



Uniform cross section

- Length of wire: L
- Area of cross section: A
- Resistivity of material: ρ
- Current density: $J = \frac{E}{\rho}$ [A/m^2]
- Current: $I = JA$ [A]
- Voltage: $V = EL$ [V]
- Resistance: $R \equiv \frac{V}{I} = \frac{\rho L}{A}$ [Ω]

Variable cross section

- Cross-sectional profile: $A(x)$
- Resistance of slice: $dR = \frac{\rho dx}{A(x)}$
- Resistance of wire: $R = \rho \int_0^L \frac{dx}{A(x)}$

