

A Guide for Using Viscoelasticity in ANSYS

Authors : A. Fettahoglu

Abstract : Theory of viscoelasticity is used by many researchers to represent the behavior of many materials such as pavements on roads or bridges. Several researches used analytical methods and rheology to predict the material behaviors of simple models. Today, more complex engineering structures are analyzed using Finite Element Method, in which material behavior is embedded by means of three dimensional viscoelastic material laws. As a result, structures of unordinary geometry and domain can be analyzed by means of Finite Element Method and three dimensional viscoelastic equations. In the scope of this study, rheological models embedded in ANSYS, namely, generalized Maxwell model and Prony series, which are two methods used by ANSYS to represent viscoelastic material behavior, are presented explicitly. Afterwards, a guide is illustrated to ease using of viscoelasticity tool in ANSYS.

Keywords : ANSYS, generalized Maxwell model, finite element method, Prony series, viscoelasticity, viscoelastic material curve fitting

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