Vinyl-crosslinked polydimethylsiloxane (PDMS)
Stress-strain response of PDMS tubes

![Graph showing stress-strain response of PDMS tubes with different durometers and postcuring methods.](image-url)
Mooney-Rivlin Characterization

\[ \sigma = 2 \left( \lambda - \frac{1}{\lambda^2} \right) \left( C_1 + \frac{C_2}{\lambda} \right) \]

\[ \frac{\sigma}{2 \lambda - \frac{1}{\lambda^2}} = C_1 + \frac{C_2}{\lambda} \]
Mooney-Rivlin plots of PDMS tube materials

\[ \sigma[2(\lambda - 1/\lambda^2)] \]

1/\lambda

- 50 durometer postcured
- extruded
- 50 durometer
Comparison of Mooney-Rivlin model with tensile stress-strain curve

[Graph showing comparison between experimental data and Mooney equation]

- Experimental data
- Mooney equation
Mesh of 70 quadrilateral Mooney-Rivlin elastomeric elements and 14 contact elements
Deformed mesh and equivalent stresses at 25% compression
Fully compressed tube
Compressing (also restoring) force

- Extruded
- New 50 durometer
- Postcured 50 durometer

Force, lb/in vs. Displacement, in