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Loading Units:-Standard

$m_i = 520[\![g]\!],\ m_w = 520[\![g]\!],\ T_{wi} = 363[\![K]\!],\ T_{ii} = 273[\![K]\!],\ c = 4190\left[\!\!\left[\frac{J}{kg \cdot K}\right]\!\!\right],\ L = 333\left[\!\!\left[\frac{kJ}{kg}\right]\!\!\right]$

$$m_i = 520\ [\![g]\!],\ m_w = 520\ [\![g]\!],\ T_{wi} = 363\ [\![K]\!],\ T_{ii} = 273\ [\![K]\!],\ c = 4190\left[\!\!\left[\frac{m^2}{s^2\,K}\right]\!\!\right],\ L = 333000\left[\!\!\left[\frac{m^2}{s^2}\right]\!\!\right] \tag{1}$$

$Q_{mathi} = L\, m_i$

$$Q_{mathi} = L\, m_i \tag{2}$$

$-c\, m_w \left(T_{fp} - T_{wi}\right) = Q_{mathi}$

$$-c\, m_w \left(T_{fp} - T_{wi}\right) = Q_{mathi} \tag{3}$$

$(3)\big|_{(2)}$

$$-c\, m_w \left(T_{fp} - T_{wi}\right) = L\, m_i \tag{4}$$

$isolate\left((4),\ T_{fp}\right)$

$$T_{fp} = -\frac{L\, m_i}{c\, m_w} + T_{wi} \tag{5}$$

$T_f = T_{ii} + \frac{T_{fp} - T_{ii}}{2}$

$$T_f = \frac{1}{2}\, T_{ii} + \frac{1}{2}\, T_{fp} \tag{6}$$

$(6)\big|_{(5)}$

$$T_f = \frac{1}{2}\, T_{ii} - \frac{1}{2}\, \frac{L\, m_i}{c\, m_w} + \frac{1}{2}\, T_{wi} \tag{7}$$

$(7)\big|_{(1)}$

$$T_f = \frac{116592}{419}\ [\![K]\!] \tag{8}$$

$evalf\left(rhs\left((8)\right)\right)$

$$278.2625298\ [\![K]\!] \tag{9}$$

Server: 1 Memory: 3.56M Time: 0.09s Math Mode

Maple 17 wish list