$$\frac{\eta(\rho,T)}{\eta^*} = \Psi(\delta,\theta) = \Psi_0(\theta)\cdot\Psi_1(\delta,\theta) \ , \tag{3.1}$$

where $\delta = \rho/\rho^*$ and $\theta = T/T^*$, with $\eta^* = 1\times10^{-6}$ Pa s, and Ψ_0 and Ψ_1 according to Eqs. (3.2) and (3.3). The first function of Eq. (3.1), $\Psi_0(\theta)$, represents the viscosity in the ideal-gas limit and has the form

$$\Psi_0(\theta) = \theta^{0.5}\left[\sum_{i=1}^{4} n_i^{\mathrm{o}}\,\theta^{1-i}\right]^{-1} \ , \tag{3.2}$$

where $\theta = T/T^*$ with $T^* = T_\mathrm{c}$ = 647.096 K according to Eq. (1.4). The coefficients n_i^{o} are listed in Table 3.1. The equation for the second function of Eq. (3.1), $\Psi_1(\delta,\theta)$, reads

$$\Psi_1(\delta,\theta) = \exp\left[\delta\sum_{i=1}^{21} n_i\,(\delta-1)^{I_i}\left(\theta^{-1}-1\right)^{J_i}\right], \tag{3.3}$$

where $\delta = \rho/\rho^*$ and $\theta = T/T^*$ with $\rho^* = \rho_\mathrm{c}$ and $T^* = T_\mathrm{c}$, where the critical density ρ_c = 322 kg m^{-3} and the critical temperature T_c = 647.096 K according to Eqs. (1.6) and (1.4). Table 3.2 contains the coefficients n_i and exponents I_i and J_i of Eq. (3.3).

Table 3.1 Coefficients of Eq. (3.2)

i	n_i^{o}	i	n_i^{o}
1	$0.167\,752\times10^{-1}$	3	$0.636\,656\,4\times10^{-2}$
2	$0.220\,462\times10^{-1}$	4	$-0.241\,605\times10^{-2}$

Table 3.2 Coefficients and exponents of Eq. (3.3)

i	I_i	J_i	n_i	i	I_i	J_i	n_i
1	0	0	0.520 094	12	2	2	−0.772 479
2	0	1	$0.850\,895\times10^{-1}$	13	2	3	−0.489 837
3	0	2	$-0.108\,374\times10^{1}$	14	2	4	−0.257 040
4	0	3	−0.289 555	15	3	0	0.161 913
5	1	0	0.222 531	16	3	1	0.257 399
6	1	1	0.999 115	17	4	0	$-0.325\,372\times10^{-1}$
7	1	2	$0.188\,797\times10^{1}$	18	4	3	$0.698\,452\times10^{-1}$
8	1	3	$0.126\,613\times10^{1}$	19	5	4	$0.872\,102\times10^{-2}$
9	1	5	0.120 573	20	6	3	$-0.435\,673\times10^{-2}$
10	2	0	−0.281 378	21	6	5	$-0.593\,264\times10^{-3}$
11	2	1	−0.906 851				

If the dynamic viscosity is calculated from Eq. (3.1) for given values of *pressure* and temperature, then the input quantity reduced density δ has to be calculated first. According to the release [31], this density does not have to be calculated from the IAPWS-95 formulation [8, 9], but can also be determined from the IAPWS-IF97 basic equations, Eq. (2.3), (2.6), (2.11),