

Chapter 17 Temperature and Heat

Example 1:

Calculate the final temperature when 50 grams of water at 0 °C is added to 100 grams at 100 °C.

Example 2:

What is the equilibrium temperature when 50 grams of 100 °C water is added to a 100 gram aluminum container that is at 20 °C? (specific heat for Al = 0.215 cal/gm °C)

Example 3:

Calculate the energy needed to convert 20 grams of ice at -35 °C to 20 grams of steam at 100 °C? (Answer should be in calories.) (Specific heat of ice is 0.5 cal/(gm °C.))

Example 4:

A 30 gram lead bullet collides with a wooden block. What was the bullet's minimum initial speed if the entire bullet melts? (Assume that the process happens so quickly that the bullet loses no heat to the wood and that all of the heat goes to melting the bullet.)

Example 5:

Calculate the final temperature when 2 grams of ice at 0 C° is added to 100 grams of water at 25 C°.

Example 6:

Calculate the final temperature when 20 grams of steam at 100 C° is added to 100 grams of ice at -40 C°. (specific heat of ice is 0.5 cal/(gm C°))

Example 7:

How much heat is lost per hour through a 2 m² glass window that is 0.5 cm thick in if the inside temperature is 20 °C and the outside temperature is 0 °C. (thermal conductivity of glass is 0.8 W/m C°)