Answer on the question #48670, Chemistry, Other

Question:

How much energy is needed to convert 15.0 g of water at 0 C to ice? give the answer in both joules and calories.

Solution:

The quantity of energy needed to convert 15.0 g of water at 0 C to ice is:

$$Q = - m(ice) * \lambda,$$

where λ is the enthalpy of fusion. For ice, $\lambda = 334\frac{J}{g} = 79.8\frac{cal}{g}$. Then:

$$Q = -15 * 334 = -5010\,J = -1197.0\,cal.$$

Answer: -5010 J, -1197.0 cal