

water equivalence

$$(m_c + m_w) C_{pw} (T - T_1) = m_s C_s (T_2 - T)$$

$$m_c = -m_w + \frac{m_s C_s (T_2 - T)}{C_{pw} (T - T_1)}$$

(i)

Brass

$$m_{c1} = \frac{(0.121)(0.385)(96.3 - 28.0)}{(4.182)(28.0 - 20.3)} - 0.099 = 0.0104 \text{ kg}$$

$$m_{c2} = \frac{(0.121)(0.385)(94 - 29.7)}{(4.182)(29.7 - 23.2)} - 0.100 = 0.0102 \text{ kg}$$

$$m_{c3} = 0.0133 \text{ kg}$$

(ii)

Steel

$$m_{c1} = \frac{(0.113)(0.480)(94 - 33.2)}{(4.182)(33.2 - 26)} - 0.089 = 0.0205 \text{ kg}$$

$$m_{c2} = \frac{(0.113)(0.480)(96.2 - 35)}{(4.182)(35 - 26)} - 0.099 = 0.0108 \text{ kg}$$

$$m_{c3} = 0.0219 \text{ kg}$$