Question #78195, Chemistry / General Chemistry

A liquid has a specific heat of 2.81 J/goC, a mass of 90.0 g, and an initial temperature of 25.0 oC. What is the new temperature of the liquid if 2,350 J of energy are removed from it?

A. 1.57 oC

B. 9.30 oC

C. 15.7 oC

D. 34.3 oC

E. None of the Above

SOLUTION

$$Q = \mathrm{c} * m * (\mathrm{t1} - \mathrm{t2}),$$

in it Q is the heat energy, J;
c is the specific heat J/(g*°C);
m is the mass of the object, g;
t1 is the initial temperature in °C;
t2 is the new temperature of the liquid in °C;

$$\mathrm{t2} = t1 - \frac{Q}{c * m},$$

$$\mathrm{t2} = 25 - \frac{2{,}350J}{2.81\mathrm{J}/(\mathrm{g} * ℃) \ * 90.0\mathrm{g}} = 15.7℃$$

ANSWER:C