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# TABLES OF EXPERIMENTAL DATA USED FOR THE CORRELATION OF THE THERMOPHYSICAL PROPERTIES OF ETHANE

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# Tables of Experimental Data Used for the Correlation of the Thermophysical Properties of Ethane

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We tabulate experimental data for the thermophysical properties of ethane from an extensive selection of the published literature. This report provides a complete tabulation of the data on ethane properties which were used in the development of correlating equations for the fluid state properties. The tables give comparisons between the correlations and the data as well as the weight which was assigned to each point in the development of the correlations. The properties include pressure and densities of the saturated liquid and vapor, the PVT relationship in the single phase, isochoric and isobaric heat capacities, sound speed, viscosity, and thermal conductivity. The general range of the data is from the triple point, near 90.4 K and 1.1 MPa, to about 625 K with pressures to about 100 MPa.

Key words: density; equation of state; heat capacity; ethane; experimental data; phase boundary; pressure; speed of sound; tables; thermal conductivity; thermophysical properties; transport properties; virial coefficients; viscosity.

## 1. Introduction

We have recently completed a study of the thermophysical properties of fluid ethane [1,2]. In [1], we described correlations for these properties, discussed their development, and provided a limited comparison between the equations and experimental data as well as short tables of properties. In a companion Technical Note [2], we included extensive graphical comparisons between experimental data and their correlating equations and more complete tables of the thermophysical properties of fluid ethane. This report provides a complete tabulation of the data on ethane properties which were considered in the study. We provide comparisons with the correlation for each point. In addition, the tables give the numerical relative weight for each point as used in the development of the correlations; both primary data, used to determine the final coefficients in the correlating equations, and secondary data are included in these tables.

With only a few exceptions, the experimental values for both independent and dependent variables reported in these tables were taken directly from the cited literature source. Those exceptions include conversion to SI units (and, in a few cases, to IPTS-68), correction of obvious typographical errors, and adjustments as described in the table notes. A few data from the cited sources were omitted because the correction for obvious typographical errors was not clear, they lay outside the range of state variables which we considered, or they lay inside the solid, metastable, or two-phase region according to our correlations. These tables include some, especially older, data which were not included in the statistical summaries or in the figures of [1] and [2].

We make several prefatory notes applicable to the tables in this report. Additional specific notes are in the following sections and at the head of some of the tables. In several instances, only first authors are given; complete citations can be found in the numbered reference. Deviations (Dev) are given on a percentage basis according to dev = 100 (calc - expt)/expt where expt is the experimental value and calc is a quantity calculated from the appropriate correlation using the experimental value(s) of the independent variable(s). The weights (wt) refer to weighting of individual data points in the least squares algorithms for the determination of the coefficients of the correlating equations as discussed in detail in [1]. The summary statistics given for each reference and for the cumulative experimental data of each type are defined as follows:

$$AAD = \frac{1}{N}\sum |calc_i - expt_i| , \tag{1}$$

$$BIAS = \frac{1}{N}\sum (calc_i - expt_i) , \tag{2}$$

and

$$RMS = \left[\frac{1}{N}\sum (calc_i - expt_i)^2 - BIAS^2\right]^{1/2} . \tag{3}$$

The quantity N above represents the number of points in the data set, and the summation over the index i is over all N points. These statistics give dimensioned quantities; the analogously defined dimensionless statistics are based on percentage deviations. Thus, AAD%, BIAS%, and RMS% are defined as above, but with the quantity ($calc_i$ – $expt_i$) replaced by 100 ($calc_i$ – $expt_i$)/$expt_i$. Some of the entries in the tables have digits beyond the range of significance, including trailing zeroes; these serve only to maintain uniform appearance of the columns and the quantities can be truncated according to the error esitimates in the original experimental publications and the discussion in [1].

We have not included the correlating equations and their coefficients in this work. We refer the interested reader to [1] and [2]. A similar study of the methane fluid was described in [3] and [4].

## 2. Two-Phase Boundary

The three tables in this section (1–3) give data for the pressure of the saturated fluid, the density of the saturated liquid, and the density of the saturated vapor. Comparisons are given for both the ancillary equations (anc.), eqs. (4–6) in [1], and for the saturation properties calculated from the full equation of state (Schmidt–Wagner equation of state or SWEOS) using the Maxwell construction. Comparisons and statistics based on the ancillary equations have the suffix 1, and those based on the SWEOS are denoted 2. The weights which are given were those used in the development of the ancillary equations. Points generated from the ancillary equations were used in the development of the SWEOS and are included in these tables but excluded from the summary statistics. Tables for the heat capacity of the liquid along the saturation boundary and the speed of sound in the saturated liquid are deferred to section 4.

Table 1. SATURATED VAPOR PRESSURES

Data from Barkelew et al. [5]

| T K | $P_\sigma$, expt MPa | $P_\sigma$, anc. MPa | dev1 % | $P_\sigma$, SWEOS MPa | dev2 % | wt |
|---|---|---|---|---|---|---|
| 110.000 | 0.7701E-04 | 0.7469E-04 | -3.012 | 0.7468E-04 | -3.020 | 0.0 |
| 120.000 | 0.3506E-03 | 0.3546E-03 | 1.141 | 0.3546E-03 | 1.155 | 0.0 |
| 130.000 | 0.1289E-02 | 0.1291E-02 | 0.204 | 0.1292E-02 | 0.219 | 0.0 |
| 140.000 | 0.3835E-02 | 0.3831E-02 | -0.103 | 0.3831E-02 | -0.096 | 0.0 |
| 150.000 | 0.9687E-02 | 0.9670E-02 | -0.172 | 0.9670E-02 | -0.174 | 0.0 |
| 160.000 | 0.2148E-01 | 0.2145E-01 | -0.126 | 0.2145E-01 | -0.133 | 0.0 |
| 170.000 | 0.4292E-01 | 0.4288E-01 | -0.087 | 0.4288E-01 | -0.093 | 0.0 |
| 180.000 | 0.7881E-01 | 0.7872E-01 | -0.116 | 0.7872E-01 | -0.117 | 0.0 |
| 190.000 | 0.1348E+00 | 0.1347E+00 | -0.054 | 0.1347E+00 | -0.049 | 0.0 |
| 200.000 | 0.2175E+00 | 0.2174E+00 | -0.049 | 0.2174E+00 | -0.039 | 0.0 |
| 210.000 | 0.3341E+00 | 0.3340E+00 | -0.032 | 0.3340E+00 | -0.019 | 0.0 |
| 220.000 | 0.4922E+00 | 0.4923E+00 | 0.007 | 0.4923E+00 | 0.022 | 0.0 |
| 230.000 | 0.7004E+00 | 0.7005E+00 | 0.017 | 0.7006E+00 | 0.034 | 0.0 |
| 240.000 | 0.9678E+00 | 0.9671E+00 | -0.064 | 0.9673E+00 | -0.045 | 0.0 |
| 250.000 | 0.1302E+01 | 0.1301E+01 | -0.066 | 0.1301E+01 | -0.043 | 0.0 |
| 260.000 | 0.1713E+01 | 0.1712E+01 | -0.084 | 0.1712E+01 | -0.053 | 0.0 |
| 270.000 | 0.2209E+01 | 0.2210E+01 | 0.035 | 0.2211E+01 | 0.083 | 0.0 |
| 280.000 | 0.2802E+01 | 0.2806E+01 | 0.147 | 0.2808E+01 | 0.211 | 0.0 |
| 290.000 | 0.3511E+01 | 0.3514E+01 | 0.100 | 0.3517E+01 | 0.165 | 0.0 |
| 300.000 | 0.4366E+01 | 0.4356E+01 | -0.230 | 0.4357E+01 | -0.219 | 0.0 |

Number of Points [5] 20

AAD% = 0.292 BIAS% = -0.127 RMS% = 0.717
AAD2% = 0.300 BIAS2% = -0.111 RMS2% = 0.724

Absolute Deviations:
AAD = 1.101 BIAS = -0.242 RMS = 2.578 kPa
AAD2 = 1.289 BIAS2 = 0.099 RMS2 = 2.870 kPa

Data from Carruth and Kobayashi [6]

| T K | $P_\sigma$, expt MPa | $P_\sigma$, anc. MPa | dev1 % | $P_\sigma$, SWEOS MPa | dev2 % | wt |
|---|---|---|---|---|---|---|
| 91.340 | 0.1543E-05 | 0.1463E-05 | -5.173 | 0.1464E-05 | -5.135 | 0.0 |
| 93.700 | 0.2733E-05 | 0.2647E-05 | -3.143 | 0.2647E-05 | -3.149 | 0.0 |
| 96.240 | 0.4977E-05 | 0.4835E-05 | -2.836 | 0.4834E-05 | -2.867 | 0.0 |
| 100.700 | 0.1313E-04 | 0.1285E-04 | -2.118 | 0.1285E-04 | -2.154 | 0.0 |
| 105.600 | 0.3304E-04 | 0.3390E-04 | 2.598 | 0.3389E-04 | 2.574 | 0.0 |

Table 1. **SATURATED VAPOR PRESSURES** (continued)

**Data from Carruth and Kobayashi [6]** (continued)

| T<br>K | $P_\sigma$, expt<br>MPa | $P_\sigma$, anc.<br>MPa | dev1<br>% | $P_\sigma$, SWEOS<br>MPa | dev2<br>% | wt |
|---|---|---|---|---|---|---|
| 114.240 | 0.1464E-03 | 0.1500E-03 | 2.456 | 0.1500E-03 | 2.460 | 0.0 |
| 120.380 | 0.3652E-03 | 0.3741E-03 | 2.427 | 0.3741E-03 | 2.441 | 0.0 |
| 129.810 | 0.1247E-02 | 0.1263E-02 | 1.285 | 0.1263E-02 | 1.299 | 0.0 |
| 135.770 | 0.2450E-02 | 0.2472E-02 | 0.898 | 0.2473E-02 | 0.908 | 0.0 |
| 140.550 | 0.4072E-02 | 0.4047E-02 | -0.613 | 0.4047E-02 | -0.607 | 0.0 |
| 144.140 | 0.5700E-02 | 0.5720E-02 | 0.353 | 0.5720E-02 | 0.355 | 0.0 |

Number of Points [6] 11

AAD% = 2.173 BIAS% = -0.351 RMS% = 2.512
AAD2% = 2.177 BIAS2% = -0.352 RMS2% = 2.512

Absolute Deviations:
AAD = 0.009 BIAS = 0.004 RMS = 0.012 kPa
AAD2 = 0.009 BIAS2 = 0.004 RMS2 = 0.012 kPa

**Data from Chui et al. [7]**

| T<br>K | $P_\sigma$, expt<br>MPa | $P_\sigma$, anc.<br>MPa | dev1<br>% | $P_\sigma$, SWEOS<br>MPa | dev2<br>% | wt |
|---|---|---|---|---|---|---|
| 115.770 | 0.6800E-03 | 0.1903E-03 | -72.014 | 0.1903E-03 | -72.012 | 0.0 |
| 161.360 | 0.2374E-01 | 0.2371E-01 | -0.142 | 0.2370E-01 | -0.148 | 0.0 |

Number of Points [7] 2

AAD% = 36.078 BIAS% = -36.078 RMS% = 35.936
AAD2% = 36.080 BIAS2% = -36.080 RMS2% = 35.932

Absolute Deviations:
AAD = 0.262 BIAS = -0.262 RMS = 0.228 kPa
AAD2 = 0.262 BIAS2 = -0.262 RMS2 = 0.227 kPa

Table 1. SATURATED VAPOR PRESSURES (continued)

Data from Djordjevich and Budenholzer [8]

| T K | $P_\sigma$, expt MPa | $P_\sigma$, anc. MPa | dev1 % | $P_\sigma$, SWEOS MPA | dev2 % | wt |
|---|---|---|---|---|---|---|
| 255.370 | 0.1503E+01 | 0.1512E+01 | 0.567 | 0.1512E+01 | 0.594 | 0.0 |
| 227.590 | 0.6405E+00 | 0.6453E+00 | 0.743 | 0.6454E+00 | 0.759 | 0.0 |
| 199.817 | 0.2161E+00 | 0.2156E+00 | -0.241 | 0.2156E+00 | -0.231 | 0.0 |
| 172.039 | 0.4837E-01 | 0.4885E-01 | 0.995 | 0.4885E-01 | 0.990 | 0.0 |
| 144.261 | 0.5853E-02 | 0.5785E-02 | -1.156 | 0.5786E-02 | -1.154 | 0.0 |
| 127.594 | 0.1013E-02 | 0.9661E-03 | -4.599 | 0.9662E-03 | -4.584 | 0.0 |

Number of Points [8] 6

AAD% = 1.384 BIAS% = -0.615 RMS% = 1.921
AAD2% = 1.385 BIAS2% = -0.604 RMS2% = 1.920

Absolute Deviations:
AAD = 2.400 BIAS = 2.189 RMS = 3.345 kPa
AAD2 = 2.481 BIAS2 = 2.277 RMS2 = 3.484 kPa

Data from Douslin and Harrison [9]

| T K | $P_\sigma$, expt MPa | $P_\sigma$, anc. MPa | dev1 % | $P_\sigma$, SWEOS MPA | dev2 % | wt |
|---|---|---|---|---|---|---|
| 238.150 | 0.9129E+00 | 0.9130E+00 | 0.010 | 0.9132E+00 | 0.028 | 1.0 |
| 243.150 | 0.1065E+01 | 0.1065E+01 | 0.010 | 0.1065E+01 | 0.029 | 1.0 |
| 248.150 | 0.1234E+01 | 0.1234E+01 | 0.015 | 0.1234E+01 | 0.037 | 1.0 |
| 253.150 | 0.1422E+01 | 0.1422E+01 | 0.010 | 0.1422E+01 | 0.035 | 1.0 |
| 258.150 | 0.1630E+01 | 0.1630E+01 | 0.004 | 0.1630E+01 | 0.033 | 1.0 |
| 263.150 | 0.1859E+01 | 0.1859E+01 | -0.005 | 0.1860E+01 | 0.031 | 1.0 |
| 268.150 | 0.2111E+01 | 0.2111E+01 | -0.011 | 0.2111E+01 | 0.033 | 1.0 |
| 273.150 | 0.2387E+01 | 0.2386E+01 | -0.020 | 0.2387E+01 | 0.033 | 1.0 |
| 278.150 | 0.2688E+01 | 0.2687E+01 | -0.028 | 0.2689E+01 | 0.033 | 1.0 |
| 283.150 | 0.3017E+01 | 0.3016E+01 | -0.033 | 0.3018E+01 | 0.033 | 1.0 |
| 288.150 | 0.3375E+01 | 0.3374E+01 | -0.035 | 0.3376E+01 | 0.031 | 1.0 |
| 293.150 | 0.3765E+01 | 0.3764E+01 | -0.030 | 0.3766E+01 | 0.025 | 1.0 |
| 298.150 | 0.4190E+01 | 0.4189E+01 | -0.018 | 0.4190E+01 | 0.008 | 1.0 |
| 302.150 | 0.4558E+01 | 0.4558E+01 | -0.004 | 0.4557E+01 | -0.010 | 1.0 |
| 303.150 | 0.4654E+01 | 0.4654E+01 | 0.000 | 0.4654E+01 | -0.013 | 1.0 |
| 304.150 | 0.4753E+01 | 0.4753E+01 | 0.003 | 0.4752E+01 | -0.011 | 1.0 |
| 305.150 | 0.4853E+01 | 0.4853E+01 | 0.000 | 0.4853E+01 | -0.004 | 1.0 |
| 305.250 | 0.4864E+01 | 0.4864E+01 | 0.002 | 0.4863E+01 | -0.001 | 1.0 |

**Data from Douslin and Harrison [9]** (continued)

Number of Points [9] 18

AAD% = 0.013 BIAS% = −0.007 RMS% = 0.016
AAD2% = 0.024 BIAS2% = 0.019 RMS2% = 0.018

Absolute Deviations:
AAD = 0.369 BIAS = −0.279 RMS = 0.464 kPa
AAD2 = 0.567 BIAS2 = 0.361 RMS2 = 0.519 kPa

Weighted Data:

Number of Points [9] 18

AAD% = 0.013 BIAS% = −0.007 RMS% = 0.016
AAD2% = 0.024 BIAS2% = 0.019 RMS2% = 0.018

Absolute Deviations:
AAD = 0.369 BIAS = −0.279 RMS = 0.464 kPa
AAD2 = 0.567 BIAS2 = 0.361 RMS2 = 0.519 kPa

**Data from Kahre [10]**

| T K | $P_\sigma$, expt MPa | $P_\sigma$, anc. MPa | dev1 % | $P_\sigma$, SWEOS MPA | dev2 % | wt |
|---|---|---|---|---|---|---|
| 267.450 | 0.2079E+01 | 0.2074E+01 | −0.255 | 0.2075E+01 | −0.211 | 0.0 |
| 277.550 | 0.2641E+01 | 0.2650E+01 | 0.356 | 0.2652E+01 | 0.416 | 0.0 |
| 288.750 | 0.3395E+01 | 0.3419E+01 | 0.698 | 0.3421E+01 | 0.764 | 0.0 |
| 294.250 | 0.3833E+01 | 0.3854E+01 | 0.552 | 0.3856E+01 | 0.603 | 0.0 |
| 299.850 | 0.4302E+01 | 0.4342E+01 | 0.931 | 0.4343E+01 | 0.942 | 0.0 |

Number of Points [10] 5

AAD% = 0.558 BIAS% = 0.456 RMS% = 0.402
AAD2% = 0.587 BIAS2% = 0.503 RMS2% = 0.397

Absolute Deviations:
AAD = 19.916 BIAS = 17.798 RMS = 15.129 kPa
AAD2 = 20.998 BIAS2 = 19.241 RMS2 = 15.103 kPa

Table 1. SATURATED VAPOR PRESSURES (continued)

Data from Loomis and Walters [11]

| T K | $P_\sigma$, expt MPa | $P_\sigma$, anc. MPa | dev1 % | $P_\sigma$, SWEOS MPA | dev2 % | wt |
|---|---|---|---|---|---|---|
| 167.836 | 0.3742E-01 | 0.3720E-01 | -0.574 | 0.3720E-01 | -0.581 | 0.0 |
| 165.629 | 0.3202E-01 | 0.3205E-01 | 0.094 | 0.3205E-01 | 0.087 | 0.0 |
| 162.629 | 0.2607E-01 | 0.2598E-01 | -0.359 | 0.2598E-01 | -0.366 | 0.0 |
| 158.385 | 0.1911E-01 | 0.1901E-01 | -0.536 | 0.1901E-01 | -0.542 | 0.0 |
| 154.546 | 0.1419E-01 | 0.1409E-01 | -0.656 | 0.1409E-01 | -0.661 | 0.0 |
| 147.324 | 0.7691E-02 | 0.7653E-02 | -0.488 | 0.7653E-02 | -0.489 | 0.0 |
| 143.267 | 0.5289E-02 | 0.5268E-02 | -0.400 | 0.5268E-02 | -0.397 | 0.0 |
| 135.736 | 0.2482E-02 | 0.2463E-02 | -0.771 | 0.2464E-02 | -0.761 | 0.0 |
| 169.175 | 0.4086E-01 | 0.4064E-01 | -0.543 | 0.4064E-01 | -0.549 | 0.0 |
| 171.700 | 0.4806E-01 | 0.4781E-01 | -0.510 | 0.4781E-01 | -0.515 | 0.0 |
| 170.602 | 0.4489E-01 | 0.4458E-01 | -0.682 | 0.4458E-01 | -0.687 | 0.0 |
| 174.062 | 0.5571E-01 | 0.5540E-01 | -0.555 | 0.5540E-01 | -0.559 | 0.0 |
| 175.708 | 0.6153E-01 | 0.6123E-01 | -0.499 | 0.6123E-01 | -0.503 | 0.0 |
| 177.623 | 0.6894E-01 | 0.6861E-01 | -0.487 | 0.6860E-01 | -0.489 | 0.0 |
| 178.621 | 0.7306E-01 | 0.7272E-01 | -0.460 | 0.7272E-01 | -0.462 | 0.0 |
| 179.750 | 0.7798E-01 | 0.7760E-01 | -0.482 | 0.7760E-01 | -0.484 | 0.0 |
| 181.506 | 0.8612E-01 | 0.8571E-01 | -0.474 | 0.8571E-01 | -0.474 | 0.0 |
| 182.463 | 0.9082E-01 | 0.9040E-01 | -0.465 | 0.9040E-01 | -0.464 | 0.0 |
| 183.778 | 0.9762E-01 | 0.9716E-01 | -0.467 | 0.9716E-01 | -0.466 | 0.0 |
| 184.539 | 0.1017E+00 | 0.1013E+00 | -0.470 | 0.1013E+00 | -0.468 | 0.0 |
| 185.137 | 0.1050E+00 | 0.1046E+00 | -0.450 | 0.1046E+00 | -0.448 | 0.0 |
| 185.914 | 0.1094E+00 | 0.1090E+00 | -0.409 | 0.1090E+00 | -0.407 | 0.0 |
| 186.609 | 0.1136E+00 | 0.1131E+00 | -0.443 | 0.1131E+00 | -0.440 | 0.0 |
| 187.302 | 0.1177E+00 | 0.1172E+00 | -0.411 | 0.1172E+00 | -0.408 | 0.0 |
| 187.726 | 0.1204E+00 | 0.1199E+00 | -0.432 | 0.1199E+00 | -0.428 | 0.0 |
| 188.379 | 0.1245E+00 | 0.1240E+00 | -0.428 | 0.1240E+00 | -0.424 | 0.0 |
| 189.114 | 0.1293E+00 | 0.1288E+00 | -0.392 | 0.1288E+00 | -0.387 | 0.0 |
| 189.858 | 0.1342E+00 | 0.1337E+00 | -0.381 | 0.1337E+00 | -0.376 | 0.0 |
| 190.791 | 0.1407E+00 | 0.1402E+00 | -0.373 | 0.1402E+00 | -0.368 | 0.0 |
| 191.430 | 0.1452E+00 | 0.1447E+00 | -0.362 | 0.1447E+00 | -0.357 | 0.0 |
| 192.286 | 0.1515E+00 | 0.1510E+00 | -0.349 | 0.1510E+00 | -0.343 | 0.0 |
| 192.777 | 0.1552E+00 | 0.1547E+00 | -0.347 | 0.1547E+00 | -0.341 | 0.0 |
| 199.909 | 0.2170E+00 | 0.2165E+00 | -0.251 | 0.2165E+00 | -0.241 | 0.0 |
| 196.244 | 0.1833E+00 | 0.1827E+00 | -0.299 | 0.1827E+00 | -0.290 | 0.0 |

**Data from Loomis and Walters [11]** (continued)

Number of Points [11]     34

| | | |
|---|---|---|
| AAD% = 0.450 | BIAS% = -0.444 | RMS% = 0.140 |
| AAD2% = 0.449 | BIAS2% = -0.444 | RMS2% = 0.141 |

Absolute Deviations:

| | | |
|---|---|---|
| AAD = 0.353 | BIAS = -0.351 | RMS = 0.182 kPa |
| AAD2 = 0.350 | BIAS2 = -0.349 | RMS2 = 0.179 kPa |

**Data from Miniovich and Sorina [12]**

| T K | $P_\sigma$, expt MPa | $P_\sigma$, anc. MPa | dev1 % | $P_\sigma$, SWEOS MPA | dev2 % | wt |
|---|---|---|---|---|---|---|
| 302.988 | 0.4641E+01 | 0.4638E+01 | -0.060 | 0.4638E+01 | -0.072 | 0.0 |
| 303.880 | 0.4727E+01 | 0.4726E+01 | -0.031 | 0.4725E+01 | -0.045 | 0.0 |
| 304.568 | 0.4796E+01 | 0.4795E+01 | -0.032 | 0.4794E+01 | -0.044 | 0.0 |
| 305.025 | 0.4842E+01 | 0.4841E+01 | -0.032 | 0.4840E+01 | -0.039 | 0.0 |
| 305.262 | 0.4866E+01 | 0.4865E+01 | -0.033 | 0.4865E+01 | -0.035 | 0.0 |
| 305.325 | 0.4872E+01 | 0.4871E+01 | -0.012 | 0.4871E+01 | -0.013 | 0.0 |
| 305.260 | 0.4866E+01 | 0.4865E+01 | -0.019 | 0.4865E+01 | -0.021 | 0.0 |
| 305.035 | 0.4842E+01 | 0.4842E+01 | -0.003 | 0.4841E+01 | -0.010 | 0.0 |
| 304.663 | 0.4802E+01 | 0.4804E+01 | 0.046 | 0.4804E+01 | 0.035 | 0.0 |
| 303.937 | 0.4732E+01 | 0.4732E+01 | -0.011 | 0.4731E+01 | -0.025 | 0.0 |
| 302.872 | 0.4628E+01 | 0.4627E+01 | -0.023 | 0.4627E+01 | -0.035 | 0.0 |

Number of Points [12]     11

| | | |
|---|---|---|
| AAD% = 0.028 | BIAS% = -0.019 | RMS% = 0.025 |
| AAD2% = 0.034 | BIAS2% = -0.028 | RMS2% = 0.026 |

Absolute Deviations:

| | | |
|---|---|---|
| AAD = 1.312 | BIAS = -0.908 | RMS = 1.198 kPa |
| AAD2 = 1.621 | BIAS2 = -1.316 | RMS2 = 1.213 kPa |

**Data from Pal et al. [13]**

| T K | $P_\sigma$, expt MPa | $P_\sigma$, anc. MPa | dev1 % | $P_\sigma$, SWEOS MPA | dev2 % | wt |
|---|---|---|---|---|---|---|
| 224.102 | 0.5711E+00 | 0.5712E+00 | 0.004 | 0.5713E+00 | 0.020 | 1.0 |
| 229.756 | 0.6948E+00 | 0.6947E+00 | -0.006 | 0.6949E+00 | 0.011 | 1.0 |
| 234.558 | 0.8140E+00 | 0.8142E+00 | 0.031 | 0.8144E+00 | 0.048 | 1.0 |
| 239.844 | 0.9622E+00 | 0.9625E+00 | 0.032 | 0.9627E+00 | 0.050 | 1.0 |

Table 1. SATURATED VAPOR PRESSURES (continued)

Data from Pal et al. [13] (continued)

| T<br>K | $P_\sigma$, expt<br>MPa | $P_\sigma$, anc.<br>MPa | dev1<br>% | $P_\sigma$, SWEOS<br>MPA | dev2<br>% | wt |
|---|---|---|---|---|---|---|
| 240.514 | 0.9824E+00 | 0.9826E+00 | 0.014 | 0.9828E+00 | 0.033 | 1.0 |
| 243.359 | 0.1072E+01 | 0.1071E+01 | -0.023 | 0.1072E+01 | -0.004 | 1.0 |
| 246.814 | 0.1187E+01 | 0.1187E+01 | -0.001 | 0.1187E+01 | 0.020 | 1.0 |
| 247.816 | 0.1221E+01 | 0.1222E+01 | 0.083 | 0.1222E+01 | 0.104 | 1.0 |
| 249.741 | 0.1293E+01 | 0.1292E+01 | -0.117 | 0.1292E+01 | -0.094 | 1.0 |
| 250.146 | 0.1307E+01 | 0.1307E+01 | -0.027 | 0.1307E+01 | -0.004 | 1.0 |
| 251.587 | 0.1362E+01 | 0.1361E+01 | -0.080 | 0.1361E+01 | -0.056 | 1.0 |
| 252.544 | 0.1399E+01 | 0.1398E+01 | -0.067 | 0.1398E+01 | -0.043 | 1.0 |
| 254.290 | 0.1468E+01 | 0.1467E+01 | -0.051 | 0.1468E+01 | -0.025 | 1.0 |
| 257.543 | 0.1603E+01 | 0.1603E+01 | -0.007 | 0.1604E+01 | 0.022 | 1.0 |
| 263.380 | 0.1870E+01 | 0.1870E+01 | 0.002 | 0.1871E+01 | 0.039 | 1.0 |
| 267.536 | 0.2079E+01 | 0.2078E+01 | -0.038 | 0.2079E+01 | 0.006 | 1.0 |
| 271.749 | 0.2307E+01 | 0.2306E+01 | -0.013 | 0.2308E+01 | 0.037 | 1.0 |
| 275.922 | 0.2549E+01 | 0.2550E+01 | 0.032 | 0.2551E+01 | 0.089 | 1.0 |
| 276.363 | 0.2579E+01 | 0.2577E+01 | -0.099 | 0.2578E+01 | -0.040 | 1.0 |
| 276.385 | 0.2579E+01 | 0.2578E+01 | -0.020 | 0.2580E+01 | 0.038 | 1.0 |
| 276.514 | 0.2589E+01 | 0.2586E+01 | -0.100 | 0.2588E+01 | -0.041 | 1.0 |
| 277.813 | 0.2667E+01 | 0.2666E+01 | -0.014 | 0.2668E+01 | 0.046 | 1.0 |
| 280.041 | 0.2807E+01 | 0.2808E+01 | 0.048 | 0.2810E+01 | 0.111 | 1.0 |
| 282.247 | 0.2954E+01 | 0.2955E+01 | 0.021 | 0.2957E+01 | 0.087 | 1.0 |
| 284.635 | 0.3117E+01 | 0.3119E+01 | 0.058 | 0.3121E+01 | 0.126 | 1.0 |
| 287.653 | 0.3337E+01 | 0.3337E+01 | 0.017 | 0.3339E+01 | 0.084 | 1.0 |
| 288.263 | 0.3383E+01 | 0.3382E+01 | -0.022 | 0.3385E+01 | 0.045 | 1.0 |
| 290.040 | 0.3515E+01 | 0.3518E+01 | 0.080 | 0.3520E+01 | 0.145 | 1.0 |
| 292.236 | 0.3693E+01 | 0.3690E+01 | -0.069 | 0.3692E+01 | -0.011 | 1.0 |
| 293.098 | 0.3757E+01 | 0.3760E+01 | 0.064 | 0.3762E+01 | 0.120 | 1.0 |
| 296.347 | 0.4029E+01 | 0.4031E+01 | 0.068 | 0.4033E+01 | 0.107 | 1.0 |
| 299.665 | 0.4322E+01 | 0.4325E+01 | 0.080 | 0.4326E+01 | 0.093 | 1.0 |
| 300.205 | 0.4374E+01 | 0.4375E+01 | 0.028 | 0.4375E+01 | 0.037 | 1.0 |
| 301.251 | 0.4469E+01 | 0.4472E+01 | 0.067 | 0.4472E+01 | 0.067 | 1.0 |
| 303.471 | 0.4682E+01 | 0.4686E+01 | 0.085 | 0.4685E+01 | 0.071 | 1.0 |
| 303.477 | 0.4689E+01 | 0.4686E+01 | -0.068 | 0.4685E+01 | -0.082 | 1.0 |
| 304.049 | 0.4739E+01 | 0.4743E+01 | 0.078 | 0.4742E+01 | 0.064 | 1.0 |
| 304.360 | 0.4772E+01 | 0.4774E+01 | 0.040 | 0.4773E+01 | 0.027 | 1.0 |
| 304.446 | 0.4785E+01 | 0.4782E+01 | -0.048 | 0.4782E+01 | -0.061 | 1.0 |
| 304.519 | 0.4783E+01 | 0.4790E+01 | 0.142 | 0.4789E+01 | 0.129 | 1.0 |

Table 1. **SATURATED VAPOR PRESSURES** (continued)

**Data from Pal et al. [13]** (continued)

| T<br>K | $P_\sigma$, expt<br>MPa | $P_\sigma$, anc.<br>MPa | dev1<br>% | $P_\sigma$, SWEOS<br>MPA | dev2<br>% | wt |
|---|---|---|---|---|---|---|
| 304.734 | 0.4806E+01 | 0.4811E+01 | 0.110 | 0.4811E+01 | 0.099 | 1.0 |
| 304.796 | 0.4815E+01 | 0.4817E+01 | 0.055 | 0.4817E+01 | 0.045 | 1.0 |
| 304.924 | 0.4832E+01 | 0.4830E+01 | -0.025 | 0.4830E+01 | -0.033 | 1.0 |
| 304.980 | 0.4835E+01 | 0.4836E+01 | 0.033 | 0.4836E+01 | 0.025 | 1.0 |
| 305.121 | 0.4848E+01 | 0.4850E+01 | 0.043 | 0.4850E+01 | 0.038 | 1.0 |
| 305.135 | 0.4846E+01 | 0.4852E+01 | 0.124 | 0.4852E+01 | 0.119 | 1.0 |
| 305.153 | 0.4852E+01 | 0.4854E+01 | 0.045 | 0.4853E+01 | 0.041 | 1.0 |
| 214.302 | 0.3973E+00 | 0.3965E+00 | -0.205 | 0.3965E+00 | -0.191 | 0.0 |
| 221.101 | 0.5153E+00 | 0.5126E+00 | -0.524 | 0.5127E+00 | -0.509 | 0.0 |
| 300.443 | 0.4388E+01 | 0.4397E+01 | 0.201 | 0.4397E+01 | 0.207 | 0.0 |

Number of Points [13] 50

AAD% = 0.066 BIAS% = 0.001 RMS% = 0.103
AAD2% = 0.073 BIAS2% = 0.025 RMS2% = 0.103

Absolute Deviations:
AAD = 1.863 BIAS = 0.837 RMS = 2.476 kPa
AAD2 = 2.076 BIAS2 = 1.385 RMS2 = 2.449 kPa

Weighted Data:

Number of Points [13] 47

AAD% = 0.051 BIAS% = 0.013 RMS% = 0.060
AAD2% = 0.058 BIAS2% = 0.037 RMS2% = 0.058

Absolute Deviations:
AAD = 1.720 BIAS = 0.778 RMS = 2.201 kPa
AAD2 = 1.943 BIAS2 = 1.352 RMS2 = 2.162 kPa

**Data from Pope [14]**

| T<br>K | $P_\sigma$, expt<br>MPa | $P_\sigma$, anc.<br>MPa | dev1<br>% | $P_\sigma$, SWEOS<br>MPA | dev2<br>% | wt |
|---|---|---|---|---|---|---|
| 198.181 | 0.2000E+00 | 0.2000E+00 | 0.015 | 0.2000E+00 | 0.024 | 1.0 |
| 234.692 | 0.8181E+00 | 0.8178E+00 | -0.040 | 0.8179E+00 | -0.023 | 1.0 |
| 238.771 | 0.9306E+00 | 0.9309E+00 | 0.034 | 0.9311E+00 | 0.052 | 1.0 |
| 272.949 | 0.2376E+01 | 0.2375E+01 | -0.066 | 0.2376E+01 | -0.013 | 1.0 |
| 284.845 | 0.3137E+01 | 0.3134E+01 | -0.081 | 0.3136E+01 | -0.014 | 1.0 |

Table 1. **SATURATED VAPOR PRESSURES** (continued)

**Data from Pope [14]** (continued)

| T K | $P_\sigma$, expt MPa | $P_\sigma$, anc. MPa | dev1 % | $P_\sigma$, SWEOS MPA | dev2 % | wt |
|---|---|---|---|---|---|---|
| 290.214 | 0.3534E+01 | 0.3531E+01 | -0.077 | 0.3533E+01 | -0.014 | 1.0 |
| 293.266 | 0.3776E+01 | 0.3773E+01 | -0.072 | 0.3775E+01 | -0.017 | 1.0 |
| 299.863 | 0.4345E+01 | 0.4343E+01 | -0.045 | 0.4344E+01 | -0.034 | 1.0 |
| 304.012 | 0.4739E+01 | 0.4739E+01 | -0.008 | 0.4738E+01 | -0.022 | 1.0 |
| 254.807 | 0.1493E+01 | 0.1488E+01 | -0.284 | 0.1489E+01 | -0.258 | 0.0 |
| 209.534 | 0.3259E+00 | 0.3277E+00 | 0.543 | 0.3277E+00 | 0.557 | 0.0 |

Number of Points [14] 11

AAD% = 0.115 BIAS% = -0.007 RMS% = 0.191
AAD2% = 0.093 BIAS2% = 0.022 RMS2% = 0.185

Absolute Deviations:
AAD = 1.692 BIAS = -1.306 RMS = 1.663 kPa
AAD2 = 0.981 BIAS2 = -0.554 RMS2 = 1.323 kPa

Weighted Data:

Number of Points [14] 9

AAD% = 0.049 BIAS% = -0.038 RMS% = 0.040
AAD2% = 0.024 BIAS2% = -0.007 RMS2% = 0.026

Absolute Deviations:
AAD = 1.399 BIAS = -1.322 RMS = 1.170 kPa
AAD2 = 0.569 BIAS2 = -0.450 RMS2 = 0.544 kPa

**Data from Porter [15]**

| T K | $P_\sigma$, expt MPa | $P_\sigma$, anc. MPa | dev1 % | $P_\sigma$, SWEOS MPA | dev2 % | wt |
|---|---|---|---|---|---|---|
| 184.470 | 0.1013E+00 | 0.1009E+00 | -0.384 | 0.1009E+00 | -0.382 | 0.0 |
| 203.490 | 0.2529E+00 | 0.2538E+00 | 0.357 | 0.2538E+00 | 0.368 | 0.0 |
| 205.620 | 0.2769E+00 | 0.2782E+00 | 0.471 | 0.2783E+00 | 0.483 | 0.0 |
| 210.960 | 0.3459E+00 | 0.3472E+00 | 0.375 | 0.3473E+00 | 0.389 | 0.0 |
| 216.310 | 0.4281E+00 | 0.4285E+00 | 0.091 | 0.4286E+00 | 0.106 | 0.0 |
| 221.880 | 0.5276E+00 | 0.5274E+00 | -0.047 | 0.5274E+00 | -0.031 | 0.0 |
| 225.100 | 0.5915E+00 | 0.5917E+00 | 0.027 | 0.5918E+00 | 0.043 | 0.0 |
| 226.180 | 0.6153E+00 | 0.6145E+00 | -0.135 | 0.6146E+00 | -0.119 | 0.0 |
| 234.580 | 0.8151E+00 | 0.8148E+00 | -0.029 | 0.8150E+00 | -0.011 | 0.0 |
| 238.900 | 0.9351E+00 | 0.9347E+00 | -0.049 | 0.9348E+00 | -0.031 | 0.0 |

Data from Porter [15] (continued)

| T<br>K | $P_\sigma$, expt<br>MPa | $P_\sigma$, anc.<br>MPa | dev1<br>% | $P_\sigma$, SWEOS<br>MPA | dev2<br>% | wt |
|---|---|---|---|---|---|---|
| 243.220 | 0.1068E+01 | 0.1067E+01 | -0.062 | 0.1067E+01 | -0.042 | 0.0 |
| 248.650 | 0.1252E+01 | 0.1252E+01 | 0.003 | 0.1252E+01 | 0.025 | 0.0 |
| 253.030 | 0.1423E+01 | 0.1417E+01 | -0.409 | 0.1417E+01 | -0.384 | 0.0 |
| 258.800 | 0.1664E+01 | 0.1658E+01 | -0.335 | 0.1659E+01 | -0.305 | 0.0 |
| 263.280 | 0.1869E+01 | 0.1865E+01 | -0.221 | 0.1866E+01 | -0.185 | 0.0 |
| 268.730 | 0.2147E+01 | 0.2141E+01 | -0.247 | 0.2142E+01 | -0.202 | 0.0 |
| 273.090 | 0.2386E+01 | 0.2383E+01 | -0.119 | 0.2384E+01 | -0.066 | 0.0 |
| 278.840 | 0.2719E+01 | 0.2731E+01 | 0.437 | 0.2733E+01 | 0.500 | 0.0 |
| 283.580 | 0.3050E+01 | 0.3046E+01 | -0.158 | 0.3048E+01 | -0.091 | 0.0 |
| 288.260 | 0.3391E+01 | 0.3382E+01 | -0.262 | 0.3385E+01 | -0.195 | 0.0 |

Number of Points [15] 20

AAD% = 0.211 BIAS% = -0.035 RMS% = 0.259
AAD2% = 0.198 BIAS2% = -0.007 RMS2% = 0.256

Absolute Deviations:
AAD = 2.808 BIAS = -1.209 RMS = 4.114 kPa
AAD2 = 2.482 BIAS2 = -0.659 RMS2 = 4.015 kPa

Data from Regnier [16]

| T<br>K | $P_\sigma$, expt<br>MPa | $P_\sigma$, anc.<br>MPa | dev1<br>% | $P_\sigma$, SWEOS<br>MPA | dev2<br>% | wt |
|---|---|---|---|---|---|---|
| 95.000 | 0.3990E-05 | 0.3619E-05 | -9.297 | 0.3618E-05 | -9.317 | 0.0 |
| 100.000 | 0.1161E-04 | 0.1110E-04 | -4.429 | 0.1109E-04 | -4.466 | 0.0 |
| 105.000 | 0.3051E-04 | 0.3027E-04 | -0.792 | 0.3026E-04 | -0.818 | 0.0 |
| 110.000 | 0.7342E-04 | 0.7469E-04 | 1.727 | 0.7468E-04 | 1.718 | 0.0 |
| 115.000 | 0.1637E-03 | 0.1690E-03 | 3.230 | 0.1690E-03 | 3.236 | 0.0 |
| 120.000 | 0.3414E-03 | 0.3546E-03 | 3.862 | 0.3546E-03 | 3.876 | 0.0 |
| 125.000 | 0.6713E-03 | 0.6966E-03 | 3.766 | 0.6967E-03 | 3.782 | 0.0 |
| 130.000 | 0.1253E-02 | 0.1291E-02 | 3.071 | 0.1292E-02 | 3.086 | 0.0 |
| 135.000 | 0.2233E-02 | 0.2275E-02 | 1.893 | 0.2276E-02 | 1.904 | 0.0 |

**Data from Regnier [16]** (continued)

Number of Points [16] 9

| | | | | | |
|---|---|---|---|---|---|
| AAD% | = 3.563 | BIAS% | = 0.337 | RMS% | = 4.232 |
| AAD2% | = 3.578 | BIAS2% | = 0.334 | RMS2% | = 4.247 |

Absolute Deviations:

| | | | | | |
|---|---|---|---|---|---|
| AAD | = 0.014 | BIAS | = 0.014 | RMS | = 0.016 kPa |
| AAD2 | = 0.014 | BIAS2 | = 0.014 | RMS2 | = 0.016 kPa |

**Data from Rossini (via Ziegler et al. [17])**

| T K | $P_\sigma$, expt MPa | $P_\sigma$, anc. MPa | dev1 % | $P_\sigma$, SWEOS MPA | dev2 % | wt |
|---|---|---|---|---|---|---|
| 130.270 | 0.1332E-02 | 0.1333E-02 | 0.062 | 0.1333E-02 | 0.077 | 0.0 |
| 136.460 | 0.2665E-02 | 0.2661E-02 | -0.145 | 0.2661E-02 | -0.136 | 0.0 |
| 140.410 | 0.3997E-02 | 0.3991E-02 | -0.155 | 0.3991E-02 | -0.149 | 0.0 |
| 143.370 | 0.5330E-02 | 0.5320E-02 | -0.187 | 0.5320E-02 | -0.184 | 0.0 |
| 145.760 | 0.6662E-02 | 0.6645E-02 | -0.253 | 0.6645E-02 | -0.252 | 0.0 |
| 147.790 | 0.7995E-02 | 0.7977E-02 | -0.223 | 0.7977E-02 | -0.224 | 0.0 |
| 151.120 | 0.1066E-01 | 0.1064E-01 | -0.226 | 0.1064E-01 | -0.229 | 0.0 |
| 153.820 | 0.1332E-01 | 0.1329E-01 | -0.241 | 0.1329E-01 | -0.245 | 0.0 |
| 159.030 | 0.1999E-01 | 0.1996E-01 | -0.153 | 0.1995E-01 | -0.160 | 0.0 |
| 162.960 | 0.2665E-01 | 0.2660E-01 | -0.191 | 0.2660E-01 | -0.198 | 0.0 |
| 166.170 | 0.3331E-01 | 0.3326E-01 | -0.164 | 0.3325E-01 | -0.171 | 0.0 |
| 168.900 | 0.3997E-01 | 0.3992E-01 | -0.141 | 0.3991E-01 | -0.147 | 0.0 |
| 173.410 | 0.5330E-01 | 0.5322E-01 | -0.151 | 0.5321E-01 | -0.156 | 0.0 |
| 177.100 | 0.6662E-01 | 0.6652E-01 | -0.145 | 0.6652E-01 | -0.147 | 0.0 |
| 180.250 | 0.7995E-01 | 0.7985E-01 | -0.123 | 0.7985E-01 | -0.124 | 0.0 |
| 183.010 | 0.9327E-01 | 0.9316E-01 | -0.114 | 0.9316E-01 | -0.113 | 0.0 |
| 184.520 | 0.1013E+00 | 0.1011E+00 | -0.114 | 0.1011E+00 | -0.113 | 0.0 |
| 185.480 | 0.1066E+00 | 0.1065E+00 | -0.093 | 0.1065E+00 | -0.091 | 0.0 |
| 187.710 | 0.1199E+00 | 0.1198E+00 | -0.128 | 0.1198E+00 | -0.125 | 0.0 |
| 189.770 | 0.1332E+00 | 0.1331E+00 | -0.085 | 0.1331E+00 | -0.080 | 0.0 |
| 193.440 | 0.1599E+00 | 0.1598E+00 | -0.081 | 0.1598E+00 | -0.074 | 0.0 |
| 198.150 | 0.1999E+00 | 0.1997E+00 | -0.068 | 0.1997E+00 | -0.059 | 0.0 |

**Data from Rossini (via Ziegler et al. [17]) (continued)**

Number of Points [17] 22

| | | | | | |
|---|---|---|---|---|---|
| AAD% | = 0.147 | BIAS% | = −0.142 | RMS% | = 0.067 |
| AAD2% | = 0.148 | BIAS2% | = −0.141 | RMS2% | = 0.071 |

Absolute Deviations:

| | | | | | |
|---|---|---|---|---|---|
| AAD | = 0.065 | BIAS | = −0.065 | RMS | = 0.048 kPa |
| AAD2 | = 0.064 | BIAS2 | = −0.064 | RMS2 | = 0.045 kPa |

**Data from Tickner and Lossing [18]**

| T K | $P_\sigma$, expt MPa | $P_\sigma$, anc. MPa | dev1 % | $P_\sigma$, SWEOS MPA | dev2 % | wt |
|---|---|---|---|---|---|---|
| 130.650 | 0.1332E−02 | 0.1394E−02 | 4.620 | 0.1394E−02 | 4.635 | 0.0 |
| 125.550 | 0.6662E−03 | 0.7475E−03 | 12.208 | 0.7477E−03 | 12.226 | 0.0 |
| 119.050 | 0.2665E−03 | 0.3097E−03 | 16.202 | 0.3097E−03 | 16.216 | 0.0 |
| 114.650 | 0.1332E−03 | 0.1600E−03 | 20.091 | 0.1600E−03 | 20.096 | 0.0 |
| 110.550 | 0.6662E−04 | 0.8204E−04 | 23.138 | 0.8203E−04 | 23.130 | 0.0 |
| 105.350 | 0.2665E−04 | 0.3234E−04 | 21.371 | 0.3234E−04 | 21.342 | 0.0 |
| 101.850 | 0.1332E−04 | 0.1629E−04 | 22.257 | 0.1628E−04 | 22.214 | 0.0 |
| 98.550 | 0.6662E−05 | 0.8121E−05 | 21.904 | 0.8118E−05 | 21.850 | 0.0 |
| 94.450 | 0.2665E−05 | 0.3174E−05 | 19.109 | 0.3174E−05 | 19.089 | 0.0 |
| 91.350 | 0.1332E−05 | 0.1467E−05 | 10.094 | 0.1468E−05 | 10.138 | 0.0 |

Number of Points [18] 10

| | | | | | |
|---|---|---|---|---|---|
| AAD% | = 17.099 | BIAS% | = 17.099 | RMS% | = 5.890 |
| AAD2% | = 17.094 | BIAS2% | = 17.094 | RMS2% | = 5.868 |

Absolute Deviations:

| | | | | | |
|---|---|---|---|---|---|
| AAD | = 0.024 | BIAS | = 0.024 | RMS | = 0.027 kPa |
| AAD2 | = 0.024 | BIAS2 | = 0.024 | RMS2 | = 0.028 kPa |

**Data from Straty and Tsumura [19]**

| T K | $P_\sigma$, expt MPa | $P_\sigma$, anc. MPa | dev1 % | $P_\sigma$, SWEOS MPA | dev2 % | wt |
|---|---|---|---|---|---|---|
| 165.000 | 0.3067E−01 | 0.3069E−01 | 0.064 | 0.3069E−01 | 0.058 | 1.0 |
| 170.000 | 0.4287E−01 | 0.4288E−01 | 0.032 | 0.4288E−01 | 0.027 | 1.0 |
| 175.000 | 0.5864E−01 | 0.5866E−01 | 0.048 | 0.5866E−01 | 0.044 | 1.0 |
| 180.000 | 0.7873E−01 | 0.7872E−01 | −0.019 | 0.7872E−01 | −0.020 | 1.0 |
| 180.000 | 0.7871E−01 | 0.7872E−01 | 0.017 | 0.7872E−01 | 0.016 | 1.0 |

Table 1. SATURATED VAPOR PRESSURES (continued)

Data from Straty and Tsumura [19] (continued)

| T<br>K | $P_\sigma$, expt<br>MPa | $P_\sigma$, anc.<br>MPa | dev1<br>% | $P_\sigma$, SWEOS<br>MPA | dev2<br>% | wt |
|---|---|---|---|---|---|---|
| 185.000 | 0.1038E+00 | 0.1038E+00 | -0.043 | 0.1038E+00 | -0.042 | 1.0 |
| 190.000 | 0.1346E+00 | 0.1347E+00 | 0.044 | 0.1347E+00 | 0.049 | 1.0 |
| 190.000 | 0.1347E+00 | 0.1347E+00 | -0.023 | 0.1347E+00 | -0.018 | 1.0 |
| 195.000 | 0.1722E+00 | 0.1722E+00 | 0.022 | 0.1723E+00 | 0.029 | 1.0 |
| 195.000 | 0.1723E+00 | 0.1722E+00 | -0.007 | 0.1723E+00 | 0.000 | 1.0 |
| 200.000 | 0.2173E+00 | 0.2174E+00 | 0.045 | 0.2174E+00 | 0.055 | 1.0 |
| 200.000 | 0.2173E+00 | 0.2174E+00 | 0.017 | 0.2174E+00 | 0.027 | 1.0 |
| 205.000 | 0.2709E+00 | 0.2709E+00 | 0.004 | 0.2710E+00 | 0.017 | 1.0 |
| 205.000 | 0.2710E+00 | 0.2709E+00 | -0.021 | 0.2710E+00 | -0.009 | 1.0 |
| 210.000 | 0.3341E+00 | 0.3340E+00 | -0.051 | 0.3340E+00 | -0.037 | 1.0 |
| 210.000 | 0.3342E+00 | 0.3340E+00 | -0.063 | 0.3340E+00 | -0.049 | 1.0 |
| 210.000 | 0.3340E+00 | 0.3340E+00 | -0.006 | 0.3340E+00 | 0.008 | 1.0 |
| 210.000 | 0.3340E+00 | 0.3340E+00 | -0.009 | 0.3340E+00 | 0.005 | 1.0 |
| 215.000 | 0.4073E+00 | 0.4074E+00 | 0.014 | 0.4075E+00 | 0.029 | 1.0 |
| 220.000 | 0.4922E+00 | 0.4923E+00 | 0.022 | 0.4923E+00 | 0.038 | 1.0 |
| 225.000 | 0.5897E+00 | 0.5896E+00 | -0.020 | 0.5897E+00 | -0.004 | 1.0 |
| 230.000 | 0.7005E+00 | 0.7005E+00 | 0.000 | 0.7006E+00 | 0.016 | 1.0 |
| 235.000 | 0.8260E+00 | 0.8260E+00 | -0.001 | 0.8261E+00 | 0.017 | 1.0 |
| 240.000 | 0.9666E+00 | 0.9671E+00 | 0.056 | 0.9673E+00 | 0.074 | 1.0 |
| 245.000 | 0.1124E+01 | 0.1125E+01 | 0.067 | 0.1125E+01 | 0.088 | 1.0 |
| 245.000 | 0.1125E+01 | 0.1125E+01 | 0.032 | 0.1125E+01 | 0.052 | 1.0 |
| 250.000 | 0.1300E+01 | 0.1301E+01 | 0.090 | 0.1301E+01 | 0.113 | 1.0 |
| 250.000 | 0.1302E+01 | 0.1301E+01 | -0.056 | 0.1301E+01 | -0.033 | 1.0 |
| 250.000 | 0.1302E+01 | 0.1301E+01 | -0.071 | 0.1301E+01 | -0.049 | 1.0 |
| 250.000 | 0.1302E+01 | 0.1301E+01 | -0.048 | 0.1301E+01 | -0.026 | 1.0 |
| 255.000 | 0.1495E+01 | 0.1496E+01 | 0.091 | 0.1497E+01 | 0.117 | 1.0 |
| 260.000 | 0.1710E+01 | 0.1712E+01 | 0.097 | 0.1712E+01 | 0.128 | 1.0 |
| 265.000 | 0.1948E+01 | 0.1949E+01 | 0.071 | 0.1950E+01 | 0.110 | 1.0 |
| 270.000 | 0.2208E+01 | 0.2210E+01 | 0.076 | 0.2211E+01 | 0.123 | 1.0 |
| 275.000 | 0.2493E+01 | 0.2495E+01 | 0.061 | 0.2496E+01 | 0.117 | 1.0 |
| 275.000 | 0.2493E+01 | 0.2495E+01 | 0.057 | 0.2496E+01 | 0.113 | 1.0 |
| 280.000 | 0.2805E+01 | 0.2806E+01 | 0.042 | 0.2808E+01 | 0.105 | 1.0 |
| 280.000 | 0.2806E+01 | 0.2806E+01 | -0.015 | 0.2808E+01 | 0.048 | 1.0 |
| 285.000 | 0.3144E+01 | 0.3145E+01 | 0.021 | 0.3147E+01 | 0.089 | 1.0 |
| 290.000 | 0.3513E+01 | 0.3514E+01 | 0.027 | 0.3517E+01 | 0.091 | 1.0 |

Table 1. **SATURATED VAPOR PRESSURES** (continued)

**Data from Straty and Tsumura [19]** (continued)

| T<br>K | $P_\sigma$, expt<br>MPa | $P_\sigma$, anc.<br>MPa | dev1<br>% | $P_\sigma$, SWEOS<br>MPA | dev2<br>% | wt |
|---|---|---|---|---|---|---|
| 298.150 | 0.4191E+01 | 0.4189E+01 | -0.046 | 0.4190E+01 | -0.020 | 1.0 |
| 298.150 | 0.4189E+01 | 0.4189E+01 | 0.002 | 0.4190E+01 | 0.028 | 1.0 |
| 300.000 | 0.4353E+01 | 0.4356E+01 | 0.059 | 0.4357E+01 | 0.069 | 1.0 |
| 160.000 | 0.2150E-01 | 0.2145E-01 | -0.218 | 0.2145E-01 | -0.224 | 0.0 |

Number of Points [19] 44

AAD% = 0.043 BIAS% = 0.010 RMS% = 0.056
AAD2% = 0.055 BIAS2% = 0.031 RMS2% = 0.064

Absolute Deviations:
AAD = 0.526 BIAS = 0.280 RMS = 0.791 kPa
AAD2 = 0.830 BIAS2 = 0.707 RMS2 = 1.158 kPa

Weighted Data:

Number of Points [19] 43

AAD% = 0.039 BIAS% = 0.016 RMS% = 0.044
AAD2% = 0.051 BIAS2% = 0.037 RMS2% = 0.052

Absolute Deviations:
AAD = 0.537 BIAS = 0.288 RMS = 0.799 kPa
AAD2 = 0.848 BIAS2 = 0.724 RMS2 = 1.166 kPa

**Data from Ziegler et al. [17]**
These data were adjusted by Goodwin et al. [20].

| T<br>K | $P_\sigma$, expt<br>MPa | $P_\sigma$, anc.<br>MPa | dev1<br>% | $P_\sigma$, SWEOS<br>MPA | dev2<br>% | wt |
|---|---|---|---|---|---|---|
| 100.010 | 0.1112E-04 | 0.1112E-04 | -0.034 | 0.1112E-04 | -0.072 | 1.0 |
| 109.998 | 0.7462E-04 | 0.7466E-04 | 0.056 | 0.7466E-04 | 0.048 | 1.0 |
| 119.989 | 0.3540E-03 | 0.3540E-03 | 0.018 | 0.3541E-03 | 0.031 | 1.0 |
| 129.987 | 0.1290E-02 | 0.1289E-02 | -0.010 | 0.1290E-02 | 0.005 | 1.0 |
| 139.992 | 0.3829E-02 | 0.3828E-02 | -0.030 | 0.3828E-02 | -0.024 | 1.0 |
| 150.000 | 0.9674E-02 | 0.9670E-02 | -0.039 | 0.9670E-02 | -0.042 | 1.0 |
| 160.010 | 0.2148E-01 | 0.2147E-01 | -0.034 | 0.2147E-01 | -0.041 | 1.0 |
| 170.019 | 0.4295E-01 | 0.4294E-01 | -0.029 | 0.4293E-01 | -0.034 | 1.0 |
| 180.027 | 0.7885E-01 | 0.7884E-01 | -0.018 | 0.7884E-01 | -0.019 | 1.0 |
| 184.550 | 0.1013E+00 | 0.1013E+00 | -0.013 | 0.1013E+00 | -0.011 | 1.0 |

**Data from Ziegler et al. [17] (continued)**

Number of Points [17] 10

AAD% = 0.028 BIAS% = −0.013 RMS% = 0.028
AAD2% = 0.033 BIAS2% = −0.016 RMS2% = 0.034

Absolute Deviations:
AAD = 0.005 BIAS = −0.005 RMS = 0.006 kPa
AAD2 = 0.006 BIAS2 = −0.005 RMS2 = 0.006 kPa

Weighted Data:

Number of Points [17] 10

AAD% = 0.028 BIAS% = −0.013 RMS% = 0.028
AAD2% = 0.033 BIAS2% = −0.016 RMS2% = 0.034

Absolute Deviations:
AAD = 0.005 BIAS = −0.005 RMS = 0.006 kPa
AAD2 = 0.006 BIAS2 = −0.005 RMS2 = 0.006 kPa

**Data from Ziegler et al. (unadj) [17]**

| T K | $P_\sigma$, expt MPa | $P_\sigma$, anc. MPa | dev1 % | $P_\sigma$, SWEOS MPA | dev2 % | wt |
|---|---|---|---|---|---|---|
| 89.890 | 0.9767E−06 | 0.9995E−06 | 2.336 | 0.1000E−05 | 2.423 | 0.0 |
| 90.000 | 0.1006E−05 | 0.1029E−05 | 2.316 | 0.1030E−05 | 2.399 | 0.0 |
| 92.000 | 0.1692E−05 | 0.1733E−05 | 2.398 | 0.1733E−05 | 2.422 | 0.0 |
| 94.000 | 0.2785E−05 | 0.2847E−05 | 2.251 | 0.2847E−05 | 2.240 | 0.0 |
| 96.000 | 0.4464E−05 | 0.4575E−05 | 2.488 | 0.4573E−05 | 2.456 | 0.0 |
| 98.000 | 0.7022E−05 | 0.7196E−05 | 2.475 | 0.7193E−05 | 2.432 | 0.0 |
| 100.000 | 0.1082E−04 | 0.1110E−04 | 2.555 | 0.1109E−04 | 2.516 | 0.0 |
| 102.000 | 0.1639E−04 | 0.1679E−04 | 2.470 | 0.1679E−04 | 2.434 | 0.0 |
| 104.000 | 0.2438E−04 | 0.2498E−04 | 2.429 | 0.2497E−04 | 2.399 | 0.0 |
| 106.000 | 0.3571E−04 | 0.3654E−04 | 2.316 | 0.3653E−04 | 2.293 | 0.0 |
| 108.000 | 0.5143E−04 | 0.5262E−04 | 2.315 | 0.5261E−04 | 2.300 | 0.0 |
| 110.000 | 0.7288E−04 | 0.7469E−04 | 2.476 | 0.7468E−04 | 2.467 | 0.0 |
| 112.000 | 0.1022E−03 | 0.1045E−03 | 2.300 | 0.1045E−03 | 2.298 | 0.0 |
| 114.000 | 0.1412E−03 | 0.1444E−03 | 2.270 | 0.1444E−03 | 2.273 | 0.0 |
| 116.000 | 0.1928E−03 | 0.1971E−03 | 2.234 | 0.1971E−03 | 2.241 | 0.0 |

Table 1. **SATURATED VAPOR PRESSURES** (continued)

Data from Ziegler et al. (unadj) [17] (continued)

| T K | $P_\sigma$, expt MPa | $P_\sigma$, anc. MPa | dev1 % | $P_\sigma$, SWEOS MPA | dev2 % | wt |
|---|---|---|---|---|---|---|
| 118.000 | 0.2602E-03 | 0.2658E-03 | 2.160 | 0.2659E-03 | 2.171 | 0.0 |
| 120.000 | 0.3472E-03 | 0.3546E-03 | 2.118 | 0.3546E-03 | 2.132 | 0.0 |
| 122.000 | 0.4588E-03 | 0.4680E-03 | 2.016 | 0.4681E-03 | 2.031 | 0.0 |
| 124.000 | 0.5999E-03 | 0.6116E-03 | 1.950 | 0.6117E-03 | 1.966 | 0.0 |
| 126.000 | 0.7771E-03 | 0.7916E-03 | 1.869 | 0.7917E-03 | 1.886 | 0.0 |
| 128.000 | 0.9975E-03 | 0.1015E-02 | 1.804 | 0.1016E-02 | 1.820 | 0.0 |
| 130.000 | 0.1270E-02 | 0.1291E-02 | 1.718 | 0.1292E-02 | 1.733 | 0.0 |
| 132.000 | 0.1603E-02 | 0.1629E-02 | 1.641 | 0.1629E-02 | 1.654 | 0.0 |
| 134.000 | 0.2008E-02 | 0.2039E-02 | 1.556 | 0.2040E-02 | 1.568 | 0.0 |
| 136.000 | 0.2497E-02 | 0.2534E-02 | 1.480 | 0.2534E-02 | 1.490 | 0.0 |
| 138.000 | 0.3083E-02 | 0.3126E-02 | 1.396 | 0.3127E-02 | 1.404 | 0.0 |
| 140.000 | 0.3781E-02 | 0.3831E-02 | 1.317 | 0.3831E-02 | 1.323 | 0.0 |
| 142.000 | 0.4608E-02 | 0.4665E-02 | 1.240 | 0.4665E-02 | 1.244 | 0.0 |
| 144.000 | 0.5581E-02 | 0.5646E-02 | 1.160 | 0.5646E-02 | 1.163 | 0.0 |
| 146.000 | 0.6719E-02 | 0.6792E-02 | 1.085 | 0.6792E-02 | 1.085 | 0.0 |
| 148.000 | 0.8045E-02 | 0.8126E-02 | 1.011 | 0.8126E-02 | 1.010 | 0.0 |
| 150.000 | 0.9580E-02 | 0.9670E-02 | 0.936 | 0.9670E-02 | 0.933 | 0.0 |
| 152.000 | 0.1135E-01 | 0.1145E-01 | 0.865 | 0.1145E-01 | 0.861 | 0.0 |
| 154.000 | 0.1338E-01 | 0.1349E-01 | 0.798 | 0.1349E-01 | 0.793 | 0.0 |
| 156.000 | 0.1570E-01 | 0.1581E-01 | 0.728 | 0.1581E-01 | 0.722 | 0.0 |
| 158.000 | 0.1834E-01 | 0.1846E-01 | 0.661 | 0.1846E-01 | 0.654 | 0.0 |
| 160.000 | 0.2133E-01 | 0.2145E-01 | 0.589 | 0.2145E-01 | 0.582 | 0.0 |
| 162.000 | 0.2470E-01 | 0.2483E-01 | 0.527 | 0.2483E-01 | 0.520 | 0.0 |
| 164.000 | 0.2849E-01 | 0.2862E-01 | 0.465 | 0.2862E-01 | 0.458 | 0.0 |
| 166.000 | 0.3274E-01 | 0.3287E-01 | 0.401 | 0.3287E-01 | 0.394 | 0.0 |
| 168.000 | 0.3749E-01 | 0.3761E-01 | 0.340 | 0.3761E-01 | 0.334 | 0.0 |
| 170.000 | 0.4276E-01 | 0.4288E-01 | 0.280 | 0.4288E-01 | 0.274 | 0.0 |
| 172.000 | 0.4862E-01 | 0.4873E-01 | 0.223 | 0.4873E-01 | 0.218 | 0.0 |
| 174.000 | 0.5510E-01 | 0.5519E-01 | 0.167 | 0.5519E-01 | 0.163 | 0.0 |
| 176.000 | 0.6224E-01 | 0.6231E-01 | 0.110 | 0.6231E-01 | 0.107 | 0.0 |
| 178.000 | 0.7010E-01 | 0.7014E-01 | 0.055 | 0.7014E-01 | 0.053 | 0.0 |
| 180.000 | 0.7872E-01 | 0.7872E-01 | 0.003 | 0.7872E-01 | 0.002 | 0.0 |
| 182.000 | 0.8815E-01 | 0.8810E-01 | -0.050 | 0.8810E-01 | -0.050 | 0.0 |
| 184.000 | 0.9844E-01 | 0.9834E-01 | -0.101 | 0.9834E-01 | -0.099 | 0.0 |
| 184.520 | 0.1013E+00 | 0.1011E+00 | -0.114 | 0.1011E+00 | -0.113 | 0.0 |

**Data from Ziegler et al. (unadj) [17] (continued)**

Number of Points [17] 50

AAD% = 1.371 BIAS% = 1.361 RMS% = 0.889
AAD2% = 1.372 BIAS2% = 1.362 RMS2% = 0.891

Absolute Deviations:
AAD = 0.049 BIAS = 0.038 RMS = 0.057 kPa
AAD2 = 0.048 BIAS2 = 0.038 RMS2 = 0.056 kPa

**Data from ancillary equation [1]**

| T<br>K | $P_\sigma$, expt<br>MPa | $P_\sigma$, anc.<br>MPa | dev1<br>% | $P_\sigma$, SWEOS<br>MPA | dev2<br>% | wt* |
|---|---|---|---|---|---|---|
| 91.000 | | 0.1340E-05 | | 0.1340E-05 | 0.043 | 531.0 |
| 96.000 | | 0.4575E-05 | | 0.4573E-05 | -0.031 | 531.0 |
| 101.000 | | 0.1368E-04 | | 0.1368E-04 | -0.037 | 531.0 |
| 106.000 | | 0.3654E-04 | | 0.3653E-04 | -0.022 | 531.0 |
| 111.000 | | 0.8851E-04 | | 0.8851E-04 | -0.005 | 531.0 |
| 116.000 | | 0.1971E-03 | | 0.1971E-03 | 0.008 | 531.0 |
| 121.000 | | 0.4079E-03 | | 0.4079E-03 | 0.014 | 531.0 |
| 126.000 | | 0.7916E-03 | | 0.7917E-03 | 0.016 | 531.0 |
| 131.000 | | 0.1452E-02 | | 0.1452E-02 | 0.014 | 531.0 |
| 136.000 | | 0.2534E-02 | | 0.2534E-02 | 0.010 | 531.0 |
| 141.000 | | 0.4231E-02 | | 0.4231E-02 | 0.005 | 531.0 |
| 146.000 | | 0.6792E-02 | | 0.6792E-02 | 0.001 | 531.0 |
| 151.000 | | 0.1053E-01 | | 0.1053E-01 | -0.003 | 531.0 |
| 156.000 | | 0.1581E-01 | | 0.1581E-01 | -0.005 | 531.0 |
| 161.000 | | 0.2309E-01 | | 0.2309E-01 | -0.007 | 531.0 |
| 166.000 | | 0.3287E-01 | | 0.3287E-01 | -0.007 | 531.0 |
| 171.000 | | 0.4573E-01 | | 0.4573E-01 | -0.005 | 531.0 |
| 176.000 | | 0.6231E-01 | | 0.6231E-01 | -0.003 | 531.0 |
| 181.000 | | 0.8331E-01 | | 0.8331E-01 | -0.001 | 531.0 |
| 186.000 | | 0.1095E+00 | | 0.1095E+00 | 0.002 | 493.0 |
| 191.000 | | 0.1416E+00 | | 0.1416E+00 | 0.005 | 371.0 |
| 196.000 | | 0.1806E+00 | | 0.1807E+00 | 0.008 | 284.0 |
| 201.000 | | 0.2274E+00 | | 0.2274E+00 | 0.010 | 221.0 |
| 206.000 | | 0.2828E+00 | | 0.2828E+00 | 0.012 | 174.0 |
| 211.000 | | 0.3478E+00 | | 0.3478E+00 | 0.014 | 138.0 |

Table 1. **SATURATED VAPOR PRESSURES** (continued)

Data from ancillary equation [1] (continued)

| T<br>K | $P_\sigma$, expt<br>MPa | $P_\sigma$, anc.<br>MPa | dev1<br>% | $P_\sigma$, SWEOS<br>MPA | dev2<br>% | wt* |
|---|---|---|---|---|---|---|
| 216.000 | | 0.4234E+00 | | 0.4235E+00 | 0.015 | 112.0 |
| 221.000 | | 0.5107E+00 | | 0.5108E+00 | 0.016 | 90.8 |
| 226.000 | | 0.6107E+00 | | 0.6108E+00 | 0.016 | 74.6 |
| 231.000 | | 0.7244E+00 | | 0.7245E+00 | 0.017 | 61.9 |
| 236.000 | | 0.8529E+00 | | 0.8530E+00 | 0.017 | 51.8 |
| 241.000 | | 0.9974E+00 | | 0.9975E+00 | 0.019 | 43.7 |
| 246.000 | | 0.1159E+01 | | 0.1159E+01 | 0.021 | 37.2 |
| 251.000 | | 0.1339E+01 | | 0.1339E+01 | 0.024 | 69.7 |
| 256.000 | | 0.1538E+01 | | 0.1538E+01 | 0.027 | 60.2 |
| 261.000 | | 0.1758E+01 | | 0.1758E+01 | 0.033 | 52.2 |
| 266.000 | | 0.1999E+01 | | 0.2000E+01 | 0.041 | 45.7 |
| 271.000 | | 0.2265E+01 | | 0.2266E+01 | 0.050 | 40.2 |
| 276.000 | | 0.2555E+01 | | 0.2556E+01 | 0.058 | 35.7 |
| 281.000 | | 0.2871E+01 | | 0.2873E+01 | 0.065 | 31.9 |
| 286.000 | | 0.3216E+01 | | 0.3219E+01 | 0.068 | 28.8 |
| 291.000 | | 0.3592E+01 | | 0.3594E+01 | 0.062 | 26.2 |
| 296.000 | | 0.4002E+01 | | 0.4003E+01 | 0.041 | 24.1 |
| 301.000 | | 0.4449E+01 | | 0.4449E+01 | 0.002 | 22.6 |

Number of Points from ancillary equation. 43
*These weights refer to development of the SWEOS.
These data are not included in the overall statistics below.

AAD2% = 0.020 BIAS2% = 0.015 RMS2% = 0.023

Absolute Deviations:
AAD2 = 0.321 BIAS2 = 0.321 RMS2 = 0.617 kPa

| | | | | |
|---|---|---|---|---|
| Overall Results: | N = 333 | AAD% = 1.245 | BIAS% = 0.430 | RMS% = 5.143 |
| | | AAD2% = 1.249 | BIAS2% = 0.442 | RMS2% = 5.141 |
| | | AAD = 1.096 | BIAS = 0.259 | RMS = 3.361 kPa |
| | | AAD2 = 1.175 | BIAS2 = 0.521 | RMS2 = 3.487 kPa |
| Weighted Data: | N = 127 | AAD% = 0.039 | BIAS% = 0.005 | RMS% = 0.049 |
| | | AAD2% = 0.047 | BIAS2% = 0.027 | RMS2% = 0.052 |
| | | AAD = 0.970 | BIAS = 0.252 | RMS = 1.568 kPa |
| | | AAD2 = 1.127 | BIAS2 = 0.764 | RMS2 = 1.597 kPa |

## Table 2. SATURATED LIQUID DENSITIES

### Data from Chui et al. [7]

| T K | $\rho_{\sigma L}$, expt $mol \cdot dm^{-3}$ | $\rho_{\sigma L}$, anc. $mol \cdot dm^{-3}$ | dev1 % | $\rho_{\sigma L}$, SWEOS $mol \cdot dm^{-3}$ | dev2 % | wt |
|---|---|---|---|---|---|---|
| 161.360 | 19.03 | 19.03 | 0.004 | 19.03 | 0.013 | 1.0 |
| 115.770 | 20.75 | 20.75 | 0.025 | 20.75 | 0.020 | 1.0 |
| 108.150 | 21.03 | 21.03 | 0.011 | 21.03 | 0.014 | 1.0 |

Number of Points [7] 3

AAD% = 0.013 BIAS% = 0.013 RMS% = 0.009
AAD2% = 0.015 BIAS2% = 0.015 RMS2% = 0.003

Absolute Deviations:
AAD = 0.00 BIAS = 0.00 RMS = 0.00 $mol \cdot dm^{-3}$
AAD2 = 0.00 BIAS2 = 0.00 RMS2 = 0.00 $mol \cdot dm^{-3}$

Weighted Data:

Number of Points [7] 3

AAD% = 0.013 BIAS% = 0.013 RMS% = 0.009
AAD2% = 0.015 BIAS2% = 0.015 RMS2% = 0.003

Absolute Deviations:
AAD = 0.00 BIAS = 0.00 RMS = 0.00 $mol \cdot dm^{-3}$
AAD2 = 0.00 BIAS2 = 0.00 RMS2 = 0.00 $mol \cdot dm^{-3}$

### Data from Douslin and Harrison [9]

| T K | $\rho_{\sigma L}$, expt $mol \cdot dm^{-3}$ | $\rho_{\sigma L}$, anc. $mol \cdot dm^{-3}$ | dev1 % | $\rho_{\sigma L}$, SWEOS $mol \cdot dm^{-3}$ | dev2 % | wt |
|---|---|---|---|---|---|---|
| 248.150 | 15.06 | 15.00 | −0.366 | 15.00 | −0.356 | 0.0 |
| 305.250 | 7.60 | 7.58 | −0.250 | 7.63 | 0.362 | 0.0 |
| 305.150 | 7.83 | 7.82 | −0.136 | 7.89 | 0.717 | 0.0 |
| 304.150 | 8.74 | 8.73 | −0.046 | 8.76 | 0.290 | 1.0 |
| 303.150 | 9.20 | 9.20 | −0.042 | 9.20 | −0.008 | 1.0 |
| 302.150 | 9.54 | 9.54 | −0.029 | 9.53 | −0.137 | 1.0 |
| 298.150 | 10.50 | 10.48 | −0.178 | 10.47 | −0.300 | 0.0 |
| 293.150 | 11.30 | 11.28 | −0.175 | 11.28 | −0.118 | 0.0 |
| 283.150 | 12.46 | 12.42 | −0.265 | 12.44 | −0.104 | 0.0 |
| 273.150 | 13.34 | 13.31 | −0.271 | 13.32 | −0.156 | 0.0 |

Table 2. **SATURATED LIQUID DENSITIES** (continued)

**Data from Douslin and Harrison [9]** (continued)

| T<br>K | $\rho_{\sigma L}$, expt<br>mol•dm$^{-3}$ | $\rho_{\sigma L}$, anc.<br>mol•dm$^{-3}$ | dev1<br>% | $\rho_{\sigma L}$, SWEOS<br>mol•dm$^{-3}$ | dev2<br>% | wt |
|---|---|---|---|---|---|---|
| 263.150 | 14.09 | 14.05 | −0.296 | 14.06 | −0.238 | 0.0 |
| 253.150 | 14.75 | 14.70 | −0.359 | 14.70 | −0.338 | 0.0 |

Number of Points [9] 12

AAD% = 0.201 BIAS% = −0.201 RMS% = 0.114
AAD2% = 0.260 BIAS2% = −0.032 RMS2% = 0.313

Absolute Deviations:
AAD = 0.02 BIAS = −0.02 RMS = 0.02 mol•dm$^{-3}$
AAD2 = 0.03 BIAS2 = −0.01 RMS2 = 0.03 mol•dm$^{-3}$

Weighted Data:

Number of Points [9] 3

AAD% = 0.039 BIAS% = −0.039 RMS% = 0.007
AAD2% = 0.145 BIAS2% = 0.049 RMS2% = 0.178

Absolute Deviations:
AAD = 0.00 BIAS = 0.00 RMS = 0.00 mol•dm$^{-3}$
AAD2 = 0.01 BIAS2 = 0.00 RMS2 = 0.02 mol•dm$^{-3}$

**Data from Goodwin et al. [20]**
Using isochores from [13]

| T<br>K | $\rho_{\sigma L}$, expt<br>mol•dm$^{-3}$ | $\rho_{\sigma L}$, anc.<br>mol•dm$^{-3}$ | dev1<br>% | $\rho_{\sigma L}$, SWEOS<br>mol•dm$^{-3}$ | dev2<br>% | wt |
|---|---|---|---|---|---|---|
| 255.963 | 14.55 | 14.52 | −0.209 | 14.53 | −0.180 | 0.0 |
| 247.962 | 15.05 | 15.01 | −0.246 | 15.01 | −0.236 | 0.0 |
| 240.700 | 15.46 | 15.43 | −0.175 | 15.43 | −0.176 | 0.0 |
| 229.917 | 16.04 | 16.00 | −0.210 | 16.00 | −0.215 | 0.0 |
| 222.618 | 16.42 | 16.37 | −0.320 | 16.37 | −0.323 | 0.0 |
| 214.942 | 16.75 | 16.74 | −0.080 | 16.74 | −0.079 | 0.0 |
| 207.941 | 17.13 | 17.07 | −0.345 | 17.07 | −0.339 | 0.0 |
| 197.888 | 17.53 | 17.52 | −0.075 | 17.52 | −0.063 | 0.0 |
| 188.451 | 17.94 | 17.92 | −0.102 | 17.93 | −0.086 | 0.0 |
| 176.512 | 18.45 | 18.42 | −0.142 | 18.42 | −0.126 | 0.0 |

**Data from Goodwin et al. [20] (continued)**

| T K | $\rho_{\sigma L}$, expt $mol \cdot dm^{-3}$ | $\rho_{\sigma L}$, anc. $mol \cdot dm^{-3}$ | dev1 % | $\rho_{\sigma L}$, SWEOS $mol \cdot dm^{-3}$ | dev2 % | wt |
|---|---|---|---|---|---|---|
| 167.366 | 18.82 | 18.79 | −0.179 | 18.79 | −0.166 | 0.0 |
| 156.875 | 19.23 | 19.20 | −0.117 | 19.20 | −0.111 | 0.0 |

Number of Points [20] 12

AAD% = 0.183 BIAS% = −0.183 RMS% = 0.084
AAD2% = 0.175 BIAS2% = −0.175 RMS2% = 0.087

Absolute Deviations:
AAD = 0.03 BIAS = −0.03 RMS = 0.01 $mol \cdot dm^{-3}$
AAD2 = 0.03 BIAS2 = −0.03 RMS2 = 0.01 $mol \cdot dm^{-3}$

**Data from Gugnoni et al. [21]**

| T K | $\rho_{\sigma L}$, expt $mol \cdot dm^{-3}$ | $\rho_{\sigma L}$, anc. $mol \cdot dm^{-3}$ | dev1 % | $\rho_{\sigma L}$, SWEOS $mol \cdot dm^{-3}$ | dev2 % | wt |
|---|---|---|---|---|---|---|
| 269.250 | 13.80 | 13.61 | −1.377 | 13.62 | −1.287 | 0.0 |
| 283.150 | 12.41 | 12.42 | 0.137 | 12.44 | 0.298 | 0.0 |
| 255.372 | 14.47 | 14.56 | 0.608 | 14.57 | 0.636 | 0.0 |
| 241.483 | 15.34 | 15.38 | 0.263 | 15.38 | 0.263 | 0.0 |

Number of Points [21] 4

AAD% = 0.596 BIAS% = −0.092 RMS% = 0.762
AAD2% = 0.621 BIAS2% = −0.022 RMS2% = 0.745

Absolute Deviations:
AAD = 0.08 BIAS = −0.01 RMS = 0.11 $mol \cdot dm^{-3}$
AAD2 = 0.09 BIAS2 = 0.00 RMS2 = 0.10 $mol \cdot dm^{-3}$

**Data from Haynes and Hiza [22]**

| T K | $\rho_{\sigma L}$, expt $mol \cdot dm^{-3}$ | $\rho_{\sigma L}$, anc. $mol \cdot dm^{-3}$ | dev1 % | $\rho_{\sigma L}$, SWEOS $mol \cdot dm^{-3}$ | dev2 % | wt |
|---|---|---|---|---|---|---|
| 270.000 | 13.55 | 13.55 | 0.017 | 13.56 | 0.113 | 1.0 |
| 260.000 | 14.26 | 14.26 | −0.001 | 14.27 | 0.044 | 1.0 |
| 250.000 | 14.89 | 14.89 | 0.013 | 14.89 | 0.026 | 1.0 |
| 240.000 | 15.46 | 15.47 | 0.017 | 15.47 | 0.016 | 1.0 |
| 230.000 | 16.00 | 16.00 | 0.013 | 16.00 | 0.008 | 1.0 |

Table 2. **SATURATED LIQUID DENSITIES** (continued)

Data from Haynes and Hiza [22] (continued)

| T<br>K | $\rho_{\sigma L}$, expt<br>mol•dm$^{-3}$ | $\rho_{\sigma L}$, anc.<br>mol•dm$^{-3}$ | dev1<br>% | $\rho_{\sigma L}$, SWEOS<br>mol•dm$^{-3}$ | dev2<br>% | wt |
|---|---|---|---|---|---|---|
| 220.000 | 16.50 | 16.50 | −0.004 | 16.50 | −0.005 | 1.0 |
| 210.000 | 16.97 | 16.97 | 0.002 | 16.97 | 0.007 | 1.0 |
| 200.000 | 17.43 | 17.42 | −0.035 | 17.42 | −0.024 | 1.0 |
| 190.000 | 17.86 | 17.86 | −0.023 | 17.86 | −0.008 | 1.0 |
| 180.000 | 18.28 | 18.28 | −0.014 | 18.28 | 0.002 | 1.0 |
| 170.000 | 18.69 | 18.68 | −0.017 | 18.69 | −0.003 | 1.0 |
| 160.000 | 19.09 | 19.08 | −0.025 | 19.08 | −0.017 | 1.0 |
| 150.000 | 19.48 | 19.47 | −0.026 | 19.47 | −0.025 | 1.0 |
| 140.000 | 19.86 | 19.85 | −0.027 | 19.85 | −0.033 | 1.0 |
| 135.000 | 20.05 | 20.04 | −0.029 | 20.04 | −0.038 | 1.0 |
| 130.000 | 20.23 | 20.23 | −0.024 | 20.23 | −0.034 | 1.0 |
| 125.000 | 20.42 | 20.41 | −0.031 | 20.41 | −0.040 | 1.0 |
| 120.000 | 20.60 | 20.60 | −0.024 | 20.60 | −0.032 | 1.0 |
| 115.000 | 20.79 | 20.78 | −0.061 | 20.78 | −0.066 | 1.0 |
| 110.000 | 20.98 | 20.96 | −0.061 | 20.96 | −0.060 | 1.0 |
| 105.000 | 21.16 | 21.14 | −0.075 | 21.14 | −0.069 | 1.0 |
| 100.000 | 21.34 | 21.32 | −0.085 | 21.32 | −0.076 | 1.0 |

Number of Points [22] 22

AAD% = 0.028 BIAS% = −0.023 RMS% = 0.028
AAD2% = 0.034 BIAS2% = −0.014 RMS2% = 0.041

Absolute Deviations:
AAD = 0.01 BIAS = 0.00 RMS = 0.01 mol•dm$^{-3}$
AAD2 = 0.01 BIAS2 = 0.00 RMS2 = 0.01 mol•dm$^{-3}$

Weighted Data:

Number of Points [22] 22

AAD% = 0.028 BIAS% = −0.023 RMS% = 0.028
AAD2% = 0.034 BIAS2% = −0.014 RMS2% = 0.041

Absolute Deviations:
AAD = 0.01 BIAS = 0.00 RMS = 0.01 mol•dm$^{-3}$
AAD2 = 0.01 BIAS2 = 0.00 RMS2 = 0.01 mol•dm$^{-3}$

Table 2. SATURATED LIQUID DENSITIES (continued)

Data from Kahre [10]

| T<br>K | $\rho_{\sigma L}$, expt<br>mol•dm$^{-3}$ | $\rho_{\sigma L}$, anc.<br>mol•dm$^{-3}$ | dev1<br>% | $\rho_{\sigma L}$, SWEOS<br>mol•dm$^{-3}$ | dev2<br>% | wt |
|---|---|---|---|---|---|---|
| 299.850 | 10.19 | 10.13 | −0.504 | 10.12 | −0.672 | 0.0 |
| 294.250 | 11.15 | 11.12 | −0.292 | 11.12 | −0.269 | 0.0 |
| 288.750 | 11.85 | 11.83 | −0.129 | 11.85 | 0.010 | 0.0 |
| 277.550 | 12.96 | 12.94 | −0.177 | 12.96 | −0.037 | 0.0 |
| 267.450 | 13.74 | 13.74 | −0.018 | 13.75 | 0.063 | 0.0 |

Number of Points [10] 5

AAD% = 0.224 BIAS% = −0.224 RMS% = 0.165
AAD2% = 0.210 BIAS2% = −0.181 RMS2% = 0.270

Absolute Deviations:
AAD = 0.02 BIAS = −0.02 RMS = 0.02 mol•dm$^{-3}$
AAD2 = 0.02 BIAS2 = −0.02 RMS2 = 0.03 mol•dm$^{-3}$

Data from Klosek and McKinley [23]

| T<br>K | $\rho_{\sigma L}$, expt<br>mol•dm$^{-3}$ | $\rho_{\sigma L}$, anc.<br>mol•dm$^{-3}$ | dev1<br>% | $\rho_{\sigma L}$, SWEOS<br>mol•dm$^{-3}$ | dev2<br>% | wt |
|---|---|---|---|---|---|---|
| 133.150 | 20.13 | 20.11 | −0.082 | 20.11 | −0.091 | 0.0 |
| 127.594 | 20.32 | 20.32 | −0.031 | 20.31 | −0.041 | 0.0 |
| 122.039 | 20.52 | 20.52 | 0.005 | 20.52 | −0.004 | 0.0 |
| 116.483 | 20.72 | 20.73 | 0.044 | 20.72 | 0.038 | 0.0 |
| 110.928 | 20.91 | 20.93 | 0.065 | 20.93 | 0.065 | 0.0 |
| 105.372 | 21.11 | 21.13 | 0.117 | 21.13 | 0.123 | 0.0 |
| 99.817 | 21.30 | 21.33 | 0.148 | 21.33 | 0.157 | 0.0 |
| 94.261 | 21.49 | 21.53 | 0.176 | 21.53 | 0.180 | 0.0 |

Number of Points [23] 8

AAD% = 0.084 BIAS% = 0.055 RMS% = 0.084
AAD2% = 0.087 BIAS2% = 0.053 RMS2% = 0.090

Absolute Deviations:
AAD = 0.02 BIAS = 0.01 RMS = 0.02 mol•dm$^{-3}$
AAD2 = 0.02 BIAS2 = 0.01 RMS2 = 0.02 mol•dm$^{-3}$

Table 2. **SATURATED LIQUID DENSITIES** (continued)

Data from McClune [24]

| T<br>K | $\rho_{\sigma L}$, expt<br>$mol \cdot dm^{-3}$ | $\rho_{\sigma L}$, anc.<br>$mol \cdot dm^{-3}$ | dev1<br>% | $\rho_{\sigma L}$, SWEOS<br>$mol \cdot dm^{-3}$ | dev2<br>% | wt |
|---|---|---|---|---|---|---|
| 173.150 | 18.57 | 18.56 | -0.045 | 18.56 | -0.030 | 1.0 |
| 168.150 | 18.77 | 18.76 | -0.037 | 18.76 | -0.024 | 1.0 |
| 163.150 | 18.96 | 18.96 | -0.037 | 18.96 | -0.027 | 1.0 |
| 158.150 | 19.16 | 19.15 | -0.022 | 19.16 | -0.015 | 1.0 |
| 153.150 | 19.35 | 19.35 | -0.029 | 19.35 | -0.026 | 1.0 |
| 148.150 | 19.55 | 19.54 | -0.030 | 19.54 | -0.030 | 1.0 |
| 143.150 | 19.74 | 19.73 | -0.030 | 19.73 | -0.034 | 1.0 |
| 138.150 | 19.92 | 19.92 | 0.003 | 19.92 | -0.004 | 1.0 |
| 133.150 | 20.11 | 20.11 | 0.022 | 20.11 | 0.013 | 1.0 |
| 128.150 | 20.29 | 20.30 | 0.024 | 20.29 | 0.014 | 1.0 |
| 123.150 | 20.48 | 20.48 | 0.025 | 20.48 | 0.016 | 1.0 |
| 118.150 | 20.66 | 20.67 | 0.015 | 20.66 | 0.008 | 1.0 |
| 113.150 | 20.85 | 20.85 | 0.008 | 20.85 | 0.006 | 1.0 |
| 108.150 | 21.03 | 21.03 | 0.006 | 21.03 | 0.009 | 1.0 |
| 103.150 | 21.21 | 21.21 | 0.004 | 21.21 | 0.011 | 1.0 |
| 98.150 | 21.39 | 21.39 | 0.005 | 21.39 | 0.014 | 1.0 |
| 93.150 | 21.57 | 21.57 | -0.003 | 21.57 | -0.001 | 1.0 |

Number of Points [24] 17

AAD% = 0.020  BIAS% = -0.007  RMS% = 0.023
AAD2% = 0.017  BIAS2% = -0.006  RMS2% = 0.018

Absolute Deviations:
AAD = 0.00  BIAS = 0.00  RMS = 0.00 $mol \cdot dm^{-3}$
AAD2 = 0.00  BIAS2 = 0.00  RMS2 = 0.00 $mol \cdot dm^{-3}$

Weighted Data:

Number of Points [24] 17

AAD% = 0.020  BIAS% = -0.007  RMS% = 0.023
AAD2% = 0.017  BIAS2% = -0.006  RMS2% = 0.018

Absolute Deviations:
AAD = 0.00  BIAS = 0.00  RMS = 0.00 $mol \cdot dm^{-3}$
AAD2 = 0.00  BIAS2 = 0.00  RMS2 = 0.00 $mol \cdot dm^{-3}$

Table 2. **SATURATED LIQUID DENSITIES** (continued)

**Data from Miniovich and Sorina [12]**

| T K | $\rho_{\sigma L}$, expt $mol \cdot dm^{-3}$ | $\rho_{\sigma L}$, anc. $mol \cdot dm^{-3}$ | dev1 % | $\rho_{\sigma L}$, SWEOS $mol \cdot dm^{-3}$ | dev2 % | wt |
|---|---|---|---|---|---|---|
| 305.262 | 7.62 | 7.54 | −1.074 | 7.59 | −0.430 | 0.0 |
| 305.025 | 8.05 | 8.02 | −0.446 | 8.08 | 0.356 | 0.0 |
| 304.568 | 8.49 | 8.46 | −0.314 | 8.51 | 0.227 | 0.0 |
| 303.880 | 8.89 | 8.88 | −0.184 | 8.90 | 0.046 | 0.0 |
| 302.983 | 9.27 | 9.26 | −0.112 | 9.26 | −0.110 | 0.0 |

Number of Points [12] 5

AAD% = 0.426 BIAS% = −0.426 RMS% = 0.343
AAD2% = 0.234 BIAS2% = 0.018 RMS2% = 0.274

Absolute Deviations:
AAD = 0.03 BIAS = −0.03 RMS = 0.03 $mol \cdot dm^{-3}$
AAD2 = 0.02 BIAS2 = 0.00 RMS2 = 0.02 $mol \cdot dm^{-3}$

**Data from Orrit et al. [25]**

| T K | $\rho_{\sigma L}$, expt $mol \cdot dm^{-3}$ | $\rho_{\sigma L}$, anc. $mol \cdot dm^{-3}$ | dev1 % | $\rho_{\sigma L}$, SWEOS $mol \cdot dm^{-3}$ | dev2 % | wt |
|---|---|---|---|---|---|---|
| 228.361 | 16.07 | 16.08 | 0.074 | 16.08 | 0.070 | 0.0 |
| 222.937 | 16.35 | 16.35 | 0.035 | 16.35 | 0.032 | 0.0 |
| 203.192 | 17.27 | 17.28 | 0.034 | 17.28 | 0.043 | 0.0 |
| 194.567 | 17.65 | 17.66 | 0.049 | 17.66 | 0.063 | 0.0 |
| 187.951 | 17.94 | 17.94 | 0.044 | 17.95 | 0.060 | 0.0 |
| 182.416 | 18.16 | 18.18 | 0.067 | 18.18 | 0.084 | 0.0 |
| 176.870 | 18.40 | 18.41 | 0.039 | 18.41 | 0.055 | 0.0 |
| 165.650 | 18.85 | 18.86 | 0.063 | 18.86 | 0.075 | 0.0 |
| 154.664 | 19.28 | 19.29 | 0.050 | 19.29 | 0.054 | 0.0 |
| 149.049 | 19.50 | 19.51 | 0.060 | 19.51 | 0.060 | 0.0 |
| 143.718 | 19.70 | 19.71 | 0.069 | 19.71 | 0.065 | 0.0 |
| 138.355 | 19.90 | 19.91 | 0.080 | 19.91 | 0.073 | 0.0 |
| 130.318 | 20.20 | 20.22 | 0.051 | 20.21 | 0.041 | 0.0 |
| 124.997 | 20.40 | 20.41 | 0.063 | 20.41 | 0.053 | 0.0 |
| 119.623 | 20.60 | 20.61 | 0.058 | 20.61 | 0.050 | 0.0 |
| 114.221 | 20.80 | 20.81 | 0.066 | 20.81 | 0.062 | 0.0 |
| 108.932 | 20.99 | 21.00 | 0.048 | 21.00 | 0.049 | 0.0 |
| 103.710 | 21.18 | 21.19 | 0.022 | 21.19 | 0.029 | 0.0 |
| 218.526 | 16.56 | 16.57 | 0.058 | 16.57 | 0.057 | 0.0 |
| 207.229 | 17.08 | 17.10 | 0.131 | 17.10 | 0.138 | 0.0 |

Table 2. **SATURATED LIQUID DENSITIES** (continued)

