



Mejores procedimientos  
Para mejores Productos

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# Modeling Rubber and Viscoelasticity with Abaqus

## Objective:

Rubber and resilient foam are widely used for a variety of applications, such as seals and gaskets, shock mounts, vibration isolators, and tires. The mechanical and chemical properties of these materials allow them to act as excellent seals against moisture, pressure, and heat. They also have excellent energy absorption and dissipation capabilities.

This course provides a brief overview of finite deformations and the material models used for rubber and resilient foam. The main focus of the seminar and workshops is to teach users how to:

- Use experimental test data to calculate material constants
- Check the stability of the Abaqus material model at extreme strains
- Obtain the best possible material constants from the available test data
- Select elements for modeling rubber and foams
- Design an appropriate finite element mesh
- Model viscoelastic behavior in both the time and frequency domain
- Use a user subroutine to define the hyper elastic behavior

## Who should attend?

This course is recommended for engineers with experience using Abaqus.

## Agenda

### Day 1 Rubber Physics

Introduction to Rubber Elasticity Models

Mechanical Testing

Workshop 1

Defining Rubber Elasticity Models in Abaqus

Modeling Issues and Tips

Workshop 2

### Day 2 Viscoelastic Material Behavior

Time-Domain Viscoelasticity

Workshop 3

Frequency-Domain Viscoelasticity

Workshop 4

Permanent Set in Solid Elastomers

Anisotropic Hyper elasticity

### Extra Finite Deformations



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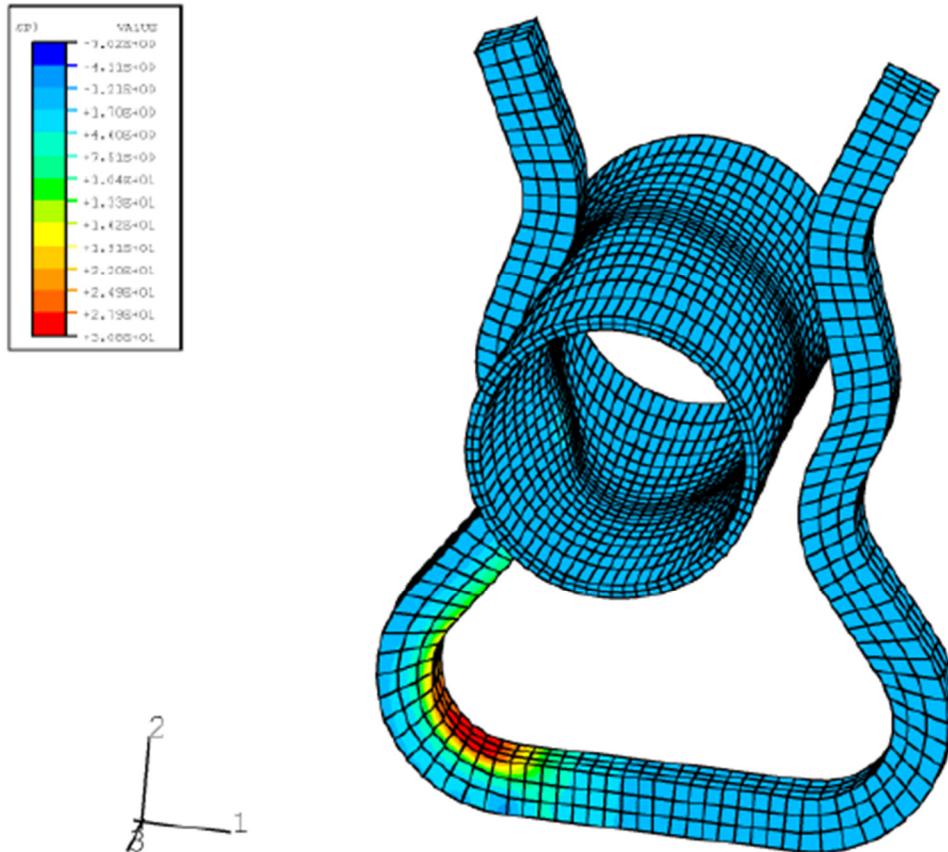
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# Modeling Rubber and Viscoelasticity with Abaqus

Rubber Elasticity Models: Mathematical Forms  
Linear Viscoelasticity Theory  
Harmonic Viscoelasticity Theory  
Suggested Reading



Rubber tubing is pushed into a plastic clip and then pulled against one side of the clip. The tubing collapses as it is pulled against the clip, which minimizes the stresses in the base of the clip.

Contours of maximum principal stress.