Chapter 14

*3. To sterilize a 50.0-g glass baby bottle, we must raise its temperature from*  *to**. How much heat transfer is required?* Specific heat of glass = 840 J/(kg.C0). [3070 J]

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| 4. *The same heat transfer into identical masses of different substances produces different temperature changes. Calculate the final temperature when 1.00 kcal of heat transfers into 1.00 kg of the following, originally at* *: (a) water; (b) concrete; (c) steel; and (d) mercury.* Cwater = 1.00 kcal/(kg.C0), Cconcrete = 0.20 kcal/(kg.C0), Csteel = 0.108 kcal/(kg.C0), Cmercury = 0.0333 kcal/(kg.C0),Answer: a. 21.0 0C, b. 25.0 0C c. 29.30C d. 50.0 0C |
| *6. A 0.250-kg block of a pure material is heated from  to  by the addition of 4.35 kJ of energy. Calculate its specific heat and identify the substance of which it is most likely composed.* [0.0924 kcal/kg.C0, Cu] |
| *11. How much heat transfer (in kilocalories) is required to thaw a 0.450-kg package of frozen vegetables originally at*  *if their heat of fusion is the same as that of water?* [35.9 kcal] |
| *24. A 0.0500-kg ice cube at*  *is placed in 0.400 kg of*  *water in a very well-insulated container. What is the final temperature?* [20.60C] |