Young's Modulus and Poisson's Ratio

Young's Modulus

- Tensile modulus
- Measure of stiffness of an isotropic elastic material
- Ratio of uniaxial stress over uniaxial strain
- $E = \sigma / \varepsilon$

Poisson's Ratio

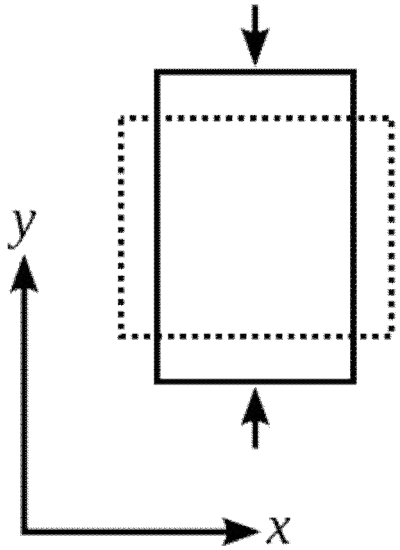
Ratio of the relative contraction strain, or transverse strain (normal to the applied load), divided by the relative extension strain, or axial strain (in the direction of the applied load).

When a material is stretched in one direction, it tends to contract in the other two. When a material is compressed in one direction, it tends to expand in the other two directions.

Poisson's ratio (v) is a measure of this tendency.

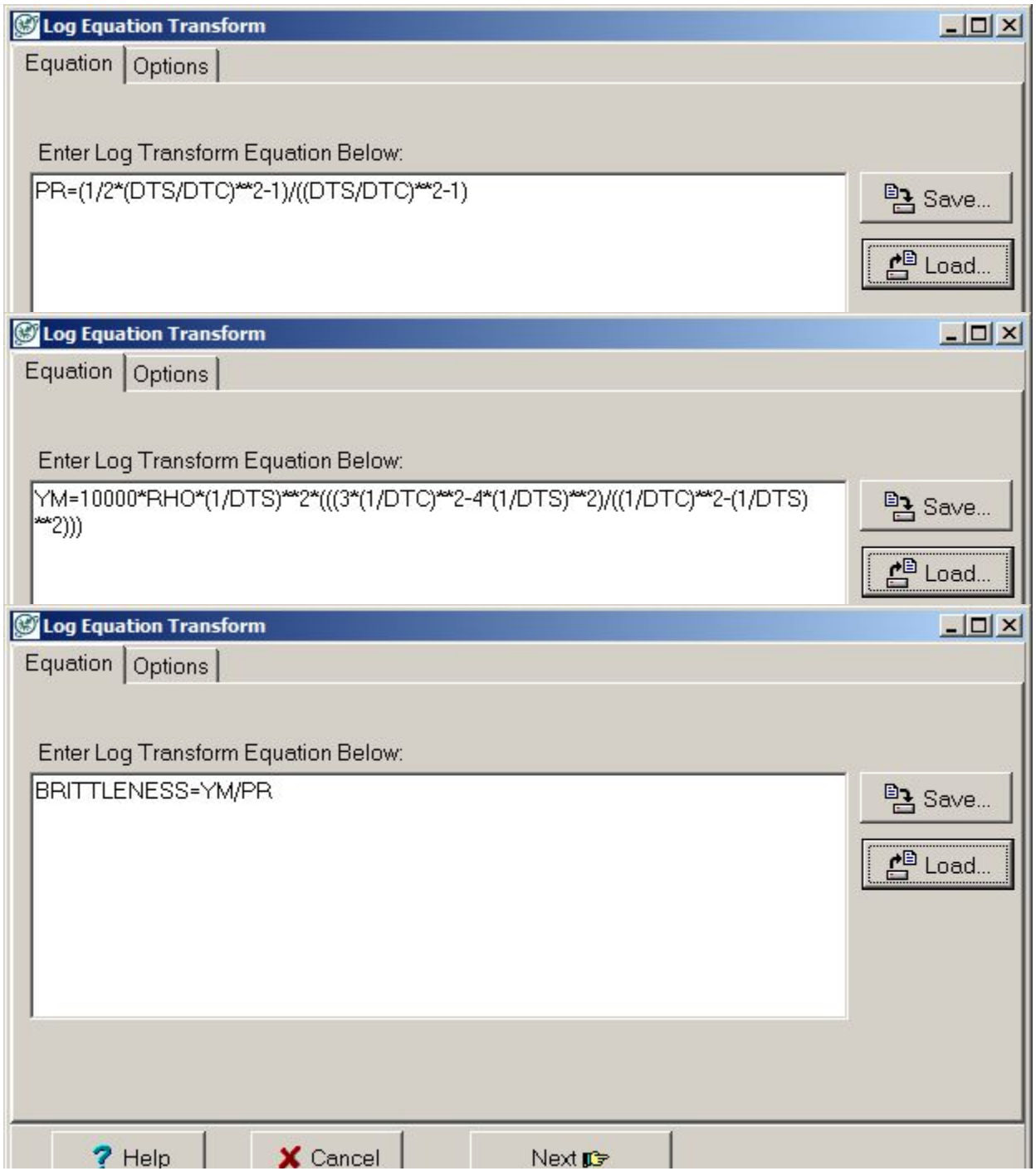
Most materials between 0 and 0.5.

$$\nu = -\frac{\varepsilon_{\mathrm{trans}}}{\varepsilon_{\mathrm{axial}}} = -\frac{\varepsilon_{\mathrm{x}}}{\varepsilon_{\mathrm{y}}}$$



Rectangular specimen subject to compression, with Poisson's ratio circa 0.5.

http://en.wikipedia.org/wiki/Poisson's_ratio


Log Equation Transform
Equation
Options
Enter Log Transform Equation Below:
PR=(1/2*(DTS/DTC)**2-1)/((DTS/DTC)**2-1)
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Equation
Options
Enter Log Transform Equation Below:
YM=10000*RHO*(1/DTS)**2*(((3*(1/DTC)**2-4*(1/DTS)**2)/((1/DTC)**2-(1/DTS)**2)))
Save...
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Equation
Options
Enter Log Transform Equation Below:
BRITTLENESS=YM/PR
Save...
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Cancel
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