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Preparation and Characterization of Polyurea Microcapsules Filled with Sulfur

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Abstract: Using sublimed sulfur as core material and polyurea as shell material, the polyurea microcapsules filled with sulfur were prepared by interfacial polymerization, and the effect of reaction time, molar ratio of ethylenediamine(EDA) and toluene-2, 4-diisocyanate(TDI) on the microcapsule production, and influential factors of microcapsule coating rate were investigated. The results showed that, the reaction time and EDA/TDI molar ratio had little effect on the microcapsule production. The optimal reaction time was 2 h, and the optimal molar ratio of EDA/TDI was 1.5. The microcapsule coating rate was optimized when the mass fraction of gelatin was 0.03, addition level of emulsifier OP-10 was 0.5 g, mass ratio of water phase and oil phase was 1.2, and stirring speed was $200 \text{ r} \cdot \text{min}^{-1}$. The microcapsules were in regular form shown in SEM, and the thermal stability was good.

Key words: interfacial polymerization; microcapsule; sulfur

胶粉-橡胶复组合物的乳混或溶混制备方法

中图分类号: TQ330.1⁺1 文献标志码: D

由陈汇宏等申请的专利(公开号 CN 101792546A, 公开日期 2010-08-04)“胶粉-橡胶复组合物的乳混或溶混制备方法”, 提出一种胶粉-橡胶复组合物的乳混或溶混制备方法, 即首先将胶粉或携有粉末辅料的胶粉或其含水浆料或其含软化油物料与橡胶乳液或溶液或尚未干燥的凝固态湿橡胶相混合, 得到胶粉-橡胶复合物中间产物, 然后经脱液处理, 得到固态的胶粉-橡胶复合物产品。该技术方案比现时橡胶制品业用胶粉捏炼进高弹性胶团的处理工艺明显节能, 比湿橡胶干燥过程效率显著提高, 提供的胶粉-橡胶复合物产品能使橡胶产业链的上、中、下游得以紧密衔接, 实现整个产业链的节能、减排、增效。

(本刊编辑部 马 晓)

一种橡胶沥青及其制备方法

中图分类号: TQ321.3 文献标志码: D

由周其强申请的专利(公开号 CN 101792608A, 公开日期 2010-08-04)“一种橡胶沥青及其制备方法”, 涉及的橡胶沥青组成为基质沥青/胶粉改性剂质量比为 $4/(1 \sim 4)$, 胶粉改性剂组成为废轮胎胶粉/己二醇质量比为 $(94 \sim 96)/(6 \sim 4)$ 。橡胶沥青的制备方法为: 将己二醇按比例掺入废轮胎胶粉中, 拌和润湿得胶粉改性剂; 将基质沥青置于反应釜, 加热至 $90 \sim 170^\circ\text{C}$; 按比例向反应釜内加入胶粉改性剂; 在搅拌状态下升温至 $190 \sim 210^\circ\text{C}$, 得橡胶沥青。该橡胶沥青 5°C 下的延伸度为 $13 \sim 19 \text{ cm}$, 25°C 下的针入度为 $68 \sim 75$, 软化点为 $53 \sim 90^\circ\text{C}$, 后工段混合料的油石比可由 $8 \sim 10$ 降低为 $6 \sim 8$, 可用于公路施工混合料的生产 and 屋面隧道防水防漏工程。

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