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Elastomer Composites Containing Ionic Liquids

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Abstract : The aim of this work was to study the activity of several novel benzalkonium and alkylammonium and alkylimidazolium ionic liquids with 2-mercaptobenzothiazolate for use as accelerators in the sulphur vulcanisation of butadiene-styrene elastomer (SBR). The application of novel ionic liquids allowed for the elimination of N-cyclohexyl-2-benzothiazolesulfenamide from SBR compounds and for the considerable reduction of the amount of 2-mercaptobenzothiazole present in rubber products, which is favourable because, it is an allergenic agent. Synthesised salts could be used alternatively to standard accelerators in the vulcanisation of SBR, without any detrimental effects on the vulcanisation process, the physical properties or the thermal stability of the obtained vulcanisates. Ionic liquids increased the crosslink density of the vulcanisates and improved their thermal stability.

Keywords : ionic liquids, mechanical properties, styrene-butadiene rubber, vulcanisation
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