

18.15 We are asked to determine the electrical conductivity of a Cu-Ni alloy that has a tensile strength of 275 MPa. From Figure 7.16(a), the composition of an alloy having this tensile strength is about 8 wt% Ni. For this composition, the resistivity is about $14 \times 10^{-8} \Omega\text{-m}$ (Figure 18.9). And since the conductivity is the reciprocal of the resistivity, Equation 18.4, we have

$$\sigma = \frac{1}{\rho} = \frac{1}{14 \times 10^{-8} \Omega\text{-m}} = 7.1 \times 10^6 (\Omega\text{-m})^{-1}$$