

18. In Eq. 27-17, we let $\rho = 2\rho_0$ where ρ_0 is the resistivity at $T_0 = 20^\circ\text{C}$:

$$\rho - \rho_0 = 2\rho_0 - \rho_0 = \rho_0\alpha(T - T_0) \ ,$$

and solve for the temperature T :

$$T = T_0 + \frac{1}{\alpha} = 20^\circ\text{C} + \frac{1}{4.3 \times 10^{-3}/\text{K}} \approx 250^\circ\text{C} \ .$$

Since a change in Celsius is equivalent to a change on the Kelvin temperature scale, the value of α used in this calculation is not inconsistent with the other units involved. It is worth noting that this agrees well with Fig. 27-10.