

$$\log_{10}(p_{\text{H}_2\text{O}}) = 10.79574 \cdot \left(1 - \frac{273.16}{T_{\text{sat}}}\right) - 5.02800 \cdot \log_{10}\left(\frac{T_{\text{sat}}}{273.16}\right) + 1.50475 \cdot 10^{-4} \cdot \left(1 - 10^{-8.2969 \cdot \left(\frac{T_{\text{sat}}}{273.16} - 1\right)}\right) \\ + 0.42873 \cdot 10^{-3} \cdot \left(10^{4.76955 \cdot \left(1 - \frac{273.16}{T_{\text{sat}}}\right)} - 1\right) - 0.2138602$$

Eq. 1065.645-1

Where:

$p_{\text{H}_2\text{O}}$ = vapor pressure of water at saturation temperature condition, kPa.

T_{sat} = saturation temperature of water at measured conditions, K.

Example:

$$T_{\text{sat}} = 9.5 \text{ }^\circ\text{C} = 282.65 \text{ K}$$

$$\log_{10}(p_{\text{H}_2\text{O}}) = 10.79574 \cdot \left(1 - \frac{273.16}{282.65}\right) - 5.02800 \cdot \log_{10}\left(\frac{282.65}{273.16}\right) + 1.50475 \cdot 10^{-4} \cdot \left(1 - 10^{-8.2969 \cdot \left(\frac{282.65}{273.16} - 1\right)}\right) \\ + 0.42873 \cdot 10^{-3} \cdot \left(10^{4.76955 \cdot \left(1 - \frac{273.16}{282.65}\right)} - 1\right) - 0.2138602$$

$$\log_{10}(p_{\text{H}_2\text{O}}) = 0.074297$$

$$p_{\text{H}_2\text{O}} = 10^{0.074297} = 1.186581 \text{ kPa}$$