

Correlations (S I)

Humid volume:

$$v_H \left(m^3 / kg \text{ dry air} \right) = \left(2.83 \times 10^{-3} + 4.56 \times 10^{-3} H \right) T \text{ (K)}$$

Where H is the absolute humidity and T in K.

Heat transfer coefficient for air flowing parallel to the drying surface:

$$h \left(W / m^2 \cdot K \right) = 0.0204 G^{0.8}$$

$$G \left(kg / h m^2 \right) = \text{mass velocity of air} = \rho_{air} v_{air}$$

$$[v_{air} = 0.61 - 7.6 \text{ m/s} \quad , \quad T_{air} = 45 - 150^\circ C]$$

Heat transfer coefficient for air flowing perpendicular to the drying surface:

$$h \left(W / m^2 \cdot K \right) = 1.17 G^{0.37}$$

$$G \left(kg / h m^2 \right) = \text{mass velocity of air} = \rho_{air} v_{air}$$

$$[v_{air} = 0.9 - 4.6 \text{ m/s} \quad , \quad T_{air} = 45 - 150^\circ C]$$

Trapezoidal Rule:

$$\int_{x_0}^{x_N} f \, dX = \frac{\Delta X}{2} \left[f_0 + f_N + 2(f_1 + f_2 + f_3 + \dots + f_{N-1}) \right]$$