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Influence of Plasticizing System on Properties of CIIR/PA12 TPV

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Abstract: The CIIR/polydodecalactam 12 (PA12) thermoplastic vulcanizate (TPV) was prepared by dynamic vulcanization, the influence of naphthenic oil, polyisobutylene and N-butyl benzenesulfonamide on the physical properties, rheological behavior, crystallization, dynamic mechanical properties and air permeability of CIIR/PA12 TPV was investigated. The results showed that N-butyl benzenesulfonamide was effective plasticizer of CIIR/PA12 TPV. Compared to naphthenic oil and polyisobutylene, with small amount of N-butyl benzenesulfonamide, the physical properties and air permeability of TPV changed a little, but the hardness was reduced significantly, and the extrudate appearance and processing property were improved. N-butyl benzenesulfonamide had little effect on the crystallization of plastic phase, and the glass transition temperature of PA12 decreased up to 40 °C.

Key words: CIIR; polydodecalactam 12; thermoplastic vulcanizate; plasticizer; rheological behavior; air permeability

乙丙橡胶-苯乙烯-丙烯腈三元共聚物的
制备方法

中图分类号: TQ334.9 文献标志码: D

由北京工业大学申请的专利(公开号 CN 101735399A, 公开日期 2010-06-16)“乙丙橡胶-苯乙烯-丙烯腈三元共聚物的制备方法”, 提供了一种 EPDM-苯乙烯-丙烯腈三元共聚物的制备方法, 即在 EPDM 的正己烷溶液中加入乳化剂(歧化松香)和氢氧化钾, 乳化剂用量为 EPDM 的正己烷溶液质量的 3.5%~4.5%, 氢氧化钾用量为

歧化松香质量的 50%; 用搅拌机进行搅拌, 搅拌速率为 6 000~16 000 r·min⁻¹; 在 60~70 °C 下, 在引发剂(过硫酸钾)作用以及氮气保护下, 加入苯乙烯-丙烯腈单体聚合 10~12 h(苯乙烯和丙烯腈的质量比为 3:1, 过硫酸钾用量为单体质量的 0.6%~1.5%); 在聚合过程中蒸馏水的加入量为 EPDM 的正己烷溶液质量的 100%~200%。该方法乳化工艺简单, 接枝效率高, 有利于节约生产成本, 具备实现连续生产的特征。

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