

1) The water equivalent m_s of the apparatus is given by :

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

where

$$m_s = (m_1 C_1 + m_2 C_2 + m_3 C_3) / C_{pw}$$

m_1 = mass of calorimeter

C_1 = Specific heat Capacity of calorimeter

m_2 = mass of thermometer

C_2 = specific heat Capacity of thermometer

m_3 = mass of stirrer

C_3 = specific heat capacity of stirrer

The value of C_s in equation (2) was taken to be equal to the standard specific heat capacities of the studied metals in follows :

$$C_s(\text{Brass}) = 385 \text{ J/kg}^\circ\text{C}$$

$$C_s(\text{steel}) = 480 \text{ J/kg}^\circ\text{C}$$