Data from Orrit et al. [25] (continued)

| T<br>K | $\rho_{\sigma L}$, expt<br>mol•dm$^{-3}$ | $\rho_{\sigma L}$, anc.<br>mol•dm$^{-3}$ | dev1<br>% | $\rho_{\sigma L}$, SWEOS<br>mol•dm$^{-3}$ | dev2<br>% | wt |
|---|---|---|---|---|---|---|
| 199.012 | 17.46 | 17.47 | 0.060 | 17.47 | 0.072 | 0.0 |
| 190.724 | 17.82 | 17.83 | 0.039 | 17.83 | 0.054 | 0.0 |
| 185.157 | 18.06 | 18.06 | 0.015 | 18.06 | 0.031 | 0.0 |
| 179.604 | 18.28 | 18.29 | 0.053 | 18.30 | 0.070 | 0.0 |
| 174.114 | 18.51 | 18.52 | 0.046 | 18.52 | 0.061 | 0.0 |
| 168.639 | 18.73 | 18.74 | 0.045 | 18.74 | 0.059 | 0.0 |
| 162.861 | 18.96 | 18.97 | 0.060 | 18.97 | 0.070 | 0.0 |
| 157.490 | 19.18 | 19.18 | 0.013 | 19.18 | 0.020 | 0.0 |
| 151.915 | 19.39 | 19.40 | 0.052 | 19.40 | 0.055 | 0.0 |
| 140.648 | 19.81 | 19.83 | 0.071 | 19.83 | 0.066 | 0.0 |
| 127.679 | 20.30 | 20.31 | 0.056 | 20.31 | 0.046 | 0.0 |
| 117.003 | 20.70 | 20.71 | 0.034 | 20.71 | 0.028 | 0.0 |
| 106.165 | 21.09 | 21.10 | 0.043 | 21.10 | 0.048 | 0.0 |
| 232.107 | 15.90 | 15.89 | −0.089 | 15.89 | −0.094 | 1.0 |
| 225.698 | 16.22 | 16.22 | −0.016 | 16.22 | −0.020 | 1.0 |
| 212.621 | 16.84 | 16.85 | 0.081 | 16.85 | 0.084 | 1.0 |
| 203.191 | 17.27 | 17.28 | 0.034 | 17.28 | 0.043 | 1.0 |
| 190.723 | 17.82 | 17.83 | 0.039 | 17.83 | 0.055 | 1.0 |
| 182.415 | 18.16 | 18.18 | 0.062 | 18.18 | 0.079 | 1.0 |
| 171.338 | 18.62 | 18.63 | 0.048 | 18.63 | 0.062 | 1.0 |
| 160.100 | 19.07 | 19.08 | 0.043 | 19.08 | 0.052 | 1.0 |
| 146.454 | 19.59 | 19.61 | 0.077 | 19.61 | 0.076 | 1.0 |
| 132.767 | 20.11 | 20.12 | 0.049 | 20.12 | 0.039 | 1.0 |
| 122.296 | 20.50 | 20.51 | 0.071 | 20.51 | 0.062 | 1.0 |
| 111.491 | 20.90 | 20.91 | 0.053 | 20.91 | 0.052 | 1.0 |
| 102.578 | 21.23 | 21.23 | 0.002 | 21.23 | 0.009 | 1.0 |

Number of Points [25] 46

AAD% = 0.052 BIAS% = 0.048 RMS% = 0.031
AAD2% = 0.057 BIAS2% = 0.052 RMS2% = 0.032

Absolute Deviations:
AAD = 0.01 BIAS = 0.01 RMS = 0.01 mol•dm$^{-3}$
AAD2 = 0.01 BIAS2 = 0.01 RMS2 = 0.01 mol•dm$^{-3}$

Table 2. **SATURATED LIQUID DENSITIES** (continued)

**Data from Orrit et al. [25]** (continued)

Weighted Data:

Number of Points [25] 13

| | | |
|---|---|---|
| AAD% = 0.051 | BIAS% = 0.035 | RMS% = 0.044 |
| AAD2% = 0.056 | BIAS2% = 0.038 | RMS2% = 0.047 |

Absolute Deviations:

| | | |
|---|---|---|
| AAD = 0.01 | BIAS = 0.01 | RMS = 0.01 $mol \cdot dm^{-3}$ |
| AAD2 = 0.01 | BIAS2 = 0.01 | RMS2 = 0.01 $mol \cdot dm^{-3}$ |

**Data from Pal et al. [13]**

| T K | $\rho_{\sigma L}$, expt $mol \cdot dm^{-3}$ | $\rho_{\sigma L}$, anc. $mol \cdot dm^{-3}$ | dev1 % | $\rho_{\sigma L}$, SWEOS $mol \cdot dm^{-3}$ | dev2 % | wt |
|---|---|---|---|---|---|---|
| 304.038 | 8.81 | 8.80 | −0.172 | 8.82 | 0.116 | 0.0 |
| 301.727 | 9.69 | 9.67 | −0.228 | 9.65 | −0.366 | 0.0 |
| 292.736 | 11.38 | 11.33 | −0.371 | 11.34 | −0.304 | 0.0 |
| 277.858 | 12.99 | 12.91 | −0.575 | 12.93 | −0.434 | 0.0 |
| 268.412 | 13.71 | 13.67 | −0.324 | 13.68 | −0.238 | 0.0 |
| 256.493 | 14.55 | 14.49 | −0.435 | 14.49 | −0.403 | 0.0 |
| 248.479 | 15.05 | 14.98 | −0.435 | 14.98 | −0.425 | 0.0 |
| 241.202 | 15.45 | 15.40 | −0.343 | 15.40 | −0.343 | 0.0 |
| 230.486 | 16.03 | 15.97 | −0.368 | 15.97 | −0.373 | 0.0 |
| 223.500 | 16.42 | 16.33 | −0.579 | 16.33 | −0.582 | 0.0 |
| 215.775 | 16.75 | 16.70 | −0.304 | 16.70 | −0.303 | 0.0 |

Number of Points [13] 11

| | | |
|---|---|---|
| AAD% = 0.376 | BIAS% = −0.376 | RMS% = 0.121 |
| AAD2% = 0.353 | BIAS2% = −0.332 | RMS2% = 0.166 |

Absolute Deviations:

| | | |
|---|---|---|
| AAD = 0.05 | BIAS = −0.05 | RMS = 0.02 $mol \cdot dm^{-3}$ |
| AAD2 = 0.05 | BIAS2 = −0.05 | RMS2 = 0.02 $mol \cdot dm^{-3}$ |

Table 2. SATURATED LIQUID DENSITIES (continued)

Data from Pestak et al. [26]

| T<br>K | $\rho_{\sigma L}$, expt<br>mol•dm$^{-3}$ | $\rho_{\sigma L}$, anc.<br>mol•dm$^{-3}$ | dev1<br>% | $\rho_{\sigma L}$, SWEOS<br>mol•dm$^{-3}$ | dev2<br>% | wt |
|---|---|---|---|---|---|---|
| 305.173 | 7.65 | 7.77 | 1.639 | 7.84 | 2.469 | 0.0 |
| 305.166 | 7.67 | 7.79 | 1.598 | 7.85 | 2.443 | 0.0 |
| 305.149 | 7.70 | 7.82 | 1.557 | 7.89 | 2.426 | 0.0 |
| 305.134 | 7.74 | 7.85 | 1.365 | 7.91 | 2.194 | 0.0 |
| 305.117 | 7.77 | 7.88 | 1.389 | 7.94 | 2.249 | 0.0 |
| 305.102 | 7.81 | 7.90 | 1.210 | 7.97 | 2.067 | 0.0 |
| 305.084 | 7.84 | 7.93 | 1.131 | 8.00 | 1.983 | 0.0 |
| 305.053 | 7.90 | 7.98 | 0.990 | 8.04 | 1.836 | 0.0 |
| 305.021 | 7.95 | 8.02 | 0.908 | 8.09 | 1.739 | 0.0 |
| 304.987 | 8.00 | 8.07 | 0.838 | 8.13 | 1.630 | 0.0 |
| 304.964 | 8.02 | 8.09 | 0.879 | 8.16 | 1.670 | 0.0 |
| 304.932 | 8.08 | 8.13 | 0.660 | 8.19 | 1.424 | 0.0 |
| 304.900 | 8.11 | 8.17 | 0.708 | 8.23 | 1.453 | 0.0 |
| 304.868 | 8.15 | 8.20 | 0.646 | 8.26 | 1.369 | 0.0 |
| 304.836 | 8.17 | 8.23 | 0.714 | 8.29 | 1.421 | 0.0 |
| 304.805 | 8.21 | 8.26 | 0.603 | 8.32 | 1.290 | 0.0 |
| 304.757 | 8.25 | 8.31 | 0.666 | 8.36 | 1.329 | 0.0 |
| 304.709 | 8.30 | 8.35 | 0.540 | 8.40 | 1.172 | 0.0 |
| 304.662 | 8.34 | 8.39 | 0.575 | 8.44 | 1.174 | 0.0 |
| 304.457 | 8.50 | 8.54 | 0.487 | 8.58 | 0.970 | 0.0 |
| 304.379 | 8.56 | 8.59 | 0.435 | 8.63 | 0.878 | 0.0 |
| 304.301 | 8.61 | 8.64 | 0.328 | 8.68 | 0.732 | 0.0 |
| 304.146 | 8.70 | 8.74 | 0.413 | 8.76 | 0.747 | 0.0 |
| 303.988 | 8.79 | 8.82 | 0.303 | 8.85 | 0.573 | 0.0 |
| 303.838 | 8.87 | 8.90 | 0.365 | 8.92 | 0.583 | 0.0 |
| 303.686 | 8.94 | 8.97 | 0.352 | 8.99 | 0.520 | 0.0 |
| 303.533 | 9.01 | 9.04 | 0.295 | 9.05 | 0.420 | 0.0 |
| 303.383 | 9.08 | 9.10 | 0.215 | 9.11 | 0.301 | 0.0 |
| 303.234 | 9.14 | 9.16 | 0.296 | 9.17 | 0.348 | 0.0 |
| 302.865 | 9.29 | 9.30 | 0.144 | 9.30 | 0.126 | 0.0 |
| 302.503 | 9.41 | 9.43 | 0.215 | 9.42 | 0.145 | 0.0 |
| 302.143 | 9.53 | 9.54 | 0.175 | 9.53 | 0.067 | 0.0 |
| 301.722 | 9.65 | 9.67 | 0.192 | 9.65 | 0.052 | 0.0 |
| 301.310 | 9.77 | 9.78 | 0.082 | 9.77 | −0.077 | 0.0 |
| 300.770 | 9.91 | 9.92 | 0.144 | 9.90 | −0.028 | 0.0 |

Table 2. **SATURATED LIQUID DENSITIES** (continued)

**Data from Pestak et al. [26]** (continued)

| T<br>K | $\rho_{\sigma L}$, expt<br>mol•dm$^{-3}$ | $\rho_{\sigma L}$, anc.<br>mol•dm$^{-3}$ | dev1<br>% | $\rho_{\sigma L}$, SWEOS<br>mol•dm$^{-3}$ | dev2<br>% | wt |
|---|---|---|---|---|---|---|
| 300.238 | 10.05 | 10.05 | 0.010 | 10.03 | -0.163 | 0.0 |
| 299.722 | 10.15 | 10.16 | 0.155 | 10.15 | -0.012 | 0.0 |
| 299.219 | 10.27 | 10.27 | 0.035 | 10.25 | -0.121 | 0.0 |
| 298.730 | 10.36 | 10.37 | 0.073 | 10.35 | -0.070 | 0.0 |

Number of Points [26] 39

AAD% = 0.598 BIAS% = 0.598 RMS% = 0.461
AAD2% = 1.033 BIAS2% = 1.008 RMS2% = 0.827

Absolute Deviations:
AAD = 0.05 BIAS = 0.05 RMS = 0.03 mol•dm$^{-3}$
AAD2 = 0.08 BIAS2 = 0.08 RMS2 = 0.06 mol•dm$^{-3}$

**Data from Rodosevich and Miller [27]**

| T<br>K | $\rho_{\sigma L}$, expt<br>mol•dm$^{-3}$ | $\rho_{\sigma L}$, anc.<br>mol•dm$^{-3}$ | dev1<br>% | $\rho_{\sigma L}$, SWEOS<br>mol•dm$^{-3}$ | dev2<br>% | wt |
|---|---|---|---|---|---|---|
| 115.050 | 20.77 | 20.78 | 0.031 | 20.78 | 0.027 | 1.0 |
| 108.110 | 21.02 | 21.03 | 0.027 | 21.03 | 0.030 | 1.0 |
| 100.020 | 21.31 | 21.32 | 0.043 | 21.32 | 0.052 | 1.0 |
| 91.010 | 21.64 | 21.64 | 0.020 | 21.64 | 0.013 | 1.0 |

Number of Points [27] 4

AAD% = 0.030 BIAS% = 0.030 RMS% = 0.008
AAD2% = 0.030 BIAS2% = 0.030 RMS2% = 0.014

Absolute Deviations:
AAD = 0.01 BIAS = 0.01 RMS = 0.00 mol•dm$^{-3}$
AAD2 = 0.01 BIAS2 = 0.01 RMS2 = 0.00 mol•dm$^{-3}$

Data from Rodosevich and Miller [27] (continued)

Weighted Data:

Number of Points [27] 4

AAD% = 0.030 BIAS% = 0.030 RMS% = 0.008
AAD2% = 0.030 BIAS2% = 0.030 RMS2% = 0.014

Absolute Deviations:
AAD = 0.01 BIAS = 0.01 RMS = 0.00 $mol \cdot dm^{-3}$
AAD2 = 0.01 BIAS2 = 0.01 RMS2 = 0.00 $mol \cdot dm^{-3}$

Data from Sliwinski [28]

| T K | $\rho_{\sigma L}$, expt $mol \cdot dm^{-3}$ | $\rho_{\sigma L}$, anc. $mol \cdot dm^{-3}$ | dev1 % | $\rho_{\sigma L}$, SWEOS $mol \cdot dm^{-3}$ | dev2 % | wt |
|---|---|---|---|---|---|---|
| 305.150 | 7.83 | 7.82 | −0.103 | 7.89 | 0.750 | 0.0 |
| 304.650 | 8.40 | 8.40 | 0.006 | 8.45 | 0.599 | 0.0 |
| 304.150 | 8.73 | 8.73 | 0.016 | 8.76 | 0.352 | 0.0 |
| 303.160 | 9.19 | 9.19 | 0.037 | 9.20 | 0.072 | 0.0 |
| 302.160 | 9.53 | 9.54 | 0.045 | 9.53 | −0.061 | 0.0 |
| 300.660 | 9.94 | 9.95 | 0.102 | 9.93 | −0.071 | 0.0 |
| 298.170 | 10.47 | 10.48 | 0.044 | 10.46 | −0.079 | 1.0 |
| 295.670 | 10.90 | 10.91 | 0.066 | 10.90 | 0.039 | 0.0 |
| 293.180 | 11.27 | 11.27 | 0.028 | 11.28 | 0.083 | 1.0 |
| 288.190 | 11.89 | 11.89 | −0.002 | 11.91 | 0.143 | 1.0 |
| 283.200 | 12.42 | 12.42 | −0.024 | 12.44 | 0.138 | 1.0 |

Number of Points [28] 11

AAD% = 0.043 BIAS% = 0.019 RMS% = 0.051
AAD2% = 0.217 BIAS2% = 0.179 RMS2% = 0.263

Absolute Deviations:
AAD = 0.00 BIAS = 0.00 RMS = 0.00 $mol \cdot dm^{-3}$
AAD2 = 0.02 BIAS2 = 0.02 RMS2 = 0.02 $mol \cdot dm^{-3}$

**Data from Sliwinski [28]** (continued)

Weighted Data:

Number of Points [28] 4

| | | |
|---|---|---|
| AAD% = 0.024 | BIAS% = 0.011 | RMS% = 0.026 |
| AAD2% = 0.111 | BIAS2% = 0.071 | RMS2% = 0.090 |

Absolute Deviations:

| | | |
|---|---|---|
| AAD = 0.00 | BIAS = 0.00 | RMS = 0.00 $mol \cdot dm^{-3}$ |
| AAD2 = 0.01 | BIAS2 = 0.01 | RMS2 = 0.01 $mol \cdot dm^{-3}$ |

**Data from Tomlinson [29]**

| T<br>K | $\rho_{\sigma L}$, expt<br>$mol \cdot dm^{-3}$ | $\rho_{\sigma L}$, anc.<br>$mol \cdot dm^{-3}$ | dev1<br>% | $\rho_{\sigma L}$, SWEOS<br>$mol \cdot dm^{-3}$ | dev2<br>% | wt |
|---|---|---|---|---|---|---|
| 302.160 | 9.58 | 9.54 | −0.416 | 9.53 | −0.522 | 0.0 |
| 300.660 | 9.98 | 9.95 | −0.332 | 9.93 | −0.503 | 0.0 |
| 298.170 | 10.50 | 10.48 | −0.242 | 10.46 | −0.365 | 0.0 |
| 295.670 | 10.93 | 10.91 | −0.172 | 10.90 | −0.199 | 0.0 |
| 293.180 | 11.29 | 11.27 | −0.150 | 11.28 | −0.094 | 0.0 |
| 288.190 | 11.91 | 11.89 | −0.119 | 11.91 | 0.026 | 0.0 |
| 283.200 | 12.43 | 12.42 | −0.112 | 12.44 | 0.049 | 0.0 |

Number of Points [29] 7

| | | |
|---|---|---|
| AAD% = 0.220 | BIAS% = −0.220 | RMS% = 0.107 |
| AAD2% = 0.251 | BIAS2% = −0.230 | RMS2% = 0.221 |

Absolute Deviations:

| | | |
|---|---|---|
| AAD = 0.02 | BIAS = −0.02 | RMS = 0.01 $mol \cdot dm^{-3}$ |
| AAD2 = 0.03 | BIAS2 = −0.02 | RMS2 = 0.02 $mol \cdot dm^{-3}$ |

**Data from ancillary equation [1]**

| T<br>K | $\rho_{\sigma L}$, expt<br>$mol \cdot dm^{-3}$ | $\rho_{\sigma L}$, anc.<br>$mol \cdot dm^{-3}$ | dev1<br>% | $\rho_{\sigma L}$, SWEOS<br>$mol \cdot dm^{-3}$ | dev2<br>% | wt* |
|---|---|---|---|---|---|---|
| 91.000 | | 21.644 | | 21.642 | −0.007 | 2.55 |
| 96.000 | | 21.466 | | 21.467 | 0.007 | 2.55 |
| 101.000 | | 21.287 | | 21.289 | 0.009 | 2.55 |
| 106.000 | | 21.107 | | 21.108 | 0.005 | 2.55 |
| 111.000 | | 20.926 | | 20.926 | 0.000 | 2.55 |

Table 2. **SATURATED LIQUID DENSITIES** (continued)

Data from ancillary equation [1] (continued)

| T K | $\rho_{\sigma L}$, expt $mol \cdot dm^{-3}$ | $\rho_{\sigma L}$, anc. $mol \cdot dm^{-3}$ | dev1 % | $\rho_{\sigma L}$, SWEOS $mol \cdot dm^{-3}$ | dev2 % | wt* |
|---|---|---|---|---|---|---|
| 116.000 | | 20.744 | | 20.743 | −0.005 | 2.55 |
| 121.000 | | 20.560 | | 20.559 | −0.008 | 2.55 |
| 126.000 | | 20.376 | | 20.374 | −0.010 | 2.55 |
| 131.000 | | 20.190 | | 20.188 | −0.010 | 2.55 |
| 136.000 | | 20.003 | | 20.001 | −0.008 | 2.55 |
| 141.000 | | 19.814 | | 19.813 | −0.005 | 2.55 |
| 146.000 | | 19.623 | | 19.623 | −0.002 | 2.55 |
| 151.000 | | 19.431 | | 19.432 | 0.002 | 2.55 |
| 156.000 | | 19.238 | | 19.239 | 0.005 | 2.55 |
| 161.000 | | 19.042 | | 19.044 | 0.009 | 2.55 |
| 166.000 | | 18.844 | | 18.846 | 0.012 | 2.55 |
| 171.000 | | 18.644 | | 18.646 | 0.014 | 2.55 |
| 176.000 | | 18.441 | | 18.444 | 0.016 | 2.55 |
| 181.000 | | 18.235 | | 18.238 | 0.017 | 2.55 |
| 186.000 | | 18.026 | | 18.029 | 0.016 | 2.55 |
| 191.000 | | 17.814 | | 17.817 | 0.015 | 2.55 |
| 196.000 | | 17.598 | | 17.601 | 0.013 | 2.55 |
| 201.000 | | 17.379 | | 17.380 | 0.011 | 2.55 |
| 206.000 | | 17.154 | | 17.156 | 0.007 | 2.55 |
| 211.000 | | 16.925 | | 16.926 | 0.004 | 2.55 |
| 216.000 | | 16.690 | | 16.691 | 0.001 | 2.55 |
| 221.000 | | 16.450 | | 16.449 | −0.002 | 2.55 |
| 226.000 | | 16.202 | | 16.202 | −0.004 | 2.55 |
| 231.000 | | 15.947 | | 15.947 | −0.005 | 2.55 |
| 236.000 | | 15.684 | | 15.683 | −0.004 | 2.55 |
| 241.000 | | 15.411 | | 15.411 | −0.001 | 2.55 |
| 246.000 | | 15.128 | | 15.129 | 0.006 | 2.55 |
| 251.000 | | 14.832 | | 14.834 | 0.016 | 2.55 |
| 256.000 | | 14.521 | | 14.526 | 0.030 | 2.55 |
| 261.000 | | 14.194 | | 14.201 | 0.049 | 2.55 |
| 266.000 | | 13.847 | | 13.857 | 0.073 | 2.55 |
| 271.000 | | 13.475 | | 13.488 | 0.101 | 2.55 |
| 276.000 | | 13.072 | | 13.090 | 0.132 | 2.55 |
| 281.000 | | 12.630 | | 12.650 | 0.156 | 2.55 |
| 286.000 | | 12.135 | | 12.154 | 0.159 | 2.55 |

Table 2. **SATURATED LIQUID DENSITIES** (continued)

**Data from ancillary equation [1]** (continued)

| T<br>K | $\rho_{\sigma L}$, expt<br>mol•dm$^{-3}$ | $\rho_{\sigma L}$, anc.<br>mol•dm$^{-3}$ | dev1<br>% | $\rho_{\sigma L}$, SWEOS<br>mol•dm$^{-3}$ | dev2<br>% | wt* |
|---|---|---|---|---|---|---|
| 291.000 | | 11.560 | | 11.572 | 0.107 | 2.55 |
| 296.000 | | 10.854 | | 10.849 | −0.040 | 12.70 |
| 301.000 | | 9.862 | | 9.846 | −0.167 | 12.70 |

Number of Points from ancillary equation. 43
*These weights refer to development of the SWEOS.
These data are not included in the overall statistics below.

AAD2% = 0.030 BIAS2% = 0.017 RMS2% = 0.052

Absolute Deviations:
AAD2 = 0.004 BIAS2 = 0.002 RMS2 = 0.006 mol•dm$^{-3}$

| | | | | |
|---|---|---|---|---|
| Overall Results: | N = 206 | AAD% = 0.213 | BIAS% = 0.057 | RMS% = 0.378 |
| | | AAD2% = 0.305 | BIAS2% = 0.171 | RMS2% = 0.578 |
| | | AAD = 0.02 | BIAS = 0.00 | RMS = 0.04 mol•dm$^{-3}$ |
| | | AAD2 = 0.03 | BIAS2 = 0.01 | RMS2 = 0.05 mol•dm$^{-3}$ |
| Weighted Data: | N = 66 | AAD% = 0.030 | BIAS% = −0.001 | RMS% = 0.037 |
| | | AAD2% = 0.042 | BIAS2% = 0.010 | RMS2% = 0.061 |
| | | AAD = 0.01 | BIAS = 0.00 | RMS = 0.01 mol•dm$^{-3}$ |
| | | AAD2 = 0.01 | BIAS2 = 0.00 | RMS2 = 0.01 mol•dm$^{-3}$ |

Table 3. SATURATED VAPOR DENSITIES

Data from Douslin and Harrison [9]

| T<br>K | $\rho_{\sigma V}$, expt<br>$mol \cdot dm^{-3}$ | $\rho_{\sigma V}$, anc.<br>$mol \cdot dm^{-3}$ | dev1<br>% | $\rho_{\sigma V}$, SWEOS<br>$mol \cdot dm^{-3}$ | dev2<br>% | wt |
|---|---|---|---|---|---|---|
| 248.150 | 0.745 | 0.745 | −0.053 | 0.745 | 0.050 | 1.0 |
| 253.150 | 0.863 | 0.863 | 0.015 | 0.864 | 0.108 | 1.0 |
| 263.150 | 1.153 | 1.153 | 0.026 | 1.154 | 0.115 | 1.0 |
| 273.150 | 1.537 | 1.537 | 0.009 | 1.539 | 0.129 | 1.0 |
| 283.150 | 2.067 | 2.066 | −0.047 | 2.070 | 0.130 | 1.0 |
| 293.150 | 2.880 | 2.868 | −0.418 | 2.873 | −0.248 | 0.0 |
| 298.150 | 3.502 | 3.495 | −0.188 | 3.496 | −0.181 | 0.0 |
| 302.150 | 4.307 | 4.302 | −0.112 | 4.284 | −0.523 | 0.0 |
| 303.150 | 4.604 | 4.614 | 0.214 | 4.586 | −0.393 | 1.0 |
| 304.150 | 5.035 | 5.046 | 0.219 | 5.003 | −0.636 | 1.0 |
| 305.150 | 5.913 | 5.928 | 0.248 | 5.878 | −0.584 | 0.0 |
| 305.250 | 6.150 | 6.162 | 0.203 | 6.122 | −0.455 | 0.0 |

Number of Points [9] 12

AAD% = 0.146 BIAS% = 0.010 RMS% = 0.188
AAD2% = 0.296 BIAS2% = −0.207 RMS2% = 0.291

Absolute Deviations:
AAD = 0.006 BIAS = 0.002 RMS = 0.008 $mol \cdot dm^{-3}$
AAD2 = 0.013 BIAS2 = −0.012 RMS2 = 0.014 $mol \cdot dm^{-3}$

Weighted Data:

Number of Points [9] 7

AAD% = 0.084 BIAS% = 0.055 RMS% = 0.106
AAD2% = 0.223 BIAS2% = −0.071 RMS2% = 0.289

Absolute Deviations:
AAD = 0.003 BIAS = 0.003 RMS = 0.005 $mol \cdot dm^{-3}$
AAD2 = 0.008 BIAS2 = −0.006 RMS2 = 0.013 $mol \cdot dm^{-3}$

Table 3. **SATURATED VAPOR DENSITIES** (continued)

**Data from Goodwin et al. [20]**
Using virial equation of state and fitted saturation pressures.

| T K | $\rho_{\sigma V}$, expt $mol \cdot dm^{-3}$ | $\rho_{\sigma V}$, anc. $mol \cdot dm^{-3}$ | dev1 % | $\rho_{\sigma V}$, SWEOS $mol \cdot dm^{-3}$ | dev2 % | wt |
|---|---|---|---|---|---|---|
| 90.348* | 0.150E-05 | 0.150E-05 | -0.117 | 0.150E-05 | -0.046 | 0.0 |
| 100.000 | 0.133E-04 | 0.133E-04 | -0.034 | 0.133E-04 | -0.072 | 0.0 |
| 110.000 | 0.817E-04 | 0.817E-04 | 0.000 | 0.816E-04 | -0.023 | 1.0 |
| 120.000 | 0.356E-03 | 0.356E-03 | 0.004 | 0.355E-03 | -0.038 | 1.0 |
| 130.000 | 0.120E-02 | 0.120E-02 | 0.001 | 0.120E-02 | -0.103 | 1.0 |
| 140.000 | 0.330E-02 | 0.330E-02 | -0.011 | 0.330E-02 | -0.191 | 1.0 |
| 150.000 | 0.780E-02 | 0.780E-02 | -0.020 | 0.779E-02 | -0.250 | 1.0 |
| 160.000 | 0.163E-01 | 0.163E-01 | -0.007 | 0.163E-01 | -0.239 | 1.0 |
| 170.000 | 0.309E-01 | 0.309E-01 | -0.005 | 0.308E-01 | -0.192 | 1.0 |
| 180.000 | 0.541E-01 | 0.541E-01 | -0.012 | 0.541E-01 | -0.120 | 1.0 |
| 190.000 | 0.889E-01 | 0.889E-01 | -0.018 | 0.889E-01 | -0.035 | 1.0 |
| 200.000 | 0.139 | 0.139 | -0.016 | 0.139 | 0.050 | 1.0 |
| 210.000 | 0.208 | 0.208 | 0.007 | 0.208 | 0.131 | 1.0 |
| 220.000 | 0.300 | 0.300 | 0.053 | 0.301 | 0.204 | 1.0 |
| 230.000 | 0.422 | 0.422 | 0.119 | 0.423 | 0.267 | 1.0 |
| 240.000 | 0.580 | 0.581 | 0.162 | 0.582 | 0.288 | 1.0 |
| 250.000 | 0.787 | 0.787 | -0.008 | 0.787 | 0.091 | 1.0 |
| 260.000 | 1.055 | 1.053 | -0.116 | 1.054 | -0.029 | 1.0 |
| 270.000 | 1.406 | 1.404 | -0.166 | 1.405 | -0.060 | 1.0 |
| 280.000 | 1.881 | 1.879 | -0.116 | 1.882 | 0.042 | 1.0 |

*This point is below the currently accepted triple point temperature.
Number of Points [20] 20

AAD% = 0.050 BIAS% = -0.015 RMS% = 0.074
AAD2% = 0.124 BIAS2% = -0.016 RMS2% = 0.151

Absolute Deviations:
AAD = 0.000 BIAS = 0.000 RMS = 0.001 $mol \cdot dm^{-3}$
AAD2 = 0.000 BIAS2 = 0.000 RMS2 = 0.001 $mol \cdot dm^{-3}$

**Data from Goodwin et al. [20] (continued)**

Weighted Data:

Number of Points [20] 18

| | | |
|---|---|---|
| AAD% = 0.047 | BIAS% = −0.008 | RMS% = 0.074 |
| AAD2% = 0.131 | BIAS2% = −0.011 | RMS2% = 0.158 |

Absolute Deviations:

| | | |
|---|---|---|
| AAD = 0.000 | BIAS = 0.000 | RMS = 0.001 $mol \cdot dm^{-3}$ |
| AAD2 = 0.000 | BIAS2 = 0.000 | RMS2 = 0.001 $mol \cdot dm^{-3}$ |

**Data from Miniovich and Sorina [12]**

| T<br>K | $\rho_{\sigma v}$, expt<br>$mol \cdot dm^{-3}$ | $\rho_{\sigma v}$, anc.<br>$mol \cdot dm^{-3}$ | dev1<br>% | $\rho_{\sigma v}$, SWEOS<br>$mol \cdot dm^{-3}$ | dev2<br>% | wt |
|---|---|---|---|---|---|---|
| 305.325 | 6.317 | 6.605 | 4.565 | 6.456 | 2.208 | 0.0 |
| 305.260 | 6.059 | 6.195 | 2.255 | 6.161 | 1.688 | 0.0 |
| 305.035 | 5.653 | 5.748 | 1.691 | 5.692 | 0.703 | 0.0 |
| 304.633 | 5.277 | 5.352 | 1.423 | 5.300 | 0.435 | 0.0 |
| 303.937 | 4.873 | 4.938 | 1.319 | 4.898 | 0.512 | 0.0 |
| 302.872 | 4.455 | 4.519 | 1.436 | 4.494 | 0.883 | 0.0 |

Number of Points [12] 6

| | | |
|---|---|---|
| AAD% = 2.115 | BIAS% = 2.115 | RMS% = 1.138 |
| AAD2% = 1.071 | BIAS2% = 1.071 | RMS2% = 0.653 |

Absolute Deviations:

| | | |
|---|---|---|
| AAD = 0.121 | BIAS = 0.121 | RMS = 0.079 $mol \cdot dm^{-3}$ |
| AAD2 = 0.061 | BIAS2 = 0.061 | RMS2 = 0.044 $mol \cdot dm^{-3}$ |

**Data from Pestak et al. [26]**

| T<br>K | $\rho_{\sigma v}$, expt<br>$mol \cdot dm^{-3}$ | $\rho_{\sigma v}$, anc.<br>$mol \cdot dm^{-3}$ | dev1<br>% | $\rho_{\sigma v}$, SWEOS<br>$mol \cdot dm^{-3}$ | dev2<br>% | wt |
|---|---|---|---|---|---|---|
| 298.730 | 3.593 | 3.588 | −0.141 | 3.587 | −0.172 | 0.0 |
| 299.219 | 3.677 | 3.670 | −0.187 | 3.668 | −0.253 | 0.0 |
| 299.722 | 3.765 | 3.761 | −0.121 | 3.756 | −0.229 | 0.0 |
| 300.238 | 3.867 | 3.859 | −0.196 | 3.853 | −0.354 | 0.0 |
| 300.770 | 3.966 | 3.969 | 0.080 | 3.960 | −0.135 | 0.0 |

Table 3. SATURATED VAPOR DENSITIES (continued)

Data from Pestak et al. [26] (continued)

| T K | $\rho_{\sigma v}$, expt mol•dm$^{-3}$ | $\rho_{\sigma v}$, anc. mol•dm$^{-3}$ | dev1 % | $\rho_{\sigma v}$, SWEOS mol•dm$^{-3}$ | dev2 % | wt |
|---|---|---|---|---|---|---|
| 301.310 | 4.095 | 4.089 | −0.131 | 4.078 | −0.415 | 0.0 |
| 301.722 | 4.198 | 4.189 | −0.201 | 4.175 | −0.543 | 0.0 |
| 302.143 | 4.302 | 4.300 | −0.031 | 4.283 | −0.441 | 0.0 |
| 302.503 | 4.411 | 4.403 | −0.165 | 4.382 | −0.639 | 0.0 |
| 302.865 | 4.523 | 4.516 | −0.138 | 4.492 | −0.681 | 0.0 |
| 303.234 | 4.651 | 4.644 | −0.153 | 4.615 | −0.776 | 0.0 |
| 303.383 | 4.710 | 4.700 | −0.200 | 4.669 | −0.858 | 0.0 |
| 303.533 | 4.767 | 4.759 | −0.160 | 4.726 | −0.852 | 0.0 |
| 303.686 | 4.832 | 4.823 | −0.174 | 4.788 | −0.906 | 0.0 |
| 303.838 | 4.899 | 4.891 | −0.156 | 4.853 | −0.927 | 0.0 |
| 303.988 | 4.971 | 4.963 | −0.178 | 4.922 | −0.989 | 0.0 |
| 304.146 | 5.052 | 5.044 | −0.152 | 5.001 | −1.008 | 0.0 |
| 304.301 | 5.145 | 5.131 | −0.271 | 5.085 | −1.166 | 0.0 |
| 304.379 | 5.190 | 5.178 | −0.230 | 5.131 | −1.143 | 0.0 |
| 304.457 | 5.238 | 5.228 | −0.191 | 5.179 | −1.127 | 0.0 |
| 304.662 | 5.389 | 5.375 | −0.254 | 5.322 | −1.236 | 0.0 |
| 304.709 | 5.433 | 5.413 | −0.378 | 5.359 | −1.357 | 0.0 |
| 304.757 | 5.470 | 5.453 | −0.303 | 5.399 | −1.290 | 0.0 |
| 304.805 | 5.517 | 5.496 | −0.379 | 5.441 | −1.382 | 0.0 |
| 304.836 | 5.544 | 5.525 | −0.333 | 5.469 | −1.338 | 0.0 |
| 304.868 | 5.579 | 5.556 | −0.401 | 5.500 | −1.414 | 0.0 |
| 304.900 | 5.617 | 5.589 | −0.490 | 5.533 | −1.497 | 0.0 |
| 304.932 | 5.655 | 5.624 | −0.555 | 5.567 | −1.559 | 0.0 |
| 304.964 | 5.690 | 5.660 | −0.528 | 5.604 | −1.513 | 0.0 |
| 304.987 | 5.722 | 5.687 | −0.605 | 5.630 | −1.607 | 0.0 |
| 305.021 | 5.767 | 5.730 | −0.645 | 5.675 | −1.592 | 0.0 |
| 305.053 | 5.819 | 5.773 | −0.784 | 5.719 | −1.713 | 0.0 |
| 305.084 | 5.871 | 5.818 | −0.910 | 5.764 | −1.828 | 0.0 |
| 305.102 | 5.901 | 5.846 | −0.936 | 5.793 | −1.835 | 0.0 |
| 305.117 | 5.933 | 5.870 | −1.059 | 5.818 | −1.941 | 0.0 |
| 305.134 | 5.969 | 5.899 | −1.181 | 5.845 | −2.092 | 0.0 |
| 305.149 | 6.001 | 5.926 | −1.246 | 5.877 | −2.066 | 0.0 |
| 305.166 | 6.036 | 5.958 | −1.293 | 5.909 | −2.112 | 0.0 |
| 305.173 | 6.064 | 5.972 | −1.524 | 5.922 | −2.345 | 0.0 |

**Data from Pestak et al. [26]** (continued)

Number of Points [26] 39

| | | |
|---|---|---|
| AAD% = 0.437 | BIAS% = −0.433 | RMS% = 0.391 |
| AAD2% = 1.162 | BIAS2% = −1.162 | RMS2% = 0.591 |

Absolute Deviations:

| | | |
|---|---|---|
| AAD = 0.024 | BIAS = −0.024 | RMS = 0.024 $mol \cdot dm^{-3}$ |
| AAD2 = 0.064 | BIAS2 = −0.064 | RMS2 = 0.038 $mol \cdot dm^{-3}$ |

**Data from Porter [30]**

| T K | $\rho_{\sigma v}$, expt $mol \cdot dm^{-3}$ | $\rho_{\sigma v}$, anc. $mol \cdot dm^{-3}$ | dev1 % | $\rho_{\sigma v}$, SWEOS $mol \cdot dm^{-3}$ | dev2 % | wt |
|---|---|---|---|---|---|---|
| 288.260 | 2.412 | 2.427 | 0.620 | 2.431 | 0.818 | 0.0 |
| 283.580 | 2.086 | 2.093 | 0.341 | 2.097 | 0.522 | 0.0 |
| 278.840 | 1.811 | 1.815 | 0.231 | 1.818 | 0.383 | 0.0 |
| 273.090 | 1.540 | 1.534 | −0.378 | 1.536 | −0.259 | 0.0 |
| 268.730 | 1.357 | 1.353 | −0.273 | 1.355 | −0.172 | 0.0 |
| 263.280 | 1.161 | 1.158 | −0.309 | 1.159 | −0.220 | 0.0 |
| 258.800 | 1.032 | 1.018 | −1.442 | 1.018 | −1.356 | 0.0 |
| 253.030 | 0.864 | 0.860 | −0.382 | 0.861 | −0.290 | 0.0 |
| 248.650 | 0.757 | 0.756 | −0.197 | 0.756 | −0.096 | 0.0 |
| 243.220 | 0.643 | 0.642 | −0.200 | 0.642 | −0.084 | 0.0 |
| 238.900 | 0.564 | 0.561 | −0.524 | 0.562 | −0.397 | 0.0 |
| 234.580 | 0.494 | 0.490 | −0.767 | 0.490 | −0.629 | 0.0 |
| 226.180 | 0.377 | 0.372 | −1.453 | 0.372 | −1.303 | 0.0 |
| 184.470 | 0.689E−01 | 0.681E−01 | −1.247 | 0.680E−01 | −1.314 | 0.0 |

Number of Points [30] 14

| | | |
|---|---|---|
| AAD% = 0.598 | BIAS% = −0.427 | RMS% = 0.606 |
| AAD2% = 0.560 | BIAS2% = −0.314 | RMS2% = 0.642 |

Absolute Deviations:

| | | |
|---|---|---|
| AAD = 0.005 | BIAS = −0.001 | RMS = 0.007 $mol \cdot dm^{-3}$ |
| AAD2 = 0.005 | BIAS2 = 0.000 | RMS2 = 0.008 $mol \cdot dm^{-3}$ |

Table 3. SATURATED VAPOR DENSITIES (continued)

**Data from Sliwinski [28]**

| T K | $\rho_{\sigma v}$, expt mol•dm$^{-3}$ | $\rho_{\sigma v}$, anc. mol•dm$^{-3}$ | dev1 % | $\rho_{\sigma v}$, SWEOS mol•dm$^{-3}$ | dev2 % | wt |
|---|---|---|---|---|---|---|
| 283.200 | 2.068 | 2.069 | 0.033 | 2.073 | 0.211 | 1.0 |
| 288.190 | 2.416 | 2.421 | 0.208 | 2.426 | 0.406 | 0.0 |
| 293.180 | 2.872 | 2.871 | −0.018 | 2.876 | 0.152 | 1.0 |
| 295.670 | 3.154 | 3.153 | −0.035 | 3.157 | 0.081 | 1.0 |
| 298.170 | 3.500 | 3.499 | −0.048 | 3.499 | −0.042 | 1.0 |
| 300.660 | 3.941 | 3.945 | 0.115 | 3.937 | −0.088 | 1.0 |
| 302.160 | 4.294 | 4.305 | 0.248 | 4.287 | −0.166 | 1.0 |
| 303.160 | 4.605 | 4.617 | 0.263 | 4.589 | −0.347 | 1.0 |
| 304.150 | 5.020 | 5.046 | 0.513 | 5.003 | −0.345 | 0.0 |
| 304.650 | 5.328 | 5.366 | 0.713 | 5.313 | −0.266 | 0.0 |
| 305.150 | 5.866 | 5.928 | 1.046 | 5.878 | 0.208 | 0.0 |

Number of Points [28] 11

AAD% = 0.295 BIAS% = 0.276 RMS% = 0.333
AAD2% = 0.210 BIAS2% = −0.018 RMS2% = 0.238

Absolute Deviations:
AAD = 0.015 BIAS = 0.014 RMS = 0.019 mol•dm$^{-3}$
AAD2 = 0.008 BIAS2 = −0.002 RMS2 = 0.010 mol•dm$^{-3}$

Weighted Data:

Number of Points [28] 7

AAD% = 0.109 BIAS% = 0.080 RMS% = 0.122
AAD2% = 0.155 BIAS2% = −0.029 RMS2% = 0.180

Absolute Deviations:
AAD = 0.004 BIAS = 0.004 RMS = 0.005 mol•dm$^{-3}$
AAD2 = 0.006 BIAS2 = −0.002 RMS2 = 0.007 mol•dm$^{-3}$

**Data from ancillary equation [1]**

| T K | $\rho_{\sigma v}$, expt mol•dm$^{-3}$ | $\rho_{\sigma v}$, anc. mol•dm$^{-3}$ | dev1 % | $\rho_{\sigma v}$, SWEOS mol•dm$^{-3}$ | dev2 % | wt* |
|---|---|---|---|---|---|---|
| 91.000 | | 0.177E−05 | | 0.177E−05 | 0.051 | 531.0 |
| 96.000 | | 0.573E−05 | | 0.573E−05 | −0.028 | 531.0 |
| 101.000 | | 0.163E−04 | | 0.163E−04 | −0.037 | 531.0 |
| 106.000 | | 0.415E−04 | | 0.414E−04 | −0.028 | 531.0 |
| 111.000 | | 0.959E−04 | | 0.959E−04 | −0.022 | 531.0 |

Table 3. SATURATED VAPOR DENSITIES (continued)

Data from ancillary equation [1] (continued)

| T<br>K | $\rho_{\sigma v}$, expt<br>mol•dm$^{-3}$ | $\rho_{\sigma v}$, anc.<br>mol•dm$^{-3}$ | dev1<br>% | $\rho_{\sigma v}$, SWEOS<br>mol•dm$^{-3}$ | dev2<br>% | wt* |
|---|---|---|---|---|---|---|
| 116.000 | | 0.204E-03 | | 0.204E-03 | -0.028 | 531.0 |
| 121.000 | | 0.406E-03 | | 0.405E-03 | -0.046 | 531.0 |
| 126.000 | | 0.756E-03 | | 0.756E-03 | -0.076 | 531.0 |
| 131.000 | | 0.134E-02 | | 0.133E-02 | -0.112 | 531.0 |
| 136.000 | | 0.225E-02 | | 0.224E-02 | -0.151 | 531.0 |
| 141.000 | | 0.362E-02 | | 0.361E-02 | -0.186 | 531.0 |
| 146.000 | | 0.562E-02 | | 0.561E-02 | -0.215 | 531.0 |
| 151.000 | | 0.844E-02 | | 0.842E-02 | -0.232 | 531.0 |
| 156.000 | | 0.123E-01 | | 0.123E-01 | -0.237 | 531.0 |
| 161.000 | | 0.175E-01 | | 0.174E-01 | -0.230 | 531.0 |
| 166.000 | | 0.242E-01 | | 0.241E-01 | -0.210 | 531.0 |
| 171.000 | | 0.328E-01 | | 0.327E-01 | -0.181 | 531.0 |
| 176.000 | | 0.436E-01 | | 0.436E-01 | -0.142 | 531.0 |
| 181.000 | | 0.570E-01 | | 0.570E-01 | -0.099 | 531.0 |
| 186.000 | | 0.734E-01 | | 0.734E-01 | -0.053 | 493.0 |
| 191.000 | | 0.932E-01 | | 0.932E-01 | -0.008 | 371.0 |
| 196.000 | | 0.117 | | 0.117 | 0.035 | 284.0 |
| 201.000 | | 0.145 | | 0.145 | 0.073 | 221.0 |
| 206.000 | | 0.177 | | 0.178 | 0.104 | 174.0 |
| 211.000 | | 0.216 | | 0.216 | 0.128 | 138.0 |
| 216.000 | | 0.260 | | 0.260 | 0.143 | 112.0 |
| 221.000 | | 0.311 | | 0.311 | 0.151 | 90.8 |
| 226.000 | | 0.369 | | 0.370 | 0.152 | 74.6 |
| 231.000 | | 0.436 | | 0.437 | 0.146 | 61.9 |
| 236.000 | | 0.512 | | 0.513 | 0.136 | 51.8 |
| 241.000 | | 0.599 | | 0.600 | 0.122 | 43.7 |
| 246.000 | | 0.698 | | 0.699 | 0.109 | 37.2 |
| 251.000 | | 0.810 | | 0.811 | 0.096 | 69.7 |
| 256.000 | | 0.938 | | 0.939 | 0.089 | 60.2 |
| 261.000 | | 1.084 | | 1.085 | 0.087 | 52.2 |
| 266.000 | | 1.252 | | 1.253 | 0.094 | 45.7 |
| 271.000 | | 1.445 | | 1.446 | 0.109 | 40.2 |
| 276.000 | | 1.670 | | 1.672 | 0.134 | 35.7 |
| 281.000 | | 1.936 | | 1.939 | 0.164 | 31.9 |
| 286.000 | | 2.257 | | 2.261 | 0.191 | 28.8 |

Table 3. **SATURATED VAPOR DENSITIES** (continued)

**Data from ancillary equation [1] (continued)**

| T<br>K | $\rho_{\sigma v}$, expt<br>mol•dm$^{-3}$ | $\rho_{\sigma v}$, anc.<br>mol•dm$^{-3}$ | dev1<br>% | $\rho_{\sigma v}$, SWEOS<br>mol•dm$^{-3}$ | dev2<br>% | wt* |
|---|---|---|---|---|---|---|
| 291.000 | | 2.659 | | 2.664 | 0.191 | 26.2 |
| 296.000 | | 3.195 | | 3.198 | 0.105 | 24.1 |
| 301.000 | | 4.019 | | 4.009 | -0.244 | 22.6 |

Number of Points from ancillary equation. 43
*These weights refer to development of the SWEOS.
These data are not included in the overall statistics below.

AAD2% = 0.120 BIAS2% = 0.001 RMS2% = 0.137

Absolute Deviations:
AAD2 = 0.001 BIAS2 = 0.000 RMS2 = 0.002 mol•dm$^{-3}$

Overall Results: N = 102 AAD% = 0.432 BIAS% =-0.072 RMS% = 0.752
AAD2% = 0.666 BIAS2% =-0.454 RMS2% = 0.795
AAD = 0.020 BIAS =-0.001 RMS = 0.042 mol•dm$^{-3}$
AAD2 = 0.031 BIAS2 =-0.022 RMS2 = 0.045 mol•dm$^{-3}$

Weighted Data: N = 32 AAD% = 0.068 BIAS% = 0.025 RMS% = 0.101
AAD2% = 0.156 BIAS2% =-0.028 RMS2% = 0.200
AAD = 0.002 BIAS = 0.001 RMS = 0.004 mol•dm$^{-3}$
AAD2 = 0.003 BIAS2 =-0.002 RMS2 = 0.007 mol•dm$^{-3}$

## 3. Ideal Gas Properties

Table 4 gives a comparison between our correlation for the ideal gas properties, derived from eq. (3) of [1], and other tabulations. We have included ideal gas entropies (at 0.101 325 MPa for [31] and [32], but at 0.1 MPa for [33]), ideal gas isobaric heat capacities, and ideal gas enthalpies. Most of the data were actually calculated from spectroscopic models; some of the heat capacities [34, 35] were determined from extrapolation of thermodynamic measurements. The two points indicated with weights of 100 were fixed point integration constants to which the correlating equations were rigorously constrained.

## Table 4. IDEAL GAS PROPERTIES

**Data from Chao et al. [31]**
Entropy at 0.101 325 MPa

| T<br>K | $S^{id}$, tab<br>$J \cdot mol^{-1} \cdot K^{-1}$ | $S^{id}$, calc<br>$J \cdot mol^{-1} \cdot K^{-1}$ | dev<br>% | wt |
|---|---|---|---|---|
| 50.000 | 160.122 | 160.100 | -0.014 | 0.0 |
| 100.000 | 183.845 | 183.876 | 0.017 | 0.0 |
| 150.000 | 198.865 | 198.889 | 0.012 | 0.0 |
| 200.000 | 210.497 | 210.474 | -0.011 | 0.0 |
| 273.150 | 224.681 | 224.654 | -0.012 | 0.0 |
| 298.150 | 229.116 | 229.116 | 0.000 | 100.0 |
| 300.000 | 229.450 | 229.441 | -0.004 | 0.0 |
| 400.000 | 246.354 | 246.338 | -0.006 | 0.0 |
| 500.000 | 262.337 | 262.316 | -0.008 | 0.0 |
| 600.000 | 277.566 | 277.548 | -0.006 | 0.0 |
| 700.000 | 292.085 | 292.067 | -0.006 | 0.0 |

Number of Points [31] 11

AAD% = 0.009 BIAS% = -0.004 RMS% = 0.009

Absolute Deviations:
AAD = 0.019 BIAS = -0.009 RMS = 0.019 $J \cdot mol^{-1} \cdot K^{-1}$

**Data from Pamidimukkala et al. [32]**
Entropy at 0.101 325 MPa

| T<br>K | $S^{id}$, tab<br>$J \cdot mol^{-1} \cdot K^{-1}$ | $S^{id}$, calc<br>$J \cdot mol^{-1} \cdot K^{-1}$ | dev<br>% | wt |
|---|---|---|---|---|
| 100.000 | 183.761 | 183.876 | 0.063 | 0.0 |
| 200.000 | 210.497 | 210.474 | -0.011 | 0.0 |
| 298.000 | 229.074 | 229.090 | 0.007 | 0.0 |
| 300.000 | 229.450 | 229.441 | -0.004 | 0.0 |
| 400.000 | 246.395 | 246.338 | -0.023 | 0.0 |
| 500.000 | 262.295 | 262.316 | 0.008 | 0.0 |
| 600.000 | 277.483 | 277.548 | 0.023 | 0.0 |
| 700.000 | 292.001 | 292.067 | 0.022 | 0.0 |

Data from Pamidimukkala et al. [32] (continued)

Number of Points [32] 8

AAD% = 0.020 BIAS% = 0.011 RMS% = 0.025

Absolute Deviations:
AAD = 0.046 BIAS = 0.024 RMS = 0.052 $J \cdot mol^{-1} \cdot K^{-1}$

Data from TRC [33]
Entropy at 0.1 MPa

| T K | $S^{id}$, tab $J \cdot mol^{-1} \cdot K^{-1}$ | $S^{id}$, calc $J \cdot mol^{-1} \cdot K^{-1}$ | dev % | wt |
|---|---|---|---|---|
| 50.000 | 160.230 | 160.209 | -0.013 | 0.0 |
| 100.000 | 183.950 | 183.986 | 0.019 | 0.0 |
| 150.000 | 198.980 | 198.999 | 0.009 | 0.0 |
| 200.000 | 210.610 | 210.583 | -0.013 | 0.0 |
| 273.160 | 224.790 | 224.765 | -0.011 | 0.0 |
| 298.150 | 229.230 | 229.225 | -0.002 | 0.0 |
| 300.000 | 229.560 | 229.551 | -0.004 | 0.0 |
| 400.000 | 246.460 | 246.448 | -0.005 | 0.0 |
| 500.000 | 262.450 | 262.426 | -0.009 | 0.0 |
| 600.000 | 277.680 | 277.657 | -0.008 | 0.0 |
| 700.000 | 292.200 | 292.176 | -0.008 | 0.0 |

Number of Points [33] 11

AAD% = 0.009 BIAS% = -0.004 RMS% = 0.010

Absolute Deviations:
AAD = 0.020 BIAS = -0.010 RMS = 0.019 $J \cdot mol^{-1} \cdot K^{-1}$

Data from Chao et al. [31]

| T K | $C_p^{id}$, tab $J \cdot mol^{-1} \cdot K^{-1}$ | $C_p^{id}$, calc $J \cdot mol^{-1} \cdot K^{-1}$ | dev % | wt |
|---|---|---|---|---|
| 50.000 | 33.388 | 33.321 | -0.201 | 1.0 |
| 100.000 | 35.648 | 35.698 | 0.140 | 1.0 |
| 150.000 | 38.660 | 38.628 | -0.084 | 1.0 |
| 200.000 | 42.258 | 42.243 | -0.037 | 1.0 |
| 273.150 | 49.538 | 49.510 | -0.057 | 1.0 |

Data from Chao et al. [31]

| T K | $C_p^{id}$, tab $J \cdot mol^{-1} \cdot K^{-1}$ | $C_p^{id}$, calc $J \cdot mol^{-1} \cdot K^{-1}$ | dev % | wt |
|---|---|---|---|---|
| 298.150 | 52.467 | 52.467 | 0.000 | 1.0 |
| 300.000 | 52.718 | 52.693 | -0.048 | 1.0 |
| 400.000 | 65.480 | 65.507 | 0.042 | 1.0 |
| 500.000 | 77.990 | 77.987 | -0.003 | 1.0 |
| 600.000 | 89.245 | 89.220 | -0.028 | 1.0 |
| 700.000 | 99.203 | 99.219 | 0.017 | 1.0 |

Number of Points [31] 11

AAD% = 0.060 BIAS% = -0.024 RMS% = 0.080

Absolute Deviations:
AAD = 0.026 BIAS = -0.009 RMS = 0.031 $J \cdot mol^{-1} \cdot K^{-1}$

Weighted Data:

Number of Points [31] 11

AAD% = 0.060 BIAS% = -0.024 RMS% = 0.080

Absolute Deviations:
AAD = 0.026 BIAS = -0.009 RMS = 0.031 $J \cdot mol^{-1} \cdot K^{-1}$

Data from Pamidimukkala et al. [32]

| T K | $C_p^{id}$, tab $J \cdot mol^{-1} \cdot K^{-1}$ | $C_p^{id}$, calc $J \cdot mol^{-1} \cdot K^{-1}$ | dev % | wt |
|---|---|---|---|---|
| 100.000 | 35.731 | 35.698 | -0.094 | 0.0 |
| 200.000 | 42.384 | 42.243 | -0.333 | 0.0 |
| 298.000 | 52.467 | 52.449 | -0.035 | 0.0 |
| 300.000 | 52.718 | 52.693 | -0.048 | 0.0 |
| 400.000 | 65.438 | 65.507 | 0.106 | 0.0 |
| 500.000 | 77.906 | 77.987 | 0.104 | 0.0 |
| 600.000 | 89.161 | 89.220 | 0.066 | 0.0 |
| 700.000 | 99.119 | 99.219 | 0.101 | 0.0 |

Data from Pamidimukkala et al. [32] (continued)

Number of Points [32] 8

AAD% = 0.111 BIAS% = −0.017 RMS% = 0.140

Absolute Deviations:
AAD = 0.066 BIAS = 0.011 RMS = 0.076 $J \cdot mol^{-1} \cdot K^{-1}$

Data from Bier et al. [34]

| T K | $C_p^{id}$, expt $J \cdot mol^{-1} \cdot K^{-1}$ | $C_p^{id}$, calc $J \cdot mol^{-1} \cdot K^{-1}$ | dev % | wt |
|---|---|---|---|---|
| 283.150 | 50.486 | 50.671 | 0.365 | 0.0 |
| 298.150 | 52.471 | 52.467 | −0.007 | 0.0 |
| 305.350 | 53.283 | 53.350 | 0.125 | 0.0 |
| 323.150 | 55.478 | 55.576 | 0.176 | 0.0 |
| 348.150 | 58.154 | 58.778 | 1.072 | 0.0 |
| 373.150 | 61.161 | 62.022 | 1.407 | 0.0 |
| 398.150 | 64.589 | 65.268 | 1.051 | 0.0 |
| 423.150 | 67.776 | 68.484 | 1.044 | 0.0 |
| 473.150 | 74.091 | 74.746 | 0.884 | 0.0 |

Number of Points [34] 9

AAD% = 0.681 BIAS% = 0.680 RMS% = 0.486

Absolute Deviations:
AAD = 0.431 BIAS = 0.430 RMS = 0.317 $J \cdot mol^{-1} \cdot K^{-1}$

Data from Furtado [35]

| T K | $C_p^{id}$, expt $J \cdot mol^{-1} \cdot K^{-1}$ | $C_p^{id}$, calc $J \cdot mol^{-1} \cdot K^{-1}$ | dev % | wt |
|---|---|---|---|---|
| 99.817 | 35.856 | 35.688 | −0.470 | 0.0 |
| 110.928 | 36.493 | 36.301 | −0.527 | 0.0 |
| 118.372 | 36.981 | 36.723 | −0.696 | 0.0 |
| 122.039 | 37.243 | 36.934 | −0.828 | 0.0 |
| 133.150 | 37.993 | 37.588 | −1.064 | 0.0 |
| 144.261 | 38.742 | 38.266 | −1.229 | 0.0 |
| 155.372 | 39.249 | 38.974 | −0.700 | 0.0 |
| 166.483 | 40.017 | 39.717 | −0.749 | 0.0 |
| 177.594 | 40.767 | 40.504 | −0.646 | 0.0 |
| 186.872 | 41.385 | 41.197 | −0.454 | 0.0 |

Data from Furtado [35] (continued)

| T K | $C_p^{id}$, expt $J \cdot mol^{-1} \cdot K^{-1}$ | $C_p^{id}$, calc $J \cdot mol^{-1} \cdot K^{-1}$ | dev % | wt |
|---|---|---|---|---|
| 188.706 | 41.648 | 41.339 | −0.742 | 0.0 |
| 199.817 | 42.529 | 42.228 | −0.708 | 0.0 |
| 210.928 | 43.522 | 43.174 | −0.801 | 0.0 |
| 222.039 | 44.534 | 44.178 | −0.800 | 0.0 |
| 233.150 | 45.546 | 45.241 | −0.671 | 0.0 |
| 241.761 | 46.427 | 46.103 | −0.698 | 0.0 |
| 244.261 | 46.671 | 46.360 | −0.666 | 0.0 |
| 255.372 | 47.927 | 47.533 | −0.822 | 0.0 |
| 266.483 | 49.201 | 48.755 | −0.907 | 0.0 |
| 277.594 | 50.457 | 50.022 | −0.862 | 0.0 |
| 282.706 | 50.963 | 50.619 | −0.676 | 0.0 |
| 288.706 | 51.713 | 51.329 | −0.742 | 0.0 |
| 299.817 | 52.837 | 52.671 | −0.316 | 0.0 |
| 305.261 | 53.212 | 53.339 | 0.237 | 0.0 |
| 310.928 | 53.850 | 54.041 | 0.355 | 0.0 |
| 322.039 | 55.237 | 55.435 | 0.359 | 0.0 |
| 324.817 | 55.611 | 55.787 | 0.316 | 0.0 |
| 333.150 | 56.624 | 56.848 | 0.397 | 0.0 |
| 344.261 | 58.123 | 58.275 | 0.262 | 0.0 |
| 355.372 | 60.147 | 59.712 | −0.723 | 0.0 |
| 366.483 | 61.647 | 61.155 | −0.798 | 0.0 |
| 366.817 | 61.778 | 61.198 | −0.938 | 0.0 |
| 377.594 | 63.165 | 62.600 | −0.895 | 0.0 |
| 388.706 | 64.533 | 64.044 | −0.759 | 0.0 |
| 399.817 | 65.808 | 65.484 | −0.493 | 0.0 |
| 410.928 | 66.558 | 66.917 | 0.540 | 0.0 |
| 422.039 | 67.813 | 68.342 | 0.780 | 0.0 |

Number of Points [35] 37

AAD% = 0.666 BIAS% = −0.490 RMS% = 0.503

Absolute Deviations:

AAD = 0.327 BIAS = −0.221 RMS = 0.269 $J \cdot mol^{-1} \cdot K^{-1}$

Table 4. IDEAL GAS PROPERTIES (continued)

Data from TRC [33]

| T K | $C_p^{id}$, tab $J \cdot mol^{-1} \cdot K^{-1}$ | $C_p^{id}$, calc $J \cdot mol^{-1} \cdot K^{-1}$ | dev % | wt |
|---|---|---|---|---|
| 50.000 | 33.390 | 33.321 | -0.207 | 0.0 |
| 100.000 | 35.650 | 35.698 | 0.133 | 0.0 |
| 150.000 | 38.660 | 38.628 | -0.084 | 0.0 |
| 200.000 | 42.260 | 42.243 | -0.041 | 0.0 |
| 273.160 | 49.540 | 49.511 | -0.058 | 0.0 |
| 298.150 | 52.470 | 52.467 | -0.005 | 0.0 |
| 300.000 | 52.720 | 52.693 | -0.051 | 0.0 |
| 400.000 | 65.480 | 65.507 | 0.042 | 0.0 |
| 500.000 | 77.990 | 77.987 | -0.004 | 0.0 |
| 600.000 | 89.240 | 89.220 | -0.023 | 0.0 |
| 700.000 | 99.200 | 99.219 | 0.019 | 0.0 |

Number of Points [33] 11

AAD% = 0.060 BIAS% = -0.025 RMS% = 0.080

Absolute Deviations:
AAD = 0.027 BIAS = -0.010 RMS = 0.031 $J \cdot mol^{-1} \cdot K^{-1}$

Data from Chao et al. [31]

| T K | $H^{id}$, tab $J \cdot mol^{-1}$ | $H^{id}$, calc $J \cdot mol^{-1}$ | dev % | wt |
|---|---|---|---|---|
| 50.000 | 1665.230 | 1662.424 | -0.168 | 0.0 |
| 100.000 | 3380.670 | 3384.364 | 0.109 | 0.0 |
| 150.000 | 5238.370 | 5240.609 | 0.043 | 0.0 |
| 200.000 | 7259.240 | 7258.399 | -0.012 | 0.0 |
| 273.150 | 10602.300 | 10599.852 | -0.023 | 0.0 |
| 298.150 | 11874.200 | 11874.192 | 0.000 | 100.0 |
| 300.000 | 11974.600 | 11971.465 | -0.026 | 0.0 |
| 400.000 | 17874.000 | 17875.826 | 0.010 | 0.0 |
| 500.000 | 25058.000 | 25059.380 | 0.006 | 0.0 |
| 600.000 | 33430.200 | 33430.747 | 0.002 | 0.0 |
| 700.000 | 42865.100 | 42862.031 | -0.007 | 0.0 |

**Data from Chao et al. [31] (continued)**

Number of Points [31] 11

AAD% = 0.037 BIAS% = −0.006 RMS% = 0.063

Absolute Deviations:
AAD = 1.999 BIAS = −0.238 RMS = 2.284 J•mol$^{-1}$

**Data from Pamidimukkala et al. [32]**

| T<br>K | $H^{id}$, tab<br>J•mol$^{-1}$ | $H^{id}$, calc<br>J•mol$^{-1}$ | dev<br>% | wt |
|---|---|---|---|---|
| 100.000 | 3389.040 | 3384.364 | −0.138 | 0.0 |
| 200.000 | 7280.160 | 7258.399 | −0.299 | 0.0 |
| 298.000 | 11882.600 | 11866.323 | −0.137 | 0.0 |
| 300.000 | 12008.100 | 11971.465 | −0.305 | 0.0 |
| 400.000 | 17907.500 | 17875.826 | −0.177 | 0.0 |
| 500.000 | 25062.200 | 25059.380 | −0.011 | 0.0 |
| 600.000 | 33430.200 | 33430.747 | 0.002 | 0.0 |
| 700.000 | 42844.200 | 42862.031 | 0.042 | 0.0 |

Number of Points [32] 8

AAD% = 0.139 BIAS% = −0.128 RMS% = 0.124

Absolute Deviations:
AAD =16.528 BIAS =−11.933 RMS =16.929 J•mol$^{-1}$

**Data from TRC [33]**

| T<br>K | $H^{id}$, tab<br>J•mol$^{-1}$ | $H^{id}$, calc<br>J•mol$^{-1}$ | dev<br>% | wt |
|---|---|---|---|---|
| 50.000 | 1665.000 | 1662.424 | −0.155 | 0.0 |
| 100.000 | 3381.000 | 3384.364 | 0.099 | 0.0 |
| 150.000 | 5238.000 | 5240.609 | 0.050 | 0.0 |
| 200.000 | 7259.000 | 7258.399 | −0.008 | 0.0 |
| 273.160 | 10602.000 | 10600.347 | −0.016 | 0.0 |
| 298.150 | 11874.000 | 11874.192 | 0.002 | 0.0 |
| 300.000 | 11975.000 | 11971.465 | −0.030 | 0.0 |
| 400.000 | 17874.000 | 17875.826 | 0.010 | 0.0 |
| 500.000 | 25058.000 | 25059.380 | 0.006 | 0.0 |
| 600.000 | 33430.000 | 33430.747 | 0.002 | 0.0 |
| 700.000 | 42840.000 | 42862.031 | 0.051 | 0.0 |

Table 4. **IDEAL GAS PROPERTIES** (continued)

**Data from TRC [33]** (continued)

Number of Points [33] 11

AAD% = 0.039 BIAS% = 0.001 RMS% = 0.061

Absolute Deviations:

AAD = 3.683 BIAS = 2.162 RMS = 6.607 $J \cdot mol^{-1}$

## 4. Thermodynamic Properties in the Single-Phase Region

Tables 5-11 give comparisons for the thermodynamic properties of the single-phase fluid as well as the heat capacity and sound speed in the saturated liquid.

Some of the data for the second virial coefficient, as tabulated in table 5, have been obtained from model potentials or were originally presented graphically or algebraically; consult the references for details. Some of these data have been adjusted or tabulated by other correlators as indicated in the table notes.

For the PVT data, table 6, we have presented comparisons based on both calculation of density using experimental temperature and pressure, and calculation of pressure using experimental temperature and density. The statistics with the suffix 2 refer to density calculations, and the statistics without the suffix refer to pressure calculations.

In table 7, for the isochoric specific heat capacity, we have presented several comparisons: dev is the percent difference between the heat capacity calculated from the tabulated temperature and density and the experimental value, dev2 is based on calculation from the tabulated temperature and pressure, dev3 compares densities calculated from the SWEOS with the tabulated values, and dev4 compares pressures calculated from the SWEOS with the tabulated values. The two sets of statistics compare the experimental isochoric heat capacities with calculations based on both density input and pressure input.

Table 9, for the heat capacity along the saturated liquid boundary, includes a column for the density of the liquid; this quantity was calculated from the ancillary equation and was used as input into the SWEOS to generate the calculated heat capacity.

We have presented two sets of statistics in table 10 for the speed of sound in the single phase fluid. The density, in column 3, was calculated from the SWEOS and the experimental temperature and pressure (given in the table) and was used to calculate W and $\partial P/\partial\rho|_T$. The isothermal density derivatives are included in the table because these quantities, rather than the sound speed itself, were used to fit the SWEOS [1]. The experimental value of $\partial P/\partial\rho|_T$ is defined by $\partial P/\partial\rho|_T = N_A\ u\ M_r\ W^2\ C_v/C_p$ where $N_A$ is the Avogadro number, u is the unified atomic mass unit, $M_r$ is the relative molecular mass of ethane, W is the experimental value of the speed of sound, and the heat capacities are calculated from the SWEOS at the experimental state point. The statistics with the suffix 2 refer to comparisons between this "experimental" value of $\partial P/\partial\rho|_T$ and the value calculated directly from the SWEOS.

Table 11 is similar in form to table 10. The essential difference is that the pressure and density at saturation were calculated from the experimental temperature using the SWEOS and the Maxwell construction. These densities were used for the calculations of sound speed and the isothermal pressure derivative. The suffix 2 on the statistics has the same meaning as in table 10: the comparisons are for the experimental value of $\partial P/\partial\rho|_T$ and that calculated by the SWEOS (for the saturated liquid).

Table 5. SECOND VIRIAL COEFFICIENTS

Data from Douslin and Harrison [9]

| T K | B, expt $dm^3 \cdot mol^{-1}$ | B, calc $dm^3 \cdot mol^{-1}$ | dev % | wt |
|---|---|---|---|---|
| 273.150 | −222.200 | −222.491 | 0.131 | 401.880 |
| 298.150 | −185.800 | −185.536 | −0.142 | 480.610 |
| 303.150 | −179.400 | −179.178 | −0.124 | 497.760 |
| 323.150 | −156.700 | −156.460 | −0.153 | 569.870 |
| 348.150 | −133.000 | −132.992 | −0.006 | 671.410 |
| 373.150 | −113.600 | −113.647 | 0.042 | 786.070 |
| 398.150 | −97.300 | −97.424 | 0.127 | 917.760 |
| 423.150 | −83.600 | −83.621 | 0.025 | 1068.200 |
| 448.150 | −71.700 | −71.735 | 0.048 | 1245.400 |
| 473.150 | −61.500 | −61.395 | −0.171 | 1452.000 |
| 498.150 | −52.400 | −52.321 | −0.150 | 1704.200 |
| 523.150 | −44.500 | −44.298 | −0.454 | 2006.700 |
| 548.150 | −37.300 | −37.157 | −0.384 | 2394.000 |
| 573.150 | −30.900 | −30.763 | −0.444 | 2889.900 |
| 598.150 | −25.000 | −25.008 | 0.034 | 3571.900 |
| 623.150 | −19.600 | −19.805 | 1.046 | 4556.000 |

Number of Points [9] 16

AAD% = 0.22 BIAS% = −0.04 RMS% = 0.33

Absolute Deviations:

AAD = 0.13 BIAS = 0.04 RMS = 0.16 $cm^3 \cdot mol^{-1}$

Weighted Data:

Number of Points [9] 16

AAD% = 0.22 BIAS% = −0.04 RMS% = 0.33

Absolute Deviations:

AAD = 0.13 BIAS = 0.04 RMS = 0.16 $cm^3 \cdot mol^{-1}$

Table 5. **SECOND VIRIAL COEFFICIENTS** (continued)

**Data from Dymond and Smith [36]**

| T<br>K | B, expt<br>$dm^3 \cdot mol^{-1}$ | B, calc<br>$dm^3 \cdot mol^{-1}$ | dev<br>% | wt |
|---|---|---|---|---|
| 200.000 | −410.000 | −420.798 | 2.634 | 0.000 |
| 210.000 | −370.000 | −381.032 | 2.982 | 0.000 |
| 220.000 | −336.000 | −346.514 | 3.129 | 0.000 |
| 240.000 | −282.000 | −290.060 | 2.858 | 0.000 |
| 260.000 | −243.000 | −246.228 | 1.328 | 0.000 |
| 280.000 | −211.000 | −211.407 | 0.193 | 0.000 |
| 300.000 | −182.000 | −183.149 | 0.631 | 0.000 |
| 325.000 | −154.000 | −154.553 | 0.359 | 0.000 |
| 350.000 | −130.500 | −131.433 | 0.715 | 0.000 |
| 375.000 | −111.000 | −112.350 | 1.216 | 0.000 |
| 400.000 | −96.000 | −96.327 | 0.340 | 0.000 |
| 450.000 | −71.000 | −70.921 | −0.112 | 0.000 |
| 500.000 | −52.000 | −51.694 | −0.589 | 0.000 |
| 550.000 | −36.500 | −36.659 | 0.437 | 0.000 |
| 600.000 | −24.500 | −24.606 | 0.431 | 0.000 |

Number of Points [36] 15

AAD% = 1.20 BIAS% = 1.10 RMS% = 1.17

Absolute Deviations:
AAD = 3.27 BIAS = −3.22 RMS = 4.27 $cm^3 \cdot mol^{-1}$

**Data from Eucken and Parts [37]**

| T<br>K | B, expt<br>$dm^3 \cdot mol^{-1}$ | B, calc<br>$dm^3 \cdot mol^{-1}$ | dev<br>% | wt |
|---|---|---|---|---|
| 191.860 | −498.000 | −457.664 | −8.100 | 0.000 |
| 193.650 | −487.000 | −449.183 | −7.765 | 0.000 |
| 201.610 | −446.000 | −414.004 | −7.174 | 0.000 |
| 202.170 | −443.000 | −411.678 | −7.070 | 0.000 |
| 211.330 | −404.000 | −376.157 | −6.892 | 0.000 |
| 213.340 | −395.000 | −368.962 | −6.592 | 0.000 |
| 222.580 | −360.000 | −338.358 | −6.012 | 0.000 |
| 224.500 | −354.000 | −332.471 | −6.082 | 0.000 |
| 233.410 | −325.000 | −307.049 | −5.523 | 0.000 |
| 236.670 | −316.000 | −298.465 | −5.549 | 0.000 |

Table 5. **SECOND VIRIAL COEFFICIENTS** (continued)

**Data from Eucken and Parts [37]** (continued)

| T<br>K | B, expt<br>$dm^3 \cdot mol^{-1}$ | B, calc<br>$dm^3 \cdot mol^{-1}$ | dev<br>% | wt |
|---|---|---|---|---|
| 244.700 | −293.000 | −278.781 | −4.853 | 0.000 |
| 247.000 | −287.000 | −273.497 | −4.705 | 0.000 |
| 257.090 | −262.000 | −251.974 | −3.827 | 0.000 |
| 259.030 | −258.000 | −248.122 | −3.829 | 0.000 |
| 273.200 | −227.500 | −222.407 | −2.239 | 0.000 |

Number of Points [37] 15

AAD% = 5.75 BIAS% = −5.75 RMS% = 1.58

Absolute Deviations:

AAD = 21.78 BIAS = 21.78 RMS = 10.23 $cm^3 \cdot mol^{-1}$

**Data from Eucken via Tester [38]**

| T<br>K | B, expt<br>$dm^3 \cdot mol^{-1}$ | B, calc<br>$dm^3 \cdot mol^{-1}$ | dev<br>% | wt |
|---|---|---|---|---|
| 200.000 | −453.000 | −420.798 | −7.109 | 0.000 |
| 210.000 | −410.000 | −381.032 | −7.065 | 0.000 |
| 220.000 | −370.000 | −346.514 | −6.348 | 0.000 |
| 230.000 | −333.000 | −316.426 | −4.977 | 0.000 |
| 240.000 | −305.000 | −290.060 | −4.898 | 0.000 |
| 250.000 | −280.000 | −266.824 | −4.706 | 0.000 |
| 260.000 | −256.000 | −246.228 | −3.817 | 0.000 |
| 270.000 | −235.000 | −227.866 | −3.036 | 0.000 |
| 280.000 | −214.000 | −211.407 | −1.211 | 0.000 |

Number of Points [38] 9

AAD% = 4.80 BIAS% = −4.80 RMS% = 1.82

Absolute Deviations:

AAD = 16.54 BIAS = 16.54 RMS = 9.37 $cm^3 \cdot mol^{-1}$

Table 5. **SECOND VIRIAL COEFFICIENTS** (continued)

**Data from Gunn [39] reported by Huff and Reed [40]**

| T K | B, expt $dm^3 \cdot mol^{-1}$ | B, calc $dm^3 \cdot mol^{-1}$ | dev % | wt |
|---|---|---|---|---|
| 273.200 | −222.200 | −222.407 | 0.093 | 0.000 |
| 298.200 | −186.900 | −185.471 | −0.765 | 0.000 |
| 323.200 | −157.500 | −156.408 | −0.693 | 0.000 |
| 377.600 | −109.400 | −110.555 | 1.055 | 0.000 |
| 410.900 | −89.600 | −90.117 | 0.577 | 0.000 |
| 444.300 | −74.000 | −73.456 | −0.735 | 0.000 |
| 477.600 | −61.600 | −59.694 | −3.094 | 0.000 |
| 510.900 | −51.000 | −48.110 | −5.667 | 0.000 |

Number of Points [39] 8

AAD% = 1.58 BIAS% = −1.15 RMS% = 2.06

Absolute Deviations:
AAD = 1.22 BIAS = 0.75 RMS = 1.26 $cm^3 \cdot mol^{-1}$

**Data from Hamann and McManamey [41]**
Using data from Reamer et al. [42], as reported by Dymond and Smith [36]

| T K | B, expt $dm^3 \cdot mol^{-1}$ | B, calc $dm^3 \cdot mol^{-1}$ | dev % | wt |
|---|---|---|---|---|
| 310.940 | −164.900 | −169.843 | 2.997 | 0.000 |
| 344.270 | −135.500 | −136.333 | 0.615 | 0.000 |
| 377.600 | −110.000 | −110.555 | 0.504 | 0.000 |
| 410.940 | −90.400 | −90.095 | −0.337 | 0.000 |
| 444.270 | −74.200 | −73.470 | −0.984 | 0.000 |
| 477.600 | −59.900 | −59.694 | −0.344 | 0.000 |
| 510.940 | −47.400 | −48.097 | 1.470 | 0.000 |

Number of Points [41] 7

AAD% = 1.04 BIAS% = 0.56 RMS% = 1.24

Absolute Deviations:
AAD = 1.18 BIAS = −0.83 RMS = 1.76 $cm^3 \cdot mol^{-1}$

**Data from Hoover et al. [43]**

| T K | B, expt $dm^3 \cdot mol^{-1}$ | B, calc $dm^3 \cdot mol^{-1}$ | dev % | wt |
|---|---|---|---|---|
| 215.000 | −340.600 | −363.171 | 6.627 | 0.000 |
| 240.000 | −276.500 | −290.060 | 4.904 | 0.000 |
| 273.150 | −223.400 | −222.491 | −0.407 | 0.000 |

Number of Points [43] 3

AAD% = 3.98 BIAS% = 3.71 RMS% = 2.99

Absolute Deviations:
AAD = 12.35 BIAS = −11.74 RMS = 9.67 $cm^3 \cdot mol^{-1}$

**Data from Lambert et al. [44]**
Reported by Tester [38]

| T K | B, expt $dm^3 \cdot mol^{-1}$ | B, calc $dm^3 \cdot mol^{-1}$ | dev % | wt |
|---|---|---|---|---|
| 200.000 | −454.000 | −420.798 | −7.313 | 0.000 |
| 210.000 | −410.000 | −381.032 | −7.065 | 0.000 |
| 220.000 | −375.000 | −346.514 | −7.596 | 0.000 |
| 230.000 | −341.000 | −316.426 | −7.207 | 0.000 |
| 240.000 | −308.000 | −290.060 | −5.825 | 0.000 |
| 250.000 | −283.000 | −266.824 | −5.716 | 0.000 |
| 260.000 | −260.000 | −246.228 | −5.297 | 0.000 |
| 270.000 | −240.000 | −227.866 | −5.056 | 0.000 |
| 280.000 | −220.000 | −211.407 | −3.906 | 0.000 |
| 290.000 | −205.000 | −196.577 | −4.109 | 0.000 |
| 300.000 | −190.000 | −183.149 | −3.606 | 0.000 |

Number of Points [44] 11

AAD% = 5.70 BIAS% = −5.70 RMS% = 1.38

Absolute Deviations:
AAD = 18.10 BIAS = 18.10 RMS = 8.87 $cm^3 \cdot mol^{-1}$

Data from Mansoorian et al. [45]

| T K | B, expt $dm^3 \cdot mol^{-1}$ | B, calc $dm^3 \cdot mol^{-1}$ | dev % | wt |
|---|---|---|---|---|
| 323.150 | −156.100 | −156.460 | 0.231 | 144.000 |
| 348.150 | −132.400 | −132.992 | 0.447 | 169.780 |
| 373.150 | −111.400 | −113.647 | 2.017 | 201.780 |
| 398.150 | −98.000 | −97.424 | −0.588 | 229.370 |
| 423.150 | −85.700 | −83.621 | −2.426 | 262.290 |
| 448.150 | −72.400 | −71.735 | −0.919 | 310.480 |
| 473.150 | −62.400 | −61.395 | −1.611 | 360.230 |

Number of Points [45] 7

AAD% = 1.18 BIAS% = −0.41 RMS% = 1.35

Absolute Deviations:
AAD = 1.07 BIAS = 0.16 RMS = 1.28 $cm^3 \cdot mol^{-1}$

Weighted Data:

Number of Points [45] 7

AAD% = 1.18 BIAS% = −0.41 RMS% = 1.35

Absolute Deviations:
AAD = 1.07 BIAS = 0.16 RMS = 1.28 $cm^3 \cdot mol^{-1}$

Data from McGlashan and Potter [46]
Reported by Goodwin et al. [20]

| T K | B, expt $dm^3 \cdot mol^{-1}$ | B, calc $dm^3 \cdot mol^{-1}$ | dev % | wt |
|---|---|---|---|---|
| 150.000 | −769.000 | −719.208 | −6.475 | 0.000 |
| 160.000 | −666.030 | −647.669 | −2.757 | 0.000 |
| 170.000 | −583.830 | −580.113 | −0.637 | 0.000 |
| 180.000 | −517.070 | −519.635 | 0.496 | 0.000 |
| 190.000 | −461.730 | −466.711 | 1.079 | 0.000 |
| 200.000 | −415.440 | −420.798 | 1.290 | 0.000 |
| 210.000 | −376.270 | −381.032 | 1.266 | 0.000 |
| 220.000 | −342.290 | −346.514 | 1.234 | 0.000 |
| 230.000 | −313.060 | −316.426 | 1.075 | 0.000 |
| 240.000 | −287.390 | −290.060 | 0.929 | 0.000 |

**Data from McGlashan and Potter [46]**
Reported by Goodwin et al. [20]

| T<br>K | B, expt<br>$dm^3 \cdot mol^{-1}$ | B, calc<br>$dm^3 \cdot mol^{-1}$ | dev<br>% | wt |
|---|---|---|---|---|
| 250.000 | −264.840 | −266.824 | 0.749 | 0.000 |
| 260.000 | −244.810 | −246.228 | 0.579 | 0.000 |
| 270.000 | −226.860 | −227.866 | 0.444 | 0.000 |
| 280.000 | −210.830 | −211.407 | 0.274 | 0.000 |
| 290.000 | −196.290 | −196.577 | 0.146 | 0.000 |
| 300.000 | −183.240 | −183.149 | −0.050 | 0.000 |

Number of Points [46] 16

AAD% = 1.22 BIAS% = −0.02 RMS% = 1.93

Absolute Deviations:
AAD = 6.57 BIAS = 2.42 RMS = 13.38 $cm^3 \cdot mol^{-1}$

**Data from Michels et al. [47]**

| T<br>K | B, expt<br>$dm^3 \cdot mol^{-1}$ | B, calc<br>$dm^3 \cdot mol^{-1}$ | dev<br>% | wt |
|---|---|---|---|---|
| 273.150 | −221.450 | −222.491 | 0.470 | 125.140 |
| 298.130 | −185.600 | −185.562 | −0.020 | 149.320 |
| 322.738 | −156.920 | −156.889 | −0.020 | 176.610 |
| 347.562 | −133.280 | −133.492 | 0.159 | 207.930 |
| 372.522 | −114.060 | −114.092 | 0.028 | 242.970 |
| 397.854 | −97.720 | −97.601 | −0.122 | 283.600 |
| 422.720 | −83.910 | −83.841 | −0.083 | 330.270 |

Number of Points [47] 7

AAD% = 0.13 BIAS% = 0.06 RMS% = 0.19

Absolute Deviations:
AAD = 0.22 BIAS = −0.15 RMS = 0.38 $cm^3 \cdot mol^{-1}$

**Data from Michels et al. [47]** (continued)

Weighted Data:

Number of Points [47] 7

AAD% = 0.13 BIAS% = 0.06 RMS% = 0.19

Absolute Deviations:

AAD = 0.22 BIAS = −0.15 RMS = 0.38 $cm^3 \cdot mol^{-1}$

**Data from Pope [14]**

| T<br>K | B, expt<br>$dm^3 \cdot mol^{-1}$ | B, calc<br>$dm^3 \cdot mol^{-1}$ | dev<br>% | wt |
|---|---|---|---|---|
| 209.534 | −368.660 | −382.762 | 3.825 | 25.058 |
| 238.769 | −287.050 | −293.126 | 2.117 | 32.182 |
| 254.807 | −252.270 | −256.621 | 1.725 | 36.618 |
| 273.150 | −219.380 | −222.491 | 1.418 | 42.108 |
| 306.062 | −175.270 | −175.610 | 0.194 | 52.706 |

Number of Points [14] 5

AAD% = 1.86 BIAS% = 1.86 RMS% = 1.18

Absolute Deviations:

AAD = 5.60 BIAS = −5.60 RMS = 4.65 $cm^3 \cdot mol^{-1}$

Weighted Data:

Number of Points [14] 5

AAD% = 1.86 BIAS% = 1.86 RMS% = 1.18

Absolute Deviations:

AAD = 5.60 BIAS = −5.60 RMS = 4.65 $cm^3 \cdot mol^{-1}$

**Data from Strein et al. [48]**

| T<br>K | B, expt<br>$dm^3 \cdot mol^{-1}$ | B, calc<br>$dm^3 \cdot mol^{-1}$ | dev<br>% | wt |
|---|---|---|---|---|
| 296.100 | −188.000 | −188.232 | 0.123 | 0.000 |
| 307.600 | −172.000 | −173.764 | 1.025 | 0.000 |
| 333.600 | −144.300 | −146.067 | 1.225 | 0.000 |
| 353.400 | −126.200 | −128.627 | 1.923 | 0.000 |
| 373.700 | −111.900 | −113.260 | 1.215 | 0.000 |

Table 5. SECOND VIRIAL COEFFICIENTS (continued)

Data from Strein et al. [48] (continued)

| T K | B, expt $dm^3 \cdot mol^{-1}$ | B, calc $dm^3 \cdot mol^{-1}$ | dev % | wt |
|---|---|---|---|---|
| 394.200 | −98.700 | −99.811 | 1.125 | 0.000 |
| 413.600 | −88.100 | −88.643 | 0.617 | 0.000 |
| 433.800 | −78.400 | −78.347 | −0.068 | 0.000 |
| 453.600 | −69.100 | −69.360 | 0.376 | 0.000 |
| 473.800 | −62.600 | −61.144 | −2.326 | 0.000 |
| 493.300 | −54.100 | −53.993 | −0.197 | 0.000 |

Number of Points [48] 11

AAD% = 0.93 BIAS% = 0.46 RMS% = 1.07

Absolute Deviations:
AAD = 1.01 BIAS = −0.71 RMS = 1.05 $cm^3 \cdot mol^{-1}$

Overall Results: N=130 AAD% = 2.26 BIAS% = −1.22 RMS% = 3.08
AAD = 7.19 BIAS = 4.58 RMS = 11.80 $cm^3 \cdot mol^{-1}$

Weighted Data: N= 35 AAD% = 0.63 BIAS% = 0.18 RMS% = 1.06
AAD = 1.12 BIAS = −0.78 RMS = 2.71 $cm^3 \cdot mol^{-1}$

## Table 6. PVT DATA

Data from Beattie et al. [49]

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | $\rho$, expt<br>$mol \cdot dm^{-3}$ | $\rho$, calc<br>$mol \cdot dm^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 298.150 | 1.126 | 1.128 | 0.17 | 0.500 | 0.499 | -0.19 | 0.0 |
| 298.150 | 2.041 | 2.045 | 0.20 | 1.000 | 0.998 | -0.25 | 0.0 |
| 298.150 | 2.770 | 2.772 | 0.05 | 1.500 | 1.499 | -0.07 | 0.0 |
| 298.150 | 3.327 | 3.329 | 0.04 | 2.000 | 1.999 | -0.07 | 0.0 |
| 298.150 | 3.737 | 3.737 | 0.01 | 2.500 | 2.500 | -0.01 | 0.0 |
| 298.150 | 4.019 | 4.018 | -0.02 | 3.000 | 3.002 | 0.07 | 0.0 |
| 323.150 | 1.240 | 1.241 | 0.10 | 0.500 | 0.499 | -0.11 | 0.0 |
| 323.150 | 2.288 | 2.292 | 0.17 | 1.000 | 0.998 | -0.20 | 0.0 |
| 323.150 | 3.165 | 3.171 | 0.17 | 1.500 | 1.497 | -0.22 | 0.0 |
| 323.150 | 3.892 | 3.898 | 0.16 | 2.000 | 1.995 | -0.23 | 0.0 |
| 323.150 | 4.486 | 4.493 | 0.17 | 2.500 | 2.493 | -0.29 | 0.0 |
| 323.150 | 4.967 | 4.976 | 0.18 | 3.000 | 2.989 | -0.35 | 0.0 |
| 323.150 | 5.357 | 5.365 | 0.15 | 3.500 | 3.489 | -0.32 | 0.0 |
| 323.150 | 5.671 | 5.678 | 0.12 | 4.000 | 3.988 | -0.29 | 0.0 |
| 323.150 | 5.926 | 5.931 | 0.08 | 4.500 | 4.489 | -0.24 | 0.0 |
| 323.150 | 6.136 | 6.141 | 0.08 | 5.000 | 4.988 | -0.25 | 0.0 |
| 348.150 | 1.352 | 1.354 | 0.18 | 0.500 | 0.499 | -0.19 | 0.0 |
| 348.150 | 2.528 | 2.534 | 0.25 | 1.000 | 0.997 | -0.28 | 0.0 |
| 348.150 | 3.554 | 3.559 | 0.14 | 1.500 | 1.497 | -0.17 | 0.0 |
| 348.150 | 4.438 | 4.448 | 0.22 | 2.000 | 1.994 | -0.30 | 0.0 |
| 348.150 | 5.205 | 5.218 | 0.25 | 2.500 | 2.491 | -0.37 | 0.0 |
| 348.150 | 5.875 | 5.888 | 0.23 | 3.000 | 2.989 | -0.36 | 0.0 |
| 348.150 | 6.463 | 6.475 | 0.19 | 3.500 | 3.489 | -0.32 | 0.0 |
| 348.150 | 6.980 | 6.995 | 0.20 | 4.000 | 3.986 | -0.36 | 0.0 |
| 348.150 | 7.449 | 7.463 | 0.18 | 4.500 | 4.485 | -0.33 | 0.0 |
| 348.150 | 7.882 | 7.895 | 0.16 | 5.000 | 4.985 | -0.30 | 0.0 |
| 373.150 | 1.462 | 1.466 | 0.27 | 0.500 | 0.499 | -0.29 | 0.0 |
| 373.150 | 2.764 | 2.774 | 0.35 | 1.000 | 0.996 | -0.39 | 0.0 |
| 373.150 | 3.930 | 3.941 | 0.27 | 1.500 | 1.495 | -0.32 | 0.0 |
| 373.150 | 4.968 | 4.986 | 0.36 | 2.000 | 1.991 | -0.45 | 0.0 |
| 373.150 | 5.906 | 5.925 | 0.33 | 2.500 | 2.489 | -0.43 | 0.0 |
| 373.150 | 6.756 | 6.777 | 0.30 | 3.000 | 2.987 | -0.42 | 0.0 |
| 373.150 | 7.534 | 7.556 | 0.29 | 3.500 | 3.486 | -0.41 | 0.0 |
| 373.150 | 8.258 | 8.279 | 0.26 | 4.000 | 3.985 | -0.38 | 0.0 |
| 373.150 | 8.942 | 8.962 | 0.22 | 4.500 | 4.485 | -0.33 | 0.0 |

Table 6. **PVT DATA** (continued)

**Data from Beattie et al. [49] (continued)**

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | $\rho$, expt<br>$mol \cdot dm^{-3}$ | $\rho$, calc<br>$mol \cdot dm^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 373.150 | 9.598 | 9.619 | 0.22 | 5.000 | 4.984 | −0.32 | 0.0 |
| 398.150 | 1.573 | 1.577 | 0.31 | 0.500 | 0.498 | −0.32 | 0.0 |
| 398.150 | 3.003 | 3.011 | 0.25 | 1.000 | 0.997 | −0.28 | 0.0 |
| 398.150 | 4.305 | 4.318 | 0.29 | 1.500 | 1.495 | −0.34 | 0.0 |
| 398.150 | 5.497 | 5.516 | 0.34 | 2.000 | 1.992 | −0.41 | 0.0 |
| 398.150 | 6.599 | 6.621 | 0.33 | 2.500 | 2.490 | −0.40 | 0.0 |
| 398.150 | 7.626 | 7.650 | 0.32 | 3.000 | 2.988 | −0.41 | 0.0 |
| 398.150 | 8.593 | 8.619 | 0.30 | 3.500 | 3.486 | −0.39 | 0.0 |
| 398.150 | 9.515 | 9.544 | 0.30 | 4.000 | 3.984 | −0.39 | 0.0 |
| 398.150 | 10.409 | 10.441 | 0.31 | 4.500 | 4.482 | −0.40 | 0.0 |
| 398.150 | 11.294 | 11.327 | 0.29 | 5.000 | 4.981 | −0.37 | 0.0 |
| 423.150 | 1.682 | 1.688 | 0.38 | 0.500 | 0.498 | −0.39 | 0.0 |
| 423.150 | 3.231 | 3.246 | 0.47 | 1.000 | 0.995 | −0.50 | 0.0 |
| 423.150 | 4.669 | 4.691 | 0.47 | 1.500 | 1.492 | −0.53 | 0.0 |
| 423.150 | 6.010 | 6.039 | 0.50 | 2.000 | 1.989 | −0.57 | 0.0 |
| 423.150 | 7.273 | 7.308 | 0.47 | 2.500 | 2.486 | −0.56 | 0.0 |
| 423.150 | 8.472 | 8.512 | 0.47 | 3.000 | 2.983 | −0.57 | 0.0 |
| 423.150 | 9.625 | 9.669 | 0.46 | 3.500 | 3.481 | −0.55 | 0.0 |
| 423.150 | 10.747 | 10.794 | 0.44 | 4.000 | 3.979 | −0.53 | 0.0 |
| 423.150 | 11.855 | 11.905 | 0.42 | 4.500 | 4.477 | −0.50 | 0.0 |
| 423.150 | 12.968 | 13.020 | 0.40 | 5.000 | 4.977 | −0.46 | 0.0 |
| 448.150 | 1.790 | 1.799 | 0.48 | 0.500 | 0.498 | −0.49 | 0.0 |
| 448.150 | 3.462 | 3.481 | 0.53 | 1.000 | 0.994 | −0.56 | 0.0 |
| 448.150 | 5.032 | 5.062 | 0.59 | 1.500 | 1.490 | −0.65 | 0.0 |
| 448.150 | 6.521 | 6.558 | 0.57 | 2.000 | 1.987 | −0.64 | 0.0 |
| 448.150 | 7.944 | 7.988 | 0.55 | 2.500 | 2.484 | −0.62 | 0.0 |
| 448.150 | 9.315 | 9.365 | 0.54 | 3.000 | 2.981 | −0.62 | 0.0 |
| 448.150 | 10.652 | 10.708 | 0.52 | 3.500 | 3.479 | −0.60 | 0.0 |
| 448.150 | 11.973 | 12.033 | 0.50 | 4.000 | 3.977 | −0.57 | 0.0 |
| 448.150 | 13.294 | 13.357 | 0.48 | 4.500 | 4.476 | −0.53 | 0.0 |
| 448.150 | 14.632 | 14.700 | 0.46 | 5.000 | 4.975 | −0.50 | 0.0 |
| 473.150 | 1.896 | 1.909 | 0.71 | 0.500 | 0.496 | −0.73 | 0.0 |
| 473.150 | 3.692 | 3.714 | 0.58 | 1.000 | 0.994 | −0.61 | 0.0 |
| 473.150 | 5.396 | 5.430 | 0.63 | 1.500 | 1.490 | −0.68 | 0.0 |
| 473.150 | 7.030 | 7.074 | 0.62 | 2.000 | 1.986 | −0.68 | 0.0 |

