

Propiedades Termofísicas SALMUERA

Densidad

$$C0 := -0.003241 \quad C1 := 0.063635 \quad C2 := 1.013714 \quad C3 := 0.014595 \quad C4 := 3317.349 \quad \text{densidad } 0 < T^{\circ}\text{C} < 140$$

$$\rho_{ap}(ws, T) := \frac{(ws \cdot C0 + C1) \cdot \exp(1 \cdot 10^{-6} \cdot (T + C4)^2)}{(ws + C2 + T \cdot C3)} \cdot \frac{\text{kg}}{\text{m}^3} \quad \rho_{sol}(ws, \rho_{ap}, \rho_w) := \left(\frac{ws}{\rho_{ap}} + \frac{(1 - ws)}{\rho_w} \right)^{-1}$$

Viscosidad

$$V1 := 16.221789 \quad V2 := 1.3229309 \quad V3 := 1.4848599 \quad V4 := 0.0074691 \quad V5 := 30.780201 \quad V6 := 2.0582685 \quad \text{viscosidad } 5 < T^{\circ}\text{C} < 154$$

$$\mu_{ap}(ws, T) := \frac{\exp\left(\frac{V1 \cdot ws^{V2} + V3}{T \cdot V4 + 1}\right)}{(V5 \cdot ws^{V6} + 1)} \quad \mu_{sol}(ws, \mu_{ap}, \mu_{walt}) := \mu_{ap}^{ws} \cdot \left(\mu_{walt} \cdot 1000 \cdot \frac{\text{m} \cdot \text{s}}{\text{kg}} \right)^{(1 - ws)} \cdot 10^{-3} \cdot \frac{\text{kg}}{\text{m} \cdot \text{s}}$$

Capacidad calorífica específica

$$a1 := -0.06936 \quad a2 := -0.07821 \quad a3 := 3.847985 \quad a4 := -11.2762 \quad a5 := 8.731877 \quad a6 := 1.812459 \quad 1.2 < T^{\circ}\text{C} < 120$$

$$\alpha(ws, T) := a2 \cdot T + a3 \cdot \exp(0.01 \cdot T) + a4 \cdot ws \quad c_{Pi}(\alpha, ws) := (a1 \cdot \exp(\alpha) + a5 \cdot ws^{a6}) \cdot \frac{\text{J}}{\text{kg} \cdot \Delta^{\circ}\text{C}}$$

$$c_{Pi} := c_{Pi}(\alpha, ws) \quad c_{Psalin} := (1 - ws) \cdot c_{Pw} + ws \cdot c_{Pi} \quad \text{Donde } c_{Pw} \text{ es el cP del agua}$$

Conductividad

$$M_{nacl} := \frac{58.44277}{1000}$$

$$b := \left(M_{nacl} \cdot \left(\frac{1}{ws} - 1 \right) \right)^{-1}$$

$$k_{sal}(T, b) := \left((0.5621 - 0.01394 \cdot b + 0.00177 \cdot b^2) + (0.00199 + 0.000294 \cdot b - 6.3 \cdot 10^{-5} \cdot b^2) \cdot T + (-8.6 \cdot 10^{-6} - 2.3 \cdot 10^{-6} \cdot b + 4.5 \cdot 10^{-7} \cdot b^2) \cdot T^2 \right) \cdot \frac{\text{W}}{\text{m} \cdot \Delta^{\circ}\text{C}}$$