Answer on Question #50087, Physics, Mechanics | Kinematics | Dynamics

Properties of Materials

A sample material is pulled by a certain force so that an elastic elongation is recorded. What is the ratio of deformation between loaded and unloaded conditions known as?

Solution:

Therefore, whenever a stress (no matter how small) is applied to a metal, a proportional dimensional change or distortion must take place.

Such a proportional dimensional change (intensity or degree of the distortion) is called strain and is measured as the total elongation per unit length of material due to some applied stress. The equation below illustrates this proportion or distortion.

$$Strain = \varepsilon = \frac{\Delta l}{l}$$

 ε = strain

 Δl = total elongation

l = original length

Answer: strain is given by the change in length per unit length

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