Answer on Question#38142 - Physics - Electric Circuit Formula for spring constant is

$$k = \frac{F}{\Delta x}$$

Formula for total stored energy is

$$E = k\Delta x^2/2 = F\Delta x/2$$

Total volume is

$$V = l\pi r^2$$

So, density energy per unit volume is

$$\epsilon = \frac{E}{V} = \frac{F\Delta x}{2l\pi r^2} = \frac{49 \cdot 0.1 \cdot 10^{-2}}{5 \cdot 3.14 \cdot (0.5 \cdot 10^{-3})^2} \approx 124.84 \; J/m^2$$