Data from Beattie et al. [49] (continued)

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | $\rho$, expt<br>$mol \cdot dm^{-3}$ | $\rho$, calc<br>$mol \cdot dm^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 473.150 | 8.610 | 8.662 | 0.61 | 2.500 | 2.483 | −0.67 | 0.0 |
| 473.150 | 10.152 | 10.212 | 0.59 | 3.000 | 2.981 | −0.65 | 0.0 |
| 473.150 | 11.673 | 11.739 | 0.57 | 3.500 | 3.478 | −0.62 | 0.0 |
| 473.150 | 13.191 | 13.262 | 0.54 | 4.000 | 3.977 | −0.58 | 0.0 |
| 473.150 | 14.723 | 14.799 | 0.52 | 4.500 | 4.475 | −0.55 | 0.0 |
| 473.150 | 16.290 | 16.370 | 0.49 | 5.000 | 4.975 | −0.50 | 0.0 |
| 498.150 | 2.006 | 2.019 | 0.65 | 0.500 | 0.497 | −0.67 | 0.0 |
| 498.150 | 3.915 | 3.946 | 0.79 | 1.000 | 0.992 | −0.82 | 0.0 |
| 498.150 | 5.748 | 5.796 | 0.83 | 1.500 | 1.487 | −0.88 | 0.0 |
| 498.150 | 7.525 | 7.586 | 0.81 | 2.000 | 1.983 | −0.86 | 0.0 |
| 498.150 | 9.259 | 9.333 | 0.79 | 2.500 | 2.479 | −0.85 | 0.0 |
| 498.150 | 10.967 | 11.052 | 0.78 | 3.000 | 2.975 | −0.83 | 0.0 |
| 498.150 | 12.668 | 12.763 | 0.75 | 3.500 | 3.472 | −0.80 | 0.0 |
| 498.150 | 14.378 | 14.483 | 0.73 | 4.000 | 3.970 | −0.76 | 0.0 |
| 498.150 | 16.119 | 16.232 | 0.70 | 4.500 | 4.468 | −0.71 | 0.0 |
| 498.150 | 17.907 | 18.031 | 0.69 | 5.000 | 4.966 | −0.68 | 0.0 |
| 523.150 | 2.117 | 2.129 | 0.59 | 0.500 | 0.497 | −0.60 | 0.0 |
| 523.150 | 4.141 | 4.178 | 0.88 | 1.000 | 0.991 | −0.90 | 0.0 |
| 523.150 | 6.103 | 6.161 | 0.95 | 1.500 | 1.485 | −0.99 | 0.0 |
| 523.150 | 8.021 | 8.096 | 0.94 | 2.000 | 1.980 | −0.98 | 0.0 |
| 523.150 | 9.911 | 9.999 | 0.90 | 2.500 | 2.477 | −0.94 | 0.0 |
| 523.150 | 11.784 | 11.888 | 0.88 | 3.000 | 2.972 | −0.92 | 0.0 |
| 523.150 | 13.663 | 13.781 | 0.87 | 3.500 | 3.469 | −0.89 | 0.0 |
| 523.150 | 15.563 | 15.697 | 0.86 | 4.000 | 3.965 | −0.87 | 0.0 |
| 523.150 | 17.516 | 17.656 | 0.80 | 4.500 | 4.465 | −0.79 | 0.0 |
| 523.150 | 19.532 | 19.683 | 0.77 | 5.000 | 4.964 | −0.73 | 0.0 |

Number of Points [49] 96

Pressure Calculation:
AAD% = 0.43 BIAS% = 0.43 RMS% = 0.25

Density Calculation:
AAD2% = 0.49 BIAS2% = −0.49 RMS2% = 0.23

Data from Beattie et al. [49] (continued)

| T K | P, expt MPa | P, calc MPa | dev % | ρ, expt $mol \cdot dm^{-3}$ | ρ, calc $mol \cdot dm^{-3}$ | dev % | wt |
|---|---|---|---|---|---|---|---|

Absolute Deviations:

Pressure Calculation:

AAD = 0.04 BIAS = 0.04 RMS = 0.04 MPa

Density Calculation:

AAD2 = 0.013 BIAS2 = −0.013 RMS2 = 0.009 $mol \cdot dm^{-3}$

Data from Besserer and Robinson [50]

| T K | P, expt MPa | P, calc MPa | dev % | ρ, expt $mol \cdot dm^{-3}$ | ρ, calc $mol \cdot dm^{-3}$ | dev % | wt |
|---|---|---|---|---|---|---|---|
| 311.094 | 0.690 | 0.690 | 0.03 | 0.280 | 0.280 | −0.03 | 0.0 |
| 311.094 | 1.379 | 1.381 | 0.12 | 0.591 | 0.590 | −0.14 | 0.0 |
| 311.094 | 2.068 | 2.074 | 0.29 | 0.945 | 0.942 | −0.35 | 0.0 |
| 311.094 | 2.758 | 2.760 | 0.09 | 1.353 | 1.351 | −0.12 | 0.0 |
| 311.094 | 3.447 | 3.446 | −0.03 | 1.849 | 1.849 | 0.04 | 0.0 |
| 311.094 | 4.137 | 4.137 | 0.00 | 2.503 | 2.503 | 0.00 | 0.0 |
| 311.094 | 4.826 | 4.851 | 0.50 | 3.581 | 3.530 | −1.43 | 0.0 |
| 311.094 | 5.171 | 5.196 | 0.47 | 4.617 | 4.512 | −2.27 | 0.0 |
| 311.094 | 5.516 | 5.555 | 0.72 | 7.698 | 7.327 | −4.82 | 0.0 |
| 311.094 | 5.861 | 5.926 | 1.11 | 9.210 | 9.059 | −1.64 | 0.0 |
| 311.094 | 6.205 | 6.282 | 1.24 | 9.792 | 9.689 | −1.05 | 0.0 |
| 311.094 | 6.895 | 6.921 | 0.38 | 10.412 | 10.392 | −0.19 | 0.0 |
| 311.094 | 7.584 | 7.475 | −1.44 | 10.780 | 10.842 | 0.57 | 0.0 |
| 311.094 | 8.274 | 8.111 | −1.96 | 11.107 | 11.179 | 0.65 | 0.0 |
| 311.094 | 8.963 | 8.722 | −2.69 | 11.361 | 11.451 | 0.79 | 0.0 |
| 311.094 | 9.653 | 9.366 | −2.97 | 11.589 | 11.681 | 0.79 | 0.0 |
| 311.094 | 10.342 | 10.035 | −2.97 | 11.794 | 11.880 | 0.73 | 0.0 |
| 344.483 | 0.690 | 0.690 | 0.06 | 0.249 | 0.249 | −0.06 | 0.0 |
| 344.483 | 1.379 | 1.379 | 0.00 | 0.517 | 0.517 | 0.00 | 0.0 |
| 344.483 | 2.068 | 2.068 | −0.01 | 0.806 | 0.806 | 0.02 | 0.0 |
| 344.483 | 2.758 | 2.755 | −0.09 | 1.121 | 1.122 | 0.11 | 0.0 |
| 344.483 | 3.447 | 3.446 | −0.04 | 1.470 | 1.470 | 0.05 | 0.0 |
| 344.483 | 4.137 | 4.141 | 0.09 | 1.861 | 1.859 | −0.13 | 0.0 |
| 344.483 | 4.826 | 4.845 | 0.39 | 2.311 | 2.299 | −0.56 | 0.0 |
| 344.483 | 5.171 | 5.197 | 0.49 | 2.561 | 2.542 | −0.73 | 0.0 |

Table 6. PVT DATA (continued)

Data from Besserer and Robinson [50] (continued)

| T K | P, expt MPa | P, calc MPa | dev % | $\rho$, expt $mol \cdot dm^{-3}$ | $\rho$, calc $mol \cdot dm^{-3}$ | dev % | wt |
|---|---|---|---|---|---|---|---|
| 344.483 | 5.516 | 5.540 | 0.44 | 2.824 | 2.804 | -0.68 | 0.0 |
| 344.483 | 5.861 | 5.885 | 0.42 | 3.110 | 3.088 | -0.68 | 0.0 |
| 344.483 | 6.205 | 6.233 | 0.44 | 3.423 | 3.397 | -0.75 | 0.0 |
| 344.483 | 6.895 | 6.915 | 0.29 | 4.122 | 4.100 | -0.54 | 0.0 |
| 344.483 | 7.584 | 7.608 | 0.31 | 4.959 | 4.928 | -0.62 | 0.0 |
| 344.483 | 8.274 | 8.295 | 0.26 | 5.883 | 5.854 | -0.50 | 0.0 |
| 344.483 | 8.963 | 8.962 | -0.01 | 6.774 | 6.775 | 0.02 | 0.0 |
| 344.483 | 9.653 | 9.631 | -0.22 | 7.556 | 7.579 | 0.30 | 0.0 |
| 344.483 | 10.342 | 10.287 | -0.53 | 8.188 | 8.235 | 0.58 | 0.0 |
| 372.372 | 0.690 | 0.688 | -0.16 | 0.228 | 0.229 | 0.16 | 0.0 |
| 372.372 | 1.379 | 1.375 | -0.30 | 0.468 | 0.470 | 0.32 | 0.0 |
| 372.372 | 2.068 | 2.059 | -0.47 | 0.722 | 0.725 | 0.51 | 0.0 |
| 372.372 | 2.758 | 2.738 | -0.71 | 0.989 | 0.997 | 0.81 | 0.0 |
| 372.372 | 3.447 | 3.420 | -0.80 | 1.274 | 1.286 | 0.94 | 0.0 |
| 372.372 | 4.137 | 4.094 | -1.04 | 1.576 | 1.595 | 1.26 | 0.0 |
| 372.372 | 4.826 | 4.772 | -1.12 | 1.901 | 1.928 | 1.42 | 0.0 |
| 372.372 | 5.171 | 5.105 | -1.27 | 2.070 | 2.104 | 1.65 | 0.0 |
| 372.372 | 5.516 | 5.442 | -1.33 | 2.247 | 2.286 | 1.76 | 0.0 |
| 372.372 | 5.861 | 5.784 | -1.31 | 2.433 | 2.476 | 1.76 | 0.0 |
| 372.372 | 6.205 | 6.114 | -1.47 | 2.620 | 2.673 | 2.02 | 0.0 |
| 372.372 | 6.895 | 6.784 | -1.60 | 3.022 | 3.091 | 2.29 | 0.0 |
| 372.372 | 7.584 | 7.441 | -1.89 | 3.445 | 3.542 | 2.79 | 0.0 |
| 372.372 | 8.274 | 8.102 | -2.08 | 3.901 | 4.025 | 3.16 | 0.0 |
| 372.372 | 8.963 | 8.712 | -2.80 | 4.347 | 4.536 | 4.36 | 0.0 |
| 372.372 | 9.653 | 9.410 | -2.51 | 4.879 | 5.067 | 3.86 | 0.0 |
| 372.372 | 10.342 | 10.052 | -2.81 | 5.379 | 5.605 | 4.20 | 0.0 |
| 394.039 | 0.690 | 0.689 | 0.00 | 0.215 | 0.215 | 0.00 | 0.0 |
| 394.039 | 1.379 | 1.380 | 0.05 | 0.440 | 0.440 | -0.05 | 0.0 |
| 394.039 | 2.068 | 2.068 | -0.02 | 0.674 | 0.675 | 0.02 | 0.0 |
| 394.039 | 2.758 | 2.758 | 0.00 | 0.921 | 0.921 | 0.00 | 0.0 |
| 394.039 | 3.447 | 3.447 | 0.00 | 1.180 | 1.180 | 0.01 | 0.0 |
| 394.039 | 4.137 | 4.132 | -0.11 | 1.450 | 1.451 | 0.12 | 0.0 |
| 394.039 | 4.826 | 4.820 | -0.12 | 1.735 | 1.738 | 0.14 | 0.0 |
| 394.039 | 5.171 | 5.165 | -0.12 | 1.883 | 1.886 | 0.15 | 0.0 |
| 394.039 | 5.516 | 5.509 | -0.12 | 2.036 | 2.039 | 0.15 | 0.0 |

Data from Besserer and Robinson [50] (continued)

| T K | P, expt MPa | P, calc MPa | dev % | $\rho$, expt $mol \cdot dm^{-3}$ | $\rho$, calc $mol \cdot dm^{-3}$ | dev % | wt |
|---|---|---|---|---|---|---|---|
| 394.039 | 5.861 | 5.854 | -0.12 | 2.192 | 2.195 | 0.14 | 0.0 |
| 394.039 | 6.205 | 6.199 | -0.11 | 2.353 | 2.356 | 0.13 | 0.0 |
| 394.039 | 6.895 | 6.891 | -0.06 | 2.688 | 2.690 | 0.07 | 0.0 |
| 394.039 | 7.584 | 7.580 | -0.05 | 3.038 | 3.040 | 0.07 | 0.0 |
| 394.039 | 8.274 | 8.277 | 0.04 | 3.408 | 3.406 | -0.05 | 0.0 |
| 394.039 | 8.963 | 8.966 | 0.03 | 3.789 | 3.788 | -0.04 | 0.0 |
| 394.039 | 9.653 | 9.659 | 0.06 | 4.185 | 4.181 | -0.08 | 0.0 |
| 394.039 | 10.342 | 10.338 | -0.04 | 4.582 | 4.584 | 0.06 | 0.0 |

Number of Points [50] 68

Pressure Calculation:
AAD% = 0.67 BIAS% = -0.43 RMS% = 1.00

Density Calculation:
AAD2% = 0.83 BIAS2% = 0.32 RMS2% = 1.37

Absolute Deviations:
Pressure Calculation:
AAD = 0.05 BIAS = -0.04 RMS = 0.09 MPa

Density Calculation:
AAD2 = 0.039 BIAS2 = 0.009 RMS2 = 0.075 $mol \cdot dm^{-3}$

Data from Douslin and Harrison [9]

| T K | P, expt MPa | P, calc MPa | dev % | $\rho$, expt $mol \cdot dm^{-3}$ | $\rho$, calc $mol \cdot dm^{-3}$ | dev % | wt |
|---|---|---|---|---|---|---|---|
| 273.150 | 1.430 | 1.429 | -0.03 | 0.750 | 0.750 | 0.04 | 71.2 |
| 298.150 | 1.612 | 1.611 | -0.02 | 0.750 | 0.750 | 0.02 | 62.0 |
| 303.150 | 1.648 | 1.647 | -0.02 | 0.750 | 0.750 | 0.03 | 60.4 |
| 323.150 | 1.790 | 1.789 | -0.02 | 0.750 | 0.750 | 0.03 | 55.1 |
| 348.150 | 1.965 | 1.965 | -0.02 | 0.750 | 0.750 | 0.02 | 49.6 |
| 373.150 | 2.139 | 2.139 | -0.02 | 0.750 | 0.750 | 0.03 | 45.2 |
| 398.150 | 2.312 | 2.311 | -0.02 | 0.750 | 0.750 | 0.02 | 41.6 |
| 423.150 | 2.483 | 2.483 | -0.02 | 0.750 | 0.750 | 0.02 | 38.5 |
| 448.150 | 2.654 | 2.653 | -0.02 | 0.750 | 0.750 | 0.02 | 35.9 |
| 473.150 | 2.824 | 2.824 | -0.01 | 0.750 | 0.750 | 0.01 | 33.6 |

Table 6. **PVT DATA** (continued)

Data from Douslin and Harrison [9] (continued)

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | ρ, expt<br>$mol \cdot dm^{-3}$ | ρ, calc<br>$mol \cdot dm^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 498.150 | 2.993 | 2.993 | 0.00 | 0.750 | 0.750 | 0.01 | 31.6 |
| 523.150 | 3.163 | 3.163 | -0.01 | 0.750 | 0.750 | 0.01 | 29.8 |
| 548.150 | 3.331 | 3.331 | 0.00 | 0.750 | 0.750 | 0.00 | 28.2 |
| 573.150 | 3.500 | 3.500 | -0.01 | 0.750 | 0.750 | 0.01 | 26.8 |
| 598.150 | 3.669 | 3.668 | -0.02 | 0.750 | 0.750 | 0.02 | 25.5 |
| 623.150 | 3.837 | 3.836 | -0.03 | 0.750 | 0.750 | 0.03 | 24.3 |
| 273.150 | 1.791 | 1.790 | -0.03 | 1.000 | 1.000 | 0.04 | 58.8 |
| 298.150 | 2.045 | 2.045 | -0.01 | 1.000 | 1.000 | 0.01 | 50.1 |
| 303.150 | 2.095 | 2.095 | -0.01 | 1.000 | 1.000 | 0.01 | 48.7 |
| 323.150 | 2.292 | 2.292 | 0.00 | 1.000 | 1.000 | 0.01 | 43.9 |
| 348.150 | 2.534 | 2.534 | 0.00 | 1.000 | 1.000 | 0.00 | 39.1 |
| 373.150 | 2.774 | 2.774 | 0.00 | 1.000 | 1.000 | 0.00 | 35.4 |
| 398.150 | 3.011 | 3.011 | 0.00 | 1.000 | 1.000 | 0.00 | 32.3 |
| 423.150 | 3.246 | 3.246 | 0.01 | 1.000 | 1.000 | -0.01 | 29.7 |
| 448.150 | 3.480 | 3.481 | 0.01 | 1.000 | 1.000 | -0.01 | 27.5 |
| 473.150 | 3.713 | 3.714 | 0.02 | 1.000 | 1.000 | -0.02 | 25.7 |
| 498.150 | 3.945 | 3.946 | 0.03 | 1.000 | 1.000 | -0.03 | 24.1 |
| 523.150 | 4.176 | 4.178 | 0.03 | 1.000 | 1.000 | -0.03 | 22.6 |
| 548.150 | 4.407 | 4.408 | 0.03 | 1.000 | 1.000 | -0.03 | 21.4 |
| 573.150 | 4.638 | 4.639 | 0.03 | 1.000 | 1.000 | -0.03 | 20.2 |
| 598.150 | 4.867 | 4.869 | 0.03 | 1.000 | 1.000 | -0.03 | 19.2 |
| 623.150 | 5.098 | 5.098 | 0.00 | 1.000 | 1.000 | 0.00 | 18.3 |
| 273.150 | 2.353 | 2.352 | -0.03 | 1.500 | 1.501 | 0.05 | 48.1 |
| 298.150 | 2.772 | 2.772 | -0.01 | 1.500 | 1.500 | 0.02 | 39.0 |
| 303.150 | 2.853 | 2.853 | -0.01 | 1.500 | 1.500 | 0.01 | 37.6 |
| 323.150 | 3.171 | 3.171 | -0.01 | 1.500 | 1.500 | 0.01 | 33.0 |
| 348.150 | 3.559 | 3.559 | 0.00 | 1.500 | 1.500 | 0.00 | 28.7 |
| 373.150 | 3.941 | 3.941 | 0.01 | 1.500 | 1.500 | -0.01 | 25.5 |
| 398.150 | 4.317 | 4.318 | 0.02 | 1.500 | 1.500 | -0.02 | 23.0 |
| 423.150 | 4.690 | 4.691 | 0.03 | 1.500 | 1.500 | -0.03 | 20.9 |
| 448.150 | 5.060 | 5.062 | 0.03 | 1.500 | 1.499 | -0.03 | 19.2 |
| 473.150 | 5.428 | 5.430 | 0.04 | 1.500 | 1.499 | -0.04 | 17.7 |
| 498.150 | 5.793 | 5.796 | 0.05 | 1.500 | 1.499 | -0.05 | 16.5 |
| 523.150 | 6.158 | 6.161 | 0.05 | 1.500 | 1.499 | -0.05 | 15.4 |
| 548.150 | 6.522 | 6.525 | 0.05 | 1.500 | 1.499 | -0.05 | 14.5 |

Table 6. PVT DATA (continued)

Data from Douslin and Harrison [9] (continued)

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | $\rho$, expt<br>$mol \cdot dm^{-3}$ | $\rho$, calc<br>$mol \cdot dm^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 573.150 | 6.883 | 6.887 | 0.06 | 1.500 | 1.499 | −0.06 | 13.7 |
| 598.150 | 7.244 | 7.248 | 0.06 | 1.500 | 1.499 | −0.06 | 12.9 |
| 623.150 | 7.607 | 7.609 | 0.03 | 1.500 | 1.500 | −0.03 | 12.3 |
| 298.150 | 3.329 | 3.329 | 0.00 | 2.000 | 2.000 | 0.01 | 34.2 |
| 303.150 | 3.445 | 3.445 | 0.00 | 2.000 | 2.000 | 0.00 | 32.7 |
| 323.150 | 3.898 | 3.898 | 0.01 | 2.000 | 2.000 | −0.01 | 27.9 |
| 348.150 | 4.447 | 4.448 | 0.01 | 2.000 | 2.000 | −0.01 | 23.7 |
| 373.150 | 4.985 | 4.986 | 0.02 | 2.000 | 2.000 | −0.02 | 20.6 |
| 398.150 | 5.514 | 5.516 | 0.03 | 2.000 | 1.999 | −0.04 | 18.3 |
| 423.150 | 6.037 | 6.039 | 0.05 | 2.000 | 1.999 | −0.05 | 16.4 |
| 448.150 | 6.555 | 6.558 | 0.05 | 2.000 | 1.999 | −0.06 | 15.0 |
| 473.150 | 7.070 | 7.074 | 0.06 | 2.000 | 1.999 | −0.06 | 13.7 |
| 498.150 | 7.581 | 7.586 | 0.07 | 2.000 | 1.999 | −0.07 | 12.7 |
| 523.150 | 8.090 | 8.096 | 0.08 | 2.000 | 1.998 | −0.08 | 11.8 |
| 548.150 | 8.596 | 8.604 | 0.09 | 2.000 | 1.998 | −0.09 | 11.0 |
| 573.150 | 9.101 | 9.110 | 0.10 | 2.000 | 1.998 | −0.10 | 10.3 |
| 598.150 | 9.605 | 9.614 | 0.09 | 2.000 | 1.998 | −0.09 | 9.7 |
| 623.150 | 10.111 | 10.117 | 0.06 | 2.000 | 1.999 | −0.06 | 9.2 |
| 298.150 | 3.737 | 3.737 | 0.01 | 2.500 | 2.500 | −0.01 | 32.0 |
| 303.150 | 3.892 | 3.892 | 0.01 | 2.500 | 2.499 | −0.03 | 30.3 |
| 323.150 | 4.493 | 4.493 | 0.01 | 2.500 | 2.499 | −0.02 | 25.1 |
| 348.150 | 5.217 | 5.218 | 0.03 | 2.500 | 2.499 | −0.04 | 20.7 |
| 373.150 | 5.923 | 5.925 | 0.04 | 2.500 | 2.499 | −0.05 | 17.7 |
| 398.150 | 6.618 | 6.621 | 0.05 | 2.500 | 2.499 | −0.06 | 15.5 |
| 423.150 | 7.303 | 7.308 | 0.06 | 2.500 | 2.498 | −0.08 | 13.7 |
| 448.150 | 7.982 | 7.988 | 0.07 | 2.500 | 2.498 | −0.08 | 12.4 |
| 473.150 | 8.654 | 8.662 | 0.09 | 2.500 | 2.497 | −0.10 | 11.2 |
| 498.150 | 9.323 | 9.333 | 0.10 | 2.500 | 2.497 | −0.11 | 10.3 |
| 523.150 | 9.989 | 9.999 | 0.10 | 2.500 | 2.497 | −0.11 | 9.5 |
| 548.150 | 10.652 | 10.663 | 0.10 | 2.500 | 2.497 | −0.11 | 8.9 |
| 573.150 | 11.312 | 11.324 | 0.11 | 2.500 | 2.497 | −0.11 | 8.3 |
| 598.150 | 11.970 | 11.983 | 0.10 | 2.500 | 2.497 | −0.10 | 7.8 |
| 623.150 | 12.631 | 12.639 | 0.06 | 2.500 | 2.498 | −0.06 | 7.3 |
| 298.150 | 4.017 | 4.018 | 0.01 | 3.000 | 2.999 | −0.02 | 31.0 |
| 303.150 | 4.215 | 4.216 | 0.01 | 3.000 | 2.999 | −0.04 | 29.1 |

Table 6. **PVT DATA** (continued)

Data from Douslin and Harrison [9] (continued)

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | $\rho$, expt<br>$mol \cdot dm^{-3}$ | $\rho$, calc<br>$mol \cdot dm^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 323.150 | 4.975 | 4.976 | 0.02 | 3.000 | 2.999 | -0.04 | 23.4 |
| 348.150 | 5.886 | 5.888 | 0.03 | 3.000 | 2.998 | -0.05 | 18.8 |
| 373.150 | 6.773 | 6.777 | 0.05 | 3.000 | 2.998 | -0.07 | 15.7 |
| 398.150 | 7.645 | 7.650 | 0.07 | 3.000 | 2.997 | -0.08 | 13.5 |
| 423.150 | 8.504 | 8.512 | 0.09 | 3.000 | 2.997 | -0.11 | 11.9 |
| 448.150 | 9.356 | 9.365 | 0.10 | 3.000 | 2.997 | -0.11 | 10.6 |
| 473.150 | 10.201 | 10.212 | 0.11 | 3.000 | 2.996 | -0.12 | 9.6 |
| 498.150 | 11.039 | 11.052 | 0.12 | 3.000 | 2.996 | -0.13 | 8.7 |
| 523.150 | 11.874 | 11.888 | 0.12 | 3.000 | 2.996 | -0.13 | 8.0 |
| 548.150 | 12.706 | 12.720 | 0.12 | 3.000 | 2.996 | -0.12 | 7.4 |
| 573.150 | 13.533 | 13.549 | 0.12 | 3.000 | 2.996 | -0.12 | 6.9 |
| 598.150 | 14.359 | 14.374 | 0.10 | 3.000 | 2.997 | -0.10 | 6.4 |
| 623.150 | 15.188 | 15.196 | 0.05 | 3.000 | 2.998 | -0.05 | 6.1 |
| 303.150 | 4.435 | 4.435 | 0.02 | 3.500 | 3.498 | -0.06 | 28.5 |
| 323.150 | 5.364 | 5.365 | 0.03 | 3.500 | 3.498 | -0.06 | 22.3 |
| 348.150 | 6.472 | 6.475 | 0.04 | 3.500 | 3.498 | -0.07 | 17.4 |
| 373.150 | 7.551 | 7.556 | 0.06 | 3.500 | 3.497 | -0.09 | 14.3 |
| 398.150 | 8.612 | 8.619 | 0.08 | 3.500 | 3.496 | -0.10 | 12.1 |
| 423.150 | 9.659 | 9.669 | 0.10 | 3.500 | 3.496 | -0.13 | 10.5 |
| 448.150 | 10.696 | 10.708 | 0.11 | 3.500 | 3.496 | -0.13 | 9.3 |
| 473.150 | 11.726 | 11.739 | 0.11 | 3.500 | 3.496 | -0.13 | 8.3 |
| 498.150 | 12.747 | 12.763 | 0.12 | 3.500 | 3.495 | -0.13 | 7.5 |
| 523.150 | 13.764 | 13.781 | 0.12 | 3.500 | 3.496 | -0.13 | 6.9 |
| 548.150 | 14.776 | 14.794 | 0.12 | 3.500 | 3.496 | -0.12 | 6.3 |
| 573.150 | 15.785 | 15.803 | 0.11 | 3.500 | 3.496 | -0.11 | 5.9 |
| 598.150 | 16.792 | 16.807 | 0.09 | 3.500 | 3.497 | -0.09 | 5.5 |
| 623.150 | 17.803 | 17.808 | 0.03 | 3.500 | 3.499 | -0.03 | 5.1 |
| 303.150 | 4.571 | 4.572 | 0.01 | 4.000 | 3.997 | -0.08 | 28.3 |
| 323.150 | 5.677 | 5.678 | 0.02 | 4.000 | 3.998 | -0.05 | 21.5 |
| 348.150 | 6.992 | 6.995 | 0.04 | 4.000 | 3.997 | -0.06 | 16.4 |
| 373.150 | 8.274 | 8.279 | 0.07 | 4.000 | 3.996 | -0.10 | 13.1 |
| 398.150 | 9.535 | 9.544 | 0.09 | 4.000 | 3.995 | -0.12 | 11.0 |
| 423.150 | 10.782 | 10.794 | 0.11 | 4.000 | 3.995 | -0.14 | 9.4 |
| 448.150 | 12.019 | 12.033 | 0.11 | 4.000 | 3.995 | -0.13 | 8.2 |
| 473.150 | 13.246 | 13.262 | 0.12 | 4.000 | 3.995 | -0.13 | 7.3 |

Table 6. PVT DATA (continued)

Data from Douslin and Harrison [9] (continued)

| T K | P, expt MPa | P, calc MPa | dev % | $\rho$, expt $mol \cdot dm^{-3}$ | $\rho$, calc $mol \cdot dm^{-3}$ | dev % | wt |
|---|---|---|---|---|---|---|---|
| 498.150 | 14.465 | 14.483 | 0.12 | 4.000 | 3.995 | −0.13 | 6.6 |
| 523.150 | 15.679 | 15.697 | 0.11 | 4.000 | 3.995 | −0.11 | 6.0 |
| 548.150 | 16.886 | 16.905 | 0.11 | 4.000 | 3.996 | −0.11 | 5.5 |
| 573.150 | 18.090 | 18.108 | 0.10 | 4.000 | 3.996 | −0.10 | 5.0 |
| 598.150 | 19.292 | 19.305 | 0.07 | 4.000 | 3.997 | −0.07 | 4.7 |
| 623.150 | 20.499 | 20.499 | 0.00 | 4.000 | 4.000 | 0.00 | 4.4 |
| 303.150 | 4.645 | 4.646 | 0.02 | 4.500 | 4.490 | −0.23 | 28.1 |
| 323.150 | 5.930 | 5.931 | 0.02 | 4.500 | 4.497 | −0.06 | 20.9 |
| 348.150 | 7.460 | 7.463 | 0.04 | 4.500 | 4.497 | −0.07 | 15.5 |
| 373.150 | 8.956 | 8.962 | 0.07 | 4.500 | 4.495 | −0.10 | 12.2 |
| 398.150 | 10.432 | 10.441 | 0.09 | 4.500 | 4.495 | −0.12 | 10.0 |
| 423.150 | 11.892 | 11.905 | 0.11 | 4.500 | 4.494 | −0.13 | 8.5 |
| 448.150 | 13.343 | 13.357 | 0.10 | 4.500 | 4.495 | −0.11 | 7.3 |
| 473.150 | 14.782 | 14.799 | 0.11 | 4.500 | 4.495 | −0.12 | 6.5 |
| 498.150 | 16.215 | 16.232 | 0.10 | 4.500 | 4.495 | −0.10 | 5.8 |
| 523.150 | 17.640 | 17.656 | 0.09 | 4.500 | 4.496 | −0.09 | 5.2 |
| 548.150 | 19.057 | 19.074 | 0.09 | 4.500 | 4.496 | −0.09 | 4.8 |
| 573.150 | 20.471 | 20.486 | 0.08 | 4.500 | 4.497 | −0.07 | 4.4 |
| 598.150 | 21.884 | 21.892 | 0.04 | 4.500 | 4.498 | −0.04 | 4.1 |
| 623.150 | 23.303 | 23.293 | −0.04 | 4.500 | 4.502 | 0.04 | 3.8 |
| 323.150 | 6.139 | 6.141 | 0.02 | 5.000 | 4.996 | −0.08 | 20.4 |
| 348.150 | 7.892 | 7.895 | 0.04 | 5.000 | 4.997 | −0.07 | 14.7 |
| 373.150 | 9.614 | 9.619 | 0.06 | 5.000 | 4.995 | −0.09 | 11.3 |
| 398.150 | 11.318 | 11.327 | 0.08 | 5.000 | 4.995 | −0.10 | 9.1 |
| 423.150 | 13.008 | 13.020 | 0.09 | 5.000 | 4.995 | −0.11 | 7.6 |
| 448.150 | 14.687 | 14.700 | 0.09 | 5.000 | 4.995 | −0.10 | 6.6 |
| 473.150 | 16.355 | 16.370 | 0.09 | 5.000 | 4.995 | −0.09 | 5.7 |
| 498.150 | 18.015 | 18.031 | 0.09 | 5.000 | 4.996 | −0.08 | 5.1 |
| 523.150 | 19.667 | 19.683 | 0.08 | 5.000 | 4.996 | −0.08 | 4.6 |
| 548.150 | 21.312 | 21.327 | 0.07 | 5.000 | 4.997 | −0.07 | 4.2 |
| 573.150 | 22.954 | 22.964 | 0.04 | 5.000 | 4.998 | −0.04 | 3.8 |
| 598.150 | 24.595 | 24.594 | 0.00 | 5.000 | 5.000 | 0.00 | 3.5 |
| 623.150 | 26.244 | 26.218 | −0.10 | 5.000 | 5.004 | 0.09 | 3.3 |
| 323.150 | 6.318 | 6.320 | 0.02 | 5.500 | 5.495 | −0.09 | 19.9 |
| 348.150 | 8.302 | 8.304 | 0.03 | 5.500 | 5.497 | −0.05 | 13.9 |

Table 6. **PVT DATA** (continued)

Data from Douslin and Harrison [9] (continued)

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | $\rho$, expt<br>mol•dm$^{-3}$ | $\rho$, calc<br>mol•dm$^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 373.150 | 10.264 | 10.268 | 0.04 | 5.500 | 5.496 | -0.06 | 10.5 |
| 398.150 | 12.211 | 12.219 | 0.06 | 5.500 | 5.496 | -0.07 | 8.3 |
| 423.150 | 14.147 | 14.157 | 0.07 | 5.500 | 5.496 | -0.08 | 6.9 |
| 448.150 | 16.072 | 16.083 | 0.07 | 5.500 | 5.496 | -0.07 | 5.9 |
| 473.150 | 17.986 | 17.999 | 0.07 | 5.500 | 5.496 | -0.07 | 5.1 |
| 498.150 | 19.893 | 19.905 | 0.06 | 5.500 | 5.497 | -0.06 | 4.5 |
| 523.150 | 21.790 | 21.801 | 0.05 | 5.500 | 5.497 | -0.05 | 4.1 |
| 548.150 | 23.681 | 23.689 | 0.04 | 5.500 | 5.498 | -0.03 | 3.7 |
| 573.150 | 25.569 | 25.569 | 0.00 | 5.500 | 5.500 | 0.00 | 3.4 |
| 598.150 | 27.455 | 27.441 | -0.05 | 5.500 | 5.502 | 0.04 | 3.1 |
| 623.150 | 29.353 | 29.307 | -0.16 | 5.500 | 5.507 | 0.13 | 2.9 |
| 323.150 | 6.479 | 6.480 | 0.02 | 6.000 | 5.996 | -0.07 | 19.5 |
| 348.150 | 8.705 | 8.706 | 0.01 | 6.000 | 5.998 | -0.03 | 13.2 |
| 373.150 | 10.921 | 10.925 | 0.03 | 6.000 | 5.998 | -0.04 | 9.7 |
| 398.150 | 13.131 | 13.136 | 0.04 | 6.000 | 5.997 | -0.04 | 7.6 |
| 423.150 | 15.329 | 15.337 | 0.05 | 6.000 | 5.997 | -0.06 | 6.2 |
| 448.150 | 17.520 | 17.529 | 0.05 | 6.000 | 5.997 | -0.05 | 5.3 |
| 473.150 | 19.701 | 19.710 | 0.04 | 6.000 | 5.998 | -0.04 | 4.5 |
| 498.150 | 21.875 | 21.880 | 0.02 | 6.000 | 5.999 | -0.02 | 4.0 |
| 523.150 | 24.036 | 24.041 | 0.02 | 6.000 | 5.999 | -0.02 | 3.6 |
| 548.150 | 26.194 | 26.192 | -0.01 | 6.000 | 6.000 | 0.00 | 3.2 |
| 573.150 | 28.346 | 28.334 | -0.04 | 6.000 | 6.002 | 0.04 | 3.0 |
| 598.150 | 30.500 | 30.468 | -0.10 | 6.000 | 6.005 | 0.08 | 2.7 |
| 623.150 | 32.667 | 32.593 | -0.22 | 6.000 | 6.011 | 0.18 | 2.5 |
| 323.150 | 6.633 | 6.634 | 0.00 | 6.500 | 6.499 | -0.01 | 18.9 |
| 348.150 | 9.116 | 9.116 | 0.00 | 6.500 | 6.500 | 0.00 | 12.4 |
| 373.150 | 11.606 | 11.609 | 0.03 | 6.500 | 6.498 | -0.03 | 8.9 |
| 398.150 | 14.096 | 14.100 | 0.03 | 6.500 | 6.498 | -0.04 | 6.9 |
| 423.150 | 16.580 | 16.586 | 0.04 | 6.500 | 6.498 | -0.04 | 5.6 |
| 448.150 | 19.058 | 19.064 | 0.03 | 6.500 | 6.498 | -0.03 | 4.7 |
| 473.150 | 21.527 | 21.531 | 0.02 | 6.500 | 6.499 | -0.02 | 4.0 |
| 498.150 | 23.989 | 23.988 | 0.00 | 6.500 | 6.500 | 0.00 | 3.5 |
| 523.150 | 26.437 | 26.434 | -0.01 | 6.500 | 6.501 | 0.01 | 3.1 |
| 548.150 | 28.885 | 28.870 | -0.05 | 6.500 | 6.503 | 0.04 | 2.8 |
| 573.150 | 31.324 | 31.296 | -0.09 | 6.500 | 6.505 | 0.07 | 2.6 |

Table 6. **PVT DATA** (continued)

Data from Douslin and Harrison [9] (continued)

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | $\rho$, expt<br>$mol \cdot dm^{-3}$ | $\rho$, calc<br>$mol \cdot dm^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 598.150 | 33.768 | 33.712 | −0.17 | 6.500 | 6.508 | 0.13 | 2.4 |
| 623.150 | 36.221 | 36.119 | −0.28 | 6.500 | 6.514 | 0.22 | 2.2 |
| 323.150 | 6.792 | 6.791 | −0.01 | 7.000 | 7.003 | 0.04 | 18.3 |
| 348.150 | 9.552 | 9.552 | 0.00 | 7.000 | 7.000 | 0.00 | 11.4 |
| 373.150 | 12.337 | 12.341 | 0.03 | 7.000 | 6.997 | −0.04 | 8.0 |
| 398.150 | 15.134 | 15.137 | 0.02 | 7.000 | 6.999 | −0.02 | 6.1 |
| 423.150 | 17.927 | 17.931 | 0.02 | 7.000 | 6.999 | −0.02 | 4.9 |
| 448.150 | 20.718 | 20.718 | 0.00 | 7.000 | 7.000 | 0.00 | 4.1 |
| 473.150 | 23.498 | 23.495 | −0.01 | 7.000 | 7.001 | 0.01 | 3.5 |
| 498.150 | 26.270 | 26.262 | −0.03 | 7.000 | 7.002 | 0.02 | 3.1 |
| 523.150 | 29.033 | 29.018 | −0.05 | 7.000 | 7.003 | 0.04 | 2.8 |
| 548.150 | 31.791 | 31.762 | −0.09 | 7.000 | 7.005 | 0.07 | 2.5 |
| 573.150 | 34.542 | 34.495 | −0.14 | 7.000 | 7.007 | 0.10 | 2.3 |
| 598.150 | 37.299 | 37.216 | −0.22 | 7.000 | 7.011 | 0.16 | 2.1 |
| 623.150 | 40.073 | 39.928 | −0.36 | 7.000 | 7.018 | 0.26 | 1.9 |
| 323.150 | 6.969 | 6.966 | −0.04 | 7.500 | 7.508 | 0.11 | 17.5 |
| 348.150 | 10.030 | 10.033 | 0.03 | 7.500 | 7.497 | −0.03 | 10.4 |
| 373.150 | 13.138 | 13.146 | 0.06 | 7.500 | 7.495 | −0.06 | 7.2 |
| 398.150 | 16.269 | 16.273 | 0.02 | 7.500 | 7.498 | −0.02 | 5.4 |
| 423.150 | 19.399 | 19.402 | 0.01 | 7.500 | 7.499 | −0.01 | 4.3 |
| 448.150 | 22.530 | 22.525 | −0.02 | 7.500 | 7.501 | 0.02 | 3.6 |
| 473.150 | 25.651 | 25.640 | −0.04 | 7.500 | 7.502 | 0.03 | 3.1 |
| 498.150 | 28.765 | 28.743 | −0.07 | 7.500 | 7.504 | 0.05 | 2.7 |
| 523.150 | 31.865 | 31.834 | −0.09 | 7.500 | 7.505 | 0.07 | 2.4 |
| 548.150 | 34.957 | 34.913 | −0.13 | 7.500 | 7.507 | 0.09 | 2.2 |
| 573.150 | 38.045 | 37.978 | −0.18 | 7.500 | 7.509 | 0.12 | 2.0 |
| 323.150 | 7.178 | 7.174 | −0.05 | 8.000 | 8.007 | 0.09 | 16.2 |
| 348.150 | 10.575 | 10.583 | 0.08 | 8.000 | 7.993 | −0.09 | 9.2 |
| 373.150 | 14.042 | 14.053 | 0.08 | 8.000 | 7.994 | −0.07 | 6.3 |
| 398.150 | 17.534 | 17.542 | 0.05 | 8.000 | 7.997 | −0.04 | 4.7 |
| 423.150 | 21.033 | 21.036 | 0.01 | 8.000 | 7.999 | −0.01 | 3.8 |
| 448.150 | 24.535 | 24.526 | −0.03 | 8.000 | 8.002 | 0.03 | 3.1 |
| 473.150 | 28.034 | 28.008 | −0.09 | 8.000 | 8.005 | 0.07 | 2.7 |
| 498.150 | 31.510 | 31.477 | −0.10 | 8.000 | 8.006 | 0.07 | 2.4 |
| 523.150 | 34.978 | 34.933 | −0.13 | 8.000 | 8.007 | 0.09 | 2.1 |

Data from Douslin and Harrison [9] (continued)

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | ρ, expt<br>$mol \cdot dm^{-3}$ | ρ, calc<br>$mol \cdot dm^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 548.150 | 38.441 | 38.374 | −0.17 | 8.000 | 8.009 | 0.11 | 1.9 |
| 323.150 | 7.441 | 7.439 | −0.03 | 8.500 | 8.503 | 0.04 | 14.5 |
| 348.150 | 11.215 | 11.231 | 0.14 | 8.500 | 8.489 | −0.13 | 8.0 |
| 373.150 | 15.076 | 15.094 | 0.12 | 8.500 | 8.492 | −0.09 | 5.4 |
| 398.150 | 18.971 | 18.981 | 0.06 | 8.500 | 8.497 | −0.04 | 4.1 |
| 423.150 | 22.873 | 22.876 | 0.01 | 8.500 | 8.499 | −0.01 | 3.3 |
| 448.150 | 26.782 | 26.767 | −0.06 | 8.500 | 8.503 | 0.04 | 2.7 |
| 473.150 | 30.686 | 30.649 | −0.12 | 8.500 | 8.507 | 0.08 | 2.3 |
| 498.150 | 34.563 | 34.517 | −0.13 | 8.500 | 8.507 | 0.08 | 2.0 |
| 523.150 | 38.431 | 38.369 | −0.16 | 8.500 | 8.508 | 0.10 | 1.8 |
| 323.150 | 7.786 | 7.789 | 0.05 | 9.000 | 8.995 | −0.05 | 12.3 |
| 348.150 | 11.986 | 12.010 | 0.20 | 9.000 | 8.986 | −0.16 | 6.7 |
| 373.150 | 16.286 | 16.308 | 0.14 | 9.000 | 8.991 | −0.10 | 4.6 |
| 398.150 | 20.626 | 20.635 | 0.05 | 9.000 | 8.997 | −0.03 | 3.4 |
| 423.150 | 24.973 | 24.970 | −0.01 | 9.000 | 9.001 | 0.01 | 2.8 |
| 448.150 | 29.323 | 29.301 | −0.07 | 9.000 | 9.004 | 0.04 | 2.3 |
| 473.150 | 33.673 | 33.621 | −0.15 | 9.000 | 9.008 | 0.09 | 2.0 |
| 498.150 | 37.985 | 37.924 | −0.16 | 9.000 | 9.008 | 0.09 | 1.7 |
| 323.150 | 8.250 | 8.264 | 0.17 | 9.500 | 9.487 | −0.13 | 9.8 |
| 348.150 | 12.932 | 12.963 | 0.24 | 9.500 | 9.485 | −0.15 | 5.5 |
| 373.150 | 17.720 | 17.747 | 0.15 | 9.500 | 9.492 | −0.09 | 3.8 |
| 398.150 | 22.551 | 22.560 | 0.04 | 9.500 | 9.498 | −0.02 | 2.9 |
| 423.150 | 27.390 | 27.380 | −0.03 | 9.500 | 9.502 | 0.02 | 2.3 |
| 448.150 | 32.233 | 32.194 | −0.12 | 9.500 | 9.506 | 0.07 | 2.0 |
| 473.150 | 37.061 | 36.992 | −0.19 | 9.500 | 9.510 | 0.10 | 1.7 |
| 323.150 | 8.884 | 8.909 | 0.29 | 10.000 | 9.983 | −0.17 | 7.5 |
| 348.150 | 14.109 | 14.147 | 0.27 | 10.000 | 9.985 | −0.15 | 4.4 |
| 373.150 | 19.442 | 19.470 | 0.14 | 10.000 | 9.993 | −0.07 | 3.1 |
| 398.150 | 24.821 | 24.822 | 0.01 | 10.000 | 10.000 | 0.00 | 2.4 |
| 423.150 | 30.198 | 30.177 | −0.07 | 10.000 | 10.003 | 0.03 | 1.9 |
| 448.150 | 35.572 | 35.520 | −0.15 | 10.000 | 10.007 | 0.07 | 1.6 |
| 323.150 | 9.748 | 9.787 | 0.40 | 10.500 | 10.481 | −0.18 | 5.6 |
| 348.150 | 15.584 | 15.630 | 0.30 | 10.500 | 10.486 | −0.13 | 3.4 |
| 373.150 | 21.524 | 21.555 | 0.14 | 10.500 | 10.493 | −0.06 | 2.5 |
| 398.150 | 27.501 | 27.502 | 0.00 | 10.500 | 10.500 | 0.00 | 2.0 |

Table 6. PVT DATA (continued)

Data from Douslin and Harrison [9] (continued)

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | $\rho$, expt<br>$mol \cdot dm^{-3}$ | $\rho$, calc<br>$mol \cdot dm^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 423.150 | 33.473 | 33.445 | −0.08 | 10.500 | 10.504 | 0.04 | 1.6 |
| 448.150 | 39.435 | 39.368 | −0.17 | 10.500 | 10.508 | 0.08 | 1.4 |
| 305.370 | 4.956 | 4.958 | 0.02 | 9.001 | 8.994 | −0.08 | 0.0 |
| 305.370 | 4.901 | 4.900 | 0.00 | 8.500 | 8.502 | 0.02 | 0.0 |
| 305.370 | 4.881 | 4.881 | 0.00 | 8.000 | 7.989 | −0.14 | 0.0 |
| 305.370 | 4.877 | 4.878 | 0.01 | 7.695 | 7.646 | −0.64 | 0.0 |
| 305.370 | 4.876 | 4.877 | 0.01 | 7.500 | 7.375 | −1.67 | 0.0 |
| 305.370 | 4.876 | 4.876 | 0.01 | 7.395 | 7.197 | −2.68 | 0.0 |
| 305.370 | 4.876 | 4.876 | 0.00 | 7.195 | 6.887 | −4.29 | 0.0 |
| 305.370 | 4.876 | 4.876 | 0.00 | 7.095 | 6.979 | −1.64 | 0.0 |
| 305.370 | 4.876 | 4.876 | 0.00 | 7.000 | 6.774 | −3.23 | 0.0 |
| 305.370 | 4.876 | 4.876 | 0.00 | 6.896 | 6.774 | −1.77 | 0.0 |
| 305.370 | 4.876 | 4.876 | 0.00 | 6.796 | 6.690 | −1.56 | 0.0 |
| 305.370 | 4.876 | 4.876 | 0.00 | 6.696 | 6.674 | −0.32 | 0.0 |
| 305.370 | 4.876 | 4.876 | 0.00 | 6.596 | 6.594 | −0.03 | 0.0 |
| 305.370 | 4.876 | 4.876 | 0.00 | 6.500 | 6.594 | 1.44 | 0.0 |
| 305.370 | 4.876 | 4.876 | 0.00 | 6.396 | 6.439 | 0.66 | 0.0 |
| 305.370 | 4.875 | 4.875 | 0.00 | 6.197 | 6.272 | 1.22 | 0.0 |
| 305.370 | 4.874 | 4.874 | −0.01 | 6.000 | 6.049 | 0.81 | 0.0 |
| 305.370 | 4.872 | 4.872 | −0.01 | 5.747 | 5.784 | 0.65 | 0.0 |
| 305.370 | 4.867 | 4.867 | −0.01 | 5.500 | 5.528 | 0.51 | 0.0 |
| 305.370 | 4.845 | 4.844 | −0.01 | 5.000 | 5.007 | 0.15 | 0.0 |
| 305.370 | 8.883 | 8.970 | 0.98 | 12.001 | 11.976 | −0.21 | 0.0 |
| 305.370 | 7.421 | 7.474 | 0.72 | 11.499 | 11.478 | −0.19 | 0.0 |
| 305.370 | 6.408 | 6.447 | 0.62 | 11.000 | 10.976 | −0.22 | 0.0 |
| 305.370 | 5.738 | 5.766 | 0.50 | 10.500 | 10.473 | −0.26 | 0.0 |
| 305.370 | 5.323 | 5.338 | 0.28 | 10.000 | 9.977 | −0.23 | 0.0 |
| 305.370 | 5.081 | 5.088 | 0.13 | 9.500 | 9.483 | −0.19 | 0.0 |
| 305.370 | 4.794 | 4.794 | 0.00 | 4.500 | 4.500 | 0.01 | 0.0 |
| 305.370 | 4.699 | 4.699 | 0.01 | 4.000 | 3.998 | −0.04 | 0.0 |
| 305.370 | 4.541 | 4.542 | 0.02 | 3.500 | 3.498 | −0.05 | 0.0 |
| 305.370 | 4.301 | 4.302 | 0.02 | 3.000 | 2.999 | −0.04 | 0.0 |
| 305.370 | 3.960 | 3.960 | 0.01 | 2.500 | 2.500 | −0.02 | 0.0 |
| 305.370 | 3.496 | 3.496 | 0.00 | 2.000 | 2.000 | 0.00 | 0.0 |
| 305.370 | 2.888 | 2.888 | −0.01 | 1.500 | 1.500 | 0.01 | 0.0 |

Table 6. **PVT DATA** (continued)

Data from Douslin and Harrison [9] (continued)

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | $\rho$, expt<br>$mol \cdot dm^{-3}$ | $\rho$, calc<br>$mol \cdot dm^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 305.370 | 2.117 | 2.117 | -0.01 | 1.000 | 1.000 | 0.01 | 0.0 |
| 305.370 | 1.663 | 1.663 | -0.02 | 0.750 | 0.750 | 0.02 | 0.0 |
| 298.150 | 4.640 | 4.668 | 0.61 | 11.000 | 10.976 | -0.22 | 0.0 |
| 323.150 | 10.920 | 10.974 | 0.49 | 11.000 | 10.980 | -0.18 | 0.0 |
| 348.150 | 17.442 | 17.499 | 0.32 | 11.000 | 10.986 | -0.12 | 0.0 |
| 373.150 | 24.060 | 24.092 | 0.13 | 11.000 | 10.994 | -0.05 | 0.0 |
| 398.150 | 30.698 | 30.696 | -0.01 | 11.000 | 11.000 | 0.00 | 0.0 |
| 423.150 | 37.323 | 37.284 | -0.10 | 11.000 | 11.005 | 0.04 | 0.0 |
| 298.150 | 5.412 | 5.450 | 0.71 | 11.500 | 11.480 | -0.17 | 0.0 |
| 323.150 | 12.498 | 12.569 | 0.57 | 11.500 | 11.481 | -0.17 | 0.0 |
| 348.150 | 19.780 | 19.856 | 0.38 | 11.500 | 11.486 | -0.13 | 0.0 |
| 373.150 | 27.147 | 27.189 | 0.15 | 11.500 | 11.494 | -0.05 | 0.0 |
| 398.150 | 34.524 | 34.515 | -0.03 | 11.500 | 11.501 | 0.01 | 0.0 |
| 298.150 | 6.614 | 6.675 | 0.92 | 12.000 | 11.979 | -0.17 | 0.0 |
| 323.150 | 14.602 | 14.692 | 0.61 | 12.000 | 11.982 | -0.15 | 0.0 |
| 348.150 | 22.722 | 22.823 | 0.44 | 12.000 | 11.985 | -0.13 | 0.0 |
| 373.150 | 30.916 | 30.969 | 0.17 | 12.000 | 11.994 | -0.05 | 0.0 |
| 398.150 | 39.114 | 39.084 | -0.08 | 12.000 | 12.003 | 0.03 | 0.0 |
| 298.150 | 8.377 | 8.480 | 1.23 | 12.500 | 12.476 | -0.19 | 0.0 |
| 323.150 | 17.352 | 17.481 | 0.75 | 12.500 | 12.479 | -0.16 | 0.0 |
| 348.150 | 26.406 | 26.539 | 0.50 | 12.500 | 12.484 | -0.13 | 0.0 |
| 373.150 | 35.507 | 35.573 | 0.18 | 12.500 | 12.494 | -0.05 | 0.0 |
| 298.150 | 10.859 | 11.022 | 1.51 | 13.000 | 12.972 | -0.21 | 0.0 |
| 323.150 | 20.886 | 21.094 | 1.00 | 13.000 | 12.974 | -0.20 | 0.0 |
| 348.150 | 30.988 | 31.160 | 0.56 | 13.000 | 12.983 | -0.13 | 0.0 |
| 273.150 | 3.158 | 3.280 | 3.86 | 13.500 | 13.477 | -0.17 | 0.0 |
| 298.150 | 14.231 | 14.479 | 1.74 | 13.500 | 13.469 | -0.23 | 0.0 |
| 323.150 | 25.415 | 25.707 | 1.15 | 13.500 | 13.472 | -0.21 | 0.0 |
| 348.150 | 36.640 | 36.865 | 0.61 | 13.500 | 13.482 | -0.13 | 0.0 |
| 273.150 | 6.278 | 6.501 | 3.54 | 14.000 | 13.970 | -0.21 | 0.0 |
| 298.150 | 18.704 | 19.043 | 1.82 | 14.000 | 13.967 | -0.24 | 0.0 |
| 323.150 | 31.174 | 31.515 | 1.10 | 14.000 | 13.973 | -0.19 | 0.0 |
| 273.150 | 10.624 | 10.960 | 3.17 | 14.500 | 14.467 | -0.23 | 0.0 |
| 298.150 | 24.511 | 24.932 | 1.72 | 14.500 | 14.468 | -0.22 | 0.0 |
| 323.150 | 38.361 | 38.739 | 0.99 | 14.500 | 14.476 | -0.16 | 0.0 |

Table 6. PVT DATA (continued)

Data from Douslin and Harrison [9] (continued)

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | ρ, expt<br>mol•dm$^{-3}$ | ρ, calc<br>mol•dm$^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 273.150 | 16.425 | 16.896 | 2.86 | 15.000 | 14.965 | -0.23 | 0.0 |
| 298.150 | 31.856 | 32.387 | 1.67 | 15.000 | 14.968 | -0.21 | 0.0 |
| 248.150 | 6.739 | 7.129 | 5.79 | 15.500 | 15.471 | -0.19 | 0.0 |
| 273.150 | 24.035 | 24.569 | 2.22 | 15.500 | 15.469 | -0.20 | 0.0 |
| 298.150 | 41.026 | 41.679 | 1.59 | 15.500 | 15.468 | -0.21 | 0.0 |
| 248.150 | 14.466 | 15.001 | 3.70 | 16.000 | 15.970 | -0.19 | 0.0 |
| 273.150 | 33.691 | 34.276 | 1.74 | 16.000 | 15.973 | -0.17 | 0.0 |
| 243.150 | 1.307 | 2.134 | 63.29 | 15.382 | 15.312 | -0.46 | 0.0 |
| 243.150 | 1.128 | 1.824 | 61.69 | 15.356 | 15.297 | -0.39 | 0.0 |
| 248.150 | 1.176 | 1.176 | 0.00 | 0.700 | 0.700 | 0.00 | 0.0 |
| 253.150 | 1.695 | 2.104 | 24.15 | 14.778 | 14.733 | -0.30 | 0.0 |
| 253.150 | 1.586 | 2.002 | 26.26 | 14.767 | 14.721 | -0.31 | 0.0 |
| 253.150 | 1.461 | 1.921 | 31.48 | 14.758 | 14.707 | -0.34 | 0.0 |
| 253.150 | 1.418 | 1.420 | 0.11 | 0.862 | 0.861 | -0.15 | 0.0 |
| 253.150 | 1.409 | 1.409 | 0.02 | 0.853 | 0.853 | -0.03 | 0.0 |
| 253.150 | 1.399 | 1.399 | 0.00 | 0.845 | 0.845 | -0.01 | 0.0 |
| 253.150 | 1.344 | 1.343 | -0.03 | 0.800 | 0.800 | 0.04 | 0.0 |
| 253.150 | 1.279 | 1.279 | -0.03 | 0.750 | 0.750 | 0.04 | 0.0 |
| 253.150 | 1.212 | 1.212 | -0.03 | 0.700 | 0.700 | 0.04 | 0.0 |
| 263.150 | 2.056 | 2.303 | 12.03 | 14.120 | 14.085 | -0.25 | 0.0 |
| 263.150 | 1.983 | 2.220 | 11.94 | 14.108 | 14.074 | -0.24 | 0.0 |
| 263.150 | 1.909 | 2.137 | 11.96 | 14.096 | 14.063 | -0.24 | 0.0 |
| 263.150 | 1.855 | 1.856 | 0.05 | 1.151 | 1.150 | -0.07 | 0.0 |
| 263.150 | 1.852 | 1.853 | 0.03 | 1.148 | 1.147 | -0.04 | 0.0 |
| 263.150 | 1.848 | 1.848 | 0.00 | 1.144 | 1.144 | 0.00 | 0.0 |
| 263.150 | 1.829 | 1.829 | -0.02 | 1.126 | 1.126 | 0.04 | 0.0 |
| 273.150 | 2.525 | 2.623 | 3.88 | 13.371 | 13.350 | -0.15 | 0.0 |
| 273.150 | 2.472 | 2.571 | 4.03 | 13.360 | 13.339 | -0.16 | 0.0 |
| 273.150 | 2.417 | 2.512 | 3.91 | 13.348 | 13.327 | -0.15 | 0.0 |
| 273.150 | 2.381 | 2.381 | 0.03 | 1.532 | 1.531 | -0.05 | 0.0 |
| 273.150 | 2.377 | 2.377 | 0.01 | 1.528 | 1.527 | -0.02 | 0.0 |
| 273.150 | 2.353 | 2.352 | -0.03 | 1.500 | 1.501 | 0.06 | 0.0 |
| 283.150 | 3.086 | 3.131 | 1.45 | 12.484 | 12.469 | -0.12 | 0.0 |
| 283.150 | 3.058 | 3.095 | 1.22 | 12.472 | 12.459 | -0.10 | 0.0 |
| 283.150 | 3.028 | 3.064 | 1.19 | 12.461 | 12.448 | -0.10 | 0.0 |

Table 6. PVT DATA (continued)

Data from Douslin and Harrison [9] (continued)

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | $\rho$, expt<br>mol•dm$^{-3}$ | $\rho$, calc<br>mol•dm$^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 283.150 | 3.013 | 3.014 | 0.03 | 2.063 | 2.062 | −0.06 | 0.0 |
| 283.150 | 3.007 | 3.007 | 0.00 | 2.053 | 2.053 | 0.00 | 0.0 |
| 283.150 | 3.005 | 3.005 | 0.00 | 2.050 | 2.050 | 0.01 | 0.0 |
| 283.150 | 2.966 | 2.965 | −0.03 | 1.994 | 1.995 | 0.06 | 0.0 |
| 293.150 | 3.782 | 3.802 | 0.53 | 11.312 | 11.297 | −0.14 | 0.0 |
| 293.150 | 3.771 | 3.789 | 0.48 | 11.302 | 11.288 | −0.13 | 0.0 |
| 293.150 | 3.755 | 3.756 | 0.04 | 2.849 | 2.846 | −0.11 | 0.0 |
| 293.150 | 3.731 | 3.735 | 0.09 | 2.799 | 2.792 | −0.26 | 0.0 |
| 298.150 | 4.218 | 4.238 | 0.45 | 10.540 | 10.511 | −0.27 | 0.0 |
| 298.150 | 4.255 | 4.274 | 0.44 | 10.590 | 10.564 | −0.24 | 0.0 |
| 298.150 | 4.176 | 4.178 | 0.04 | 3.449 | 3.443 | −0.16 | 0.0 |
| 298.150 | 4.163 | 4.164 | 0.03 | 3.399 | 3.395 | −0.12 | 0.0 |
| 302.150 | 4.608 | 4.616 | 0.17 | 9.738 | 9.715 | −0.24 | 0.0 |
| 302.150 | 4.593 | 4.600 | 0.16 | 9.688 | 9.664 | −0.24 | 0.0 |
| 302.150 | 4.578 | 4.585 | 0.16 | 9.639 | 9.613 | −0.27 | 0.0 |
| 302.150 | 4.567 | 4.572 | 0.11 | 9.590 | 9.569 | −0.21 | 0.0 |
| 302.150 | 4.557 | 4.559 | 0.04 | 4.298 | 4.281 | −0.37 | 0.0 |
| 302.150 | 4.545 | 4.546 | 0.02 | 4.196 | 4.188 | −0.18 | 0.0 |
| 302.150 | 4.530 | 4.531 | 0.02 | 4.098 | 4.091 | −0.16 | 0.0 |
| 302.150 | 4.513 | 4.514 | 0.02 | 3.998 | 3.993 | −0.13 | 0.0 |
| 303.150 | 4.676 | 4.678 | 0.05 | 9.342 | 9.330 | −0.13 | 0.0 |
| 303.150 | 4.667 | 4.669 | 0.04 | 9.292 | 9.283 | −0.10 | 0.0 |
| 303.150 | 4.661 | 4.662 | 0.02 | 9.252 | 9.246 | −0.07 | 0.0 |
| 303.150 | 4.655 | 4.656 | 0.02 | 9.219 | 9.213 | −0.07 | 0.0 |
| 303.150 | 4.654 | 4.655 | 0.03 | 4.606 | 4.588 | −0.41 | 0.0 |
| 303.150 | 4.653 | 4.655 | 0.03 | 4.598 | 4.581 | −0.38 | 0.0 |
| 303.150 | 4.649 | 4.650 | 0.03 | 4.548 | 4.535 | −0.29 | 0.0 |
| 303.150 | 4.645 | 4.646 | 0.02 | 4.500 | 4.490 | −0.23 | 0.0 |
| 304.150 | 4.764 | 4.764 | −0.02 | 8.893 | 8.901 | 0.09 | 0.0 |
| 304.150 | 4.760 | 4.759 | −0.03 | 8.842 | 8.855 | 0.15 | 0.0 |
| 304.150 | 4.756 | 4.754 | −0.03 | 8.794 | 8.811 | 0.19 | 0.0 |
| 304.150 | 4.753 | 4.751 | −0.05 | 8.743 | 8.773 | 0.35 | 0.0 |
| 304.150 | 4.751 | 4.752 | 0.02 | 4.998 | 4.981 | −0.34 | 0.0 |
| 304.150 | 4.746 | 4.747 | 0.01 | 4.898 | 4.888 | −0.21 | 0.0 |
| 304.150 | 4.740 | 4.740 | 0.01 | 4.798 | 4.792 | −0.13 | 0.0 |

Data from Douslin and Harrison [9] (continued)

| T K | P, expt MPa | P, calc MPa | dev % | $\rho$, expt $mol \cdot dm^{-3}$ | $\rho$, calc $mol \cdot dm^{-3}$ | dev % | wt |
|---|---|---|---|---|---|---|---|
| 305.150 | 4.857 | 4.856 | −0.01 | 8.093 | 8.122 | 0.36 | 0.0 |
| 305.150 | 4.855 | 4.854 | −0.01 | 7.994 | 8.024 | 0.38 | 0.0 |
| 305.150 | 4.854 | 4.853 | −0.01 | 7.895 | 7.946 | 0.66 | 0.0 |
| 305.150 | 4.854 | 4.853 | −0.02 | 7.844 | 7.930 | 1.10 | 0.0 |
| 305.150 | 4.853 | 4.853 | 0.00 | 5.897 | 5.889 | −0.13 | 0.0 |
| 305.150 | 4.853 | 4.853 | 0.00 | 5.847 | 5.865 | 0.30 | 0.0 |
| 305.150 | 4.853 | 4.853 | 0.00 | 5.797 | 5.817 | 0.35 | 0.0 |
| 305.150 | 4.852 | 4.852 | 0.00 | 5.747 | 5.762 | 0.25 | 0.0 |
| 305.150 | 4.852 | 4.851 | 0.00 | 5.697 | 5.715 | 0.33 | 0.0 |
| 305.150 | 4.851 | 4.851 | 0.00 | 5.647 | 5.661 | 0.25 | 0.0 |
| 305.150 | 4.848 | 4.848 | −0.01 | 5.497 | 5.513 | 0.30 | 0.0 |
| 305.150 | 4.839 | 4.838 | −0.01 | 5.198 | 5.208 | 0.20 | 0.0 |
| 305.150 | 4.834 | 4.833 | −0.01 | 5.098 | 5.107 | 0.18 | 0.0 |
| 305.150 | 4.828 | 4.828 | −0.01 | 4.998 | 5.003 | 0.10 | 0.0 |
| 305.250 | 4.865 | 4.865 | 0.00 | 7.895 | 7.908 | 0.17 | 0.0 |
| 305.250 | 4.865 | 4.864 | 0.00 | 7.794 | 7.822 | 0.35 | 0.0 |
| 305.250 | 4.864 | 4.864 | 0.00 | 7.695 | 7.725 | 0.39 | 0.0 |
| 305.250 | 4.863 | 4.863 | 0.00 | 6.096 | 6.110 | 0.22 | 0.0 |
| 305.250 | 4.863 | 4.863 | 0.00 | 5.997 | 6.001 | 0.08 | 0.0 |
| 305.250 | 4.863 | 4.862 | 0.00 | 5.897 | 5.916 | 0.32 | 0.0 |
| 305.250 | 4.861 | 4.861 | 0.00 | 5.747 | 5.761 | 0.24 | 0.0 |
| 305.250 | 4.857 | 4.856 | −0.01 | 5.497 | 5.514 | 0.31 | 0.0 |
| 305.350 | 4.875 | 4.875 | 0.01 | 7.695 | 7.642 | −0.68 | 0.0 |
| 305.350 | 4.874 | 4.874 | 0.00 | 7.495 | 7.418 | −1.02 | 0.0 |
| 305.350 | 4.874 | 4.874 | 0.00 | 7.395 | 7.265 | −1.76 | 0.0 |
| 305.350 | 4.874 | 4.874 | 0.00 | 7.195 | 7.178 | −0.24 | 0.0 |
| 243.150 | 1.228 | 1.992 | 62.23 | 15.370 | 15.305 | −0.42 | 0.0 |
| 305.350 | 4.874 | 4.874 | 0.00 | 7.095 | 6.866 | −3.23 | 0.0 |
| 305.350 | 4.874 | 4.874 | 0.00 | 6.995 | 6.792 | −2.91 | 0.0 |
| 305.350 | 4.874 | 4.874 | 0.00 | 6.896 | 6.672 | −3.24 | 0.0 |
| 305.350 | 4.874 | 4.874 | 0.00 | 6.746 | 6.608 | −2.04 | 0.0 |
| 305.350 | 4.874 | 4.874 | 0.00 | 6.496 | 6.590 | 1.44 | 0.0 |
| 305.350 | 4.874 | 4.874 | 0.00 | 6.396 | 6.505 | 1.70 | 0.0 |
| 305.350 | 4.874 | 4.873 | 0.00 | 6.296 | 6.383 | 1.38 | 0.0 |
| 305.350 | 4.873 | 4.873 | 0.00 | 6.197 | 6.269 | 1.16 | 0.0 |

Table 6. PVT DATA (continued)

Data from Douslin and Harrison [9] (continued)

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | $\rho$, expt<br>mol•dm$^{-3}$ | $\rho$, calc<br>mol•dm$^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 305.350 | 4.873 | 4.873 | −0.01 | 6.097 | 6.162 | 1.08 | 0.0 |
| 305.350 | 4.873 | 4.872 | −0.01 | 5.997 | 6.045 | 0.80 | 0.0 |
| 305.350 | 4.872 | 4.871 | −0.01 | 5.897 | 5.946 | 0.84 | 0.0 |
| 305.350 | 4.870 | 4.870 | −0.01 | 5.747 | 5.785 | 0.66 | 0.0 |
| 305.390 | 4.880 | 4.880 | 0.01 | 7.695 | 7.636 | −0.76 | 0.0 |
| 305.390 | 4.879 | 4.879 | 0.01 | 7.495 | 7.352 | −1.90 | 0.0 |
| 305.390 | 4.878 | 4.879 | 0.01 | 7.395 | 7.228 | −2.25 | 0.0 |
| 305.390 | 4.878 | 4.878 | 0.00 | 7.195 | 6.968 | −3.15 | 0.0 |
| 305.390 | 4.878 | 4.878 | 0.00 | 6.996 | 6.830 | −2.37 | 0.0 |
| 305.390 | 4.878 | 4.878 | 0.00 | 6.796 | 6.732 | −0.94 | 0.0 |
| 305.390 | 4.878 | 4.878 | 0.00 | 6.596 | 6.596 | −0.01 | 0.0 |
| 305.390 | 4.878 | 4.878 | 0.00 | 6.396 | 6.472 | 1.18 | 0.0 |
| 305.390 | 4.877 | 4.877 | −0.01 | 6.197 | 6.272 | 1.22 | 0.0 |
| 305.390 | 4.876 | 4.876 | −0.01 | 5.997 | 6.056 | 0.98 | 0.0 |
| 305.390 | 4.874 | 4.873 | −0.01 | 5.747 | 5.789 | 0.73 | 0.0 |
| 248.150 | 1.618 | 2.062 | 27.44 | 15.083 | 15.041 | −0.28 | 0.0 |
| 248.150 | 1.350 | 1.869 | 38.38 | 15.065 | 15.015 | −0.33 | 0.0 |
| 248.150 | 1.227 | 1.227 | 0.07 | 0.740 | 0.739 | −0.10 | 0.0 |
| 248.150 | 1.493 | 1.965 | 31.58 | 15.074 | 15.029 | −0.30 | 0.0 |

Pressure Calculation:
AAD% = 1.10 BIAS% = 1.07 RMS% = 6.20

Density Calculation:
AAD2% = 0.24 BIAS2% = −0.10 RMS2% = 0.55

Absolute Deviations:
Pressure Calculation:
AAD = 0.04 BIAS = 0.03 RMS = 0.12 MPa

Density Calculation:
AAD2 = 0.017 BIAS2 = −0.008 RMS2 = 0.040 mol•dm$^{-3}$

**Data from Douslin and Harrison [9]** (continued)

Weighted Data:

Number of Points [9] 257

Pressure Calculation:
AAD% = 0.07 BIAS% = 0.02 RMS% = 0.09

Density Calculation:
AAD2% = 0.06 BIAS2% = −0.03 RMS2% = 0.07

Absolute Deviations:
Pressure Calculation:
AAD = 0.01 BIAS = 0.00 RMS = 0.02 MPa

Density Calculation:
AAD2 = 0.003 BIAS2 = −0.001 RMS2 = 0.005 $mol \cdot dm^{-3}$

**Data from Golovskiy et al. [51]**

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | $\rho$, expt<br>$mol \cdot dm^{-3}$ | $\rho$, calc<br>$mol \cdot dm^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 233.810 | 6.475 | 6.503 | 0.43 | 16.169 | 16.167 | −0.01 | 0.0 |
| 243.990 | 14.130 | 14.667 | 3.80 | 16.162 | 16.133 | −0.18 | 0.0 |
| 262.070 | 28.125 | 28.877 | 2.67 | 16.149 | 16.114 | −0.22 | 0.0 |
| 227.550 | 1.971 | 2.288 | 16.10 | 16.225 | 16.206 | −0.12 | 0.0 |
| 238.960 | 11.111 | 11.553 | 3.98 | 16.215 | 16.191 | −0.15 | 0.0 |
| 255.290 | 24.252 | 24.583 | 1.37 | 16.202 | 16.186 | −0.10 | 0.0 |
| 267.050 | 33.549 | 33.857 | 0.92 | 16.196 | 16.182 | −0.08 | 0.0 |
| 212.910 | 3.550 | 4.040 | 13.81 | 17.010 | 16.988 | −0.13 | 0.0 |
| 217.690 | 8.444 | 8.614 | 2.01 | 17.004 | 16.996 | −0.04 | 0.0 |
| 228.700 | 18.809 | 19.203 | 2.09 | 16.997 | 16.981 | −0.09 | 0.0 |
| 239.980 | 29.400 | 29.865 | 1.58 | 16.990 | 16.973 | −0.10 | 0.0 |
| 254.750 | 42.698 | 43.420 | 1.69 | 16.977 | 16.952 | −0.15 | 0.0 |
| 270.210 | 56.994 | 57.307 | 0.55 | 16.964 | 16.954 | −0.06 | 0.0 |
| 205.610 | 4.335 | 4.937 | 13.89 | 17.369 | 17.345 | −0.14 | 0.0 |
| 213.510 | 12.660 | 13.198 | 4.25 | 17.363 | 17.342 | −0.12 | 0.0 |
| 222.780 | 21.781 | 22.767 | 4.53 | 17.356 | 17.321 | −0.20 | 0.0 |
| 234.050 | 33.500 | 34.235 | 2.20 | 17.350 | 17.325 | −0.14 | 0.0 |
| 241.440 | 41.188 | 41.570 | 0.93 | 17.343 | 17.331 | −0.07 | 0.0 |
| 242.410 | 42.071 | 42.554 | 1.15 | 17.343 | 17.328 | −0.09 | 0.0 |
| 250.920 | 50.955 | 50.911 | −0.09 | 17.336 | 17.338 | 0.01 | 0.0 |

Data from Golovskiy et al. [51] (continued)

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | $\rho$, expt<br>$mol \cdot dm^{-3}$ | $\rho$, calc<br>$mol \cdot dm^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 259.660 | 59.566 | 59.273 | −0.49 | 17.326 | 17.335 | 0.05 | 0.0 |
| 195.790 | 3.815 | 4.573 | 19.87 | 17.772 | 17.745 | −0.15 | 0.0 |
| 201.830 | 11.258 | 11.552 | 2.61 | 17.769 | 17.759 | −0.06 | 0.0 |
| 209.250 | 19.594 | 19.931 | 1.72 | 17.762 | 17.751 | −0.06 | 0.0 |
| 218.220 | 29.400 | 29.938 | 1.83 | 17.755 | 17.739 | −0.09 | 0.0 |
| 227.930 | 40.080 | 40.600 | 1.30 | 17.749 | 17.733 | −0.09 | 0.0 |
| 235.940 | 48.974 | 49.218 | 0.50 | 17.742 | 17.735 | −0.04 | 0.0 |
| 245.390 | 59.222 | 59.155 | −0.11 | 17.732 | 17.734 | 0.01 | 0.0 |
| 187.590 | 4.207 | 4.000 | −4.91 | 18.091 | 18.098 | 0.04 | 0.0 |
| 195.040 | 13.278 | 13.163 | −0.87 | 18.084 | 18.088 | 0.02 | 0.0 |
| 203.780 | 24.115 | 23.754 | −1.50 | 18.078 | 18.088 | 0.06 | 0.0 |
| 217.990 | 40.982 | 40.596 | −0.94 | 18.068 | 18.078 | 0.06 | 0.0 |
| 224.830 | 48.837 | 48.469 | −0.75 | 18.061 | 18.071 | 0.05 | 0.0 |
| 233.610 | 58.899 | 58.503 | −0.67 | 18.055 | 18.064 | 0.05 | 0.0 |
| 180.920 | 2.726 | 2.872 | 5.34 | 18.327 | 18.323 | −0.02 | 0.0 |
| 187.490 | 11.346 | 11.394 | 0.42 | 18.321 | 18.319 | −0.01 | 0.0 |
| 194.010 | 19.809 | 19.832 | 0.11 | 18.317 | 18.317 | 0.00 | 0.0 |
| 202.280 | 30.146 | 30.270 | 0.41 | 18.311 | 18.307 | −0.02 | 0.0 |
| 211.470 | 41.874 | 41.682 | −0.46 | 18.304 | 18.309 | 0.03 | 0.0 |
| 216.960 | 48.602 | 48.289 | −0.64 | 18.297 | 18.305 | 0.04 | 0.0 |
| 225.970 | 59.507 | 59.152 | −0.60 | 18.291 | 18.299 | 0.05 | 0.0 |
| 172.850 | 5.168 | 5.323 | 3.00 | 18.716 | 18.712 | −0.02 | 0.0 |
| 180.260 | 15.946 | 15.803 | −0.90 | 18.710 | 18.713 | 0.02 | 0.0 |
| 187.640 | 25.968 | 26.037 | 0.27 | 18.703 | 18.701 | −0.01 | 0.0 |
| 194.120 | 35.059 | 34.975 | −0.24 | 18.700 | 18.702 | 0.01 | 0.0 |
| 200.730 | 43.914 | 43.818 | −0.22 | 18.693 | 18.695 | 0.01 | 0.0 |
| 207.050 | 52.318 | 52.286 | −0.06 | 18.690 | 18.690 | 0.00 | 0.0 |
| 212.300 | 59.213 | 59.215 | 0.00 | 18.686 | 18.686 | 0.00 | 0.0 |
| 162.110 | 1.932 | 3.104 | 60.66 | 19.075 | 19.047 | −0.15 | 0.0 |
| 167.580 | 10.650 | 11.635 | 9.25 | 19.072 | 19.049 | −0.12 | 0.0 |
| 173.440 | 19.731 | 20.492 | 3.86 | 19.066 | 19.048 | −0.09 | 0.0 |
| 179.530 | 29.165 | 29.702 | 1.84 | 19.062 | 19.050 | −0.06 | 0.0 |
| 186.040 | 38.883 | 39.245 | 0.93 | 19.056 | 19.048 | −0.04 | 0.0 |
| 192.640 | 48.366 | 48.924 | 1.15 | 19.052 | 19.041 | −0.06 | 0.0 |
| 200.210 | 59.291 | 59.710 | 0.71 | 19.046 | 19.037 | −0.04 | 0.0 |

Table 6. **PVT DATA** (continued)

Data from Golovskiy et al. [51] (continued)

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | $\rho$, expt<br>mol•dm$^{-3}$ | $\rho$, calc<br>mol•dm$^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 154.070 | 2.285 | 2.896 | 26.73 | 19.378 | 19.365 | −0.07 | 0.0 |
| 160.390 | 10.856 | 13.341 | 22.89 | 19.371 | 19.318 | −0.28 | 0.0 |
| 167.320 | 23.281 | 24.745 | 6.29 | 19.368 | 19.338 | −0.16 | 0.0 |
| 172.200 | 31.754 | 32.427 | 2.12 | 19.361 | 19.348 | −0.07 | 0.0 |
| 178.490 | 41.943 | 42.433 | 1.17 | 19.358 | 19.349 | −0.05 | 0.0 |
| 184.890 | 52.064 | 52.278 | 0.41 | 19.352 | 19.347 | −0.02 | 0.0 |
| 190.050 | 59.821 | 60.388 | 0.95 | 19.352 | 19.341 | −0.05 | 0.0 |
| 144.570 | 1.922 | 3.636 | 89.19 | 19.751 | 19.716 | −0.17 | 0.0 |
| 149.480 | 11.278 | 12.614 | 11.85 | 19.747 | 19.721 | −0.13 | 0.0 |
| 155.380 | 22.104 | 23.241 | 5.14 | 19.744 | 19.723 | −0.11 | 0.0 |
| 160.360 | 30.822 | 32.028 | 3.91 | 19.741 | 19.719 | −0.11 | 0.0 |
| 165.540 | 39.854 | 41.034 | 2.96 | 19.737 | 19.716 | −0.11 | 0.0 |
| 171.550 | 50.102 | 51.153 | 2.10 | 19.731 | 19.712 | −0.09 | 0.0 |
| 176.280 | 58.340 | 59.105 | 1.31 | 19.727 | 19.714 | −0.07 | 0.0 |
| 131.860 | 3.393 | 4.583 | 35.07 | 20.236 | 20.216 | −0.10 | 0.0 |
| 135.790 | 11.680 | 12.646 | 8.27 | 20.233 | 20.216 | −0.08 | 0.0 |
| 140.510 | 20.937 | 22.209 | 6.08 | 20.229 | 20.208 | −0.10 | 0.0 |
| 145.550 | 30.871 | 32.252 | 4.47 | 20.226 | 20.204 | −0.11 | 0.0 |
| 150.360 | 40.197 | 41.662 | 3.64 | 20.223 | 20.200 | −0.11 | 0.0 |
| 155.360 | 49.788 | 51.292 | 3.02 | 20.219 | 20.196 | −0.12 | 0.0 |
| 160.510 | 59.311 | 60.838 | 2.57 | 20.213 | 20.190 | −0.11 | 0.0 |
| 121.300 | 4.227 | 6.239 | 47.59 | 20.645 | 20.614 | −0.15 | 0.0 |
| 125.740 | 14.573 | 16.334 | 12.09 | 20.642 | 20.615 | −0.13 | 0.0 |
| 129.620 | 23.301 | 25.204 | 8.17 | 20.642 | 20.614 | −0.14 | 0.0 |
| 132.670 | 29.881 | 31.857 | 6.61 | 20.639 | 20.610 | −0.14 | 0.0 |
| 136.070 | 37.363 | 39.202 | 4.92 | 20.635 | 20.609 | −0.13 | 0.0 |
| 140.820 | 47.464 | 49.397 | 4.07 | 20.632 | 20.605 | −0.13 | 0.0 |
| 146.370 | 59.173 | 61.126 | 3.30 | 20.629 | 20.602 | −0.13 | 0.0 |
| 111.570 | 5.168 | 7.010 | 35.65 | 21.004 | 20.979 | −0.12 | 0.0 |
| 114.920 | 13.376 | 15.308 | 14.44 | 21.001 | 20.974 | −0.13 | 0.0 |
| 119.800 | 25.340 | 27.300 | 7.73 | 20.998 | 20.971 | −0.13 | 0.0 |
| 122.930 | 33.264 | 34.774 | 4.54 | 20.994 | 20.974 | −0.10 | 0.0 |
| 126.260 | 40.031 | 42.889 | 7.14 | 20.994 | 20.957 | −0.18 | 0.0 |
| 129.570 | 48.739 | 50.593 | 3.80 | 20.991 | 20.967 | −0.11 | 0.0 |
| 134.760 | 60.409 | 62.614 | 3.65 | 20.988 | 20.960 | −0.13 | 0.0 |

Table 6. **PVT DATA** (continued)

Data from Golovskiy et al. [51] (continued)

| T K | P, expt MPa | P, calc MPa | dev % | $\rho$, expt $mol\cdot dm^{-3}$ | $\rho$, calc $mol\cdot dm^{-3}$ | dev % | wt |
|---|---|---|---|---|---|---|---|
| 99.820 | 3.119 | 4.628 | 48.39 | 21.390 | 21.371 | -0.09 | 0.0 |
| 102.820 | 11.180 | 13.039 | 16.63 | 21.390 | 21.367 | -0.11 | 0.0 |
| 106.800 | 22.634 | 23.820 | 5.24 | 21.387 | 21.372 | -0.07 | 0.0 |
| 110.060 | 31.479 | 32.487 | 3.20 | 21.383 | 21.371 | -0.06 | 0.0 |
| 113.640 | 40.913 | 42.184 | 3.11 | 21.383 | 21.368 | -0.07 | 0.0 |
| 116.860 | 49.033 | 50.506 | 3.00 | 21.380 | 21.363 | -0.08 | 0.0 |
| 120.950 | 59.523 | 60.992 | 2.47 | 21.377 | 21.360 | -0.08 | 0.0 |
| 92.450 | 2.412 | 3.997 | 65.71 | 21.640 | 21.621 | -0.09 | 0.0 |
| 95.050 | 10.140 | 11.605 | 14.45 | 21.640 | 21.622 | -0.08 | 0.0 |
| 98.580 | 20.329 | 21.650 | 6.50 | 21.636 | 21.621 | -0.07 | 0.0 |
| 102.050 | 30.499 | 31.756 | 4.12 | 21.636 | 21.622 | -0.07 | 0.0 |
| 105.170 | 39.315 | 40.469 | 2.93 | 21.633 | 21.620 | -0.06 | 0.0 |
| 108.820 | 49.171 | 50.590 | 2.89 | 21.630 | 21.614 | -0.07 | 0.0 |
| 112.300 | 58.879 | 60.402 | 2.59 | 21.630 | 21.613 | -0.08 | 0.0 |
| 112.570 | 59.330 | 61.158 | 3.08 | 21.630 | 21.610 | -0.09 | 0.0 |
| 92.140 | 12.101 | 26.056 | 115.32 | 21.896 | 21.743 | -0.70 | 0.0 |
| 93.140 | 19.809 | 29.092 | 46.86 | 21.896 | 21.796 | -0.46 | 0.0 |
| 94.760 | 29.243 | 33.699 | 15.24 | 21.892 | 21.845 | -0.22 | 0.0 |
| 97.170 | 39.305 | 41.025 | 4.38 | 21.892 | 21.874 | -0.08 | 0.0 |
| 100.750 | 49.220 | 51.543 | 4.72 | 21.889 | 21.865 | -0.11 | 0.0 |
| 104.290 | 60.007 | 62.175 | 3.61 | 21.889 | 21.867 | -0.10 | 0.0 |

Number of Points [51] 111

Pressure Calculation:
AAD% = 8.88 BIAS% = 8.64 RMS% = 17.72

Density Calculation:
AAD2% = 0.10 BIAS2% = -0.09 RMS2% = 0.09

Absolute Deviations:
Pressure Calculation:
AAD = 1.15 BIAS = 1.09 RMS = 1.68 MPa

Density Calculation:
AAD2 = 0.019 BIAS2 = -0.017 RMS2 = 0.020 $mol\cdot dm^{-3}$

Table 6. PVT DATA (continued)

Data from Khazanova and Sominskaya [53]

| T K | P, expt MPa | P, calc MPa | dev % | $\rho$, expt $mol\cdot dm^{-3}$ | $\rho$, calc $mol\cdot dm^{-3}$ | dev % | wt |
|---|---|---|---|---|---|---|---|
| 299.300 | 5.467 | 5.441 | −0.49 | 11.326 | 11.341 | 0.13 | 0.0 |
| 302.800 | 6.381 | 6.378 | −0.05 | 11.326 | 11.328 | 0.02 | 0.0 |
| 305.390 | 7.082 | 7.077 | −0.06 | 11.326 | 11.328 | 0.02 | 0.0 |
| 305.610 | 6.730 | 6.517 | −3.16 | 11.006 | 11.125 | 1.09 | 0.0 |
| 303.390 | 6.144 | 5.964 | −2.94 | 11.006 | 11.116 | 1.00 | 0.0 |
| 307.100 | 7.112 | 6.891 | −3.11 | 11.006 | 11.124 | 1.07 | 0.0 |
| 309.360 | 7.434 | 7.460 | 0.35 | 11.006 | 10.992 | −0.12 | 0.0 |
| 306.120 | 6.424 | 6.261 | −2.54 | 10.761 | 10.871 | 1.02 | 0.0 |
| 308.520 | 7.004 | 6.829 | −2.50 | 10.761 | 10.869 | 1.00 | 0.0 |
| 304.720 | 6.084 | 5.932 | −2.49 | 10.761 | 10.869 | 1.01 | 0.0 |
| 303.430 | 5.774 | 5.631 | −2.47 | 10.761 | 10.870 | 1.01 | 0.0 |
| 305.920 | 5.723 | 5.631 | −1.60 | 10.241 | 10.341 | 0.98 | 0.0 |
| 303.240 | 5.150 | 5.083 | −1.31 | 10.241 | 10.329 | 0.86 | 0.0 |
| 306.900 | 5.928 | 5.834 | −1.58 | 10.241 | 10.338 | 0.95 | 0.0 |
| 308.520 | 6.273 | 6.171 | −1.63 | 10.241 | 10.338 | 0.95 | 0.0 |
| 305.350 | 5.239 | 4.998 | −4.60 | 9.211 | 9.841 | 6.85 | 0.0 |
| 303.250 | 4.842 | 4.670 | −3.55 | 9.211 | 9.817 | 6.59 | 0.0 |
| 305.820 | 3.121 | 3.085 | −1.15 | 1.642 | 1.670 | 1.71 | 0.0 |
| 304.520 | 3.098 | 3.062 | −1.16 | 1.642 | 1.671 | 1.74 | 0.0 |
| 303.420 | 3.077 | 3.042 | −1.15 | 1.642 | 1.671 | 1.74 | 0.0 |
| 308.820 | 3.176 | 3.139 | −1.19 | 1.642 | 1.671 | 1.75 | 0.0 |
| 306.220 | 1.847 | 1.984 | 7.39 | 0.920 | 0.845 | −8.17 | 0.0 |
| 303.970 | 1.829 | 1.963 | 7.36 | 0.920 | 0.845 | −8.16 | 0.0 |
| 303.160 | 1.823 | 1.956 | 7.32 | 0.920 | 0.845 | −8.13 | 0.0 |
| 308.320 | 1.868 | 2.003 | 7.19 | 0.920 | 0.847 | −7.93 | 0.0 |
| 308.230 | 0.998 | 1.082 | 8.41 | 0.458 | 0.419 | −8.39 | 0.0 |
| 305.560 | 0.989 | 1.071 | 8.30 | 0.458 | 0.420 | −8.30 | 0.0 |
| 303.170 | 0.980 | 1.061 | 8.30 | 0.458 | 0.419 | −8.31 | 0.0 |
| 303.600 | 0.982 | 1.063 | 8.26 | 0.458 | 0.420 | −8.27 | 0.0 |
| 307.120 | 5.570 | 5.513 | −1.02 | 9.749 | 9.843 | 0.96 | 0.0 |
| 308.220 | 5.774 | 5.715 | −1.03 | 9.749 | 9.840 | 0.93 | 0.0 |
| 308.230 | 5.488 | 5.457 | −0.56 | 9.209 | 9.291 | 0.90 | 0.0 |
| 306.990 | 5.288 | 5.258 | −0.57 | 9.209 | 9.303 | 1.02 | 0.0 |
| 305.240 | 5.014 | 4.980 | −0.67 | 9.209 | 9.338 | 1.40 | 0.0 |
| 306.290 | 4.935 | 4.961 | 0.51 | 6.106 | 5.320 | −12.87 | 0.0 |

Table 6. PVT DATA (continued)

Data from Khazanova and Sominskaya [53] (continued)

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | $\rho$, expt<br>$mol \cdot dm^{-3}$ | $\rho$, calc<br>$mol \cdot dm^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 309.320 | 5.234 | 5.243 | 0.16 | 6.106 | 5.982 | -2.03 | 0.0 |
| 312.650 | 5.564 | 5.551 | -0.24 | 6.106 | 6.218 | 1.85 | 0.0 |
| 316.970 | 5.997 | 5.948 | -0.83 | 6.106 | 6.366 | 4.26 | 0.0 |
| 305.790 | 4.865 | 4.900 | 0.74 | 5.452 | 4.862 | -10.82 | 0.0 |
| 309.380 | 5.167 | 5.197 | 0.59 | 5.452 | 5.173 | -5.13 | 0.0 |
| 313.620 | 5.505 | 5.542 | 0.67 | 5.452 | 5.246 | -3.78 | 0.0 |
| 316.360 | 5.720 | 5.762 | 0.75 | 5.452 | 5.264 | -3.46 | 0.0 |
| 308.590 | 5.102 | 5.132 | 0.59 | 5.452 | 5.137 | -5.79 | 0.0 |
| 305.730 | 4.744 | 4.763 | 0.41 | 4.190 | 4.101 | -2.11 | 0.0 |
| 308.560 | 4.908 | 4.933 | 0.50 | 4.190 | 4.099 | -2.18 | 0.0 |
| 308.820 | 2.530 | 2.495 | -1.37 | 1.204 | 1.226 | 1.79 | 0.0 |
| 304.920 | 2.481 | 2.447 | -1.37 | 1.204 | 1.226 | 1.81 | 0.0 |
| 306.320 | 2.500 | 2.465 | -1.40 | 1.204 | 1.226 | 1.85 | 0.0 |
| 303.470 | 2.464 | 2.429 | -1.41 | 1.204 | 1.227 | 1.87 | 0.0 |
| 308.250 | 1.723 | 1.697 | -1.51 | 0.757 | 0.770 | 1.78 | 0.0 |
| 304.890 | 1.699 | 1.672 | -1.58 | 0.757 | 0.771 | 1.88 | 0.0 |
| 303.370 | 1.688 | 1.661 | -1.59 | 0.757 | 0.771 | 1.88 | 0.0 |
| 306.280 | 1.690 | 1.682 | -0.46 | 0.757 | 0.761 | 0.54 | 0.0 |
| 303.560 | 0.487 | 0.537 | 10.12 | 0.221 | 0.200 | -9.54 | 0.0 |
| 303.260 | 0.487 | 0.536 | 10.00 | 0.221 | 0.200 | -9.44 | 0.0 |
| 305.710 | 0.492 | 0.541 | 9.84 | 0.221 | 0.201 | -9.29 | 0.0 |
| 308.760 | 0.499 | 0.547 | 9.67 | 0.221 | 0.201 | -9.14 | 0.0 |
| 316.070 | 5.345 | 5.378 | 0.63 | 4.202 | 4.118 | -1.98 | 0.0 |
| 312.520 | 5.141 | 5.171 | 0.57 | 4.202 | 4.115 | -2.07 | 0.0 |
| 312.890 | 4.438 | 4.494 | 1.26 | 2.866 | 2.794 | -2.53 | 0.0 |
| 306.840 | 4.229 | 4.275 | 1.09 | 2.866 | 2.798 | -2.40 | 0.0 |
| 309.770 | 4.333 | 4.382 | 1.13 | 2.866 | 2.798 | -2.38 | 0.0 |
| 318.010 | 4.353 | 4.676 | 7.42 | 2.866 | 2.512 | -12.37 | 0.0 |
| 303.020 | 4.311 | 4.287 | -0.56 | 3.153 | 3.205 | 1.64 | 0.0 |
| 304.570 | 4.377 | 4.352 | -0.57 | 3.153 | 3.204 | 1.62 | 0.0 |
| 306.250 | 4.449 | 4.422 | -0.61 | 3.153 | 3.206 | 1.67 | 0.0 |
| 308.470 | 4.540 | 4.513 | -0.59 | 3.153 | 3.201 | 1.53 | 0.0 |
| 308.500 | 3.891 | 3.855 | -0.92 | 2.278 | 2.316 | 1.66 | 0.0 |
| 303.140 | 3.740 | 3.710 | -0.81 | 2.278 | 2.312 | 1.52 | 0.0 |
| 304.840 | 3.790 | 3.756 | -0.89 | 2.278 | 2.315 | 1.65 | 0.0 |

