

Answer on Question #71799-Physics -Other

A certain wire has a diameter of 2 mm and a length of 280 m. If it has a resistance of 10 ohms and 20 degrees Celsius, what is the resistivity?

Solution

$$R = \rho \frac{l}{A}.$$

The resistivity is

$$\rho = R \frac{A}{l} = R \frac{\pi d^2}{4l}$$

$$\rho = \frac{10}{4} \frac{(0.002)^2}{280} = 3.57 \cdot 10^{-8} \text{ ohm} \cdot \text{m}.$$

Answer: $3.57 \cdot 10^{-8} \text{ ohm} \cdot \text{m}$.

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