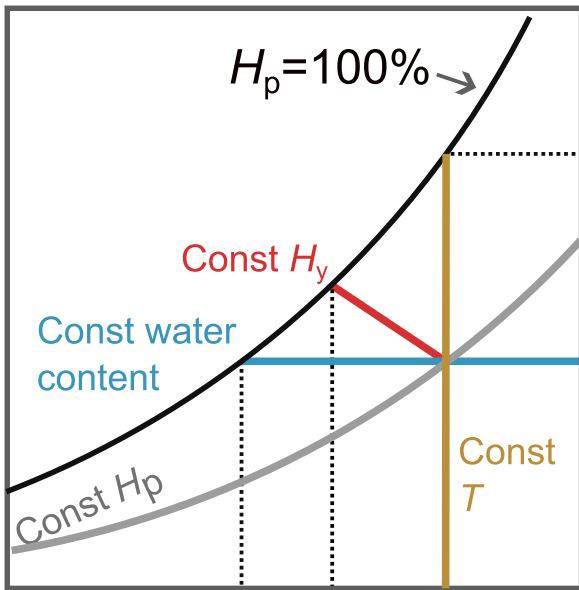


Cheatsheet: Humidification & Concepts



Dew point Wet-bulb Temp. Dry-bulb Temp.

$$H_s = 0.622 \frac{p_{vap}}{p_T - p_{vap}}$$

$$H = \frac{M_A p_A}{M_B (p_T - p_A)} = 0.622 \frac{p_A}{p_T - p_A}$$

$$y = \frac{H/M_A}{1/M_B + H/M_A} \approx \frac{M_B}{M_A} H$$

Percentage humidity

$$H_p = \left(\frac{H}{H_s} \right) \times 100\%$$

Relative humidity (R.H.)

$$H_R = \left(\frac{p_A}{p_{vap}} \right) \times 100\%$$

$$H_p = H_R \frac{p_T - p_{vap}}{p_T - p_A}$$

Humid volume (m^3)

$$v_H = \left(\frac{1}{28.97} + \frac{H}{18.02} \right) \frac{22.41}{273} T \left(\frac{1.013 \times 10^5}{p_T} \right)$$

Humid heat (kJ /kg dry air / K)

$$c_s = c_B + H c_A$$

$$= 1.005 + 1.88H$$

Enthalpy (kJ /kg dry air)

$$H_y = c_s (T - T_0) + H \lambda_0$$

$$= (1.005 + 1.88H)T + 2501.4H$$

