Fehlerrechnung

$$C_{th} = \frac{c_A m_A (T_A - T_M) + c_B m_B \cdot (T_B - T_M)}{T_M - T_B}$$

$$\left| \frac{\partial C_{th}}{\partial m_A} \right| \Delta m_A = \left| \frac{c_A \Delta m_A (T_A - T_M)}{T_M - T_B} \right|$$

$$\left| \frac{\partial C_{th}}{\partial m_B} \right| \Delta m_B = \left| \frac{c_B \Delta m_B (T_B - T_M)}{T_M - T_B} \right| = c_3 \Delta m_B$$

$$\left| \frac{\partial C_{th}}{\partial T_A} \right| \Delta T_A = \frac{c_A m_A \Delta T_A}{|T_M - T_B|}$$

$$\left| \frac{\partial C_{th}}{\partial T_B} \right| \Delta T_B = \frac{c_B m_B (T_M - T_B) - \left(c_A m_A (T_A - T_B) + c_B m_B (T_B - T_M) \right) \cdot (-1)}{(T_M - T_B)^2}$$

$$= \left| \frac{c_A m_A (T_A - T_B) \Delta T_B}{(T_M - T_B)^2} \right|$$

$$\left| \frac{\partial C_{th}}{\partial T_M} \right| \Delta T_M = \left| \frac{-(c_A m_A + c_B m_B) \cdot (T_M - T_B) - \left(c_A m_A (T_A - T_M) + c_B m_B (T_B - T_M) \right) \cdot 1}{(T_M - T_B)^2} \right|$$

$$= \frac{c_A m_A (T_M - T_B + T_A - T_M) + c_B m_B (T_M - T_B + T_B - T_M)}{(T_M - T_B)^2} \Delta T_M$$

$$= \left| \frac{c_A m_A (T_A - T_B)}{(T_M - T_B)^2} \right| \Delta T_M$$

$$C_A = \frac{(c_B m_B + C_{th})(T_M - T_B)}{m_A (T_A - T_M)}$$

$$\left|\frac{\partial C_A}{\partial C_{th}}\right| \Delta C_{th} = \left| \frac{\Delta C_{th} (T_M - T_B)}{m_A (T_A - T_M)} \right|$$

$$\left|\frac{\partial C_A}{\partial m_A}\right| \Delta m_A = \left| \frac{C_A \, \Delta m_A}{m_A} \right|$$

$$\left|\frac{\partial C_A}{\partial m_B}\right| \Delta m_B = \left| \frac{c_B \, \Delta m_B (T_M - T_B)}{m_A (T_A - T_M)} \right|$$

$$\left|\frac{\partial C_A}{\partial T_A}\right| \Delta T_A = \left| \frac{C_A \, \Delta T_A}{(T_A - T_M)} \right|$$

$$\left|\frac{\partial C_A}{\partial T_B}\right| \Delta T_B = \left| \frac{C_A \, \Delta T_B}{(T_M - T_B)} \right|$$

$$\left|\frac{\partial C_A}{\partial T_M}\right| \Delta T_M = (c_B m_B + C_{th}) \, \Delta T_M \cdot \frac{1 \, m_A (T_A - T_M) - (T_M - T_B) \cdot (-m_A)}{m_A^2}$$

$$= (c_B m_B + C_{th}) \, \Delta T_M \cdot \frac{T_A - T_B}{m_A}$$