Table 6. PVT DATA (continued)

Data from Khazanova and Sominskaya [53] (continued)

| T K | P, expt MPa | P, calc MPa | dev % | $\rho$, expt $mol \cdot dm^{-3}$ | $\rho$, calc $mol \cdot dm^{-3}$ | dev % | wt |
|---|---|---|---|---|---|---|---|
| 306.180 | 3.826 | 3.792 | -0.88 | 2.278 | 2.315 | 1.61 | 0.0 |
| 308.690 | 3.754 | 3.740 | -0.37 | 2.157 | 2.171 | 0.62 | 0.0 |
| 305.600 | 3.676 | 3.662 | -0.37 | 2.157 | 2.171 | 0.65 | 0.0 |
| 303.110 | 3.614 | 3.599 | -0.41 | 2.157 | 2.173 | 0.74 | 0.0 |
| 304.430 | 3.649 | 3.633 | -0.43 | 2.157 | 2.174 | 0.77 | 0.0 |
| 305.720 | 2.071 | 2.043 | -1.38 | 0.955 | 0.972 | 1.71 | 0.0 |
| 303.370 | 2.049 | 2.020 | -1.39 | 0.955 | 0.972 | 1.73 | 0.0 |
| 304.700 | 2.062 | 2.033 | -1.41 | 0.955 | 0.972 | 1.75 | 0.0 |
| 308.290 | 2.095 | 2.067 | -1.37 | 0.955 | 0.972 | 1.69 | 0.0 |
| 306.320 | 1.138 | 1.126 | -1.04 | 0.482 | 0.487 | 1.15 | 0.0 |
| 303.420 | 1.127 | 1.113 | -1.18 | 0.482 | 0.488 | 1.32 | 0.0 |
| 308.150 | 1.146 | 1.134 | -1.04 | 0.482 | 0.487 | 1.15 | 0.0 |
| 304.770 | 1.132 | 1.119 | -1.11 | 0.482 | 0.488 | 1.23 | 0.0 |
| 308.150 | 0.630 | 0.631 | 0.05 | 0.257 | 0.257 | -0.05 | 0.0 |
| 303.420 | 0.624 | 0.620 | -0.69 | 0.257 | 0.259 | 0.73 | 0.0 |
| 308.150 | 0.631 | 0.631 | -0.12 | 0.257 | 0.258 | 0.13 | 0.0 |

Number of Points [53] 86

Pressure Calculation:
AAD% = 2.23 BIAS% = 0.55 RMS% = 3.51

Density Calculation:
AAD2% = 3.02 BIAS2% = -1.05 RMS2% = 4.26

Absolute Deviations:
Pressure Calculation:
AAD = 0.06 BIAS = -0.01 RMS = 0.08 MPa

Density Calculation:
AAD2 = 0.093 BIAS2 = 0.001 RMS2 = 0.170 $mol \cdot dm^{-3}$

Table 6. PVT DATA (continued)

Data from Law [54]

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | $\rho$, expt<br>$mol \cdot dm^{-3}$ | $\rho$, calc<br>$mol \cdot dm^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 300.000 | 31.099 | 31.211 | 0.36 | 14.859 | 14.852 | -0.05 | 0.0 |
| 300.000 | 33.967 | 34.092 | 0.37 | 15.033 | 15.026 | -0.05 | 0.0 |
| 300.000 | 27.644 | 27.722 | 0.28 | 14.627 | 14.622 | -0.04 | 0.0 |
| 300.000 | 24.190 | 24.219 | 0.12 | 14.367 | 14.364 | -0.02 | 0.0 |
| 300.000 | 20.047 | 20.008 | -0.19 | 14.004 | 14.007 | 0.03 | 0.0 |
| 300.000 | 15.693 | 15.583 | -0.70 | 13.533 | 13.546 | 0.10 | 0.0 |
| 300.000 | 11.557 | 11.368 | -1.64 | 12.934 | 12.965 | 0.25 | 0.0 |
| 300.000 | 6.808 | 6.575 | -3.42 | 11.760 | 11.847 | 0.74 | 0.0 |
| 300.000 | 4.644 | 4.447 | -4.23 | 10.266 | 10.552 | 2.78 | 0.0 |
| 320.000 | 33.987 | 34.136 | 0.44 | 14.309 | 14.299 | -0.07 | 0.0 |
| 320.000 | 30.094 | 30.161 | 0.22 | 14.017 | 14.011 | -0.04 | 0.0 |
| 320.000 | 25.064 | 25.041 | -0.09 | 13.573 | 13.575 | 0.02 | 0.0 |
| 320.000 | 20.061 | 19.972 | -0.44 | 13.019 | 13.030 | 0.09 | 0.0 |
| 320.000 | 15.058 | 14.913 | -0.96 | 12.250 | 12.277 | 0.22 | 0.0 |
| 320.000 | 9.331 | 9.161 | -1.82 | 10.552 | 10.638 | 0.81 | 0.0 |
| 320.000 | 7.418 | 7.260 | -2.13 | 8.985 | 9.197 | 2.37 | 0.0 |
| 320.000 | 6.493 | 6.392 | -1.55 | 6.782 | 7.170 | 5.72 | 0.0 |
| 320.000 | 6.010 | 5.944 | -1.10 | 5.086 | 5.301 | 4.22 | 0.0 |
| 320.000 | 5.504 | 5.456 | -0.86 | 3.900 | 3.991 | 2.34 | 0.0 |
| 280.000 | 34.309 | 34.644 | 0.98 | 15.776 | 15.760 | -0.10 | 0.0 |
| 280.000 | 29.588 | 29.915 | 1.11 | 15.534 | 15.516 | -0.11 | 0.0 |
| 280.000 | 24.994 | 25.347 | 1.41 | 15.272 | 15.250 | -0.14 | 0.0 |
| 280.000 | 19.648 | 19.922 | 1.40 | 14.912 | 14.892 | -0.13 | 0.0 |
| 280.000 | 14.435 | 14.653 | 1.51 | 14.487 | 14.467 | -0.14 | 0.0 |
| 280.000 | 10.192 | 10.313 | 1.19 | 14.044 | 14.030 | -0.10 | 0.0 |
| 280.000 | 7.078 | 7.128 | 0.71 | 13.625 | 13.617 | -0.06 | 0.0 |
| 280.000 | 4.292 | 4.239 | -1.24 | 13.105 | 13.116 | 0.09 | 0.0 |
| 260.000 | 34.311 | 34.484 | 0.50 | 16.468 | 16.461 | -0.04 | 0.0 |
| 260.000 | 29.843 | 30.045 | 0.68 | 16.278 | 16.269 | -0.06 | 0.0 |
| 260.000 | 24.822 | 25.063 | 0.97 | 16.044 | 16.032 | -0.08 | 0.0 |
| 260.000 | 19.982 | 20.259 | 1.39 | 15.790 | 15.775 | -0.10 | 0.0 |
| 260.000 | 14.978 | 15.257 | 1.86 | 15.488 | 15.470 | -0.12 | 0.0 |
| 260.000 | 10.165 | 10.429 | 2.59 | 15.144 | 15.124 | -0.14 | 0.0 |
| 260.000 | 4.967 | 5.156 | 3.80 | 14.673 | 14.653 | -0.13 | 0.0 |
| 260.000 | 2.023 | 2.120 | 4.78 | 14.321 | 14.309 | -0.09 | 0.0 |

Table 6. PVT DATA (continued)

Data from Law [54] (continued)

| T K | P, expt MPa | P, calc MPa | dev % | ρ, expt $mol \cdot dm^{-3}$ | ρ, calc $mol \cdot dm^{-3}$ | dev % | wt |
|---|---|---|---|---|---|---|---|
| 240.000 | 34.314 | 34.603 | 0.84 | 17.160 | 17.150 | -0.06 | 0.0 |
| 240.000 | 29.617 | 29.822 | 0.69 | 16.988 | 16.980 | -0.05 | 0.0 |
| 240.000 | 24.939 | 25.178 | 0.96 | 16.808 | 16.798 | -0.06 | 0.0 |
| 240.000 | 20.007 | 20.354 | 1.74 | 16.603 | 16.588 | -0.09 | 0.0 |
| 240.000 | 14.825 | 15.238 | 2.78 | 16.362 | 16.341 | -0.13 | 0.0 |
| 240.000 | 9.974 | 10.342 | 3.69 | 16.101 | 16.080 | -0.13 | 0.0 |
| 240.000 | 5.027 | 5.391 | 7.25 | 15.794 | 15.770 | -0.16 | 0.0 |
| 240.000 | 2.026 | 2.370 | 16.98 | 15.578 | 15.551 | -0.17 | 0.0 |
| 240.000 | 1.137 | 1.452 | 27.72 | 15.506 | 15.480 | -0.16 | 0.0 |
| 350.000 | 34.311 | 34.302 | -0.03 | 13.220 | 13.221 | 0.01 | 0.0 |
| 350.000 | 30.076 | 30.086 | 0.03 | 12.819 | 12.818 | -0.01 | 0.0 |
| 350.000 | 25.349 | 25.329 | -0.08 | 12.265 | 12.268 | 0.02 | 0.0 |
| 350.000 | 19.830 | 19.775 | -0.28 | 11.381 | 11.392 | 0.10 | 0.0 |
| 350.000 | 15.694 | 15.638 | -0.35 | 10.371 | 10.388 | 0.17 | 0.0 |
| 350.000 | 12.930 | 12.881 | -0.38 | 9.293 | 9.317 | 0.26 | 0.0 |
| 350.000 | 10.860 | 10.810 | -0.46 | 7.977 | 8.017 | 0.50 | 0.0 |
| 350.000 | 9.482 | 9.437 | -0.47 | 6.654 | 6.703 | 0.75 | 0.0 |
| 350.000 | 8.381 | 8.344 | -0.44 | 5.374 | 5.418 | 0.81 | 0.0 |
| 350.000 | 7.275 | 7.251 | -0.34 | 4.160 | 4.186 | 0.61 | 0.0 |
| 350.000 | 6.034 | 6.009 | -0.41 | 3.043 | 3.063 | 0.64 | 0.0 |
| 350.000 | 4.655 | 4.630 | -0.53 | 2.086 | 2.101 | 0.73 | 0.0 |

Number of Points [54] 56

Pressure Calculation:
AAD% = 2.03 BIAS% = 1.16 RMS% = 4.57

Density Calculation:
AAD2% = 0.49 BIAS2% = 0.38 RMS2% = 1.08

Absolute Deviations:
Pressure Calculation:
AAD = 0.16 BIAS = 0.09 RMS = 0.18 MPa

Density Calculation:
AAD2 = 0.038 BIAS2 = 0.023 RMS2 = 0.077 $mol \cdot dm^{-3}$

Table 6. **PVT DATA** (continued)

Data from Michels et al. [47]

| T K | P, expt MPa | P, calc MPa | dev % | $\rho$, expt $mol \cdot dm^{-3}$ | $\rho$, calc $mol \cdot dm^{-3}$ | dev % | wt |
|---|---|---|---|---|---|---|---|
| 273.150 | 1.587 | 1.586 | -0.09 | 0.854 | 0.855 | 0.12 | 46.2 |
| 298.142 | 1.798 | 1.797 | -0.04 | 0.854 | 0.854 | 0.04 | 39.9 |
| 323.140 | 2.004 | 2.003 | -0.02 | 0.854 | 0.854 | 0.02 | 35.2 |
| 348.143 | 2.206 | 2.206 | -0.01 | 0.854 | 0.854 | 0.02 | 31.6 |
| 373.150 | 2.407 | 2.407 | 0.01 | 0.854 | 0.854 | -0.01 | 28.7 |
| 398.160 | 2.605 | 2.606 | 0.02 | 0.854 | 0.854 | -0.02 | 26.3 |
| 423.170 | 2.803 | 2.804 | 0.02 | 0.854 | 0.854 | -0.02 | 24.3 |
| 273.150 | 1.880 | 1.878 | -0.12 | 1.067 | 1.069 | 0.16 | 40.2 |
| 298.142 | 2.154 | 2.153 | -0.04 | 1.067 | 1.068 | 0.05 | 34.0 |
| 323.140 | 2.420 | 2.419 | -0.03 | 1.067 | 1.068 | 0.03 | 29.7 |
| 348.143 | 2.681 | 2.681 | -0.02 | 1.067 | 1.067 | 0.02 | 26.4 |
| 373.150 | 2.939 | 2.938 | 0.00 | 1.067 | 1.067 | 0.00 | 23.8 |
| 398.160 | 3.193 | 3.194 | 0.02 | 1.067 | 1.067 | -0.02 | 21.7 |
| 423.170 | 3.447 | 3.447 | 0.01 | 1.067 | 1.067 | -0.01 | 19.9 |
| 273.150 | 2.135 | 2.132 | -0.15 | 1.281 | 1.284 | 0.23 | 36.5 |
| 298.142 | 2.477 | 2.475 | -0.06 | 1.281 | 1.282 | 0.08 | 30.3 |
| 323.140 | 2.807 | 2.806 | -0.03 | 1.281 | 1.282 | 0.04 | 26.0 |
| 348.143 | 3.129 | 3.128 | -0.03 | 1.281 | 1.282 | 0.03 | 22.9 |
| 373.150 | 3.446 | 3.446 | 0.00 | 1.281 | 1.281 | 0.00 | 20.5 |
| 398.160 | 3.760 | 3.760 | 0.01 | 1.281 | 1.281 | -0.02 | 18.6 |
| 423.170 | 4.071 | 4.072 | 0.02 | 1.281 | 1.281 | -0.02 | 17.0 |
| 273.150 | 2.344 | 2.340 | -0.17 | 1.487 | 1.491 | 0.28 | 34.3 |
| 298.142 | 2.756 | 2.755 | -0.06 | 1.487 | 1.488 | 0.08 | 27.8 |
| 323.140 | 3.151 | 3.150 | -0.04 | 1.487 | 1.488 | 0.05 | 23.6 |
| 348.143 | 3.535 | 3.534 | -0.03 | 1.487 | 1.488 | 0.04 | 20.5 |
| 373.150 | 3.913 | 3.912 | -0.01 | 1.487 | 1.487 | 0.01 | 18.2 |
| 398.160 | 4.285 | 4.285 | 0.02 | 1.487 | 1.487 | -0.02 | 16.4 |
| 423.170 | 4.654 | 4.655 | 0.02 | 1.487 | 1.487 | -0.02 | 15.0 |
| 298.142 | 2.940 | 2.938 | -0.05 | 1.635 | 1.637 | 0.08 | 26.5 |
| 323.140 | 3.383 | 3.382 | -0.04 | 1.635 | 1.636 | 0.05 | 22.2 |
| 348.143 | 3.814 | 3.813 | -0.04 | 1.635 | 1.636 | 0.05 | 19.2 |
| 373.150 | 4.236 | 4.235 | -0.01 | 1.635 | 1.636 | 0.01 | 17.0 |
| 398.160 | 4.652 | 4.653 | 0.01 | 1.635 | 1.635 | -0.01 | 15.2 |
| 423.170 | 5.065 | 5.065 | 0.02 | 1.635 | 1.635 | -0.02 | 13.8 |
| 298.142 | 3.019 | 3.017 | -0.06 | 1.703 | 1.705 | 0.09 | 26.0 |

Table 6. PVT DATA (continued)

Data from Michels et al. [47] (continued)

| T K | P, expt MPa | P, calc MPa | dev % | ρ, expt $mol \cdot dm^{-3}$ | ρ, calc $mol \cdot dm^{-3}$ | dev % | wt |
|---|---|---|---|---|---|---|---|
| 323.140 | 3.485 | 3.483 | −0.04 | 1.703 | 1.704 | 0.05 | 21.7 |
| 348.143 | 3.937 | 3.936 | −0.04 | 1.703 | 1.704 | 0.05 | 18.7 |
| 373.150 | 4.380 | 4.379 | −0.01 | 1.703 | 1.703 | 0.01 | 16.5 |
| 398.160 | 4.816 | 4.817 | 0.02 | 1.703 | 1.703 | −0.03 | 14.7 |
| 423.170 | 5.249 | 5.250 | 0.02 | 1.703 | 1.703 | −0.02 | 13.3 |
| 298.142 | 3.248 | 3.246 | −0.06 | 1.916 | 1.918 | 0.10 | 24.7 |
| 323.140 | 3.787 | 3.786 | −0.03 | 1.916 | 1.917 | 0.05 | 20.3 |
| 348.143 | 4.309 | 4.308 | −0.03 | 1.916 | 1.917 | 0.04 | 17.3 |
| 373.150 | 4.819 | 4.819 | 0.00 | 1.916 | 1.916 | 0.00 | 15.1 |
| 398.160 | 5.321 | 5.323 | 0.03 | 1.916 | 1.916 | −0.03 | 13.4 |
| 423.170 | 5.819 | 5.821 | 0.03 | 1.916 | 1.916 | −0.03 | 12.1 |
| 298.142 | 3.306 | 3.305 | −0.04 | 1.975 | 1.977 | 0.07 | 24.4 |
| 323.140 | 3.866 | 3.865 | −0.03 | 1.975 | 1.976 | 0.05 | 20.0 |
| 348.143 | 4.408 | 4.407 | −0.03 | 1.975 | 1.976 | 0.04 | 17.0 |
| 373.150 | 4.938 | 4.937 | −0.02 | 1.975 | 1.976 | 0.02 | 14.8 |
| 398.160 | 5.458 | 5.459 | 0.02 | 1.975 | 1.975 | −0.02 | 13.1 |
| 423.170 | 5.974 | 5.975 | 0.03 | 1.975 | 1.975 | −0.03 | 11.8 |
| 298.142 | 3.443 | 3.441 | −0.05 | 2.122 | 2.124 | 0.10 | 23.8 |
| 323.140 | 4.056 | 4.054 | −0.03 | 2.122 | 2.123 | 0.05 | 19.2 |
| 348.143 | 4.647 | 4.646 | −0.03 | 2.122 | 2.123 | 0.04 | 16.2 |
| 373.150 | 5.224 | 5.224 | 0.00 | 2.122 | 2.122 | 0.00 | 14.1 |
| 398.160 | 5.791 | 5.793 | 0.03 | 2.122 | 2.121 | −0.03 | 12.4 |
| 423.170 | 6.354 | 6.355 | 0.03 | 2.122 | 2.121 | −0.03 | 11.1 |
| 298.142 | 3.618 | 3.616 | −0.05 | 2.334 | 2.336 | 0.10 | 23.1 |
| 323.140 | 4.310 | 4.309 | −0.03 | 2.334 | 2.335 | 0.05 | 18.4 |
| 348.143 | 4.976 | 4.974 | −0.03 | 2.334 | 2.335 | 0.04 | 15.3 |
| 373.150 | 5.624 | 5.624 | 0.00 | 2.334 | 2.334 | 0.00 | 13.2 |
| 398.160 | 6.261 | 6.263 | 0.03 | 2.334 | 2.333 | −0.04 | 11.6 |
| 423.170 | 6.892 | 6.895 | 0.04 | 2.334 | 2.333 | −0.05 | 10.3 |
| 298.142 | 3.673 | 3.672 | −0.03 | 2.408 | 2.410 | 0.07 | 22.9 |
| 323.140 | 4.394 | 4.393 | −0.02 | 2.408 | 2.409 | 0.03 | 18.1 |
| 348.143 | 5.086 | 5.085 | −0.02 | 2.408 | 2.409 | 0.03 | 15.0 |
| 373.150 | 5.760 | 5.760 | 0.00 | 2.408 | 2.408 | 0.00 | 12.9 |
| 398.160 | 6.422 | 6.425 | 0.04 | 2.408 | 2.407 | −0.05 | 11.3 |
| 423.170 | 7.078 | 7.081 | 0.05 | 2.408 | 2.407 | −0.06 | 10.1 |

Table 6. **PVT DATA** (continued)

Data from Michels et al. [47] (continued)

| T K | P, expt MPa | P, calc MPa | dev % | $\rho$, expt $mol \cdot dm^{-3}$ | $\rho$, calc $mol \cdot dm^{-3}$ | dev % | wt |
|---|---|---|---|---|---|---|---|
| 298.142 | 3.990 | 3.989 | −0.02 | 2.939 | 2.941 | 0.05 | 22.1 |
| 323.140 | 4.923 | 4.923 | 0.00 | 2.939 | 2.940 | 0.01 | 16.7 |
| 348.143 | 5.813 | 5.811 | −0.02 | 2.939 | 2.940 | 0.03 | 13.5 |
| 373.150 | 6.677 | 6.678 | 0.01 | 2.939 | 2.939 | −0.02 | 11.3 |
| 398.160 | 7.525 | 7.529 | 0.05 | 2.939 | 2.937 | −0.06 | 9.8 |
| 423.170 | 8.364 | 8.369 | 0.07 | 2.939 | 2.937 | −0.08 | 8.6 |
| 323.140 | 5.420 | 5.421 | 0.00 | 3.582 | 3.582 | −0.01 | 15.7 |
| 348.143 | 6.565 | 6.564 | −0.01 | 3.582 | 3.583 | 0.02 | 12.2 |
| 373.150 | 7.677 | 7.678 | 0.02 | 3.582 | 3.581 | −0.02 | 10.0 |
| 398.160 | 8.768 | 8.774 | 0.06 | 3.582 | 3.579 | −0.08 | 8.4 |
| 423.170 | 9.848 | 9.856 | 0.08 | 3.582 | 3.579 | −0.10 | 7.3 |
| 323.140 | 5.897 | 5.898 | 0.01 | 4.429 | 4.428 | −0.02 | 0.0 |
| 348.143 | 7.400 | 7.398 | −0.02 | 4.429 | 4.431 | 0.04 | 0.0 |
| 373.150 | 8.866 | 8.866 | 0.01 | 4.429 | 4.428 | −0.02 | 0.0 |
| 398.160 | 10.310 | 10.315 | 0.05 | 4.429 | 4.426 | −0.07 | 0.0 |
| 423.170 | 11.740 | 11.748 | 0.07 | 4.429 | 4.425 | −0.08 | 0.0 |
| 323.140 | 6.300 | 6.299 | −0.01 | 5.440 | 5.442 | 0.03 | 0.0 |
| 348.143 | 8.260 | 8.255 | −0.05 | 5.440 | 5.445 | 0.09 | 0.0 |
| 373.150 | 10.193 | 10.191 | −0.03 | 5.440 | 5.442 | 0.04 | 0.0 |
| 398.160 | 12.110 | 12.112 | 0.02 | 5.440 | 5.439 | −0.02 | 0.0 |
| 423.170 | 14.017 | 14.020 | 0.03 | 5.440 | 5.439 | −0.03 | 0.0 |
| 323.140 | 6.691 | 6.689 | −0.03 | 6.682 | 6.689 | 0.11 | 0.0 |
| 348.143 | 9.279 | 9.270 | −0.10 | 6.682 | 6.693 | 0.16 | 0.0 |
| 373.150 | 11.877 | 11.868 | −0.07 | 6.682 | 6.688 | 0.09 | 0.0 |
| 398.160 | 14.473 | 14.469 | −0.03 | 6.682 | 6.684 | 0.03 | 0.0 |
| 423.170 | 17.071 | 17.065 | −0.04 | 6.682 | 6.684 | 0.03 | 0.0 |
| 323.140 | 7.278 | 7.272 | −0.09 | 8.202 | 8.216 | 0.16 | 0.0 |
| 348.143 | 10.835 | 10.831 | −0.03 | 8.202 | 8.205 | 0.03 | 0.0 |
| 373.150 | 14.460 | 14.456 | −0.03 | 8.202 | 8.205 | 0.03 | 0.0 |
| 398.160 | 18.110 | 18.103 | −0.04 | 8.202 | 8.205 | 0.03 | 0.0 |
| 423.170 | 21.766 | 21.756 | −0.04 | 8.202 | 8.205 | 0.03 | 0.0 |

**Data from Michels et al. [47]** (continued)

Number of Points [47] 101

Pressure Calculation:
AAD% = 0.03 BIAS% = −0.01 RMS% = 0.04

Density Calculation:
AAD2% = 0.05 BIAS2% = 0.02 RMS2% = 0.06

Absolute Deviations:
Pressure Calculation:
AAD = 0.00 BIAS = 0.00 RMS = 0.00 MPa

Density Calculation:
AAD2 = 0.001 BIAS2 = 0.001 RMS2 = 0.002 mol•dm$^{-3}$

Weighted Data:

Number of Points [47] 81

Pressure Calculation:
AAD% = 0.03 BIAS% = −0.01 RMS% = 0.04

Density Calculation:
AAD2% = 0.04 BIAS2% = 0.02 RMS2% = 0.06

Absolute Deviations:
Pressure Calculation:
AAD = 0.00 BIAS = 0.00 RMS = 0.00 MPa

Density Calculation:
AAD2 = 0.001 BIAS2 = 0.000 RMS2 = 0.001 mol•dm$^{-3}$

**Data from Miniovich and Sorina [12]**

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | $\rho$, expt<br>mol•dm$^{-3}$ | $\rho$, calc<br>mol•dm$^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 303.036 | 4.648 | 4.647 | −0.02 | 9.271 | 9.278 | 0.07 | 0.0 |
| 303.530 | 4.724 | 4.725 | 0.02 | 9.271 | 9.267 | −0.05 | 0.0 |
| 304.072 | 4.810 | 4.810 | 0.00 | 9.271 | 9.272 | 0.01 | 0.0 |
| 304.525 | 4.881 | 4.882 | 0.01 | 9.271 | 9.270 | −0.02 | 0.0 |
| 303.887 | 4.728 | 4.726 | −0.05 | 8.894 | 8.917 | 0.27 | 0.0 |

Data from Miniovich and Sorina [12] (continued)

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | $\rho$, expt<br>$mol \cdot dm^{-3}$ | $\rho$, calc<br>$mol \cdot dm^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 303.922 | 4.734 | 4.731 | -0.06 | 8.894 | 8.925 | 0.35 | 0.0 |
| 304.340 | 4.792 | 4.791 | -0.03 | 8.894 | 8.907 | 0.15 | 0.0 |
| 304.820 | 4.863 | 4.860 | -0.05 | 8.894 | 8.913 | 0.21 | 0.0 |
| 305.102 | 4.904 | 4.901 | -0.05 | 8.894 | 8.911 | 0.19 | 0.0 |
| 304.595 | 4.798 | 4.797 | -0.03 | 8.488 | 8.524 | 0.42 | 0.0 |
| 304.705 | 4.813 | 4.811 | -0.05 | 8.488 | 8.534 | 0.54 | 0.0 |
| 305.090 | 4.864 | 4.862 | -0.02 | 8.488 | 8.508 | 0.23 | 0.0 |
| 305.550 | 4.924 | 4.924 | -0.01 | 8.488 | 8.496 | 0.10 | 0.0 |
| 305.060 | 4.847 | 4.844 | -0.05 | 8.052 | 8.180 | 1.59 | 0.0 |
| 305.272 | 4.871 | 4.870 | -0.02 | 8.052 | 8.096 | 0.55 | 0.0 |
| 305.575 | 4.907 | 4.907 | 0.00 | 8.052 | 8.050 | -0.02 | 0.0 |
| 305.272 | 4.868 | 4.866 | -0.03 | 7.623 | 7.872 | 3.26 | 0.0 |
| 305.470 | 4.889 | 4.889 | -0.01 | 7.623 | 7.711 | 1.15 | 0.0 |
| 305.672 | 4.911 | 4.912 | 0.03 | 7.623 | 7.481 | -1.86 | 0.0 |
| 305.345 | 4.875 | 4.874 | -0.02 | 7.257 | 7.685 | 5.90 | 0.0 |
| 305.645 | 4.906 | 4.906 | 0.00 | 7.257 | 7.217 | -0.55 | 0.0 |
| 305.960 | 4.940 | 4.941 | 0.02 | 7.257 | 7.142 | -1.59 | 0.0 |
| 305.360 | 4.876 | 4.875 | -0.02 | 6.998 | 7.604 | 8.65 | 0.0 |
| 305.657 | 4.906 | 4.906 | 0.00 | 6.998 | 7.026 | 0.39 | 0.0 |
| 305.990 | 4.941 | 4.942 | 0.02 | 6.998 | 6.906 | -1.32 | 0.0 |
| 305.560 | 4.896 | 4.896 | -0.01 | 6.844 | 6.960 | 1.69 | 0.0 |
| 305.910 | 4.931 | 4.932 | 0.01 | 6.844 | 6.759 | -1.24 | 0.0 |
| 306.020 | 4.943 | 4.943 | 0.02 | 6.844 | 6.761 | -1.22 | 0.0 |
| 305.360 | 4.876 | 4.875 | -0.02 | 6.702 | 7.555 | 12.74 | 0.0 |
| 305.672 | 4.907 | 4.907 | -0.01 | 6.702 | 6.852 | 2.25 | 0.0 |
| 306.043 | 4.945 | 4.944 | -0.02 | 6.702 | 6.786 | 1.26 | 0.0 |
| 305.380 | 4.878 | 4.877 | -0.03 | 6.505 | 7.537 | 15.85 | 0.0 |
| 305.690 | 4.908 | 4.907 | -0.02 | 6.505 | 6.671 | 2.55 | 0.0 |
| 306.078 | 4.947 | 4.946 | -0.02 | 6.505 | 6.597 | 1.41 | 0.0 |
| 305.335 | 4.872 | 4.872 | 0.00 | 6.317 | 6.260 | -0.90 | 0.0 |
| 305.722 | 4.909 | 4.909 | 0.01 | 6.317 | 6.274 | -0.68 | 0.0 |
| 306.110 | 4.947 | 4.947 | 0.00 | 6.317 | 6.326 | 0.15 | 0.0 |
| 305.280 | 4.867 | 4.866 | -0.01 | 6.059 | 6.194 | 2.22 | 0.0 |
| 305.752 | 4.911 | 4.910 | -0.02 | 6.059 | 6.130 | 1.18 | 0.0 |
| 306.135 | 4.947 | 4.946 | -0.02 | 6.059 | 6.120 | 1.01 | 0.0 |

Table 6. **PVT DATA** (continued)

**Data from Miniovich and Sorina [12]** (continued)

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | ρ, expt<br>mol•dm$^{-3}$ | ρ, calc<br>mol•dm$^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 305.045 | 4.842 | 4.842 | −0.02 | 5.653 | 5.716 | 1.13 | 0.0 |
| 305.760 | 4.904 | 4.904 | −0.01 | 5.653 | 5.665 | 0.22 | 0.0 |
| 306.188 | 4.942 | 4.941 | −0.02 | 5.653 | 5.691 | 0.68 | 0.0 |
| 304.640 | 4.801 | 4.800 | −0.01 | 5.277 | 5.287 | 0.19 | 0.0 |
| 304.660 | 4.803 | 4.802 | −0.02 | 5.277 | 5.309 | 0.59 | 0.0 |
| 305.340 | 4.859 | 4.857 | −0.04 | 5.277 | 5.322 | 0.84 | 0.0 |
| 306.025 | 4.917 | 4.912 | −0.11 | 5.277 | 5.387 | 2.08 | 0.0 |
| 303.945 | 4.731 | 4.730 | −0.01 | 4.873 | 4.883 | 0.20 | 0.0 |
| 304.001 | 4.736 | 4.734 | −0.03 | 4.873 | 4.900 | 0.55 | 0.0 |
| 304.537 | 4.775 | 4.774 | −0.03 | 4.873 | 4.893 | 0.40 | 0.0 |
| 305.287 | 4.830 | 4.829 | −0.03 | 4.873 | 4.891 | 0.36 | 0.0 |
| 305.960 | 4.880 | 4.878 | −0.04 | 4.873 | 4.892 | 0.39 | 0.0 |
| 306.620 | 4.928 | 4.926 | −0.04 | 4.873 | 4.892 | 0.39 | 0.0 |
| 302.910 | 4.630 | 4.625 | −0.11 | 4.455 | 4.506 | 1.15 | 0.0 |
| 303.380 | 4.660 | 4.656 | −0.07 | 4.455 | 4.487 | 0.72 | 0.0 |
| 304.035 | 4.703 | 4.700 | −0.07 | 4.455 | 4.482 | 0.61 | 0.0 |
| 304.599 | 4.739 | 4.737 | −0.04 | 4.455 | 4.471 | 0.36 | 0.0 |
| 305.000 | 4.766 | 4.763 | −0.05 | 4.455 | 4.471 | 0.36 | 0.0 |
| 305.440 | 4.795 | 4.792 | −0.06 | 4.455 | 4.475 | 0.45 | 0.0 |
| 306.074 | 4.836 | 4.833 | −0.05 | 4.455 | 4.469 | 0.31 | 0.0 |
| 306.522 | 4.865 | 4.863 | −0.04 | 4.455 | 4.467 | 0.27 | 0.0 |
| 307.025 | 4.898 | 4.895 | −0.05 | 4.455 | 4.469 | 0.32 | 0.0 |
| 307.475 | 4.928 | 4.925 | −0.06 | 4.455 | 4.472 | 0.39 | 0.0 |

Number of Points [12] 63

Pressure Calculation:
AAD% = 0.03 BIAS% = −0.03 RMS% = 0.03

Density Calculation:
AAD2% = 1.41 BIAS2% = 1.11 RMS2% = 2.85

Absolute Deviations:
Pressure Calculation:
AAD = 0.00 BIAS = 0.00 RMS = 0.00 MPa

Density Calculation:
AAD2 = 0.093 BIAS2 = 0.072 RMS2 = 0.191 mol•dm$^{-3}$

Table 6. PVT DATA (continued)

Data from Pal et al. [13]
Data slightly adjusted after personal communication with author.

| T K | P, expt MPa | P, calc MPa | dev % | ρ, expt $mol \cdot dm^{-3}$ | ρ, calc $mol \cdot dm^{-3}$ | dev % | wt |
|---|---|---|---|---|---|---|---|
| 263.847 | 1.799 | 1.816 | 0.92 | 1.106 | 1.091 | -1.33 | 0.0 |
| 267.267 | 1.846 | 1.857 | 0.59 | 1.106 | 1.096 | -0.84 | 0.0 |
| 270.457 | 1.885 | 1.894 | 0.50 | 1.105 | 1.098 | -0.70 | 0.0 |
| 273.094 | 1.916 | 1.925 | 0.47 | 1.105 | 1.098 | -0.65 | 0.0 |
| 276.946 | 1.962 | 1.970 | 0.40 | 1.105 | 1.099 | -0.55 | 0.0 |
| 281.362 | 2.014 | 2.021 | 0.34 | 1.105 | 1.100 | -0.45 | 0.0 |
| 288.868 | 2.101 | 2.107 | 0.28 | 1.104 | 1.100 | -0.37 | 0.0 |
| 298.954 | 2.214 | 2.220 | 0.26 | 1.104 | 1.100 | -0.33 | 0.0 |
| 306.232 | 2.295 | 2.300 | 0.22 | 1.103 | 1.100 | -0.28 | 0.0 |
| 315.928 | 2.402 | 2.406 | 0.20 | 1.103 | 1.100 | -0.25 | 0.0 |
| 326.185 | 2.514 | 2.518 | 0.17 | 1.102 | 1.100 | -0.20 | 0.0 |
| 332.655 | 2.584 | 2.587 | 0.15 | 1.102 | 1.100 | -0.18 | 0.0 |
| 343.612 | 2.701 | 2.705 | 0.13 | 1.101 | 1.099 | -0.16 | 0.0 |
| 290.936 | 3.548 | 3.559 | 0.32 | 2.597 | 2.575 | -0.85 | 0.0 |
| 292.700 | 3.614 | 3.619 | 0.14 | 2.596 | 2.587 | -0.35 | 0.0 |
| 294.967 | 3.691 | 3.695 | 0.11 | 2.596 | 2.589 | -0.26 | 0.0 |
| 297.293 | 3.768 | 3.772 | 0.10 | 2.596 | 2.589 | -0.24 | 0.0 |
| 299.402 | 3.838 | 3.841 | 0.07 | 2.595 | 2.591 | -0.17 | 0.0 |
| 300.717 | 3.880 | 3.884 | 0.11 | 2.595 | 2.589 | -0.24 | 0.0 |
| 306.169 | 4.055 | 4.059 | 0.09 | 2.594 | 2.589 | -0.19 | 0.0 |
| 311.528 | 4.226 | 4.229 | 0.09 | 2.594 | 2.589 | -0.16 | 0.0 |
| 317.621 | 4.416 | 4.419 | 0.08 | 2.593 | 2.589 | -0.14 | 0.0 |
| 325.244 | 4.651 | 4.654 | 0.08 | 2.592 | 2.588 | -0.13 | 0.0 |
| 333.158 | 4.891 | 4.895 | 0.08 | 2.590 | 2.587 | -0.12 | 0.0 |
| 343.446 | 5.199 | 5.203 | 0.08 | 2.589 | 2.586 | -0.13 | 0.0 |
| 305.270 | 4.786 | 4.800 | 0.28 | 4.594 | 4.492 | -2.22 | 0.0 |
| 306.575 | 4.875 | 4.888 | 0.27 | 4.594 | 4.507 | -1.89 | 0.0 |
| 306.998 | 4.904 | 4.917 | 0.26 | 4.594 | 4.515 | -1.72 | 0.0 |
| 308.355 | 4.993 | 5.008 | 0.29 | 4.594 | 4.516 | -1.70 | 0.0 |
| 309.475 | 5.067 | 5.083 | 0.31 | 4.593 | 4.518 | -1.65 | 0.0 |
| 310.226 | 5.117 | 5.133 | 0.31 | 4.593 | 4.521 | -1.57 | 0.0 |
| 311.461 | 5.197 | 5.214 | 0.33 | 4.593 | 4.522 | -1.54 | 0.0 |
| 314.528 | 5.396 | 5.416 | 0.37 | 4.592 | 4.525 | -1.46 | 0.0 |
| 316.957 | 5.552 | 5.574 | 0.40 | 4.591 | 4.527 | -1.41 | 0.0 |
| 326.208 | 6.137 | 6.166 | 0.48 | 4.589 | 4.530 | -1.27 | 0.0 |

Table 6. **PVT DATA** (continued)

Data from Pal et al. [13] (continued)

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | ρ, expt<br>$mol \cdot dm^{-3}$ | ρ, calc<br>$mol \cdot dm^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 329.914 | 6.365 | 6.401 | 0.57 | 4.588 | 4.524 | −1.39 | 0.0 |
| 333.690 | 6.622 | 6.638 | 0.24 | 4.587 | 4.561 | −0.56 | 0.0 |
| 305.232 | 4.830 | 4.851 | 0.43 | 5.359 | 4.945 | −7.74 | 0.0 |
| 306.165 | 4.917 | 4.927 | 0.22 | 5.359 | 5.171 | −3.52 | 0.0 |
| 307.343 | 5.014 | 5.023 | 0.17 | 5.359 | 5.242 | −2.18 | 0.0 |
| 308.378 | 5.097 | 5.107 | 0.19 | 5.359 | 5.254 | −1.95 | 0.0 |
| 310.753 | 5.289 | 5.297 | 0.15 | 5.358 | 5.295 | −1.17 | 0.0 |
| 315.523 | 5.666 | 5.675 | 0.16 | 5.356 | 5.314 | −0.80 | 0.0 |
| 320.133 | 6.025 | 6.036 | 0.18 | 5.355 | 5.318 | −0.70 | 0.0 |
| 324.789 | 6.385 | 6.397 | 0.19 | 5.354 | 5.321 | −0.61 | 0.0 |
| 329.529 | 6.749 | 6.762 | 0.19 | 5.352 | 5.324 | −0.53 | 0.0 |
| 334.774 | 7.150 | 7.163 | 0.19 | 5.351 | 5.327 | −0.45 | 0.0 |
| 342.584 | 7.745 | 7.758 | 0.17 | 5.348 | 5.330 | −0.35 | 0.0 |
| 305.380 | 4.868 | 4.876 | 0.16 | 6.137 | 5.527 | −9.93 | 0.0 |
| 305.932 | 4.920 | 4.928 | 0.15 | 6.137 | 5.711 | −6.94 | 0.0 |
| 306.528 | 4.976 | 4.984 | 0.15 | 6.137 | 5.829 | −5.02 | 0.0 |
| 307.927 | 5.109 | 5.115 | 0.12 | 6.136 | 6.001 | −2.21 | 0.0 |
| 309.803 | 5.285 | 5.290 | 0.10 | 6.135 | 6.066 | −1.13 | 0.0 |
| 314.618 | 5.733 | 5.736 | 0.05 | 6.134 | 6.114 | −0.32 | 0.0 |
| 320.295 | 6.255 | 6.259 | 0.06 | 6.132 | 6.117 | −0.25 | 0.0 |
| 325.427 | 6.724 | 6.730 | 0.08 | 6.130 | 6.115 | −0.25 | 0.0 |
| 330.799 | 7.215 | 7.221 | 0.08 | 6.128 | 6.115 | −0.21 | 0.0 |
| 336.699 | 7.755 | 7.760 | 0.07 | 6.126 | 6.117 | −0.15 | 0.0 |
| 343.543 | 8.378 | 8.385 | 0.08 | 6.124 | 6.114 | −0.15 | 0.0 |
| 305.423 | 4.879 | 4.881 | 0.05 | 6.789 | 6.006 | −11.54 | 0.0 |
| 305.743 | 4.903 | 4.914 | 0.22 | 6.789 | 5.699 | −16.05 | 0.0 |
| 306.184 | 4.946 | 4.960 | 0.28 | 6.789 | 5.862 | −13.65 | 0.0 |
| 306.693 | 4.998 | 5.012 | 0.29 | 6.788 | 6.082 | −10.41 | 0.0 |
| 307.188 | 5.050 | 5.063 | 0.26 | 6.788 | 6.284 | −7.44 | 0.0 |
| 309.162 | 5.258 | 5.267 | 0.18 | 6.787 | 6.617 | −2.52 | 0.0 |
| 312.231 | 5.567 | 5.585 | 0.32 | 6.787 | 6.616 | −2.51 | 0.0 |
| 317.552 | 6.119 | 6.137 | 0.30 | 6.785 | 6.693 | −1.35 | 0.0 |
| 322.347 | 6.620 | 6.637 | 0.26 | 6.783 | 6.724 | −0.86 | 0.0 |
| 327.148 | 7.123 | 7.140 | 0.23 | 6.781 | 6.739 | −0.62 | 0.0 |
| 333.270 | 7.768 | 7.782 | 0.19 | 6.778 | 6.751 | −0.40 | 0.0 |

Table 6. **PVT DATA** (continued)

Data from Pal et al. [13] (continued)

| T K | P, expt MPa | P, calc MPa | dev % | $\rho$, expt $mol \cdot dm^{-3}$ | $\rho$, calc $mol \cdot dm^{-3}$ | dev % | wt |
|---|---|---|---|---|---|---|---|
| 343.351 | 8.827 | 8.843 | 0.19 | 6.775 | 6.753 | −0.32 | 0.0 |
| 305.633 | 4.899 | 4.916 | 0.35 | 8.102 | 6.081 | −24.94 | 0.0 |
| 306.319 | 4.982 | 5.002 | 0.39 | 8.102 | 7.371 | −9.03 | 0.0 |
| 307.031 | 5.081 | 5.091 | 0.20 | 8.101 | 7.916 | −2.29 | 0.0 |
| 308.123 | 5.216 | 5.229 | 0.25 | 8.101 | 7.938 | −2.01 | 0.0 |
| 311.913 | 5.697 | 5.717 | 0.36 | 8.099 | 7.981 | −1.46 | 0.0 |
| 316.998 | 6.365 | 6.389 | 0.37 | 8.097 | 8.020 | −0.95 | 0.0 |
| 322.404 | 7.090 | 7.117 | 0.38 | 8.094 | 8.035 | −0.73 | 0.0 |
| 327.708 | 7.808 | 7.842 | 0.44 | 8.092 | 8.036 | −0.69 | 0.0 |
| 333.451 | 8.594 | 8.634 | 0.48 | 8.089 | 8.036 | −0.65 | 0.0 |
| 339.014 | 9.365 | 9.407 | 0.44 | 8.086 | 8.042 | −0.55 | 0.0 |
| 343.093 | 9.933 | 9.975 | 0.43 | 8.084 | 8.045 | −0.49 | 0.0 |
| 305.015 | 4.843 | 4.879 | 0.74 | 8.810 | 8.246 | −6.41 | 0.0 |
| 306.220 | 5.013 | 5.052 | 0.77 | 8.810 | 8.482 | −3.73 | 0.0 |
| 307.783 | 5.233 | 5.279 | 0.88 | 8.809 | 8.541 | −3.04 | 0.0 |
| 309.310 | 5.478 | 5.504 | 0.47 | 8.808 | 8.699 | −1.24 | 0.0 |
| 310.839 | 5.706 | 5.733 | 0.47 | 8.807 | 8.716 | −1.04 | 0.0 |
| 314.681 | 6.275 | 6.316 | 0.66 | 8.805 | 8.707 | −1.12 | 0.0 |
| 319.840 | 7.067 | 7.117 | 0.69 | 8.803 | 8.720 | −0.94 | 0.0 |
| 325.591 | 7.972 | 8.024 | 0.66 | 8.800 | 8.733 | −0.76 | 0.0 |
| 331.302 | 8.879 | 8.937 | 0.65 | 8.797 | 8.739 | −0.66 | 0.0 |
| 337.309 | 9.843 | 9.904 | 0.62 | 8.794 | 8.742 | −0.58 | 0.0 |
| 342.720 | 10.714 | 10.780 | 0.62 | 8.791 | 8.743 | −0.55 | 0.0 |
| 303.430 | 4.803 | 4.823 | 0.40 | 9.689 | 9.635 | −0.55 | 0.0 |
| 303.752 | 4.862 | 4.879 | 0.36 | 9.689 | 9.642 | −0.49 | 0.0 |
| 303.962 | 4.898 | 4.916 | 0.36 | 9.689 | 9.642 | −0.48 | 0.0 |
| 304.336 | 4.948 | 4.982 | 0.67 | 9.688 | 9.603 | −0.88 | 0.0 |
| 305.899 | 5.227 | 5.259 | 0.62 | 9.687 | 9.618 | −0.72 | 0.0 |
| 308.437 | 5.681 | 5.716 | 0.61 | 9.686 | 9.626 | −0.62 | 0.0 |
| 313.081 | 6.535 | 6.569 | 0.52 | 9.683 | 9.640 | −0.45 | 0.0 |
| 318.048 | 7.473 | 7.501 | 0.37 | 9.681 | 9.653 | −0.29 | 0.0 |
| 322.924 | 8.395 | 8.428 | 0.39 | 9.678 | 9.651 | −0.28 | 0.0 |
| 327.991 | 9.361 | 9.401 | 0.43 | 9.675 | 9.647 | −0.29 | 0.0 |
| 334.413 | 10.581 | 10.643 | 0.59 | 9.671 | 9.635 | −0.38 | 0.0 |
| 342.647 | 12.202 | 12.247 | 0.36 | 9.667 | 9.645 | −0.23 | 0.0 |

Table 6. PVT DATA (continued)

Data from Pal et al. [13] (continued)

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | $\rho$, expt<br>$mol \cdot dm^{-3}$ | $\rho$, calc<br>$mol \cdot dm^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 293.336 | 3.898 | 3.937 | 1.01 | 11.376 | 11.348 | −0.25 | 0.0 |
| 293.674 | 3.988 | 4.026 | 0.97 | 11.376 | 11.349 | −0.24 | 0.0 |
| 294.103 | 4.098 | 4.140 | 1.01 | 11.376 | 11.347 | −0.25 | 0.0 |
| 294.883 | 4.304 | 4.345 | 0.97 | 11.375 | 11.347 | −0.25 | 0.0 |
| 295.416 | 4.444 | 4.487 | 0.97 | 11.375 | 11.347 | −0.25 | 0.0 |
| 295.792 | 4.542 | 4.586 | 0.97 | 11.375 | 11.346 | −0.25 | 0.0 |
| 296.034 | 4.606 | 4.651 | 0.98 | 11.375 | 11.346 | −0.25 | 0.0 |
| 298.624 | 5.295 | 5.342 | 0.90 | 11.373 | 11.346 | −0.24 | 0.0 |
| 301.993 | 6.195 | 6.249 | 0.87 | 11.371 | 11.344 | −0.24 | 0.0 |
| 304.995 | 7.009 | 7.063 | 0.77 | 11.369 | 11.344 | −0.22 | 0.0 |
| 309.657 | 8.281 | 8.335 | 0.65 | 11.365 | 11.344 | −0.19 | 0.0 |
| 314.468 | 9.599 | 9.659 | 0.62 | 11.362 | 11.341 | −0.19 | 0.0 |
| 319.264 | 10.933 | 10.984 | 0.47 | 11.359 | 11.343 | −0.14 | 0.0 |
| 324.667 | 12.442 | 12.484 | 0.34 | 11.355 | 11.343 | −0.11 | 0.0 |
| 328.588 | 13.530 | 13.575 | 0.33 | 11.353 | 11.341 | −0.11 | 0.0 |
| 335.200 | 15.371 | 15.420 | 0.32 | 11.348 | 11.336 | −0.11 | 0.0 |
| 341.335 | 17.025 | 17.135 | 0.65 | 11.344 | 11.320 | −0.22 | 0.0 |
| 277.504 | 2.735 | 2.752 | 0.62 | 12.989 | 12.985 | −0.03 | 0.0 |
| 277.925 | 2.896 | 2.916 | 0.70 | 12.989 | 12.983 | −0.04 | 0.0 |
| 278.136 | 2.968 | 2.999 | 1.04 | 12.989 | 12.981 | −0.06 | 0.0 |
| 278.777 | 3.220 | 3.249 | 0.88 | 12.988 | 12.981 | −0.05 | 0.0 |
| 279.387 | 3.454 | 3.487 | 0.98 | 12.988 | 12.979 | −0.06 | 0.0 |
| 279.902 | 3.655 | 3.689 | 0.92 | 12.987 | 12.979 | −0.06 | 0.0 |
| 282.317 | 4.572 | 4.633 | 1.35 | 12.985 | 12.971 | −0.11 | 0.0 |
| 284.543 | 5.454 | 5.506 | 0.96 | 12.984 | 12.972 | −0.09 | 0.0 |
| 286.727 | 6.307 | 6.363 | 0.88 | 12.982 | 12.970 | −0.09 | 0.0 |
| 290.618 | 7.830 | 7.893 | 0.81 | 12.979 | 12.966 | −0.10 | 0.0 |
| 297.190 | 10.410 | 10.484 | 0.72 | 12.974 | 12.961 | −0.10 | 0.0 |
| 304.683 | 13.370 | 13.440 | 0.52 | 12.968 | 12.957 | −0.08 | 0.0 |
| 312.625 | 16.492 | 16.575 | 0.50 | 12.962 | 12.950 | −0.09 | 0.0 |
| 320.832 | 19.726 | 19.805 | 0.40 | 12.955 | 12.945 | −0.08 | 0.0 |
| 329.753 | 23.259 | 23.309 | 0.21 | 12.948 | 12.942 | −0.05 | 0.0 |
| 339.989 | 27.248 | 27.315 | 0.25 | 12.940 | 12.933 | −0.06 | 0.0 |
| 268.389 | 2.184 | 2.304 | 5.52 | 13.716 | 13.695 | −0.15 | 0.0 |
| 268.613 | 2.287 | 2.407 | 5.26 | 13.716 | 13.695 | −0.15 | 0.0 |

Data from Pal et al. [13] (continued)

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | ρ, expt<br>mol•dm$^{-3}$ | ρ, calc<br>mol•dm$^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 268.944 | 2.439 | 2.560 | 4.94 | 13.715 | 13.694 | −0.15 | 0.0 |
| 269.313 | 2.604 | 2.732 | 4.95 | 13.715 | 13.693 | −0.16 | 0.0 |
| 269.861 | 2.857 | 2.985 | 4.49 | 13.715 | 13.693 | −0.16 | 0.0 |
| 270.539 | 3.164 | 3.298 | 4.22 | 13.714 | 13.691 | −0.16 | 0.0 |
| 271.359 | 3.541 | 3.678 | 3.86 | 13.713 | 13.691 | −0.17 | 0.0 |
| 272.788 | 4.196 | 4.341 | 3.45 | 13.712 | 13.689 | −0.17 | 0.0 |
| 277.605 | 6.405 | 6.573 | 2.62 | 13.708 | 13.683 | −0.18 | 0.0 |
| 281.789 | 8.338 | 8.511 | 2.08 | 13.705 | 13.680 | −0.18 | 0.0 |
| 286.317 | 10.423 | 10.610 | 1.79 | 13.701 | 13.676 | −0.18 | 0.0 |
| 290.328 | 12.271 | 12.467 | 1.59 | 13.698 | 13.673 | −0.18 | 0.0 |
| 296.212 | 14.987 | 15.186 | 1.33 | 13.693 | 13.669 | −0.17 | 0.0 |
| 302.145 | 17.713 | 17.922 | 1.18 | 13.688 | 13.665 | −0.17 | 0.0 |
| 310.715 | 21.650 | 21.862 | 0.98 | 13.681 | 13.660 | −0.15 | 0.0 |
| 319.093 | 25.508 | 25.693 | 0.72 | 13.674 | 13.657 | −0.13 | 0.0 |
| 334.225 | 32.389 | 32.558 | 0.52 | 13.661 | 13.647 | −0.10 | 0.0 |
| 256.613 | 1.904 | 2.130 | 11.85 | 14.555 | 14.528 | −0.18 | 0.0 |
| 257.326 | 2.290 | 2.530 | 10.47 | 14.554 | 14.526 | −0.19 | 0.0 |
| 257.911 | 2.611 | 2.860 | 9.51 | 14.554 | 14.525 | −0.20 | 0.0 |
| 259.065 | 3.256 | 3.507 | 7.71 | 14.553 | 14.524 | −0.20 | 0.0 |
| 263.450 | 5.691 | 5.962 | 4.76 | 14.549 | 14.520 | −0.20 | 0.0 |
| 268.631 | 8.553 | 8.858 | 3.57 | 14.544 | 14.513 | −0.21 | 0.0 |
| 273.496 | 11.269 | 11.567 | 2.64 | 14.539 | 14.511 | −0.19 | 0.0 |
| 283.116 | 16.588 | 16.902 | 1.90 | 14.531 | 14.504 | −0.19 | 0.0 |
| 291.287 | 21.078 | 21.404 | 1.55 | 14.523 | 14.497 | −0.18 | 0.0 |
| 298.372 | 24.959 | 25.283 | 1.30 | 14.517 | 14.493 | −0.17 | 0.0 |
| 307.254 | 29.794 | 30.112 | 1.07 | 14.509 | 14.487 | −0.15 | 0.0 |
| 319.529 | 36.406 | 36.722 | 0.87 | 14.498 | 14.478 | −0.14 | 0.4 |
| 248.290 | 1.422 | 1.801 | 26.64 | 15.050 | 15.013 | −0.24 | 0.0 |
| 249.192 | 2.002 | 2.366 | 18.15 | 15.049 | 15.014 | −0.23 | 0.0 |
| 250.248 | 2.656 | 3.028 | 13.98 | 15.048 | 15.013 | −0.23 | 0.0 |
| 253.374 | 4.599 | 4.984 | 8.37 | 15.045 | 15.010 | −0.23 | 0.0 |
| 258.654 | 7.873 | 8.280 | 5.17 | 15.040 | 15.005 | −0.23 | 0.0 |
| 265.858 | 12.335 | 12.755 | 3.41 | 15.033 | 15.000 | −0.22 | 0.0 |
| 272.972 | 16.704 | 17.145 | 2.64 | 15.027 | 14.994 | −0.22 | 0.0 |
| 279.035 | 20.408 | 20.864 | 2.23 | 15.021 | 14.989 | −0.21 | 0.0 |

Table 6. **PVT DATA** (continued)

Data from Pal et al. [13] (continued)

| T K | P, expt MPa | P, calc MPa | dev % | $\rho$, expt $mol \cdot dm^{-3}$ | $\rho$, calc $mol \cdot dm^{-3}$ | dev % | wt |
|---|---|---|---|---|---|---|---|
| 285.189 | 24.149 | 24.611 | 1.91 | 15.015 | 14.984 | −0.20 | 0.0 |
| 294.840 | 29.996 | 30.447 | 1.50 | 15.006 | 14.978 | −0.19 | 0.0 |
| 304.470 | 35.755 | 36.211 | 1.28 | 14.997 | 14.971 | −0.18 | 0.4 |
| 316.744 | 43.238 | 43.471 | 0.54 | 14.985 | 14.973 | −0.08 | 0.3 |
| 240.739 | 1.010 | 1.344 | 33.10 | 15.455 | 15.427 | −0.18 | 0.0 |
| 240.885 | 1.107 | 1.446 | 30.72 | 15.455 | 15.427 | −0.18 | 0.0 |
| 241.249 | 1.364 | 1.697 | 24.43 | 15.455 | 15.427 | −0.18 | 0.0 |
| 241.891 | 1.803 | 2.138 | 18.58 | 15.454 | 15.427 | −0.18 | 0.0 |
| 243.148 | 2.660 | 2.999 | 12.76 | 15.453 | 15.425 | −0.18 | 0.0 |
| 246.601 | 4.982 | 5.365 | 7.69 | 15.449 | 15.420 | −0.19 | 0.0 |
| 251.930 | 8.627 | 8.998 | 4.30 | 15.444 | 15.417 | −0.18 | 0.0 |
| 257.186 | 12.201 | 12.566 | 2.99 | 15.439 | 15.414 | −0.16 | 0.0 |
| 261.745 | 15.281 | 15.644 | 2.37 | 15.435 | 15.411 | −0.16 | 0.0 |
| 267.242 | 18.986 | 19.328 | 1.80 | 15.429 | 15.407 | −0.14 | 0.0 |
| 273.834 | 23.374 | 23.723 | 1.49 | 15.423 | 15.402 | −0.14 | 0.0 |
| 282.799 | 29.309 | 29.645 | 1.15 | 15.414 | 15.395 | −0.12 | 0.0 |
| 290.022 | 34.031 | 34.371 | 1.00 | 15.407 | 15.389 | −0.12 | 0.0 |
| 298.219 | 39.368 | 39.687 | 0.81 | 15.399 | 15.383 | −0.10 | 0.3 |
| 309.559 | 46.679 | 46.960 | 0.60 | 15.388 | 15.375 | −0.09 | 0.3 |
| 230.051 | 0.806 | 1.325 | 64.39 | 16.037 | 16.003 | −0.21 | 0.0 |
| 230.294 | 0.996 | 1.514 | 51.93 | 16.037 | 16.002 | −0.21 | 0.0 |
| 230.807 | 1.397 | 1.918 | 37.30 | 16.036 | 16.002 | −0.21 | 0.0 |
| 232.572 | 2.784 | 3.295 | 18.34 | 16.034 | 16.001 | −0.20 | 0.0 |
| 234.160 | 4.001 | 4.532 | 13.30 | 16.033 | 15.999 | −0.21 | 0.0 |
| 235.255 | 4.850 | 5.387 | 11.07 | 16.032 | 15.998 | −0.21 | 0.0 |
| 242.791 | 10.658 | 11.221 | 5.28 | 16.024 | 15.991 | −0.21 | 0.0 |
| 249.107 | 15.504 | 16.060 | 3.59 | 16.017 | 15.986 | −0.19 | 0.0 |
| 254.888 | 19.880 | 20.455 | 2.89 | 16.011 | 15.981 | −0.19 | 0.0 |
| 262.164 | 25.381 | 25.942 | 2.21 | 16.004 | 15.976 | −0.18 | 0.0 |
| 271.236 | 32.092 | 32.703 | 1.90 | 15.995 | 15.966 | −0.18 | 0.0 |
| 279.282 | 38.044 | 38.629 | 1.54 | 15.986 | 15.960 | −0.16 | 0.3 |
| 286.940 | 43.652 | 44.210 | 1.28 | 15.978 | 15.954 | −0.15 | 0.3 |
| 294.543 | 49.179 | 49.704 | 1.07 | 15.971 | 15.949 | −0.14 | 0.3 |
| 301.025 | 53.742 | 54.343 | 1.12 | 15.964 | 15.940 | −0.15 | 0.2 |
| 222.875 | 0.762 | 1.692 | 121.90 | 16.423 | 16.370 | −0.33 | 0.0 |

Table 6. **PVT DATA** (continued)

Data from Pal et al. [13] (continued)

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | ρ, expt<br>$mol \cdot dm^{-3}$ | ρ, calc<br>$mol \cdot dm^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 223.264 | 1.083 | 2.025 | 86.97 | 16.423 | 16.369 | −0.33 | 0.0 |
| 223.573 | 1.346 | 2.288 | 69.96 | 16.423 | 16.369 | −0.33 | 0.0 |
| 225.014 | 2.579 | 3.518 | 36.44 | 16.421 | 16.368 | −0.32 | 0.0 |
| 230.291 | 7.010 | 7.985 | 13.90 | 16.416 | 16.363 | −0.32 | 0.0 |
| 237.396 | 12.950 | 13.941 | 7.66 | 16.408 | 16.358 | −0.31 | 0.0 |
| 252.785 | 25.571 | 26.618 | 4.09 | 16.391 | 16.344 | −0.29 | 0.0 |
| 259.848 | 31.261 | 32.345 | 3.47 | 16.384 | 16.337 | −0.29 | 0.0 |
| 267.602 | 37.448 | 38.557 | 2.96 | 16.376 | 16.330 | −0.28 | 0.2 |
| 275.649 | 43.890 | 44.930 | 2.37 | 16.367 | 16.326 | −0.25 | 0.2 |
| 282.466 | 49.233 | 50.283 | 2.13 | 16.360 | 16.321 | −0.24 | 0.2 |
| 293.185 | 57.574 | 58.591 | 1.77 | 16.349 | 16.312 | −0.22 | 0.2 |
| 215.247 | 0.682 | 0.956 | 40.16 | 16.754 | 16.740 | −0.08 | 0.0 |
| 215.504 | 0.932 | 1.191 | 27.77 | 16.754 | 16.741 | −0.08 | 0.0 |
| 215.892 | 1.278 | 1.549 | 21.27 | 16.754 | 16.740 | −0.08 | 0.0 |
| 216.369 | 1.726 | 1.984 | 14.98 | 16.753 | 16.740 | −0.08 | 0.0 |
| 216.832 | 2.151 | 2.412 | 12.13 | 16.753 | 16.739 | −0.08 | 0.0 |
| 217.058 | 2.347 | 2.617 | 11.52 | 16.752 | 16.739 | −0.08 | 0.0 |
| 220.809 | 5.784 | 6.037 | 4.37 | 16.748 | 16.736 | −0.07 | 0.0 |
| 226.802 | 11.252 | 11.460 | 1.85 | 16.741 | 16.732 | −0.06 | 0.0 |
| 234.917 | 18.554 | 18.724 | 0.92 | 16.733 | 16.725 | −0.04 | 0.0 |
| 243.045 | 25.738 | 25.893 | 0.60 | 16.724 | 16.717 | −0.04 | 0.0 |
| 250.885 | 32.618 | 32.718 | 0.31 | 16.715 | 16.711 | −0.02 | 0.0 |
| 260.378 | 40.837 | 40.873 | 0.09 | 16.705 | 16.703 | −0.01 | 0.2 |
| 269.927 | 49.045 | 48.950 | −0.19 | 16.694 | 16.697 | 0.02 | 0.2 |
| 278.130 | 55.970 | 55.802 | −0.30 | 16.685 | 16.691 | 0.03 | 0.2 |
| 284.744 | 61.514 | 61.276 | −0.39 | 16.678 | 16.686 | 0.05 | 0.2 |
| 293.608 | 68.881 | 68.528 | −0.51 | 16.668 | 16.679 | 0.07 | 0.2 |
| 208.453 | 0.812 | 2.121 | 161.39 | 17.125 | 17.066 | −0.34 | 0.0 |
| 209.053 | 1.409 | 2.719 | 93.00 | 17.125 | 17.066 | −0.34 | 0.0 |
| 213.403 | 5.704 | 7.025 | 23.16 | 17.120 | 17.063 | −0.33 | 0.0 |
| 218.566 | 10.754 | 12.087 | 12.40 | 17.114 | 17.058 | −0.32 | 0.0 |
| 227.034 | 18.957 | 20.287 | 7.02 | 17.104 | 17.052 | −0.30 | 0.0 |
| 233.700 | 25.300 | 26.651 | 5.34 | 17.096 | 17.046 | −0.30 | 0.0 |
| 241.770 | 32.899 | 34.261 | 4.14 | 17.087 | 17.039 | −0.28 | 0.0 |
| 251.549 | 42.028 | 43.341 | 3.12 | 17.076 | 17.032 | −0.26 | 0.2 |

Table 6. **PVT DATA** (continued)

**Data from Pal et al. [13]** (continued)

| T K | P, expt MPa | P, calc MPa | dev % | ρ, expt $mol \cdot dm^{-3}$ | ρ, calc $mol \cdot dm^{-3}$ | dev % | wt |
|---|---|---|---|---|---|---|---|
| 260.957 | 50.705 | 51.936 | 2.43 | 17.066 | 17.026 | −0.23 | 0.2 |
| 268.486 | 57.440 | 58.719 | 2.23 | 17.057 | 17.018 | −0.23 | 0.2 |
| 280.494 | 68.304 | 69.396 | 1.60 | 17.044 | 17.012 | −0.19 | 0.2 |
| 198.356 | 0.713 | 1.012 | 41.93 | 17.529 | 17.518 | −0.07 | 0.0 |
| 199.230 | 1.659 | 1.965 | 18.45 | 17.528 | 17.516 | −0.07 | 0.0 |
| 200.946 | 3.544 | 3.831 | 8.11 | 17.526 | 17.515 | −0.06 | 0.0 |
| 204.756 | 7.681 | 7.943 | 3.40 | 17.522 | 17.512 | −0.06 | 0.0 |
| 210.931 | 14.342 | 14.541 | 1.39 | 17.514 | 17.507 | −0.04 | 0.0 |
| 220.998 | 25.028 | 25.116 | 0.35 | 17.503 | 17.500 | −0.02 | 0.0 |
| 227.537 | 31.801 | 31.875 | 0.23 | 17.495 | 17.492 | −0.01 | 0.0 |
| 235.067 | 39.592 | 39.560 | −0.08 | 17.486 | 17.487 | 0.01 | 0.2 |
| 242.758 | 47.394 | 47.294 | −0.21 | 17.477 | 17.480 | 0.02 | 0.2 |
| 249.071 | 53.746 | 53.555 | −0.36 | 17.470 | 17.475 | 0.03 | 0.2 |
| 256.389 | 61.108 | 60.748 | −0.59 | 17.461 | 17.471 | 0.06 | 0.2 |
| 263.603 | 68.221 | 67.739 | −0.71 | 17.453 | 17.466 | 0.07 | 0.2 |
| 188.907 | 0.673 | 1.156 | 71.89 | 17.942 | 17.925 | −0.09 | 0.0 |
| 189.331 | 1.176 | 1.669 | 41.87 | 17.942 | 17.925 | −0.09 | 0.0 |
| 189.746 | 1.684 | 2.159 | 28.21 | 17.941 | 17.925 | −0.09 | 0.0 |
| 192.590 | 5.087 | 5.536 | 8.82 | 17.937 | 17.922 | −0.08 | 0.0 |
| 198.660 | 12.300 | 12.680 | 3.09 | 17.930 | 17.918 | −0.07 | 0.0 |
| 205.509 | 20.264 | 20.608 | 1.70 | 17.921 | 17.911 | −0.06 | 0.0 |
| 213.217 | 29.113 | 29.397 | 0.97 | 17.912 | 17.904 | −0.05 | 0.0 |
| 220.733 | 37.667 | 37.820 | 0.41 | 17.903 | 17.898 | −0.02 | 0.2 |
| 228.543 | 46.431 | 46.448 | 0.04 | 17.893 | 17.893 | 0.00 | 0.1 |
| 238.949 | 58.019 | 57.723 | −0.51 | 17.880 | 17.888 | 0.04 | 0.1 |
| 176.719 | 0.347 | 1.138 | 227.86 | 18.446 | 18.423 | −0.13 | 0.0 |
| 177.382 | 1.231 | 2.032 | 65.05 | 18.445 | 18.422 | −0.13 | 0.0 |
| 178.429 | 2.659 | 3.419 | 28.59 | 18.444 | 18.421 | −0.12 | 0.0 |
| 179.691 | 4.342 | 5.096 | 17.37 | 18.442 | 18.420 | −0.12 | 0.0 |
| 182.793 | 8.481 | 9.198 | 8.46 | 18.438 | 18.418 | −0.11 | 0.0 |
| 188.263 | 15.673 | 16.351 | 4.32 | 18.431 | 18.412 | −0.10 | 0.0 |
| 195.148 | 24.580 | 25.203 | 2.53 | 18.422 | 18.406 | −0.09 | 0.0 |
| 201.949 | 33.279 | 33.806 | 1.59 | 18.413 | 18.400 | −0.07 | 0.0 |
| 208.686 | 41.821 | 42.190 | 0.88 | 18.405 | 18.396 | −0.05 | 0.1 |
| 215.452 | 50.282 | 50.484 | 0.40 | 18.396 | 18.391 | −0.03 | 0.1 |

Table 6. **PVT DATA** (continued)

Data from Pal et al. [13] (continued)

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | ρ, expt<br>mol•dm$^{-3}$ | ρ, calc<br>mol•dm$^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 222.008 | 58.443 | 58.394 | −0.08 | 18.387 | 18.389 | 0.01 | 0.1 |
| 227.030 | 64.631 | 64.394 | −0.37 | 18.381 | 18.386 | 0.03 | 0.1 |
| 229.121 | 67.237 | 66.874 | −0.54 | 18.378 | 18.387 | 0.04 | 0.1 |
| 168.032 | 1.000 | 2.254 | 125.34 | 18.824 | 18.791 | −0.17 | 0.0 |
| 168.479 | 1.659 | 2.902 | 74.88 | 18.823 | 18.791 | −0.17 | 0.0 |
| 169.437 | 3.051 | 4.291 | 40.63 | 18.822 | 18.790 | −0.17 | 0.0 |
| 171.067 | 5.423 | 6.656 | 22.73 | 18.820 | 18.788 | −0.17 | 0.0 |
| 173.679 | 9.221 | 10.403 | 12.82 | 18.816 | 18.786 | −0.16 | 0.0 |
| 177.673 | 14.928 | 16.088 | 7.77 | 18.811 | 18.782 | −0.15 | 0.0 |
| 183.136 | 22.604 | 23.757 | 5.10 | 18.803 | 18.776 | −0.15 | 0.0 |
| 188.844 | 30.544 | 31.647 | 3.61 | 18.796 | 18.770 | −0.14 | 0.0 |
| 195.448 | 39.684 | 40.622 | 2.37 | 18.787 | 18.766 | −0.11 | 0.1 |
| 201.251 | 47.685 | 48.397 | 1.49 | 18.779 | 18.764 | −0.08 | 0.1 |
| 206.784 | 55.063 | 55.710 | 1.18 | 18.772 | 18.758 | −0.07 | 0.1 |
| 212.460 | 62.851 | 63.108 | 0.41 | 18.764 | 18.759 | −0.03 | 0.1 |
| 217.337 | 69.284 | 69.404 | 0.17 | 18.758 | 18.755 | −0.01 | 0.1 |
| 157.201 | 0.522 | 1.491 | 185.68 | 19.227 | 19.204 | −0.12 | 0.0 |
| 158.496 | 2.616 | 3.551 | 35.73 | 19.225 | 19.203 | −0.11 | 0.0 |
| 159.577 | 4.283 | 5.263 | 22.90 | 19.223 | 19.200 | −0.12 | 0.0 |
| 160.786 | 6.293 | 7.180 | 14.09 | 19.221 | 19.201 | −0.11 | 0.0 |
| 163.656 | 10.866 | 11.697 | 7.64 | 19.217 | 19.199 | −0.10 | 0.0 |
| 167.103 | 16.135 | 17.072 | 5.80 | 19.213 | 19.192 | −0.11 | 0.0 |
| 172.270 | 24.169 | 25.005 | 3.46 | 19.205 | 19.187 | −0.09 | 0.0 |
| 177.321 | 31.853 | 32.648 | 2.49 | 19.198 | 19.182 | −0.09 | 0.0 |
| 183.160 | 40.762 | 41.332 | 1.40 | 19.190 | 19.178 | −0.06 | 0.1 |
| 188.652 | 49.035 | 49.381 | 0.70 | 19.182 | 19.175 | −0.04 | 0.1 |
| 194.552 | 57.854 | 57.910 | 0.10 | 19.174 | 19.173 | −0.01 | 0.1 |
| 199.115 | 64.770 | 64.394 | −0.58 | 19.168 | 19.175 | 0.04 | 0.1 |
| 202.417 | 69.454 | 69.068 | −0.56 | 19.163 | 19.171 | 0.04 | 0.1 |

Number of Points [13] 309

Pressure Calculation:
AAD% = 8.38 BIAS% = 8.34 RMS% = 24.68

Density Calculation:
AAD2% = 0.78 BIAS2% = −0.78 RMS2% = 2.32

**Data from** Pal et al. [13] (continued)

Absolute Deviations:
Pressure Calculation:
AAD = 0.30 BIAS = 0.27 RMS = 0.38 MPa

Density Calculation:
AAD2 = 0.061 BIAS2 = −0.060 RMS2 = 0.169 mol•dm$^{-3}$

Weighted Data:

Number of Points [13] 45

Pressure Calculation:
AAD% = 0.96 BIAS% = 0.70 RMS% = 1.05

Density Calculation:
AAD2% = 0.09 BIAS2% = −0.07 RMS2% = 0.10

Absolute Deviations:
Pressure Calculation:
AAD = 0.47 BIAS = 0.30 RMS = 0.51 MPa

Density Calculation:
AAD2 = 0.015 BIAS2 = −0.011 RMS2 = 0.017 mol•dm$^{-3}$

**Data from Parrish** [55]

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | $\rho$, expt<br>mol•dm$^{-3}$ | $\rho$, calc<br>mol•dm$^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 299.850 | 5.520 | 5.535 | 0.28 | 11.297 | 11.288 | −0.08 | 4.9 |
| 299.850 | 6.890 | 6.919 | 0.42 | 11.902 | 11.892 | −0.09 | 2.8 |
| 310.950 | 6.890 | 6.911 | 0.30 | 10.429 | 10.413 | −0.15 | 6.5 |
| 310.950 | 8.270 | 8.293 | 0.28 | 11.204 | 11.194 | −0.09 | 3.6 |
| 310.950 | 9.650 | 9.682 | 0.33 | 11.703 | 11.693 | −0.08 | 2.5 |
| 322.050 | 5.520 | 5.498 | −0.40 | 3.788 | 3.825 | 0.98 | 16.8 |
| 322.050 | 6.890 | 6.885 | −0.07 | 7.645 | 7.658 | 0.16 | 13.4 |
| 322.050 | 8.270 | 8.291 | 0.26 | 9.704 | 9.686 | −0.18 | 7.0 |
| 322.050 | 9.650 | 9.699 | 0.51 | 10.582 | 10.558 | −0.23 | 4.2 |

**Data from Parrish [55]**

Number of Points [55] 9

Pressure Calculation:
AAD% = 0.32 BIAS% = 0.21 RMS% = 0.26

Density Calculation:
AAD2% = 0.23 BIAS2% = 0.03 RMS2% = 0.35

Absolute Deviations:
Pressure Calculation:
AAD = 0.02 BIAS = 0.02 RMS = 0.02 MPa

Density Calculation:
AAD2 = 0.016 BIAS2 = −0.005 RMS2 = 0.018 mol•dm$^{-3}$

Weighted Data:

Number of Points [55] 9

Pressure Calculation:
AAD% = 0.32 BIAS% = 0.21 RMS% = 0.26

Density Calculation:
AAD2% = 0.23 BIAS2% = 0.03 RMS2% = 0.35

Absolute Deviations:
Pressure Calculation:
AAD = 0.02 BIAS = 0.02 RMS = 0.02 MPa

Density Calculation:
AAD2 = 0.016 BIAS2 = −0.005 RMS2 = 0.018 mol•dm$^{-3}$

**Data from Reamer et al. [42]**

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | ρ, expt<br>mol•dm$^{-3}$ | ρ, calc<br>mol•dm$^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 310.928 | 4.826 | 4.816 | −0.22 | 3.525 | 3.547 | 0.63 | 0.0 |
| 310.928 | 5.171 | 5.158 | −0.25 | 4.502 | 4.558 | 1.24 | 0.0 |
| 310.928 | 5.343 | 5.331 | −0.23 | 5.518 | 5.623 | 1.91 | 0.0 |
| 310.928 | 5.516 | 5.492 | −0.44 | 7.270 | 7.517 | 3.41 | 0.0 |
| 310.928 | 5.654 | 5.636 | −0.32 | 8.363 | 8.451 | 1.05 | 0.0 |

Table 6. **PVT DATA** (continued)

Data from Reamer et al. [42] (continued)

| T K | P, expt MPa | P, calc MPa | dev % | $\rho$, expt $mol \cdot dm^{-3}$ | $\rho$, calc $mol \cdot dm^{-3}$ | dev % | wt |
|---|---|---|---|---|---|---|---|
| 310.928 | 5.792 | 5.759 | −0.57 | 8.848 | 8.945 | 1.10 | 0.0 |
| 310.928 | 5.929 | 5.889 | −0.68 | 9.189 | 9.276 | 0.94 | 0.0 |
| 310.928 | 6.067 | 6.018 | −0.81 | 9.445 | 9.527 | 0.87 | 0.0 |
| 310.928 | 6.205 | 6.154 | −0.83 | 9.659 | 9.732 | 0.75 | 0.0 |
| 310.928 | 6.343 | 6.291 | −0.82 | 9.842 | 9.905 | 0.63 | 0.0 |
| 310.928 | 6.481 | 6.421 | −0.93 | 9.992 | 10.055 | 0.63 | 0.0 |
| 310.928 | 6.619 | 6.558 | −0.92 | 10.132 | 10.189 | 0.57 | 0.0 |
| 310.928 | 6.757 | 6.695 | −0.91 | 10.258 | 10.310 | 0.51 | 0.0 |
| 344.261 | 7.584 | 7.567 | −0.23 | 4.925 | 4.948 | 0.46 | 0.0 |
| 344.261 | 8.274 | 8.245 | −0.35 | 5.841 | 5.880 | 0.68 | 0.0 |
| 344.261 | 8.963 | 8.922 | −0.46 | 6.752 | 6.805 | 0.79 | 0.0 |
| 344.261 | 9.653 | 9.605 | −0.50 | 7.558 | 7.609 | 0.67 | 0.0 |
| 344.261 | 10.342 | 10.302 | −0.38 | 8.229 | 8.263 | 0.41 | 0.0 |
| 344.261 | 11.032 | 10.963 | −0.63 | 8.743 | 8.792 | 0.55 | 0.0 |
| 344.261 | 11.721 | 11.633 | −0.76 | 9.175 | 9.227 | 0.56 | 0.0 |
| 344.261 | 12.411 | 12.324 | −0.70 | 9.550 | 9.593 | 0.45 | 0.0 |
| 344.261 | 13.100 | 13.009 | −0.70 | 9.868 | 9.907 | 0.40 | 0.0 |
| 310.928 | 1.379 | 1.375 | −0.26 | 0.589 | 0.591 | 0.29 | 0.0 |
| 344.261 | 1.379 | 1.378 | −0.10 | 0.516 | 0.517 | 0.11 | 0.0 |
| 377.594 | 1.379 | 1.379 | −0.03 | 0.462 | 0.462 | 0.03 | 0.0 |
| 410.928 | 1.379 | 1.379 | −0.01 | 0.419 | 0.419 | 0.01 | 0.0 |
| 444.261 | 1.379 | 1.379 | −0.02 | 0.384 | 0.384 | 0.02 | 0.0 |
| 477.594 | 1.379 | 1.379 | −0.03 | 0.354 | 0.355 | 0.03 | 0.0 |
| 510.928 | 1.379 | 1.378 | −0.07 | 0.329 | 0.330 | 0.07 | 0.0 |
| 310.928 | 2.758 | 2.748 | −0.34 | 1.347 | 1.353 | 0.46 | 0.0 |
| 344.261 | 2.758 | 2.754 | −0.16 | 1.121 | 1.123 | 0.19 | 0.0 |
| 377.594 | 2.758 | 2.756 | −0.07 | 0.976 | 0.977 | 0.08 | 0.0 |
| 410.928 | 2.758 | 2.757 | −0.01 | 0.871 | 0.871 | 0.02 | 0.0 |
| 444.261 | 2.758 | 2.757 | −0.04 | 0.789 | 0.790 | 0.04 | 0.0 |
| 477.594 | 2.758 | 2.756 | −0.06 | 0.723 | 0.724 | 0.06 | 0.0 |
| 510.928 | 2.758 | 2.754 | −0.13 | 0.668 | 0.669 | 0.14 | 0.0 |
| 310.928 | 4.137 | 4.126 | −0.27 | 2.496 | 2.509 | 0.51 | 0.0 |
| 344.261 | 4.137 | 4.129 | −0.20 | 1.857 | 1.862 | 0.26 | 0.0 |
| 377.594 | 4.137 | 4.131 | −0.14 | 1.555 | 1.557 | 0.17 | 0.0 |
| 410.928 | 4.137 | 4.136 | −0.03 | 1.360 | 1.361 | 0.03 | 0.0 |

Table 6. **PVT DATA** (continued)

Data from Reamer et al. [42] (continued)

| T K | P, expt MPa | P, calc MPa | dev % | $\rho$, expt $mol \cdot dm^{-3}$ | $\rho$, calc $mol \cdot dm^{-3}$ | dev % | wt |
|---|---|---|---|---|---|---|---|
| 444.261 | 4.137 | 4.134 | -0.08 | 1.217 | 1.218 | 0.09 | 0.0 |
| 477.594 | 4.137 | 4.133 | -0.10 | 1.107 | 1.108 | 0.10 | 0.0 |
| 510.928 | 4.137 | 4.129 | -0.19 | 1.017 | 1.019 | 0.20 | 0.0 |
| 310.928 | 5.516 | 5.492 | -0.44 | 7.270 | 7.517 | 3.41 | 0.0 |
| 344.261 | 5.516 | 5.505 | -0.20 | 2.802 | 2.810 | 0.31 | 0.0 |
| 377.594 | 5.516 | 5.505 | -0.19 | 2.213 | 2.219 | 0.25 | 0.0 |
| 410.928 | 5.516 | 5.512 | -0.07 | 1.890 | 1.892 | 0.08 | 0.0 |
| 444.261 | 5.516 | 5.510 | -0.11 | 1.668 | 1.671 | 0.13 | 0.0 |
| 477.594 | 5.516 | 5.509 | -0.13 | 1.504 | 1.506 | 0.14 | 0.0 |
| 510.928 | 5.516 | 5.502 | -0.24 | 1.373 | 1.377 | 0.26 | 0.0 |
| 310.928 | 6.895 | 6.835 | -0.87 | 10.374 | 10.421 | 0.45 | 0.0 |
| 344.261 | 6.895 | 6.879 | -0.22 | 4.096 | 4.113 | 0.42 | 0.0 |
| 377.594 | 6.895 | 6.882 | -0.18 | 2.970 | 2.977 | 0.24 | 0.0 |
| 410.928 | 6.895 | 6.887 | -0.11 | 2.463 | 2.466 | 0.14 | 0.0 |
| 444.261 | 6.895 | 6.885 | -0.15 | 2.143 | 2.146 | 0.17 | 0.0 |
| 477.594 | 6.895 | 6.883 | -0.18 | 1.914 | 1.918 | 0.19 | 0.0 |
| 510.928 | 6.895 | 6.875 | -0.29 | 1.738 | 1.743 | 0.31 | 0.0 |
| 310.928 | 8.618 | 8.475 | -1.67 | 11.282 | 11.339 | 0.51 | 0.0 |
| 344.261 | 8.618 | 8.590 | -0.33 | 6.314 | 6.352 | 0.61 | 0.0 |
| 377.594 | 8.618 | 8.601 | -0.20 | 4.065 | 4.077 | 0.29 | 0.0 |
| 410.928 | 8.618 | 8.603 | -0.18 | 3.237 | 3.245 | 0.22 | 0.0 |
| 444.261 | 8.618 | 8.602 | -0.19 | 2.765 | 2.770 | 0.21 | 0.0 |
| 477.594 | 8.618 | 8.600 | -0.22 | 2.443 | 2.449 | 0.24 | 0.0 |
| 510.928 | 8.618 | 8.592 | -0.31 | 2.203 | 2.210 | 0.33 | 0.0 |
| 310.928 | 10.342 | 10.044 | -2.88 | 11.812 | 11.894 | 0.70 | 0.0 |
| 344.261 | 10.342 | 10.302 | -0.38 | 8.229 | 8.263 | 0.41 | 0.0 |
| 377.594 | 10.342 | 10.308 | -0.33 | 5.278 | 5.302 | 0.47 | 0.0 |
| 410.928 | 10.342 | 10.324 | -0.18 | 4.069 | 4.078 | 0.23 | 0.0 |
| 444.261 | 10.342 | 10.324 | -0.17 | 3.415 | 3.421 | 0.20 | 0.0 |
| 477.594 | 10.342 | 10.318 | -0.23 | 2.986 | 2.994 | 0.26 | 0.0 |
| 510.928 | 10.342 | 10.309 | -0.32 | 2.675 | 2.685 | 0.34 | 0.0 |
| 310.928 | 12.066 | 11.674 | -3.25 | 12.218 | 12.302 | 0.69 | 0.0 |
| 344.261 | 12.066 | 11.973 | -0.77 | 9.368 | 9.417 | 0.53 | 0.0 |
| 377.594 | 12.066 | 12.008 | -0.48 | 6.471 | 6.509 | 0.59 | 0.0 |
| 410.928 | 12.066 | 12.037 | -0.24 | 4.922 | 4.936 | 0.29 | 0.0 |

Table 6. **PVT DATA** (continued)

Data from Reamer et al. [42] (continued)

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | $\rho$, expt<br>$mol \cdot dm^{-3}$ | $\rho$, calc<br>$mol \cdot dm^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 444.261 | 12.066 | 12.042 | -0.20 | 4.078 | 4.087 | 0.23 | 0.0 |
| 477.594 | 12.066 | 12.036 | -0.24 | 3.537 | 3.546 | 0.27 | 0.0 |
| 510.928 | 12.066 | 12.035 | -0.26 | 3.154 | 3.162 | 0.27 | 0.0 |
| 310.928 | 13.790 | 13.326 | -3.36 | 12.548 | 12.630 | 0.65 | 0.0 |
| 344.261 | 13.790 | 13.670 | -0.86 | 10.136 | 10.181 | 0.44 | 0.0 |
| 377.594 | 13.790 | 13.729 | -0.44 | 7.515 | 7.548 | 0.44 | 0.0 |
| 410.928 | 13.790 | 13.747 | -0.31 | 5.758 | 5.778 | 0.35 | 0.0 |
| 444.261 | 13.790 | 13.755 | -0.25 | 4.739 | 4.753 | 0.28 | 0.0 |
| 477.594 | 13.790 | 13.756 | -0.24 | 4.088 | 4.099 | 0.26 | 0.0 |
| 510.928 | 13.790 | 13.763 | -0.19 | 3.632 | 3.640 | 0.20 | 0.0 |
| 310.928 | 15.513 | 15.035 | -3.08 | 12.833 | 12.906 | 0.56 | 0.0 |
| 344.261 | 15.513 | 15.256 | -1.66 | 10.667 | 10.742 | 0.70 | 0.0 |
| 377.594 | 15.513 | 15.442 | -0.46 | 8.354 | 8.385 | 0.37 | 0.0 |
| 410.928 | 15.513 | 15.440 | -0.47 | 6.529 | 6.561 | 0.49 | 0.0 |
| 444.261 | 15.513 | 15.456 | -0.37 | 5.380 | 5.401 | 0.39 | 0.0 |
| 477.594 | 15.513 | 15.469 | -0.29 | 4.630 | 4.644 | 0.30 | 0.0 |
| 510.928 | 15.513 | 15.487 | -0.17 | 4.104 | 4.111 | 0.17 | 0.0 |
| 310.928 | 17.237 | 16.699 | -3.12 | 13.074 | 13.145 | 0.55 | 0.0 |
| 344.261 | 17.237 | 16.877 | -2.09 | 11.098 | 11.183 | 0.76 | 0.0 |
| 377.594 | 17.237 | 17.149 | -0.51 | 9.026 | 9.057 | 0.34 | 0.0 |
| 410.928 | 17.237 | 17.148 | -0.52 | 7.229 | 7.263 | 0.47 | 0.0 |
| 444.261 | 17.237 | 17.165 | -0.42 | 5.992 | 6.017 | 0.41 | 0.0 |
| 477.594 | 17.237 | 17.180 | -0.33 | 5.156 | 5.173 | 0.33 | 0.0 |
| 510.928 | 17.237 | 17.209 | -0.16 | 4.566 | 4.573 | 0.16 | 0.0 |
| 310.928 | 18.961 | 18.365 | -3.14 | 13.287 | 13.358 | 0.53 | 0.0 |
| 344.261 | 18.961 | 18.541 | -2.21 | 11.465 | 11.548 | 0.73 | 0.0 |
| 377.594 | 18.961 | 18.820 | -0.74 | 9.565 | 9.606 | 0.43 | 0.0 |
| 410.928 | 18.961 | 18.862 | -0.52 | 7.846 | 7.879 | 0.42 | 0.0 |
| 444.261 | 18.961 | 18.859 | -0.53 | 6.558 | 6.591 | 0.49 | 0.0 |
| 477.594 | 18.961 | 18.879 | -0.43 | 5.657 | 5.680 | 0.41 | 0.0 |
| 510.928 | 18.961 | 18.928 | -0.17 | 5.013 | 5.022 | 0.16 | 0.0 |
| 310.928 | 20.684 | 20.010 | -3.26 | 13.477 | 13.550 | 0.54 | 0.0 |
| 344.261 | 20.684 | 20.230 | -2.20 | 11.781 | 11.859 | 0.66 | 0.0 |
| 377.594 | 20.684 | 20.478 | -1.00 | 10.014 | 10.066 | 0.51 | 0.0 |
| 410.928 | 20.684 | 20.583 | -0.49 | 8.387 | 8.417 | 0.35 | 0.0 |

Table 6. **PVT DATA** (continued)

Data from Reamer et al. [42] (continued)

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | $\rho$, expt<br>mol•dm$^{-3}$ | $\rho$, calc<br>mol•dm$^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 444.261 | 20.684 | 20.559 | −0.61 | 7.081 | 7.118 | 0.52 | 0.0 |
| 477.594 | 20.684 | 20.580 | −0.50 | 6.133 | 6.161 | 0.46 | 0.0 |
| 510.928 | 20.684 | 20.649 | −0.17 | 5.445 | 5.453 | 0.16 | 0.0 |
| 310.928 | 24.132 | 23.377 | −3.13 | 13.817 | 13.886 | 0.50 | 0.0 |
| 344.261 | 24.132 | 23.712 | −1.74 | 12.315 | 12.371 | 0.46 | 0.0 |
| 377.594 | 24.132 | 23.813 | −1.32 | 10.738 | 10.798 | 0.56 | 0.0 |
| 410.928 | 24.132 | 23.916 | −0.89 | 9.255 | 9.304 | 0.53 | 0.0 |
| 444.261 | 24.132 | 24.002 | −0.54 | 8.004 | 8.036 | 0.39 | 0.0 |
| 477.594 | 24.132 | 23.983 | −0.61 | 6.999 | 7.034 | 0.50 | 0.0 |
| 510.928 | 24.132 | 24.062 | −0.29 | 6.243 | 6.259 | 0.25 | 0.0 |
| 310.928 | 27.579 | 26.656 | −3.35 | 14.102 | 14.176 | 0.52 | 0.0 |
| 344.261 | 27.579 | 27.152 | −1.55 | 12.740 | 12.788 | 0.37 | 0.0 |
| 377.594 | 27.579 | 27.155 | −1.54 | 11.304 | 11.368 | 0.56 | 0.0 |
| 410.928 | 27.579 | 27.279 | −1.09 | 9.948 | 10.003 | 0.55 | 0.0 |
| 444.261 | 27.579 | 27.366 | −0.77 | 8.752 | 8.795 | 0.49 | 0.0 |
| 477.594 | 27.579 | 27.397 | −0.66 | 7.754 | 7.791 | 0.48 | 0.0 |
| 510.928 | 27.579 | 27.447 | −0.48 | 6.955 | 6.982 | 0.38 | 0.0 |
| 310.928 | 31.026 | 29.918 | −3.57 | 14.353 | 14.432 | 0.55 | 0.0 |
| 344.261 | 31.026 | 30.443 | −1.88 | 13.083 | 13.139 | 0.43 | 0.0 |
| 377.594 | 31.026 | 30.499 | −1.70 | 11.768 | 11.834 | 0.56 | 0.0 |
| 410.928 | 31.026 | 30.618 | −1.32 | 10.512 | 10.574 | 0.59 | 0.0 |
| 444.261 | 31.026 | 30.733 | −0.94 | 9.380 | 9.430 | 0.53 | 0.0 |
| 477.594 | 31.026 | 30.799 | −0.73 | 8.405 | 8.445 | 0.48 | 0.0 |
| 510.928 | 31.026 | 30.846 | −0.58 | 7.593 | 7.625 | 0.42 | 0.0 |
| 310.928 | 34.474 | 33.022 | −4.21 | 14.568 | 14.662 | 0.65 | 0.0 |
| 344.261 | 34.474 | 33.656 | −2.37 | 13.376 | 13.445 | 0.52 | 0.0 |
| 377.594 | 34.474 | 33.842 | −1.83 | 12.160 | 12.228 | 0.56 | 0.0 |
| 410.928 | 34.474 | 33.964 | −1.48 | 10.987 | 11.053 | 0.60 | 0.0 |
| 444.261 | 34.474 | 34.069 | −1.17 | 9.910 | 9.969 | 0.60 | 0.0 |
| 477.594 | 34.474 | 34.220 | −0.74 | 8.974 | 9.013 | 0.44 | 0.0 |
| 510.928 | 34.474 | 34.215 | −0.75 | 8.155 | 8.196 | 0.50 | 0.0 |
| 310.928 | 41.368 | 39.058 | −5.58 | 14.936 | 15.063 | 0.85 | 0.0 |
| 344.261 | 41.368 | 39.988 | −3.34 | 13.866 | 13.961 | 0.69 | 0.0 |
| 377.594 | 41.368 | 40.606 | −1.84 | 12.809 | 12.873 | 0.50 | 0.0 |
| 410.928 | 41.368 | 40.700 | −1.62 | 11.758 | 11.824 | 0.57 | 0.0 |

Table 6. **PVT DATA** (continued)

