Answer on Question #72325, Physics / Mechanics | Relativity |

A 10 kg iron bar (specific heat 0.11 cal/g°C) at 80°C is placed on a block of ice. How much ice melts?

Solution

m_{ir} = 10000 g
C = 0.11 cal/g°C
Δt = (80°C – 0°C) = 80°C
L = 81 cal/g
m_{ice} – ?

$Q_{\text{ir}} = Q_{\text{ice}}$, $m_{\text{ir}} C \Delta t = m_{\text{ice}} L$, $m_{\text{ice}} = (m_{\text{ir}} C \Delta t)/L$.

Finally

m_{ice} = (10000· 0.11·80)/81 = 1080 [g], m_{ice} = 1080 g = 1.08 kg

Answer: 1.08 kg