

# HYPERELASTIC MODULE – REQUIRED TEST

## Stress-Strain Behavior



The Hyperelastic Module produces the basic information about nonlinear stress-strain behavior that is needed to run a finite element model and to represent initial transient softening (Mullins effect) in the model.

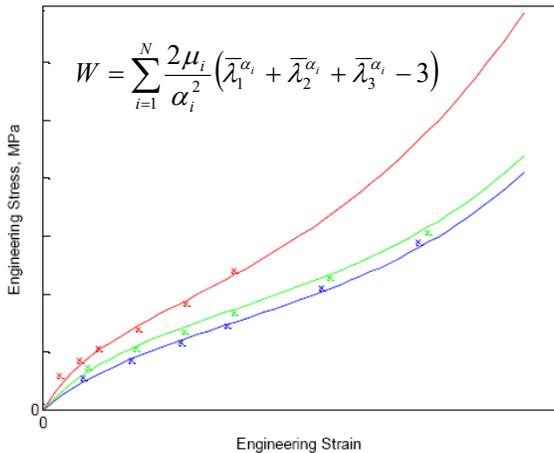
- simple tension, slow cyclic loading, raw data
- planar tension, slow cyclic loading, raw data
- biaxial tension, slow cyclic loading, raw data
- 5 strain levels
- number of slabs needed for test: 4

**Use with**

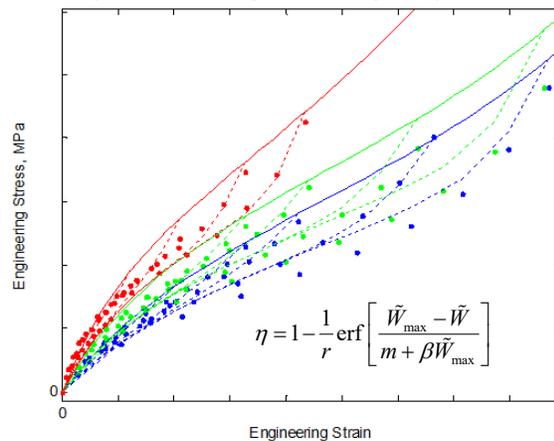
- Ogden hyperelastic law
- Mullins/Ogden Roxburgh
- and other hyperelastic laws on request

### Analysis and Reporting / Deliverables

- identification of a suitable hyperelastic function and parameters for FEA
- identification of parameters for specifying Mullins effect in ABAQUS, ANSYS or MARC
- unit cube validation and stability check



Typical hyperelastic law fit to stress-strain curves measured in simple (blue), planar (green) and equibiaxial (red) tension.



Typical Mullins law fit to cyclic stabilized stress-strain curves.

**FPM-H Hyperelastic Module** completed at lab ambient temperature (23°C) **\$2,395**

*Additional Options*

**FPM-HV Volumetric Compression Add-on to Hyperelastic Module** **\$475**

Useful for specifying dilatational behavior of elastomers in highly confined deformation states. Requires 1 additional slab.

*Recommended when p / K > 5%*

**FPM-H-TEMP Temperature Upcharge for non 23°C Hyperelastic Module** **\$1,075**

Indicate temperature with range of -40°C to 200°C