

A 2 kg iron block is taken from a furnace where its temperature was 672 degree celsius and placed a large block of ice at 0 degree celsius. Assuming that heat given up by iron is used to melt the ice , how much ice is melted if specific heat capacity for iron is  $450 \text{ jkg}^{-1}\text{k}^{-1}$

Solution

$$Q_{\text{iron}} = c * m * (t_2 - t_1) \text{ -heat given up by iron}$$

$$Q_{\text{ice}} = L * M \text{ -heat used to melt the ice}$$

$$c * m * (t_2 - t_1) = L * M$$

$$M = \frac{c * m * (t_2 - t_1)}{L}$$

L is specific heat of melting(335 kJ/kg)

$$M = 1.8 \text{ kg of ice}$$