Table 2.131 Maximum and root-mean-square inconsistencies in specific volume between the auxiliary equations $v(p,T)$ for subregions 3u to 3z and the basic equation $f_3(\rho,T)$, Eq. (2.11)

Subregion	$\|\Delta v/v\|$ [%] max	$\|\Delta v/v\|$ [%] RMS	Subregion	$\|\Delta v/v\|$ [%] max	$\|\Delta v/v\|$ [%] RMS
3u	0.097	0.058	3x	0.090	0.050
3v	0.082	0.040	3y	1.77	1.04
3w	0.065	0.023	3z	1.80	0.921

The maximum inconsistencies in specific volume between the auxiliary equations $v(p,T)$ of adjacent subregions along subregion boundaries are as follows: Along subregion boundaries that are isobars, the inconsistencies are less than 0.1% for all subregions except for the subregion boundaries between subregions 3v/3y and 3w/3z, where the inconsistencies amount to 1.7%. Along subregion boundaries defined by the subregion-boundary equations given in Sec. 2.3.6.5a, the inconsistencies are also less than 0.1% except for the boundaries between subregions 3u/3v and 3u/3y (equation $T_{3\text{uv}}(p)$), 3y/3z (equation $T_{3\text{ef}}(p)$), and 3z/3x (equation $T_{3\text{wx}}(p)$), where the inconsistencies amount to 0.14%, 1.8%, 3.5%, and 1.8%, respectively. Further details are given in Tables 15 and 16 of the IAPWS supplementary release [25].

Calculation of Properties with the Help of the Auxiliary Equations $v(p,T)$. In order to calculate the thermodynamic properties in the range very close to the critical point with the help of the auxiliary equations $v(p,T)$ for regions 3u to 3t, the description given in Sec. 2.3.6.4b for the backward equations $v(p,T)$ can be applied analogously to the auxiliary equations $v(p,T)$.

Application of the Auxiliary Equations $v(p,T)$. In comparison with the backward equations $v(p,T)$, the corresponding numerical consistency of the auxiliary equations $v(p,T)$ for the range very close to the critical point is clearly worse. Nevertheless, for many applications, this consistency is satisfactory.

c) Coefficients and Exponents of the Auxiliary Equations $v(p,T)$ for Subregions 3u to 3z

This section contains Tables 2.132 to 2.137 with the coefficients and exponents of the auxiliary equations $v(p,T)$ for subregions 3u to 3z given in Sec. 2.3.6.5b.

Table 2.132 Coefficients and exponents of the auxiliary equation $v_{3\text{u}}(p,T)$ for subregion 3u

i	I_i	J_i	n_i	i	I_i	J_i	n_i
1	−12	14	$0.122\,088\,349\,258\,355 \times 10^{18}$	20	1	−2	$0.105\,581\,745\,346\,187 \times 10^{-2}$
2	−10	10	$0.104\,216\,468\,608\,488 \times 10^{10}$	21	2	5	$-0.651\,903\,203\,602\,581 \times 10^{15}$
3	−10	12	$-0.882\,666\,931\,564\,652 \times 10^{16}$	22	2	10	$-0.160\,116\,813\,274\,676 \times 10^{25}$
4	−10	14	$0.259\,929\,510\,849\,499 \times 10^{20}$	23	3	−5	$-0.510\,254\,294\,237\,837 \times 10^{-8}$
5	−8	10	$0.222\,612\,779\,142\,211 \times 10^{15}$	24	5	−4	$-0.152\,355\,388\,953\,402$
6	−8	12	$-0.878\,473\,585\,050\,085 \times 10^{18}$	25	5	2	$0.677\,143\,292\,290\,144 \times 10^{12}$
7	−8	14	$-0.314\,432\,577\,551\,552 \times 10^{22}$	26	5	3	$0.276\,378\,438\,378\,930 \times 10^{15}$
8	−6	8	$-0.216\,934\,916\,996\,285 \times 10^{13}$	27	6	−5	$0.116\,862\,983\,141\,686 \times 10^{-1}$
9	−6	12	$0.159\,079\,648\,196\,849 \times 10^{21}$	28	6	2	$-0.301\,426\,947\,980\,171 \times 10^{14}$
10	−5	4	$-0.339\,567\,617\,303\,423 \times 10^{3}$	29	8	−8	$0.169\,719\,813\,884\,840 \times 10^{-7}$
11	−5	8	$0.884\,387\,651\,337\,836 \times 10^{13}$	30	8	8	$0.104\,674\,840\,020\,929 \times 10^{27}$
12	−5	12	$-0.843\,405\,926\,846\,418 \times 10^{21}$	31	10	−4	$-0.108\,016\,904\,560\,140 \times 10^{5}$
13	−3	2	$0.114\,178\,193\,518\,022 \times 10^{2}$	32	12	−12	$-0.990\,623\,601\,934\,295 \times 10^{-12}$
14	−1	−1	$-0.122\,708\,229\,235\,641 \times 10^{-3}$	33	12	−4	$0.536\,116\,483\,602\,738 \times 10^{7}$

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