Data from Reamer et al. [42] (continued)

| T K | P, expt MPa | P, calc MPa | dev % | $\rho$, expt $mol \cdot dm^{-3}$ | $\rho$, calc $mol \cdot dm^{-3}$ | dev % | wt |
|---|---|---|---|---|---|---|---|
| 444.261 | 41.368 | 40.836 | −1.29 | 10.782 | 10.842 | 0.55 | 0.0 |
| 477.594 | 41.368 | 40.993 | −0.91 | 9.905 | 9.950 | 0.46 | 0.0 |
| 510.928 | 41.368 | 41.187 | −0.44 | 9.137 | 9.160 | 0.25 | 0.0 |
| 310.928 | 48.263 | 45.586 | −5.55 | 15.279 | 15.407 | 0.84 | 0.0 |
| 344.261 | 48.263 | 46.700 | −3.24 | 14.298 | 14.389 | 0.64 | 0.0 |
| 377.594 | 48.263 | 47.115 | −2.38 | 13.312 | 13.392 | 0.60 | 0.0 |
| 410.928 | 48.263 | 47.222 | −2.16 | 12.349 | 12.433 | 0.68 | 0.0 |
| 444.261 | 48.263 | 47.468 | −1.65 | 11.458 | 11.530 | 0.63 | 0.0 |
| 477.594 | 48.263 | 47.627 | −1.32 | 10.634 | 10.696 | 0.59 | 0.0 |
| 510.928 | 48.263 | 47.852 | −0.85 | 9.899 | 9.942 | 0.43 | 0.0 |
| 310.928 | 55.158 | 52.286 | −5.21 | 15.588 | 15.709 | 0.78 | 0.0 |
| 344.261 | 55.158 | 53.504 | −3.00 | 14.672 | 14.756 | 0.57 | 0.0 |
| 377.594 | 55.158 | 53.467 | −3.07 | 13.727 | 13.828 | 0.73 | 0.0 |
| 410.928 | 55.158 | 53.698 | −2.65 | 12.837 | 12.937 | 0.78 | 0.0 |
| 444.261 | 55.158 | 54.076 | −1.96 | 12.013 | 12.095 | 0.68 | 0.0 |
| 477.594 | 55.158 | 54.221 | −1.70 | 11.234 | 11.311 | 0.69 | 0.0 |
| 510.928 | 55.158 | 54.435 | −1.31 | 10.529 | 10.592 | 0.60 | 0.0 |
| 310.928 | 62.053 | 59.060 | −4.82 | 15.866 | 15.980 | 0.72 | 0.0 |
| 344.261 | 62.053 | 60.285 | −2.85 | 14.999 | 15.078 | 0.53 | 0.0 |
| 377.594 | 62.053 | 60.092 | −3.16 | 14.102 | 14.204 | 0.72 | 0.0 |
| 410.928 | 62.053 | 60.228 | −2.94 | 13.259 | 13.367 | 0.81 | 0.0 |
| 444.261 | 62.053 | 60.617 | −2.31 | 12.480 | 12.574 | 0.75 | 0.0 |
| 477.594 | 62.053 | 60.777 | −2.06 | 11.742 | 11.832 | 0.77 | 0.0 |
| 510.928 | 62.053 | 61.131 | −1.49 | 11.076 | 11.146 | 0.63 | 0.0 |
| 310.928 | 68.948 | 66.328 | −3.80 | 16.135 | 16.225 | 0.56 | 0.0 |
| 344.261 | 68.948 | 66.687 | −3.28 | 15.275 | 15.366 | 0.60 | 0.0 |
| 377.594 | 68.948 | 66.826 | −3.08 | 14.438 | 14.536 | 0.68 | 0.0 |
| 410.928 | 68.948 | 66.909 | −2.96 | 13.636 | 13.742 | 0.78 | 0.0 |
| 444.261 | 68.948 | 67.100 | −2.68 | 12.884 | 12.990 | 0.82 | 0.0 |
| 477.594 | 68.948 | 67.358 | −2.30 | 12.185 | 12.284 | 0.81 | 0.0 |
| 510.928 | 68.948 | 67.827 | −1.63 | 11.552 | 11.626 | 0.64 | 0.0 |

Data from Reamer et al. [42] (continued)

Number of Points [42] 176

Pressure Calculation:
AAD% = 1.13 BIAS% = -1.13 RMS% = 1.22

Density Calculation:
AAD2% = 0.50 BIAS2% = 0.50 RMS2% = 0.40

Absolute Deviations:
Pressure Calculation:
AAD = 0.41 BIAS = -0.41 RMS = 0.65 MPa

Density Calculation:
AAD2 = 0.047 BIAS2 = 0.047 RMS2 = 0.040 $mol \cdot dm^{-3}$

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Data from Sengers [56]
Data were calculated from a scaled equation of state.

| T K | P, expt MPa | P, calc MPa | dev % | $\rho$, expt $mol \cdot dm^{-3}$ | $\rho$, calc $mol \cdot dm^{-3}$ | dev % | wt |
|---|---|---|---|---|---|---|---|
| 304.000 | 4.735 | 4.736 | 0.02 | 4.900 | 4.883 | -0.34 | 105.4 |
| 304.000 | 4.754 | 4.754 | -0.01 | 9.000 | 9.002 | 0.02 | 102.2 |
| 306.000 | 4.893 | 4.892 | -0.02 | 5.000 | 5.011 | 0.23 | 101.8 |
| 306.000 | 4.933 | 4.932 | -0.02 | 6.000 | 6.074 | 1.23 | 101.3 |
| 306.000 | 4.938 | 4.938 | -0.01 | 6.500 | 6.537 | 0.57 | 101.2 |
| 306.000 | 4.941 | 4.942 | 0.02 | 6.900 | 6.811 | -1.28 | 101.1 |
| 306.000 | 4.946 | 4.948 | 0.04 | 7.500 | 7.336 | -2.18 | 101.0 |
| 306.000 | 4.957 | 4.958 | 0.03 | 8.000 | 7.944 | -0.70 | 100.6 |
| 306.000 | 5.051 | 5.052 | 0.02 | 9.000 | 8.994 | -0.06 | 93.3 |
| 310.000 | 5.191 | 5.190 | -0.02 | 5.000 | 5.007 | 0.13 | 95.3 |
| 310.000 | 5.298 | 5.298 | -0.01 | 6.000 | 6.009 | 0.15 | 93.9 |
| 310.000 | 5.333 | 5.334 | 0.01 | 6.500 | 6.491 | -0.13 | 93.4 |
| 310.000 | 5.359 | 5.361 | 0.04 | 6.900 | 6.870 | -0.44 | 92.9 |
| 310.000 | 5.403 | 5.406 | 0.05 | 7.500 | 7.466 | -0.45 | 91.8 |
| 310.000 | 5.455 | 5.456 | 0.02 | 8.000 | 7.990 | -0.12 | 90.1 |
| 310.000 | 5.666 | 5.666 | 0.01 | 9.000 | 8.999 | -0.01 | 77.6 |
| 315.000 | 5.556 | 5.556 | 0.00 | 5.000 | 5.001 | 0.02 | 87.9 |
| 315.000 | 5.749 | 5.750 | 0.02 | 6.000 | 5.994 | -0.10 | 85.7 |
| 315.000 | 5.827 | 5.828 | 0.02 | 6.500 | 6.492 | -0.13 | 84.5 |
| 315.000 | 5.888 | 5.890 | 0.02 | 6.900 | 6.891 | -0.13 | 83.5 |

Table 6. **PVT DATA** (continued)

**Data from Sengers [56]** (continued)

| T K | P, expt MPa | P, calc MPa | dev % | $\rho$, expt $mol \cdot dm^{-3}$ | $\rho$, calc $mol \cdot dm^{-3}$ | dev % | wt |
|---|---|---|---|---|---|---|---|
| 315.000 | 5.991 | 5.991 | 0.00 | 7.500 | 7.500 | −0.01 | 81.2 |
| 315.000 | 6.101 | 6.098 | −0.04 | 8.000 | 8.010 | 0.13 | 78.0 |
| 315.000 | 6.458 | 6.459 | 0.02 | 9.000 | 8.998 | −0.02 | 62.7 |
| 325.000 | 6.273 | 6.272 | 0.00 | 5.000 | 5.000 | 0.01 | 75.6 |
| 325.000 | 6.643 | 6.646 | 0.03 | 6.000 | 5.993 | −0.11 | 71.8 |
| 325.000 | 6.816 | 6.817 | 0.01 | 6.500 | 6.498 | −0.03 | 69.7 |
| 325.000 | 6.958 | 6.957 | −0.01 | 6.900 | 6.902 | 0.03 | 67.6 |
| 325.000 | 7.193 | 7.189 | −0.05 | 7.500 | 7.508 | 0.11 | 63.6 |
| 325.000 | 7.426 | 7.422 | −0.06 | 8.000 | 8.009 | 0.11 | 58.8 |
| 325.000 | 8.085 | 8.096 | 0.13 | 9.000 | 8.988 | −0.14 | 44.2 |

Number of Points [56] 30

Pressure Calculation:
AAD% = 0.03 BIAS% = 0.01 RMS% = 0.03

Density Calculation:
AAD2% = 0.30 BIAS2% = −0.12 RMS2% = 0.55

Absolute Deviations:
Pressure Calculation:
AAD = 0.00 BIAS = 0.00 RMS = 0.00 MPa

Density Calculation:
AAD2 = 0.021 BIAS2 = −0.010 RMS2 = 0.039 $mol \cdot dm^{-3}$

Weighted Data:

Number of Points [56] 30

Pressure Calculation:
AAD% = 0.03 BIAS% = 0.01 RMS% = 0.03

Density Calculation:
AAD2% = 0.30 BIAS2% = −0.12 RMS2% = 0.55

Data from Sengers [56] (continued)

Absolute Deviations:
Pressure Calculation:
AAD = 0.00 BIAS = 0.00 RMS = 0.00 MPa

Density Calculation:
AAD2 = 0.021 BIAS2 = −0.010 RMS2 = 0.039 mol•dm$^{-3}$

Data from Straty and Tsumura [19]

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | $\rho$, expt<br>mol•dm$^{-3}$ | $\rho$, calc<br>mol•dm$^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 288.000 | 3.055 | 3.051 | −0.13 | 1.955 | 1.959 | 0.24 | 43.4 |
| 296.000 | 3.237 | 3.233 | −0.12 | 1.952 | 1.956 | 0.21 | 40.1 |
| 304.000 | 3.416 | 3.411 | −0.14 | 1.950 | 1.954 | 0.22 | 37.4 |
| 312.000 | 3.591 | 3.585 | −0.15 | 1.947 | 1.952 | 0.24 | 35.1 |
| 320.000 | 3.763 | 3.756 | −0.18 | 1.945 | 1.950 | 0.26 | 33.1 |
| 296.000 | 3.881 | 3.879 | −0.04 | 2.880 | 2.884 | 0.13 | 36.6 |
| 300.000 | 4.031 | 4.028 | −0.07 | 2.875 | 2.881 | 0.18 | 34.8 |
| 304.000 | 4.178 | 4.176 | −0.07 | 2.873 | 2.878 | 0.17 | 33.1 |
| 308.000 | 4.324 | 4.321 | −0.07 | 2.871 | 2.875 | 0.16 | 31.7 |
| 312.000 | 4.467 | 4.464 | −0.07 | 2.869 | 2.873 | 0.16 | 30.3 |
| 316.000 | 4.608 | 4.605 | −0.08 | 2.866 | 2.871 | 0.16 | 29.1 |
| 320.000 | 4.748 | 4.744 | −0.09 | 2.864 | 2.869 | 0.17 | 28.0 |
| 306.000 | 4.944 | 4.938 | −0.11 | 6.533 | 7.151 | 9.45 | 0.0 |
| 308.000 | 5.143 | 5.137 | −0.12 | 6.530 | 6.691 | 2.47 | 0.0 |
| 312.000 | 5.540 | 5.534 | −0.11 | 6.522 | 6.583 | 0.94 | 0.0 |
| 316.000 | 5.936 | 5.929 | −0.11 | 6.513 | 6.552 | 0.60 | 0.0 |
| 320.000 | 6.331 | 6.323 | −0.13 | 6.503 | 6.536 | 0.50 | 0.0 |
| 304.000 | 4.772 | 4.767 | −0.10 | 9.097 | 9.128 | 0.34 | 30.1 |
| 306.000 | 5.076 | 5.071 | −0.08 | 9.092 | 9.111 | 0.21 | 27.4 |
| 308.000 | 5.387 | 5.381 | −0.12 | 9.086 | 9.107 | 0.23 | 24.9 |
| 312.000 | 6.021 | 6.011 | −0.16 | 9.072 | 9.094 | 0.24 | 20.8 |
| 316.000 | 6.661 | 6.650 | −0.16 | 9.054 | 9.072 | 0.20 | 17.7 |
| 320.000 | 7.306 | 7.293 | −0.18 | 9.032 | 9.050 | 0.20 | 15.4 |
| 304.000 | 4.967 | 4.965 | −0.05 | 9.788 | 9.794 | 0.06 | 22.5 |
| 308.000 | 5.697 | 5.690 | −0.12 | 9.774 | 9.785 | 0.11 | 17.8 |

Data from Straty and Tsumura [19] (continued)

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | $\rho$, expt<br>$mol \cdot dm^{-3}$ | $\rho$, calc<br>$mol \cdot dm^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 312.000 | 6.433 | 6.425 | −0.12 | 9.756 | 9.766 | 0.10 | 14.8 |
| 316.000 | 7.173 | 7.162 | −0.15 | 9.732 | 9.743 | 0.11 | 12.7 |
| 320.000 | 7.917 | 7.904 | −0.17 | 9.710 | 9.721 | 0.12 | 11.1 |
| 296.000 | 4.396 | 4.402 | 0.13 | 11.211 | 11.207 | −0.04 | 9.5 |
| 300.000 | 5.397 | 5.405 | 0.15 | 11.196 | 11.191 | −0.04 | 8.0 |
| 304.000 | 6.395 | 6.401 | 0.10 | 11.173 | 11.169 | −0.03 | 7.0 |
| 308.000 | 7.378 | 7.381 | 0.04 | 11.141 | 11.140 | −0.01 | 6.3 |
| 312.000 | 8.374 | 8.368 | −0.08 | 11.116 | 11.119 | 0.03 | 5.7 |
| 316.000 | 9.388 | 9.373 | −0.16 | 11.099 | 11.105 | 0.05 | 5.2 |
| 320.000 | 10.414 | 10.389 | −0.23 | 11.087 | 11.096 | 0.08 | 4.7 |
| 292.000 | 3.811 | 3.792 | −0.50 | 11.522 | 11.534 | 0.11 | 8.3 |
| 296.000 | 4.869 | 4.864 | −0.08 | 11.505 | 11.508 | 0.02 | 7.0 |
| 300.000 | 5.948 | 5.935 | −0.23 | 11.485 | 11.492 | 0.06 | 6.1 |
| 304.000 | 6.998 | 6.982 | −0.23 | 11.455 | 11.462 | 0.06 | 5.5 |
| 308.000 | 8.035 | 8.024 | −0.13 | 11.424 | 11.429 | 0.04 | 5.0 |
| 312.000 | 9.111 | 9.087 | −0.26 | 11.404 | 11.413 | 0.08 | 4.6 |
| 316.000 | 10.198 | 10.167 | −0.31 | 11.390 | 11.401 | 0.09 | 4.2 |
| 320.000 | 11.248 | 11.256 | 0.07 | 11.380 | 11.377 | −0.02 | 3.9 |
| 288.000 | 3.971 | 3.962 | −0.23 | 12.194 | 12.197 | 0.03 | 4.7 |
| 292.000 | 5.216 | 5.209 | −0.13 | 12.173 | 12.176 | 0.02 | 4.2 |
| 296.000 | 6.439 | 6.433 | −0.09 | 12.146 | 12.148 | 0.02 | 3.9 |
| 300.000 | 7.628 | 7.616 | −0.16 | 12.109 | 12.113 | 0.03 | 3.6 |
| 304.000 | 8.847 | 8.823 | −0.28 | 12.082 | 12.089 | 0.06 | 3.3 |
| 308.000 | 10.094 | 10.061 | −0.32 | 12.066 | 12.074 | 0.07 | 3.1 |
| 312.000 | 11.357 | 11.314 | −0.38 | 12.054 | 12.064 | 0.08 | 2.9 |
| 316.000 | 12.624 | 12.575 | −0.39 | 12.044 | 12.055 | 0.09 | 2.7 |
| 320.000 | 13.901 | 13.839 | −0.45 | 12.036 | 12.049 | 0.11 | 2.6 |
| 280.000 | 2.976 | 2.963 | −0.42 | 12.787 | 12.791 | 0.03 | 0.0 |
| 284.000 | 4.398 | 4.392 | −0.15 | 12.768 | 12.770 | 0.01 | 0.0 |
| 288.000 | 5.803 | 5.799 | −0.07 | 12.745 | 12.746 | 0.01 | 2.8 |
| 292.000 | 7.140 | 7.133 | −0.09 | 12.707 | 12.709 | 0.01 | 2.7 |
| 296.000 | 8.482 | 8.464 | −0.20 | 12.672 | 12.676 | 0.03 | 2.5 |
| 300.000 | 9.884 | 9.852 | −0.33 | 12.652 | 12.659 | 0.05 | 2.4 |
| 304.000 | 11.309 | 11.265 | −0.38 | 12.638 | 12.647 | 0.07 | 2.2 |
| 308.000 | 12.742 | 12.690 | −0.41 | 12.627 | 12.637 | 0.07 | 2.1 |

Table 6. PVT DATA (continued)

Data from Straty and Tsumura [19] (continued)

| T K | P, expt MPa | P, calc MPa | dev % | $\rho$, expt $mol \cdot dm^{-3}$ | $\rho$, calc $mol \cdot dm^{-3}$ | dev % | wt |
|---|---|---|---|---|---|---|---|
| 312.000 | 14.182 | 14.119 | -0.44 | 12.618 | 12.629 | 0.09 | 2.0 |
| 315.000 | 15.263 | 15.193 | -0.46 | 12.612 | 12.624 | 0.09 | 1.9 |
| 320.000 | 17.066 | 16.983 | -0.49 | 12.602 | 12.615 | 0.10 | 1.8 |
| 276.000 | 3.268 | 3.286 | 0.55 | 13.256 | 13.252 | -0.03 | 0.0 |
| 280.000 | 4.843 | 4.857 | 0.28 | 13.234 | 13.231 | -0.02 | 0.0 |
| 284.000 | 6.360 | 6.373 | 0.22 | 13.203 | 13.201 | -0.02 | 2.1 |
| 288.000 | 7.797 | 7.800 | 0.04 | 13.160 | 13.159 | 0.00 | 2.0 |
| 292.000 | 9.311 | 9.292 | -0.20 | 13.131 | 13.134 | 0.02 | 1.9 |
| 296.000 | 10.870 | 10.842 | -0.26 | 13.115 | 13.119 | 0.03 | 1.8 |
| 300.000 | 12.449 | 12.411 | -0.31 | 13.102 | 13.108 | 0.05 | 1.7 |
| 300.000 | 12.449 | 12.411 | -0.31 | 13.102 | 13.108 | 0.05 | 1.7 |
| 304.000 | 14.036 | 13.988 | -0.35 | 13.092 | 13.099 | 0.05 | 1.7 |
| 308.000 | 15.626 | 15.568 | -0.37 | 13.083 | 13.091 | 0.06 | 1.6 |
| 312.000 | 17.218 | 17.149 | -0.40 | 13.075 | 13.084 | 0.07 | 1.5 |
| 316.000 | 18.804 | 18.729 | -0.40 | 13.068 | 13.077 | 0.07 | 1.4 |
| 320.000 | 20.401 | 20.308 | -0.46 | 13.060 | 13.072 | 0.09 | 1.4 |
| 272.000 | 3.626 | 3.714 | 2.44 | 13.670 | 13.655 | -0.11 | 0.0 |
| 276.000 | 5.327 | 5.407 | 1.51 | 13.644 | 13.631 | -0.09 | 0.0 |
| 280.000 | 6.919 | 6.994 | 1.08 | 13.604 | 13.593 | -0.08 | 1.7 |
| 284.000 | 8.488 | 8.542 | 0.63 | 13.563 | 13.555 | -0.06 | 1.6 |
| 288.000 | 10.166 | 10.199 | 0.32 | 13.540 | 13.535 | -0.03 | 1.6 |
| 292.000 | 11.877 | 11.901 | 0.20 | 13.525 | 13.522 | -0.02 | 1.5 |
| 296.000 | 13.604 | 13.619 | 0.11 | 13.514 | 13.512 | -0.01 | 1.4 |
| 300.000 | 15.338 | 15.343 | 0.04 | 13.504 | 13.503 | -0.01 | 1.3 |
| 304.000 | 17.094 | 17.068 | -0.15 | 13.495 | 13.498 | 0.02 | 1.3 |
| 308.000 | 18.831 | 18.793 | -0.20 | 13.487 | 13.491 | 0.03 | 1.2 |
| 312.000 | 20.567 | 20.515 | -0.25 | 13.480 | 13.485 | 0.04 | 1.2 |
| 316.000 | 22.300 | 22.235 | -0.29 | 13.472 | 13.479 | 0.05 | 1.1 |
| 320.000 | 24.032 | 23.950 | -0.34 | 13.465 | 13.474 | 0.06 | 1.1 |
| 268.000 | 3.055 | 3.138 | 2.72 | 13.884 | 13.871 | -0.09 | 0.0 |
| 272.000 | 4.851 | 4.921 | 1.45 | 13.859 | 13.849 | -0.08 | 0.0 |
| 276.000 | 6.546 | 6.610 | 0.99 | 13.824 | 13.815 | -0.07 | 1.5 |
| 280.000 | 8.153 | 8.192 | 0.49 | 13.778 | 13.772 | -0.04 | 1.5 |
| 284.000 | 9.884 | 9.898 | 0.14 | 13.751 | 13.749 | -0.01 | 1.4 |
| 288.000 | 11.668 | 11.670 | 0.01 | 13.735 | 13.735 | 0.00 | 1.4 |

Data from Straty and Tsumura [19] (continued)

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | $\rho$, expt<br>mol•dm$^{-3}$ | $\rho$, calc<br>mol•dm$^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 292.000 | 13.469 | 13.462 | −0.05 | 13.723 | 13.724 | 0.01 | 1.3 |
| 296.000 | 15.277 | 15.262 | −0.10 | 13.713 | 13.715 | 0.01 | 1.2 |
| 300.000 | 17.091 | 17.064 | −0.15 | 13.704 | 13.707 | 0.02 | 1.2 |
| 304.000 | 18.901 | 18.865 | −0.19 | 13.696 | 13.699 | 0.03 | 1.1 |
| 308.000 | 20.713 | 20.664 | −0.24 | 13.688 | 13.693 | 0.04 | 1.1 |
| 312.000 | 22.524 | 22.460 | −0.29 | 13.681 | 13.687 | 0.05 | 1.1 |
| 316.000 | 24.331 | 24.251 | −0.33 | 13.673 | 13.681 | 0.06 | 1.0 |
| 320.000 | 26.130 | 26.037 | −0.36 | 13.667 | 13.675 | 0.06 | 1.0 |
| 264.000 | 2.404 | 2.490 | 3.59 | 14.085 | 14.072 | −0.09 | 0.0 |
| 268.000 | 4.265 | 4.366 | 2.37 | 14.062 | 14.048 | −0.10 | 0.0 |
| 272.000 | 6.068 | 6.166 | 1.61 | 14.032 | 14.019 | −0.09 | 1.4 |
| 276.000 | 7.720 | 7.798 | 1.02 | 13.983 | 13.973 | −0.07 | 1.4 |
| 280.000 | 9.489 | 9.531 | 0.45 | 13.951 | 13.946 | −0.04 | 1.3 |
| 284.000 | 11.339 | 11.364 | 0.22 | 13.933 | 13.930 | −0.02 | 1.3 |
| 288.000 | 13.206 | 13.228 | 0.16 | 13.920 | 13.918 | −0.02 | 1.2 |
| 292.000 | 15.086 | 15.102 | 0.10 | 13.909 | 13.908 | −0.01 | 1.2 |
| 296.000 | 16.974 | 16.978 | 0.03 | 13.900 | 13.900 | 0.00 | 1.1 |
| 300.000 | 18.862 | 18.854 | −0.04 | 13.892 | 13.892 | 0.01 | 1.1 |
| 304.000 | 20.745 | 20.728 | −0.08 | 13.884 | 13.885 | 0.01 | 1.0 |
| 308.000 | 22.630 | 22.598 | −0.14 | 13.876 | 13.879 | 0.02 | 1.0 |
| 312.000 | 24.512 | 24.463 | −0.20 | 13.869 | 13.873 | 0.03 | 1.0 |
| 316.000 | 26.389 | 26.323 | −0.25 | 13.862 | 13.868 | 0.04 | 0.9 |
| 320.000 | 28.259 | 28.177 | −0.29 | 13.855 | 13.862 | 0.05 | 0.9 |
| 260.000 | 2.686 | 2.852 | 6.19 | 14.414 | 14.394 | −0.14 | 0.0 |
| 264.000 | 4.677 | 4.839 | 3.48 | 14.389 | 14.370 | −0.13 | 0.0 |
| 268.000 | 6.547 | 6.695 | 2.27 | 14.351 | 14.335 | −0.12 | 1.2 |
| 272.000 | 8.294 | 8.414 | 1.45 | 14.302 | 14.289 | −0.09 | 1.2 |
| 276.000 | 10.221 | 10.310 | 0.87 | 14.275 | 14.266 | −0.07 | 1.1 |
| 280.000 | 12.214 | 12.288 | 0.61 | 14.259 | 14.252 | −0.05 | 1.1 |
| 284.000 | 14.226 | 14.289 | 0.45 | 14.247 | 14.241 | −0.04 | 1.0 |
| 288.000 | 16.244 | 16.299 | 0.34 | 14.237 | 14.232 | −0.04 | 1.0 |
| 292.000 | 18.264 | 18.310 | 0.25 | 14.228 | 14.223 | −0.03 | 1.0 |
| 296.000 | 20.285 | 20.319 | 0.17 | 14.219 | 14.216 | −0.02 | 0.9 |
| 300.000 | 22.302 | 22.324 | 0.10 | 14.211 | 14.209 | −0.01 | 0.9 |
| 304.000 | 24.314 | 24.324 | 0.04 | 14.204 | 14.203 | −0.01 | 0.9 |

Table 6. PVT DATA (continued)

Data from Straty and Tsumura [19] (continued)

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | $\rho$, expt<br>$mol \cdot dm^{-3}$ | $\rho$, calc<br>$mol \cdot dm^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 308.000 | 26.325 | 26.318 | −0.02 | 14.196 | 14.197 | 0.00 | 0.8 |
| 312.000 | 28.329 | 28.306 | −0.08 | 14.189 | 14.191 | 0.01 | 0.8 |
| 316.000 | 30.324 | 30.286 | −0.12 | 14.182 | 14.185 | 0.02 | 0.8 |
| 320.000 | 32.317 | 32.260 | −0.18 | 14.176 | 14.180 | 0.03 | 0.8 |
| 252.000 | 1.593 | 1.728 | 8.48 | 14.811 | 14.797 | −0.10 | 0.0 |
| 256.000 | 3.706 | 3.936 | 6.19 | 14.790 | 14.767 | −0.16 | 0.0 |
| 260.000 | 5.799 | 5.995 | 3.38 | 14.757 | 14.738 | −0.13 | 1.0 |
| 264.000 | 7.656 | 7.820 | 2.14 | 14.705 | 14.689 | −0.11 | 1.0 |
| 268.000 | 9.668 | 9.783 | 1.19 | 14.669 | 14.658 | −0.07 | 1.0 |
| 272.000 | 11.808 | 11.904 | 0.81 | 14.650 | 14.641 | −0.06 | 0.9 |
| 276.000 | 13.984 | 14.067 | 0.60 | 14.636 | 14.629 | −0.05 | 0.9 |
| 280.000 | 16.165 | 16.243 | 0.48 | 14.625 | 14.619 | −0.04 | 0.9 |
| 284.000 | 18.356 | 18.422 | 0.36 | 14.615 | 14.610 | −0.04 | 0.8 |
| 288.000 | 20.548 | 20.600 | 0.25 | 14.607 | 14.602 | −0.03 | 0.8 |
| 292.000 | 22.739 | 22.772 | 0.14 | 14.598 | 14.596 | −0.02 | 0.8 |
| 296.000 | 24.876 | 24.940 | 0.26 | 14.591 | 14.586 | −0.03 | 0.8 |
| 300.000 | 27.093 | 27.099 | 0.02 | 14.583 | 14.583 | 0.00 | 0.7 |
| 304.000 | 29.263 | 29.252 | −0.04 | 14.576 | 14.576 | 0.01 | 0.7 |
| 308.000 | 31.426 | 31.395 | −0.10 | 14.569 | 14.571 | 0.01 | 0.7 |
| 312.000 | 33.582 | 33.531 | −0.15 | 14.562 | 14.565 | 0.02 | 0.7 |
| 248.000 | 1.738 | 1.913 | 10.07 | 15.078 | 15.061 | −0.11 | 0.0 |
| 252.000 | 3.975 | 4.228 | 6.37 | 15.056 | 15.032 | −0.15 | 0.0 |
| 256.000 | 6.140 | 6.346 | 3.36 | 15.018 | 15.000 | −0.12 | 0.9 |
| 260.000 | 8.064 | 8.225 | 2.00 | 14.963 | 14.949 | −0.09 | 0.9 |
| 264.000 | 10.229 | 10.340 | 1.08 | 14.931 | 14.922 | −0.06 | 0.8 |
| 268.000 | 12.503 | 12.594 | 0.72 | 14.914 | 14.906 | −0.05 | 0.8 |
| 272.000 | 14.806 | 14.885 | 0.53 | 14.901 | 14.895 | −0.04 | 0.8 |
| 276.000 | 17.120 | 17.187 | 0.39 | 14.890 | 14.885 | −0.03 | 0.8 |
| 280.000 | 19.438 | 19.491 | 0.27 | 14.880 | 14.876 | −0.03 | 0.7 |
| 284.000 | 21.750 | 21.791 | 0.19 | 14.871 | 14.869 | −0.02 | 0.7 |
| 288.000 | 24.058 | 24.086 | 0.12 | 14.863 | 14.861 | −0.01 | 0.7 |
| 292.000 | 26.364 | 26.373 | 0.03 | 14.855 | 14.855 | 0.00 | 0.7 |
| 296.000 | 28.648 | 28.653 | 0.02 | 14.848 | 14.847 | 0.00 | 0.7 |
| 300.000 | 30.950 | 30.923 | −0.09 | 14.840 | 14.842 | 0.01 | 0.6 |
| 304.000 | 33.231 | 33.184 | −0.14 | 14.833 | 14.836 | 0.02 | 0.6 |

Data from Straty and Tsumura [19] (continued)

| T K | P, expt MPa | P, calc MPa | dev % | $\rho$, expt $mol \cdot dm^{-3}$ | $\rho$, calc $mol \cdot dm^{-3}$ | dev % | wt |
|---|---|---|---|---|---|---|---|
| 308.000 | 35.502 | 35.436 | −0.19 | 14.826 | 14.830 | 0.03 | 0.6 |
| 240.000 | 1.255 | 1.567 | 24.87 | 15.515 | 15.490 | −0.16 | 0.0 |
| 244.000 | 3.637 | 4.039 | 11.05 | 15.487 | 15.456 | −0.20 | 0.0 |
| 248.000 | 5.992 | 6.341 | 5.81 | 15.449 | 15.423 | −0.17 | 0.7 |
| 252.000 | 8.032 | 8.333 | 3.74 | 15.392 | 15.369 | −0.15 | 0.7 |
| 256.000 | 10.374 | 10.610 | 2.28 | 15.358 | 15.341 | −0.11 | 0.7 |
| 260.000 | 12.853 | 13.068 | 1.67 | 15.340 | 15.325 | −0.10 | 0.7 |
| 264.000 | 15.369 | 15.569 | 1.30 | 15.327 | 15.313 | −0.09 | 0.7 |
| 268.000 | 17.894 | 18.084 | 1.06 | 15.316 | 15.303 | −0.08 | 0.6 |
| 272.000 | 20.423 | 20.600 | 0.87 | 15.306 | 15.294 | −0.07 | 0.6 |
| 276.000 | 22.946 | 23.112 | 0.72 | 15.297 | 15.286 | −0.07 | 0.6 |
| 280.000 | 25.463 | 25.617 | 0.60 | 15.288 | 15.279 | −0.06 | 0.6 |
| 284.000 | 27.973 | 28.113 | 0.50 | 15.280 | 15.272 | −0.05 | 0.6 |
| 288.000 | 30.472 | 30.599 | 0.42 | 15.273 | 15.265 | −0.05 | 0.6 |
| 292.000 | 32.967 | 33.074 | 0.32 | 15.265 | 15.259 | −0.04 | 0.5 |
| 296.000 | 35.448 | 35.538 | 0.25 | 15.258 | 15.253 | −0.03 | 0.5 |
| 240.000 | 2.202 | 2.481 | 12.68 | 15.586 | 15.565 | −0.14 | 0.0 |
| 244.000 | 4.670 | 4.955 | 6.10 | 15.556 | 15.535 | −0.14 | 0.0 |
| 248.000 | 6.891 | 7.130 | 3.47 | 15.508 | 15.490 | −0.11 | 0.7 |
| 252.000 | 9.055 | 9.224 | 1.86 | 15.457 | 15.445 | −0.08 | 0.7 |
| 256.000 | 11.532 | 11.658 | 1.09 | 15.433 | 15.424 | −0.06 | 0.7 |
| 260.000 | 14.078 | 14.188 | 0.78 | 15.417 | 15.410 | −0.05 | 0.7 |
| 264.000 | 16.647 | 16.743 | 0.58 | 15.405 | 15.399 | −0.04 | 0.6 |
| 268.000 | 19.231 | 19.304 | 0.38 | 15.395 | 15.390 | −0.03 | 0.6 |
| 272.000 | 21.804 | 21.863 | 0.27 | 15.385 | 15.382 | −0.02 | 0.6 |
| 276.000 | 24.384 | 24.417 | 0.13 | 15.377 | 15.375 | −0.01 | 0.6 |
| 280.000 | 26.947 | 26.962 | 0.05 | 15.368 | 15.367 | −0.01 | 0.6 |
| 284.000 | 29.497 | 29.497 | 0.00 | 15.360 | 15.360 | 0.00 | 0.6 |
| 288.000 | 32.045 | 32.021 | −0.07 | 15.353 | 15.354 | 0.01 | 0.5 |
| 232.000 | 1.267 | 1.558 | 23.00 | 15.950 | 15.930 | −0.12 | 0.0 |
| 236.000 | 3.851 | 4.228 | 9.79 | 15.920 | 15.895 | −0.16 | 0.0 |
| 240.000 | 6.337 | 6.639 | 4.77 | 15.877 | 15.857 | −0.12 | 0.6 |
| 244.000 | 8.536 | 8.754 | 2.56 | 15.817 | 15.803 | −0.09 | 0.6 |
| 248.000 | 11.135 | 11.294 | 1.43 | 15.788 | 15.778 | −0.06 | 0.6 |
| 252.000 | 13.865 | 13.996 | 0.94 | 15.771 | 15.763 | −0.05 | 0.6 |

Data from Straty and Tsumura [19] (continued)

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | ρ, expt<br>mol•dm$^{-3}$ | ρ, calc<br>mol•dm$^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 256.000 | 16.625 | 16.738 | 0.68 | 15.758 | 15.751 | −0.04 | 0.6 |
| 260.000 | 19.395 | 19.492 | 0.50 | 15.747 | 15.741 | −0.04 | 0.5 |
| 264.000 | 22.162 | 22.245 | 0.38 | 15.737 | 15.732 | −0.03 | 0.5 |
| 268.000 | 24.927 | 24.990 | 0.25 | 15.728 | 15.724 | −0.02 | 0.5 |
| 272.000 | 27.678 | 27.727 | 0.18 | 15.719 | 15.717 | −0.02 | 0.5 |
| 276.000 | 30.417 | 30.453 | 0.12 | 15.711 | 15.709 | −0.01 | 0.5 |
| 280.000 | 33.152 | 33.166 | 0.04 | 15.703 | 15.703 | 0.00 | 0.5 |
| 284.000 | 35.872 | 35.867 | −0.02 | 15.696 | 15.696 | 0.00 | 0.5 |
| 228.000 | 1.855 | 2.204 | 18.79 | 16.198 | 16.176 | −0.13 | 0.0 |
| 232.000 | 4.583 | 4.984 | 8.76 | 16.167 | 16.143 | −0.15 | 0.0 |
| 236.000 | 7.005 | 7.353 | 4.97 | 16.114 | 16.094 | −0.13 | 0.5 |
| 240.000 | 9.421 | 9.670 | 2.65 | 16.062 | 16.048 | −0.09 | 0.5 |
| 244.000 | 12.225 | 12.427 | 1.66 | 16.038 | 16.027 | −0.07 | 0.5 |
| 248.000 | 15.113 | 15.296 | 1.21 | 16.023 | 16.013 | −0.06 | 0.5 |
| 252.000 | 18.030 | 18.194 | 0.91 | 16.011 | 16.002 | −0.06 | 0.5 |
| 256.000 | 20.949 | 21.098 | 0.71 | 16.000 | 15.992 | −0.05 | 0.5 |
| 260.000 | 23.866 | 23.999 | 0.55 | 15.990 | 15.983 | −0.04 | 0.5 |
| 264.000 | 26.772 | 26.891 | 0.44 | 15.981 | 15.975 | −0.04 | 0.5 |
| 268.000 | 29.668 | 29.771 | 0.35 | 15.973 | 15.968 | −0.03 | 0.5 |
| 272.000 | 32.554 | 32.639 | 0.26 | 15.964 | 15.960 | −0.03 | 0.4 |
| 276.000 | 35.431 | 35.493 | 0.18 | 15.956 | 15.954 | −0.02 | 0.4 |
| 220.000 | 1.430 | 1.745 | 22.03 | 16.567 | 16.550 | −0.10 | 0.0 |
| 224.000 | 4.332 | 4.745 | 9.53 | 16.536 | 16.514 | −0.13 | 0.0 |
| 228.000 | 6.923 | 7.274 | 5.07 | 16.483 | 16.465 | −0.11 | 0.5 |
| 232.000 | 9.458 | 9.697 | 2.52 | 16.428 | 16.416 | −0.08 | 0.5 |
| 236.000 | 12.475 | 12.654 | 1.43 | 16.403 | 16.394 | −0.06 | 0.5 |
| 240.000 | 15.597 | 15.745 | 0.94 | 16.387 | 16.380 | −0.04 | 0.5 |
| 244.000 | 18.742 | 18.870 | 0.68 | 16.375 | 16.369 | −0.04 | 0.4 |
| 248.000 | 21.890 | 22.003 | 0.51 | 16.364 | 16.359 | −0.03 | 0.4 |
| 252.000 | 25.039 | 25.131 | 0.37 | 16.354 | 16.350 | −0.03 | 0.4 |
| 256.000 | 28.172 | 28.249 | 0.27 | 16.345 | 16.341 | −0.02 | 0.4 |
| 260.000 | 31.294 | 31.354 | 0.19 | 16.336 | 16.333 | −0.02 | 0.4 |
| 264.000 | 34.399 | 34.444 | 0.13 | 16.328 | 16.326 | −0.01 | 0.4 |
| 216.000 | 2.104 | 2.532 | 20.33 | 16.798 | 16.776 | −0.13 | 0.0 |
| 220.000 | 5.125 | 5.556 | 8.41 | 16.761 | 16.740 | −0.13 | 0.0 |

Data from Straty and Tsumura [19] (continued)

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | $\rho$, expt<br>$mol \cdot dm^{-3}$ | $\rho$, calc<br>$mol \cdot dm^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 224.000 | 7.612 | 7.970 | 4.70 | 16.698 | 16.681 | −0.10 | 0.4 |
| 228.000 | 10.476 | 10.703 | 2.16 | 16.654 | 16.643 | −0.07 | 0.4 |
| 232.000 | 13.690 | 13.870 | 1.31 | 16.633 | 16.625 | −0.05 | 0.4 |
| 236.000 | 16.976 | 17.132 | 0.92 | 16.618 | 16.611 | −0.04 | 0.4 |
| 240.000 | 20.279 | 20.419 | 0.69 | 16.606 | 16.600 | −0.04 | 0.4 |
| 244.000 | 23.587 | 23.698 | 0.47 | 16.595 | 16.590 | −0.03 | 0.4 |
| 248.000 | 26.880 | 26.989 | 0.41 | 16.586 | 16.581 | −0.03 | 0.4 |
| 252.000 | 30.162 | 30.257 | 0.32 | 16.576 | 16.573 | −0.02 | 0.4 |
| 256.000 | 33.425 | 33.511 | 0.25 | 16.568 | 16.564 | −0.02 | 0.4 |
| 212.000 | 3.427 | 3.962 | 15.60 | 17.048 | 17.024 | −0.14 | 0.0 |
| 216.000 | 6.405 | 6.821 | 6.49 | 16.998 | 16.979 | −0.11 | 0.0 |
| 220.000 | 8.998 | 9.274 | 3.06 | 16.933 | 16.921 | −0.07 | 0.4 |
| 224.000 | 12.271 | 12.462 | 1.55 | 16.904 | 16.896 | −0.05 | 0.4 |
| 228.000 | 15.716 | 15.871 | 0.98 | 16.887 | 16.880 | −0.04 | 0.4 |
| 232.000 | 19.203 | 19.333 | 0.68 | 16.874 | 16.868 | −0.03 | 0.4 |
| 236.000 | 22.690 | 22.807 | 0.51 | 16.862 | 16.857 | −0.03 | 0.4 |
| 240.000 | 26.177 | 26.276 | 0.38 | 16.852 | 16.848 | −0.02 | 0.4 |
| 244.000 | 29.648 | 29.733 | 0.29 | 16.842 | 16.839 | −0.02 | 0.3 |
| 248.000 | 33.104 | 33.174 | 0.21 | 16.833 | 16.830 | −0.02 | 0.3 |
| 200.000 | 0.680 | 0.710 | 4.39 | 17.445 | 17.444 | −0.01 | 0.0 |
| 204.000 | 3.776 | 4.240 | 12.29 | 17.411 | 17.393 | −0.11 | 0.0 |
| 208.000 | 6.803 | 7.097 | 4.31 | 17.354 | 17.342 | −0.07 | 0.3 |
| 212.000 | 9.657 | 9.794 | 1.41 | 17.293 | 17.287 | −0.03 | 0.3 |
| 216.000 | 13.235 | 13.296 | 0.46 | 17.267 | 17.264 | −0.01 | 0.3 |
| 220.000 | 16.967 | 16.990 | 0.14 | 17.250 | 17.249 | −0.01 | 0.3 |
| 224.000 | 20.726 | 20.732 | 0.03 | 17.237 | 17.236 | 0.00 | 0.3 |
| 228.000 | 24.489 | 24.481 | −0.03 | 17.225 | 17.225 | 0.00 | 0.3 |
| 232.000 | 28.240 | 28.223 | −0.06 | 17.215 | 17.215 | 0.00 | 0.3 |
| 236.000 | 31.981 | 31.950 | −0.10 | 17.205 | 17.206 | 0.01 | 0.3 |
| 240.000 | 35.705 | 35.657 | −0.13 | 17.196 | 17.198 | 0.01 | 0.3 |
| 196.000 | 0.494 | 0.663 | 34.03 | 17.619 | 17.613 | −0.04 | 0.0 |
| 200.000 | 3.574 | 4.209 | 17.79 | 17.581 | 17.557 | −0.14 | 0.0 |
| 204.000 | 6.742 | 7.152 | 6.07 | 17.524 | 17.508 | −0.09 | 0.3 |
| 208.000 | 9.662 | 9.881 | 2.27 | 17.461 | 17.453 | −0.05 | 0.3 |
| 212.000 | 13.358 | 13.495 | 1.02 | 17.434 | 17.429 | −0.03 | 0.3 |

Data from Straty and Tsumura [19] (continued)

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | $\rho$, expt<br>$mol \cdot dm^{-3}$ | $\rho$, calc<br>$mol \cdot dm^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 216.000 | 17.223 | 17.318 | 0.55 | 17.417 | 17.414 | -0.02 | 0.3 |
| 220.000 | 21.111 | 21.191 | 0.38 | 17.404 | 17.401 | -0.02 | 0.3 |
| 224.000 | 25.013 | 25.073 | 0.24 | 17.392 | 17.390 | -0.01 | 0.3 |
| 228.000 | 28.895 | 28.947 | 0.18 | 17.382 | 17.380 | -0.01 | 0.3 |
| 232.000 | 32.752 | 32.805 | 0.16 | 17.372 | 17.370 | -0.01 | 0.3 |
| 192.000 | 0.987 | 1.299 | 31.72 | 17.815 | 17.804 | -0.06 | 0.0 |
| 196.000 | 4.453 | 4.904 | 10.13 | 17.775 | 17.759 | -0.09 | 0.0 |
| 200.000 | 7.393 | 7.721 | 4.43 | 17.709 | 17.698 | -0.07 | 0.3 |
| 204.000 | 10.698 | 10.834 | 1.27 | 17.657 | 17.653 | -0.03 | 0.3 |
| 208.000 | 14.625 | 14.695 | 0.48 | 17.634 | 17.632 | -0.01 | 0.3 |
| 212.000 | 18.667 | 18.707 | 0.22 | 17.618 | 17.617 | -0.01 | 0.3 |
| 216.000 | 22.737 | 22.756 | 0.08 | 17.606 | 17.605 | 0.00 | 0.3 |
| 220.000 | 26.805 | 26.807 | 0.01 | 17.594 | 17.594 | 0.00 | 0.3 |
| 224.000 | 30.857 | 30.846 | -0.03 | 17.584 | 17.584 | 0.00 | 0.3 |
| 228.000 | 34.886 | 34.867 | -0.05 | 17.574 | 17.575 | 0.00 | 0.3 |
| 188.000 | 1.982 | 2.377 | 19.95 | 18.021 | 18.008 | -0.07 | 0.0 |
| 192.000 | 5.596 | 5.995 | 7.13 | 17.976 | 17.963 | -0.07 | 0.0 |
| 196.000 | 8.433 | 8.655 | 2.63 | 17.903 | 17.896 | -0.04 | 0.3 |
| 200.000 | 12.237 | 12.311 | 0.60 | 17.866 | 17.863 | -0.01 | 0.3 |
| 204.000 | 16.408 | 16.433 | 0.15 | 17.846 | 17.845 | 0.00 | 0.3 |
| 208.000 | 20.655 | 20.653 | -0.01 | 17.831 | 17.831 | 0.00 | 0.3 |
| 212.000 | 24.909 | 24.895 | -0.06 | 17.819 | 17.819 | 0.00 | 0.3 |
| 216.000 | 29.154 | 29.132 | -0.08 | 17.808 | 17.808 | 0.00 | 0.3 |
| 220.000 | 33.347 | 33.354 | 0.02 | 17.797 | 17.797 | 0.00 | 0.3 |
| 180.000 | 0.525 | 0.583 | 11.20 | 18.295 | 18.293 | -0.01 | 0.0 |
| 184.000 | 3.972 | 4.528 | 13.98 | 18.253 | 18.236 | -0.09 | 0.0 |
| 188.000 | 7.206 | 7.527 | 4.45 | 18.186 | 18.176 | -0.05 | 0.3 |
| 192.000 | 10.667 | 10.774 | 1.01 | 18.128 | 18.125 | -0.02 | 0.3 |
| 196.000 | 14.966 | 14.999 | 0.22 | 18.104 | 18.103 | -0.01 | 0.3 |
| 200.000 | 19.418 | 19.420 | 0.01 | 18.087 | 18.087 | 0.00 | 0.2 |
| 204.000 | 23.905 | 23.887 | -0.08 | 18.074 | 18.074 | 0.00 | 0.2 |
| 208.000 | 28.379 | 28.357 | -0.08 | 18.062 | 18.063 | 0.00 | 0.2 |
| 212.000 | 32.842 | 32.813 | -0.09 | 18.051 | 18.052 | 0.00 | 0.2 |
| 176.000 | 1.107 | 1.594 | 43.95 | 18.488 | 18.474 | -0.08 | 0.0 |
| 180.000 | 4.958 | 5.529 | 11.51 | 18.442 | 18.426 | -0.09 | 0.0 |

Table 6. PVT DATA (continued)

Data from Straty and Tsumura [19] (continued)

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | $\rho$, expt<br>$mol \cdot dm^{-3}$ | $\rho$, calc<br>$mol \cdot dm^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 184.000 | 7.979 | 8.391 | 5.15 | 18.368 | 18.356 | −0.07 | 0.2 |
| 188.000 | 11.972 | 12.159 | 1.56 | 18.323 | 18.318 | −0.03 | 0.2 |
| 192.000 | 16.519 | 16.654 | 0.82 | 18.302 | 18.298 | −0.02 | 0.2 |
| 196.000 | 21.159 | 21.290 | 0.62 | 18.286 | 18.282 | −0.02 | 0.2 |
| 200.000 | 25.852 | 25.954 | 0.40 | 18.273 | 18.270 | −0.02 | 0.2 |
| 204.000 | 30.230 | 30.634 | 1.33 | 18.262 | 18.251 | −0.06 | 0.2 |
| 208.000 | 35.087 | 35.263 | 0.50 | 18.251 | 18.246 | −0.03 | 0.2 |
| 172.000 | 1.245 | 1.646 | 32.18 | 18.650 | 18.639 | −0.06 | 0.0 |
| 176.000 | 5.209 | 5.615 | 7.79 | 18.602 | 18.590 | −0.06 | 0.0 |
| 180.000 | 8.278 | 8.461 | 2.21 | 18.525 | 18.520 | −0.03 | 0.2 |
| 184.000 | 12.481 | 12.478 | −0.02 | 18.483 | 18.484 | 0.00 | 0.2 |
| 188.000 | 17.206 | 17.152 | −0.31 | 18.462 | 18.464 | 0.01 | 0.2 |
| 192.000 | 22.033 | 21.956 | −0.35 | 18.447 | 18.449 | 0.01 | 0.2 |
| 196.000 | 26.867 | 26.788 | −0.29 | 18.434 | 18.436 | 0.01 | 0.2 |
| 200.000 | 31.694 | 31.613 | −0.26 | 18.422 | 18.425 | 0.01 | 0.2 |
| 204.000 | 36.490 | 36.416 | −0.20 | 18.412 | 18.414 | 0.01 | 0.2 |
| 168.000 | 1.730 | 1.957 | 13.11 | 18.817 | 18.811 | −0.03 | 0.0 |
| 172.000 | 5.761 | 6.036 | 4.78 | 18.768 | 18.761 | −0.04 | 0.0 |
| 176.000 | 8.876 | 8.934 | 0.66 | 18.691 | 18.689 | −0.01 | 0.2 |
| 180.000 | 13.300 | 13.310 | 0.08 | 18.655 | 18.655 | 0.00 | 0.2 |
| 184.000 | 18.265 | 18.189 | −0.42 | 18.635 | 18.637 | 0.01 | 0.2 |
| 188.000 | 23.327 | 23.180 | −0.63 | 18.620 | 18.623 | 0.02 | 0.2 |
| 192.000 | 28.346 | 28.196 | −0.53 | 18.607 | 18.611 | 0.02 | 0.2 |
| 196.000 | 33.368 | 33.200 | −0.50 | 18.595 | 18.599 | 0.02 | 0.2 |
| 162.000 | 2.082 | 2.577 | 23.81 | 19.067 | 19.055 | −0.06 | 0.0 |
| 164.000 | 4.258 | 4.760 | 11.78 | 19.043 | 19.031 | −0.06 | 0.0 |
| 166.000 | 6.191 | 6.590 | 6.45 | 19.011 | 19.001 | −0.05 | 0.2 |
| 168.000 | 7.644 | 7.946 | 3.95 | 18.968 | 18.961 | −0.04 | 0.2 |
| 170.000 | 9.532 | 9.649 | 1.23 | 18.935 | 18.932 | −0.02 | 0.2 |
| 172.000 | 11.878 | 11.910 | 0.28 | 18.916 | 18.915 | 0.00 | 0.2 |
| 176.000 | 16.991 | 16.962 | −0.17 | 18.892 | 18.893 | 0.00 | 0.2 |
| 180.000 | 22.263 | 22.210 | −0.24 | 18.876 | 18.877 | 0.01 | 0.2 |
| 184.000 | 27.548 | 27.502 | −0.17 | 18.862 | 18.863 | 0.01 | 0.2 |
| 188.000 | 32.834 | 32.788 | −0.14 | 18.850 | 18.851 | 0.01 | 0.2 |
| 152.000 | 1.208 | 1.409 | 16.66 | 19.424 | 19.420 | −0.02 | 0.0 |

Table 6. PVT DATA (continued)

Data from Straty and Tsumura [19] (continued)

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | $\rho$, expt<br>$mol \cdot dm^{-3}$ | $\rho$, calc<br>$mol \cdot dm^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 156.000 | 5.598 | 5.785 | 3.35 | 19.369 | 19.365 | −0.02 | 0.0 |
| 160.000 | 8.963 | 8.838 | −1.40 | 19.288 | 19.290 | 0.01 | 0.2 |
| 164.000 | 14.047 | 13.738 | −2.20 | 19.250 | 19.257 | 0.04 | 0.2 |
| 168.000 | 19.651 | 19.295 | −1.81 | 19.230 | 19.237 | 0.04 | 0.2 |
| 172.000 | 25.340 | 24.980 | −1.42 | 19.214 | 19.222 | 0.04 | 0.2 |
| 176.000 | 31.037 | 30.686 | −1.13 | 19.201 | 19.208 | 0.04 | 0.2 |
| 180.000 | 36.709 | 36.373 | −0.92 | 19.189 | 19.196 | 0.04 | 0.2 |
| 144.000 | 0.939 | 1.126 | 20.00 | 19.722 | 19.718 | −0.02 | 0.0 |
| 148.000 | 5.449 | 5.837 | 7.12 | 19.667 | 19.660 | −0.04 | 0.0 |
| 152.000 | 8.924 | 8.970 | 0.52 | 19.584 | 19.583 | 0.00 | 0.2 |
| 156.000 | 14.285 | 14.136 | −1.04 | 19.545 | 19.548 | 0.02 | 0.2 |
| 160.000 | 20.232 | 20.056 | −0.87 | 19.524 | 19.528 | 0.02 | 0.2 |
| 164.000 | 26.288 | 26.120 | −0.64 | 19.508 | 19.511 | 0.02 | 0.2 |
| 168.000 | 32.344 | 32.205 | −0.43 | 19.494 | 19.497 | 0.01 | 0.1 |
| 172.000 | 38.372 | 38.267 | −0.27 | 19.482 | 19.484 | 0.01 | 0.1 |
| 136.000 | 1.369 | 1.555 | 13.56 | 20.030 | 20.026 | −0.02 | 0.0 |
| 138.000 | 3.783 | 4.408 | 16.53 | 20.008 | 19.997 | −0.06 | 0.0 |
| 140.000 | 6.057 | 6.414 | 5.89 | 19.972 | 19.965 | −0.03 | 0.1 |
| 142.000 | 7.656 | 7.859 | 2.66 | 19.926 | 19.922 | −0.02 | 0.1 |
| 144.000 | 9.846 | 9.789 | −0.58 | 19.890 | 19.891 | 0.01 | 0.1 |
| 148.000 | 15.772 | 15.587 | −1.17 | 19.856 | 19.859 | 0.02 | 0.1 |
| 152.000 | 22.175 | 21.987 | −0.85 | 19.836 | 19.839 | 0.02 | 0.1 |
| 156.000 | 28.659 | 28.504 | −0.54 | 19.820 | 19.823 | 0.01 | 0.1 |
| 160.000 | 35.147 | 35.028 | −0.34 | 19.806 | 19.808 | 0.01 | 0.1 |
| 128.000 | 0.671 | 0.718 | 6.99 | 20.312 | 20.311 | 0.00 | 0.0 |
| 130.000 | 2.929 | 3.603 | 23.04 | 20.287 | 20.276 | −0.06 | 0.0 |
| 132.000 | 5.498 | 5.917 | 7.62 | 20.254 | 20.247 | −0.04 | 0.1 |
| 134.000 | 7.237 | 7.512 | 3.80 | 20.209 | 20.204 | −0.02 | 0.1 |
| 136.000 | 9.249 | 9.261 | 0.13 | 20.167 | 20.167 | 0.00 | 0.1 |
| 138.000 | 12.124 | 12.007 | −0.96 | 20.144 | 20.146 | 0.01 | 0.1 |
| 140.000 | 15.338 | 15.194 | −0.94 | 20.129 | 20.131 | 0.01 | 0.1 |
| 142.000 | 18.702 | 18.541 | −0.86 | 20.117 | 20.120 | 0.01 | 0.1 |
| 144.000 | 22.109 | 21.964 | −0.66 | 20.107 | 20.110 | 0.01 | 0.1 |
| 146.000 | 25.532 | 25.421 | −0.43 | 20.099 | 20.100 | 0.01 | 0.1 |
| 148.000 | 28.968 | 28.891 | −0.26 | 20.091 | 20.092 | 0.01 | 0.1 |

Table 6. PVT DATA (continued)

Data from Straty and Tsumura [19] (continued)

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | $\rho$, expt<br>$mol \cdot dm^{-3}$ | $\rho$, calc<br>$mol \cdot dm^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 150.000 | 32.409 | 32.362 | −0.15 | 20.083 | 20.084 | 0.00 | 0.1 |
| 152.000 | 35.831 | 35.830 | 0.00 | 20.077 | 20.077 | 0.00 | 0.1 |
| 120.000 | 1.275 | 1.601 | 25.62 | 20.621 | 20.616 | −0.02 | 0.0 |
| 122.000 | 3.866 | 4.455 | 15.22 | 20.592 | 20.583 | −0.04 | 0.0 |
| 124.000 | 6.244 | 6.529 | 4.57 | 20.553 | 20.548 | −0.02 | 0.1 |
| 126.000 | 7.924 | 8.019 | 1.20 | 20.504 | 20.503 | −0.01 | 0.1 |
| 128.000 | 10.479 | 10.296 | −1.74 | 20.470 | 20.472 | 0.01 | 0.1 |
| 130.000 | 13.750 | 13.490 | −1.89 | 20.450 | 20.454 | 0.02 | 0.1 |
| 132.000 | 17.276 | 17.006 | −1.57 | 20.436 | 20.440 | 0.02 | 0.1 |
| 134.000 | 20.890 | 20.652 | −1.14 | 20.425 | 20.429 | 0.02 | 0.1 |
| 136.000 | 24.552 | 24.354 | −0.81 | 20.416 | 20.419 | 0.02 | 0.1 |
| 138.000 | 28.231 | 28.082 | −0.53 | 20.407 | 20.410 | 0.01 | 0.1 |
| 140.000 | 31.909 | 31.817 | −0.29 | 20.400 | 20.401 | 0.01 | 0.1 |
| 142.000 | 35.582 | 35.549 | −0.09 | 20.392 | 20.393 | 0.00 | 0.1 |
| 116.000 | 1.964 | 2.189 | 11.49 | 20.776 | 20.772 | −0.02 | 0.0 |
| 120.000 | 6.813 | 6.913 | 1.47 | 20.702 | 20.701 | −0.01 | 0.0 |
| 124.000 | 11.683 | 11.303 | −3.25 | 20.627 | 20.632 | 0.03 | 0.1 |
| 128.000 | 18.891 | 18.496 | −2.09 | 20.597 | 20.603 | 0.03 | 0.1 |
| 132.000 | 26.464 | 26.180 | −1.07 | 20.577 | 20.581 | 0.02 | 0.1 |
| 136.000 | 34.068 | 33.949 | −0.35 | 20.561 | 20.563 | 0.01 | 0.1 |
| 112.000 | 1.191 | 1.488 | 24.89 | 20.911 | 20.907 | −0.02 | 0.0 |
| 114.000 | 3.874 | 4.504 | 16.26 | 20.882 | 20.873 | −0.04 | 0.0 |
| 116.000 | 6.316 | 6.606 | 4.60 | 20.841 | 20.836 | −0.02 | 0.1 |
| 118.000 | 8.048 | 8.126 | 0.98 | 20.791 | 20.790 | −0.01 | 0.1 |
| 120.000 | 10.802 | 10.592 | −1.94 | 20.757 | 20.760 | 0.01 | 0.1 |
| 122.000 | 14.300 | 14.035 | −1.85 | 20.737 | 20.741 | 0.02 | 0.1 |
| 124.000 | 18.049 | 17.814 | −1.30 | 20.724 | 20.727 | 0.02 | 0.1 |
| 126.000 | 21.955 | 21.717 | −1.09 | 20.712 | 20.716 | 0.02 | 0.1 |
| 128.000 | 25.862 | 25.688 | −0.67 | 20.703 | 20.705 | 0.01 | 0.1 |
| 130.000 | 29.781 | 29.683 | −0.33 | 20.694 | 20.696 | 0.01 | 0.1 |
| 132.000 | 33.696 | 33.684 | −0.04 | 20.687 | 20.687 | 0.00 | 0.1 |
| 108.000 | 1.823 | 2.144 | 17.61 | 21.065 | 21.061 | −0.02 | 0.1 |
| 110.000 | 4.710 | 5.099 | 8.25 | 21.034 | 21.029 | −0.03 | 0.1 |
| 112.000 | 6.842 | 7.058 | 3.16 | 20.990 | 20.987 | −0.01 | 0.1 |
| 114.000 | 8.815 | 8.709 | −1.20 | 20.942 | 20.943 | 0.01 | 0.1 |

Data from Straty and Tsumura [19] (continued)

| T K | P, expt MPa | P, calc MPa | dev % | $\rho$, expt $mol \cdot dm^{-3}$ | $\rho$, calc $mol \cdot dm^{-3}$ | dev % | wt |
|---|---|---|---|---|---|---|---|
| 116.000 | 12.003 | 11.690 | -2.61 | 20.913 | 20.918 | 0.02 | 0.1 |
| 118.000 | 15.749 | 15.417 | -2.11 | 20.896 | 20.901 | 0.02 | 0.1 |
| 120.000 | 19.692 | 19.404 | -1.46 | 20.883 | 20.887 | 0.02 | 0.1 |
| 122.000 | 23.719 | 23.498 | -0.93 | 20.873 | 20.876 | 0.01 | 0.1 |
| 124.000 | 27.761 | 27.642 | -0.43 | 20.863 | 20.865 | 0.01 | 0.1 |
| 126.000 | 31.841 | 31.800 | -0.13 | 20.855 | 20.855 | 0.00 | 0.1 |
| 128.000 | 35.903 | 35.961 | 0.16 | 20.847 | 20.846 | 0.00 | 0.1 |
| 104.000 | 1.183 | 1.330 | 12.45 | 21.198 | 21.196 | -0.01 | 0.0 |
| 108.000 | 6.451 | 6.517 | 1.02 | 21.125 | 21.124 | 0.00 | 0.0 |
| 112.000 | 11.285 | 10.793 | -4.36 | 21.041 | 21.048 | 0.03 | 0.1 |
| 116.000 | 19.066 | 18.587 | -2.51 | 21.008 | 21.015 | 0.03 | 0.1 |
| 118.000 | 23.202 | 22.786 | -1.79 | 20.997 | 21.003 | 0.03 | 0.1 |
| 120.000 | 27.359 | 27.048 | -1.14 | 20.988 | 20.992 | 0.02 | 0.1 |
| 122.000 | 31.531 | 31.335 | -0.62 | 20.979 | 20.982 | 0.01 | 0.1 |
| 100.000 | 2.250 | 1.452 | -35.45 | 21.343 | 21.354 | 0.05 | 0.0 |
| 102.000 | 4.953 | 4.636 | -6.40 | 21.313 | 21.317 | 0.02 | 0.0 |
| 104.000 | 7.026 | 6.514 | -7.28 | 21.266 | 21.273 | 0.03 | 0.1 |
| 106.000 | 9.185 | 8.319 | -9.43 | 21.219 | 21.230 | 0.05 | 0.1 |
| 108.000 | 12.655 | 11.622 | -8.16 | 21.192 | 21.206 | 0.06 | 0.1 |
| 110.000 | 16.821 | 15.612 | -7.19 | 21.175 | 21.191 | 0.07 | 0.1 |
| 112.000 | 20.989 | 19.914 | -5.12 | 21.162 | 21.176 | 0.07 | 0.1 |
| 114.000 | 25.323 | 24.305 | -4.02 | 21.152 | 21.165 | 0.06 | 0.1 |
| 116.000 | 29.525 | 28.768 | -2.56 | 21.143 | 21.152 | 0.05 | 0.1 |
| 100.000 | 1.799 | 1.769 | -1.69 | 21.348 | 21.348 | 0.00 | 0.0 |
| 102.000 | 4.796 | 4.797 | 0.02 | 21.315 | 21.315 | 0.00 | 0.0 |
| 104.000 | 6.958 | 6.675 | -4.07 | 21.268 | 21.272 | 0.02 | 0.1 |
| 106.000 | 9.057 | 8.443 | -6.78 | 21.221 | 21.229 | 0.04 | 0.1 |
| 108.000 | 12.481 | 11.689 | -6.34 | 21.193 | 21.203 | 0.05 | 0.1 |
| 110.000 | 16.477 | 15.696 | -4.73 | 21.176 | 21.186 | 0.05 | 0.1 |
| 112.000 | 20.690 | 19.969 | -3.48 | 21.163 | 21.172 | 0.04 | 0.1 |
| 114.000 | 24.971 | 24.360 | -2.45 | 21.152 | 21.160 | 0.04 | 0.1 |
| 116.000 | 29.282 | 28.801 | -1.64 | 21.143 | 21.149 | 0.03 | 0.1 |
| 94.000 | 3.587 | 5.117 | 42.66 | 21.599 | 21.581 | -0.08 | 0.0 |
| 96.000 | 6.309 | 7.223 | 14.49 | 21.555 | 21.544 | -0.05 | 0.0 |
| 98.000 | 8.185 | 8.648 | 5.65 | 21.503 | 21.498 | -0.03 | 0.1 |

Table 6. PVT DATA (continued)

Data from Straty and Tsumura [19] (continued)

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | $\rho$, expt<br>$mol \cdot dm^{-3}$ | $\rho$, calc<br>$mol \cdot dm^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 100.000 | 11.375 | 11.428 | 0.46 | 21.468 | 21.467 | 0.00 | 0.1 |
| 102.000 | 15.489 | 15.448 | -0.26 | 21.448 | 21.448 | 0.00 | 0.1 |
| 104.000 | 19.910 | 19.894 | -0.08 | 21.433 | 21.434 | 0.00 | 0.1 |
| 106.000 | 24.433 | 24.519 | 0.35 | 21.422 | 21.421 | 0.00 | 0.1 |
| 108.000 | 29.005 | 29.223 | 0.75 | 21.412 | 21.409 | -0.01 | 0.1 |
| 110.000 | 33.581 | 33.965 | 1.14 | 21.403 | 21.398 | -0.02 | 0.1 |
| 93.000 | 8.787 | 9.283 | 5.64 | 21.682 | 21.677 | -0.03 | 0.0 |
| 94.000 | 10.498 | 10.617 | 1.14 | 21.664 | 21.662 | -0.01 | 0.0 |
| 96.000 | 14.622 | 14.504 | -0.80 | 21.641 | 21.642 | 0.01 | 0.1 |
| 98.000 | 19.173 | 19.007 | -0.87 | 21.625 | 21.627 | 0.01 | 0.1 |
| 100.000 | 23.869 | 23.763 | -0.45 | 21.613 | 21.614 | 0.01 | 0.1 |
| 102.000 | 28.538 | 28.652 | 0.40 | 21.603 | 21.601 | -0.01 | 0.1 |
| 104.000 | 33.196 | 33.601 | 1.22 | 21.594 | 21.589 | -0.02 | 0.1 |
| 272.000 | 2.084 | 2.074 | -0.52 | 1.243 | 1.253 | 0.79 | 0.0 |
| 276.000 | 2.138 | 2.127 | -0.50 | 1.242 | 1.251 | 0.74 | 0.0 |
| 280.000 | 2.190 | 2.179 | -0.50 | 1.241 | 1.250 | 0.72 | 0.0 |
| 284.000 | 2.243 | 2.231 | -0.51 | 1.240 | 1.249 | 0.72 | 0.0 |
| 288.000 | 2.295 | 2.283 | -0.54 | 1.239 | 1.248 | 0.75 | 0.0 |
| 292.000 | 2.347 | 2.335 | -0.49 | 1.239 | 1.247 | 0.68 | 0.0 |
| 296.000 | 2.399 | 2.385 | -0.55 | 1.238 | 1.247 | 0.75 | 0.0 |
| 300.000 | 2.449 | 2.436 | -0.56 | 1.237 | 1.246 | 0.75 | 0.0 |
| 304.000 | 2.500 | 2.487 | -0.52 | 1.237 | 1.245 | 0.69 | 0.0 |
| 308.000 | 2.550 | 2.536 | -0.54 | 1.236 | 1.245 | 0.71 | 0.0 |
| 312.000 | 2.600 | 2.585 | -0.56 | 1.235 | 1.244 | 0.72 | 0.0 |
| 316.000 | 2.649 | 2.635 | -0.52 | 1.235 | 1.243 | 0.66 | 0.0 |
| 320.000 | 2.698 | 2.684 | -0.53 | 1.234 | 1.242 | 0.68 | 0.0 |
| 304.000 | 4.683 | 4.680 | -0.06 | 4.325 | 4.344 | 0.44 | 0.0 |
| 306.000 | 4.809 | 4.806 | -0.07 | 4.323 | 4.341 | 0.43 | 0.0 |
| 308.000 | 4.934 | 4.930 | -0.07 | 4.321 | 4.337 | 0.38 | 0.0 |
| 312.000 | 5.179 | 5.175 | -0.08 | 4.316 | 4.330 | 0.31 | 0.0 |
| 316.000 | 5.420 | 5.416 | -0.07 | 4.312 | 4.322 | 0.24 | 0.0 |
| 320.000 | 5.657 | 5.653 | -0.08 | 4.307 | 4.317 | 0.23 | 0.0 |

Data from Straty and Tsumura [19] (continued)

Number of Points [19] 477

Pressure Calculation:
AAD% = 2.73 BIAS% = 1.84 RMS% = 6.23

Density Calculation:
AAD2% = 0.10 BIAS2% = 0.05 RMS2% = 0.47

Absolute Deviations:
Pressure Calculation:
AAD = 0.15 BIAS = 0.04 RMS = 0.25 MPa

Density Calculation:
AAD2 = 0.009 BIAS2 = 0.000 RMS2 = 0.031 mol•dm$^{-3}$

Weighted Data:

Number of Points [19] 381

Pressure Calculation:
AAD% = 1.07 BIAS% = 0.23 RMS% = 2.07

Density Calculation:
AAD2% = 0.04 BIAS2% = 0.00 RMS2% = 0.06

Absolute Deviations:
Pressure Calculation:
AAD = 0.13 BIAS = -0.01 RMS = 0.22 MPa

Density Calculation:
AAD2 = 0.006 BIAS2 = -0.001 RMS2 = 0.007 mol•dm$^{-3}$

Data from Tomlinson [29]

| T K | P, expt MPa | P, calc MPa | dev % | $\rho$, expt mol•dm$^{-3}$ | $\rho$, calc mol•dm$^{-3}$ | dev % | wt |
|---|---|---|---|---|---|---|---|
| 305.372 | 4.648 | 4.651 | 0.07 | 3.821 | 3.810 | -0.29 | 0.0 |
| 313.706 | 5.086 | 5.088 | 0.03 | 3.817 | 3.813 | -0.10 | 0.0 |
| 322.039 | 5.515 | 5.513 | -0.04 | 3.814 | 3.818 | 0.10 | 0.0 |
| 305.372 | 4.835 | 4.845 | 0.19 | 5.002 | 4.877 | -2.51 | 0.0 |
| 310.928 | 5.250 | 5.258 | 0.16 | 4.998 | 4.949 | -0.99 | 0.0 |

Table 6. PVT DATA (continued)

Data from Tomlinson [29] (continued)

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | $\rho$, expt<br>$mol \cdot dm^{-3}$ | $\rho$, calc<br>$mol \cdot dm^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 316.483 | 5.659 | 5.662 | 0.06 | 4.996 | 4.983 | −0.26 | 0.0 |
| 322.039 | 6.066 | 6.059 | −0.11 | 4.993 | 5.011 | 0.37 | 0.0 |
| 306.483 | 4.976 | 4.991 | 0.31 | 6.828 | 5.978 | −12.46 | 0.0 |
| 316.483 | 6.016 | 6.033 | 0.28 | 6.821 | 6.728 | −1.37 | 0.0 |
| 324.817 | 6.895 | 6.907 | 0.17 | 6.815 | 6.781 | −0.50 | 0.0 |
| 305.372 | 4.932 | 4.958 | 0.54 | 9.003 | 8.827 | −1.95 | 0.0 |
| 309.261 | 5.534 | 5.551 | 0.29 | 8.998 | 8.945 | −0.60 | 0.0 |
| 313.706 | 6.229 | 6.248 | 0.32 | 8.994 | 8.951 | −0.48 | 0.0 |
| 322.039 | 7.585 | 7.595 | 0.13 | 8.985 | 8.972 | −0.14 | 0.0 |
| 302.594 | 4.659 | 4.695 | 0.78 | 9.742 | 9.631 | −1.13 | 0.0 |
| 305.372 | 5.154 | 5.189 | 0.68 | 9.737 | 9.663 | −0.77 | 0.0 |
| 313.706 | 6.688 | 6.723 | 0.52 | 9.727 | 9.686 | −0.42 | 0.0 |
| 322.039 | 8.275 | 8.307 | 0.38 | 9.718 | 9.692 | −0.27 | 0.0 |
| 298.150 | 4.279 | 4.320 | 0.95 | 10.650 | 10.597 | −0.50 | 0.0 |
| 299.817 | 4.635 | 4.685 | 1.08 | 10.646 | 10.589 | −0.54 | 0.0 |
| 303.589 | 5.469 | 5.523 | 1.00 | 10.640 | 10.590 | −0.47 | 0.0 |
| 310.928 | 7.135 | 7.190 | 0.77 | 10.629 | 10.593 | −0.34 | 0.0 |
| 322.039 | 9.711 | 9.768 | 0.59 | 10.616 | 10.589 | −0.25 | 0.0 |
| 298.150 | 4.485 | 4.532 | 1.04 | 10.879 | 10.834 | −0.42 | 0.0 |
| 305.372 | 6.193 | 6.237 | 0.71 | 10.867 | 10.837 | −0.27 | 0.0 |
| 313.706 | 8.205 | 8.250 | 0.55 | 10.856 | 10.833 | −0.21 | 0.0 |
| 322.039 | 10.256 | 10.292 | 0.35 | 10.846 | 10.831 | −0.14 | 0.0 |
| 295.928 | 4.393 | 4.424 | 0.69 | 11.241 | 11.219 | −0.20 | 0.0 |
| 296.483 | 4.539 | 4.565 | 0.57 | 11.239 | 11.221 | −0.16 | 0.0 |
| 298.150 | 4.969 | 4.990 | 0.43 | 11.236 | 11.222 | −0.12 | 0.0 |
| 299.817 | 5.389 | 5.418 | 0.54 | 11.233 | 11.215 | −0.16 | 0.0 |
| 302.594 | 6.112 | 6.136 | 0.39 | 11.228 | 11.215 | −0.12 | 0.0 |
| 310.928 | 8.292 | 8.316 | 0.30 | 11.216 | 11.206 | −0.09 | 0.0 |
| 316.483 | 9.763 | 9.786 | 0.24 | 11.209 | 11.201 | −0.08 | 0.0 |
| 322.039 | 11.258 | 11.260 | 0.01 | 11.201 | 11.201 | 0.00 | 0.0 |
| 293.150 | 4.548 | 4.574 | 0.57 | 11.773 | 11.761 | −0.11 | 0.0 |
| 298.150 | 5.998 | 6.031 | 0.55 | 11.763 | 11.750 | −0.11 | 0.0 |
| 306.483 | 8.449 | 8.490 | 0.49 | 11.750 | 11.736 | −0.12 | 0.0 |
| 314.261 | 10.770 | 10.805 | 0.33 | 11.739 | 11.729 | −0.08 | 0.0 |
| 322.039 | 13.108 | 13.132 | 0.18 | 11.730 | 11.724 | −0.05 | 0.0 |

Table 6. PVT DATA (continued)

Data from Tomlinson [29] (continued)

| T<br>K | P, expt<br>MPa | P, calc<br>MPa | dev<br>% | $\rho$, expt<br>$mol \cdot dm^{-3}$ | $\rho$, calc<br>$mol \cdot dm^{-3}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|---|
| 288.706 | 4.719 | 4.742 | 0.49 | 12.384 | 12.376 | -0.06 | 0.0 |
| 294.261 | 6.587 | 6.608 | 0.32 | 12.371 | 12.365 | -0.05 | 0.0 |
| 298.150 | 7.888 | 7.925 | 0.47 | 12.365 | 12.355 | -0.08 | 0.0 |
| 299.817 | 8.453 | 8.491 | 0.45 | 12.362 | 12.353 | -0.08 | 0.0 |
| 305.372 | 10.359 | 10.379 | 0.19 | 12.353 | 12.349 | -0.04 | 0.0 |
| 285.372 | 4.603 | 4.591 | -0.25 | 12.686 | 12.689 | 0.02 | 0.0 |
| 292.039 | 6.938 | 6.991 | 0.76 | 12.671 | 12.658 | -0.10 | 0.0 |
| 298.150 | 9.156 | 9.206 | 0.55 | 12.660 | 12.650 | -0.08 | 0.0 |
| 302.594 | 10.759 | 10.820 | 0.57 | 12.653 | 12.641 | -0.09 | 0.0 |
| 310.928 | 13.791 | 13.851 | 0.44 | 12.641 | 12.630 | -0.08 | 0.0 |
| 283.150 | 4.650 | 4.687 | 0.81 | 12.922 | 12.913 | -0.07 | 0.0 |
| 285.928 | 5.695 | 5.738 | 0.75 | 12.915 | 12.905 | -0.07 | 0.0 |
| 292.594 | 8.216 | 8.275 | 0.72 | 12.901 | 12.889 | -0.09 | 0.0 |
| 298.150 | 10.346 | 10.399 | 0.51 | 12.891 | 12.882 | -0.07 | 0.0 |
| 280.372 | 4.790 | 4.806 | 0.35 | 13.192 | 13.189 | -0.03 | 0.0 |
| 291.483 | 9.251 | 9.294 | 0.47 | 13.168 | 13.161 | -0.06 | 0.0 |
| 298.150 | 11.955 | 11.999 | 0.37 | 13.157 | 13.150 | -0.05 | 0.0 |
| 302.594 | 13.776 | 13.799 | 0.17 | 13.149 | 13.146 | -0.03 | 0.0 |
| 285.928 | 8.535 | 8.666 | 1.54 | 13.451 | 13.431 | -0.15 | 0.0 |
| 292.039 | 11.170 | 11.296 | 1.12 | 13.439 | 13.422 | -0.13 | 0.0 |
| 298.150 | 13.799 | 13.926 | 0.92 | 13.429 | 13.412 | -0.12 | 0.0 |

Number of Points [29] 61

Pressure Calculation:

AAD% = 0.48 BIAS% = 0.47 RMS% = 0.33

Density Calculation:
AAD2% = 0.51 BIAS2% = -0.49 RMS2% = 1.61

Absolute Deviations:
Pressure Calculation:
AAD = 0.03 BIAS = 0.03 RMS = 0.03 MPa

Density Calculation:
AAD2 = 0.040 BIAS2 = -0.039 RMS2 = 0.110 $mol \cdot dm^{-3}$

Table 6. **PVT DATA** (continued)

Data from Wallace et al. [57]

| T K | P, expt MPa | P, calc MPa | dev % | $\rho$, expt $mol \cdot dm^{-3}$ | $\rho$, calc $mol \cdot dm^{-3}$ | dev % | wt |
|---|---|---|---|---|---|---|---|
| 348.150 | 0.191 | 0.191 | -0.05 | 0.067 | 0.067 | 0.05 | 0.0 |
| 348.150 | 0.147 | 0.147 | -0.07 | 0.051 | 0.051 | 0.07 | 0.0 |
| 348.150 | 0.109 | 0.109 | -0.01 | 0.038 | 0.038 | 0.01 | 0.0 |
| 348.150 | 0.094 | 0.094 | 0.06 | 0.033 | 0.033 | -0.06 | 0.0 |
| 323.150 | 0.176 | 0.176 | 0.00 | 0.066 | 0.066 | 0.00 | 0.0 |
| 323.150 | 0.136 | 0.136 | -0.05 | 0.051 | 0.051 | 0.05 | 0.0 |
| 323.150 | 0.100 | 0.100 | 0.14 | 0.037 | 0.037 | -0.14 | 0.0 |
| 323.150 | 0.086 | 0.087 | 0.25 | 0.032 | 0.032 | -0.25 | 0.0 |
| 298.150 | 0.202 | 0.202 | 0.06 | 0.083 | 0.083 | -0.06 | 0.0 |
| 298.150 | 0.162 | 0.162 | 0.01 | 0.066 | 0.066 | -0.01 | 0.0 |
| 298.150 | 0.125 | 0.125 | 0.00 | 0.051 | 0.051 | 0.00 | 0.0 |
| 298.150 | 0.091 | 0.091 | -0.07 | 0.037 | 0.037 | 0.07 | 0.0 |
| 273.150 | 0.184 | 0.184 | 0.03 | 0.083 | 0.083 | -0.03 | 0.0 |
| 273.150 | 0.147 | 0.147 | 0.05 | 0.066 | 0.066 | -0.05 | 0.0 |
| 273.150 | 0.113 | 0.113 | 0.00 | 0.051 | 0.050 | 0.00 | 0.0 |
| 273.150 | 0.072 | 0.072 | -0.09 | 0.032 | 0.032 | 0.09 | 0.0 |
| 248.150 | 0.190 | 0.190 | 0.00 | 0.095 | 0.095 | 0.00 | 0.0 |
| 248.150 | 0.133 | 0.133 | 0.11 | 0.066 | 0.066 | -0.11 | 0.0 |
| 248.150 | 0.102 | 0.102 | 0.07 | 0.050 | 0.050 | -0.07 | 0.0 |
| 248.150 | 0.074 | 0.075 | 0.09 | 0.036 | 0.036 | -0.09 | 0.0 |

Number of Points [57] 20

Pressure Calculation:
AAD% = 0.06 BIAS% = 0.03 RMS% = 0.08

Density Calculation:
AAD2% = 0.06 BIAS2% = -0.03 RMS2% = 0.08

Absolute Deviations:
Pressure Calculation:
AAD = 0.00 BIAS = 0.00 RMS = 0.00 MPa

Density Calculation:
AAD2 = 0.000 BIAS2 = 0.000 RMS2 = 0.000 $mol \cdot dm^{-3}$

Table 6. PVT DATA (continued)

| | | | | |
|---|---|---|---|---|
| Overall Results: | N =2112 | AAD% = 2.84 | BIAS% = 2.30 | RMS% =11.57 |
| | | AAD2% = 0.483 | BIAS2% =-0.113 | RMS2% = 1.509 |
| | | AAD = 0.19 | BIAS = 0.08 | RMS = 0.55 MPa |
| | | AAD2 = 0.030 | BIAS2 =-0.006 | RMS2 = 0.094 $mol \cdot dm^{-3}$ |
| Weighted Data: | N = 803 | AAD% = 0.59 | BIAS% = 0.16 | RMS% = 1.46 |
| | | AAD2% = 0.064 | BIAS2% =-0.014 | RMS2% = 0.135 |
| | | AAD = 0.09 | BIAS = 0.01 | RMS = 0.21 MPa |
| | | AAD2 = 0.006 | BIAS2 =-0.002 | RMS2 = 0.011 $mol \cdot dm^{-3}$ |

Table 7. ISOCHORIC SPECIFIC HEAT CAPACITY

Data from Roder [58]
The densities are from the tabulation of [58].

| T K | P, expt MPa | $\rho$ $mol \cdot dm^{-3}$ | $C_v$,expt $J \cdot mol^{-1} \cdot K^{-1}$ | $C_v$,calc | dev % | dev2 % | dev3 % | dev4 % | wt |
|---|---|---|---|---|---|---|---|---|---|
| 288.868 | 2.7144 | 1.585 | 49.301 | 49.262 | -0.08 | -0.08 | 0.00 | 0.00 | 1.030 |
| 292.068 | 2.7708 | 1.585 | 49.209 | 49.237 | 0.06 | 0.05 | -0.02 | 0.01 | 1.032 |
| 295.282 | 2.8271 | 1.585 | 48.278 | 49.266 | 2.05 | 2.04 | -0.03 | 0.02 | 1.052 |
| 299.364 | 2.8980 | 1.585 | 48.874 | 49.366 | 1.01 | 1.00 | -0.04 | 0.03 | 1.040 |
| 304.333 | 2.9836 | 1.584 | 49.322 | 49.563 | 0.49 | 0.49 | 0.01 | 0.00 | 1.030 |
| 309.311 | 3.0687 | 1.584 | 49.104 | 49.831 | 1.48 | 1.48 | 0.00 | 0.00 | 1.035 |
| 314.289 | 3.1531 | 1.583 | 49.849 | 50.149 | 0.60 | 0.61 | 0.05 | -0.03 | 1.020 |
| 319.287 | 3.2372 | 1.583 | 50.205 | 50.514 | 0.61 | 0.62 | 0.03 | -0.02 | 1.013 |
| 324.315 | 3.3213 | 1.582 | 50.175 | 50.913 | 1.47 | 1.48 | 0.08 | -0.06 | 1.013 |
| 329.076 | 3.4004 | 1.582 | 51.109 | 51.320 | 0.41 | 0.42 | 0.06 | -0.04 | 0.995 |
| 302.904 | 4.3292 | 3.276 | 56.641 | 57.118 | 0.84 | 0.65 | -0.59 | 0.19 | 0.897 |
| 307.501 | 4.5274 | 3.275 | 55.600 | 56.149 | 0.99 | 0.82 | -0.63 | 0.23 | 0.914 |
| 312.122 | 4.7242 | 3.274 | 55.111 | 55.510 | 0.72 | 0.59 | -0.61 | 0.25 | 0.922 |
| 316.773 | 4.9200 | 3.272 | 54.334 | 55.116 | 1.44 | 1.34 | -0.53 | 0.24 | 0.936 |
| 321.425 | 5.1138 | 3.271 | 53.926 | 54.914 | 1.83 | 1.76 | -0.49 | 0.23 | 0.943 |
| 326.113 | 5.3073 | 3.270 | 53.907 | 54.854 | 1.76 | 1.70 | -0.44 | 0.22 | 0.943 |
| 298.669 | 4.1439 | 3.276 | 60.310 | 58.403 | -3.16 | -3.32 | -0.42 | 0.11 | 0.000 |
| 308.116 | 4.9833 | 4.611 | 62.026 | 62.256 | 0.37 | -0.12 | -1.41 | 0.23 | 0.819 |
| 312.344 | 5.2602 | 4.609 | 59.590 | 60.414 | 1.38 | 0.99 | -1.41 | 0.31 | 0.853 |
| 316.397 | 5.5228 | 4.607 | 58.605 | 59.155 | 0.94 | 0.65 | -1.31 | 0.36 | 0.867 |
| 320.349 | 5.7766 | 4.604 | 57.298 | 58.285 | 1.72 | 1.51 | -1.17 | 0.37 | 0.887 |
| 324.259 | 6.0260 | 4.603 | 56.954 | 57.693 | 1.30 | 1.14 | -1.07 | 0.38 | 0.893 |
| 328.210 | 6.2766 | 4.601 | 56.924 | 57.297 | 0.66 | 0.54 | -0.95 | 0.37 | 0.893 |
| 313.190 | 5.5670 | 5.884 | 62.976 | 63.533 | 0.88 | 0.81 | -0.50 | 0.07 | 0.807 |
| 317.960 | 5.9863 | 5.881 | 60.780 | 61.211 | 0.71 | 0.68 | -0.28 | 0.06 | 0.836 |
| 322.792 | 6.4088 | 5.878 | 59.470 | 59.658 | 0.32 | 0.31 | -0.13 | 0.04 | 0.855 |
| 327.675 | 6.8341 | 5.876 | 58.705 | 58.659 | -0.08 | -0.08 | -0.04 | 0.01 | 0.866 |
| 308.511 | 5.1530 | 5.887 | 68.850 | 66.900 | -2.83 | -2.99 | -0.74 | 0.05 | 0.000 |
| 317.440 | 6.4742 | 7.882 | 61.255 | 59.830 | -2.33 | -3.52 | 3.72 | -1.43 | 0.000 |
| 320.690 | 6.9054 | 7.880 | 60.542 | 58.838 | -2.81 | -3.68 | 3.34 | -1.53 | 0.000 |
| 321.099 | 6.9598 | 7.879 | 60.201 | 58.736 | -2.43 | -3.28 | 3.31 | -1.54 | 0.000 |
| 324.541 | 7.4171 | 7.877 | 59.881 | 58.023 | -3.10 | -3.71 | 2.96 | -1.58 | 0.000 |
| 328.165 | 7.8992 | 7.875 | 59.490 | 57.524 | -3.31 | -3.74 | 2.64 | -1.58 | 0.000 |
| 307.853 | 5.2078 | 7.891 | 67.130 | 65.297 | -2.73 | -5.32 | 4.52 | -0.54 | 0.000 |
| 311.011 | 5.6238 | 7.888 | 63.750 | 62.959 | -1.24 | -3.40 | 4.49 | -0.97 | 0.000 |

Table 7. ISOCHORIC SPECIFIC HEAT CAPACITY (continued)

Data from Roder [58] (continued)

| T | P, expt | $\rho$ | $C_v$,expt | $C_v$,calc | dev | dev2 | dev3 | dev4 | wt |
|---|---|---|---|---|---|---|---|---|---|
| K | MPa | $mol \cdot dm^{-3}$ | $J \cdot mol^{-1} \cdot K^{-1}$ | | % | % | % | % | |
| 314.211 | 6.0466 | 7.884 | 62.200 | 61.175 | -1.65 | -3.27 | 4.13 | -1.26 | 0.000 |
| 306.311 | 5.1849 | 9.177 | 59.880 | 59.355 | -0.88 | -2.20 | 1.63 | -0.85 | 0.000 |
| 306.501 | 5.2172 | 9.177 | 59.724 | 59.275 | -0.75 | -2.08 | 1.67 | -0.89 | 0.851 |
| 309.793 | 5.7778 | 9.173 | 58.441 | 58.114 | -0.56 | -1.84 | 2.01 | -1.40 | 0.870 |
| 313.122 | 6.3472 | 9.169 | 57.701 | 57.268 | -0.75 | -1.79 | 2.05 | -1.68 | 0.881 |
| 316.478 | 6.9235 | 9.166 | 57.342 | 56.671 | -1.17 | -1.97 | 1.97 | -1.81 | 0.886 |
| 326.629 | 8.6765 | 9.158 | 56.918 | 55.905 | -1.78 | -2.11 | 1.58 | -1.78 | 0.893 |
| 309.399 | 5.7106 | 9.173 | 58.489 | 58.236 | -0.43 | -1.74 | 2.00 | -1.36 | 0.869 |
| 312.513 | 6.2429 | 9.169 | 57.769 | 57.405 | -0.63 | -1.72 | 2.07 | -1.65 | 0.880 |
| 315.643 | 6.7799 | 9.166 | 57.355 | 56.801 | -0.97 | -1.82 | 2.01 | -1.80 | 0.886 |
| 318.812 | 7.3256 | 9.164 | 57.035 | 56.376 | -1.16 | -1.81 | 1.90 | -1.85 | 0.891 |
| 321.990 | 7.8740 | 9.161 | 56.952 | 56.103 | -1.49 | -1.99 | 1.78 | -1.85 | 0.893 |
| 325.186 | 8.4267 | 9.159 | 56.765 | 55.944 | -1.45 | -1.83 | 1.64 | -1.81 | 0.896 |
| 328.408 | 8.9849 | 9.156 | 56.845 | 55.881 | -1.70 | -1.99 | 1.52 | -1.75 | 0.894 |
| 297.554 | 4.6182 | 11.049 | 53.786 | 52.872 | -1.70 | -1.85 | 0.26 | -0.78 | 0.945 |
| 300.530 | 5.3719 | 11.044 | 53.364 | 52.823 | -1.01 | -1.20 | 0.38 | -1.15 | 0.952 |
| 303.509 | 6.1267 | 11.039 | 53.514 | 52.830 | -1.28 | -1.46 | 0.45 | -1.32 | 0.950 |
| 306.501 | 6.8874 | 11.035 | 53.590 | 52.881 | -1.32 | -1.49 | 0.47 | -1.39 | 0.948 |
| 309.501 | 7.6523 | 11.031 | 53.581 | 52.971 | -1.14 | -1.28 | 0.48 | -1.41 | 0.949 |
| 312.511 | 8.4210 | 11.028 | 53.545 | 53.094 | -0.84 | -0.97 | 0.47 | -1.36 | 0.949 |
| 315.531 | 9.1928 | 11.025 | 53.678 | 53.246 | -0.81 | -0.91 | 0.46 | -1.30 | 0.947 |
| 318.570 | 9.9703 | 11.021 | 53.846 | 53.424 | -0.78 | -0.87 | 0.44 | -1.24 | 0.944 |
| 321.607 | 10.7480 | 11.018 | 54.035 | 53.622 | -0.76 | -0.84 | 0.42 | -1.16 | 0.941 |
| 324.656 | 11.5291 | 11.015 | 54.138 | 53.839 | -0.55 | -0.61 | 0.39 | -1.07 | 0.939 |
| 328.087 | 12.4082 | 11.012 | 54.442 | 54.101 | -0.63 | -0.67 | 0.35 | -0.96 | 0.934 |
| 290.820 | 4.3794 | 11.976 | 51.739 | 50.787 | -1.84 | -1.92 | 0.21 | -1.36 | 0.982 |
| 295.076 | 5.6995 | 11.968 | 51.643 | 50.994 | -1.26 | -1.33 | 0.24 | -1.39 | 0.984 |
| 291.384 | 4.5546 | 11.975 | 51.622 | 50.812 | -1.57 | -1.65 | 0.22 | -1.37 | 0.984 |
| 295.658 | 5.8805 | 11.967 | 51.733 | 51.026 | -1.37 | -1.44 | 0.25 | -1.38 | 0.982 |
| 299.925 | 7.2048 | 11.959 | 51.983 | 51.283 | -1.35 | -1.41 | 0.26 | -1.31 | 0.978 |
| 304.195 | 8.5348 | 11.954 | 52.142 | 51.573 | -1.09 | -1.14 | 0.24 | -1.14 | 0.975 |
| 308.490 | 9.8732 | 11.948 | 52.374 | 51.896 | -0.91 | -0.95 | 0.23 | -1.02 | 0.970 |
| 312.666 | 11.1743 | 11.943 | 52.654 | 52.235 | -0.80 | -0.82 | 0.20 | -0.87 | 0.965 |
| 316.715 | 12.4352 | 11.938 | 52.990 | 52.585 | -0.76 | -0.79 | 0.18 | -0.74 | 0.959 |
| 320.765 | 13.6959 | 11.933 | 53.330 | 52.952 | -0.71 | -0.73 | 0.16 | -0.62 | 0.953 |

Table 7. ISOCHORIC SPECIFIC HEAT CAPACITY (continued)

