

Erratum for the 3rd Edition

Correction on Page 156

The coefficients n_{ij} are given in Table 3.5. The function $A_2(\delta, \theta)$ represents the critical enhancement of the thermal conductivity. This additive contribution is defined for IAPWS-IF97 regions 1-2 and 3 by

$$A_2(\delta, \theta) = n_1 \frac{\delta \theta c_p}{\Psi R} A, \quad (3.7)$$

where $\delta = \rho/\rho_c$ and $\theta = T/T_c$ with $\rho_c = 322 \text{ kg m}^{-3}$ and $T_c = 647.096 \text{ K}$. The numerical constant n_1 is given in Table 3.6. The variable $\Psi = \eta/\eta^*$ with $\eta^* = 1 \times 10^{-6} \text{ Pa s}$ represents the dimensionless dynamic viscosity calculated from Eq. (3.1); see Section 3.1. The calculation of the enclosed specific isobaric heat capacity c_p depends on the region where the given state point is located. Its calculation will be described later in this section. The variable R in Eq. (3.7) represents the specific gas constant of water and is given in [36] by $R = 0.461\,518\,05 \text{ kJ kg}^{-1} \text{ K}^{-1}$. This value for R is different from the value given in Sec. 1 but is consistent with Eq. (3.7). The function A^{23} is defined by

$$A = \frac{n_2}{a} \left[\left(1 - \frac{1}{b} \right) \arctan(a) + \frac{a}{b} - 1 + \exp \left(- \frac{1}{a^{-1} + \frac{1}{3} a^2 \delta^{-2}} \right) \right], \quad (3.7a)$$

$$\text{with } a = n_3 (\delta B)^{n_4}, \quad (3.7b)$$

$$B = p_c \delta \kappa_T - n_5 \theta^{-1} C, \quad (3.7c)$$

$$C = \frac{1}{\sum_{i=1}^6 n_i \delta^{i-1}}, \quad (3.7d)$$

$$\text{and } b = c_p/c_v, \quad (3.7e)$$