

Answer on Question #47135, Physics, Electric Circuits

A 4.0 m long wire has diameter of 0.30 mm. If its resistance is 30 ohm, find it's specific resistance

By the definition, specific resistance is:

$$\rho = \frac{RS}{l}$$

Where R – wire resistance, S – cross section of a wire, l – length of a wire

$$\rho = \frac{30 \text{ Ohm} \cdot (0.30 \cdot 10^{-3} \text{ m})^2}{4.0 \text{ m}} = 0.68 \cdot 10^{-6} \text{ Ohm} \cdot \text{m}$$

Answer: $\rho = 0.68 \cdot 10^{-6} \text{ Ohm} \cdot \text{m}$