Data from Roder [58] (continued)

| T K | P, expt MPa | $\rho$ $mol \cdot dm^{-3}$ | $C_v$,expt $J \cdot mol^{-1} \cdot K^{-1}$ | $C_v$,calc | dev % | dev2 % | dev3 % | dev4 % | wt |
|---|---|---|---|---|---|---|---|---|---|
| 324.828 | 14.9594 | 11.928 | 53.623 | 53.335 | −0.54 | −0.55 | 0.13 | −0.51 | 0.948 |
| 328.907 | 16.2269 | 11.923 | 54.030 | 53.733 | −0.55 | −0.56 | 0.11 | −0.41 | 0.941 |
| 280.688 | 3.8940 | 12.950 | 49.949 | 49.014 | −1.87 | −1.89 | 0.09 | −1.29 | 1.017 |
| 284.835 | 5.4845 | 12.941 | 49.928 | 49.322 | −1.21 | −1.23 | 0.10 | −1.02 | 1.017 |
| 288.976 | 7.0695 | 12.932 | 50.221 | 49.653 | −1.13 | −1.15 | 0.09 | −0.82 | 1.012 |
| 293.117 | 8.6596 | 12.925 | 50.473 | 50.004 | −0.93 | −0.94 | 0.08 | −0.64 | 1.007 |
| 293.453 | 8.7885 | 12.925 | 50.601 | 50.033 | −1.12 | −1.13 | 0.08 | −0.60 | 1.004 |
| 297.602 | 10.3808 | 12.918 | 50.830 | 50.404 | −0.84 | −0.84 | 0.07 | −0.47 | 1.000 |
| 301.740 | 11.9663 | 12.912 | 51.196 | 50.790 | −0.79 | −0.80 | 0.05 | −0.32 | 0.993 |
| 310.014 | 15.1274 | 12.900 | 51.711 | 51.604 | −0.21 | −0.21 | 0.02 | −0.09 | 0.983 |
| 314.163 | 16.7073 | 12.894 | 52.222 | 52.030 | −0.37 | −0.37 | 0.00 | 0.01 | 0.973 |
| 318.308 | 18.2826 | 12.888 | 52.679 | 52.465 | −0.41 | −0.41 | −0.02 | 0.09 | 0.965 |
| 322.453 | 19.8541 | 12.882 | 53.170 | 52.909 | −0.49 | −0.49 | −0.03 | 0.15 | 0.956 |
| 326.617 | 21.4289 | 12.876 | 53.564 | 53.363 | −0.38 | −0.38 | −0.04 | 0.21 | 0.949 |
| 266.868 | 3.3507 | 14.004 | 48.300 | 47.303 | −2.06 | −2.06 | −0.03 | 0.92 | 0.000 |
| 270.918 | 5.2993 | 13.994 | 48.285 | 47.655 | −1.30 | −1.30 | −0.04 | 0.73 | 1.052 |
| 274.958 | 7.2348 | 13.983 | 48.605 | 48.022 | −1.20 | −1.20 | −0.04 | 0.56 | 1.045 |
| 278.996 | 9.1760 | 13.976 | 48.893 | 48.402 | −1.00 | −1.00 | −0.05 | 0.66 | 1.039 |
| 283.030 | 11.1121 | 13.968 | 49.180 | 48.795 | −0.78 | −0.78 | −0.06 | 0.63 | 1.033 |
| 287.053 | 13.0367 | 13.961 | 49.570 | 49.198 | −0.75 | −0.75 | −0.07 | 0.67 | 1.025 |
| 291.068 | 14.9507 | 13.954 | 49.995 | 49.610 | −0.77 | −0.77 | −0.08 | 0.70 | 1.016 |
| 295.074 | 16.8537 | 13.947 | 50.337 | 50.030 | −0.61 | −0.61 | −0.09 | 0.73 | 1.009 |
| 299.072 | 18.7465 | 13.940 | 50.718 | 50.457 | −0.51 | −0.52 | −0.10 | 0.74 | 1.002 |
| 303.068 | 20.6313 | 13.933 | 51.123 | 50.892 | −0.45 | −0.46 | −0.11 | 0.76 | 0.994 |
| 307.053 | 22.5042 | 13.926 | 51.579 | 51.331 | −0.48 | −0.49 | −0.11 | 0.76 | 0.985 |
| 311.509 | 24.5909 | 13.918 | 51.996 | 51.829 | −0.32 | −0.33 | −0.12 | 0.75 | 0.978 |
| 315.497 | 26.4506 | 13.911 | 52.444 | 52.281 | −0.31 | −0.32 | −0.12 | 0.74 | 0.969 |
| 319.489 | 28.3058 | 13.904 | 52.843 | 52.737 | −0.20 | −0.21 | −0.12 | 0.73 | 0.962 |
| 323.481 | 30.1545 | 13.897 | 53.299 | 53.197 | −0.19 | −0.20 | −0.13 | 0.72 | 0.954 |
| 327.478 | 31.9986 | 13.890 | 53.800 | 53.661 | −0.26 | −0.27 | −0.13 | 0.70 | 0.945 |
| 258.973 | 4.1721 | 14.644 | 47.198 | 46.509 | −1.46 | −1.46 | −0.08 | 2.70 | 1.075 |
| 265.038 | 7.5076 | 14.628 | 47.568 | 47.073 | −1.04 | −1.04 | −0.09 | 1.81 | 1.067 |
| 271.085 | 10.8449 | 14.616 | 48.168 | 47.664 | −1.05 | −1.05 | −0.10 | 1.50 | 1.054 |
| 277.105 | 14.1445 | 14.604 | 48.608 | 48.274 | −0.69 | −0.70 | −0.11 | 1.34 | 1.045 |
| 283.089 | 17.4014 | 14.592 | 49.118 | 48.899 | −0.45 | −0.46 | −0.12 | 1.23 | 1.034 |

**Data from Roder [58]** (continued)

| T K | P, expt MPa | $\rho$ $mol \cdot dm^{-3}$ | $C_v$,expt $J \cdot mol^{-1} \cdot K^{-1}$ | $C_v$,calc | dev % | dev2 % | dev3 % | dev4 % | wt |
|---|---|---|---|---|---|---|---|---|---|
| 289.038 | 20.6173 | 14.580 | 49.761 | 49.537 | −0.45 | −0.46 | −0.13 | 1.14 | 1.021 |
| 290.026 | 21.1489 | 14.578 | 49.844 | 49.645 | −0.40 | −0.41 | −0.13 | 1.13 | 1.019 |
| 295.968 | 24.3355 | 14.567 | 50.481 | 50.298 | −0.36 | −0.38 | −0.14 | 1.10 | 1.007 |
| 301.879 | 27.4845 | 14.555 | 51.124 | 50.959 | −0.32 | −0.34 | −0.14 | 1.02 | 0.994 |
| 307.773 | 30.6037 | 14.543 | 51.821 | 51.627 | −0.37 | −0.39 | −0.14 | 0.94 | 0.981 |
| 313.655 | 33.6958 | 14.532 | 52.457 | 52.304 | −0.29 | −0.31 | −0.14 | 0.90 | 0.969 |
| 257.577 | 3.3934 | 14.647 | 47.195 | 46.383 | −1.72 | −1.72 | −0.08 | 3.19 | 1.075 |
| 260.618 | 5.0545 | 14.637 | 47.302 | 46.659 | −1.36 | −1.36 | −0.09 | 2.34 | 1.073 |
| 263.680 | 6.7547 | 14.631 | 47.384 | 46.944 | −0.93 | −0.93 | −0.09 | 1.97 | 1.071 |
| 266.736 | 8.4464 | 14.624 | 47.736 | 47.236 | −1.05 | −1.05 | −0.09 | 1.63 | 1.064 |
| 269.783 | 10.1279 | 14.618 | 47.923 | 47.534 | −0.81 | −0.82 | −0.10 | 1.49 | 1.059 |
| 272.823 | 11.7994 | 14.612 | 48.204 | 47.837 | −0.76 | −0.77 | −0.10 | 1.40 | 1.053 |
| 275.855 | 13.4608 | 14.606 | 48.482 | 48.145 | −0.69 | −0.70 | −0.11 | 1.33 | 1.047 |
| 258.449 | 7.9440 | 15.039 | 47.151 | 46.519 | −1.34 | −1.35 | −0.11 | 2.46 | 1.076 |
| 262.425 | 10.3308 | 15.030 | 47.459 | 46.907 | −1.16 | −1.17 | −0.12 | 2.09 | 1.070 |
| 260.021 | 8.8885 | 15.035 | 47.196 | 46.671 | −1.11 | −1.12 | −0.11 | 2.24 | 1.075 |
| 264.005 | 11.2775 | 15.027 | 47.518 | 47.064 | −0.95 | −0.97 | −0.12 | 2.04 | 1.068 |
| 267.971 | 13.6450 | 15.018 | 47.972 | 47.464 | −1.06 | −1.07 | −0.13 | 1.79 | 1.058 |
| 271.915 | 15.9882 | 15.009 | 48.292 | 47.870 | −0.87 | −0.89 | −0.13 | 1.60 | 1.051 |
| 275.845 | 18.3111 | 15.001 | 48.655 | 48.281 | −0.77 | −0.79 | −0.14 | 1.53 | 1.044 |
| 250.496 | 3.1815 | 15.063 | 46.730 | 45.776 | −2.04 | −2.05 | −0.10 | 5.28 | 0.000 |
| 254.472 | 5.5686 | 15.051 | 46.780 | 46.142 | −1.36 | −1.37 | −0.11 | 3.29 | 0.000 |
| 256.033 | 6.5052 | 15.046 | 46.910 | 46.289 | −1.32 | −1.33 | −0.11 | 2.80 | 0.000 |
| 279.768 | 20.6179 | 14.993 | 49.048 | 48.699 | −0.71 | −0.73 | −0.14 | 1.46 | 1.036 |
| 283.679 | 22.9060 | 14.984 | 49.408 | 49.120 | −0.58 | −0.60 | −0.14 | 1.34 | 1.028 |
| 287.579 | 25.1761 | 14.976 | 49.746 | 49.546 | −0.40 | −0.42 | −0.14 | 1.29 | 1.021 |
| 291.462 | 27.4251 | 14.968 | 50.272 | 49.975 | −0.59 | −0.61 | −0.15 | 1.23 | 1.011 |
| 295.349 | 29.6660 | 14.959 | 50.623 | 50.408 | −0.42 | −0.45 | −0.14 | 1.13 | 1.004 |
| 300.025 | 32.3465 | 14.949 | 51.179 | 50.935 | −0.48 | −0.50 | −0.14 | 1.05 | 0.993 |
| 231.182 | 3.6030 | 16.140 | 45.310 | 44.453 | −1.89 | −1.91 | −0.10 | 7.45 | 1.119 |
| 234.160 | 5.8108 | 16.129 | 45.163 | 44.721 | −0.98 | −1.01 | −0.11 | 5.16 | 1.123 |
| 237.158 | 8.0795 | 16.121 | 45.529 | 44.997 | −1.17 | −1.20 | −0.12 | 3.98 | 1.114 |
| 240.148 | 10.3326 | 16.113 | 45.792 | 45.278 | −1.12 | −1.15 | −0.12 | 3.28 | 1.108 |
| 243.126 | 12.5647 | 16.105 | 46.060 | 45.561 | −1.08 | −1.11 | −0.12 | 2.81 | 1.101 |
| 244.528 | 13.6123 | 16.101 | 46.079 | 45.696 | −0.83 | −0.86 | −0.12 | 2.60 | 1.101 |

Table 7. ISOCHORIC SPECIFIC HEAT CAPACITY (continued)

Data from Roder [58] (continued)

| T K | P, expt MPa | $\rho$ mol•dm$^{-3}$ | $C_v$,expt J•mol$^{-1}$•K$^{-1}$ | $C_v$,calc | dev % | dev2 % | dev3 % | dev4 % | wt |
|---|---|---|---|---|---|---|---|---|---|
| 250.439 | 17.9966 | 16.086 | 46.681 | 46.275 | −0.87 | −0.90 | −0.13 | 2.17 | 1.087 |
| 256.303 | 22.3017 | 16.071 | 47.337 | 46.864 | −1.00 | −1.03 | −0.13 | 1.87 | 1.072 |
| 262.126 | 26.5329 | 16.056 | 47.918 | 47.460 | −0.96 | −0.99 | −0.13 | 1.64 | 1.059 |
| 267.928 | 30.7076 | 16.041 | 48.534 | 48.065 | −0.97 | −1.00 | −0.13 | 1.45 | 1.046 |
| 272.246 | 33.7881 | 16.029 | 48.910 | 48.521 | −0.79 | −0.83 | −0.12 | 1.27 | 1.038 |
| | | | | | | | | | |
| 214.213 | 2.9576 | 16.914 | 44.887 | 43.573 | −2.93 | −2.96 | −0.08 | 9.35 | 1.128 |
| 218.081 | 6.3375 | 16.898 | 44.881 | 43.896 | −2.19 | −2.22 | −0.08 | 4.67 | 1.129 |
| 221.935 | 9.6893 | 16.884 | 44.972 | 44.227 | −1.66 | −1.69 | −0.09 | 3.46 | 1.127 |
| 225.787 | 13.0630 | 16.872 | 45.159 | 44.567 | −1.31 | −1.35 | −0.09 | 2.75 | 1.122 |
| 228.421 | 15.3573 | 16.864 | 45.308 | 44.804 | −1.11 | −1.15 | −0.10 | 2.44 | 1.119 |
| | | | | | | | | | |
| 232.253 | 18.6722 | 16.852 | 45.703 | 45.152 | −1.21 | −1.24 | −0.10 | 2.05 | 1.109 |
| 236.060 | 21.9407 | 16.841 | 45.982 | 45.505 | −1.04 | −1.07 | −0.10 | 1.85 | 1.103 |
| 239.848 | 25.1666 | 16.830 | 46.364 | 45.862 | −1.08 | −1.12 | −0.10 | 1.68 | 1.094 |
| 243.612 | 28.3476 | 16.818 | 46.753 | 46.220 | −1.14 | −1.17 | −0.10 | 1.44 | 1.085 |
| 247.355 | 31.4871 | 16.807 | 47.074 | 46.582 | −1.05 | −1.08 | −0.10 | 1.31 | 1.078 |
| | | | | | | | | | |
| 189.118 | 2.6876 | 17.990 | 44.545 | 42.852 | −3.80 | −3.82 | −0.03 | 5.62 | 1.135 |
| 192.360 | 6.1935 | 17.974 | 44.210 | 43.070 | −2.58 | −2.60 | −0.03 | 2.75 | 1.144 |
| 195.613 | 9.6990 | 17.959 | 44.088 | 43.296 | −1.80 | −1.82 | −0.03 | 1.95 | 1.147 |
| 198.035 | 12.3416 | 17.950 | 44.273 | 43.471 | −1.81 | −1.83 | −0.04 | 1.71 | 1.143 |
| 201.281 | 15.8641 | 17.938 | 44.497 | 43.710 | −1.77 | −1.79 | −0.04 | 1.44 | 1.137 |
| | | | | | | | | | |
| 204.510 | 19.3399 | 17.927 | 44.706 | 43.954 | −1.68 | −1.71 | −0.05 | 1.37 | 1.132 |
| 207.717 | 22.7643 | 17.915 | 44.937 | 44.199 | −1.64 | −1.67 | −0.04 | 1.14 | 1.127 |
| 210.907 | 26.1421 | 17.903 | 45.208 | 44.447 | −1.68 | −1.70 | −0.04 | 0.94 | 1.120 |
| 214.081 | 29.4749 | 17.892 | 45.460 | 44.700 | −1.67 | −1.69 | −0.04 | 0.88 | 1.114 |
| 217.237 | 32.7623 | 17.881 | 45.744 | 44.955 | −1.73 | −1.75 | −0.04 | 0.80 | 1.107 |
| | | | | | | | | | |
| 168.242 | 5.8435 | 18.908 | 44.186 | 43.019 | −2.64 | −2.64 | 0.00 | 0.44 | 1.141 |
| 166.260 | 3.2642 | 18.919 | 44.154 | 42.935 | −2.76 | −2.76 | 0.00 | 0.09 | 1.142 |
| 169.533 | 7.5377 | 18.901 | 44.209 | 43.076 | −2.56 | −2.56 | 0.00 | 0.27 | 1.141 |
| 172.795 | 11.7968 | 18.885 | 44.170 | 43.230 | −2.13 | −2.13 | −0.01 | 0.43 | 1.143 |
| 176.058 | 16.0901 | 18.871 | 44.269 | 43.396 | −1.97 | −1.98 | −0.01 | 0.43 | 1.140 |
| | | | | | | | | | |
| 179.304 | 20.3225 | 18.857 | 44.433 | 43.568 | −1.95 | −1.95 | −0.01 | 0.33 | 1.137 |
| 182.531 | 24.4871 | 18.843 | 44.625 | 43.746 | −1.97 | −1.98 | −0.01 | 0.21 | 1.132 |
| 185.736 | 28.5823 | 18.830 | 44.825 | 43.930 | −2.00 | −2.00 | −0.01 | 0.21 | 1.127 |
| 188.925 | 32.6166 | 18.816 | 45.120 | 44.118 | −2.22 | −2.22 | 0.00 | 0.05 | 1.120 |
| 174.677 | 14.2771 | 18.877 | 44.830 | 43.325 | −3.36 | −3.36 | −0.01 | 0.48 | 0.000 |

Data from Roder [58] (continued)

| T K | P, expt MPa | $\rho$ $mol \cdot dm^{-3}$ | $C_v$,expt $J \cdot mol^{-1} \cdot K^{-1}$ | $C_v$,calc | dev % | dev2 % | dev3 % | dev4 % | wt |
|---|---|---|---|---|---|---|---|---|---|
| 166.750 | 3.8855 | 18.916 | 44.640 | 42.955 | -3.78 | -3.78 | 0.00 | 0.42 | 0.000 |
| 170.023 | 8.1541 | 18.898 | 44.520 | 43.098 | -3.20 | -3.20 | 0.00 | 0.34 | 0.000 |
| 173.301 | 12.4645 | 18.883 | 44.480 | 43.255 | -2.75 | -2.76 | -0.01 | 0.50 | 0.000 |
| 176.572 | 16.7633 | 18.868 | 44.500 | 43.421 | -2.42 | -2.43 | 0.00 | 0.23 | 0.000 |
| 179.822 | 20.9940 | 18.855 | 44.710 | 43.596 | -2.49 | -2.50 | -0.01 | 0.36 | 0.000 |
| 183.059 | 25.1643 | 18.841 | 44.810 | 43.776 | -2.31 | -2.31 | -0.01 | 0.24 | 0.000 |
| 186.280 | 29.2726 | 18.827 | 45.010 | 43.961 | -2.33 | -2.33 | 0.00 | 0.10 | 0.000 |
| 145.929 | 1.6026 | 19.657 | 44.784 | 43.688 | -2.45 | -2.44 | 0.01 | -5.19 | 1.122 |
| 148.039 | 4.7507 | 19.643 | 44.886 | 43.705 | -2.63 | -2.63 | 0.00 | -0.98 | 1.120 |
| 148.064 | 4.7897 | 19.643 | 44.975 | 43.705 | -2.82 | -2.82 | 0.00 | -0.83 | 1.118 |
| 151.130 | 9.4205 | 19.624 | 44.405 | 43.744 | -1.49 | -1.48 | 0.00 | -0.48 | 1.133 |
| 151.151 | 9.4530 | 19.624 | 44.387 | 43.745 | -1.45 | -1.44 | 0.00 | -0.42 | 1.133 |
| 154.270 | 14.2807 | 19.609 | 44.484 | 43.808 | -1.52 | -1.52 | 0.00 | -0.18 | 1.132 |
| 157.366 | 19.0182 | 19.594 | 44.659 | 43.881 | -1.74 | -1.74 | 0.00 | -0.19 | 1.128 |
| 160.437 | 23.6640 | 19.579 | 44.835 | 43.965 | -1.94 | -1.93 | 0.01 | -0.29 | 1.124 |
| 163.485 | 28.2233 | 19.565 | 44.933 | 44.060 | -1.94 | -1.94 | 0.01 | -0.24 | 1.122 |
| 165.894 | 31.7892 | 19.553 | 45.097 | 44.139 | -2.12 | -2.11 | 0.01 | -0.39 | 1.118 |
| 148.027 | 4.7424 | 19.643 | 44.778 | 43.704 | -2.40 | -2.39 | 0.01 | -1.27 | 1.123 |
| 151.152 | 9.4813 | 19.624 | 44.516 | 43.745 | -1.73 | -1.73 | 0.01 | -0.70 | 1.130 |
| 154.267 | 14.2771 | 19.609 | 44.552 | 43.808 | -1.67 | -1.67 | 0.00 | -0.20 | 1.130 |
| 157.364 | 19.0097 | 19.594 | 44.654 | 43.881 | -1.73 | -1.73 | 0.00 | -0.16 | 1.128 |
| 133.939 | 11.0190 | 20.270 | 45.146 | 45.048 | -0.22 | -0.21 | 0.00 | -0.44 | 1.110 |
| 136.801 | 16.1127 | 20.254 | 45.230 | 45.000 | -0.51 | -0.50 | 0.01 | -0.58 | 1.109 |
| 139.647 | 21.1154 | 20.239 | 45.247 | 44.969 | -0.61 | -0.60 | 0.01 | -0.48 | 1.109 |
| 142.469 | 26.0146 | 20.224 | 45.398 | 44.951 | -0.98 | -0.97 | 0.01 | -0.52 | 1.106 |
| 145.270 | 30.8177 | 20.209 | 45.462 | 44.946 | -1.14 | -1.12 | 0.02 | -0.61 | 1.105 |
| 112.401 | 7.4628 | 20.981 | 46.067 | 47.358 | 2.80 | 2.80 | 0.00 | -0.05 | 2.161 |
| 114.288 | 11.4471 | 20.969 | 46.203 | 47.272 | 2.31 | 2.32 | 0.00 | -0.54 | 2.156 |
| 116.167 | 15.3828 | 20.957 | 46.210 | 47.186 | 2.11 | 2.12 | 0.01 | -0.90 | 2.158 |
| 118.324 | 19.8576 | 20.944 | 46.282 | 47.090 | 1.75 | 1.76 | 0.01 | -0.93 | 2.156 |
| 120.762 | 24.8511 | 20.930 | 46.410 | 46.986 | 1.24 | 1.26 | 0.01 | -0.77 | 2.152 |
| 123.178 | 29.7379 | 20.915 | 46.427 | 46.884 | 0.98 | 1.01 | 0.02 | -1.00 | 2.153 |
| 110.494 | 3.6415 | 20.996 | 44.790 | 47.451 | 5.94 | 5.94 | 0.00 | 0.21 | 0.000 |
| 131.088 | 6.0623 | 20.289 | 45.990 | 45.119 | -1.89 | -1.89 | 0.00 | -0.42 | 0.000 |

**Data from Roder [58]** (continued)

Number of Points [58] 209

Using temperature and density:
AAD% = 1.32 BIAS% = −0.93 RMS% = 1.27

Using temperature and pressure:
AAD2% = 1.43 BIAS2% = −1.06 RMS2% = 1.35

Absolute Deviations:

Using temperature and density:
AAD = 0.66 BIAS = −0.46 RMS = 0.63 $J \cdot mol^{-1} \cdot K^{-1}$

Using temperature and pressure:
AAD2 = 0.72 BIAS2 = −0.53 RMS2 = 0.71 $J \cdot mol^{-1} \cdot K^{-1}$

Weighted Data:

Number of Points [58] 184

Using temperature and density:
AAD% = 1.16 BIAS% = −0.78 RMS% = 1.09

Using temperature and pressure:
AAD2% = 1.22 BIAS2% = −0.86 RMS2% = 1.10

Absolute Deviations:

Using temperature and density:
AAD = 0.56 BIAS = −0.36 RMS = 0.52 $J \cdot mol^{-1} \cdot K^{-1}$

Using temperature and pressure:
AAD2 = 0.60 BIAS2 = −0.41 RMS2 = 0.54 $J \cdot mol^{-1} \cdot K^{-1}$

**Data from Sengers [56]**
These data were calculated from the scaled equation of state of [56].

| T K | P, expt MPa | $\rho$ $mol \cdot dm^{-3}$ | $C_v$,expt $J \cdot mol^{-1} \cdot K^{-1}$ | $C_v$,calc | dev % | dev2 % | dev3 % | dev4 % | wt |
|---|---|---|---|---|---|---|---|---|---|
| 304.000 | 4.7347 | 4.900 | 73.000 | 66.516 | −8.88 | −9.02 | −0.34 | 0.02 | 0.348 |
| 304.000 | 4.7541 | 9.000 | 63.954 | 61.623 | −3.64 | −3.67 | 0.02 | −0.01 | 0.397 |
| 306.000 | 4.8928 | 5.000 | 68.563 | 65.496 | −4.47 | −4.39 | 0.23 | −0.02 | 0.371 |
| 306.000 | 4.9332 | 6.000 | 79.978 | 69.632 | −12.94 | −12.70 | 1.23 | −0.02 | 0.318 |
| 306.000 | 4.9385 | 6.500 | 84.432 | 70.487 | −16.52 | −16.49 | 0.57 | −0.01 | 0.301 |

Data from Sengers [56] (continued)

| T K | P, expt MPa | $\rho$ $mol \cdot dm^{-3}$ | $C_v$,expt $J \cdot mol^{-1} \cdot K^{-1}$ | $C_v$,calc | dev % | dev2 % | dev3 % | dev4 % | wt |
|---|---|---|---|---|---|---|---|---|---|
| 306.000 | 4.9410 | 6.900 | 84.532 | 70.366 | -16.76 | -16.65 | -1.28 | 0.02 | 0.301 |
| 306.000 | 4.9460 | 7.500 | 78.528 | 68.798 | -12.39 | -11.65 | -2.18 | 0.04 | 0.324 |
| 306.000 | 4.9565 | 8.000 | 71.456 | 66.428 | -7.04 | -6.62 | -0.70 | 0.03 | 0.356 |
| 306.000 | 5.0510 | 9.000 | 61.270 | 60.495 | -1.27 | -1.21 | -0.06 | 0.02 | 0.415 |
| 310.000 | 5.1910 | 5.000 | 63.745 | 62.925 | -1.29 | -1.25 | 0.13 | -0.02 | 0.399 |
| 310.000 | 5.2983 | 6.000 | 67.131 | 65.914 | -1.81 | -1.79 | 0.15 | -0.01 | 0.379 |
| 310.000 | 5.3334 | 6.500 | 67.639 | 66.447 | -1.76 | -1.77 | -0.13 | 0.01 | 0.376 |
| 310.000 | 5.3593 | 6.900 | 67.274 | 66.271 | -1.49 | -1.44 | -0.44 | 0.04 | 0.378 |
| 310.000 | 5.4035 | 7.500 | 65.575 | 65.001 | -0.88 | -0.72 | -0.45 | 0.05 | 0.388 |
| 310.000 | 5.4553 | 8.000 | 63.478 | 63.192 | -0.45 | -0.39 | -0.12 | 0.02 | 0.400 |
| 310.000 | 5.6658 | 9.000 | 59.094 | 58.780 | -0.53 | -0.52 | -0.01 | 0.01 | 0.430 |
| 315.000 | 5.5560 | 5.000 | 61.205 | 60.677 | -0.86 | -0.86 | 0.02 | 0.00 | 0.415 |
| 315.000 | 5.7488 | 6.000 | 62.916 | 62.686 | -0.37 | -0.38 | -0.10 | 0.02 | 0.404 |
| 315.000 | 5.8268 | 6.500 | 63.053 | 62.963 | -0.14 | -0.14 | -0.13 | 0.02 | 0.403 |
| 315.000 | 5.8884 | 6.900 | 62.778 | 62.761 | -0.03 | -0.01 | -0.13 | 0.02 | 0.405 |
| 315.000 | 5.9914 | 7.500 | 61.806 | 61.779 | -0.04 | -0.04 | -0.01 | 0.00 | 0.411 |
| 315.000 | 6.1006 | 8.000 | 60.640 | 60.476 | -0.27 | -0.32 | 0.13 | -0.04 | 0.419 |
| 315.000 | 6.4576 | 9.000 | 58.035 | 57.396 | -1.10 | -1.09 | -0.02 | 0.02 | 0.438 |
| 325.000 | 6.2726 | 5.000 | 59.115 | 58.246 | -1.47 | -1.47 | 0.01 | 0.00 | 0.430 |
| 325.000 | 6.6434 | 6.000 | 59.953 | 59.205 | -1.25 | -1.25 | -0.11 | 0.03 | 0.424 |
| 325.000 | 6.8161 | 6.500 | 59.983 | 59.248 | -1.23 | -1.23 | -0.03 | 0.01 | 0.424 |
| 325.000 | 6.9579 | 6.900 | 59.825 | 59.062 | -1.28 | -1.28 | 0.03 | -0.01 | 0.425 |
| 325.000 | 7.1928 | 7.500 | 59.332 | 58.465 | -1.46 | -1.48 | 0.11 | -0.05 | 0.428 |
| 325.000 | 7.4265 | 8.000 | 58.749 | 57.762 | -1.68 | -1.70 | 0.11 | -0.06 | 0.433 |
| 325.000 | 8.0855 | 9.000 | 57.397 | 56.189 | -2.10 | -2.07 | -0.14 | 0.13 | 0.443 |

Number of Points [56] 30

Using temperature and density:
AAD% = 3.51 BIAS% = -3.51 RMS% = 4.82

Using temperature and pressure:
AAD2% = 3.45 BIAS2% = -3.45 RMS2% = 4.75

**Data from Sengers [56]** (continued)

Absolute Deviations:

Using temperature and density:
AAD = 2.64 BIAS = −2.64 RMS = 4.01 $J{\cdot}mol^{-1}{\cdot}K^{-1}$

Using temperature and pressure:
AAD2 = 2.59 BIAS2 = −2.59 RMS2 = 3.95 $J{\cdot}mol^{-1}{\cdot}K^{-1}$

Weighted Data:

Number of Points [88] 30

Using temperature and density:
AAD% = 3.51 BIAS% = −3.51 RMS% = 4.82

Using temperature and pressure:
AAD2% = 3.45 BIAS2% = −3.45 RMS2% = 4.75

Absolute Deviations:

Using temperature and density:
AAD = 2.64 BIAS = −2.64 RMS = 4.01 $J{\cdot}mol^{-1}{\cdot}K^{-1}$

Using temperature and pressure:
AAD2 = 2.59 BIAS2 = −2.59 RMS2 = 3.95 $J{\cdot}mol^{-1}{\cdot}K^{-1}$

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Overall Results: N = 239

AAD% = 1.60 BIAS% = −1.26 RMS% = 2.25
AAD2% = 1.69 BIAS2% = −1.36 RMS2% = 2.25
AAD = 0.90 BIAS = −0.73 RMS = 1.70 $J{\cdot}mol^{-1}{\cdot}K^{-1}$
AAD2 = 0.96 BIAS2 = −0.79 RMS2 = 1.69 $J{\cdot}mol^{-1}{\cdot}K^{-1}$

Weighted Data: N = 214

AAD% = 1.49 BIAS% = −1.16 RMS% = 2.28
AAD2% = 1.53 BIAS2% = −1.22 RMS2% = 2.24
AAD = 0.85 BIAS = −0.68 RMS = 1.76 $J{\cdot}mol^{-1}{\cdot}K^{-1}$
AAD2 = 0.88 BIAS2 = −0.72 RMS2 = 1.74 $J{\cdot}mol^{-1}{\cdot}K^{-1}$

## Table 8. ISOBARIC SPECIFIC HEAT CAPACITY

Data from Bier et al. [34]
Data extrapolated to zero pressure have been included in table 4.

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $C_p$, expt $J \cdot mol^{-1} \cdot K^{-1}$ | $C_p$, calc $J \cdot mol^{-1} \cdot K^{-1}$ | dev % | wt |
|---|---|---|---|---|---|---|
| 283.150 | 0.100 | 0.04 | 50.877 | 51.120 | 0.48 | 1.27 |
| 298.150 | 0.100 | 0.04 | 52.772 | 52.845 | 0.14 | 1.22 |
| 305.350 | 0.100 | 0.04 | 53.554 | 53.699 | 0.27 | 1.20 |
| 323.150 | 0.100 | 0.04 | 55.749 | 55.867 | 0.21 | 1.16 |
| 348.150 | 0.100 | 0.03 | 58.365 | 59.008 | 1.10 | 1.11 |
| 373.150 | 0.100 | 0.03 | 61.372 | 62.208 | 1.36 | 1.05 |
| 398.150 | 0.100 | 0.03 | 64.709 | 65.422 | 1.10 | 1.00 |
| 423.150 | 0.100 | 0.03 | 67.897 | 68.614 | 1.06 | 0.95 |
| 473.150 | 0.100 | 0.03 | 74.181 | 74.842 | 0.89 | 0.87 |
| 283.150 | 0.200 | 0.09 | 51.298 | 51.591 | 0.57 | 1.26 |
| 298.150 | 0.200 | 0.08 | 53.133 | 53.239 | 0.20 | 1.21 |
| 305.350 | 0.200 | 0.08 | 53.944 | 54.062 | 0.22 | 1.20 |
| 323.150 | 0.200 | 0.08 | 55.989 | 56.167 | 0.32 | 1.15 |
| 348.150 | 0.200 | 0.07 | 58.575 | 59.243 | 1.14 | 1.10 |
| 373.150 | 0.200 | 0.06 | 61.582 | 62.398 | 1.33 | 1.05 |
| 398.150 | 0.200 | 0.06 | 64.860 | 65.579 | 1.11 | 1.00 |
| 423.150 | 0.200 | 0.06 | 68.017 | 68.745 | 1.07 | 0.95 |
| 473.150 | 0.200 | 0.05 | 74.271 | 74.938 | 0.90 | 0.87 |
| 283.150 | 0.500 | 0.22 | 52.802 | 53.155 | 0.67 | 1.22 |
| 298.150 | 0.500 | 0.21 | 54.426 | 54.522 | 0.18 | 1.19 |
| 305.350 | 0.500 | 0.20 | 55.087 | 55.236 | 0.27 | 1.17 |
| 323.150 | 0.500 | 0.19 | 56.951 | 57.124 | 0.30 | 1.13 |
| 348.150 | 0.500 | 0.18 | 59.327 | 59.984 | 1.11 | 1.09 |
| 373.150 | 0.500 | 0.16 | 62.214 | 62.989 | 1.25 | 1.04 |
| 398.150 | 0.500 | 0.15 | 65.311 | 66.062 | 1.15 | 0.99 |
| 423.150 | 0.500 | 0.14 | 68.408 | 69.148 | 1.08 | 0.94 |
| 473.150 | 0.500 | 0.13 | 74.632 | 75.232 | 0.80 | 0.87 |
| 283.150 | 1.000 | 0.47 | 56.019 | 56.440 | 0.75 | 1.15 |
| 298.150 | 1.000 | 0.44 | 56.951 | 57.088 | 0.24 | 1.13 |
| 305.350 | 1.000 | 0.42 | 57.252 | 57.542 | 0.51 | 1.13 |
| 323.150 | 1.000 | 0.40 | 58.786 | 58.941 | 0.26 | 1.10 |
| 348.150 | 1.000 | 0.36 | 60.680 | 61.346 | 1.10 | 1.06 |
| 373.150 | 1.000 | 0.33 | 63.356 | 64.051 | 1.10 | 1.02 |
| 398.150 | 1.000 | 0.31 | 66.093 | 66.915 | 1.24 | 0.98 |
| 423.150 | 1.000 | 0.29 | 69.220 | 69.851 | 0.91 | 0.93 |

Table 8. ISOBARIC SPECIFIC HEAT CAPACITY (continued)

Data from Bier et al. [34] (continued)

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $C_p$, expt $J \cdot mol^{-1} \cdot K^{-1}$ | $C_p$, calc $J \cdot mol^{-1} \cdot K^{-1}$ | dev % | wt |
|---|---|---|---|---|---|---|
| 473.150 | 1.000 | 0.26 | 75.174 | 75.735 | 0.75 | 0.86 |
| 283.150 | 2.000 | 1.07 | 67.446 | 68.265 | 1.21 | 0.96 |
| 298.150 | 2.000 | 0.97 | 64.679 | 64.905 | 0.35 | 1.00 |
| 305.350 | 2.000 | 0.93 | 63.988 | 64.207 | 0.34 | 1.01 |
| 323.150 | 2.000 | 0.85 | 63.537 | 63.731 | 0.31 | 1.02 |
| 348.150 | 2.000 | 0.76 | 63.988 | 64.659 | 1.05 | 1.01 |
| 373.150 | 2.000 | 0.70 | 65.912 | 66.506 | 0.90 | 0.98 |
| 398.150 | 2.000 | 0.64 | 68.047 | 68.820 | 1.14 | 0.95 |
| 423.150 | 2.000 | 0.60 | 70.783 | 71.380 | 0.84 | 0.91 |
| 473.150 | 2.000 | 0.52 | 76.256 | 76.794 | 0.71 | 0.85 |
| 298.150 | 3.000 | 1.69 | 81.638 | 81.980 | 0.42 | 0.79 |
| 305.350 | 3.000 | 1.58 | 76.857 | 76.858 | 0.00 | 0.84 |
| 323.150 | 3.000 | 1.40 | 70.844 | 71.125 | 0.40 | 0.91 |
| 348.150 | 3.000 | 1.22 | 68.498 | 69.068 | 0.83 | 0.94 |
| 373.150 | 3.000 | 1.09 | 68.919 | 69.511 | 0.86 | 0.94 |
| 398.150 | 3.000 | 1.00 | 70.272 | 71.030 | 1.08 | 0.92 |
| 423.150 | 3.000 | 0.92 | 72.527 | 73.090 | 0.78 | 0.89 |
| 473.150 | 3.000 | 0.80 | 77.308 | 77.924 | 0.80 | 0.84 |
| 323.150 | 3.200 | 1.52 | 72.978 | 73.118 | 0.19 | 0.88 |
| 473.150 | 3.500 | 0.94 | 77.940 | 78.515 | 0.74 | 0.83 |
| 373.150 | 3.600 | 1.35 | 70.783 | 71.644 | 1.22 | 0.91 |
| 298.150 | 3.900 | 2.76 | 153.564 | 145.911 | -4.98 | 0.42 |
| 305.350 | 4.000 | 2.55 | 114.685 | 113.037 | -1.44 | 0.56 |
| 323.150 | 4.000 | 2.08 | 84.615 | 84.104 | -0.60 | 0.76 |
| 348.150 | 4.000 | 1.74 | 74.783 | 75.158 | 0.50 | 0.86 |
| 373.150 | 4.000 | 1.53 | 72.407 | 73.229 | 1.14 | 0.89 |
| 398.150 | 4.000 | 1.37 | 72.828 | 73.598 | 1.06 | 0.89 |
| 423.150 | 4.000 | 1.26 | 74.452 | 74.996 | 0.73 | 0.87 |
| 473.150 | 4.000 | 1.08 | 78.541 | 79.124 | 0.74 | 0.82 |
| 305.350 | 4.600 | 3.66 | 276.428 | 231.009 | -16.43 | 0.00 |
| 307.150 | 4.880 | 4.33 | 401.607 | 375.105 | -6.60 | 0.00 |
| 313.150 | 4.880 | 3.45 | 157.985 | 156.226 | -1.11 | 0.00 |
| 316.150 | 4.880 | 3.23 | 134.410 | 133.141 | -0.94 | 0.48 |
| 323.150 | 4.880 | 2.89 | 108.069 | 107.514 | -0.51 | 0.60 |
| 348.150 | 4.880 | 2.27 | 82.059 | 82.686 | 0.76 | 0.79 |

Table 8. **ISOBARIC SPECIFIC HEAT CAPACITY** (continued)

Data from Bier et al. [34] (continued)

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $C_p$, expt $J \cdot mol^{-1} \cdot K^{-1}$ | $C_p$, calc $J \cdot mol^{-1} \cdot K^{-1}$ | dev % | wt |
|---|---|---|---|---|---|---|
| 373.150 | 4.880 | 1.95 | 76.587 | 77.254 | 0.87 | 0.84 |
| 398.150 | 4.880 | 1.73 | 75.354 | 76.194 | 1.11 | 0.86 |
| 423.150 | 4.880 | 1.57 | 76.106 | 76.846 | 0.97 | 0.85 |
| 473.150 | 4.880 | 1.34 | 79.564 | 80.235 | 0.84 | 0.81 |
| 305.350 | 5.200 | 9.77 | 273.842 | 265.777 | −2.95 | 0.24 |
| 305.350 | 6.000 | 10.70 | 162.615 | 163.743 | 0.69 | 0.40 |
| 309.150 | 6.000 | 9.91 | 204.292 | 206.650 | 1.15 | 0.32 |
| 313.150 | 6.000 | 8.57 | 341.859 | 346.649 | 1.40 | 0.19 |
| 314.650 | 6.000 | 7.76 | 427.527 | 453.251 | 6.02 | 0.15 |
| 316.150 | 6.000 | 6.83 | 458.318 | 482.826 | 5.35 | 0.14 |
| 317.150 | 6.000 | 6.29 | 429.541 | 435.906 | 1.48 | 0.15 |
| 319.150 | 6.000 | 5.51 | 326.343 | 321.170 | −1.59 | 0.20 |
| 323.150 | 6.000 | 4.65 | 206.757 | 203.897 | −1.38 | 0.31 |
| 348.150 | 6.000 | 3.09 | 96.403 | 97.012 | 0.63 | 0.67 |
| 373.150 | 6.000 | 2.54 | 82.992 | 83.652 | 0.80 | 0.78 |
| 398.150 | 6.000 | 2.21 | 79.293 | 80.001 | 0.89 | 0.81 |
| 423.150 | 6.000 | 1.98 | 78.722 | 79.439 | 0.91 | 0.82 |
| 473.150 | 6.000 | 1.67 | 81.067 | 81.719 | 0.80 | 0.80 |
| 323.150 | 6.300 | 5.44 | 258.958 | 259.961 | 0.39 | 0.25 |
| 323.150 | 6.600 | 6.39 | 296.575 | 302.408 | 1.97 | 0.22 |
| 323.150 | 6.800 | 7.03 | 288.065 | 299.435 | 3.95 | 0.22 |
| 305.350 | 7.000 | 11.30 | 132.997 | 134.008 | 0.76 | 0.49 |
| 313.150 | 7.000 | 10.12 | 168.599 | 169.568 | 0.57 | 0.38 |
| 316.150 | 7.000 | 9.52 | 198.007 | 194.701 | −1.67 | 0.33 |
| 320.150 | 7.000 | 8.51 | 243.231 | 245.202 | 0.81 | 0.27 |
| 323.150 | 7.000 | 7.59 | 272.699 | 276.469 | 1.38 | 0.24 |
| 325.150 | 7.000 | 6.97 | 266.655 | 274.122 | 2.80 | 0.24 |
| 329.150 | 7.000 | 5.96 | 225.400 | 228.663 | 1.45 | 0.29 |
| 339.150 | 7.000 | 4.61 | 141.176 | 144.588 | 2.42 | 0.46 |
| 348.150 | 7.000 | 4.01 | 115.376 | 116.310 | 0.81 | 0.56 |
| 373.150 | 7.000 | 3.14 | 90.148 | 90.754 | 0.67 | 0.72 |
| 398.150 | 7.000 | 2.68 | 82.962 | 83.891 | 1.12 | 0.78 |
| 423.150 | 7.000 | 2.38 | 81.127 | 81.970 | 1.04 | 0.80 |
| 473.150 | 7.000 | 1.98 | 82.360 | 83.100 | 0.90 | 0.78 |
| 305.350 | 8.000 | 11.70 | 120.608 | 120.476 | −0.11 | 0.53 |

Table 8. ISOBARIC SPECIFIC HEAT CAPACITY (continued)

Data from Bier et al. [34] (continued)

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $C_p$, expt $J \cdot mol^{-1} \cdot K^{-1}$ | $C_p$, calc $J \cdot mol^{-1} \cdot K^{-1}$ | dev % | wt |
|---|---|---|---|---|---|---|
| 323.150 | 8.000 | 9.24 | 180.386 | 178.320 | -1.15 | 0.36 |
| 329.150 | 8.000 | 8.03 | 198.879 | 204.911 | 3.03 | 0.32 |
| 339.150 | 8.000 | 6.15 | 176.958 | 179.212 | 1.27 | 0.36 |
| 348.150 | 8.000 | 5.13 | 138.891 | 140.046 | 0.83 | 0.46 |
| 373.150 | 8.000 | 3.80 | 98.177 | 99.067 | 0.91 | 0.66 |
| 398.150 | 8.000 | 3.18 | 87.171 | 88.193 | 1.17 | 0.74 |
| 423.150 | 8.000 | 2.78 | 83.563 | 84.675 | 1.33 | 0.77 |
| 473.150 | 8.000 | 2.29 | 83.743 | 84.522 | 0.93 | 0.77 |
| 348.150 | 9.200 | 6.60 | 152.332 | 155.166 | 1.86 | 0.42 |
| 305.350 | 10.000 | 12.27 | 106.115 | 106.941 | 0.78 | 0.61 |
| 323.150 | 10.000 | 10.60 | 126.352 | 128.085 | 1.37 | 0.51 |
| 348.150 | 10.000 | 7.47 | 149.475 | 150.700 | 0.82 | 0.43 |
| 373.150 | 10.000 | 5.29 | 114.264 | 115.578 | 1.15 | 0.57 |
| 398.150 | 10.000 | 4.25 | 96.433 | 97.303 | 0.90 | 0.67 |
| 423.150 | 10.000 | 3.65 | 89.066 | 90.349 | 1.44 | 0.73 |
| 473.150 | 10.000 | 2.93 | 86.690 | 87.422 | 0.84 | 0.75 |

Number of Points [34] 121

AAD% = 1.25 BIAS% = 0.56 RMS% = 2.06

Absolute Deviations:

AAD = 2.29 BIAS = 0.52 RMS = 6.17 $J \cdot mol^{-1} \cdot K^{-1}$

Weighted Data:

Number of Points [34] 118

AAD% = 1.08 BIAS% = 0.78 RMS% = 1.18

Absolute Deviations:

AAD = 1.72 BIAS = 1.16 RMS = 3.80 $J \cdot mol^{-1} \cdot K^{-1}$

Table 8. **ISOBARIC SPECIFIC HEAT CAPACITY** (continued)

**Data from Furtado [35]**
Data extrapolated to zero pressure have been included in table 4.

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $C_p$, expt $J \cdot mol^{-1} \cdot K^{-1}$ | $C_p$, calc $J \cdot mol^{-1} \cdot K^{-1}$ | dev % | wt |
|---|---|---|---|---|---|---|
| 99.817 | 1.724 | 21.35 | 68.451 | 70.000 | 2.26 | 18.35 |
| 110.928 | 1.724 | 20.95 | 68.694 | 70.743 | 2.98 | 18.39 |
| 118.372 | 1.724 | 20.68 | 68.826 | 70.513 | 2.45 | 18.41 |
| 122.039 | 1.724 | 20.55 | 68.938 | 70.355 | 2.06 | 18.40 |
| 133.150 | 1.724 | 20.14 | 69.200 | 69.974 | 1.12 | 18.39 |
| 144.261 | 1.724 | 19.72 | 69.819 | 69.918 | 0.14 | 18.27 |
| 155.372 | 1.724 | 19.30 | 70.700 | 70.234 | −0.66 | 18.08 |
| 166.483 | 1.724 | 18.87 | 71.468 | 70.898 | −0.80 | 17.92 |
| 177.594 | 1.724 | 18.43 | 72.462 | 71.882 | −0.80 | 17.69 |
| 186.872 | 1.724 | 18.05 | 73.343 | 72.940 | −0.55 | 17.50 |
| 188.706 | 1.724 | 17.97 | 73.474 | 73.175 | −0.41 | 17.47 |
| 199.817 | 1.724 | 17.49 | 74.992 | 74.788 | −0.27 | 17.13 |
| 210.928 | 1.724 | 16.99 | 76.754 | 76.770 | 0.02 | 16.75 |
| 222.039 | 1.724 | 16.47 | 78.891 | 79.216 | 0.41 | 16.31 |
| 233.150 | 1.724 | 15.90 | 82.021 | 82.305 | 0.35 | 15.70 |
| 241.761 | 1.724 | 15.43 | 85.301 | 85.354 | 0.06 | 15.10 |
| 244.261 | 1.724 | 15.28 | 85.938 | 86.388 | 0.52 | 14.99 |
| 249.817 | 1.724 | 14.95 | 89.331 | 89.013 | −0.36 | 14.42 |
| 252.594 | 1.724 | 14.77 | 91.336 | 90.537 | −0.88 | 14.11 |
| 255.372 | 1.724 | 14.59 | 94.110 | 92.242 | −1.99 | 13.69 |
| 258.150 | 1.724 | 14.40 | 98.759 | 94.172 | −4.64 | 0.00 |
| 260.928 | 1.724 | 1.05 | 74.355 | 74.605 | 0.34 | 17.33 |
| 262.594 | 1.724 | 1.04 | 72.724 | 72.927 | 0.28 | 17.72 |
| 265.372 | 1.724 | 1.01 | 70.213 | 70.656 | 0.63 | 18.36 |
| 266.483 | 1.724 | 1.00 | 69.444 | 69.895 | 0.65 | 18.56 |
| 277.594 | 1.724 | 0.92 | 65.171 | 65.109 | −0.09 | 19.79 |
| 282.706 | 1.724 | 0.89 | 64.046 | 63.939 | −0.17 | 20.14 |
| 288.706 | 1.724 | 0.86 | 63.278 | 63.023 | −0.40 | 20.39 |
| 299.817 | 1.724 | 0.80 | 62.397 | 62.157 | −0.38 | 20.68 |
| 305.261 | 1.724 | 0.78 | 62.153 | 61.996 | −0.25 | 20.76 |
| 310.928 | 1.724 | 0.76 | 62.022 | 61.959 | −0.10 | 20.81 |
| 322.039 | 1.724 | 0.72 | 62.284 | 62.176 | −0.17 | 20.73 |
| 324.817 | 1.724 | 0.71 | 62.397 | 62.279 | −0.19 | 20.69 |
| 333.150 | 1.724 | 0.69 | 62.772 | 62.675 | −0.15 | 20.57 |
| 344.261 | 1.724 | 0.66 | 63.652 | 63.372 | −0.44 | 20.29 |

Data from Furtado [35] (continued)

| T<br>K | P<br>MPa | $\rho$<br>$mol \cdot dm^{-3}$ | $C_p$, expt<br>$J \cdot mol^{-1} \cdot K^{-1}$ | $C_p$, calc<br>$J \cdot mol^{-1} \cdot K^{-1}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|
| 355.372 | 1.724 | 0.63 | 64.533 | 64.215 | −0.49 | 20.01 |
| 366.483 | 1.724 | 0.61 | 65.302 | 65.166 | −0.21 | 19.78 |
| 366.817 | 1.724 | 0.61 | 65.414 | 65.196 | −0.33 | 19.75 |
| 377.594 | 1.724 | 0.59 | 66.183 | 66.200 | 0.03 | 19.52 |
| 277.594 | 2.827 | 13.00 | 115.365 | 113.353 | −1.74 | 11.18 |
| 278.706 | 2.827 | 12.89 | 116.134 | 115.851 | −0.24 | 11.10 |
| 279.817 | 2.827 | 12.77 | 118.645 | 118.684 | 0.03 | 10.87 |
| 233.150 | 3.447 | 16.01 | 81.777 | 81.180 | −0.73 | 15.74 |
| 241.761 | 3.447 | 15.56 | 84.420 | 83.812 | −0.72 | 15.26 |
| 244.261 | 3.447 | 15.43 | 85.301 | 84.684 | −0.72 | 15.10 |
| 255.372 | 3.447 | 14.78 | 89.200 | 89.398 | 0.22 | 14.45 |
| 266.483 | 3.447 | 14.04 | 96.884 | 96.382 | −0.52 | 13.31 |
| 277.594 | 3.447 | 13.15 | 109.705 | 108.860 | −0.77 | 11.75 |
| 282.706 | 3.447 | 12.64 | 119.264 | 119.504 | 0.20 | 10.81 |
| 285.928 | 3.447 | 12.26 | 128.823 | 130.320 | 1.16 | 10.01 |
| 287.594 | 3.447 | 12.03 | 136.883 | 138.412 | 1.12 | 9.42 |
| 288.706 | 3.447 | 11.87 | 142.806 | 145.437 | 1.84 | 9.03 |
| 290.372 | 3.447 | 2.43 | 131.597 | 135.639 | 3.07 | 0.00 |
| 291.483 | 3.447 | 2.37 | 122.282 | 126.846 | 3.73 | 0.00 |
| 292.594 | 3.447 | 2.32 | 115.628 | 119.929 | 3.72 | 0.00 |
| 294.261 | 3.447 | 2.26 | 107.193 | 111.905 | 4.40 | 0.00 |
| 297.039 | 3.447 | 2.16 | 98.515 | 102.442 | 3.99 | 0.00 |
| 299.817 | 3.447 | 2.08 | 98.384 | 95.883 | −2.54 | 0.00 |
| 305.261 | 3.447 | 1.96 | 87.063 | 87.522 | 0.53 | 14.82 |
| 310.928 | 3.447 | 1.85 | 82.283 | 82.181 | −0.12 | 15.68 |
| 322.039 | 3.447 | 1.69 | 76.248 | 76.318 | 0.09 | 16.93 |
| 324.817 | 3.447 | 1.66 | 75.611 | 75.390 | −0.29 | 17.07 |
| 333.150 | 3.447 | 1.57 | 73.718 | 73.368 | −0.47 | 17.51 |
| 344.261 | 3.447 | 1.47 | 72.218 | 71.853 | −0.51 | 17.88 |
| 355.372 | 3.447 | 1.39 | 71.468 | 71.164 | −0.43 | 18.07 |
| 366.483 | 3.447 | 1.32 | 71.468 | 70.998 | −0.66 | 18.07 |
| 366.817 | 3.447 | 1.32 | 71.468 | 70.999 | −0.66 | 18.07 |
| 282.706 | 4.137 | 12.83 | 111.598 | 112.962 | 1.22 | 11.56 |
| 288.706 | 4.137 | 12.17 | 129.591 | 128.775 | −0.63 | 9.95 |
| 294.261 | 4.137 | 11.35 | 161.661 | 163.215 | 0.96 | 0.00 |

Data from Furtado [35] (continued)

| T<br>K | P<br>MPa | $\rho$<br>$mol \cdot dm^{-3}$ | $C_p$, expt<br>$J \cdot mol^{-1} \cdot K^{-1}$ | $C_p$, calc<br>$J \cdot mol^{-1} \cdot K^{-1}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|
| 295.928 | 4.137 | 11.01 | 179.280 | 186.430 | 3.99 | 0.00 |
| 297.039 | 4.137 | 10.73 | 195.006 | 212.731 | 9.09 | 0.00 |
| 298.706 | 4.137 | 3.24 | 220.797 | 213.515 | -3.30 | 0.00 |
| 299.817 | 4.137 | 3.12 | 189.983 | 183.009 | -3.67 | 0.00 |
| 299.817 | 4.137 | 3.12 | 189.851 | 183.009 | -3.60 | 0.00 |
| 300.650 | 4.137 | 3.04 | 168.596 | 167.607 | -0.59 | 0.00 |
| 301.206 | 4.137 | 3.00 | 157.763 | 159.463 | 1.08 | 0.00 |
| 302.594 | 4.137 | 2.90 | 137.895 | 143.930 | 4.38 | 0.00 |
| 305.261 | 4.137 | 2.74 | 122.413 | 124.965 | 2.08 | 0.00 |
| 310.928 | 4.137 | 2.51 | 104.682 | 104.283 | -0.38 | 0.00 |
| 322.039 | 4.137 | 2.21 | 89.200 | 87.649 | -1.74 | 14.47 |
| 324.817 | 4.137 | 2.16 | 86.932 | 85.372 | -1.79 | 14.85 |
| 298.428 | 4.668 | 10.94 | 174.875 | 177.215 | 1.34 | 0.00 |
| 299.817 | 4.668 | 10.63 | 198.792 | 200.852 | 1.04 | 0.00 |
| 300.650 | 4.668 | 10.40 | 221.434 | 222.710 | 0.58 | 0.00 |
| 301.206 | 4.668 | 10.23 | 240.309 | 243.530 | 1.34 | 0.00 |
| 302.039 | 4.668 | 9.92 | 279.313 | 294.684 | 5.50 | 0.00 |
| 302.594 | 4.668 | 9.66 | 320.830 | 362.143 | 12.88 | 0.00 |
| 302.872 | 4.668 | 9.49 | 352.281 | 423.859 | 20.32 | 0.00 |
| 303.150 | 4.668 | 9.29 | 401.351 | 538.763 | 34.24 | 0.00 |
| 303.983 | 4.668 | 4.25 | 425.249 | 464.788 | 9.30 | 0.00 |
| 304.261 | 4.668 | 4.15 | 352.281 | 401.223 | 13.89 | 0.00 |
| 305.261 | 4.668 | 3.90 | 299.444 | 286.082 | -4.46 | 0.00 |
| 305.372 | 4.668 | 3.88 | 293.146 | 278.404 | -5.03 | 0.00 |
| 305.928 | 4.668 | 3.78 | 261.695 | 247.358 | -5.48 | 0.00 |
| 306.761 | 4.668 | 3.65 | 223.946 | 215.605 | -3.72 | 0.00 |
| 308.150 | 4.668 | 3.49 | 184.941 | 182.545 | -1.30 | 0.00 |
| 309.539 | 4.668 | 3.35 | 162.299 | 161.738 | -0.35 | 0.00 |
| 310.928 | 4.668 | 3.24 | 148.466 | 147.287 | -0.79 | 0.00 |
| 310.928 | 4.668 | 3.24 | 148.841 | 147.287 | -1.04 | 0.00 |
| 313.706 | 4.668 | 3.07 | 130.847 | 128.345 | -1.91 | 0.00 |
| 316.483 | 4.668 | 2.92 | 120.276 | 116.382 | -3.24 | 10.73 |
| 322.039 | 4.668 | 2.71 | 119.020 | 102.019 | -14.28 | 0.00 |
| 324.817 | 4.668 | 2.62 | 97.878 | 97.372 | -0.52 | 13.19 |
| 282.706 | 4.916 | 13.01 | 106.069 | 107.749 | 1.58 | 12.16 |

Table 8. ISOBARIC SPECIFIC HEAT CAPACITY (continued)

Data from Furtado [35] (continued)

| T K | P MPa | $\rho$ mol•dm$^{-3}$ | $C_p$, expt J•mol$^{-1}$•K$^{-1}$ | $C_p$, calc J•mol$^{-1}$•K$^{-1}$ | dev % | wt |
|---|---|---|---|---|---|---|
| 283.150 | 4.916 | 12.97 | 106.687 | 108.377 | 1.58 | 12.09 |
| 288.706 | 4.916 | 12.44 | 119.151 | 118.397 | -0.63 | 10.83 |
| 294.261 | 4.916 | 11.78 | 135.496 | 135.755 | 0.19 | 0.00 |
| 297.039 | 4.916 | 11.37 | 149.085 | 150.704 | 1.09 | 0.00 |
| 298.261 | 4.916 | 11.17 | 156.638 | 159.972 | 2.13 | 0.00 |
| 299.817 | 4.916 | 10.87 | 177.893 | 175.987 | -1.07 | 0.00 |
| 300.928 | 4.916 | 10.63 | 193.131 | 192.271 | -0.45 | 0.00 |
| 302.039 | 4.916 | 10.35 | 217.404 | 216.130 | -0.59 | 0.00 |
| 302.594 | 4.916 | 10.19 | 231.237 | 233.099 | 0.81 | 0.00 |
| 303.150 | 4.916 | 10.01 | 246.475 | 256.079 | 3.90 | 0.00 |
| 303.706 | 4.916 | 9.80 | 274.403 | 289.517 | 5.51 | 0.00 |
| 304.261 | 4.916 | 9.55 | 566.162 | 344.108 | -39.22 | 0.00 |
| 304.817 | 4.916 | 9.22 | 691.967 | 455.469 | -34.18 | 0.00 |
| 305.261 | 4.916 | 8.83 | 1006.499 | 708.886 | -29.57 | 0.00 |
| 305.261 | 4.916 | 8.83 | 1132.323 | 708.886 | -37.40 | 0.00 |
| 306.483 | 4.916 | 4.87 | 553.585 | 726.302 | 31.20 | 0.00 |
| 307.039 | 4.916 | 4.57 | 488.152 | 480.476 | -1.57 | 0.00 |
| 307.594 | 4.916 | 4.37 | 375.560 | 375.203 | -0.10 | 0.00 |
| 308.150 | 4.916 | 4.22 | 332.395 | 315.085 | -5.21 | 0.00 |
| 309.261 | 4.916 | 3.99 | 261.826 | 247.744 | -5.38 | 0.00 |
| 310.928 | 4.916 | 3.75 | 200.048 | 196.828 | -1.61 | 0.00 |
| 313.706 | 4.916 | 3.47 | 158.138 | 155.823 | -1.46 | 0.00 |
| 316.483 | 4.916 | 3.27 | 135.496 | 134.367 | -0.83 | 9.53 |
| 322.039 | 4.916 | 2.98 | 108.824 | 111.862 | 2.79 | 11.86 |
| 324.817 | 4.916 | 2.87 | 101.908 | 105.194 | 3.22 | 12.67 |
| 327.594 | 4.916 | 2.77 | 102.545 | 100.124 | -2.36 | 12.59 |
| 333.150 | 4.916 | 2.61 | 95.366 | 92.952 | -2.53 | 13.54 |
| 322.039 | 5.171 | 3.30 | 125.805 | 125.444 | -0.29 | 10.26 |
| 324.817 | 5.171 | 3.15 | 116.883 | 115.501 | -1.18 | 11.04 |
| 333.150 | 5.171 | 2.84 | 99.265 | 98.534 | -0.74 | 13.01 |
| 344.261 | 5.171 | 2.55 | 88.825 | 88.036 | -0.89 | 14.54 |
| 355.372 | 5.171 | 2.34 | 83.033 | 82.757 | -0.33 | 15.56 |
| 366.483 | 5.171 | 2.18 | 79.266 | 79.852 | 0.74 | 16.30 |
| 366.817 | 5.171 | 2.17 | 79.134 | 79.788 | 0.83 | 16.32 |
| 377.594 | 5.171 | 2.04 | 76.754 | 78.240 | 1.94 | 16.83 |

Data from Furtado [35] (continued)

| T<br>K | P<br>MPa | $\rho$<br>$mol \cdot dm^{-3}$ | $C_p$, expt<br>$J \cdot mol^{-1} \cdot K^{-1}$ | $C_p$, calc<br>$J \cdot mol^{-1} \cdot K^{-1}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|
| 310.372 | 5.647 | 8.75 | 408.886 | 384.757 | −5.90 | 3.16 |
| 310.650 | 5.647 | 8.59 | 444.124 | 419.568 | −5.53 | 2.91 |
| 310.928 | 5.647 | 8.42 | 483.129 | 461.106 | −4.56 | 2.67 |
| 311.206 | 5.647 | 8.23 | 530.924 | 509.575 | −4.02 | 2.43 |
| 311.483 | 5.647 | 8.01 | 577.483 | 563.150 | −2.48 | 2.23 |
| 311.761 | 5.647 | 7.78 | 626.553 | 617.416 | −1.46 | 2.06 |
| 312.039 | 5.647 | 7.53 | 666.813 | 664.009 | −0.42 | 1.94 |
| 312.150 | 5.647 | 7.42 | 680.646 | 678.428 | −0.33 | 1.90 |
| 312.261 | 5.647 | 7.32 | 689.455 | 689.753 | 0.04 | 1.87 |
| 312.428 | 5.647 | 7.16 | 693.223 | 700.368 | 1.03 | 1.86 |
| 312.594 | 5.647 | 7.00 | 694.479 | 703.048 | 1.23 | 1.86 |
| 312.706 | 5.647 | 6.90 | 693.223 | 700.590 | 1.06 | 1.86 |
| 312.817 | 5.647 | 6.80 | 691.967 | 695.040 | 0.44 | 1.87 |
| 312.928 | 5.647 | 6.70 | 679.390 | 686.714 | 1.08 | 1.90 |
| 313.150 | 5.647 | 6.51 | 644.153 | 663.239 | 2.96 | 2.00 |
| 313.428 | 5.647 | 6.29 | 595.101 | 625.100 | 5.04 | 2.17 |
| 313.706 | 5.647 | 6.10 | 552.310 | 582.501 | 5.47 | 2.34 |
| 313.983 | 5.647 | 5.92 | 514.580 | 539.840 | 4.91 | 2.51 |
| 314.261 | 5.647 | 5.77 | 485.640 | 499.394 | 2.83 | 2.66 |
| 110.928 | 6.895 | 21.03 | 68.563 | 70.542 | 2.89 | 18.42 |
| 118.372 | 6.895 | 20.76 | 68.694 | 70.297 | 2.33 | 18.44 |
| 122.039 | 6.895 | 20.63 | 68.826 | 70.126 | 1.89 | 18.43 |
| 133.150 | 6.895 | 20.23 | 69.069 | 69.688 | 0.90 | 18.42 |
| 144.261 | 6.895 | 19.83 | 69.707 | 69.555 | −0.22 | 18.30 |
| 155.372 | 6.895 | 19.42 | 70.456 | 69.774 | −0.97 | 18.14 |
| 166.483 | 6.895 | 19.00 | 71.206 | 70.317 | −1.25 | 17.98 |
| 177.594 | 6.895 | 18.57 | 71.843 | 71.146 | −0.97 | 17.85 |
| 186.872 | 6.895 | 18.21 | 72.462 | 72.040 | −0.58 | 17.71 |
| 188.706 | 6.895 | 18.14 | 73.230 | 72.237 | −1.36 | 17.53 |
| 199.817 | 6.895 | 17.69 | 73.980 | 73.581 | −0.54 | 17.37 |
| 210.928 | 6.895 | 17.22 | 75.367 | 75.189 | −0.24 | 17.06 |
| 222.039 | 6.895 | 16.73 | 76.998 | 77.094 | 0.13 | 16.71 |
| 233.150 | 6.895 | 16.22 | 79.266 | 79.359 | 0.12 | 16.24 |
| 241.761 | 6.895 | 15.81 | 81.140 | 81.425 | 0.35 | 15.87 |
| 244.261 | 6.895 | 15.68 | 82.415 | 82.088 | −0.40 | 15.63 |

Table 8. ISOBARIC SPECIFIC HEAT CAPACITY (continued)

Data from Furtado [35] (continued)

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $C_p$, expt $J \cdot mol^{-1} \cdot K^{-1}$ | $C_p$, calc $J \cdot mol^{-1} \cdot K^{-1}$ | dev % | wt |
|---|---|---|---|---|---|---|
| 255.372 | 6.895 | 15.10 | 85.676 | 85.465 | -0.25 | 15.04 |
| 266.483 | 6.895 | 14.47 | 89.462 | 89.820 | 0.40 | 14.41 |
| 277.594 | 6.895 | 13.76 | 95.741 | 95.819 | 0.08 | 13.47 |
| 282.706 | 6.895 | 13.39 | 98.890 | 99.489 | 0.61 | 13.04 |
| 288.706 | 6.895 | 12.93 | 104.925 | 104.987 | 0.06 | 12.29 |
| 299.817 | 6.895 | 11.90 | 111.842 | 121.514 | 8.65 | 11.54 |
| 305.261 | 6.895 | 11.26 | 137.145 | 135.726 | -1.03 | 9.41 |
| 310.928 | 6.895 | 10.42 | 158.531 | 160.391 | 1.17 | 8.14 |
| 314.261 | 6.895 | 9.80 | 176.394 | 184.806 | 4.77 | 7.32 |
| 316.483 | 6.895 | 9.31 | 200.160 | 208.818 | 4.33 | 6.45 |
| 317.594 | 6.895 | 9.03 | 222.690 | 223.893 | 0.54 | 5.80 |
| 319.261 | 6.895 | 8.56 | 254.272 | 249.719 | -1.79 | 5.08 |
| 320.372 | 6.895 | 8.22 | 270.616 | 267.042 | -1.32 | 4.77 |
| 320.928 | 6.895 | 8.04 | 277.795 | 274.756 | -1.09 | 4.65 |
| 322.039 | 6.895 | 7.67 | 284.974 | 286.155 | 0.41 | 4.53 |
| 322.706 | 6.895 | 7.45 | 285.592 | 289.482 | 1.36 | 4.52 |
| 323.706 | 6.895 | 7.12 | 285.218 | 288.823 | 1.26 | 4.53 |
| 324.817 | 6.895 | 6.78 | 281.825 | 280.858 | -0.34 | 4.58 |
| 324.817 | 6.895 | 6.78 | 282.200 | 280.858 | -0.48 | 4.57 |
| 325.372 | 6.895 | 6.62 | 277.158 | 274.703 | -0.89 | 4.66 |
| 326.483 | 6.895 | 6.31 | 258.302 | 259.775 | 0.57 | 5.00 |
| 327.594 | 6.895 | 6.04 | 240.927 | 243.422 | 1.04 | 5.36 |
| 330.372 | 6.895 | 5.50 | 200.554 | 205.666 | 2.55 | 6.44 |
| 333.150 | 6.895 | 5.08 | 176.506 | 177.273 | 0.43 | 7.31 |
| 335.928 | 6.895 | 4.76 | 158.906 | 156.965 | -1.22 | 8.13 |
| 338.706 | 6.895 | 4.51 | 143.686 | 142.236 | -1.01 | 8.99 |
| 344.261 | 6.895 | 4.11 | 123.294 | 122.839 | -0.37 | 10.47 |
| 355.372 | 6.895 | 3.59 | 104.419 | 103.016 | -1.34 | 12.37 |
| 366.483 | 6.895 | 3.24 | 94.485 | 93.454 | -1.09 | 13.67 |
| 366.817 | 6.895 | 3.23 | 94.242 | 93.248 | -1.05 | 13.71 |
| 282.706 | 8.618 | 13.66 | 94.860 | 95.084 | 0.24 | 13.60 |
| 288.706 | 8.618 | 13.25 | 98.890 | 98.839 | -0.05 | 13.04 |
| 299.817 | 8.618 | 12.39 | 108.205 | 108.388 | 0.17 | 11.92 |
| 305.261 | 8.618 | 11.91 | 114.616 | 114.963 | 0.30 | 11.26 |
| 310.928 | 8.618 | 11.34 | 123.425 | 123.825 | 0.32 | 10.46 |

Data from Furtado [35] (continued)

| T<br>K | P<br>MPa | $\rho$<br>$mol \cdot dm^{-3}$ | $C_p$, expt<br>$J \cdot mol^{-1} \cdot K^{-1}$ | $C_p$, calc<br>$J \cdot mol^{-1} \cdot K^{-1}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|
| 316.483 | 8.618 | 10.70 | 134.615 | 135.283 | 0.50 | 9.59 |
| 322.039 | 8.618 | 9.96 | 149.965 | 150.444 | 0.32 | 8.61 |
| 324.817 | 8.618 | 9.54 | 160.162 | 159.443 | −0.45 | 8.06 |
| 327.594 | 8.618 | 9.09 | 168.203 | 168.747 | 0.32 | 7.68 |
| 330.372 | 8.618 | 8.61 | 176.131 | 177.027 | 0.51 | 7.33 |
| 333.150 | 8.618 | 8.12 | 180.536 | 182.443 | 1.06 | 7.15 |
| 334.817 | 8.618 | 7.83 | 181.173 | 183.672 | 1.38 | 7.13 |
| 337.039 | 8.618 | 7.44 | 180.292 | 182.695 | 1.33 | 7.16 |
| 338.706 | 8.618 | 7.17 | 177.649 | 180.131 | 1.40 | 7.27 |
| 341.483 | 8.618 | 6.74 | 170.227 | 173.186 | 1.74 | 7.59 |
| 344.261 | 8.618 | 6.35 | 161.793 | 164.321 | 1.56 | 7.98 |
| 349.817 | 8.618 | 5.72 | 148.466 | 146.134 | −1.57 | 8.70 |
| 355.372 | 8.618 | 5.23 | 133.996 | 131.199 | −2.09 | 9.64 |
| 366.483 | 8.618 | 4.54 | 114.241 | 111.748 | −2.18 | 11.31 |
| 366.817 | 8.618 | 4.53 | 113.978 | 111.324 | −2.33 | 11.33 |
| 377.594 | 8.618 | 4.08 | 101.664 | 100.887 | −0.76 | 12.71 |
| 241.761 | 10.342 | 16.02 | 79.641 | 79.646 | 0.01 | 16.17 |
| 244.261 | 10.342 | 15.90 | 80.147 | 80.181 | 0.04 | 16.07 |
| 255.372 | 10.342 | 15.37 | 82.789 | 82.816 | 0.03 | 15.56 |
| 266.483 | 10.342 | 14.80 | 85.938 | 85.970 | 0.04 | 15.00 |
| 277.594 | 10.342 | 14.19 | 89.837 | 89.844 | 0.01 | 14.35 |
| 282.706 | 10.342 | 13.89 | 91.842 | 91.953 | 0.12 | 14.04 |
| 288.706 | 10.342 | 13.52 | 94.729 | 94.774 | 0.05 | 13.62 |
| 299.817 | 10.342 | 12.76 | 101.664 | 101.322 | −0.34 | 12.69 |
| 305.261 | 10.342 | 12.35 | 105.675 | 105.370 | −0.29 | 12.21 |
| 310.928 | 10.342 | 11.89 | 110.342 | 110.345 | 0.00 | 11.70 |
| 316.483 | 10.342 | 11.40 | 115.628 | 116.102 | 0.41 | 11.16 |
| 322.039 | 10.342 | 10.87 | 122.169 | 122.821 | 0.53 | 10.57 |
| 324.817 | 10.342 | 10.58 | 126.443 | 126.535 | 0.07 | 10.21 |
| 327.594 | 10.342 | 10.28 | 129.966 | 130.436 | 0.36 | 9.93 |
| 333.150 | 10.342 | 9.64 | 137.895 | 138.348 | 0.33 | 9.36 |
| 338.706 | 10.342 | 8.96 | 144.811 | 144.874 | 0.04 | 8.92 |
| 344.261 | 10.342 | 8.26 | 150.846 | 147.807 | −2.01 | 8.56 |
| 344.928 | 10.342 | 8.18 | 151.727 | 147.853 | −2.55 | 8.51 |
| 345.928 | 10.342 | 8.06 | 151.484 | 147.797 | −2.43 | 8.53 |

Table 8. ISOBARIC SPECIFIC HEAT CAPACITY (continued)

Data from Furtado [35] (continued)

| T<br>K | P<br>MPa | $\rho$<br>$mol \cdot dm^{-3}$ | $C_p$, expt<br>$J \cdot mol^{-1} \cdot K^{-1}$ | $C_p$, calc<br>$J \cdot mol^{-1} \cdot K^{-1}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|
| 348.150 | 10.342 | 7.79 | 151.109 | 147.147 | −2.62 | 8.55 |
| 349.817 | 10.342 | 7.59 | 149.216 | 146.216 | −2.01 | 8.66 |
| 352.594 | 10.342 | 7.28 | 144.811 | 143.925 | −0.61 | 8.92 |
| 355.372 | 10.342 | 6.99 | 140.912 | 140.894 | −0.01 | 9.17 |
| 360.928 | 10.342 | 6.46 | 132.347 | 133.557 | 0.91 | 9.76 |
| 366.483 | 10.342 | 6.01 | 126.817 | 125.894 | −0.73 | 10.19 |
| 366.817 | 10.342 | 5.98 | 126.443 | 125.448 | −0.79 | 10.22 |
| 377.594 | 10.342 | 5.30 | 116.752 | 112.944 | −3.26 | 11.07 |
| 324.817 | 12.066 | 11.22 | 113.735 | 112.861 | −0.77 | 11.35 |
| 333.150 | 12.066 | 10.48 | 120.276 | 119.676 | −0.50 | 10.73 |
| 338.706 | 12.066 | 9.96 | 124.681 | 124.094 | −0.47 | 10.36 |
| 344.261 | 12.066 | 9.42 | 129.704 | 127.726 | −1.53 | 9.96 |
| 347.039 | 12.066 | 9.14 | 131.597 | 129.023 | −1.96 | 9.81 |
| 349.817 | 12.066 | 8.87 | 132.740 | 129.884 | −2.15 | 9.73 |
| 351.761 | 12.066 | 8.68 | 133.115 | 130.210 | −2.18 | 9.70 |
| 352.317 | 12.066 | 8.62 | 133.228 | 130.261 | −2.23 | 9.69 |
| 355.372 | 12.066 | 8.33 | 132.347 | 130.215 | −1.61 | 9.76 |
| 358.150 | 12.066 | 8.07 | 130.341 | 129.715 | −0.48 | 9.91 |
| 360.928 | 12.066 | 7.81 | 128.336 | 128.824 | 0.38 | 10.06 |
| 366.483 | 12.066 | 7.33 | 124.043 | 126.072 | 1.64 | 10.41 |
| 366.817 | 12.066 | 7.31 | 123.800 | 125.873 | 1.67 | 10.43 |
| 377.594 | 12.066 | 6.51 | 117.258 | 118.365 | 0.94 | 11.02 |
| 110.928 | 13.790 | 21.12 | 68.188 | 70.300 | 3.10 | 18.52 |
| 118.372 | 13.790 | 20.86 | 68.451 | 70.042 | 2.32 | 18.51 |
| 122.039 | 13.790 | 20.73 | 68.563 | 69.857 | 1.89 | 18.50 |
| 133.150 | 13.790 | 20.34 | 68.938 | 69.356 | 0.61 | 18.46 |
| 144.261 | 13.790 | 19.95 | 69.444 | 69.138 | −0.44 | 18.37 |
| 155.372 | 13.790 | 19.56 | 70.081 | 69.251 | −1.18 | 18.24 |
| 166.483 | 13.790 | 19.16 | 70.588 | 69.667 | −1.30 | 18.14 |
| 177.594 | 13.790 | 18.76 | 71.094 | 70.340 | −1.06 | 18.03 |
| 186.872 | 13.790 | 18.41 | 71.581 | 71.075 | −0.71 | 17.93 |
| 188.706 | 13.790 | 18.34 | 71.712 | 71.237 | −0.66 | 17.90 |
| 199.817 | 13.790 | 17.92 | 72.724 | 72.336 | −0.53 | 17.67 |
| 210.928 | 13.790 | 17.49 | 73.980 | 73.625 | −0.48 | 17.38 |
| 222.039 | 13.790 | 17.04 | 75.367 | 75.107 | −0.34 | 17.07 |

Table 8. ISOBARIC SPECIFIC HEAT CAPACITY (continued)

Data from Furtado [35] (continued)

| T<br>K | P<br>MPa | $\rho$<br>$mol \cdot dm^{-3}$ | $C_p$, expt<br>$J \cdot mol^{-1} \cdot K^{-1}$ | $C_p$, calc<br>$J \cdot mol^{-1} \cdot K^{-1}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|
| 233.150 | 13.790 | 16.58 | 77.129 | 76.794 | −0.43 | 16.69 |
| 241.761 | 13.790 | 16.21 | 78.628 | 78.255 | −0.47 | 16.38 |
| 244.261 | 13.790 | 16.10 | 79.003 | 78.707 | −0.37 | 16.30 |
| 255.372 | 13.790 | 15.60 | 81.140 | 80.881 | −0.32 | 15.88 |
| 266.483 | 13.790 | 15.08 | 83.408 | 83.367 | −0.05 | 15.46 |
| 277.594 | 13.790 | 14.53 | 86.313 | 86.236 | −0.09 | 14.94 |
| 282.706 | 13.790 | 14.27 | 87.700 | 87.710 | 0.01 | 14.71 |
| 288.706 | 13.790 | 13.94 | 89.706 | 89.585 | −0.13 | 14.38 |
| 299.817 | 13.790 | 13.31 | 92.967 | 93.539 | 0.61 | 13.88 |
| 305.261 | 13.790 | 12.99 | 94.860 | 95.737 | 0.92 | 13.60 |
| 310.928 | 13.790 | 12.63 | 97.878 | 98.226 | 0.36 | 13.19 |
| 322.039 | 13.790 | 11.88 | 103.801 | 103.700 | −0.10 | 12.44 |
| 324.817 | 13.790 | 11.69 | 105.431 | 105.178 | −0.24 | 12.24 |
| 333.150 | 13.790 | 11.06 | 110.455 | 109.769 | −0.62 | 11.69 |
| 344.261 | 13.790 | 10.18 | 116.621 | 115.636 | −0.84 | 11.07 |
| 355.372 | 13.790 | 9.26 | 120.276 | 119.450 | −0.69 | 10.74 |
| 366.483 | 13.790 | 8.36 | 120.651 | 119.675 | −0.81 | 10.71 |
| 366.817 | 13.790 | 8.34 | 118.383 | 119.628 | 1.05 | 10.91 |
| 377.594 | 13.790 | 7.55 | 112.610 | 116.826 | 3.74 | 11.47 |

Number of Points [35] 299

AAD% = 2.22 BIAS% = −0.11 RMS% = 5.59

Absolute Deviations:

AAD = 8.32 BIAS = −2.27 RMS = 38.37 $J \cdot mol^{-1} \cdot K^{-1}$

Weighted Data:

Number of Points [35] 241

AAD% = 1.09 BIAS% = −0.02 RMS% = 1.63

Absolute Deviations:

AAD = 2.19 BIAS = 0.12 RMS = 5.15 $J \cdot mol^{-1} \cdot K^{-1}$

Table 8. ISOBARIC SPECIFIC HEAT CAPACITY (continued)

Data from Miyazaki et al. [59]

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $C_p$, expt $J \cdot mol^{-1} \cdot K^{-1}$ | $C_p$, calc $J \cdot mol^{-1} \cdot K^{-1}$ | dev % | wt |
|---|---|---|---|---|---|---|
| 298.150 | 4.473 | 10.82 | 217.702 | 191.188 | −12.18 | 0.00 |
| 303.150 | 4.473 | 3.61 | 278.142 | 246.560 | −11.35 | 0.00 |
| 308.150 | 4.473 | 3.11 | 148.543 | 144.723 | −2.57 | 0.00 |
| 313.150 | 4.473 | 2.83 | 119.376 | 116.386 | −2.50 | 0.00 |
| 318.150 | 4.473 | 2.63 | 105.243 | 102.582 | −2.53 | 0.00 |
| 323.150 | 4.473 | 2.48 | 97.123 | 94.384 | −2.82 | 0.00 |
| 298.150 | 5.167 | 11.35 | 152.151 | 148.856 | −2.17 | 0.00 |
| 303.150 | 5.167 | 10.37 | 213.793 | 203.509 | −4.81 | 0.00 |
| 308.150 | 5.167 | 6.90 | 1533.539 | 1851.331 | 20.72 | 0.00 |
| 313.150 | 5.167 | 4.09 | 231.534 | 222.399 | −3.95 | 0.00 |
| 318.150 | 5.167 | 3.55 | 157.864 | 147.546 | −6.54 | 0.00 |
| 323.150 | 5.167 | 3.23 | 121.780 | 120.825 | −0.78 | 0.00 |
| 298.150 | 5.514 | 11.53 | 143.431 | 138.885 | −3.17 | 0.00 |
| 303.150 | 5.514 | 10.72 | 177.410 | 171.804 | −3.16 | 0.00 |
| 308.150 | 5.514 | 9.39 | 333.770 | 290.290 | −13.03 | 0.00 |
| 313.150 | 5.514 | 5.52 | 490.131 | 503.995 | 2.83 | 0.00 |
| 318.150 | 5.514 | 4.24 | 222.814 | 201.370 | −9.62 | 0.00 |
| 323.150 | 5.514 | 3.72 | 147.340 | 144.594 | −1.86 | 0.00 |
| 298.150 | 6.203 | 11.83 | 132.005 | 126.231 | −4.37 | 0.00 |
| 303.150 | 6.203 | 11.19 | 145.837 | 143.568 | −1.56 | 0.00 |
| 308.150 | 6.203 | 10.35 | 183.724 | 175.799 | −4.31 | 0.00 |
| 313.150 | 6.203 | 9.09 | 291.974 | 262.642 | −10.05 | 0.00 |
| 318.150 | 6.203 | 6.80 | 411.951 | 411.102 | −0.21 | 0.00 |
| 323.150 | 6.203 | 5.17 | 240.250 | 240.972 | 0.30 | 0.00 |
| 298.150 | 13.001 | 13.30 | 97.124 | 94.188 | −3.02 | 0.00 |
| 303.150 | 13.001 | 13.00 | 97.244 | 96.374 | −0.90 | 0.00 |
| 308.150 | 13.001 | 12.67 | 102.537 | 98.760 | −3.68 | 0.00 |
| 313.150 | 13.001 | 12.34 | 105.544 | 101.359 | −3.96 | 0.00 |
| 318.150 | 13.001 | 11.98 | 108.250 | 104.174 | −3.77 | 0.00 |
| 323.150 | 13.001 | 11.61 | 111.860 | 107.192 | −4.17 | 0.00 |
| 307.150 | 5.167 | 8.69 | 703.624 | 592.019 | −15.86 | 0.00 |
| 307.550 | 5.167 | 8.23 | 1169.700 | 928.052 | −20.66 | 0.00 |
| 307.950 | 5.167 | 7.43 | 1900.386 | 1684.962 | −11.34 | 0.00 |
| 308.550 | 5.167 | 6.03 | 932.151 | 1369.314 | 46.90 | 0.00 |
| 309.150 | 5.167 | 5.34 | 439.013 | 748.959 | 70.60 | 0.00 |

Data from Miyazaki et al. [59] (continued)

| T<br>K | P<br>MPa | $\rho$<br>$mol \cdot dm^{-3}$ | $C_p$, expt<br>$J \cdot mol^{-1} \cdot K^{-1}$ | $C_p$, calc<br>$J \cdot mol^{-1} \cdot K^{-1}$ | dev<br>% | wt |
|---|---|---|---|---|---|---|
| 309.150 | 5.514 | 8.93 | 439.013 | 374.520 | -14.69 | 0.00 |
| 310.150 | 5.514 | 8.27 | 565.305 | 562.179 | -0.55 | 0.00 |
| 311.250 | 5.514 | 7.13 | 869.006 | 843.507 | -2.93 | 0.00 |
| 312.150 | 5.514 | 6.19 | 685.582 | 722.845 | 5.44 | 0.00 |
| 315.150 | 5.514 | 4.79 | 339.784 | 301.005 | -11.41 | 0.00 |
| 315.150 | 6.203 | 8.31 | 363.840 | 344.229 | -5.39 | 0.00 |
| 316.550 | 6.203 | 7.62 | 408.944 | 404.779 | -1.02 | 0.00 |
| 317.450 | 6.203 | 7.15 | 420.972 | 419.082 | -0.45 | 0.00 |
| 318.150 | 6.203 | 6.80 | 414.958 | 411.102 | -0.93 | 0.00 |
| 320.150 | 6.203 | 5.96 | 342.791 | 338.457 | -1.26 | 0.00 |

Number of Points [59] 45

AAD% = 7.92 BIAS% = -1.39 RMS% = 14.64

Absolute Deviations:

AAD = 46.67 BIAS = 2.97 RMS = 107.38 $J \cdot mol^{-1} \cdot K^{-1}$

Overall Results: N = 465
AAD% = 2.52 BIAS% = -0.06 RMS% = 6.50
AAD = 10.46 BIAS = -1.04 RMS = 45.56 $J \cdot mol^{-1} \cdot K^{-1}$

Weighted Data: N = 359
AAD% = 1.09 BIAS% = 0.25 RMS% = 1.55
AAD = 2.04 BIAS = 0.46 RMS = 4.78 $J \cdot mol^{-1} \cdot K^{-1}$

Table 9. SPECIFIC HEAT CAPACITY OF THE SATURATED LIQUID

Data from Roder [58]

| T<br>K | $\rho$<br>$mol \cdot dm^{-3}$ | $C_{\sigma L}$, expt<br>$J \cdot mol^{-1} \cdot K^{-1}$ | $C_{\sigma L}$, calc<br>$J \cdot mol^{-1} \cdot K^{-1}$ | dev<br>% | wt |
|---|---|---|---|---|---|
| 93.712 | 21.547 | 68.270 | 68.482 | 0.31 | 0.0058 |
| 97.045 | 21.429 | 68.300 | 69.515 | 1.78 | 0.0055 |
| 98.095 | 21.391 | 68.440 | 69.750 | 1.91 | 0.0054 |
| 100.322 | 21.311 | 68.450 | 70.135 | 2.46 | 0.0052 |
| 101.482 | 21.270 | 68.440 | 70.283 | 2.69 | 0.0052 |
| 103.565 | 21.195 | 68.460 | 70.478 | 2.95 | 0.0050 |
| 104.828 | 21.149 | 68.530 | 70.559 | 2.96 | 0.0049 |
| 106.788 | 21.079 | 68.350 | 70.638 | 3.35 | 0.0048 |
| 108.142 | 21.030 | 68.600 | 70.667 | 3.01 | 0.0047 |
| 108.287 | 21.024 | 68.600 | 70.669 | 3.02 | 0.0047 |
| 110.531 | 20.943 | 68.660 | 70.677 | 2.94 | 0.0046 |
| 110.862 | 20.931 | 68.720 | 70.675 | 2.84 | 0.0045 |
| 113.180 | 20.847 | 68.730 | 70.644 | 2.78 | 0.0044 |
| 115.018 | 20.780 | 68.710 | 70.603 | 2.75 | 0.0043 |
| 115.760 | 20.753 | 68.820 | 70.584 | 2.56 | 0.0043 |
| 118.003 | 20.670 | 68.840 | 70.518 | 2.44 | 0.0041 |
| 119.454 | 20.617 | 68.810 | 70.473 | 2.42 | 0.0041 |
| 120.599 | 20.575 | 68.930 | 70.436 | 2.19 | 0.0040 |
| 122.751 | 20.496 | 68.970 | 70.368 | 2.03 | 0.0039 |
| 123.782 | 20.458 | 68.950 | 70.337 | 2.01 | 0.0039 |
| 124.252 | 20.440 | 68.990 | 70.323 | 1.93 | 0.0039 |
| 127.423 | 20.323 | 69.060 | 70.236 | 1.70 | 0.0037 |
| 129.007 | 20.264 | 69.220 | 70.198 | 1.41 | 0.0036 |
| 132.037 | 20.151 | 69.290 | 70.141 | 1.23 | 0.0035 |
| 133.712 | 20.088 | 69.390 | 70.119 | 1.05 | 0.0035 |
| 136.389 | 19.988 | 69.500 | 70.097 | 0.86 | 0.0034 |
| 138.362 | 19.914 | 69.620 | 70.093 | 0.68 | 0.0033 |
| 141.365 | 19.800 | 69.640 | 70.105 | 0.67 | 0.0032 |
| 142.426 | 19.760 | 69.790 | 70.115 | 0.47 | 0.0032 |
| 142.604 | 19.753 | 69.780 | 70.117 | 0.48 | 0.0031 |
| 146.274 | 19.613 | 69.980 | 70.177 | 0.28 | 0.0030 |
| 149.205 | 19.501 | 70.130 | 70.250 | 0.17 | 0.0029 |
| 151.131 | 19.426 | 70.220 | 70.311 | 0.13 | 0.0029 |
| 153.786 | 19.324 | 70.370 | 70.410 | 0.06 | 0.0028 |
| 155.932 | 19.240 | 70.570 | 70.503 | −0.10 | 0.0028 |

Data from Roder [58] (continued)

| T<br>K | $\rho$<br>$mol \cdot dm^{-3}$ | $C_{\sigma L}$, expt<br>$J \cdot mol^{-1} \cdot K^{-1}$ | $C_{\sigma L}$, calc<br>$J \cdot mol^{-1} \cdot K^{-1}$ | dev<br>% | wt |
|---|---|---|---|---|---|
| 158.321 | 19.147 | 70.760 | 70.620 | −0.20 | 0.0027 |
| 160.684 | 19.054 | 70.840 | 70.750 | −0.13 | 0.0026 |
| 160.830 | 19.049 | 70.870 | 70.758 | −0.16 | 0.0026 |
| 161.771 | 19.011 | 71.030 | 70.814 | −0.30 | 0.0026 |
| 162.290 | 18.991 | 70.950 | 70.846 | −0.15 | 0.0013 |
| 162.575 | 18.980 | 70.960 | 70.863 | −0.14 | 0.0013 |
| 165.384 | 18.868 | 71.220 | 71.048 | −0.24 | 0.0013 |
| 165.464 | 18.865 | 71.230 | 71.054 | −0.25 | 0.0013 |
| 170.038 | 18.682 | 71.720 | 71.395 | −0.45 | 0.0012 |
| 170.061 | 18.681 | 71.690 | 71.397 | −0.41 | 0.0012 |
| 172.446 | 18.585 | 71.910 | 71.595 | −0.44 | 0.0012 |
| 174.613 | 18.497 | 72.080 | 71.786 | −0.41 | 0.0012 |
| 177.535 | 18.378 | 72.340 | 72.061 | −0.39 | 0.0011 |
| 179.126 | 18.312 | 72.520 | 72.219 | −0.41 | 0.0011 |
| 182.564 | 18.170 | 72.900 | 72.582 | −0.44 | 0.0011 |
| 183.603 | 18.127 | 73.000 | 72.696 | −0.42 | 0.0011 |
| 186.415 | 18.009 | 73.420 | 73.020 | −0.54 | 0.0010 |
| 187.540 | 17.961 | 73.460 | 73.155 | −0.41 | 0.0010 |
| 187.745 | 17.953 | 73.370 | 73.180 | −0.26 | 0.0010 |
| 190.995 | 17.814 | 73.940 | 73.589 | −0.47 | 0.0010 |
| 192.556 | 17.747 | 74.060 | 73.794 | −0.36 | 0.0010 |
| 195.533 | 17.619 | 74.490 | 74.203 | −0.38 | 0.0010 |
| 197.332 | 17.540 | 74.750 | 74.462 | −0.39 | 0.0010 |
| 200.029 | 17.422 | 75.140 | 74.865 | −0.37 | 0.0009 |
| 202.057 | 17.332 | 75.400 | 75.181 | −0.29 | 0.0009 |
| 202.127 | 17.328 | 75.450 | 75.192 | −0.34 | 0.0009 |
| 204.490 | 17.222 | 75.900 | 75.576 | −0.43 | 0.0009 |
| 204.866 | 17.206 | 75.760 | 75.638 | −0.16 | 0.0009 |
| 206.723 | 17.121 | 76.150 | 75.953 | −0.26 | 0.0009 |
| 208.850 | 17.024 | 76.430 | 76.326 | −0.14 | 0.0009 |
| 209.372 | 17.000 | 76.560 | 76.420 | −0.18 | 0.0009 |
| 211.363 | 16.908 | 76.970 | 76.785 | −0.24 | 0.0008 |
| 213.835 | 16.793 | 77.410 | 77.256 | −0.20 | 0.0008 |
| 215.978 | 16.691 | 77.870 | 77.681 | −0.24 | 0.0008 |
| 218.259 | 16.582 | 78.370 | 78.151 | −0.28 | 0.0008 |

Table 9. SPECIFIC HEAT CAPACITY OF THE SATURATED LIQUID (continued)

