

- [5] Vega B. Control of Vulcanizing/Devulcanizing Behavior of Diphenyl Disulfide with Microwaves as the Heating Source[J]. Journal of Applied Polymer Science, 2008, 108(3): 1969-1975.
- [6] Rajan V V. Recycling of NR Based Cured Latex Material Reclaimed with 2, 2 Prime-Dibenzamidodiphenyldisulphide in a Truck Tire Tread Compound[J]. Journal of Applied Polymer Science, 2006, 102(5): 4194-4206.
- [7] De D, De D, Singharoy G M. Reclaiming of Ground Rubber Tire by a Novel Reclaiming Agent. I. Virgin Natural Rubber/Reclaimed GRT Vulcanizates [J]. Polymer Engineering & Science, 2007, 47(7): 1091-1100.
- [8] Rajan V V, Dierkes W K, Joseph R, et al. Effect of Diphenyl-disulfides with Different Substituents on the Reclamation of NR Based Latex Products [J]. Journal of Applied Polymer Science, 2007, 104(6): 3562-3580.
- [9] Cavalieri F, Padella F, Cataldo F. Mechanochemical Surface Activation of Ground Tire Rubber by Solid-state Devulcanization and Grafting[J]. Journal of Applied Polymer Science, 2003, 90(6): 1631-1638.
- [10] Löffler M. Microbial Surface Sulfurization of Scrap Rubber Crumb—A Contribution Towards Material Recycling of Scrap Rubber [J]. Kautschuk Gummi Kunststoffe, 1995, 48(6): 454-457.
- [11] Flory P J, Rehner J. Statistical Mechanics of Cross-linked Polymer Networks. I. Rubberlike Elasticity [J]. Journal of Chemical Physics, 1943, 11(11): 512-520.
- [12] Flory P J, Rehner J. Statistical Mechanics of Cross-linked Polymer Networks. II. Swelling [J]. Journal of Chemical Physics, 1943, 11(11): 521-526.
- [13] Kanagawa T, Kelly D P. Breakdown of Dimethyl Sulfide by Mixed Cultures and by *Thiobacillusthioparus* [J]. FEMS Microbiology Letters, 1986, 34(1): 13-19.
- [14] 布里格斯 D. 聚合物表面分析: X 射线光电子能谱 (XPS) 和静态次级离子质谱 (SSIMS) [M]. 曹立礼, 邓宗武, 译. 北京: 化学工业出版社, 2001: 51.

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Property of SBR Filled with SBR Ground Rubber Desulfurized by *Sphingomonas* sp.

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Abstract: SBR ground rubber was desulfurized using *Sphingomonas* sp., and the properties of desulfurized SBR ground rubber filled SBR were investigated and compared to regular SBR ground rubber filled SBR. The results showed that, *Sphingomonas* sp. not only could break sulfur crosslinked bond, but also might partially rupture the carbon-carbon double bonds in rubber main chain. Compared with SBR ground rubber filled SBR compound, the torque and apparent crosslink density of desulfurized SBR ground rubber filled SBR decreased, tensile strength and elongation at break increased, Shore A hardness and tear strength kept at same levels, and Akron abrasion loss decreased. Desulfurized SBR ground rubber bound much stronger with SBR matrix, and the dynamic hysteresis loss was lower.

Key words: *Sphingomonas* sp.; SBR ground rubber; desulfurizing; physical property; dynamic property

一种鄂式移动拼幅硫化设备

中图分类号: TQ330.4⁺7 文献标志码: D

由烟台桑尼橡胶有限公司申请的专利(公开号 CN 101804674A, 公开日期 2010-08-18)“一种鄂式移动拼幅硫化设备”, 属于橡胶制品生产设备技术领域。该鄂式移动拼幅硫化设备改固定式为移动式, 鄂式硫化机上设有用于压紧橡胶

制品的上模板和下模板, 两端设有用于夹紧橡胶制品的固定夹具, 底部安装有转轮。该设备在对橡胶制品进行硫化的过程中, 将橡胶制品始终置于拉伸状态, 使得硫化制品外观和内在平整, 保证了产品质量, 延长了产品使用寿命, 而且易于加工, 提高了安全性。

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