

- Journal of Materials Science Letters, 2003, 22 (22): 1591-1594.
- [5] Jouault N, Vallat P, Dalmás F, et al. Well-dispersed Fractal Aggregates as Filler in Polymer-Silica Nanocomposites: Long-Range Effects in Rheology[J]. Macromolecules, 2009, 42(6): 2031-2040.
- [6] Yang S H, Liu L, Jia Z X, et al. Structure and Mechanical Properties of Rare Earth Complex La-GDTC Modified Silica/SBR Composites[J]. Polymer, 2011, 52(12): 2701-2710.
- [7] Yang S H, Liu L, Jia Z X, et al. Study on the Influence of Lanthanide Glutamic Dithiocarbamate on the Interfacial Reinforcement of SBR/SiO₂ Composites by Swelling Equilibrium Test[J]. Acta Polymerica Sinica, 2011, 52(7): 709-719.
- [8] Susamma A P, Kurian M, Kuriakose A P. A New Binary Accelerator System for Filled Natural Rubber Vulcanization[J]. Iranian Polymer Journal, 2002, 11(5): 311-323.
- [9] 杨树颜, 刘岚, 罗远芳, 等. 新型促进剂 STU 对天然橡胶性能的影响[J]. 橡胶工业, 2013, 60(4): 216-220.
- [10] Lee B L. Reinforcement of Uncured and Cured Rubber Composites and Its Relationship to Dispersive Mixing—An Interpretation of Cure Meter Rheographs of Carbon Black Loaded SBR and Cis-Polybutadiene Compounds[J]. Rubber Chemistry and Technology, 1979, 52(5): 1019-1029.
- [11] Swapan Kumar Mandal, Dipak Kumar Basu. Reactive Compounds for Effective Utilization of Silica[J]. Rubber Chemistry and Technology, 1994, 67(4): 675-680.
- [12] Yang S H, Liu L, Jia Z X, et al. Study on the Curing Properties of SBR/La-GDTC/SiO₂ Composites[J]. Journal of Rare Earths, 2011, 29(5): 444-453.

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Evaluation on Dispersion of Silica in NR by Rheometer and Mathematic Analysis Method

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Abstract: The feasibility of using rheometer and mathematic analysis method to evaluate the dispersion of filler in rubber matrix and achieve an optimum filler loading level were verified by RPA, SEM and TEM analysis. The results showed that the three methods of RPA, SEM and TEM, as well as rheometer and mathematic analysis method came to the same result that the optimum addition level of silica filler in STU/silica/NR compound with 0.92 phr STU was about 30 phr. It was suggested that the rheometer and mathematic analysis method could be effective for evaluating the dispersion of filler and optimum filler content in designing rubber composite.

Key words: rheometer; mathematic analysis; silica; NR; dispersion

一种芳烃橡胶油的制备方法

中图分类号: TQ330.38⁺7 文献标志码: D

由中国石油化工股份有限公司和中国石油化工股份有限公司石油化工科学研究院申请的专利(公开号 CN 103589453A, 公开日期 2014-02-19)“一种芳烃橡胶油的制备方法”, 提供了一种芳烃橡胶油的制备方法: 将原料油(溶剂精制抽出油和/或溶剂精制抽出油的脱蜡油)与反溶剂及来自抽提塔底的抽出液混合后, 进入抽提塔下部, 与从抽提塔上部进入的抽提溶剂(由主溶剂

和反溶剂组成, 主溶剂对芳烃的溶解性大于对烷烃的溶解性)逆流接触, 同时 C₆~C₁₂ 的轻质烷烃进入抽提塔下部, 塔顶得到的提余液脱除轻质烷烃和溶剂后得到提余油, 塔底得到的抽出液的一部分与原料油及反溶剂混合后, 循环回抽提塔。该发明萃取效率高, 抽提溶剂的选择性好, 芳烃橡胶油收率高, 且稠环芳烃(PAHs)的总含量低, 多环芳烃质量分数小于 0.03, 满足欧盟 2005/69/EC 指令要求。

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