Data from Roder [58] (continued)

| T K | $\rho$ $mol \cdot dm^{-3}$ | $C_{\sigma L}$, expt $J \cdot mol^{-1} \cdot K^{-1}$ | $C_{\sigma L}$, calc $J \cdot mol^{-1} \cdot K^{-1}$ | dev % | wt |
|---|---|---|---|---|---|
| 220.536 | 16.472 | 78.870 | 78.640 | −0.29 | 0.0008 |
| 222.647 | 16.369 | 79.130 | 79.110 | −0.02 | 0.0008 |
| 225.058 | 16.249 | 79.790 | 79.670 | −0.15 | 0.0008 |
| 229.541 | 16.023 | 80.790 | 80.778 | −0.02 | 0.0007 |
| 231.507 | 15.921 | 81.410 | 81.293 | −0.14 | 0.0006 |
| 233.988 | 15.791 | 81.970 | 81.972 | 0.00 | 0.0006 |
| 236.091 | 15.679 | 82.600 | 82.573 | −0.03 | 0.0005 |
| 238.894 | 15.527 | 83.410 | 83.415 | 0.01 | 0.0005 |
| 240.641 | 15.431 | 84.060 | 83.965 | −0.11 | 0.0005 |
| 243.704 | 15.259 | 84.900 | 84.979 | 0.09 | 0.0005 |
| 244.814 | 15.196 | 85.260 | 85.364 | 0.12 | 0.0005 |
| 247.726 | 15.027 | 86.410 | 86.419 | 0.01 | 0.0005 |
| 248.469 | 14.983 | 86.560 | 86.700 | 0.16 | 0.0005 |
| 252.414 | 14.745 | 88.290 | 88.279 | −0.01 | 0.0005 |
| 257.059 | 14.453 | 90.390 | 90.356 | −0.04 | 0.0004 |
| 260.020 | 14.260 | 91.870 | 91.828 | −0.05 | 0.0004 |
| 260.744 | 14.211 | 92.040 | 92.208 | 0.18 | 0.0004 |
| 261.383 | 14.168 | 92.320 | 92.550 | 0.25 | 0.0004 |
| 264.754 | 13.935 | 94.600 | 94.476 | −0.13 | 0.0004 |
| 269.456 | 13.592 | 97.750 | 97.569 | −0.19 | 0.0004 |
| 274.128 | 13.227 | 101.370 | 101.264 | −0.10 | 0.0004 |
| 274.528 | 13.194 | 101.810 | 101.617 | −0.19 | 0.0004 |
| 279.261 | 12.789 | 106.680 | 106.364 | −0.30 | 0.0003 |
| 283.620 | 12.379 | 112.750 | 112.012 | −0.65 | 0.0003 |
| 283.946 | 12.346 | 112.850 | 112.501 | −0.31 | 0.0003 |
| 288.238 | 11.889 | 121.720 | 120.219 | −1.23 | 0.0002 |
| 291.779 | 11.461 | 130.470 | 129.277 | −0.91 | 0.0002 |
| 292.479 | 11.368 | 133.410 | 131.523 | −1.41 | 0.0002 |
| 292.539 | 11.360 | 133.540 | 131.724 | −1.36 | 0.0002 |
| 295.236 | 10.974 | 146.320 | 142.709 | −2.47 | 0.0002 |
| 296.550 | 10.763 | 151.710 | 149.978 | −1.14 | 0.0002 |
| 296.661 | 10.745 | 152.770 | 150.674 | −1.37 | 0.0002 |
| 298.389 | 10.435 | 167.240 | 163.795 | −2.06 | 0.0002 |
| 300.295 | 10.034 | 187.540 | 186.437 | −0.59 | 0.0002 |
| 300.550 | 9.974 | 191.340 | 190.574 | −0.40 | 0.0001 |
| 301.473 | 9.737 | 212.290 | 209.246 | −1.43 | 0.0001 |

**Data from Roder [58]** (continued)

Number of Points [58] 106

AAD% = 0.84 BIAS% = 0.31 RMS% = 1.23

Absolute Deviations:
AAD = 0.71 BIAS = 0.09 RMS = 1.08 $J \cdot mol^{-1} \cdot K^{-1}$

Weighted Data:

Number of Points [58] 106

AAD% = 0.84 BIAS% = 0.31 RMS% = 1.23

Absolute Deviations:
AAD = 0.71 BIAS = 0.09 RMS = 1.08 $J \cdot mol^{-1} \cdot K^{-1}$

**Data from Wiebe et al. [60]**

| T K | $\rho$ $mol \cdot dm^{-3}$ | $C_{\sigma L}$, expt $J \cdot mol^{-1} \cdot K^{-1}$ | $C_{\sigma L}$, calc $J \cdot mol^{-1} \cdot K^{-1}$ | dev % | wt |
|---|---|---|---|---|---|
| 96.770 | 21.438 | 68.460 | 69.447 | 1.44 | 0.0000 |
| 96.820 | 21.437 | 68.760 | 69.459 | 1.02 | 0.0000 |
| 98.060 | 21.392 | 68.550 | 69.742 | 1.74 | 0.0000 |
| 101.540 | 21.268 | 68.710 | 70.290 | 2.30 | 0.0000 |
| 107.080 | 21.068 | 68.630 | 70.646 | 2.94 | 0.0000 |
| 108.650 | 21.011 | 68.550 | 70.673 | 3.10 | 0.0000 |
| 115.740 | 20.753 | 68.670 | 70.584 | 2.79 | 0.0000 |
| 116.190 | 20.737 | 68.450 | 70.572 | 3.10 | 0.0000 |
| 122.700 | 20.498 | 69.130 | 70.370 | 1.79 | 0.0000 |
| 123.600 | 20.464 | 69.170 | 70.342 | 1.69 | 0.0000 |
| 128.080 | 20.299 | 69.550 | 70.220 | 0.96 | 0.0000 |
| 128.490 | 20.283 | 69.510 | 70.210 | 1.01 | 0.0000 |
| 132.650 | 20.128 | 69.840 | 70.132 | 0.42 | 0.0000 |
| 138.000 | 19.927 | 69.890 | 70.093 | 0.29 | 0.0000 |
| 138.180 | 19.920 | 70.010 | 70.092 | 0.12 | 0.0000 |
| 138.310 | 19.916 | 69.840 | 70.092 | 0.36 | 0.0000 |
| 142.430 | 19.760 | 70.100 | 70.115 | 0.02 | 0.0000 |
| 143.360 | 19.724 | 70.050 | 70.127 | 0.11 | 0.0000 |
| 151.750 | 19.403 | 69.970 | 70.332 | 0.52 | 0.0000 |
| 152.600 | 19.370 | 70.140 | 70.363 | 0.32 | 0.0000 |

Table 9. SPECIFIC HEAT CAPACITY OF THE SATURATED LIQUID (continued)

Data from Wiebe et al. [60] (continued)

| T<br>K | $\rho$<br>mol•dm$^{-3}$ | $C_{\sigma L}$, expt<br>J•mol$^{-1}$•K$^{-1}$ | $C_{\sigma L}$, calc<br>J•mol$^{-1}$•K$^{-1}$ | dev<br>% | wt |
|---|---|---|---|---|---|
| 154.990 | 19.277 | 70.260 | 70.461 | 0.29 | 0.0000 |
| 156.980 | 19.199 | 70.260 | 70.552 | 0.42 | 0.0000 |
| 157.420 | 19.182 | 70.100 | 70.574 | 0.68 | 0.0000 |
| 160.100 | 19.077 | 71.100 | 70.716 | −0.54 | 0.0000 |
| 162.650 | 18.977 | 71.180 | 70.868 | −0.44 | 0.0000 |
| 164.490 | 18.904 | 71.730 | 70.987 | −1.04 | 0.0000 |
| 165.930 | 18.847 | 71.310 | 71.086 | −0.31 | 0.0000 |
| 168.090 | 18.760 | 71.600 | 71.244 | −0.50 | 0.0000 |
| 170.180 | 18.677 | 71.770 | 71.407 | −0.51 | 0.0000 |
| 172.050 | 18.601 | 71.770 | 71.561 | −0.29 | 0.0000 |
| 172.690 | 18.575 | 72.150 | 71.616 | −0.74 | 0.0000 |
| 178.170 | 18.352 | 72.820 | 72.124 | −0.96 | 0.0000 |
| 181.500 | 18.214 | 73.070 | 72.466 | −0.83 | 0.0000 |
| 182.030 | 18.192 | 73.320 | 72.523 | −1.09 | 0.0000 |
| 190.000 | 17.857 | 73.530 | 73.461 | −0.09 | 0.0000 |
| 199.860 | 17.429 | 74.370 | 74.839 | 0.63 | 0.0000 |
| 208.880 | 17.023 | 75.660 | 76.331 | 0.89 | 0.0000 |
| 212.800 | 16.841 | 75.960 | 77.056 | 1.44 | 0.0000 |
| 220.480 | 16.475 | 77.800 | 78.627 | 1.06 | 0.0000 |
| 228.760 | 16.063 | 80.610 | 80.578 | −0.04 | 0.0000 |
| 236.210 | 15.673 | 82.320 | 82.608 | 0.35 | 0.0000 |

Number of Points [60] 41

AAD% = 0.95 BIAS% = 0.60 RMS% = 1.13

Absolute Deviations:
AAD = 0.67 BIAS = 0.41 RMS = 0.79 J•mol$^{-1}$•K$^{-1}$

Data from Witt and Kemp [61]

| T<br>K | $\rho$<br>mol•dm$^{-3}$ | $C_{\sigma L}$, expt<br>J•mol$^{-1}$•K$^{-1}$ | $C_{\sigma L}$, calc<br>J•mol$^{-1}$•K$^{-1}$ | dev<br>% | wt |
|---|---|---|---|---|---|
| 91.590 | 21.623 | 68.300 | 67.539 | −1.11 | 0.0000 |
| 92.970 | 21.574 | 68.460 | 68.181 | −0.41 | 0.0000 |
| 94.940 | 21.504 | 68.380 | 68.919 | 0.79 | 0.0000 |
| 96.600 | 21.445 | 68.250 | 69.403 | 1.69 | 0.0000 |
| 98.230 | 21.386 | 68.880 | 69.777 | 1.30 | 0.0000 |

Table 9. SPECIFIC HEAT CAPACITY OF THE SATURATED LIQUID (continued)

Data from Witt and Kemp [61] (continued)

| T K | $\rho$ $mol \cdot dm^{-3}$ | $C_{\sigma L}$, expt $J \cdot mol^{-1} \cdot K^{-1}$ | $C_{\sigma L}$, calc $J \cdot mol^{-1} \cdot K^{-1}$ | dev % | wt |
|---|---|---|---|---|---|
| 98.890 | 21.363 | 68.380 | 69.903 | 2.23 | 0.0000 |
| 100.490 | 21.305 | 68.340 | 70.158 | 2.66 | 0.0000 |
| 104.050 | 21.177 | 68.590 | 70.512 | 2.80 | 0.0000 |
| 106.670 | 21.083 | 68.880 | 70.635 | 2.55 | 0.0000 |
| 109.240 | 20.990 | 68.920 | 70.677 | 2.55 | 0.0000 |
| 111.670 | 20.902 | 69.130 | 70.667 | 2.22 | 0.0000 |
| 114.200 | 20.809 | 69.010 | 70.623 | 2.34 | 0.0000 |
| 116.240 | 20.735 | 69.170 | 70.570 | 2.02 | 0.0000 |
| 119.330 | 20.622 | 69.300 | 70.477 | 1.70 | 0.0000 |
| 122.720 | 20.497 | 69.430 | 70.369 | 1.35 | 0.0000 |
| 125.960 | 20.377 | 69.590 | 70.274 | 0.98 | 0.0000 |
| 129.470 | 20.247 | 69.550 | 70.188 | 0.92 | 0.0000 |
| 134.490 | 20.059 | 69.640 | 70.111 | 0.68 | 0.0000 |
| 138.720 | 19.900 | 69.760 | 70.093 | 0.48 | 0.0000 |
| 142.830 | 19.744 | 69.890 | 70.120 | 0.33 | 0.0000 |
| 145.970 | 19.625 | 70.050 | 70.171 | 0.17 | 0.0000 |
| 149.800 | 19.478 | 70.310 | 70.268 | −0.06 | 0.0000 |
| 153.580 | 19.332 | 70.770 | 70.401 | −0.52 | 0.0000 |
| 157.950 | 19.162 | 70.770 | 70.601 | −0.24 | 0.0000 |
| 162.820 | 18.970 | 71.020 | 70.879 | −0.20 | 0.0000 |
| 167.430 | 18.787 | 71.520 | 71.194 | −0.46 | 0.0000 |
| 172.020 | 18.602 | 71.560 | 71.559 | 0.00 | 0.0000 |
| 176.540 | 18.419 | 72.060 | 71.965 | −0.13 | 0.0000 |
| 180.880 | 18.240 | 72.110 | 72.401 | 0.40 | 0.0000 |
| 236.210 | 15.673 | 82.257 | 82.608 | 0.43 | 0.0000 |
| 244.610 | 15.208 | 83.889 | 85.292 | 1.67 | 0.0000 |
| 252.530 | 14.738 | 87.069 | 88.328 | 1.45 | 0.0000 |
| 258.220 | 14.378 | 88.366 | 90.918 | 2.89 | 0.0000 |
| 265.250 | 13.900 | 92.257 | 94.778 | 2.73 | 0.0000 |
| 273.060 | 13.313 | 98.031 | 100.353 | 2.37 | 0.0000 |
| 278.070 | 12.895 | 101.253 | 105.058 | 3.76 | 0.0000 |
| 284.070 | 12.334 | 109.035 | 112.691 | 3.35 | 0.0000 |
| 291.270 | 11.526 | 122.591 | 127.757 | 4.21 | 0.0000 |
| 294.850 | 11.033 | 135.687 | 140.859 | 3.81 | 0.0000 |

Table 9. SPECIFIC HEAT CAPACITY OF THE SATURATED LIQUID (continued)

**Data from Witt and Kemp [61]** (continued)

Number of Points [61] 39

AAD% = 1.54 BIAS% = 1.38 RMS% = 1.36

Absolute Deviations:

AAD = 1.31 BIAS = 1.20 RMS = 1.40 $J \cdot mol^{-1} \cdot K^{-1}$

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| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Overall Results: | N = 186 | | | | | | | | | |
| | AAD% | = | 1.01 | BIAS% | = | 0.60 | RMS% | = | 1.31 | |
| | AAD | = | 0.83 | BIAS | = | 0.39 | RMS | = | 1.18 | $J \cdot mol^{-1} \cdot K^{-1}$ |
| Weighted Data: | N = 106 | | | | | | | | | |
| | AAD% | = | 0.84 | BIAS% | = | 0.31 | RMS% | = | 1.23 | |
| | AAD | = | 0.71 | BIAS | = | 0.09 | RMS | = | 1.08 | $J \cdot mol^{-1} \cdot K^{-1}$ |

Table 10. SOUND SPEED IN THE SINGLE-PHASE FLUID

Data from Terres et al. [62]

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | W, expt $m \cdot s^{-1}$ | W, calc $m \cdot s^{-1}$ | dev % | $\partial P/\partial \rho\|_T$ $MPa \cdot dm^3 \cdot mol^{-1}$ expt | calc | dev2 % | wt |
|---|---|---|---|---|---|---|---|---|---|
| 292.65 | 0.098 | 0.04 | 308.8 | 308.8 | -0.01 | 2.40 | 2.40 | -0.01 | 5.88 |
| 292.65 | 0.490 | 0.21 | 302.9 | 301.8 | -0.35 | 2.26 | 2.24 | -0.71 | 2.71 |
| 292.65 | 0.981 | 0.44 | 294.8 | 292.6 | -0.76 | 2.07 | 2.04 | -1.51 | 1.89 |
| 292.65 | 1.471 | 0.69 | 285.2 | 282.6 | -0.93 | 1.85 | 1.82 | -1.84 | 1.50 |
| 292.65 | 1.961 | 0.98 | 274.5 | 271.6 | -1.06 | 1.62 | 1.59 | -2.12 | 1.27 |
| 292.65 | 2.452 | 1.32 | 263.0 | 259.3 | -1.42 | 1.37 | 1.33 | -2.82 | 1.11 |
| 292.65 | 2.942 | 1.73 | 249.0 | 245.0 | -1.62 | 1.08 | 1.05 | -3.21 | 0.98 |
| 292.65 | 3.432 | 2.30 | 232.0 | 227.0 | -2.17 | 0.73 | 0.70 | -4.29 | 0.88 |
| 323.15 | 0.098 | 0.04 | 324.0 | 322.8 | -0.36 | 2.68 | 2.66 | -0.71 | 10.53 |
| 323.15 | 0.981 | 0.39 | 312.3 | 310.7 | -0.51 | 2.40 | 2.37 | -1.02 | 2.12 |
| 323.15 | 1.961 | 0.83 | 298.5 | 296.2 | -0.77 | 2.07 | 2.04 | -1.53 | 1.46 |
| 323.15 | 2.942 | 1.36 | 282.5 | 280.5 | -0.71 | 1.71 | 1.69 | -1.42 | 1.16 |
| 323.15 | 3.432 | 1.67 | 274.4 | 272.1 | -0.84 | 1.53 | 1.50 | -1.68 | 1.06 |
| 323.15 | 3.923 | 2.02 | 266.0 | 263.3 | -1.01 | 1.33 | 1.31 | -2.01 | 0.98 |
| 323.15 | 4.413 | 2.43 | 257.8 | 254.2 | -1.41 | 1.14 | 1.11 | -2.81 | 0.92 |
| 323.15 | 4.903 | 2.92 | 249.5 | 244.7 | -1.93 | 0.93 | 0.90 | -3.82 | 0.86 |
| 323.15 | 5.394 | 3.54 | 241.2 | 235.2 | -2.50 | 0.72 | 0.68 | -4.94 | 0.81 |
| 323.15 | 5.884 | 4.40 | 233.0 | 226.6 | -2.74 | 0.50 | 0.48 | -5.40 | 0.77 |
| 323.15 | 6.374 | 5.66 | 227.0 | 223.2 | -1.69 | 0.34 | 0.32 | -3.36 | 0.75 |
| 323.15 | 6.865 | 7.22 | 235.0 | 238.3 | 1.42 | 0.34 | 0.34 | 2.86 | 0.75 |
| 323.15 | 7.845 | 9.07 | 296.0 | 306.0 | 3.38 | 0.79 | 0.84 | 6.88 | 0.83 |
| 323.15 | 8.826 | 9.94 | 347.0 | 360.9 | 4.02 | 1.34 | 1.45 | 8.19 | 0.98 |
| 323.15 | 9.807 | 10.51 | 396.0 | 404.9 | 2.25 | 1.96 | 2.05 | 4.55 | 1.34 |
| 348.15 | 0.098 | 0.03 | 334.2 | 333.8 | -0.12 | 2.88 | 2.87 | -0.25 | 8.28 |
| 348.15 | 0.981 | 0.36 | 325.8 | 324.0 | -0.54 | 2.66 | 2.63 | -1.08 | 2.35 |
| 348.15 | 1.961 | 0.75 | 314.4 | 312.8 | -0.50 | 2.38 | 2.36 | -1.00 | 1.60 |
| 348.15 | 2.942 | 1.19 | 303.2 | 301.3 | -0.62 | 2.11 | 2.08 | -1.24 | 1.29 |
| 348.15 | 3.923 | 1.70 | 292.2 | 289.7 | -0.87 | 1.84 | 1.80 | -1.73 | 1.11 |
| 348.15 | 4.903 | 2.29 | 281.2 | 278.2 | -1.07 | 1.56 | 1.52 | -2.13 | 0.99 |
| 348.15 | 5.884 | 3.00 | 270.2 | 267.7 | -0.94 | 1.28 | 1.25 | -1.86 | 0.90 |
| 348.15 | 6.865 | 3.87 | 261.8 | 259.8 | -0.76 | 1.03 | 1.01 | -1.51 | 0.84 |
| 348.15 | 7.355 | 4.38 | 259.8 | 257.9 | -0.74 | 0.93 | 0.91 | -1.47 | 0.81 |
| 348.15 | 7.845 | 4.94 | 260.0 | 258.1 | -0.72 | 0.85 | 0.84 | -1.43 | 0.80 |
| 348.15 | 8.336 | 5.54 | 265.0 | 261.3 | -1.38 | 0.83 | 0.81 | -2.75 | 0.79 |
| 348.15 | 8.826 | 6.15 | 272.0 | 268.1 | -1.42 | 0.84 | 0.81 | -2.83 | 0.80 |

Table 10. SOUND SPEED IN THE SINGLE-PHASE FLUID (continued)

Data from Terres et al. [62] (continued)

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | W, expt $m \cdot s^{-1}$ | W, calc $m \cdot s^{-1}$ | dev % | $\partial P/\partial \rho\|_T$ $MPa \cdot dm^3 \cdot mol^{-1}$ expt | $\partial P/\partial \rho\|_T$ $MPa \cdot dm^3 \cdot mol^{-1}$ calc | dev2 % | wt |
|---|---|---|---|---|---|---|---|---|---|
| 348.15 | 9.316 | 6.73 | 280.0 | 278.5 | -0.52 | 0.88 | 0.87 | -1.04 | 0.80 |
| 348.15 | 9.807 | 7.27 | 291.0 | 291.8 | 0.27 | 0.96 | 0.97 | 0.54 | 0.82 |
| 348.15 | 10.297 | 7.75 | 304.0 | 306.8 | 0.90 | 1.08 | 1.10 | 1.82 | 0.85 |
| 348.15 | 10.787 | 8.17 | 319.0 | 322.4 | 1.08 | 1.23 | 1.26 | 2.17 | 0.89 |
| 348.15 | 11.768 | 8.86 | 348.0 | 353.9 | 1.71 | 1.57 | 1.62 | 3.44 | 0.99 |
| 373.15 | 0.098 | 0.03 | 345.1 | 344.3 | -0.23 | 3.09 | 3.08 | -0.46 | 12.67 |
| 373.15 | 0.981 | 0.33 | 337.9 | 336.4 | -0.45 | 2.90 | 2.88 | -0.89 | 2.57 |
| 373.15 | 1.961 | 0.68 | 329.5 | 327.6 | -0.59 | 2.69 | 2.65 | -1.18 | 1.77 |
| 373.15 | 2.942 | 1.07 | 321.0 | 318.8 | -0.70 | 2.46 | 2.43 | -1.39 | 1.43 |
| 373.15 | 3.923 | 1.49 | 312.5 | 310.2 | -0.73 | 2.24 | 2.21 | -1.46 | 1.23 |
| 373.15 | 4.903 | 1.96 | 304.1 | 302.1 | -0.65 | 2.02 | 2.00 | -1.30 | 1.10 |
| 373.15 | 5.884 | 2.48 | 297.0 | 294.9 | -0.72 | 1.82 | 1.79 | -1.43 | 1.01 |
| 373.15 | 6.865 | 3.05 | 281.0 | 289.0 | 2.85 | 1.52 | 1.61 | 5.79 | 0.91 |
| 373.15 | 7.845 | 3.70 | 286.8 | 285.4 | -0.49 | 1.47 | 1.46 | -0.97 | 0.89 |
| 373.15 | 8.826 | 4.40 | 285.5 | 285.1 | -0.15 | 1.35 | 1.35 | -0.30 | 0.86 |
| 373.15 | 9.807 | 5.14 | 289.5 | 289.2 | -0.12 | 1.30 | 1.30 | -0.23 | 0.85 |
| 373.15 | 10.787 | 5.90 | 299.2 | 298.5 | -0.24 | 1.33 | 1.32 | -0.48 | 0.86 |
| 373.15 | 11.768 | 6.61 | 313.0 | 312.8 | -0.06 | 1.43 | 1.43 | -0.12 | 0.88 |
| 398.15 | 0.098 | 0.03 | 355.0 | 354.5 | -0.15 | 3.30 | 3.29 | -0.30 | 11.83 |
| 398.15 | 0.981 | 0.31 | 349.1 | 348.0 | -0.31 | 3.14 | 3.12 | -0.62 | 2.76 |
| 398.15 | 1.961 | 0.63 | 342.5 | 341.0 | -0.45 | 2.96 | 2.93 | -0.90 | 1.93 |
| 398.15 | 2.942 | 0.97 | 336.0 | 334.1 | -0.56 | 2.78 | 2.75 | -1.12 | 1.57 |
| 398.15 | 3.923 | 1.34 | 329.5 | 327.6 | -0.58 | 2.60 | 2.57 | -1.15 | 1.35 |
| 398.15 | 4.903 | 1.74 | 323.0 | 321.6 | -0.43 | 2.42 | 2.40 | -0.86 | 1.21 |
| 398.15 | 5.884 | 2.16 | 317.2 | 316.3 | -0.28 | 2.25 | 2.24 | -0.55 | 1.11 |
| 398.15 | 6.865 | 2.62 | 313.0 | 312.0 | -0.31 | 2.11 | 2.09 | -0.62 | 1.04 |
| 398.15 | 7.845 | 3.10 | 310.7 | 309.0 | -0.54 | 1.99 | 1.97 | -1.07 | 0.99 |
| 398.15 | 8.826 | 3.61 | 309.3 | 307.7 | -0.51 | 1.89 | 1.87 | -1.01 | 0.96 |
| 398.15 | 9.807 | 4.15 | 309.9 | 308.5 | -0.45 | 1.82 | 1.80 | -0.90 | 0.94 |
| 398.15 | 10.787 | 4.70 | 312.8 | 311.7 | -0.35 | 1.78 | 1.77 | -0.70 | 0.92 |
| 398.15 | 11.768 | 5.25 | 318.2 | 317.6 | -0.20 | 1.79 | 1.78 | -0.39 | 0.93 |
| 423.15 | 0.098 | 0.03 | 365.2 | 364.3 | -0.24 | 3.52 | 3.50 | -0.47 | 67.43 |
| 423.15 | 0.981 | 0.29 | 360.8 | 359.1 | -0.48 | 3.39 | 3.36 | -0.96 | 3.17 |
| 423.15 | 1.961 | 0.58 | 355.7 | 353.4 | -0.65 | 3.24 | 3.20 | -1.29 | 2.16 |
| 423.15 | 2.942 | 0.90 | 350.7 | 348.0 | -0.77 | 3.09 | 3.04 | -1.53 | 1.75 |

Table 10. SOUND SPEED IN THE SINGLE-PHASE FLUID (continued)

Data from Terres et al. [62] (continued)

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | W, expt $m \cdot s^{-1}$ | W, calc $m \cdot s^{-1}$ | dev % | $\partial P/\partial \rho\|_T$ $MPa \cdot dm^3 \cdot mol^{-1}$ expt | $\partial P/\partial \rho\|_T$ $MPa \cdot dm^3 \cdot mol^{-1}$ calc | dev2 % | wt |
|---|---|---|---|---|---|---|---|---|---|
| 423.15 | 3.923 | 1.23 | 345.8 | 343.0 | −0.82 | 2.94 | 2.90 | −1.63 | 1.51 |
| 423.15 | 4.903 | 1.58 | 340.8 | 338.4 | −0.69 | 2.80 | 2.76 | −1.38 | 1.35 |
| 423.15 | 5.884 | 1.94 | 336.3 | 334.5 | −0.53 | 2.66 | 2.63 | −1.06 | 1.23 |
| 423.15 | 6.865 | 2.32 | 332.7 | 331.3 | −0.41 | 2.54 | 2.51 | −0.82 | 1.15 |
| 423.15 | 7.845 | 2.72 | 330.2 | 329.1 | −0.34 | 2.43 | 2.41 | −0.67 | 1.10 |
| 423.15 | 8.826 | 3.13 | 328.9 | 327.9 | −0.30 | 2.35 | 2.33 | −0.59 | 1.06 |
| 423.15 | 9.807 | 3.56 | 329.1 | 328.0 | −0.32 | 2.28 | 2.27 | −0.64 | 1.03 |
| 423.15 | 10.787 | 4.00 | 330.9 | 329.6 | −0.40 | 2.25 | 2.23 | −0.80 | 1.01 |
| 423.15 | 11.768 | 4.44 | 334.3 | 332.7 | −0.49 | 2.24 | 2.22 | −0.97 | 1.01 |
| 448.15 | 0.098 | 0.03 | 375.4 | 373.9 | −0.39 | 3.74 | 3.71 | −0.78 | 9.24 |
| 448.15 | 0.981 | 0.27 | 371.4 | 369.6 | −0.48 | 3.62 | 3.59 | −0.95 | 3.54 |
| 448.15 | 1.961 | 0.55 | 366.8 | 365.1 | −0.47 | 3.49 | 3.45 | −0.94 | 2.33 |
| 448.15 | 2.942 | 0.84 | 362.6 | 360.8 | −0.49 | 3.36 | 3.32 | −0.98 | 1.88 |
| 448.15 | 3.923 | 1.14 | 358.2 | 356.9 | −0.36 | 3.23 | 3.20 | −0.71 | 1.62 |
| 448.15 | 4.903 | 1.45 | 354.4 | 353.5 | −0.26 | 3.11 | 3.09 | −0.53 | 1.45 |
| 448.15 | 5.884 | 1.77 | 351.2 | 350.5 | −0.19 | 3.00 | 2.99 | −0.38 | 1.34 |
| 448.15 | 6.865 | 2.11 | 348.8 | 348.2 | −0.17 | 2.90 | 2.89 | −0.33 | 1.26 |
| 448.15 | 7.845 | 2.45 | 347.2 | 346.6 | −0.17 | 2.82 | 2.81 | −0.34 | 1.20 |
| 448.15 | 8.826 | 2.80 | 346.8 | 345.8 | −0.29 | 2.76 | 2.75 | −0.58 | 1.16 |
| 448.15 | 9.807 | 3.16 | 347.5 | 345.9 | −0.47 | 2.72 | 2.69 | −0.94 | 1.14 |
| 448.15 | 10.787 | 3.53 | 348.9 | 346.9 | −0.57 | 2.69 | 2.66 | −1.15 | 1.12 |
| 448.15 | 11.768 | 3.90 | 350.9 | 349.0 | −0.55 | 2.67 | 2.64 | −1.10 | 1.11 |

Number of Points [62] 92

Calculation of sound speed:
AAD% = 0.79 BIAS% = −0.40 RMS% = 1.00

Calculation of $\partial P/\partial \rho|_T$ :
AAD2% = 1.57 BIAS2% = −0.79 RMS2% = 2.00

Absolute Deviations:
Calculation of sound speed:
AAD = 2.35 BIAS = −1.11 RMS = 2.98 $m \cdot s^{-1}$

Calculation of $\partial P/\partial \rho|_T$ :
AAD2 = 0.026 BIAS2 = −0.016 RMS2 = 0.027 $MPa \cdot dm^3 \cdot mol^{-1}$

Table 10. SOUND SPEED IN THE SINGLE-PHASE FLUID (continued)

**Data from Terres et al. [62] (continued)**

Weighted Data:

Number of Points [62] 92

Calculation of sound speed:
AAD% = 0.79 BIAS% = −0.40 RMS% = 1.00

Calculation of $\partial P/\partial \rho|_T$ :
AAD2% = 1.57 BIAS2% = −0.79 RMS2% = 2.00

Absolute Deviations:
Calculation of sound speed:
AAD = 2.35 BIAS = −1.11 RMS = 2.98 $m \cdot s^{-1}$

Calculation of $\partial P/\partial \rho|_T$ :
AAD2 = 0.026 BIAS2 = −0.016 RMS2 = 0.027 $MPa \cdot dm^3 \cdot mol^{-1}$

**Data from Tsumura and Straty [63]**

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | W, expt $m \cdot s^{-1}$ | W, calc $m \cdot s^{-1}$ | dev % | $\partial P/\partial \rho\|_T$ $MPa \cdot dm^3 \cdot mol^{-1}$ expt | calc | dev2 % | wt |
|---|---|---|---|---|---|---|---|---|---|
| 100.00 | 31.949 | 21.70 | 2051.3 | 2068.1 | 0.82 | 89.29 | 90.76 | 1.65 | 0.12 |
| 100.00 | 28.495 | 21.67 | 2040.0 | 2054.9 | 0.73 | 88.07 | 89.36 | 1.46 | 0.12 |
| 100.00 | 25.196 | 21.63 | 2028.8 | 2042.1 | 0.65 | 86.88 | 88.02 | 1.31 | 0.12 |
| 100.00 | 21.728 | 21.59 | 2017.3 | 2028.4 | 0.55 | 85.66 | 86.61 | 1.11 | 0.12 |
| 100.00 | 18.427 | 21.55 | 2005.7 | 2015.3 | 0.48 | 84.45 | 85.25 | 0.96 | 0.12 |
| 100.00 | 14.981 | 21.51 | 1993.6 | 2001.3 | 0.39 | 83.19 | 83.83 | 0.78 | 0.13 |
| 100.00 | 11.414 | 21.47 | 1981.0 | 1986.7 | 0.29 | 81.89 | 82.36 | 0.58 | 0.13 |
| 100.00 | 7.962 | 21.43 | 1968.4 | 1972.3 | 0.20 | 80.60 | 80.92 | 0.40 | 0.13 |
| 100.00 | 4.122 | 21.38 | 1954.2 | 1956.1 | 0.10 | 79.16 | 79.31 | 0.19 | 0.13 |
| 120.00 | 36.342 | 21.11 | 1943.2 | 1951.8 | 0.44 | 77.77 | 78.46 | 0.89 | 0.13 |
| 120.00 | 28.584 | 21.01 | 1914.2 | 1920.6 | 0.33 | 74.84 | 75.34 | 0.67 | 0.13 |
| 120.00 | 18.912 | 20.88 | 1876.1 | 1880.1 | 0.21 | 71.07 | 71.38 | 0.43 | 0.14 |
| 120.00 | 14.963 | 20.82 | 1860.0 | 1863.1 | 0.17 | 69.51 | 69.75 | 0.33 | 0.14 |
| 120.00 | 8.105 | 20.72 | 1831.0 | 1832.8 | 0.10 | 66.75 | 66.88 | 0.19 | 0.14 |
| 140.00 | 35.565 | 20.46 | 1819.4 | 1820.2 | 0.04 | 66.31 | 66.37 | 0.08 | 0.14 |
| 140.00 | 14.708 | 20.12 | 1725.2 | 1723.6 | −0.10 | 57.85 | 57.74 | −0.19 | 0.15 |
| 140.00 | 7.800 | 20.00 | 1690.7 | 1688.9 | −0.11 | 54.89 | 54.78 | −0.21 | 0.16 |
| 140.00 | 28.434 | 20.35 | 1788.1 | 1788.3 | 0.01 | 63.45 | 63.46 | 0.03 | 0.14 |
| 140.00 | 21.457 | 20.23 | 1756.7 | 1756.0 | −0.04 | 60.62 | 60.58 | −0.08 | 0.15 |
| 160.00 | 35.328 | 19.81 | 1698.2 | 1694.8 | −0.20 | 56.56 | 56.33 | −0.40 | 0.15 |

Table 10. SOUND SPEED IN THE SINGLE-PHASE FLUID (continued)

Data from Tsumura and Straty [63] (continued)

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | W, expt $m \cdot s^{-1}$ | W, calc $m \cdot s^{-1}$ | dev % | $\partial P/\partial \rho\|_T$ $MPa \cdot dm^3 \cdot mol^{-1}$ expt | calc | dev2 % | wt |
|---|---|---|---|---|---|---|---|---|---|
| 160.00 | 28.145 | 19.68 | 1662.8 | 1658.8 | -0.24 | 53.62 | 53.36 | -0.48 | 0.16 |
| 160.00 | 21.806 | 19.56 | 1629.9 | 1625.7 | -0.26 | 50.95 | 50.69 | -0.52 | 0.16 |
| 160.00 | 14.846 | 19.42 | 1591.7 | 1587.5 | -0.26 | 47.94 | 47.69 | -0.52 | 0.17 |
| 160.00 | 8.013 | 19.27 | 1551.5 | 1548.0 | -0.23 | 44.88 | 44.68 | -0.45 | 0.17 |
| 180.00 | 35.697 | 19.17 | 1583.4 | 1576.6 | -0.43 | 48.45 | 48.03 | -0.86 | 0.17 |
| 180.00 | 28.615 | 19.02 | 1543.8 | 1536.9 | -0.45 | 45.47 | 45.06 | -0.89 | 0.17 |
| 180.00 | 21.600 | 18.86 | 1502.0 | 1495.3 | -0.45 | 42.42 | 42.04 | -0.89 | 0.18 |
| 180.00 | 14.716 | 18.69 | 1457.9 | 1451.8 | -0.42 | 39.33 | 39.00 | -0.83 | 0.19 |
| 180.00 | 7.879 | 18.51 | 1410.3 | 1405.5 | -0.34 | 36.12 | 35.88 | -0.68 | 0.19 |
| 180.00 | 11.517 | 18.61 | 1435.6 | 1430.6 | -0.35 | 37.82 | 37.55 | -0.70 | 0.19 |
| 200.00 | 14.190 | 17.93 | 1321.0 | 1314.8 | -0.47 | 31.64 | 31.35 | -0.93 | 0.21 |
| 200.00 | 36.755 | 18.55 | 1475.4 | 1467.4 | -0.54 | 41.72 | 41.26 | -1.08 | 0.18 |
| 200.00 | 32.140 | 18.44 | 1446.9 | 1438.9 | -0.55 | 39.75 | 39.31 | -1.10 | 0.19 |
| 200.00 | 28.520 | 18.34 | 1423.6 | 1415.8 | -0.55 | 38.18 | 37.76 | -1.10 | 0.19 |
| 200.00 | 25.381 | 18.26 | 1402.5 | 1395.0 | -0.53 | 36.78 | 36.39 | -1.07 | 0.19 |
| 200.00 | 21.834 | 18.16 | 1377.9 | 1370.7 | -0.52 | 35.19 | 34.82 | -1.04 | 0.20 |
| 200.00 | 18.326 | 18.05 | 1352.4 | 1345.7 | -0.49 | 33.58 | 33.25 | -0.99 | 0.20 |
| 200.00 | 14.831 | 17.95 | 1325.7 | 1319.7 | -0.45 | 31.93 | 31.64 | -0.90 | 0.21 |
| 200.00 | 11.523 | 17.84 | 1299.1 | 1294.0 | -0.40 | 30.33 | 30.10 | -0.79 | 0.21 |
| 200.00 | 7.881 | 17.72 | 1268.2 | 1264.1 | -0.32 | 28.53 | 28.35 | -0.64 | 0.22 |
| 200.00 | 4.934 | 17.61 | 1241.6 | 1238.6 | -0.24 | 27.03 | 26.90 | -0.48 | 0.23 |
| 220.00 | 15.513 | 17.19 | 1200.8 | 1195.0 | -0.48 | 25.85 | 25.60 | -0.96 | 0.23 |
| 220.00 | 35.977 | 17.87 | 1361.0 | 1352.0 | -0.66 | 35.23 | 34.77 | -1.32 | 0.20 |
| 220.00 | 28.535 | 17.65 | 1308.1 | 1299.5 | -0.65 | 31.97 | 31.55 | -1.30 | 0.21 |
| 220.00 | 21.679 | 17.42 | 1254.4 | 1246.9 | -0.60 | 28.82 | 28.48 | -1.19 | 0.22 |
| 220.00 | 14.782 | 17.16 | 1194.2 | 1188.5 | -0.48 | 25.49 | 25.25 | -0.95 | 0.23 |
| 220.00 | 7.875 | 16.87 | 1125.4 | 1122.4 | -0.27 | 21.95 | 21.84 | -0.53 | 0.25 |
| 220.00 | 10.057 | 16.97 | 1147.8 | 1144.3 | -0.30 | 23.08 | 22.94 | -0.61 | 0.25 |
| 220.00 | 10.029 | 16.97 | 1147.5 | 1144.0 | -0.30 | 23.06 | 22.92 | -0.60 | 0.25 |
| 240.00 | 34.279 | 17.15 | 1242.2 | 1233.7 | -0.69 | 29.16 | 28.76 | -1.37 | 0.22 |
| 240.00 | 28.538 | 16.94 | 1195.8 | 1188.0 | -0.65 | 26.58 | 26.24 | -1.30 | 0.23 |
| 240.00 | 21.670 | 16.66 | 1134.4 | 1128.1 | -0.56 | 23.36 | 23.10 | -1.11 | 0.25 |
| 240.00 | 14.733 | 16.34 | 1063.4 | 1059.4 | -0.37 | 19.90 | 19.75 | -0.74 | 0.27 |
| 240.00 | 7.867 | 15.95 | 980.1 | 979.5 | -0.06 | 16.21 | 16.19 | -0.13 | 0.30 |
| 240.00 | 3.559 | 15.67 | 917.3 | 919.7 | 0.26 | 13.69 | 13.77 | 0.52 | 0.33 |

Table 10. SOUND SPEED IN THE SINGLE-PHASE FLUID (continued)

Data from Tsumura and Straty [63] (continued)

| T K | P MPa | $\rho$ mol·dm$^{-3}$ | W, expt m·s$^{-1}$ | W, calc m·s$^{-1}$ | dev % | $\partial P/\partial \rho\|_T$ MPa·dm$^3$·mol$^{-1}$ expt | $\partial P/\partial \rho\|_T$ MPa·dm$^3$·mol$^{-1}$ calc | dev2 % | wt |
|---|---|---|---|---|---|---|---|---|---|
| 260.00 | 22.529 | 15.91 | 1028.1 | 1022.8 | −0.51 | 19.12 | 18.93 | −1.02 | 0.28 |
| 260.00 | 34.541 | 16.47 | 1142.5 | 1134.9 | −0.66 | 24.69 | 24.37 | −1.32 | 0.24 |
| 260.00 | 31.987 | 16.36 | 1120.1 | 1113.0 | −0.64 | 23.54 | 23.25 | −1.27 | 0.25 |
| 260.00 | 28.478 | 16.21 | 1087.8 | 1081.3 | −0.60 | 21.94 | 21.68 | −1.19 | 0.26 |
| 260.00 | 25.289 | 16.05 | 1056.6 | 1050.8 | −0.55 | 20.44 | 20.22 | −1.09 | 0.27 |
| 260.00 | 21.770 | 15.87 | 1019.5 | 1014.8 | −0.46 | 18.74 | 18.56 | −0.91 | 0.28 |
| 260.00 | 17.581 | 15.63 | 971.2 | 968.1 | −0.32 | 16.63 | 16.52 | −0.64 | 0.30 |
| 260.00 | 14.835 | 15.46 | 936.3 | 934.4 | −0.20 | 15.18 | 15.12 | −0.40 | 0.32 |
| 260.00 | 11.364 | 15.22 | 887.6 | 887.6 | 0.00 | 13.28 | 13.28 | −0.01 | 0.34 |
| 260.00 | 7.801 | 14.93 | 830.2 | 832.4 | 0.26 | 11.21 | 11.27 | 0.53 | 0.38 |
| 260.00 | 5.134 | 14.67 | 780.0 | 784.3 | 0.55 | 9.55 | 9.66 | 1.11 | 0.42 |
| 280.00 | 34.921 | 15.79 | 1050.9 | 1044.1 | −0.64 | 20.97 | 20.70 | −1.29 | 0.26 |
| 280.00 | 28.585 | 15.46 | 987.7 | 982.4 | −0.54 | 18.09 | 17.89 | −1.08 | 0.29 |
| 280.00 | 21.654 | 15.03 | 907.7 | 904.5 | −0.35 | 14.74 | 14.64 | −0.70 | 0.32 |
| 280.00 | 14.752 | 14.50 | 809.9 | 809.7 | −0.03 | 11.12 | 11.12 | −0.05 | 0.39 |
| 280.00 | 7.824 | 13.73 | 676.0 | 679.6 | 0.53 | 7.00 | 7.08 | 1.05 | 0.53 |
| 280.00 | 36.829 | 15.88 | 1068.5 | 1061.4 | −0.66 | 21.82 | 21.53 | −1.32 | 0.26 |
| 280.00 | 32.035 | 15.65 | 1023.2 | 1016.9 | −0.62 | 19.68 | 19.44 | −1.23 | 0.27 |
| 280.00 | 28.535 | 15.46 | 987.4 | 981.9 | −0.56 | 18.07 | 17.87 | −1.12 | 0.29 |
| 280.00 | 25.322 | 15.27 | 952.0 | 947.3 | −0.49 | 16.55 | 16.38 | −0.98 | 0.30 |
| 280.00 | 21.684 | 15.04 | 908.2 | 904.9 | −0.37 | 14.76 | 14.65 | −0.73 | 0.32 |
| 280.00 | 18.345 | 14.79 | 863.9 | 861.8 | −0.24 | 13.05 | 12.99 | −0.48 | 0.35 |
| 280.00 | 14.738 | 14.49 | 809.9 | 809.5 | −0.05 | 11.12 | 11.11 | −0.11 | 0.39 |
| 280.00 | 11.310 | 14.16 | 750.2 | 751.5 | 0.18 | 9.17 | 9.20 | 0.35 | 0.44 |
| 280.00 | 7.804 | 13.72 | 675.7 | 679.1 | 0.50 | 7.00 | 7.07 | 1.00 | 0.53 |
| 280.00 | 4.998 | 13.26 | 598.0 | 603.6 | 0.94 | 5.04 | 5.14 | 1.90 | 0.69 |
| 300.00 | 35.788 | 15.13 | 971.1 | 965.8 | −0.55 | 18.05 | 17.86 | −1.09 | 0.29 |
| 300.00 | 28.536 | 14.68 | 892.6 | 888.8 | −0.42 | 14.78 | 14.65 | −0.85 | 0.33 |
| 300.00 | 25.137 | 14.44 | 850.7 | 847.9 | −0.32 | 13.17 | 13.08 | −0.65 | 0.35 |
| 300.00 | 21.672 | 14.15 | 803.6 | 801.9 | −0.22 | 11.47 | 11.42 | −0.43 | 0.38 |
| 300.00 | 9.545 | 12.59 | 566.1 | 567.7 | 0.28 | 4.69 | 4.72 | 0.55 | 0.77 |
| 300.00 | 9.547 | 12.59 | 566.2 | 567.7 | 0.27 | 4.69 | 4.72 | 0.54 | 0.77 |
| 300.00 | 7.823 | 12.17 | 509.8 | 511.4 | 0.31 | 3.52 | 3.54 | 0.62 | 1.13 |
| 300.00 | 7.000 | 11.91 | 477.2 | 478.6 | 0.29 | 2.91 | 2.93 | 0.59 | 1.77 |
| 300.00 | 30.764 | 14.83 | 918.0 | 913.8 | −0.46 | 15.80 | 15.66 | −0.92 | 0.00 |

Data from Tsumura and Straty [63] (continued)

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | W, expt $m \cdot s^{-1}$ | W, calc $m \cdot s^{-1}$ | dev % | $\partial P/\partial\rho\|_T$ $MPa \cdot dm^3 \cdot mol^{-1}$ expt | calc | dev2 % | wt |
|---|---|---|---|---|---|---|---|---|---|
| 300.00 | 28.502 | 14.68 | 892.0 | 888.4 | -0.40 | 14.76 | 14.64 | -0.80 | 0.00 |
| 300.00 | 21.711 | 14.16 | 804.1 | 802.4 | -0.21 | 11.49 | 11.44 | -0.42 | 0.00 |
| 300.00 | 18.200 | 13.83 | 750.2 | 749.7 | -0.07 | 9.69 | 9.67 | -0.14 | 0.00 |
| 300.00 | 14.841 | 13.44 | 690.4 | 690.8 | 0.06 | 7.87 | 7.88 | 0.13 | 0.00 |
| 300.00 | 13.268 | 13.23 | 658.2 | 659.3 | 0.16 | 6.97 | 6.99 | 0.32 | 0.00 |
| 300.00 | 11.337 | 12.93 | 614.0 | 615.5 | 0.24 | 5.82 | 5.85 | 0.48 | 0.00 |
| 300.00 | 11.304 | 12.92 | 613.3 | 614.7 | 0.22 | 5.80 | 5.83 | 0.44 | 0.00 |
| 300.00 | 8.753 | 12.41 | 541.8 | 543.4 | 0.30 | 4.16 | 4.19 | 0.59 | 0.00 |
| 300.00 | 7.928 | 12.20 | 513.6 | 515.2 | 0.32 | 3.59 | 3.61 | 0.63 | 0.00 |
| 300.00 | 7.821 | 12.17 | 509.8 | 511.3 | 0.29 | 3.52 | 3.54 | 0.59 | 0.00 |
| 300.00 | 7.815 | 12.17 | 509.6 | 511.1 | 0.29 | 3.51 | 3.53 | 0.58 | 0.00 |
| 300.00 | 7.036 | 11.93 | 478.7 | 480.2 | 0.30 | 2.94 | 2.96 | 0.61 | 0.00 |
| 300.00 | 6.177 | 11.60 | 438.3 | 439.5 | 0.27 | 2.26 | 2.28 | 0.54 | 0.00 |
| 300.00 | 5.735 | 11.38 | 413.2 | 414.4 | 0.28 | 1.89 | 1.90 | 0.56 | 0.00 |
| 300.00 | 5.565 | 11.29 | 402.6 | 403.6 | 0.24 | 1.74 | 1.75 | 0.48 | 0.00 |
| 300.00 | 4.855 | 10.78 | 346.2 | 346.8 | 0.18 | 1.05 | 1.06 | 0.36 | 0.00 |
| 300.00 | 4.610 | 10.51 | 318.4 | 318.8 | 0.12 | 0.78 | 0.78 | 0.25 | 0.00 |
| 300.00 | 4.584 | 10.48 | 314.9 | 315.3 | 0.13 | 0.74 | 0.75 | 0.26 | 0.00 |
| 305.33 | 24.830 | 14.19 | 821.6 | 819.3 | -0.28 | 12.25 | 12.18 | -0.57 | 0.00 |
| 305.33 | 21.127 | 13.86 | 768.9 | 767.7 | -0.16 | 10.43 | 10.39 | -0.32 | 0.00 |
| 305.33 | 18.210 | 13.56 | 722.0 | 721.6 | -0.06 | 8.93 | 8.92 | -0.12 | 0.00 |
| 305.33 | 14.694 | 13.12 | 656.1 | 656.6 | 0.08 | 7.02 | 7.03 | 0.15 | 0.00 |
| 305.33 | 11.461 | 12.58 | 581.3 | 582.3 | 0.16 | 5.13 | 5.15 | 0.33 | 0.00 |
| 305.33 | 11.324 | 12.55 | 577.8 | 578.6 | 0.15 | 5.05 | 5.07 | 0.29 | 0.00 |
| 305.33 | 10.156 | 12.31 | 544.8 | 545.7 | 0.17 | 4.32 | 4.33 | 0.33 | 0.00 |
| 305.33 | 8.269 | 11.79 | 480.6 | 481.3 | 0.15 | 3.05 | 3.06 | 0.31 | 0.00 |
| 305.33 | 7.711 | 11.60 | 457.8 | 458.3 | 0.10 | 2.65 | 2.66 | 0.20 | 0.00 |
| 305.33 | 7.427 | 11.49 | 445.1 | 445.5 | 0.08 | 2.44 | 2.45 | 0.17 | 0.00 |
| 305.33 | 6.085 | 10.77 | 369.2 | 369.4 | 0.04 | 1.37 | 1.37 | 0.09 | 0.00 |
| 305.33 | 5.701 | 10.45 | 338.7 | 338.6 | -0.02 | 1.03 | 1.03 | -0.04 | 0.00 |
| 305.33 | 5.260 | 9.89 | 289.9 | 290.0 | 0.03 | 0.58 | 0.58 | 0.06 | 0.00 |
| 305.33 | 5.222 | 9.82 | 284.4 | 284.5 | 0.03 | 0.53 | 0.53 | 0.06 | 0.00 |
| 305.33 | 5.088 | 9.52 | 261.7 | 261.7 | 0.01 | 0.37 | 0.37 | 0.02 | 0.00 |
| 305.33 | 5.052 | 9.42 | 254.2 | 254.3 | 0.04 | 0.32 | 0.32 | 0.09 | 0.00 |
| 305.33 | 5.023 | 9.32 | 247.5 | 247.7 | 0.09 | 0.28 | 0.28 | 0.18 | 0.00 |

Table 10. SOUND SPEED IN THE SINGLE-PHASE FLUID (continued)

Data from Tsumura and Straty [63] (continued)

| T<br>K | P<br>MPa | $\rho$<br>$mol \cdot dm^{-3}$ | W, expt<br>$m \cdot s^{-1}$ | W, calc<br>$m \cdot s^{-1}$ | dev<br>% | $\partial P/\partial \rho\|_T$<br>$MPa \cdot dm^3 \cdot mol^{-1}$<br>expt | <br><br>calc | dev2<br>% | wt |
|---|---|---|---|---|---|---|---|---|---|
| 305.33 | 4.996 | 9.22 | 240.6 | 240.9 | 0.14 | 0.24 | 0.24 | 0.28 | 0.00 |
| 305.33 | 4.930 | 8.86 | 218.2 | 220.1 | 0.86 | 0.13 | 0.13 | 1.73 | 0.00 |
| 320.00 | 16.387 | 12.51 | 610.9 | 610.7 | −0.03 | 6.12 | 6.12 | −0.06 | 0.61 |
| 320.00 | 16.381 | 12.51 | 610.9 | 610.6 | −0.05 | 6.12 | 6.12 | −0.10 | 0.61 |
| 320.00 | 16.291 | 12.49 | 608.5 | 608.7 | 0.03 | 6.07 | 6.07 | 0.07 | 0.62 |
| 320.00 | 34.482 | 14.33 | 877.1 | 873.1 | −0.46 | 14.75 | 14.61 | −0.91 | 0.33 |
| 320.00 | 27.495 | 13.80 | 792.8 | 790.3 | −0.31 | 11.61 | 11.54 | −0.63 | 0.38 |
| 320.00 | 21.649 | 13.22 | 707.5 | 706.4 | −0.15 | 8.82 | 8.79 | −0.31 | 0.46 |
| 320.00 | 14.707 | 12.21 | 573.8 | 573.4 | −0.07 | 5.22 | 5.21 | −0.14 | 0.71 |
| 320.00 | 11.258 | 11.38 | 479.3 | 478.6 | −0.15 | 3.24 | 3.23 | −0.30 | 1.50 |
| 320.00 | 9.969 | 10.92 | 433.6 | 432.9 | −0.15 | 2.45 | 2.44 | −0.31 | 2.48 |
| 320.00 | 8.588 | 10.22 | 372.5 | 372.6 | 0.04 | 1.57 | 1.57 | 0.07 | 1.09 |
| 320.00 | 7.802 | 9.62 | 328.1 | 329.1 | 0.30 | 1.05 | 1.05 | 0.60 | 0.90 |
| 320.00 | 7.348 | 9.11 | 297.2 | 298.3 | 0.38 | 0.74 | 0.75 | 0.75 | 0.83 |
| 320.00 | 31.610 | 14.13 | 844.1 | 840.8 | −0.39 | 13.47 | 13.37 | −0.77 | 0.35 |
| 323.15 | 33.170 | 14.12 | 850.1 | 846.7 | −0.40 | 13.78 | 13.67 | −0.81 | 0.34 |
| 323.15 | 28.536 | 13.76 | 793.5 | 791.0 | −0.31 | 11.71 | 11.64 | −0.62 | 0.38 |
| 323.15 | 25.114 | 13.44 | 746.6 | 744.9 | −0.22 | 10.12 | 10.08 | −0.45 | 0.42 |
| 323.15 | 21.665 | 13.07 | 693.5 | 692.6 | −0.14 | 8.46 | 8.44 | −0.27 | 0.48 |
| 323.15 | 17.118 | 12.44 | 611.3 | 609.9 | −0.23 | 6.19 | 6.16 | −0.45 | 0.00 |
| 323.15 | 14.694 | 12.00 | 556.5 | 556.0 | −0.09 | 4.87 | 4.86 | −0.18 | 0.77 |
| 323.15 | 13.346 | 11.70 | 521.9 | 521.5 | −0.08 | 4.12 | 4.12 | −0.15 | 0.00 |
| 323.15 | 10.176 | 10.68 | 419.9 | 419.7 | −0.06 | 2.27 | 2.27 | −0.12 | 0.00 |
| 323.15 | 10.034 | 10.62 | 414.6 | 414.1 | −0.12 | 2.19 | 2.18 | −0.25 | 1.62 |
| 323.15 | 9.077 | 10.11 | 372.8 | 373.0 | 0.05 | 1.60 | 1.60 | 0.10 | 1.10 |
| 323.15 | 9.061 | 10.10 | 371.7 | 372.2 | 0.15 | 1.59 | 1.59 | 0.29 | 0.00 |
| 323.15 | 8.035 | 9.28 | 316.2 | 317.8 | 0.52 | 0.95 | 0.96 | 1.04 | 0.00 |
| 323.15 | 7.049 | 7.71 | 250.7 | 250.2 | −0.21 | 0.41 | 0.41 | −0.42 | 0.00 |
| 323.15 | 6.707 | 6.74 | 231.8 | 230.5 | −0.56 | 0.32 | 0.31 | −1.11 | 0.00 |
| 323.15 | 6.323 | 5.51 | 223.5 | 223.0 | −0.24 | 0.34 | 0.33 | −0.48 | 0.00 |
| 323.15 | 6.063 | 4.80 | 224.5 | 224.3 | −0.08 | 0.41 | 0.41 | −0.17 | 0.00 |

**Data from Tsumura and Straty [63] (continued)**

Number of Points [63] 156

Calculation of sound speed:
AAD% = 0.31 BIAS% = −0.09 RMS% = 0.36

Calculation of $\partial P/\partial \rho|_T$ :
AAD2% = 0.62 BIAS2% = −0.18 RMS2% = 0.72

Absolute Deviations:
Calculation of sound speed:
AAD = 3.29 BIAS = −1.13 RMS = 4.38 $m \cdot s^{-1}$

Calculation of $\partial P/\partial \rho|_T$ :
AAD2 = 0.162 BIAS2 = −0.033 RMS2 = 0.283 $MPa \cdot dm^3 \cdot mol^{-1}$

Weighted Data:

Number of Points [63] 109

Calculation of sound speed:
AAD% = 0.36 BIAS% = −0.16 RMS% = 0.38

Calculation of $\partial P/\partial \rho|_T$ :
AAD2% = 0.71 BIAS2% = −0.32 RMS2% = 0.76

Absolute Deviations:
Calculation of sound speed:
AAD = 4.29 BIAS = −1.70 RMS = 5.07 $m \cdot s^{-1}$

Calculation of $\partial P/\partial \rho|_T$ :
AAD2 = 0.225 BIAS2 = −0.045 RMS2 = 0.337 $MPa \cdot dm^3 \cdot mol^{-1}$

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Overall Results: N = 248
AAD% = 0.49 BIAS% = −0.21 RMS% = 0.69
AAD2% = 0.97 BIAS2% = −0.41 RMS2% = 1.38
AAD = 2.94 BIAS = −1.12 RMS = 3.92 $m \cdot s^{-1}$
AAD2 = 0.112 BIAS2 = −0.026 RMS2 = 0.225 $MPa \cdot dm^3 \cdot mol^{-1}$

Weighted Data: N = 201
AAD% = 0.55 BIAS% = −0.27 RMS% = 0.74
AAD2% = 1.11 BIAS2% = −0.53 RMS2% = 1.48
AAD = 3.40 BIAS = −1.43 RMS = 4.26 $m \cdot s^{-1}$
AAD2 = 0.134 BIAS2 = −0.032 RMS2 = 0.249 $MPa \cdot dm^3 \cdot mol^{-1}$

## Table 11. SOUND SPEED IN THE SATURATED LIQUID

Data from Poole and Aziz [64]

| T<br>K | $P_\sigma$<br>MPa | $\rho_{\sigma L}$<br>$mol \cdot dm^{-3}$ | $W_{\sigma L}$,expt<br>$m \cdot s^{-1}$ | $W_{\sigma L}$,calc<br>$m \cdot s^{-1}$ | dev<br>% | $\partial P/\partial \rho\|_T$<br>$MPa \cdot dm^3 \cdot mol^{-1}$<br>expt | <br><br>calc | dev2<br>% | wt |
|---|---|---|---|---|---|---|---|---|---|
| 92.95 | 0.2E−5 | 21.57 | 1977.3 | 1981.9 | 0.23 | 82.62 | 83.00 | 0.46 | 0.00 |
| 98.72 | 0.8E−5 | 21.37 | 1933.6 | 1946.7 | 0.68 | 77.49 | 78.55 | 1.36 | 0.00 |
| 100.15 | 0.1E−4 | 21.32 | 1921.9 | 1937.3 | 0.80 | 76.24 | 77.46 | 1.60 | 0.00 |
| 103.15 | 0.2E−4 | 21.21 | 1904.5 | 1916.8 | 0.65 | 74.24 | 75.21 | 1.30 | 0.00 |
| 108.30 | 0.6E−4 | 21.02 | 1867.2 | 1880.5 | 0.71 | 70.44 | 71.44 | 1.43 | 0.00 |
| 111.52 | 0.1E−3 | 20.91 | 1844.4 | 1857.3 | 0.70 | 68.20 | 69.16 | 1.40 | 0.00 |
| 114.94 | 0.2E−3 | 20.78 | 1818.0 | 1832.5 | 0.80 | 65.75 | 66.80 | 1.60 | 0.00 |
| 121.01 | 0.4E−3 | 20.56 | 1774.6 | 1788.1 | 0.76 | 61.83 | 62.77 | 1.53 | 0.00 |
| 127.25 | 0.9E−3 | 20.33 | 1730.4 | 1742.2 | 0.68 | 58.04 | 58.83 | 1.37 | 0.00 |
| 132.32 | 0.2E−2 | 20.14 | 1693.8 | 1704.7 | 0.64 | 55.05 | 55.76 | 1.29 | 0.00 |
| 134.09 | 0.2E−2 | 20.07 | 1682.6 | 1691.6 | 0.53 | 54.15 | 54.73 | 1.07 | 0.00 |
| 139.91 | 0.4E−2 | 19.85 | 1639.7 | 1648.4 | 0.53 | 50.87 | 51.41 | 1.07 | 0.00 |
| 147.12 | 0.8E−2 | 19.58 | 1587.7 | 1594.8 | 0.44 | 47.08 | 47.50 | 0.89 | 0.00 |
| 147.82 | 0.8E−2 | 19.55 | 1583.4 | 1589.5 | 0.39 | 46.77 | 47.13 | 0.78 | 0.00 |
| 154.05 | 0.014 | 19.31 | 1536.7 | 1543.1 | 0.41 | 43.59 | 43.95 | 0.83 | 0.00 |
| 159.77 | 0.021 | 19.09 | 1494.7 | 1500.2 | 0.37 | 40.85 | 41.15 | 0.74 | 0.00 |
| 165.52 | 0.032 | 18.87 | 1453.2 | 1457.0 | 0.26 | 38.26 | 38.46 | 0.53 | 0.00 |
| 168.94 | 0.040 | 18.73 | 1430.5 | 1431.2 | 0.05 | 36.87 | 36.91 | 0.10 | 0.00 |
| 174.26 | 0.056 | 18.51 | 1391.7 | 1391.1 | −0.04 | 34.61 | 34.58 | −0.08 | 0.00 |
| 177.14 | 0.067 | 18.40 | 1368.6 | 1369.4 | 0.06 | 33.32 | 33.36 | 0.11 | 0.00 |
| 180.46 | 0.081 | 18.26 | 1343.2 | 1344.2 | 0.08 | 31.93 | 31.98 | 0.15 | 0.00 |
| 183.08 | 0.094 | 18.15 | 1325.4 | 1324.3 | −0.08 | 30.96 | 30.91 | −0.16 | 0.00 |
| 184.57 | 0.101 | 18.09 | 1312.9 | 1313.0 | 0.00 | 30.31 | 30.32 | 0.01 | 0.00 |
| 188.83 | 0.127 | 17.91 | 1280.3 | 1280.5 | 0.01 | 28.64 | 28.65 | 0.03 | 0.00 |
| 198.78 | 0.206 | 17.48 | 1202.2 | 1204.2 | 0.17 | 24.86 | 24.94 | 0.34 | 0.00 |

Number of Points [64] 25

Calculation of sound speed:
AAD% = 0.40 BIAS% = 0.39 RMS% = 0.29

Calculation of $\partial P/\partial \rho|_T$ :
AAD2% = 0.81 BIAS2% = 0.79 RMS2% = 0.58

Data from Poole and Aziz [64] (continued)

Absolute Deviations:

Calculation of sound speed :
AAD = 7.01 BIAS = 6.88 RMS = 5.39 $m \cdot s^{-1}$

Calculation of $\partial P/\partial \rho|_T$ :
AAD2 = 0.486 BIAS2 = 0.480 RMS2 = 0.410 $MPa \cdot dm^3 \cdot mol^{-1}$

Data from Tsumura and Straty [63]
These data were adjusted slightly as in [20].

| T K | $P_\sigma$ MPa | $\rho_{\sigma L}$ $mol \cdot dm^{-3}$ | $W_{\sigma L}$,expt $m \cdot s^{-1}$ | $W_{\sigma L}$,calc $m \cdot s^{-1}$ | dev % | $\partial P/\partial \rho\|_T$ $MPa \cdot dm^3 \cdot mol^{-1}$ expt | calc | dev2 % | wt |
|---|---|---|---|---|---|---|---|---|---|
| 91.00 | 0.1E-5 | 21.64 | 2002.6 | 1992.0 | -0.53 | 85.43 | 84.52 | -1.06 | 0.42 |
| 95.00 | 0.4E-5 | 21.50 | 1974.1 | 1970.1 | -0.20 | 81.74 | 81.42 | -0.40 | 0.41 |
| 100.00 | 0.1E-4 | 21.32 | 1938.7 | 1938.3 | -0.02 | 77.61 | 77.58 | -0.04 | 0.40 |
| 105.00 | 0.3E-4 | 21.14 | 1902.8 | 1903.9 | 0.06 | 73.75 | 73.84 | 0.11 | 0.39 |
| 110.00 | 0.7E-4 | 20.96 | 1867.4 | 1868.3 | 0.05 | 70.17 | 70.23 | 0.09 | 0.38 |
| 115.00 | 0.2E-3 | 20.78 | 1831.2 | 1832.0 | 0.05 | 66.70 | 66.76 | 0.09 | 0.37 |
| 120.00 | 0.4E-3 | 20.60 | 1795.0 | 1795.5 | 0.03 | 63.39 | 63.43 | 0.05 | 0.37 |
| 125.00 | 0.7E-3 | 20.41 | 1759.0 | 1758.7 | -0.01 | 60.24 | 60.23 | -0.03 | 0.36 |
| 130.00 | 0.1E-2 | 20.23 | 1722.8 | 1721.8 | -0.06 | 57.21 | 57.15 | -0.11 | 0.36 |
| 135.00 | 0.2E-2 | 20.04 | 1685.9 | 1684.8 | -0.06 | 54.26 | 54.20 | -0.12 | 0.35 |
| 140.00 | 0.4E-2 | 19.85 | 1649.4 | 1647.8 | -0.10 | 51.46 | 51.36 | -0.20 | 0.35 |
| 145.00 | 0.6E-2 | 19.66 | 1612.7 | 1610.6 | -0.13 | 48.76 | 48.63 | -0.26 | 0.35 |
| 150.00 | 0.1E-1 | 19.47 | 1575.5 | 1573.3 | -0.14 | 46.13 | 46.00 | -0.28 | 0.35 |
| 155.00 | 0.015 | 19.28 | 1538.3 | 1535.9 | -0.15 | 43.61 | 43.47 | -0.31 | 0.35 |
| 160.00 | 0.021 | 19.08 | 1501.1 | 1498.5 | -0.17 | 41.18 | 41.04 | -0.35 | 0.35 |
| 165.00 | 0.031 | 18.89 | 1463.6 | 1460.9 | -0.18 | 38.84 | 38.70 | -0.36 | 0.35 |
| 170.00 | 0.043 | 18.69 | 1426.0 | 1423.3 | -0.19 | 36.58 | 36.44 | -0.38 | 0.35 |
| 175.00 | 0.059 | 18.48 | 1388.1 | 1385.5 | -0.18 | 34.39 | 34.26 | -0.37 | 0.35 |
| 180.00 | 0.079 | 18.28 | 1350.3 | 1347.7 | -0.19 | 32.29 | 32.17 | -0.39 | 0.35 |
| 185.00 | 0.104 | 18.07 | 1312.1 | 1309.7 | -0.18 | 30.26 | 30.15 | -0.37 | 0.35 |
| 190.00 | 0.135 | 17.86 | 1273.6 | 1271.6 | -0.16 | 28.29 | 28.20 | -0.32 | 0.36 |
| 195.00 | 0.172 | 17.64 | 1235.0 | 1233.3 | -0.14 | 26.39 | 26.32 | -0.28 | 0.36 |
| 200.00 | 0.217 | 17.42 | 1196.0 | 1194.8 | -0.10 | 24.55 | 24.50 | -0.19 | 0.36 |
| 205.00 | 0.271 | 17.20 | 1156.9 | 1156.2 | -0.06 | 22.78 | 22.76 | -0.12 | 0.37 |
| 210.00 | 0.334 | 16.97 | 1117.4 | 1117.4 | 0.00 | 21.07 | 21.07 | 0.00 | 0.38 |

Table 11. SOUND SPEED IN THE SATURATED LIQUID (continued)

Data from Tsumura and Straty [63] (continued)

| T K | $P_\sigma$ MPa | $\rho_{\sigma L}$ $mol \cdot dm^{-3}$ | $W_{\sigma L}$,expt $m \cdot s^{-1}$ | $W_{\sigma L}$,calc $m \cdot s^{-1}$ | dev % | $\partial P/\partial\rho\|_T$ $MPa \cdot dm^3 \cdot mol^{-1}$ expt | calc | dev2 % | wt |
|---|---|---|---|---|---|---|---|---|---|
| 215.00 | 0.407 | 16.74 | 1077.7 | 1078.3 | 0.06 | 19.43 | 19.45 | 0.11 | 0.39 |
| 220.00 | 0.492 | 16.50 | 1037.7 | 1039.0 | 0.12 | 17.84 | 17.89 | 0.25 | 0.40 |
| 225.00 | 0.590 | 16.25 | 997.2 | 999.4 | 0.22 | 16.31 | 16.38 | 0.43 | 0.41 |
| 230.00 | 0.701 | 16.00 | 956.5 | 959.4 | 0.30 | 14.85 | 14.93 | 0.60 | 0.42 |
| 235.00 | 0.826 | 15.74 | 915.2 | 919.0 | 0.42 | 13.43 | 13.54 | 0.84 | 0.44 |
| 240.00 | 0.967 | 15.47 | 873.6 | 878.2 | 0.53 | 12.07 | 12.20 | 1.06 | 0.46 |
| 245.00 | 1.125 | 15.19 | 831.3 | 836.9 | 0.68 | 10.77 | 10.92 | 1.35 | 0.48 |
| 250.00 | 1.301 | 14.89 | 788.5 | 795.0 | 0.82 | 9.52 | 9.68 | 1.65 | 0.51 |
| 255.00 | 1.497 | 14.59 | 745.0 | 752.4 | 0.99 | 8.33 | 8.50 | 1.98 | 0.55 |
| 260.00 | 1.712 | 14.27 | 700.7 | 708.9 | 1.16 | 7.20 | 7.37 | 2.34 | 0.60 |
| 265.00 | 1.950 | 13.93 | 655.4 | 664.3 | 1.36 | 6.12 | 6.29 | 2.73 | 0.67 |
| 270.00 | 2.211 | 13.56 | 609.0 | 618.4 | 1.55 | 5.10 | 5.26 | 3.12 | 0.76 |
| 275.00 | 2.496 | 13.17 | 561.1 | 570.8 | 1.73 | 4.14 | 4.29 | 3.50 | 0.93 |
| 280.00 | 2.808 | 12.74 | 511.5 | 520.9 | 1.84 | 3.24 | 3.36 | 3.72 | 1.30 |
| 285.00 | 3.147 | 12.26 | 459.4 | 467.9 | 1.84 | 2.41 | 2.49 | 3.72 | 6.51 |
| 290.00 | 3.517 | 11.70 | 404.2 | 410.5 | 1.55 | 1.65 | 1.70 | 3.13 | 1.38 |
| 295.00 | 3.919 | 11.01 | 343.9 | 347.3 | 1.00 | 0.98 | 1.00 | 2.01 | 0.97 |
| 295.40 | 3.952 | 10.95 | 339.0 | 342.0 | 0.89 | 0.93 | 0.95 | 1.80 | 0.96 |
| 296.00 | 4.003 | 10.85 | 331.1 | 333.9 | 0.84 | 0.86 | 0.87 | 1.69 | 0.93 |
| 297.00 | 4.089 | 10.68 | 317.8 | 320.1 | 0.73 | 0.74 | 0.76 | 1.47 | 0.89 |
| 298.00 | 4.177 | 10.50 | 304.0 | 306.0 | 0.67 | 0.63 | 0.64 | 1.35 | 0.86 |
| 299.00 | 4.266 | 10.30 | 289.6 | 291.6 | 0.69 | 0.53 | 0.53 | 1.39 | 0.83 |
| 300.00 | 4.357 | 10.08 | 274.8 | 276.8 | 0.71 | 0.43 | 0.43 | 1.43 | 0.00 |
| 301.00 | 4.449 | 9.85 | 259.1 | 261.4 | 0.91 | 0.33 | 0.34 | 1.82 | 0.00 |
| 302.00 | 4.543 | 9.58 | 241.9 | 245.5 | 1.50 | 0.24 | 0.25 | 3.02 | 0.00 |
| 303.00 | 4.639 | 9.25 | 223.2 | 228.8 | 2.49 | 0.16 | 0.16 | 5.04 | 0.00 |

Number of Points [63] 51

Calculation of sound speed:
AAD% = 0.56 BIAS% = 0.45 RMS% = 0.70

Calculation of $\partial P/\partial\rho|_T$ :
AAD2% = 1.13 BIAS2% = 0.90 RMS2% = 1.40

Data from Tsumura and Straty [63] (continued)

Absolute Deviations:

Calculation of sound speed:
AAD = 3.42 BIAS = 1.59 RMS = 4.15 $m \cdot s^{-1}$

Calculation of $\partial P/\partial\rho|_T$ :
AAD2 = 0.100 BIAS2 = −0.015 RMS2 = 0.164 $MPa \cdot dm^3 \cdot mol^{-1}$

Weighted Data:

Number of Points [63] 47

Calculation of sound speed:
AAD% = 0.49 BIAS% = 0.37 RMS% = 0.63

Calculation of $\partial P/\partial\rho|_T$ :
AAD2% = 0.99 BIAS2% = 0.74 RMS2% = 1.28

Absolute Deviations:

Calculation of sound speed:
AAD = 3.42 BIAS = 1.43 RMS = 4.26 $m \cdot s^{-1}$

Calculation of $\partial P/\partial\rho|_T$ :
AAD2 = 0.108 BIAS2 = −0.016 RMS2 = 0.171 $MPa \cdot dm^3 \cdot mol^{-1}$

Data from Vangeel [65]
These unpublished data were tabulated in [20].

| T K | $P_\sigma$ MPa | $\rho_{\sigma L}$ $mol \cdot dm^{-3}$ | $W_{\sigma L}$, expt $m \cdot s^{-1}$ | $W_{\sigma L}$, calc $m \cdot s^{-1}$ | dev % | $\partial P/\partial\rho\|_T$ $MPa \cdot dm^3 \cdot mol^{-1}$ expt | calc | dev2 % | wt |
|---|---|---|---|---|---|---|---|---|---|
| 95.50 | 0.4E−5 | 21.49 | 1963.0 | 1967.1 | 0.21 | 80.69 | 81.03 | 0.42 | 0.00 |
| 99.70 | 0.1E−4 | 21.34 | 1934.0 | 1940.3 | 0.32 | 77.30 | 77.80 | 0.65 | 0.00 |
| 104.87 | 0.3E−4 | 21.15 | 1898.5 | 1904.8 | 0.33 | 73.45 | 73.93 | 0.67 | 0.00 |
| 109.80 | 0.7E−4 | 20.97 | 1862.0 | 1869.7 | 0.41 | 69.79 | 70.37 | 0.83 | 0.00 |
| 114.97 | 0.2E−3 | 20.78 | 1826.2 | 1832.3 | 0.33 | 66.34 | 66.78 | 0.67 | 0.00 |
| 115.01 | 0.2E−3 | 20.78 | 1827.0 | 1832.0 | 0.27 | 66.39 | 66.75 | 0.55 | 0.00 |
| 119.70 | 0.3E−3 | 20.61 | 1795.0 | 1797.7 | 0.15 | 63.43 | 63.62 | 0.30 | 0.00 |
| 125.49 | 0.7E−3 | 20.39 | 1752.8 | 1755.1 | 0.13 | 59.76 | 59.92 | 0.27 | 0.00 |
| 130.11 | 0.1E−2 | 20.22 | 1721.0 | 1721.0 | 0.00 | 57.08 | 57.08 | 0.00 | 0.00 |
| 134.89 | 0.2E−2 | 20.04 | 1685.0 | 1685.7 | 0.04 | 54.22 | 54.26 | 0.08 | 0.00 |

Table 11. SOUND SPEED IN THE SATURATED LIQUID (continued)

Data from Vangeel [65] (continued)

| T K | $P_\sigma$ MPa | $\rho_{\sigma L}$ $mol \cdot dm^{-3}$ | $W_{\sigma L}$,expt $m \cdot s^{-1}$ | $W_{\sigma L}$,calc $m \cdot s^{-1}$ | dev % | $\partial P/\partial \rho \vert_T$ $MPa \cdot dm^3 \cdot mol^{-1}$ expt | calc | dev2 % | wt |
|---|---|---|---|---|---|---|---|---|---|
| 139.47 | 0.4E−2 | 19.87 | 1652.1 | 1651.7 | −0.02 | 51.68 | 51.65 | −0.05 | 0.00 |
| 145.08 | 0.6E−2 | 19.66 | 1608.0 | 1610.0 | 0.12 | 48.47 | 48.59 | 0.25 | 0.00 |
| 151.28 | 0.011 | 19.42 | 1565.7 | 1563.7 | −0.13 | 45.46 | 45.35 | −0.25 | 0.00 |
| 155.94 | 0.016 | 19.24 | 1531.2 | 1528.9 | −0.15 | 43.14 | 43.01 | −0.30 | 0.00 |
| 161.25 | 0.024 | 19.03 | 1491.2 | 1489.1 | −0.14 | 40.56 | 40.45 | −0.28 | 0.00 |
| 161.26 | 0.024 | 19.03 | 1491.4 | 1489.0 | −0.16 | 40.57 | 40.44 | −0.32 | 0.00 |
| 164.86 | 0.030 | 18.89 | 1464.0 | 1462.0 | −0.14 | 38.87 | 38.76 | −0.27 | 0.00 |
| 164.89 | 0.030 | 18.89 | 1463.1 | 1461.8 | −0.09 | 38.82 | 38.75 | −0.18 | 0.00 |
| 169.84 | 0.042 | 18.69 | 1426.5 | 1424.5 | −0.14 | 36.61 | 36.51 | −0.28 | 0.00 |
| 174.59 | 0.057 | 18.50 | 1391.0 | 1388.6 | −0.17 | 34.56 | 34.44 | −0.34 | 0.00 |
| 179.85 | 0.078 | 18.29 | 1350.9 | 1348.8 | −0.15 | 32.33 | 32.23 | −0.31 | 0.00 |
| 184.67 | 0.102 | 18.09 | 1316.2 | 1312.2 | −0.30 | 30.46 | 30.28 | −0.61 | 0.00 |
| 189.71 | 0.133 | 17.87 | 1276.1 | 1273.8 | −0.18 | 28.41 | 28.31 | −0.36 | 0.00 |
| 195.09 | 0.173 | 17.64 | 1234.3 | 1232.6 | −0.14 | 26.36 | 26.28 | −0.27 | 0.00 |
| 199.64 | 0.214 | 17.44 | 1199.1 | 1197.6 | −0.12 | 24.69 | 24.63 | −0.25 | 0.00 |
| 204.42 | 0.264 | 17.23 | 1160.2 | 1160.7 | 0.04 | 22.94 | 22.96 | 0.09 | 0.00 |
| 210.31 | 0.338 | 16.96 | 1115.1 | 1115.0 | −0.01 | 20.98 | 20.97 | −0.02 | 0.00 |
| 214.56 | 0.401 | 16.76 | 1081.5 | 1081.8 | 0.02 | 19.58 | 19.59 | 0.05 | 0.00 |
| 220.10 | 0.494 | 16.49 | 1036.4 | 1038.2 | 0.17 | 17.80 | 17.86 | 0.35 | 0.00 |
| 224.96 | 0.589 | 16.25 | 996.8 | 999.7 | 0.29 | 16.30 | 16.40 | 0.58 | 0.00 |
| 229.93 | 0.699 | 16.00 | 958.1 | 959.9 | 0.19 | 14.90 | 14.95 | 0.39 | 0.00 |
| 234.91 | 0.824 | 15.74 | 916.4 | 919.8 | 0.37 | 13.47 | 13.57 | 0.73 | 0.00 |
| 239.90 | 0.964 | 15.47 | 875.3 | 879.1 | 0.43 | 12.12 | 12.23 | 0.86 | 0.00 |
| 244.96 | 1.124 | 15.19 | 831.4 | 837.2 | 0.70 | 10.77 | 10.93 | 1.41 | 0.00 |
| 244.75 | 1.117 | 15.20 | 832.5 | 839.0 | 0.78 | 10.81 | 10.98 | 1.57 | 0.00 |
| 250.22 | 1.310 | 14.88 | 787.7 | 793.1 | 0.69 | 9.50 | 9.63 | 1.38 | 0.00 |
| 255.11 | 1.501 | 14.58 | 744.6 | 751.4 | 0.91 | 8.32 | 8.47 | 1.84 | 0.00 |
| 259.93 | 1.709 | 14.27 | 700.0 | 709.5 | 1.35 | 7.19 | 7.39 | 2.72 | 0.00 |
| 264.97 | 1.949 | 13.93 | 655.5 | 664.6 | 1.38 | 6.13 | 6.30 | 2.79 | 0.00 |
| 269.92 | 2.206 | 13.57 | 609.7 | 619.2 | 1.55 | 5.12 | 5.28 | 3.13 | 0.00 |
| 274.17 | 2.447 | 13.24 | 569.6 | 578.9 | 1.63 | 4.30 | 4.44 | 3.28 | 0.00 |
| 280.05 | 2.811 | 12.74 | 509.4 | 520.4 | 2.16 | 3.21 | 3.35 | 4.37 | 0.00 |
| 285.15 | 3.158 | 12.24 | 459.0 | 466.2 | 1.57 | 2.39 | 2.47 | 3.17 | 0.00 |
| 288.57 | 3.408 | 11.87 | 423.8 | 427.4 | 0.85 | 1.89 | 1.92 | 1.71 | 0.00 |

**Data from Vangeel [65] (continued)**

Number of Points [65] 44

Calculation of sound speed:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AAD% | = | 0.44 | BIAS% | = | 0.35 | RMS% | = | 0.59 |

Calculation of $\partial P/\partial\rho|_T$ :

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AAD2% | = | 0.89 | BIAS2% | = | 0.70 | RMS2% | = | 1.18 |

Absolute Deviations:

Calculation of sound speed:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AAD | = | 3.86 | BIAS | = | 2.56 | RMS | = | 4.09 $m \cdot s^{-1}$ |

Calculation of $\partial P/\partial\rho|_T$ :

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AAD2 | = | 0.151 | BIAS2 | = | 0.086 | RMS2 | = | 0.182 $MPa \cdot dm^3 \cdot mol^{-1}$ |

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Overall Results: N = 120

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AAD% | = | 0.49 | BIAS% | = | 0.40 | RMS% | = | 0.59 |
| AAD2% | = | 0.98 | BIAS2% | = | 0.81 | RMS2% | = | 1.20 |
| AAD | = | 4.33 | BIAS | = | 3.05 | RMS | = | 4.85 $m \cdot s^{-1}$ |
| AAD2 | = | 0.199 | BIAS2 | = | 0.125 | RMS2 | = | 0.306 $MPa \cdot dm^3 \cdot mol^{-1}$ |

Weighted Data: N = 47

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AAD% | = | 0.49 | BIAS% | = | 0.37 | RMS% | = | 0.63 |
| AAD2% | = | 0.99 | BIAS2% | = | 0.74 | RMS2% | = | 1.28 |
| AAD | = | 3.42 | BIAS | = | 1.43 | RMS | = | 4.26 $m \cdot s^{-1}$ |
| AAD2 | = | 0.108 | BIAS2 | = | −0.016 | RMS2 | = | 0.171 $MPa \cdot dm^3 \cdot mol^{-1}$ |

## 5. Dilute Gas Transport Properties

Table 12 gives comparisons for the dilute gas viscosity and table 13 is for the dilute gas thermal conductivity. In both tables, we list the pressure and the value of the transport property as tabulated in the experimental paper. Under the headings $\eta_0$,expt and $\lambda_0$,expt we give values adjusted to zero pressure according to our correlation of the transport property surfaces [1,2]. This adjustment is done by calculating the excess property (the difference between the total transport property and its dilute gas limit) at the experimental temperature and pressure and subtracting this value from the experimental measurement of the transport property at that state point. The experimental measurements are typically done at 0.1 MPa or 0.101 325 MPa (1 atm), and the correction to zero pressure is seen to be extremely small for all of the tabulated data. When the experimental paper reports values which have already been extrapolated to zero pressure, these data are used in our comparisons, the pressure is indicated as 0 MPa, and the columns for the experimental quantity and the adjusted experimental quantity are identical.

The weights refer to the linear problem associated with the evaluation of coefficients for the dilute gas transport properties. In one instance, as indicated in table 13, the adjusted values used to determine the final correlation for the dilute gas were based on a preliminary version of the surface.

All data with pressures at or below 0.1 MPa are included in these tables rather than with the data at elevated pressures in Sec. 6. We have included overall statistics which eliminate both very recently acquired data and some older data in order to agree with the data selection in the comparisons of [1].

