

$$T_0 = ConvertTemp (C, K T (Water, P = 80 [kPa], x = 0))$$

T<sub>inf</sub> = ConvertTemp (C, K 20 [C]) Ambient Temp

h = 10 [W/m<sup>2</sup>-K] heat transfer coeff

$$D = 7 \text{ [cm]} \cdot \left| 0.01 \cdot \frac{\text{m}}{\text{cm}} \right|$$

$$L = 7 \text{ [cm]} \cdot \left| 0.01 \cdot \frac{\text{m}}{\text{cm}} \right|$$

$$A = \pi \cdot D \cdot L$$
 area

$$\rho = \rho \text{ (Water, P = 80 [kPa], x = 0)}$$

$$m = \rho \cdot \frac{\pi}{4} \cdot D^2 \cdot L$$

$$C_V = Cv$$
 (Water,  $P = 80$  [kPa],  $x = 0$ )  $\cdot \left| 1000 \cdot \frac{J}{kJ} \right|$  Heat Cap

$$dTdt = \frac{h \cdot A}{m \cdot C_V} \cdot (T_0 - T_{inf}) \quad solving eq$$

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## SOLUTION

Unit Settings: SI C kPa kJ mass deg

 $A = 0.01539 \text{ [m}^2\text{]}$ 

dTdt = 0.01147 [K/s] {0.01147 [C/s]}

m = 0.2594 [kg] T<sub>inf</sub> = 293.2 [K] Cv = 3802 [J/kg-K]  $h = 10 \text{ [W/m}^2\text{-K]}$  $\rho = 962.9 \text{ [kg/m}^3]$  D = 0.07 [m] L = 0.07 [m] T<sub>0</sub> = 366.6 [K]

No unit problems were detected.