

工艺性能, 在混炼时无粉尘飞扬, 胶料不粘辊, 容易操作, 混炼时间短, 混炼胶质量高。

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Study on Mechanical Properties of Powdered NBR or Ultra-fine Calcium Carbonate-filled Powdered NBR Vulcanizates

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Abstract The powdered NBR and ultra-fine calcium carbonate-filled powdered NBR were prepared with coacervation-coprecipitation method by using polymeric resin as encapsulant. The influence of the encapsulant and ultra-fine calcium carbonate levels on the particle size of product and the mechanical properties of vulcanizate was investigated. The results showed that the particle size of product would be decreased further by the addition of ultra-fine calcium carbonate if 10 phr of encapsulant was used and the product with particle diameter ≤ 0.9 mm accounted for 99.8%; both unfilled powdered NBR vulcanizate and ultra-fine calcium carbonate-filled powdered NBR vulcanizate gave good mechanical properties because the encapsulant with suitable polarity and the ultra-fine calcium carbonate had the significant reinforcing effect on the powdered NBR vulcanizate. It was found by SEM that the encapsulant with high polarity was compatible to NBR and dispersed uniformly in NBR matrix in the form of microparticles with diameter equal to $0.5\ \mu\text{m}$; the ultra-fine calcium carbonate was available in the form of primary particles or aggregates with diameter $\leq 0.5\ \mu\text{m}$ and its dispersion in powdered NBR was much better than that in bale NBR/ultra-fine calcium carbonate mix.

Keywords powdered NBR, ultra-fine calcium carbonate, mechanical properties, microstructure

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