



































20.3 Temperature dependence of resistance and resistivity The resistivity of a material depends on its temperatures. $\rho = \rho_o [1 + \alpha (T - T_o)]$ where α is the temperature coefficient of resistivity. And similarly we also have the following equation for resis tance. $R = R_o [1 + \alpha (T - T_o)]$











• The SI unit of power is Watt (W) - I must be in Amperes, R in ohms and ΔV in Volts

$$P = I V$$
$$P = I^2 R = V^2 / R$$

- The unit of energy used by electric companies is the *kilowatt-hour*This is defined in terms of the unit of power and the amount of time it is supplied
 - $-1 \text{ kWh} = 3.60 \text{ x} 10^6 \text{ J}$

















































































- Electric shock can result in fatal burns
- Electric shock can cause the muscles of vital organs (such as the heart) to malfunction
- 5 mA or less
 - Can cause a sensation of shock
 - Generally little or no damage
- 10 mA
 - Hand muscles contract
 - May be unable to let go of a live wire
- 100 mA
 - If passes through the body for just a few seconds, can be fatal

