

- Hypothesis[J]. Chemical Communication, 1988, 29: 272-275.
- [4] Edwards S F, Vilgis T A. The Tube Model Theory of Rubber Elasticity[J]. Reports on Progress in Physics, 1988, 51 (2): 243-297.
- [5] 杨清芝. 实用橡胶工艺学[M]. 北京: 化学工业出版社, 2005.
- [6] Çaykara T, Turan E. Effect of the Amount and Type of the Crosslinker on the Swelling Behavior of Temperature-Sensitive Poly (N-tert-butylacrylamide-co-acrylamide) Hydrogels[J]. Colloid and Polymer Science, 2006, 284 (9): 1038-1048.
- [7] 金日光, 华幼卿. 高分子物理[M]. 北京: 化学工业出版社, 2006.
- [8] Marzocca A J. Evaluation of the Polymer-Solvent Interaction Parameter  $\chi$  for the System Cured Styrene Butadiene Rubber and Toluene[J]. European Polymer Journal, 2007, 43: 2682-2689.
- [9] McKenna G B, Flynn K M, Chen Y M. Swelling in Crosslinked Natural Rubber: Experimental Evidence of the Crosslink Density Dependence of  $\chi$ [J]. Polymer, 1990, 31 (10): 1937-1945.

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## Influence of Crosslinking Density on Flory-Huggins Interaction Parameter between SBR and Solvent

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**Abstract:** The influence of the crosslinking density on the Flory-Huggins parameter between SBR and solvent was studied. The samples with different crosslinking density were prepared by changing the addition level of sulfur. The average molecular weight between crosslinking points was calculated using Tube model. The volume fractions of rubber after swelling in toluene, cyclohexane and ethyl acetate were measured by equilibrium swelling test. Then the interaction parameters between rubber and solvents were obtained using Flory-Rehner equation. The results showed that the interaction parameter had a linear relationship with the volume fraction of rubber after swelling. However, the relationship was different for different solvents. In this study, a modified Flory-Rehner equation was also proposed to calculate the average molecular weight between crosslinking points by the equilibrium swelling method.

**Key words:** SBR; crosslinking density; interaction parameter

### 双喜轮胎通过国家实验室认可现场评审

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2015年12月25-27日, 中国合格评定国家认可委员会(CNAS)派员对双喜轮胎工业股份有限公司申报国家实验室认可项目进行了现场评审。评审组在资料审查和现场测试的基础上, 对评审结果进行了确认, 同意向CNAS推荐认可。这标志着双喜轮胎试验中心获得了国家实验室的认可资格。

国家实验室现场评审覆盖了CNAS《检测和校准实验室能力认可准则》要求的25个要素、申请认可的载重汽车轮胎等4类产品、23个检测参数的技术能力的考核。评审组对CNAS要求的25个要素

在试验中心的具体运行记录进行了严格审查, 对申报的所有检测项目开展了现场测试, 并最终同意了评审结果。预计2016年3月, 双喜轮胎将取得CNAS实验室认可证书。

经过1年的努力, 双喜轮胎完成了试验中心温湿度等试验条件改善以及样品存放、屋顶修缮等设施改造; 对体系运行、文件资料准备及与认可准则的符合性进行了认真整理; 对质量控制、人员监督、标准方法验证、测量不确定度评定、期间核查等以前从未涉及的工作进行了认真准备。双喜轮胎举全公司之力, 确保了现场评审顺利通过。

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