

VISCOELASTIC MATERIAL MODELS FOR FINITE ELEMENT ANALYSIS OF RUBBER COMPONENTS

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The purpose of this master's thesis work is to investigate the possibilities and limitations to model transient and harmonic loads for solid rubber, in the FE-program ABAQUS. The constitutive linear viscoelastic material model in conjunction with large deformations that is implemented in ABAQUS, can for a one-dimensional case be illustrated with the rheological generalized Maxwell model. Evaluation of this rheological model is an illustrative way to interpret and describe the behaviour of the three-dimensional viscoelastic material model in ABAQUS.

This master's thesis contributes furthermore with a connection between the theoretical linear viscoelastic material in ABAQUS and the physical viscoelastic material rubber. The static and dynamic behaviour of rubber components is compared with the results from the computation model. The discussion is held with reference to experimental tests performed [Harris 86].



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