

SECTION REVIEW

1. A jeweler working with a heated 47 g gold ring must lower the ring's temperature to make it safe to handle. If the ring is initially at 99°C, what mass of water at 25°C is needed to lower the ring's temperature to 38°C?
2. How much energy must be added to a bowl of 125 popcorn kernels in order for them to reach a popping temperature of 175°C? Assume that their initial temperature is 21°C, that the specific heat capacity of popcorn is 1650 J/kg•°C, and that each kernel has a mass of 0.105 g.
3. Because of the pressure inside a popcorn kernel, water does not vaporize at 100°C. Instead, it stays liquid until its temperature is about 175°C, at which point the kernel ruptures and the superheated water turns into steam. How much energy is needed to pop 95.0 g of corn if 14 percent of a kernel's mass consists of water? Assume that the latent heat of vaporization for water at 175°C is 0.90 times its value at 100°C and that the kernels have an initial temperature of 175°C.
4. **Critical Thinking** Using the concepts of latent heat and internal energy, explain why it is difficult to build a fire with damp wood.
5. **Critical Thinking** Why does steam at 100°C cause more severe burns than does liquid water at 100°C?
6. **Interpreting Graphics** From the heating curve for a 15 g sample, as shown in **Figure 15**, estimate the following properties of the substance.
 - a. the specific heat capacity of the liquid
 - b. the latent heat of fusion
 - c. the specific heat capacity of the solid
 - d. the specific heat capacity of the vapor
 - e. the latent heat of vaporization

extension

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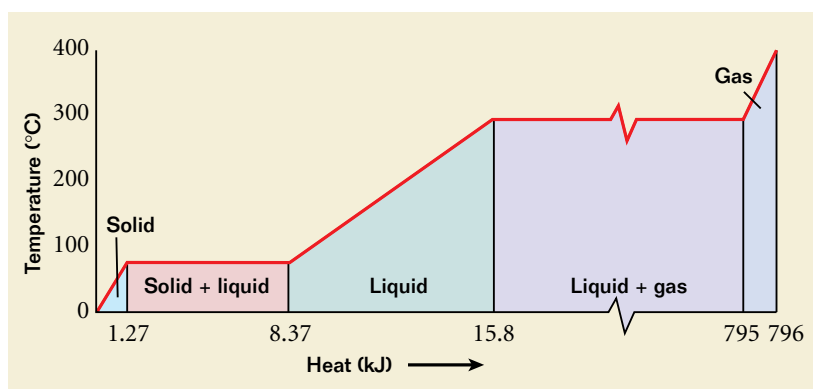


Figure 15