

# Vaporization: Energy and Pressure Chemistry

Name \_\_\_\_\_

1 What property or properties of liquids are similar to solids?

2 What property or properties of liquids are similar to gases?

3 List six physical properties of water.

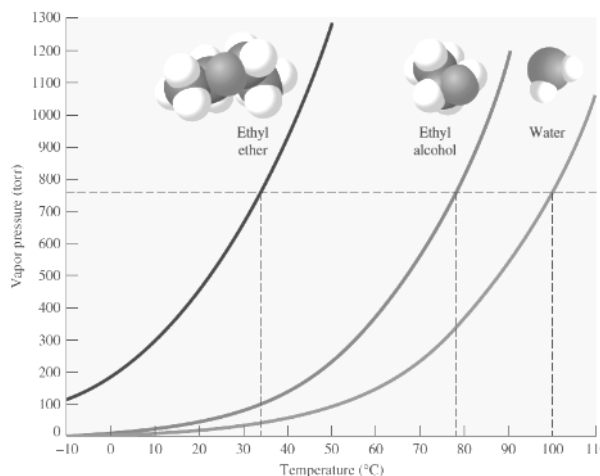
4 At approximately what temperature would each of the substances shown in the vapor pressure figure boil when the pressure is 30 torr?

5 Use the vapor pressure graphs to find the following:

(a) boiling point of water at 500 torr \_\_\_\_\_

(b) normal boiling point of ethyl alcohol \_\_\_\_\_

(c) boiling point of ethyl ether at 0.50 atm \_\_\_\_\_

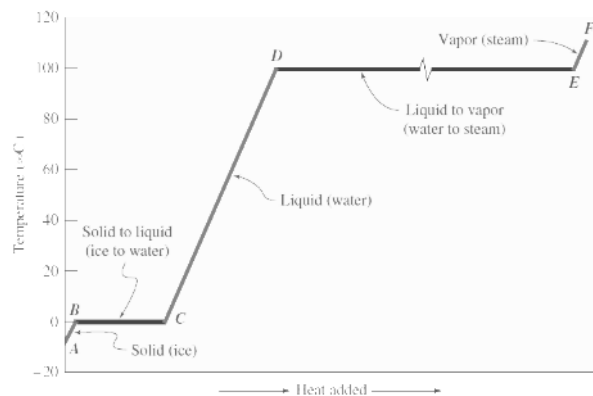


6 Consider the heat vs temperature phase diagram.

(a) Why is line *BC* horizontal? What is happening in this interval?

(b) What phases are present in the interval *BC*?

(c) When heating is continued after point *C*, another horizontal line, *DE*, is reached at a higher temperature. What does this line represent?



7 Which contains less energy: ice at 0°C or water at 0°C? Explain.

8 Why does ice float in water? Would ice float in ethyl alcohol ( $d = 0.789 \text{ g/mL}$ )? Explain.

9 Which causes a more severe burn: liquid water at 100°C or steam at 100°C? Why?

- 10** Explain why rubbing alcohol warmed to body temperature still feels cold when applied to your skin.
- 11** Explain why a higher temperature is obtained in a pressure cooker than in an ordinary cooking pot.
- 12** Explain what is occurring physically when a substance is boiling. Draw pictures to support your answer.
- 13** Suggest a method whereby water could be made to boil at 50°C.
- 14** What is the relationship between vapor pressure and boiling point? Refer to a previous diagram for help.
- 15** Why does a boiling liquid maintain a constant temperature when heat is continuously being added?
- 16** Regardless of how warm the outside temperature may be, we always feel cool when stepping out of a swimming pool, the ocean, or a shower. Why is this so?
- 17** Why does a lake freeze from the top down? What significance does this have for life on Earth? Draw a picture to support your answer.