

Effect of the bismaleimide cross-link agent on the mechanical properties of thermo reversibly cross-linked EPM rubber



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Description of research

In our research, The Diels-Alder reaction is used to create thermoreversible cross-linked rubbers. At low temperatures (~ 50 °C) the Diels-Alder adduct (and therefore the cross-links) are formed, while at high temperatures (> 150 °C) the cross-links are broken. Our system uses an industrial rubber, which is modified to yield a diene functionalized rubber. This rubber is subsequently reacted with a bis-dienophile to form the thermoreversibly cross-linked rubber.

My specific research topic is to find the effect of the cross-link agent on the mechanical properties (Young's modulus, tensile strength, elongation, hardness, compressability etc.) of our cross-linked rubbers. This requires the synthesis of new cross-link agents with various spacers. Some of the variations in the spacer can for example be: the length of the spacer, the degree of aromaticity and the introduction of other reactive groups in the spacer.



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