Answer on Question #64757, Physics / Solid State Physics

Explain more about Young's modulus.

Answer:

$$E = \frac{\sigma}{\varepsilon} = \frac{F l_0}{S \Delta l}$$

Where E is a constant that characterizes the elastic properties of the material depends on its physical state called Young's modulus.

The physical meaning of the Young's modulus:

If $\Delta l = l_0$, then $\varepsilon = 1$ and the tension $\sigma = E$. Therefore, the Young's modulus can be defined as the tensile stress that would lead to a doubling of the length of the rod, subject to Hooke's law. However, none of the actual material other than rubber and some polymers, as not capable of withstanding large deformations.