using finite element analysis software developed by Harbin Institute of Technology. The tire friction power and wear direction were given under the conditions of static state, steady state, starting, braking, cornering and turning. The results indicated that working conditions influenced tire wear greatly, and in descending order, the conditions were listed as: turning, braking, starting, cornering and steady state. In addition, the working conditions also had great impact on the lateral wear distribution of the tire, especially the turning and cornering working conditions.

Key words: truck and bus radial tire; friction power; wear; finite element analysis

一种易混合高填充粘土/橡胶 纳米复合材料的制备方法

中图分类号:TQ333.99 文献标志码:D

由北京化工大学申请的专利(公开号 CN 101851360A,公开日期 2010-10-06)"一种 易混合高填充粘土/橡胶纳米复合材料的制备方 法",提供了一种易混合高填充粘土/橡胶纳米复 合材料的制备方法:首先通过将橡胶乳液与粘土/ 水悬浮液共混,然后利用电解质溶液破乳形成1~ 100 μm 的絮凝颗粒,再利用水力旋流器分离、洗涤和浓缩,最后利用喷雾干燥工艺雾化干燥制得粉末状态的高填充粘土/橡胶纳米复合材料。该发明通过利用喷雾干燥工艺解决了粘土高填充量条件下絮凝后复合材料胶粒细小不易过滤干燥的难题以及复合材料干燥后胶粒板结造成后续混炼加工工艺和分散困难的问题,同时将产品的烘干时间从数小时缩短到几十秒。

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