Table 12. ZERO DENSITY VISCOSITY

Data from Abe et al. [66]

| T K | P MPa | $\eta$, expt $\mu$Pa•s | $\eta_o$, expt $\mu$Pa•s | $\eta_o$, calc $\mu$Pa•s | Dev % | wt |
|---|---|---|---|---|---|---|
| 298.150 | 0.10 | 9.25 | 9.23 | 9.33 | 1.13 | 0.00 |
| 333.150 | 0.10 | 0.370 | 10.35 | 10.34 | -0.04 | 0.00 |
| 373.150 | 0.10 | 11.52 | 11.50 | 11.46 | -0.31 | 0.00 |
| 418.150 | 0.10 | 12.74 | 12.72 | 12.68 | -0.35 | 0.00 |
| 468.150 | 0.10 | 14.07 | 14.05 | 13.97 | -0.61 | 0.00 |

Number of Points [66] 5

AAD% = 0.49 BIAS% = -0.04 RMS% = 0.61
AAD = 0.05 BIAS = -0.01 RMS = 0.06 $\mu$Pa•s

Data from Adzumi [67]

| T K | P MPa | $\eta$, expt $\mu$Pa•s | $\eta_o$, expt $\mu$Pa•s | $\eta_o$, calc $\mu$Pa•s | Dev % | wt |
|---|---|---|---|---|---|---|
| 293.150 | 0.00 | 9.28 | 9.28 | 9.19 | -1.02 | 0.00 |
| 303.150 | 0.00 | 9.66 | 9.66 | 9.48 | -1.88 | 0.00 |
| 313.150 | 0.00 | 9.91 | 9.91 | 9.77 | -1.42 | 0.00 |
| 323.150 | 0.00 | 10.16 | 10.16 | 10.06 | -1.00 | 0.00 |
| 333.150 | 0.00 | 10.51 | 10.51 | 10.34 | -1.58 | 0.00 |
| 343.150 | 0.00 | 10.80 | 10.80 | 10.63 | -1.60 | 0.00 |
| 353.150 | 0.00 | 11.09 | 11.09 | 10.91 | -1.63 | 0.00 |
| 363.150 | 0.00 | 11.43 | 11.43 | 11.19 | -2.12 | 0.00 |
| 373.150 | 0.00 | 11.71 | 11.71 | 11.46 | -2.11 | 0.00 |

Number of Points [67] 9

AAD% = 1.60 BIAS% = -1.60 RMS% = 0.38
AAD = 0.17 BIAS = -0.17 RMS = 0.05 $\mu$Pa•s

Table 12. ZERO DENSITY VISCOSITY (continued)

Data from Carmichael et al. [68]

| T K | P MPa | $\eta$, expt µPa•s | $\eta_o$, expt µPa•s | $\eta_o$, calc µPa•s | Dev % | wt |
|---|---|---|---|---|---|---|
| 305.372 | 0.10 | 9.56 | 9.54 | 9.54 | 0.08 | 0.00 |
| 305.372 | 0.10 | 9.55 | 9.53 | 9.54 | 0.13 | 0.00 |
| 305.372 | 0.10 | 9.53 | 9.51 | 9.54 | 0.33 | 0.00 |

Number of Points [68] 3

AAD% = 0.18 BIAS% = 0.18 RMS% = 0.11
AAD = 0.02 BIAS = 0.02 RMS = 0.01 µPa•s

Data from Craven et al. [69]

| T K | P MPa | $\eta$, expt µPa•s | $\eta_o$, expt µPa•s | $\eta_o$, calc µPa•s | Dev % | wt |
|---|---|---|---|---|---|---|
| 308.150 | 0.00 | 9.47 | 9.47 | 9.62 | 1.63 | 0.00 |
| 323.150 | 0.00 | 9.86 | 9.86 | 10.06 | 2.01 | 0.00 |
| 338.150 | 0.00 | 10.33 | 10.33 | 10.49 | 1.51 | 0.00 |
| 350.950 | 0.00 | 10.78 | 10.78 | 10.85 | 0.62 | 0.00 |

Number of Points [69] 4

AAD% = 1.44 BIAS% = 1.44 RMS% = 0.51
AAD = 0.14 BIAS = 0.14 RMS = 0.05 µPa•s

Data from De Rocco and Halford [70]

| T K | P MPa | $\eta$, expt µPa•s | $\eta_o$, expt µPa•s | $\eta_o$, calc µPa•s | Dev % | wt |
|---|---|---|---|---|---|---|
| 250.100 | 0.00 | 7.95 | 7.95 | 7.90 | −0.68 | 0.00 |
| 273.160 | 0.00 | 8.69 | 8.69 | 8.59 | −1.13 | 0.00 |
| 292.700 | 0.00 | 9.30 | 9.30 | 9.17 | −1.38 | 0.00 |
| 300.700 | 0.00 | 9.50 | 9.50 | 9.41 | −0.98 | 0.00 |
| 308.200 | 0.00 | 9.70 | 9.70 | 9.63 | −0.76 | 0.00 |
| 320.700 | 0.00 | 10.10 | 10.10 | 9.99 | −1.11 | 0.00 |
| 328.700 | 0.00 | 10.35 | 10.35 | 10.22 | −1.28 | 0.00 |
| 337.300 | 0.00 | 10.64 | 10.64 | 10.46 | −1.67 | 0.00 |
| 351.100 | 0.00 | 11.01 | 11.01 | 10.85 | −1.44 | 0.00 |
| 363.100 | 0.00 | 11.27 | 11.27 | 11.19 | −0.75 | 0.00 |
| 373.200 | 0.00 | 11.55 | 11.55 | 11.46 | −0.74 | 0.00 |
| 387.900 | 0.00 | 12.04 | 12.04 | 11.87 | −1.44 | 0.00 |

Data from De Rocco and Halford [70] (continued)

| T<br>K | P<br>MPa | $\eta$, expt<br>$\mu$Pa•s | $\eta_o$, expt<br>$\mu$Pa•s | $\eta_o$, calc<br>$\mu$Pa•s | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 394.400 | 0.00 | 12.30 | 12.30 | 12.04 | −2.10 | 0.00 |
| 407.200 | 0.00 | 12.54 | 12.54 | 12.38 | −1.24 | 0.00 |
| 424.400 | 0.00 | 12.89 | 12.89 | 12.84 | −0.39 | 0.00 |
| 439.900 | 0.00 | 13.41 | 13.41 | 13.24 | −1.24 | 0.00 |
| 451.600 | 0.00 | 13.72 | 13.72 | 13.54 | −1.28 | 0.00 |
| 459.400 | 0.00 | 13.90 | 13.90 | 13.74 | −1.12 | 0.00 |
| 473.160 | 0.00 | 14.18 | 14.18 | 14.09 | −0.62 | 0.00 |

Number of Points [70] 19

AAD% = 1.12 BIAS% = −1.12 RMS% = 0.40
AAD = 0.13 BIAS = −0.13 RMS = 0.05 $\mu$Pa•s

Data from Eakin et al. [71]

| T<br>K | P<br>MPa | $\eta$, expt<br>$\mu$Pa•s | $\eta_o$, expt<br>$\mu$Pa•s | $\eta_o$, calc<br>$\mu$Pa•s | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 294.261 | 0.10 | 9.10 | 9.08 | 9.22 | 1.54 | 0.00 |
| 310.928 | 0.10 | 9.60 | 9.58 | 9.71 | 1.33 | 0.00 |
| 327.594 | 0.10 | 10.10 | 10.08 | 10.19 | 1.07 | 0.00 |
| 344.261 | 0.10 | 10.60 | 10.58 | 10.66 | 0.76 | 0.00 |
| 360.928 | 0.10 | 11.10 | 11.08 | 11.13 | 0.42 | 0.00 |
| 377.594 | 0.10 | 11.50 | 11.48 | 11.59 | 0.93 | 0.00 |
| 394.261 | 0.10 | 12.00 | 11.98 | 12.04 | 0.49 | 0.00 |
| 410.928 | 0.10 | 12.40 | 12.38 | 12.48 | 0.84 | 0.00 |
| 444.261 | 0.10 | 13.30 | 13.28 | 13.36 | 0.57 | 0.00 |
| 477.594 | 0.10 | 14.20 | 14.18 | 14.20 | 0.16 | 0.00 |
| 510.928 | 0.10 | 15.00 | 14.98 | 15.03 | 0.30 | 0.00 |

Number of Points [71] 11

AAD% = 0.77 BIAS% = 0.77 RMS% = 0.41
AAD = 0.08 BIAS = 0.08 RMS = 0.04 $\mu$Pa•s

Table 12. ZERO DENSITY VISCOSITY (continued)

Data from Fleeter et al. [72]

| T K | P MPa | $\eta$, expt $\mu$Pa•s | $\eta_o$, expt $\mu$Pa•s | $\eta_o$, calc $\mu$Pa•s | Dev % | wt |
|---|---|---|---|---|---|---|
| 300.650 | 0.00 | 9.32 | 9.32 | 9.40 | 0.88 | 1.50 |

Number of Points [72] 1

AAD% = 0.88 BIAS% = 0.88 RMS% = 0.00
AAD = 0.08 BIAS = 0.08 RMS = 0.00 $\mu$Pa•s

Weighted Data:

Number of Points [72] 1

AAD% = 0.88 BIAS% = 0.88 RMS% = 0.00
AAD = 0.08 BIAS = 0.08 RMS = 0.00 $\mu$Pa•s

Data from Iwasaki et al. [73]

| T K | P MPa | $\eta$, expt $\mu$Pa•s | $\eta_o$, expt $\mu$Pa•s | $\eta_o$, calc $\mu$Pa•s | Dev % | wt |
|---|---|---|---|---|---|---|
| 298.150 | 0.10 | 9.26 | 9.24 | 9.33 | 1.02 | 0.00 |
| 298.150 | 0.10 | 9.26 | 9.24 | 9.33 | 1.02 | 0.00 |
| 305.650 | 0.10 | 9.46 | 9.44 | 9.55 | 1.20 | 0.00 |
| 305.650 | 0.10 | 9.46 | 9.44 | 9.55 | 1.21 | 0.00 |
| 305.850 | 0.10 | 9.46 | 9.44 | 9.56 | 1.26 | 0.00 |
| 305.850 | 0.10 | 9.47 | 9.45 | 9.56 | 1.16 | 0.00 |
| 306.150 | 0.10 | 9.50 | 9.48 | 9.57 | 0.93 | 0.00 |
| 306.150 | 0.10 | 9.46 | 9.44 | 9.57 | 1.36 | 0.00 |
| 306.450 | 0.10 | 9.48 | 9.46 | 9.57 | 1.24 | 0.00 |
| 306.450 | 0.10 | 9.50 | 9.48 | 9.57 | 1.02 | 0.00 |
| 308.150 | 0.10 | 9.54 | 9.52 | 9.62 | 1.12 | 0.00 |
| 308.150 | 0.10 | 9.54 | 9.52 | 9.62 | 1.12 | 0.00 |
| 323.150 | 0.10 | 9.99 | 9.97 | 10.06 | 0.90 | 0.00 |
| 348.150 | 0.10 | 10.69 | 10.67 | 10.77 | 0.94 | 0.00 |
| 348.150 | 0.10 | 10.69 | 10.67 | 10.77 | 0.94 | 0.00 |
| 348.150 | 0.00 | 10.70 | 10.70 | 10.77 | 0.66 | 0.00 |

Table 12. ZERO DENSITY VISCOSITY (continued)

Data from Iwasaki et al. [73] (continued)

Number of Points [73] 16

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AAD% | = | 1.07 | BIAS% | = | 1.07 | RMS% | = | 0.17 |
| AAD | = | 0.10 | BIAS | = | 0.10 | RMS | = | 0.01 μPa•s |

Data from Kestin et al. [74]

| T K | P MPa | $\eta$, expt μPa•s | $\eta_o$, expt μPa•s | $\eta_o$, calc μPa•s | Dev % | wt |
|---|---|---|---|---|---|---|
| 296.350 | 0.00 | 9.19 | 9.17 | 9.28 | 1.20 | 0.00 |
| 303.750 | 0.10 | 9.42 | 9.40 | 9.50 | 1.05 | 1.50 |

Number of Points [74] 2

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AAD% | = | 1.13 | BIAS% | = | 1.13 | RMS% | = | 0.07 |
| AAD | = | 0.10 | BIAS | = | 0.10 | RMS | = | 0.01 μPa•s |

Weighted Data:

Number of Points [74] 1

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AAD% | = | 1.05 | BIAS% | = | 1.05 | RMS% | = | 0.00 |
| AAD | = | 0.10 | BIAS | = | 0.10 | RMS | = | 0.00 μPa•s |

Data from Kestin et al. [75]

| T K | P MPa | $\eta$, expt μPa•s | $\eta_o$, expt μPa•s | $\eta_o$, calc μPa•s | Dev % | wt |
|---|---|---|---|---|---|---|
| 301.370 | 0.10 | 9.34 | 9.32 | 9.43 | 1.13 | 0.00 |
| 334.250 | 0.10 | 10.40 | 10.38 | 10.38 | −0.04 | 1.00 |
| 377.430 | 0.10 | 11.68 | 11.66 | 11.58 | −0.71 | 1.00 |
| 421.190 | 0.10 | 12.93 | 12.91 | 12.76 | −1.17 | 1.00 |
| 476.820 | 0.10 | 14.38 | 14.36 | 14.18 | −1.23 | 1.00 |

Number of Point [75] 5

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AAD% | = | 0.86 | BIAS% | = | −0.40 | RMS% | = | 0.88 |
| AAD | = | 0.10 | BIAS | = | −0.06 | RMS | = | 0.10 μPa•s |

**Data from Kestin et al. [75]** (continued)

Weighted Data:

Number of Points [75] 4

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AAD% | = | 0.79 | BIAS% | = | -0.79 | RMS% | = | 0.48 |
| AAD | = | 0.10 | BIAS | = | -0.10 | RMS | = | 0.07 $\mu$Pa•s |

**Data from Lambert et al. [76]**

| T K | P MPa | $\eta$, expt $\mu$Pa•s | $\eta_o$, expt $\mu$Pa•s | $\eta_o$, calc $\mu$Pa•s | Dev % | wt |
|---|---|---|---|---|---|---|
| 308.150 | 0.10 | 9.61 | 9.59 | 9.62 | 0.38 | 0.00 |
| 323.150 | 0.10 | 10.06 | 10.04 | 10.06 | 0.20 | 0.00 |
| 338.150 | 0.10 | 10.53 | 10.51 | 10.49 | -0.21 | 0.00 |
| 351.150 | 0.10 | 10.96 | 10.94 | 10.85 | -0.78 | 0.00 |

Number of Points [76] 4

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AAD% | = | 0.39 | BIAS% | = | -0.10 | RMS% | = | 0.45 |
| AAD | = | 0.04 | BIAS | = | -0.01 | RMS | = | 0.05 $\mu$Pa•s |

**Data from Trautz et al. [77]**

| T K | P MPa | $\eta$, expt $\mu$Pa•s | $\eta_o$, expt $\mu$Pa•s | $\eta_o$, calc $\mu$Pa•s | Dev % | wt |
|---|---|---|---|---|---|---|
| 290.350 | 0.00 | 9.01 | 9.01 | 9.10 | 1.03 | 0.00 |
| 323.950 | 0.00 | 10.01 | 10.01 | 10.08 | 0.71 | 0.00 |
| 373.550 | 0.00 | 11.43 | 11.43 | 11.47 | 0.39 | 0.00 |
| 423.050 | 0.00 | 12.78 | 12.78 | 12.80 | 0.19 | 0.00 |
| 473.450 | 0.00 | 14.09 | 14.09 | 14.10 | 0.07 | 0.00 |
| 523.150 | 0.00 | 15.26 | 15.26 | 15.32 | 0.41 | 0.00 |

Number of Points [77] 6

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AAD% | = | 0.47 | BIAS% | = | 0.47 | RMS% | = | 0.32 |
| AAD | = | 0.05 | BIAS | = | 0.05 | RMS | = | 0.03 $\mu$Pa•s |

Data from Vogel [78]

| T<br>K | P<br>MPa | $\eta$, expt<br>$\mu$Pa•s | $\eta_o$, expt<br>$\mu$Pa•s | $\eta_o$, calc<br>$\mu$Pa•s | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 194.600 | 0.10 | 6.40 | 6.38 | 6.18 | -3.14 | 0.00 |
| 273.100 | 0.10 | 8.55 | 8.53 | 8.59 | 0.72 | 0.00 |

Number of Points [78] 2

| | | | | | |
|---|---|---|---|---|---|
| AAD% | = 1.93 | BIAS% | = -1.21 | RMS% | = 1.93 |
| AAD | = 0.13 | BIAS | = -0.07 | RMS | = 0.13 $\mu$Pa•s |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Overall Results: | N = 87 | AAD% | = 0.98 | BIAS% | = -0.03 | RMS% | = 1.13 |
| | | AAD | = 0.10 | BIAS | = -0.01 | RMS | = 0.12 $\mu$Pa•s |
| Weighted Data: | N = 6 | AAD% | = 0.85 | BIAS% | = -0.20 | RMS% | = 0.92 |
| | | AAD | = 0.10 | BIAS | = -0.04 | RMS | = 0.11 $\mu$Pa•s |

Adzumi and Vogel excluded:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Overall Results: | N = 76 | AAD% | = 0.89 | BIAS% | = 0.18 | RMS% | = 0.98 |
| | | AAD | = 0.09 | BIAS | = 0.01 | RMS | = 0.11 $\mu$Pa•s |

Table 13. ZERO DENSITY THERMAL CONDUCTIVITY

Data from Clifford et al. [79]

| T K | P MPa | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda_o$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda_o$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 303.00 | 0.00 | 22.20 | 22.20 | 21.51 | -3.095 | 0.0 |

Number of Points [79] 1

AAD% = 3.09 BIAS% = -3.09 RMS% = 0.00
AAD = 0.69 BIAS = -0.69 RMS = 0.00 $mW \cdot m^{-1} \cdot K^{-1}$

Data from Craven et al. [69]

| T K | P MPa | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda_o$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda_o$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 339.15 | 0.00 | 27.20 | 27.20 | 26.48 | -2.657 | 0.0 |

Number of Points [69] 1

AAD% = 2.66 BIAS% = -2.66 RMS% = 0.00
AAD = 0.72 BIAS = -0.72 RMS = 0.00 $mW \cdot m^{-1} \cdot K^{-1}$

Data from Fleeter et al. [72]

| T K | P MPa | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda_o$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda_o$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 300.65 | 0.00 | 21.92 | 21.92 | 21.21 | -3.242 | 0.0 |

Number of Points [72] 1

AAD% = 3.24 BIAS% = -3.24 RMS% = 0.00
AAD = 0.71 BIAS = -0.71 RMS = 0.00 $mW \cdot m^{-1} \cdot K^{-1}$

Data from Gilmore et al. [80]

| T K | P MPa | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda_o$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda_o$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 348.15 | 0.10 | 27.57 | 27.51 | 27.80 | 1.051 | 0.0 |
| 348.15 | 0.10 | 27.74 | 27.67 | 27.80 | 0.440 | 0.0 |

Number of Points [80] 2

AAD% = 0.75 BIAS% = 0.75 RMS% = 0.31
AAD = 0.21 BIAS = 0.21 RMS = 0.08 $mW \cdot m^{-1} \cdot K^{-1}$

Data from Keyes [81]

| T K | P MPa | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda_o$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda_o$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 522.35 | 0.10 | 58.12 | 58.09 | 58.04 | -0.079 | 0.0 |
| 325.05 | 0.00 | 25.06 | 25.06 | 24.48 | -2.337 | 0.0 |

Number of Points [81] 2

AAD% = 1.21 BIAS% = -1.21 RMS% = 1.13
AAD = 0.32 BIAS = -0.32 RMS = 0.27 $mW \cdot m^{-1} \cdot K^{-1}$

Data from Le Neindre et al. [82]

| T K | P MPa | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda_o$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda_o$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 308.15 | 0.10 | 22.60 | 22.52 | 22.19 | -1.463 | 0.0 |
| 343.15 | 0.10 | 27.40 | 27.33 | 27.06 | -1.002 | 0.0 |
| 406.15 | 0.10 | 36.80 | 36.75 | 36.98 | 0.615 | 0.0 |
| 483.15 | 0.10 | 50.60 | 50.56 | 50.63 | 0.126 | 0.0 |
| 571.15 | 0.10 | 65.80 | 65.77 | 67.58 | 2.744 | 0.0 |
| 649.15 | 0.10 | 80.70 | 80.68 | 83.36 | 3.323 | 0.0 |
| 724.15 | 0.10 | 94.40 | 94.38 | 98.98 | 4.873 | 0.0 |

Number of Points [82] 7

AAD% = 2.02 BIAS% = 1.32 RMS% = 2.19
AAD = 1.43 BIAS = 1.25 RMS = 1.73 $mW \cdot m^{-1} \cdot K^{-1}$

Table 13. ZERO DENSITY THERMAL CONDUCTIVITY (continued)

Data from Leng et al. [83]

| T K | P MPa | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda_o$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda_o$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 340.93 | 0.10 | 27.52 | 27.45 | 26.74 | −2.600 | 0.0 |

Number of Points [83] 1

AAD% = 2.60 BIAS% = −2.60 RMS% = 0.00
AAD = 0.71 BIAS = −0.71 RMS = 0.00 $mW \cdot m^{-1} \cdot K^{-1}$

Data from Lenoir et al. [84]

| T K | P MPa | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda_o$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda_o$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 315.21 | 0.10 | 24.58 | 24.49 | 23.13 | −5.578 | 0.0 |
| 315.09 | 0.10 | 23.36 | 23.28 | 23.11 | −0.731 | 0.0 |
| 329.82 | 0.10 | 25.44 | 25.37 | 25.14 | −0.881 | 0.0 |
| 340.37 | 0.10 | 27.52 | 27.45 | 26.65 | −2.895 | 0.0 |

Number of Points [84] 4

AAD% = 2.52 BIAS% = −2.52 RMS% = 1.96
AAD = 0.64 BIAS = −0.64 RMS = 0.49 $mW \cdot m^{-1} \cdot K^{-1}$

Data from Millat et al. [85]

| T K | P MPa | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda_o$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda_o$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 308.15 | 0.00 | 22.87 | 22.87 | 22.19 | −2.988 | 0.0 |
| 331.65 | 0.00 | 26.14 | 26.14 | 25.40 | −2.819 | 0.0 |
| 380.15 | 0.00 | 34.01 | 34.01 | 32.72 | −3.784 | 0.0 |
| 425.65 | 0.00 | 42.29 | 42.29 | 40.30 | −4.708 | 0.0 |

Number of Points [85] 4

AAD% = 3.57 BIAS% = −3.57 RMS% = 0.75
AAD = 1.17 BIAS = −1.17 RMS = 0.53 $mW \cdot m^{-1} \cdot K^{-1}$

Table 13. ZERO DENSITY THERMAL CONDUCTIVITY (continued)

Data from Prasad et al. [86]

| T K | P MPa | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda_o$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda_o$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 295.00 | 0.10 | 20.28 | 20.19 | 20.49 | 1.498 | 0.0 |
| 315.00 | 0.10 | 22.97 | 22.89 | 23.10 | 0.923 | 1.0 |
| 350.00 | 0.10 | 27.94 | 27.88 | 28.07 | 0.700 | 1.0 |
| 400.00 | 0.10 | 35.74 | 35.69 | 35.95 | 0.737 | 1.0 |
| 498.00 | 0.10 | 53.53 | 53.50 | 53.41 | -0.171 | 1.0 |
| 600.00 | 0.10 | 73.91 | 73.89 | 73.35 | -0.727 | 1.0 |

Number of Points [86] 6

AAD% = 0.79 BIAS% = 0.49 RMS% = 0.73
AAD = 0.27 BIAS = 0.06 RMS = 0.29 $mW \cdot m^{-1} \cdot K^{-1}$

Weighted Data:

Number of Points [86] 5

AAD% = 0.65 BIAS% = 0.29 RMS% = 0.63
AAD = 0.26 BIAS = 0.01 RMS = 0.30 $mW \cdot m^{-1} \cdot K^{-1}$

Original adjustment to zero pressure:

Number of Points [86] 6

AAD% = 0.91 BIAS% = 0.60 RMS% = 0.84
AAD = 0.30 BIAS = 0.08 RMS = 0.32 $mW \cdot m^{-1} \cdot K^{-1}$

Weighted Data:

Number of Points [86] 5

AAD% = 0.73 BIAS% = 0.36 RMS% = 0.71
AAD = 0.28 BIAS = 0.02 RMS = 0.32 $mW \cdot m^{-1} \cdot K^{-1}$

Table 13. ZERO DENSITY THERMAL CONDUCTIVITY (continued)

Data from Roder et al. [87]

| T K | P MPa | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda_o$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda_o$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 225.00 | 0.00 | 13.12 | 13.12 | 12.75 | −2.839 | 0.0 |
| 235.00 | 0.00 | 14.00 | 14.00 | 13.72 | −1.986 | 0.0 |
| 245.00 | 0.00 | 14.94 | 14.94 | 14.74 | −1.345 | 1.0 |
| 255.00 | 0.00 | 15.90 | 15.90 | 15.80 | −0.630 | 1.0 |
| 265.00 | 0.00 | 17.08 | 17.08 | 16.90 | −1.025 | 1.0 |
| 275.00 | 0.00 | 18.14 | 18.14 | 18.05 | −0.469 | 1.0 |
| 285.00 | 0.00 | 19.34 | 19.34 | 19.25 | −0.466 | 1.0 |
| 295.00 | 0.00 | 20.57 | 20.57 | 20.49 | −0.391 | 1.0 |
| 305.00 | 0.00 | 22.03 | 22.03 | 21.77 | −1.166 | 0.0 |
| 312.00 | 0.00 | 22.59 | 22.59 | 22.70 | 0.476 | 1.0 |
| 325.00 | 0.00 | 24.72 | 24.72 | 24.47 | −1.013 | 0.0 |

Number of Points [87] 11

AAD% = 1.07 BIAS% = −0.99 RMS% = 0.84
AAD = 0.18 BIAS = −0.16 RMS = 0.12 $mW \cdot m^{-1} \cdot K^{-1}$

Weighted Data:

Number of Points [87] 7

AAD% = 0.69 BIAS% = −0.55 RMS% = 0.53
AAD = 0.12 BIAS = −0.09 RMS = 0.09 $mW \cdot m^{-1} \cdot K^{-1}$

Data from Tufeu et al. [88]

| T K | P MPa | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda_o$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda_o$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 307.05 | 0.00 | 22.40 | 22.40 | 22.04 | -1.600 | 0.0 |
| 307.80 | 0.00 | 22.50 | 22.50 | 22.14 | -1.598 | 0.0 |
| 311.80 | 0.00 | 23.00 | 23.00 | 22.67 | -1.431 | 0.0 |
| 313.35 | 0.00 | 23.20 | 23.20 | 22.88 | -1.387 | 0.0 |
| 322.75 | 0.00 | 24.40 | 24.40 | 24.16 | -0.993 | 0.0 |
| 434.15 | 0.00 | 41.20 | 41.20 | 41.78 | 1.403 | 0.0 |
| 500.30 | 0.00 | 52.00 | 52.00 | 53.84 | 3.537 | 0.0 |

Number of Points [88] 7

AAD% = 1.71 BIAS% = -0.30 RMS% = 1.85
AAD = 0.58 BIAS = 0.12 RMS = 0.77 $mW \cdot m^{-1} \cdot K^{-1}$

Data from Yakush et al. [89]

| T K | P MPa | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda_o$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda_o$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 318.80 | 0.00 | 24.90 | 24.90 | 23.62 | -5.158 | 0.0 |
| 327.54 | 0.00 | 25.80 | 25.80 | 24.82 | -3.783 | 0.0 |
| 344.24 | 0.00 | 27.50 | 27.50 | 27.22 | -1.023 | 0.0 |
| 379.60 | 0.00 | 32.20 | 32.20 | 32.64 | 1.352 | 0.0 |
| 462.40 | 0.00 | 46.00 | 46.00 | 46.82 | 1.778 | 0.0 |
| 580.50 | 0.00 | 67.20 | 67.20 | 69.44 | 3.332 | 0.0 |
| 590.20 | 0.00 | 67.50 | 67.50 | 71.38 | 5.748 | 0.0 |

Number of Points [89] 7

AAD% = 3.17 BIAS% = 0.32 RMS% = 3.59
AAD = 1.42 BIAS = 0.69 RMS = 1.70 $mW \cdot m^{-1} \cdot K^{-1}$

Table 13. ZERO DENSITY THERMAL CONDUCTIVITY (continued)

Overall Results:

| | | | |
|---|---|---|---|
| N = 54 | AAD% = 1.94 | BIAS% = −0.66 | RMS% = 2.34 |
| | AAD = 0.72 | BIAS = 0.05 | RMS = 1.16 $mW \cdot m^{-1} \cdot K^{-1}$ |

Overall Results (excluding Gilmore, Keyes, Leng, Lenoir):

| | | | |
|---|---|---|---|
| N = 45 | AAD% = 1.96 | BIAS% = −0.48 | RMS% = 2.38 |
| | AAD = 0.76 | BIAS = 0.14 | RMS = 1.23 $mW \cdot m^{-1} \cdot K^{-1}$ |

Weighted Data:

| | | | |
|---|---|---|---|
| N = 12 | AAD% = 0.67 | BIAS% = −0.20 | RMS% = 0.71 |
| | AAD = 0.18 | BIAS = −0.05 | RMS = 0.21 $mW \cdot m^{-1} \cdot K^{-1}$ |

## 6. Transport Properties at Elevated Pressures

Table 14 gives comparisons and weights for the viscosity at elevated pressures, and table 15 is for the thermal conductivity at elevated pressures. Unless otherwise noted, the entries given under the density column are values calculated from our equation of state and the experimentally measured temperatures and pressures. The calculated values of the transport properties represent evaluations of our correlating equations also at the experimental temperature and pressure—that is, using the densities given in these tables. The exceptions occur when the experimental pressures were not available and only densities were tabulated in the experimental papers. The percentage deviations given in the tables correspond to these calculations based on experimental pressures.

For each experimental source, we have also given summary statistics based on calculation of the transport property using the densities tabulated in the source papers. These statistics are omitted, and an indicative note is given, when tabulated densities were not given in the experimental paper. Except in the critical region, the deviations and the statistics based on experimental pressures and densities are quite similar.

Data corresponding to pressures at or below 0.1 MPa are included in Sec. 5 and are excluded from the tables and statistics of this section. (A few exceptions occur when low density data were weighted in the determination of the coefficients of the transport correlations.) Again we have included overall statistics which correspond to the data selection of [1].

## Table 14. VISCOSITY AT ELEVATED PRESSURES

Data from Baron et al. [90]

| T<br>K | P<br>MPa | $\rho$<br>$mol \cdot dm^{-3}$ | $\eta$, calc<br>$\mu Pa \cdot s$ | $\eta$, expt<br>$\mu Pa \cdot s$ | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 324.817 | 0.690 | 0.266 | 10.271 | 10.000 | 2.714 | 0.000 |
| 324.817 | 3.447 | 1.659 | 11.548 | 11.200 | 3.103 | 0.000 |
| 324.817 | 6.895 | 6.779 | 22.168 | 22.800 | −2.773 | 0.000 |
| 324.817 | 13.790 | 11.685 | 45.554 | 45.200 | 0.784 | 0.000 |
| 324.817 | 20.684 | 12.865 | 55.334 | 54.700 | 1.159 | 0.000 |
| 324.817 | 27.579 | 13.605 | 62.993 | 62.000 | 1.602 | 0.000 |
| 324.817 | 34.474 | 14.157 | 69.744 | 67.800 | 2.867 | 0.000 |
| 324.817 | 41.368 | 14.604 | 75.997 | 73.000 | 4.105 | 0.000 |
| 324.817 | 48.263 | 14.981 | 81.946 | 78.000 | 5.060 | 0.000 |
| 324.817 | 55.158 | 15.309 | 87.703 | 82.200 | 6.695 | 0.000 |
| 352.594 | 0.690 | 0.243 | 11.053 | 10.800 | 2.341 | 0.000 |
| 352.594 | 3.447 | 1.409 | 12.106 | 11.800 | 2.593 | 0.000 |
| 352.594 | 6.895 | 3.697 | 15.507 | 15.600 | −0.595 | 0.000 |
| 352.594 | 13.790 | 9.491 | 33.479 | 34.600 | −3.240 | 0.000 |
| 352.594 | 20.684 | 11.413 | 44.527 | 45.400 | −1.923 | 0.000 |
| 352.594 | 27.579 | 12.433 | 52.416 | 53.300 | −1.658 | 0.000 |
| 352.594 | 34.474 | 13.140 | 59.080 | 59.800 | −1.203 | 0.000 |
| 352.594 | 41.368 | 13.687 | 65.110 | 65.400 | −0.443 | 0.000 |
| 352.594 | 48.263 | 14.137 | 70.764 | 70.400 | 0.518 | 0.000 |
| 352.594 | 55.158 | 14.521 | 76.179 | 74.700 | 1.980 | 0.000 |
| 380.372 | 0.690 | 0.223 | 11.815 | 11.700 | 0.984 | 0.000 |
| 380.372 | 3.447 | 1.244 | 12.735 | 12.600 | 1.074 | 0.000 |
| 380.372 | 6.895 | 2.922 | 15.002 | 15.100 | −0.646 | 0.000 |
| 380.372 | 13.790 | 7.361 | 25.789 | 26.000 | −0.810 | 0.000 |
| 380.372 | 20.684 | 9.918 | 36.494 | 37.200 | −1.898 | 0.000 |
| 380.372 | 27.579 | 11.251 | 44.373 | 45.200 | −1.829 | 0.000 |
| 380.372 | 34.474 | 12.128 | 50.889 | 51.900 | −1.948 | 0.000 |
| 380.372 | 41.368 | 12.784 | 56.690 | 57.400 | −1.237 | 0.000 |
| 380.372 | 48.263 | 13.311 | 62.067 | 62.200 | −0.214 | 0.000 |
| 380.372 | 55.158 | 13.752 | 67.174 | 66.400 | 1.166 | 0.000 |
| 408.150 | 0.690 | 0.207 | 12.558 | 12.700 | −1.114 | 0.000 |
| 408.150 | 3.447 | 1.122 | 13.387 | 13.400 | −0.097 | 0.000 |
| 408.150 | 6.895 | 2.499 | 15.154 | 15.000 | 1.030 | 0.000 |
| 408.150 | 13.790 | 5.890 | 22.202 | 22.500 | −1.324 | 0.000 |
| 408.150 | 20.684 | 8.542 | 31.045 | 31.000 | 0.145 | 0.000 |
| 408.150 | 27.579 | 10.112 | 38.437 | 38.100 | 0.883 | 0.000 |

Data from Baron et al. [90] (continued)

| T K | P MPa | $\rho$ mol•dm$^{-3}$ | $\eta$, calc $\mu$Pa•s | $\eta$, expt $\mu$Pa•s | Dev % | wt |
|---|---|---|---|---|---|---|
| 408.150 | 34.474 | 11.148 | 44.661 | 44.000 | 1.502 | 0.000 |
| 408.150 | 41.368 | 11.909 | 50.186 | 49.200 | 2.005 | 0.000 |
| 408.150 | 48.263 | 12.511 | 55.281 | 53.700 | 2.944 | 0.000 |
| 408.150 | 55.158 | 13.009 | 60.096 | 57.800 | 3.972 | 0.000 |

Comparisons based on experimental pressures:

Number of Points [90] 40

AAD% = 1.85 BIAS% = 0.71 RMS% = 2.19
AAD = 0.88 BIAS = 0.44 RMS = 1.34 $\mu$Pa•s

Comparisons based on experimental densities:

Number of Points [90] 40

AAD% = 1.73 BIAS% = 0.39 RMS% = 2.07
AAD = 0.80 BIAS = 0.23 RMS = 1.22 $\mu$Pa•s

**Data from Carmichael et al. [68]**

| T K | P MPa | $\rho$ mol•dm$^{-3}$ | $\eta$, calc $\mu$Pa•s | $\eta$, expt $\mu$Pa•s | Dev % | wt |
|---|---|---|---|---|---|---|
| 299.817 | 8.932 | 12.467 | 50.998 | 51.503 | −0.981 | 1.000 |
| 299.817 | 8.932 | 12.467 | 50.998 | 51.371 | −0.727 | 1.000 |
| 299.817 | 8.925 | 12.466 | 50.983 | 50.560 | 0.836 | 1.000 |
| 299.817 | 7.121 | 11.974 | 46.998 | 46.816 | 0.388 | 1.000 |
| 299.817 | 7.134 | 11.978 | 47.031 | 46.495 | 1.152 | 1.000 |
| 299.817 | 7.134 | 11.978 | 47.031 | 46.395 | 1.370 | 1.000 |
| 299.817 | 5.792 | 11.440 | 43.118 | 42.598 | 1.221 | 1.000 |
| 299.817 | 5.809 | 11.448 | 43.175 | 42.694 | 1.128 | 1.000 |
| 299.817 | 4.384 | 10.216 | 35.622 | 35.244 | 1.073 | 1.000 |
| 299.817 | 4.384 | 10.216 | 35.622 | 35.158 | 1.321 | 1.000 |
| 299.817 | 35.817 | 15.138 | 83.345 | 83.362 | −0.020 | 1.000 |
| 299.817 | 35.817 | 15.138 | 83.345 | 82.907 | 0.528 | 1.000 |
| 299.817 | 35.772 | 15.136 | 83.302 | 82.802 | 0.604 | 1.000 |
| 299.817 | 31.459 | 14.881 | 79.116 | 78.938 | 0.225 | 1.000 |
| 299.817 | 31.459 | 14.881 | 79.116 | 79.091 | 0.031 | 1.000 |
| 299.817 | 27.843 | 14.643 | 75.472 | 75.390 | 0.109 | 1.000 |

Data from Carmichael et al. [68] (continued)

| T<br>K | P<br>MPa | $\rho$<br>$mol \cdot dm^{-3}$ | $\eta$, calc<br>$\mu Pa \cdot s$ | $\eta$, expt<br>$\mu Pa \cdot s$ | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 299.817 | 27.830 | 14.642 | 75.459 | 75.371 | 0.116 | 1.000 |
| 299.817 | 21.110 | 14.113 | 68.203 | 68.347 | −0.210 | 1.000 |
| 299.817 | 21.112 | 14.114 | 68.206 | 68.505 | −0.437 | 1.000 |
| 299.817 | 14.812 | 13.448 | 60.404 | 60.553 | −0.247 | 1.000 |
| 299.817 | 14.805 | 13.447 | 60.394 | 60.548 | −0.254 | 1.000 |
| 299.817 | 14.805 | 13.447 | 60.394 | 60.557 | −0.269 | 1.000 |
| 299.817 | 10.663 | 12.822 | 54.150 | 54.544 | −0.722 | 1.000 |
| 299.817 | 10.686 | 12.826 | 54.189 | 54.486 | −0.546 | 1.000 |
| 299.817 | 7.232 | 12.009 | 47.274 | 47.381 | −0.225 | 1.000 |
| 299.817 | 7.232 | 12.009 | 47.274 | 47.357 | −0.174 | 1.000 |
| 299.817 | 3.913 | 2.686 | 12.114 | 11.955 | 1.331 | 1.000 |
| 299.817 | 3.913 | 2.686 | 12.114 | 12.008 | 0.884 | 1.000 |
| 299.817 | 3.913 | 2.688 | 12.116 | 11.946 | 1.421 | 1.000 |
| 299.817 | 3.485 | 2.124 | 11.329 | 11.204 | 1.112 | 1.000 |
| 299.817 | 3.485 | 2.124 | 11.329 | 11.204 | 1.112 | 1.000 |
| 299.817 | 1.796 | 0.845 | 9.961 | 9.844 | 1.186 | 1.000 |
| 299.817 | 1.798 | 0.846 | 9.961 | 9.825 | 1.388 | 1.000 |
| 299.817 | 0.190 | 0.077 | 9.423 | 9.413 | 0.108 | 1.000 |
| 299.817 | 0.190 | 0.077 | 9.423 | 9.399 | 0.257 | 1.000 |
| 305.372 | 0.972E−01 | 0.039 | 9.565 | 9.557 | 0.079 | 1.000 |
| 305.372 | 0.972E−01 | 0.039 | 9.565 | 9.552 | 0.131 | 1.000 |
| 305.372 | 0.979E−01 | 0.039 | 9.565 | 9.533 | 0.332 | 1.000 |
| 305.372 | 8.773 | 11.944 | 46.914 | 46.897 | 0.036 | 1.000 |
| 305.372 | 8.778 | 11.945 | 46.926 | 47.032 | −0.225 | 1.000 |
| 305.372 | 8.778 | 11.945 | 46.926 | 47.017 | −0.193 | 1.000 |
| 305.372 | 7.168 | 11.370 | 42.785 | 42.837 | −0.122 | 1.000 |
| 305.372 | 7.175 | 11.373 | 42.804 | 42.861 | −0.134 | 1.000 |
| 305.372 | 6.129 | 10.793 | 39.085 | 39.021 | 0.164 | 1.000 |
| 305.372 | 6.132 | 10.795 | 39.097 | 39.093 | 0.010 | 1.000 |
| 305.372 | 5.219 | 9.798 | 33.578 | 33.764 | −0.551 | 1.000 |
| 305.372 | 5.230 | 9.819 | 33.684 | 33.740 | −0.166 | 1.000 |
| 305.372 | 4.113 | 2.704 | 12.321 | 12.319 | 0.018 | 1.000 |
| 305.372 | 4.113 | 2.704 | 12.321 | 12.286 | 0.287 | 1.000 |
| 305.372 | 4.113 | 2.704 | 12.321 | 12.334 | −0.104 | 1.000 |
| 305.372 | 3.429 | 1.938 | 11.271 | 11.208 | 0.561 | 1.000 |
| 305.372 | 3.429 | 1.938 | 11.271 | 11.275 | −0.036 | 1.000 |

Data from Carmichael et al. [68] (continued)

| T<br>K | P<br>MPa | $\rho$<br>mol•dm$^{-3}$ | $\eta$, calc<br>$\mu$Pa•s | $\eta$, expt<br>$\mu$Pa•s | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 305.372 | 3.429 | 1.938 | 11.271 | 11.223 | 0.427 | 1.000 |
| 305.372 | 1.746 | 0.794 | 10.088 | 10.026 | 0.618 | 1.000 |
| 305.372 | 1.746 | 0.794 | 10.088 | 10.150 | -0.611 | 1.000 |
| 305.372 | 1.744 | 0.793 | 10.087 | 10.031 | 0.559 | 1.000 |
| 305.372 | 4.862 | 5.330 | 17.522 | 18.342 | -4.468 | 0.000 |
| 305.372 | 4.862 | 5.330 | 17.522 | 18.453 | -5.043 | 0.000 |
| 305.372 | 4.862 | 5.330 | 17.522 | 18.333 | -4.421 | 0.000 |
| 305.372 | 4.135 | 2.736 | 12.369 | 12.698 | -2.589 | 1.000 |
| 305.372 | 4.142 | 2.745 | 12.383 | 12.678 | -2.327 | 1.000 |
| 305.372 | 4.145 | 2.750 | 12.391 | 12.654 | -2.082 | 1.000 |
| 310.928 | 35.183 | 14.706 | 76.893 | 76.415 | 0.625 | 1.000 |
| 310.928 | 35.094 | 14.701 | 76.808 | 76.252 | 0.730 | 1.000 |
| 310.928 | 35.052 | 14.698 | 76.769 | 76.314 | 0.596 | 1.000 |
| 310.928 | 27.779 | 14.192 | 69.624 | 71.239 | -2.267 | 1.000 |
| 310.928 | 27.772 | 14.191 | 69.617 | 71.354 | -2.434 | 1.000 |
| 310.928 | 20.919 | 13.574 | 62.146 | 62.453 | -0.492 | 1.000 |
| 310.928 | 20.899 | 13.572 | 62.122 | 62.453 | -0.530 | 1.000 |
| 310.928 | 13.981 | 12.663 | 53.021 | 53.419 | -0.745 | 1.000 |
| 310.928 | 13.981 | 12.663 | 53.021 | 53.419 | -0.745 | 1.000 |
| 310.928 | 6.974 | 10.480 | 37.395 | 37.872 | -1.258 | 1.000 |
| 310.928 | 6.974 | 10.480 | 37.395 | 37.652 | -0.681 | 1.000 |
| 310.928 | 6.152 | 9.657 | 33.031 | 33.271 | -0.722 | 1.000 |
| 310.928 | 6.152 | 9.657 | 33.031 | 33.281 | -0.752 | 1.000 |
| 310.928 | 5.261 | 5.018 | 16.951 | 17.323 | -2.146 | 1.000 |
| 310.928 | 5.271 | 5.077 | 17.092 | 17.198 | -0.619 | 1.000 |
| 310.928 | 5.273 | 5.091 | 17.123 | 17.136 | -0.075 | 1.000 |
| 310.928 | 4.329 | 2.740 | 12.556 | 12.396 | 1.290 | 1.000 |
| 310.928 | 4.333 | 2.746 | 12.566 | 12.391 | 1.409 | 1.000 |
| 310.928 | 3.483 | 1.881 | 11.378 | 11.242 | 1.209 | 1.000 |
| 310.928 | 3.484 | 1.882 | 11.379 | 11.237 | 1.260 | 1.000 |
| 310.928 | 1.712 | 0.755 | 10.224 | 10.102 | 1.210 | 1.000 |
| 310.928 | 1.713 | 0.755 | 10.225 | 10.079 | 1.446 | 1.000 |
| 310.928 | 0.154 | 0.060 | 9.739 | 9.734 | 0.050 | 1.000 |
| 310.928 | 0.154 | 0.060 | 9.739 | 9.719 | 0.204 | 1.000 |
| 310.928 | 4.960 | 3.859 | 14.481 | 14.469 | 0.083 | 1.000 |
| 310.928 | 4.960 | 3.859 | 14.481 | 14.900 | -2.812 | 1.000 |

Table 14. VISCOSITY AT ELEVATED PRESSURES (continued)

Data from Carmichael et al. [68] (continued)

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\eta$, calc $\mu Pa \cdot s$ | $\eta$, expt $\mu Pa \cdot s$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 310.928 | 4.898 | 3.706 | 14.191 | 14.254 | -0.443 | 1.000 |
| 310.928 | 4.904 | 3.721 | 14.218 | 14.297 | -0.551 | 1.000 |
| 310.928 | 4.561 | 3.068 | 13.075 | 13.176 | -0.768 | 1.000 |
| 310.928 | 4.561 | 3.068 | 13.075 | 13.138 | -0.481 | 1.000 |
| 310.928 | 4.564 | 3.073 | 13.082 | 13.066 | 0.121 | 1.000 |
| 310.928 | 5.940 | 9.297 | 31.310 | 30.441 | 2.855 | 1.000 |
| 310.928 | 5.926 | 9.269 | 31.180 | 30.470 | 2.330 | 1.000 |
| 310.928 | 5.920 | 9.256 | 31.120 | 30.480 | 2.101 | 1.000 |
| 310.928 | 5.222 | 4.798 | 16.444 | 16.715 | -1.620 | 1.000 |
| 310.928 | 5.222 | 4.798 | 16.444 | 16.288 | 0.959 | 1.000 |
| 310.928 | 5.229 | 4.834 | 16.526 | 16.357 | 1.035 | 1.000 |
| 310.928 | 5.229 | 4.834 | 16.526 | 16.346 | 1.103 | 1.000 |
| 310.928 | 4.142 | 2.514 | 12.221 | 12.195 | 0.215 | 1.000 |
| 310.928 | 4.142 | 2.514 | 12.221 | 12.180 | 0.339 | 1.000 |
| 310.928 | 4.142 | 2.514 | 12.221 | 12.477 | -2.050 | 1.000 |
| 310.928 | 4.142 | 2.514 | 12.221 | 12.472 | -2.011 | 1.000 |
| 310.928 | 4.364 | 2.786 | 12.626 | 12.516 | 0.881 | 1.000 |
| 310.928 | 4.151 | 2.525 | 12.237 | 12.295 | -0.471 | 1.000 |
| 327.594 | 14.551 | 11.667 | 45.510 | 45.538 | -0.062 | 1.000 |
| 327.594 | 14.551 | 11.667 | 45.510 | 45.547 | -0.081 | 1.000 |
| 327.594 | 14.351 | 11.620 | 45.174 | 45.356 | -0.401 | 1.000 |
| 327.594 | 14.351 | 11.620 | 45.174 | 45.504 | -0.725 | 1.000 |
| 327.594 | 8.643 | 9.114 | 30.966 | 31.610 | -2.039 | 1.000 |
| 327.594 | 8.643 | 9.114 | 30.966 | 31.662 | -2.200 | 1.000 |
| 327.594 | 8.814 | 9.272 | 31.684 | 31.476 | 0.662 | 1.000 |
| 327.594 | 8.814 | 9.272 | 31.684 | 31.533 | 0.480 | 1.000 |
| 327.594 | 7.599 | 7.689 | 25.275 | 25.151 | 0.493 | 1.000 |
| 327.594 | 7.606 | 7.701 | 25.317 | 24.993 | 1.298 | 1.000 |
| 327.594 | 7.606 | 7.701 | 25.317 | 25.012 | 1.221 | 1.000 |
| 327.594 | 6.935 | 6.146 | 20.392 | 20.267 | 0.614 | 1.000 |
| 327.594 | 6.935 | 6.146 | 20.392 | 20.191 | 0.993 | 1.000 |
| 327.594 | 6.983 | 6.270 | 20.740 | 20.238 | 2.481 | 1.000 |
| 327.594 | 6.223 | 4.530 | 16.390 | 16.490 | -0.606 | 1.000 |
| 327.594 | 6.211 | 4.506 | 16.340 | 16.432 | -0.561 | 1.000 |
| 327.594 | 6.212 | 4.508 | 16.343 | 16.451 | -0.658 | 1.000 |
| 327.594 | 5.521 | 3.444 | 14.253 | 14.493 | -1.655 | 1.000 |

Data from Carmichael et al. [68] (continued)

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\eta$, calc $\mu Pa \cdot s$ | $\eta$, expt $\mu Pa \cdot s$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 327.594 | 5.521 | 3.444 | 14.253 | 14.445 | -1.329 | 1.000 |
| 327.594 | 5.524 | 3.447 | 14.259 | 14.503 | -1.680 | 1.000 |
| 327.594 | 4.819 | 2.678 | 12.995 | 13.114 | -0.908 | 1.000 |
| 327.594 | 4.822 | 2.680 | 12.998 | 13.143 | -1.104 | 1.000 |
| 327.594 | 4.822 | 2.680 | 12.998 | 13.100 | -0.779 | 1.000 |
| 344.261 | 35.231 | 13.508 | 62.685 | 62.425 | 0.417 | 1.000 |
| 344.261 | 35.194 | 13.505 | 62.651 | 62.453 | 0.317 | 1.000 |
| 344.261 | 35.161 | 13.502 | 62.621 | 62.530 | 0.146 | 1.000 |
| 344.261 | 26.950 | 12.717 | 54.645 | 54.687 | -0.077 | 1.000 |
| 344.261 | 26.951 | 12.717 | 54.647 | 54.673 | -0.048 | 1.000 |
| 344.261 | 20.617 | 11.847 | 47.384 | 47.295 | 0.189 | 1.000 |
| 344.261 | 20.599 | 11.844 | 47.361 | 47.324 | 0.077 | 1.000 |
| 344.261 | 20.589 | 11.843 | 47.348 | 47.300 | 0.102 | 1.000 |
| 344.261 | 14.138 | 10.307 | 37.416 | 37.681 | -0.702 | 1.000 |
| 344.261 | 14.144 | 10.309 | 37.427 | 37.542 | -0.306 | 1.000 |
| 344.261 | 23.742 | 12.319 | 51.144 | 51.135 | 0.018 | 1.000 |
| 344.261 | 23.742 | 12.319 | 51.144 | 51.178 | -0.066 | 1.000 |
| 344.261 | 23.742 | 12.319 | 51.144 | 51.120 | 0.047 | 1.000 |
| 344.261 | 23.742 | 12.319 | 51.144 | 51.116 | 0.055 | 1.000 |
| 344.261 | 17.824 | 11.315 | 43.578 | 43.517 | 0.140 | 1.000 |
| 344.261 | 17.824 | 11.315 | 43.578 | 43.503 | 0.172 | 1.000 |
| 344.261 | 17.828 | 11.316 | 43.585 | 43.484 | 0.232 | 1.000 |
| 344.261 | 13.997 | 10.257 | 37.139 | 37.226 | -0.233 | 1.000 |
| 344.261 | 14.000 | 10.258 | 37.146 | 37.121 | 0.068 | 1.000 |
| 344.261 | 14.032 | 10.270 | 37.209 | 37.231 | -0.060 | 1.000 |
| 344.261 | 10.531 | 8.419 | 28.538 | 28.574 | -0.128 | 1.000 |
| 344.261 | 10.531 | 8.419 | 28.538 | 28.402 | 0.477 | 1.000 |
| 344.261 | 10.531 | 8.419 | 28.538 | 28.349 | 0.665 | 1.000 |
| 344.261 | 7.212 | 4.481 | 16.820 | 16.825 | -0.033 | 1.000 |
| 344.261 | 7.212 | 4.481 | 16.820 | 16.734 | 0.511 | 1.000 |
| 344.261 | 7.222 | 4.494 | 16.846 | 16.691 | 0.931 | 1.000 |
| 344.261 | 5.361 | 2.690 | 13.536 | 13.416 | 0.891 | 1.000 |
| 344.261 | 5.361 | 2.690 | 13.536 | 13.430 | 0.786 | 1.000 |
| 344.261 | 5.361 | 2.690 | 13.536 | 13.444 | 0.681 | 1.000 |
| 344.261 | 3.580 | 1.544 | 12.007 | 12.022 | -0.121 | 1.000 |
| 344.261 | 3.580 | 1.544 | 12.007 | 11.931 | 0.640 | 1.000 |

Data from Carmichael et al. [68] (continued)

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\eta$, calc $\mu Pa \cdot s$ | $\eta$, expt $\mu Pa \cdot s$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 344.261 | 3.541 | 1.522 | 11.984 | 11.917 | 0.558 | 1.000 |
| 344.261 | 1.924 | 0.744 | 11.206 | 11.132 | 0.662 | 1.000 |
| 344.261 | 1.924 | 0.744 | 11.206 | 11.127 | 0.707 | 1.000 |
| 344.261 | 0.175 | 0.062 | 10.697 | 10.725 | −0.262 | 1.000 |
| 344.261 | 0.176 | 0.062 | 10.697 | 10.725 | −0.259 | 1.000 |
| 377.594 | 32.034 | 11.956 | 49.403 | 48.999 | 0.825 | 1.000 |
| 377.594 | 32.034 | 11.956 | 49.403 | 48.980 | 0.864 | 1.000 |
| 377.594 | 32.059 | 11.959 | 49.427 | 49.047 | 0.774 | 1.000 |
| 377.594 | 26.847 | 11.257 | 44.320 | 44.240 | 0.180 | 1.000 |
| 377.594 | 26.875 | 11.262 | 44.349 | 44.322 | 0.062 | 1.000 |
| 377.594 | 21.010 | 10.144 | 37.598 | 37.561 | 0.098 | 1.000 |
| 377.594 | 21.020 | 10.147 | 37.611 | 37.484 | 0.339 | 1.000 |
| 377.594 | 14.495 | 7.913 | 27.646 | 27.439 | 0.754 | 1.000 |
| 377.594 | 14.498 | 7.915 | 27.652 | 27.361 | 1.064 | 1.000 |
| 377.594 | 8.909 | 4.277 | 17.428 | 17.433 | −0.026 | 1.000 |
| 377.594 | 8.918 | 4.284 | 17.442 | 17.260 | 1.052 | 1.000 |
| 377.594 | 4.457 | 1.703 | 13.182 | 12.985 | 1.520 | 1.000 |
| 377.594 | 4.457 | 1.703 | 13.182 | 13.004 | 1.372 | 1.000 |
| 377.594 | 0.233 | 0.075 | 11.635 | 11.697 | −0.533 | 1.000 |
| 377.594 | 0.233 | 0.075 | 11.635 | 11.659 | −0.209 | 1.000 |
| 410.928 | 21.304 | 8.594 | 31.343 | 31.275 | 0.217 | 1.000 |
| 410.928 | 21.300 | 8.593 | 31.338 | 31.174 | 0.527 | 1.000 |
| 410.928 | 21.278 | 8.586 | 31.313 | 31.557 | −0.774 | 1.000 |
| 410.928 | 15.368 | 6.498 | 24.005 | 24.035 | −0.126 | 1.000 |
| 410.928 | 15.368 | 6.498 | 24.005 | 24.030 | −0.105 | 1.000 |
| 410.928 | 10.583 | 4.197 | 18.266 | 18.400 | −0.727 | 1.000 |
| 410.928 | 10.585 | 4.198 | 18.268 | 18.318 | −0.271 | 1.000 |
| 410.928 | 5.743 | 1.983 | 14.499 | 14.555 | −0.386 | 1.000 |
| 410.928 | 5.750 | 1.986 | 14.503 | 14.526 | −0.158 | 1.000 |
| 410.928 | 0.701 | 0.209 | 12.634 | 12.779 | −1.132 | 1.000 |
| 410.928 | 0.701 | 0.209 | 12.634 | 12.750 | −0.907 | 1.000 |
| 410.928 | 36.031 | 11.246 | 45.420 | 45.217 | 0.449 | 1.000 |
| 410.928 | 36.021 | 11.244 | 45.412 | 45.065 | 0.769 | 1.000 |
| 410.928 | 36.021 | 11.244 | 45.412 | 45.035 | 0.836 | 1.000 |
| 410.928 | 27.775 | 10.039 | 38.133 | 37.513 | 1.653 | 1.000 |
| 410.928 | 27.775 | 10.039 | 38.133 | 38.911 | −1.999 | 1.000 |

Data from Carmichael et al. [68] (continued)

| T<br>K | P<br>MPa | $\rho$<br>$mol\cdot dm^{-3}$ | $\eta$, calc<br>$\mu Pa\cdot s$ | $\eta$, expt<br>$\mu Pa\cdot s$ | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 410.928 | 27.775 | 10.039 | 38.133 | 37.772 | 0.956 | 1.000 |
| 444.261 | 33.375 | 9.806 | 38.005 | 37.762 | 0.643 | 1.000 |
| 444.261 | 33.360 | 9.804 | 37.993 | 37.738 | 0.676 | 1.000 |
| 444.261 | 27.964 | 8.872 | 33.569 | 33.357 | 0.634 | 1.000 |
| 444.261 | 27.955 | 8.870 | 33.561 | 33.410 | 0.452 | 1.000 |
| 444.261 | 20.780 | 7.146 | 27.032 | 26.764 | 1.000 | 0.000 |
| 444.261 | 20.780 | 7.146 | 27.032 | 26.822 | 0.782 | 1.000 |
| 444.261 | 14.051 | 4.853 | 20.675 | 20.875 | −0.957 | 1.000 |
| 444.261 | 14.051 | 4.853 | 20.675 | 20.866 | −0.915 | 1.000 |
| 444.261 | 7.151 | 2.237 | 15.781 | 15.771 | 0.066 | 1.000 |
| 444.261 | 7.155 | 2.238 | 15.784 | 15.824 | −0.254 | 1.000 |
| 444.261 | 0.674 | 0.185 | 13.494 | 13.650 | −1.140 | 1.000 |
| 444.261 | 0.674 | 0.185 | 13.494 | 13.646 | −1.111 | 1.000 |
| 477.594 | 34.291 | 8.985 | 35.108 | 34.966 | 0.406 | 1.000 |
| 477.594 | 34.260 | 8.980 | 35.086 | 35.162 | −0.215 | 1.000 |
| 477.594 | 34.260 | 8.980 | 35.086 | 34.837 | 0.716 | 1.000 |
| 477.594 | 28.024 | 7.881 | 30.597 | 30.216 | 1.260 | 1.000 |
| 477.594 | 28.003 | 7.877 | 30.581 | 30.446 | 0.443 | 1.000 |
| 477.594 | 27.997 | 7.876 | 30.576 | 30.571 | 0.017 | 1.000 |
| 477.594 | 7.119 | 1.986 | 16.324 | 16.518 | −1.177 | 1.000 |
| 477.594 | 7.121 | 1.987 | 16.324 | 16.537 | −1.287 | 1.000 |
| 477.594 | 0.677 | 0.172 | 14.336 | 14.656 | −2.183 | 1.000 |
| 477.594 | 0.678 | 0.173 | 14.336 | 14.637 | −2.054 | 1.000 |
| 477.594 | 0.678 | 0.173 | 14.336 | 14.646 | −2.114 | 1.000 |
| 477.594 | 21.044 | 6.258 | 25.271 | 25.314 | −0.168 | 1.000 |
| 477.594 | 21.044 | 6.258 | 25.271 | 25.347 | −0.298 | 1.000 |
| 477.594 | 21.044 | 6.258 | 25.271 | 25.467 | −0.768 | 1.000 |
| 477.594 | 14.255 | 4.247 | 20.275 | 20.808 | −2.560 | 1.000 |
| 477.594 | 14.255 | 4.247 | 20.275 | 20.918 | −3.072 | 1.000 |
| 477.594 | 14.238 | 4.242 | 20.264 | 20.846 | −2.793 | 1.000 |

**Data from Carmichael et al. [68]** (continued)

Comparisons based on experimental pressures:

Number of Points [68] 226

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AAD% | = | 0.81 | BIAS% | = | −0.07 | RMS% | = | 1.14 |
| AAD | = | 0.21 | BIAS | = | −0.01 | RMS | = | 0.31 μPa•s |

Weighted Data:

Number of Points [68] 222

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AAD% | = | 0.76 | BIAS% | = | −0.02 | RMS% | = | 1.01 |
| AAD | = | 0.20 | BIAS | = | 0.00 | RMS | = | 0.30 μPa•s |

Densities are not tabulated in [68]

**Data from Diller et al. [91]**

| T K | P MPa | ρ mol•dm$^{-3}$ | η, calc μPa•s | η, expt μPa•s | Dev % | wt |
|---|---|---|---|---|---|---|
| 320.000 | 31.029 | 14.084 | 68.589 | 68.720 | −0.191 | 1.000 |
| 320.000 | 21.378 | 13.188 | 58.335 | 58.570 | −0.402 | 1.000 |
| 320.000 | 14.102 | 12.090 | 48.477 | 48.960 | −0.986 | 1.000 |
| 320.000 | 13.699 | 12.006 | 47.815 | 48.540 | −1.494 | 1.000 |
| 320.000 | 10.253 | 11.035 | 40.999 | 41.740 | −1.775 | 1.000 |
| 320.000 | 10.099 | 10.975 | 40.620 | 41.050 | −1.048 | 1.000 |
| 320.000 | 8.785 | 10.344 | 36.888 | 37.460 | −1.527 | 1.000 |
| 320.000 | 8.363 | 10.073 | 35.412 | 35.640 | −0.640 | 1.000 |
| 320.000 | 7.319 | 9.068 | 30.534 | 30.950 | −1.343 | 1.000 |
| 320.000 | 6.937 | 8.427 | 27.828 | 27.930 | −0.364 | 1.000 |
| 320.000 | 6.818 | 8.161 | 26.786 | 26.960 | −0.647 | 1.000 |
| 320.000 | 6.718 | 7.901 | 25.808 | 26.040 | −0.891 | 1.000 |
| 320.000 | 6.456 | 7.032 | 22.815 | 22.930 | −0.500 | 1.000 |
| 320.000 | 6.366 | 6.677 | 21.702 | 21.950 | −1.130 | 1.000 |
| 320.000 | 6.153 | 5.820 | 19.256 | 18.990 | 1.403 | 1.000 |
| 320.000 | 6.064 | 5.491 | 18.400 | 18.430 | −0.165 | 1.000 |
| 320.000 | 5.778 | 4.612 | 16.323 | 16.090 | 1.450 | 1.000 |
| 320.000 | 5.443 | 3.875 | 14.807 | 14.710 | 0.658 | 1.000 |
| 320.000 | 5.248 | 3.541 | 14.183 | 13.900 | 2.039 | 1.000 |
| 320.000 | 4.759 | 2.881 | 13.067 | 12.960 | 0.825 | 1.000 |

Table 14. **VISCOSITY AT ELEVATED PRESSURES** (continued)

Data from Diller et al. [91] (continued)

| T<br>K | P<br>MPa | $\rho$<br>$mol \cdot dm^{-3}$ | $\eta$, calc<br>$\mu Pa \cdot s$ | $\eta$, expt<br>$\mu Pa \cdot s$ | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 320.000 | 4.671 | 2.781 | 12.911 | 12.880 | 0.242 | 1.000 |
| 320.000 | 3.902 | 2.059 | 11.887 | 11.960 | −0.608 | 0.000 |
| 320.000 | 3.873 | 2.036 | 11.858 | 12.010 | −1.265 | 0.000 |
| 320.000 | 3.448 | 1.719 | 11.467 | 11.550 | −0.715 | 0.000 |
| 320.000 | 3.078 | 1.472 | 11.189 | 11.540 | −3.044 | 0.000 |
| 320.000 | 2.115 | 0.924 | 10.644 | 10.870 | −2.081 | 0.000 |
| 320.000 | 2.056 | 0.894 | 10.617 | 10.990 | −3.395 | 0.000 |
| 320.000 | 1.107 | 0.447 | 10.257 | 10.480 | −2.131 | 0.000 |
| 290.000 | 3.399 | 2.365 | 11.330 | 11.120 | 1.889 | 0.000 |
| 290.000 | 3.213 | 2.097 | 10.974 | 10.760 | 1.991 | 0.000 |
| 290.000 | 2.609 | 1.476 | 10.250 | 10.350 | −0.968 | 0.000 |
| 290.000 | 2.516 | 1.399 | 10.170 | 10.280 | −1.073 | 0.000 |
| 290.000 | 1.924 | 0.975 | 9.767 | 9.920 | −1.539 | 0.000 |
| 290.000 | 1.799 | 0.896 | 9.700 | 9.940 | −2.416 | 0.000 |
| 290.000 | 1.238 | 0.577 | 9.449 | 9.720 | −2.786 | 0.000 |
| 290.000 | 1.132 | 0.521 | 9.409 | 9.550 | −1.472 | 0.000 |
| 290.000 | 1.068 | 0.489 | 9.387 | 9.640 | −2.628 | 0.000 |
| 290.000 | 1.019 | 0.464 | 9.370 | 9.640 | −2.806 | 0.000 |
| 290.000 | 0.603 | 0.264 | 9.240 | 9.410 | −1.809 | 0.000 |
| 290.000 | 30.343 | 15.183 | 83.670 | 83.310 | 0.432 | 1.000 |
| 290.000 | 27.327 | 14.998 | 80.585 | 80.380 | 0.255 | 1.000 |
| 290.000 | 23.904 | 14.767 | 76.959 | 76.590 | 0.482 | 1.000 |
| 290.000 | 20.466 | 14.506 | 73.143 | 72.650 | 0.679 | 1.000 |
| 290.000 | 17.691 | 14.268 | 69.889 | 69.490 | 0.574 | 1.000 |
| 290.000 | 14.881 | 13.992 | 66.375 | 66.330 | 0.068 | 1.000 |
| 290.000 | 11.206 | 13.554 | 61.280 | 61.160 | 0.195 | 1.000 |
| 290.000 | 9.268 | 13.267 | 58.235 | 57.800 | 0.752 | 1.000 |
| 290.000 | 7.266 | 12.902 | 54.649 | 54.600 | 0.090 | 1.000 |
| 290.000 | 5.411 | 12.451 | 50.615 | 50.520 | 0.189 | 1.000 |
| 290.000 | 3.517 | 11.698 | 44.705 | 44.460 | 0.550 | 1.000 |
| 250.000 | 27.148 | 16.518 | 110.150 | 109.880 | 0.246 | 1.000 |
| 250.000 | 24.209 | 16.388 | 106.922 | 106.650 | 0.255 | 1.000 |
| 250.000 | 23.703 | 16.365 | 106.362 | 106.410 | −0.045 | 1.000 |
| 250.000 | 20.658 | 16.220 | 102.949 | 104.510 | −1.493 | 1.000 |
| 250.000 | 17.052 | 16.033 | 98.808 | 98.970 | −0.163 | 1.000 |
| 250.000 | 15.159 | 15.928 | 96.580 | 97.250 | −0.689 | 1.000 |

Table 14. VISCOSITY AT ELEVATED PRESSURES (continued)

Data from Diller et al. [91] (continued)

| T<br>K | P<br>MPa | $\rho$<br>mol•dm$^{-3}$ | $\eta$, calc<br>$\mu$Pa•s | $\eta$, expt<br>$\mu$Pa•s | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 250.000 | 11.712 | 15.721 | 92.401 | 93.930 | −1.628 | 1.000 |
| 250.000 | 9.124 | 15.549 | 89.131 | 89.750 | −0.690 | 1.000 |
| 250.000 | 6.297 | 15.340 | 85.384 | 85.900 | −0.600 | 1.000 |
| 250.000 | 3.427 | 15.099 | 81.327 | 81.870 | −0.663 | 1.000 |
| 250.000 | 1.302 | 14.894 | 78.088 | 78.490 | −0.512 | 1.000 |
| 200.000 | 29.623 | 18.371 | 177.052 | 176.630 | 0.239 | 1.000 |
| 200.000 | 26.170 | 18.279 | 172.540 | 173.040 | −0.289 | 1.000 |
| 200.000 | 22.714 | 18.183 | 168.033 | 167.750 | 0.169 | 1.000 |
| 200.000 | 19.396 | 18.087 | 163.705 | 164.380 | −0.411 | 1.000 |
| 200.000 | 15.918 | 17.981 | 159.161 | 160.740 | −0.982 | 1.000 |
| 200.000 | 14.590 | 17.939 | 157.421 | 158.330 | −0.574 | 1.000 |
| 200.000 | 11.165 | 17.828 | 152.920 | 154.050 | −0.734 | 1.000 |
| 200.000 | 7.644 | 17.707 | 148.258 | 149.530 | −0.851 | 1.000 |
| 200.000 | 5.233 | 17.619 | 145.036 | 145.450 | −0.284 | 0.000 |
| 200.000 | 2.562 | 17.518 | 141.434 | 141.270 | 0.116 | 1.000 |
| 200.000 | 0.300 | 17.428 | 138.347 | 138.490 | −0.103 | 1.000 |
| 150.000 | 25.183 | 19.961 | 320.235 | 321.210 | −0.304 | 1.000 |
| 150.000 | 22.913 | 19.920 | 315.522 | 318.010 | −0.782 | 1.000 |
| 150.000 | 20.043 | 19.868 | 309.634 | 312.740 | −0.993 | 1.000 |
| 150.000 | 17.035 | 19.813 | 303.542 | 301.330 | 0.734 | 1.000 |
| 150.000 | 14.344 | 19.762 | 298.159 | 301.240 | −1.023 | 1.000 |
| 150.000 | 11.566 | 19.708 | 292.661 | 294.580 | −0.652 | 1.000 |
| 150.000 | 8.756 | 19.653 | 287.158 | 289.330 | −0.751 | 1.000 |
| 150.000 | 6.030 | 19.597 | 281.873 | 284.720 | −1.000 | 1.000 |
| 150.000 | 2.665 | 19.527 | 275.416 | 278.590 | −1.139 | 1.000 |
| 130.000 | 31.980 | 20.727 | 482.779 | 478.710 | 0.850 | 1.000 |
| 130.000 | 28.123 | 20.672 | 470.458 | 473.890 | −0.724 | 1.000 |
| 130.000 | 24.916 | 20.625 | 460.477 | 457.020 | 0.756 | 1.000 |
| 130.000 | 21.442 | 20.573 | 449.919 | 448.880 | 0.231 | 1.000 |
| 130.000 | 18.283 | 20.525 | 440.536 | 440.960 | −0.096 | 1.000 |
| 130.000 | 14.451 | 20.465 | 429.415 | 435.490 | −1.395 | 1.000 |
| 130.000 | 11.069 | 20.411 | 419.825 | 424.650 | −1.136 | 1.000 |
| 130.000 | 7.878 | 20.359 | 410.955 | 413.910 | −0.714 | 1.000 |
| 130.000 | 5.243 | 20.315 | 403.759 | 405.110 | −0.333 | 1.000 |
| 130.000 | 2.041 | 20.261 | 395.161 | 400.100 | −1.234 | 1.000 |
| 120.000 | 30.380 | 21.032 | 602.752 | 599.520 | 0.539 | 1.000 |

Data from Diller et al. [91] (continued)

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\eta$, calc $\mu Pa \cdot s$ | $\eta$, expt $\mu Pa \cdot s$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 120.000 | 26.917 | 20.986 | 588.190 | 587.430 | 0.129 | 1.000 |
| 120.000 | 23.229 | 20.936 | 573.162 | 571.400 | 0.308 | 1.000 |
| 120.000 | 19.750 | 20.888 | 559.414 | 556.980 | 0.437 | 1.000 |
| 120.000 | 18.395 | 20.869 | 554.168 | 552.650 | 0.275 | 1.000 |
| 120.000 | 14.810 | 20.818 | 540.560 | 536.030 | 0.845 | 1.000 |
| 120.000 | 11.301 | 20.767 | 527.610 | 528.450 | −0.159 | 1.000 |
| 120.000 | 7.815 | 20.716 | 515.087 | 512.010 | 0.601 | 1.000 |
| 120.000 | 4.982 | 20.673 | 505.150 | 501.320 | 0.764 | 1.000 |
| 120.000 | 2.057 | 20.628 | 495.099 | 492.610 | 0.505 | 1.000 |
| 110.000 | 32.108 | 21.381 | 809.781 | 788.920 | 2.644 | 0.000 |
| 110.000 | 28.650 | 21.339 | 788.299 | 785.820 | 0.316 | 1.000 |
| 110.000 | 25.260 | 21.297 | 768.026 | 771.740 | −0.481 | 1.000 |
| 110.000 | 21.233 | 21.247 | 744.881 | 750.080 | −0.693 | 1.000 |
| 110.000 | 19.505 | 21.225 | 735.242 | 733.530 | 0.233 | 1.000 |
| 110.000 | 16.226 | 21.183 | 717.420 | 716.280 | 0.159 | 1.000 |
| 110.000 | 12.728 | 21.137 | 699.037 | 701.350 | −0.330 | 1.000 |
| 110.000 | 9.357 | 21.092 | 681.899 | 679.320 | 0.380 | 1.000 |
| 110.000 | 6.522 | 21.053 | 667.903 | 675.320 | −1.098 | 1.000 |
| 110.000 | 3.900 | 21.017 | 655.279 | 659.390 | −0.623 | 1.000 |
| 110.000 | 1.479 | 20.983 | 643.884 | 643.780 | 0.016 | 1.000 |
| 100.000 | 31.549 | 21.701 | 1144.445 | 1130.240 | 1.257 | 1.000 |
| 100.000 | 27.871 | 21.660 | 1107.439 | 1106.280 | 0.105 | 1.000 |
| 100.000 | 24.358 | 21.620 | 1073.829 | 1075.970 | −0.199 | 1.000 |
| 100.000 | 22.203 | 21.595 | 1053.995 | 1047.810 | 0.590 | 1.000 |
| 100.000 | 22.180 | 21.595 | 1053.782 | 1046.400 | 0.705 | 1.000 |
| 100.000 | 18.958 | 21.557 | 1025.160 | 1025.810 | −0.063 | 1.000 |
| 100.000 | 15.432 | 21.516 | 995.174 | 999.900 | −0.473 | 1.000 |
| 100.000 | 11.018 | 21.463 | 959.450 | 971.220 | −1.212 | 1.000 |
| 100.000 | 7.204 | 21.416 | 930.068 | 931.960 | −0.203 | 1.000 |
| 100.000 | 3.274 | 21.367 | 901.133 | 906.500 | −0.592 | 1.000 |
| 95.000 | 0.362E−05 | 21.503 | 1057.128 | 1073.360 | −1.512 | 1.000 |
| 100.000 | 0.111E−04 | 21.325 | 877.990 | 868.420 | 1.102 | 1.000 |
| 105.000 | 0.303E−04 | 21.144 | 742.077 | 743.510 | −0.193 | 1.000 |
| 110.000 | 0.747E−04 | 20.962 | 637.039 | 632.120 | 0.778 | 1.000 |
| 115.000 | 0.169E−03 | 20.779 | 554.363 | 552.050 | 0.419 | 1.000 |
| 120.000 | 0.355E−03 | 20.595 | 488.153 | 483.220 | 1.021 | 1.000 |

Table 14. VISCOSITY AT ELEVATED PRESSURES (continued)

Data from Diller et al. [91] (continued)

| T<br>K | P<br>MPa | $\rho$<br>$mol \cdot dm^{-3}$ | $\eta$, calc<br>$\mu Pa \cdot s$ | $\eta$, expt<br>$\mu Pa \cdot s$ | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 125.000 | 0.697E-03 | 20.411 | 434.269 | 428.110 | 1.439 | 1.000 |
| 130.000 | 0.129E-02 | 20.225 | 389.763 | 390.190 | -0.109 | 1.000 |
| 135.000 | 0.228E-02 | 20.038 | 352.501 | 357.380 | -1.365 | 1.000 |
| 140.000 | 0.383E-02 | 19.850 | 320.913 | 318.910 | 0.628 | 1.000 |
| 145.000 | 0.620E-02 | 19.661 | 293.830 | 297.350 | -1.184 | 1.000 |
| 150.000 | 0.967E-02 | 19.470 | 270.366 | 271.600 | -0.454 | 1.000 |
| 155.000 | 0.146E-01 | 19.277 | 249.843 | 251.690 | -0.734 | 1.000 |
| 160.000 | 0.215E-01 | 19.083 | 231.736 | 233.440 | -0.730 | 1.000 |
| 165.000 | 0.307E-01 | 18.886 | 215.632 | 216.930 | -0.598 | 1.000 |
| 170.000 | 0.429E-01 | 18.686 | 201.206 | 202.390 | -0.585 | 1.000 |
| 175.000 | 0.587E-01 | 18.484 | 188.197 | 185.700 | 1.345 | 1.000 |
| 180.000 | 0.787E-01 | 18.279 | 176.393 | 173.890 | 1.440 | 1.000 |
| 185.000 | 0.104 | 18.071 | 165.625 | 162.630 | 1.841 | 1.000 |
| 190.000 | 0.135 | 17.860 | 155.750 | 154.330 | 0.920 | 1.000 |
| 195.000 | 0.172 | 17.644 | 146.652 | 143.910 | 1.905 | 1.000 |
| 200.000 | 0.217 | 17.425 | 138.234 | 137.350 | 0.644 | 1.000 |
| 205.000 | 0.271 | 17.201 | 130.414 | 128.970 | 1.120 | 1.000 |
| 210.000 | 0.341 | 16.972 | 123.132 | 121.750 | 1.135 | 1.000 |
| 215.000 | 0.414 | 16.738 | 116.310 | 114.900 | 1.227 | 1.000 |
| 220.000 | 0.499 | 16.498 | 109.906 | 108.150 | 1.624 | 1.000 |
| 225.000 | 0.596 | 16.252 | 103.876 | 102.120 | 1.720 | 1.000 |
| 230.000 | 0.707 | 15.999 | 98.181 | 97.270 | 0.936 | 1.000 |
| 235.000 | 0.832 | 15.737 | 92.785 | 91.840 | 1.029 | 1.000 |
| 240.000 | 0.973 | 15.467 | 87.658 | 87.080 | 0.664 | 1.000 |
| 245.000 | 1.130 | 15.186 | 82.770 | 82.380 | 0.474 | 1.000 |
| 250.000 | 1.304 | 14.894 | 78.092 | 77.810 | 0.363 | 1.000 |
| 255.000 | 1.499 | 14.589 | 73.603 | 73.350 | 0.345 | 1.000 |
| 260.000 | 1.716 | 14.268 | 69.280 | 68.900 | 0.551 | 1.000 |
| 265.000 | 1.954 | 13.928 | 65.087 | 64.970 | 0.180 | 1.000 |
| 270.000 | 2.214 | 13.565 | 60.996 | 60.790 | 0.339 | 1.000 |
| 275.000 | 2.498 | 13.173 | 56.971 | 56.930 | 0.072 | 1.000 |
| 280.000 | 2.809 | 12.742 | 52.966 | 52.850 | 0.219 | 1.000 |
| 285.000 | 3.147 | 12.259 | 48.910 | 49.000 | -0.183 | 1.000 |
| 290.000 | 3.517 | 11.697 | 44.703 | 44.570 | 0.299 | 1.000 |
| 295.000 | 3.919 | 11.010 | 40.163 | 40.710 | -1.343 | 1.000 |
| 300.000 | 4.357 | 10.084 | 34.918 | 35.160 | -0.687 | 1.000 |

**Data from Diller et al. [91] (continued)**

Comparisons based on experimental pressures:

Number of Points [91] 164

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AAD% | = | 0.84 | BIAS% | = | −0.17 | RMS% | = | 1.05 |
| AAD | = | 1.84 | BIAS | = | 0.02 | RMS | = | 3.40 μPa•s |

Weighted Data:

Number of Points [91] 144

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AAD% | = | 0.69 | BIAS% | = | −0.02 | RMS% | = | 0.84 |
| AAD | = | 1.93 | BIAS | = | −0.10 | RMS | = | 3.18 μPa•s |

Comparisons based on experimental densities:

Number of Points [91] 164

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AAD% | = | 0.87 | BIAS% | = | −0.09 | RMS% | = | 1.09 |
| AAD | = | 1.85 | BIAS | = | 0.24 | RMS | = | 3.39 μPa•s |

Weighted Data:

Number of Points [91] 144

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AAD% | = | 0.73 | BIAS% | = | 0.06 | RMS% | = | 0.88 |
| AAD | = | 1.94 | BIAS | = | 0.15 | RMS | = | 3.20 μPa•s |

**Data from Diller [92]**

| T<br>K | P<br>MPa | $\rho$<br>$mol \cdot dm^{-3}$ | $\eta$, calc<br>μPa•s | $\eta$, expt<br>μPa•s | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 294.800 | 51.914 | 16.052 | 101.086 | 100.200 | 0.884 | 1.000 |
| 294.800 | 48.358 | 15.907 | 97.875 | 96.900 | 1.006 | 1.000 |
| 294.600 | 41.470 | 15.607 | 91.666 | 90.700 | 1.066 | 1.000 |
| 294.600 | 34.663 | 15.260 | 85.206 | 84.200 | 1.195 | 1.000 |
| 294.600 | 27.789 | 14.846 | 78.351 | 78.300 | 0.065 | 1.000 |
| 294.600 | 20.908 | 14.334 | 70.924 | 71.500 | −0.806 | 1.000 |
| 294.600 | 14.103 | 13.654 | 62.519 | 63.100 | −0.921 | 1.000 |
| 294.600 | 7.639 | 12.603 | 52.037 | 52.600 | −1.070 | 1.000 |
| 319.180 | 47.808 | 15.131 | 84.196 | 84.800 | −0.712 | 1.000 |
| 319.160 | 40.922 | 14.765 | 78.183 | 75.300 | 3.829 | 0.000 |

Table 14. VISCOSITY AT ELEVATED PRESSURES (continued)

Data from Diller [92] (continued)

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\eta$, calc $\mu Pa \cdot s$ | $\eta$, expt $\mu Pa \cdot s$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 319.140 | 34.752 | 14.383 | 72.550 | 73.700 | −1.560 | 1.000 |
| 319.140 | 31.182 | 14.128 | 69.131 | 70.300 | −1.663 | 1.000 |
| 319.110 | 20.984 | 13.186 | 58.279 | 59.100 | −1.389 | 1.000 |
| 319.410 | 13.918 | 12.093 | 48.477 | 49.500 | −2.067 | 1.000 |
| 319.110 | 10.506 | 11.214 | 42.126 | 42.500 | −0.880 | 1.000 |
| 319.060 | 8.709 | 10.423 | 37.300 | 37.300 | −0.001 | 1.000 |
| 319.640 | 8.658 | 10.316 | 36.720 | 36.800 | −0.218 | 1.000 |
| 319.640 | 8.327 | 10.100 | 35.548 | 35.600 | −0.145 | 1.000 |
| 319.100 | 7.352 | 9.308 | 31.599 | 31.400 | 0.635 | 1.000 |
| 319.630 | 7.056 | 8.756 | 29.170 | 29.000 | 0.588 | 1.000 |
| 319.040 | 6.886 | 8.609 | 28.541 | 28.200 | 1.209 | 1.000 |
| 319.630 | 6.853 | 8.361 | 27.554 | 27.700 | −0.528 | 1.000 |
| 319.630 | 6.574 | 7.606 | 24.734 | 25.000 | −1.065 | 1.000 |
| 319.040 | 6.427 | 7.334 | 23.780 | 23.300 | 2.061 | 1.000 |
| 319.150 | 6.188 | 6.281 | 20.505 | 20.400 | 0.515 | 1.000 |
| 319.170 | 5.905 | 5.159 | 17.554 | 17.300 | 1.471 | 1.000 |
| 319.630 | 5.201 | 3.494 | 14.086 | 14.000 | 0.615 | 1.000 |
| 319.640 | 5.160 | 3.430 | 13.973 | 13.800 | 1.252 | 1.000 |
| 319.170 | 4.547 | 2.676 | 12.724 | 12.700 | 0.192 | 1.000 |
| 319.580 | 3.631 | 1.857 | 11.620 | 11.500 | 1.042 | 1.000 |
| 319.170 | 3.565 | 1.814 | 11.555 | 11.500 | 0.480 | 1.000 |
| 319.670 | 3.498 | 1.758 | 11.504 | 11.300 | 1.808 | 1.000 |
| 319.690 | 1.706 | 0.722 | 10.461 | 10.400 | 0.582 | 1.000 |
| 399.910 | 54.893 | 13.209 | 61.838 | 61.900 | −0.100 | 1.000 |
| 399.790 | 54.201 | 13.168 | 61.384 | 61.500 | −0.188 | 1.000 |
| 399.880 | 48.925 | 12.796 | 57.609 | 57.600 | 0.016 | 1.000 |
| 399.790 | 48.144 | 12.739 | 57.063 | 57.500 | −0.761 | 1.000 |
| 399.880 | 41.419 | 12.171 | 51.988 | 52.200 | −0.407 | 1.000 |
| 399.790 | 41.318 | 12.164 | 51.929 | 52.400 | −0.899 | 1.000 |
| 399.840 | 34.725 | 11.466 | 46.558 | 46.600 | −0.090 | 1.000 |
| 399.790 | 34.504 | 11.441 | 46.380 | 46.800 | −0.898 | 1.000 |
| 399.950 | 27.949 | 10.503 | 40.357 | 40.500 | −0.353 | 1.000 |
| 399.700 | 27.858 | 10.498 | 40.318 | 40.700 | −0.939 | 1.000 |
| 399.790 | 27.574 | 10.446 | 40.019 | 40.400 | −0.943 | 1.000 |
| 399.660 | 24.387 | 9.844 | 36.739 | 36.700 | 0.106 | 1.000 |

Table 14. VISCOSITY AT ELEVATED PRESSURES (continued)

Data from Diller [92] (continued)

| T K | P MPa | $\rho$ mol•dm$^{-3}$ | $\eta$, calc $\mu$Pa•s | $\eta$, expt $\mu$Pa•s | Dev % | wt |
|---|---|---|---|---|---|---|
| 399.740 | 20.593 | 8.911 | 32.333 | 32.500 | −0.514 | 1.000 |
| 399.660 | 17.589 | 7.940 | 28.434 | 28.600 | −0.582 | 1.000 |
| 399.760 | 17.205 | 7.790 | 27.889 | 27.900 | −0.041 | 1.000 |
| 399.750 | 13.758 | 6.249 | 22.939 | 23.100 | −0.697 | 1.000 |
| 399.600 | 10.628 | 4.556 | 18.693 | 18.800 | −0.570 | 1.000 |
| 399.540 | 10.314 | 4.384 | 18.319 | 18.300 | 0.106 | 1.000 |
| 399.100 | 6.815 | 2.579 | 15.014 | 15.300 | −1.872 | 1.000 |
| 399.750 | 6.765 | 2.547 | 14.983 | 15.300 | −2.069 | 1.000 |
| 399.730 | 6.695 | 2.514 | 14.934 | 15.500 | −3.653 | 0.000 |
| 399.930 | 6.497 | 2.420 | 14.799 | 15.200 | −2.636 | 1.000 |
| 399.730 | 3.658 | 1.235 | 13.274 | 13.400 | −0.942 | 1.000 |
| 400.110 | 3.475 | 1.164 | 13.208 | 13.100 | 0.827 | 1.000 |
| 499.600 | 50.427 | 10.402 | 43.111 | 42.900 | 0.491 | 1.000 |
| 499.530 | 47.482 | 10.111 | 41.432 | 41.300 | 0.320 | 1.000 |
| 499.530 | 42.747 | 9.586 | 38.646 | 38.400 | 0.642 | 1.000 |
| 499.530 | 38.697 | 9.073 | 36.180 | 35.900 | 0.780 | 1.000 |
| 499.490 | 34.488 | 8.463 | 33.527 | 33.100 | 1.291 | 1.000 |
| 499.080 | 30.982 | 7.891 | 31.266 | 30.800 | 1.513 | 1.000 |
| 499.600 | 27.538 | 7.229 | 28.930 | 28.600 | 1.154 | 1.000 |
| 499.630 | 24.072 | 6.486 | 26.570 | 26.300 | 1.027 | 1.000 |
| 499.630 | 20.488 | 5.621 | 24.137 | 23.900 | 0.992 | 1.000 |
| 500.100 | 18.308 | 5.040 | 22.687 | 22.600 | 0.384 | 1.000 |
| 499.650 | 17.141 | 4.729 | 21.944 | 21.800 | 0.660 | 1.000 |
| 499.660 | 13.681 | 3.748 | 19.857 | 19.700 | 0.797 | 1.000 |
| 500.010 | 13.532 | 3.700 | 19.774 | 19.700 | 0.373 | 1.000 |
| 499.660 | 9.906 | 2.653 | 17.904 | 17.700 | 1.151 | 1.000 |
| 500.020 | 9.614 | 2.566 | 17.774 | 17.800 | −0.145 | 1.000 |
| 499.710 | 6.814 | 1.775 | 16.612 | 16.400 | 1.293 | 1.000 |
| 500.020 | 6.649 | 1.727 | 16.557 | 16.500 | 0.347 | 1.000 |
| 499.730 | 3.458 | 0.868 | 15.535 | 15.100 | 2.879 | 0.000 |
| 500.120 | 3.425 | 0.859 | 15.535 | 15.100 | 2.879 | 0.000 |

**Data from Diller [92]** (continued)

Comparisons based on experimental pressures:

Number of Points [92] 76

| | | | | | |
|---|---|---|---|---|---|
| AAD% = | 0.96 | BIAS% = | 0.11 | RMS% = | 1.23 |
| AAD = | 0.34 | BIAS = | 0.02 | RMS = | 0.53 μPa•s |

Weighted Data:

Number of Points [92] 72

| | | | | | |
|---|---|---|---|---|---|
| AAD% = | 0.83 | BIAS% = | 0.03 | RMS% = | 1.00 |
| AAD = | 0.30 | BIAS = | −0.03 | RMS = | 0.42 μPa•s |

Comparisons based on experimental densities:

Number of Points [92] 76

| | | | | | |
|---|---|---|---|---|---|
| AAD% = | 1.02 | BIAS% = | 0.07 | RMS% = | 1.30 |
| AAD = | 0.37 | BIAS = | 0.00 | RMS = | 0.58 μPa•s |

Weighted Data:

Number of Points [92] 72

| | | | | | |
|---|---|---|---|---|---|
| AAD% = | 0.89 | BIAS% = | −0.01 | RMS% = | 1.07 |
| AAD = | 0.33 | BIAS = | −0.04 | RMS = | 0.46 μPa•s |

**Data from Eakin et al. [71]**

| T<br>K | P<br>MPa | $\rho$<br>mol•dm$^{-3}$ | $\eta$, calc<br>μPa•s | $\eta$, expt<br>μPa•s | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 294.261 | 0.690 | 0.299 | 9.389 | 9.300 | 0.962 | 0.000 |
| 294.261 | 1.379 | 0.639 | 9.625 | 9.500 | 1.320 | 0.000 |
| 294.261 | 2.068 | 1.040 | 9.958 | 9.800 | 1.612 | 0.000 |
| 294.261 | 2.758 | 1.541 | 10.456 | 10.100 | 3.524 | 0.000 |
| 294.261 | 3.447 | 2.255 | 11.321 | 10.400 | 8.853 | 0.000 |
| 294.261 | 4.137 | 11.345 | 42.338 | 44.000 | −3.777 | 0.000 |
| 294.261 | 5.516 | 12.024 | 47.249 | 47.500 | −0.528 | 0.000 |
| 294.261 | 6.895 | 12.449 | 50.697 | 50.500 | 0.391 | 0.000 |
| 294.261 | 10.342 | 13.150 | 57.164 | 56.700 | 0.818 | 0.000 |
| 294.261 | 13.790 | 13.635 | 62.295 | 62.100 | 0.314 | 0.000 |

Data from Eakin et al. [71] (continued)

| T<br>K | P<br>MPa | $\rho$<br>$mol \cdot dm^{-3}$ | $\eta$, calc<br>$\mu Pa \cdot s$ | $\eta$, expt<br>$\mu Pa \cdot s$ | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 294.261 | 20.684 | 14.331 | 70.865 | 70.500 | 0.518 | 0.000 |
| 294.261 | 27.579 | 14.845 | 78.330 | 78.000 | 0.423 | 0.000 |
| 294.261 | 34.474 | 15.261 | 85.221 | 84.500 | 0.853 | 0.000 |
| 294.261 | 41.368 | 15.613 | 91.774 | 90.700 | 1.184 | 0.000 |
| 294.261 | 48.263 | 15.920 | 98.117 | 96.000 | 2.206 | 0.000 |
| 294.261 | 55.158 | 16.193 | 104.331 | 101.300 | 2.992 | 0.000 |
| 294.261 | 62.053 | 16.439 | 110.467 | 106.200 | 4.018 | 0.000 |
| 294.261 | 68.948 | 16.664 | 116.566 | 111.300 | 4.732 | 0.000 |
| 310.928 | 0.690 | 0.280 | 9.873 | 9.800 | 0.749 | 0.000 |
| 310.928 | 1.379 | 0.591 | 10.094 | 10.000 | 0.938 | 0.000 |
| 310.928 | 2.068 | 0.943 | 10.385 | 10.300 | 0.830 | 0.000 |
| 310.928 | 2.758 | 1.353 | 10.781 | 10.600 | 1.707 | 0.000 |
| 310.928 | 3.447 | 1.852 | 11.342 | 10.900 | 4.057 | 0.000 |
| 310.928 | 4.137 | 2.509 | 12.213 | 11.900 | 2.634 | 0.000 |
| 310.928 | 5.516 | 7.517 | 24.157 | 24.900 | −2.984 | 0.000 |
| 310.928 | 6.895 | 10.421 | 37.059 | 37.100 | −0.111 | 0.000 |
| 310.928 | 10.342 | 11.894 | 46.692 | 46.800 | −0.231 | 0.000 |
| 310.928 | 13.790 | 12.630 | 52.728 | 52.800 | −0.135 | 0.000 |
| 310.928 | 20.684 | 13.550 | 61.870 | 62.100 | −0.371 | 0.000 |
| 310.928 | 27.579 | 14.176 | 69.418 | 69.600 | −0.261 | 0.000 |
| 310.928 | 34.474 | 14.662 | 76.220 | 76.200 | 0.027 | 0.000 |
| 310.928 | 41.368 | 15.063 | 82.598 | 82.300 | 0.362 | 0.000 |
| 310.928 | 48.263 | 15.407 | 88.714 | 87.700 | 1.156 | 0.000 |
| 310.928 | 55.158 | 15.709 | 94.665 | 93.200 | 1.572 | 0.000 |
| 310.928 | 62.053 | 15.980 | 100.511 | 98.700 | 1.835 | 0.000 |
| 310.928 | 68.948 | 16.225 | 106.297 | 103.800 | 2.405 | 0.000 |
| 327.594 | 0.690 | 0.264 | 10.350 | 10.300 | 0.489 | 0.000 |
| 327.594 | 1.379 | 0.551 | 10.558 | 10.500 | 0.557 | 0.000 |
| 327.594 | 2.068 | 0.868 | 10.822 | 10.700 | 1.140 | 0.000 |
| 327.594 | 2.758 | 1.223 | 11.159 | 11.000 | 1.444 | 0.000 |
| 327.594 | 3.447 | 1.628 | 11.597 | 11.300 | 2.629 | 0.000 |
| 327.594 | 4.137 | 2.104 | 12.184 | 12.000 | 1.530 | 0.000 |
| 327.594 | 5.516 | 3.437 | 14.241 | 14.300 | −0.415 | 0.000 |
| 327.594 | 6.895 | 6.045 | 20.109 | 19.700 | 2.076 | 0.000 |
| 327.594 | 10.342 | 10.278 | 36.744 | 36.500 | 0.669 | 0.000 |
| 327.594 | 13.790 | 11.483 | 44.202 | 44.300 | −0.220 | 0.000 |

Data from Eakin et al. [71] (continued)

| T K | P MPa | $\rho$ mol•dm$^{-3}$ | $\eta$, calc $\mu$Pa•s | $\eta$, expt $\mu$Pa•s | Dev % | wt |
|---|---|---|---|---|---|---|
| 327.594 | 20.684 | 12.725 | 54.122 | 54.300 | −0.327 | 0.000 |
| 327.594 | 27.579 | 13.489 | 61.806 | 61.700 | 0.172 | 0.000 |
| 327.594 | 34.474 | 14.056 | 68.548 | 68.500 | 0.070 | 0.000 |
| 327.594 | 41.368 | 14.512 | 74.777 | 74.300 | 0.642 | 0.000 |
| 327.594 | 48.263 | 14.896 | 80.696 | 80.000 | 0.870 | 0.000 |
| 327.594 | 55.158 | 15.230 | 86.416 | 85.500 | 1.071 | 0.000 |
| 327.594 | 62.053 | 15.526 | 92.007 | 91.300 | 0.775 | 0.000 |
| 327.594 | 68.948 | 15.792 | 97.519 | 96.300 | 1.265 | 0.000 |
| 344.261 | 0.690 | 0.249 | 10.820 | 10.800 | 0.189 | 0.000 |
| 344.261 | 1.379 | 0.517 | 11.018 | 11.000 | 0.167 | 0.000 |
| 344.261 | 2.068 | 0.807 | 11.261 | 11.200 | 0.543 | 0.000 |
| 344.261 | 2.758 | 1.123 | 11.559 | 11.500 | 0.510 | 0.000 |
| 344.261 | 3.447 | 1.472 | 11.927 | 11.800 | 1.076 | 0.000 |
| 344.261 | 4.137 | 1.862 | 12.387 | 12.200 | 1.532 | 0.000 |
| 344.261 | 5.516 | 2.810 | 13.722 | 13.700 | 0.160 | 0.000 |
| 344.261 | 6.895 | 4.113 | 16.053 | 15.700 | 2.250 | 0.000 |
| 344.261 | 10.342 | 8.263 | 27.923 | 27.400 | 1.909 | 0.000 |
| 344.261 | 13.790 | 10.181 | 36.725 | 36.700 | 0.069 | 0.000 |
| 344.261 | 20.684 | 11.859 | 47.470 | 47.300 | 0.358 | 0.000 |
| 344.261 | 27.579 | 12.788 | 55.300 | 54.800 | 0.913 | 0.000 |
| 344.261 | 34.474 | 13.445 | 61.992 | 61.700 | 0.473 | 0.000 |
| 344.261 | 41.368 | 13.961 | 68.087 | 67.500 | 0.870 | 0.000 |
| 344.261 | 48.263 | 14.389 | 73.827 | 73.000 | 1.132 | 0.000 |
| 344.261 | 55.158 | 14.756 | 79.339 | 78.300 | 1.326 | 0.000 |
| 344.261 | 62.053 | 15.078 | 84.702 | 84.500 | 0.239 | 0.000 |
| 344.261 | 68.948 | 15.366 | 89.968 | 89.000 | 1.088 | 0.000 |
| 360.928 | 0.690 | 0.237 | 11.284 | 11.300 | −0.146 | 0.000 |
| 360.928 | 1.379 | 0.488 | 11.473 | 11.500 | −0.237 | 0.000 |
| 360.928 | 2.068 | 0.756 | 11.699 | 11.700 | −0.012 | 0.000 |
| 360.928 | 2.758 | 1.043 | 11.968 | 12.000 | −0.264 | 0.000 |
| 360.928 | 3.447 | 1.353 | 12.291 | 12.300 | −0.077 | 0.000 |
| 360.928 | 4.137 | 1.690 | 12.677 | 12.600 | 0.608 | 0.000 |
| 360.928 | 5.516 | 2.460 | 13.703 | 13.600 | 0.755 | 0.000 |
| 360.928 | 6.895 | 3.397 | 15.219 | 15.000 | 1.461 | 0.000 |
| 360.928 | 10.342 | 6.458 | 22.339 | 22.200 | 0.625 | 0.000 |
| 360.928 | 13.790 | 8.805 | 30.647 | 30.800 | −0.498 | 0.000 |

**Data from Eakin et al. [71] (continued)**

| T K | P MPa | $\rho$ mol•dm$^{-3}$ | $\eta$, calc $\mu$Pa•s | $\eta$, expt $\mu$Pa•s | Dev % | wt |
|---|---|---|---|---|---|---|
| 360.928 | 20.684 | 10.963 | 41.832 | 41.500 | 0.800 | 0.000 |
| 360.928 | 27.579 | 12.077 | 49.759 | 49.500 | 0.523 | 0.000 |
| 360.928 | 34.474 | 12.835 | 56.390 | 56.000 | 0.696 | 0.000 |
| 360.928 | 41.368 | 13.414 | 62.354 | 62.000 | 0.570 | 0.000 |
| 360.928 | 48.263 | 13.887 | 67.924 | 67.000 | 1.379 | 0.000 |
| 360.928 | 55.158 | 14.288 | 73.244 | 72.200 | 1.445 | 0.000 |
| 360.928 | 62.053 | 14.637 | 78.397 | 77.500 | 1.158 | 0.000 |
| 360.928 | 68.948 | 14.947 | 83.441 | 82.300 | 1.386 | 0.000 |
| 377.594 | 0.690 | 0.225 | 11.740 | 11.700 | 0.339 | 0.000 |
| 377.594 | 1.379 | 0.462 | 11.921 | 11.900 | 0.179 | 0.000 |
| 377.594 | 2.068 | 0.712 | 12.134 | 12.200 | −0.543 | 0.000 |
| 377.594 | 2.758 | 0.977 | 12.382 | 12.500 | −0.946 | 0.000 |
| 377.594 | 3.447 | 1.258 | 12.671 | 12.800 | −1.008 | 0.000 |
| 377.594 | 4.137 | 1.557 | 13.008 | 13.000 | 0.060 | 0.000 |
| 377.594 | 5.516 | 2.219 | 13.857 | 13.800 | 0.415 | 0.000 |
| 377.594 | 6.895 | 2.977 | 15.009 | 14.900 | 0.735 | 0.000 |
| 377.594 | 10.342 | 5.302 | 19.753 | 19.700 | 0.268 | 0.000 |
| 377.594 | 13.790 | 7.548 | 26.341 | 26.200 | 0.537 | 0.000 |
| 377.594 | 20.684 | 10.066 | 37.176 | 36.800 | 1.023 | 0.000 |
| 377.594 | 27.579 | 11.368 | 45.077 | 45.000 | 0.170 | 0.000 |
| 377.594 | 34.474 | 12.228 | 51.613 | 51.300 | 0.610 | 0.000 |
| 377.594 | 41.368 | 12.873 | 57.438 | 57.000 | 0.768 | 0.000 |
| 377.594 | 48.263 | 13.392 | 62.843 | 62.000 | 1.359 | 0.000 |
| 377.594 | 55.158 | 13.828 | 67.980 | 66.700 | 1.919 | 0.000 |
| 377.594 | 62.053 | 14.204 | 72.938 | 71.700 | 1.727 | 0.000 |
| 377.594 | 68.948 | 14.536 | 77.777 | 76.100 | 2.203 | 0.000 |
| 394.261 | 0.690 | 0.215 | 12.189 | 12.200 | −0.089 | 0.000 |
| 394.261 | 1.379 | 0.439 | 12.364 | 12.400 | −0.292 | 0.000 |
| 394.261 | 2.068 | 0.674 | 12.565 | 12.600 | −0.278 | 0.000 |
| 394.261 | 2.758 | 0.920 | 12.796 | 12.900 | −0.808 | 0.000 |
| 394.261 | 3.447 | 1.179 | 13.060 | 13.200 | −1.062 | 0.000 |
| 394.261 | 4.137 | 1.450 | 13.361 | 13.400 | −0.289 | 0.000 |
| 394.261 | 5.516 | 2.037 | 14.095 | 14.200 | −0.742 | 0.000 |
| 394.261 | 6.895 | 2.686 | 15.038 | 15.000 | 0.253 | 0.000 |
| 394.261 | 10.342 | 4.576 | 18.575 | 18.500 | 0.407 | 0.000 |
| 394.261 | 13.790 | 6.540 | 23.619 | 23.300 | 1.368 | 0.000 |

Table 14. VISCOSITY AT ELEVATED PRESSURES (continued)

Data from Eakin et al. [71] (continued)

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\eta$, calc $\mu Pa \cdot s$ | $\eta$, expt $\mu Pa \cdot s$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 394.261 | 20.684 | 9.205 | 33.469 | 33.300 | 0.509 | 0.000 |
| 394.261 | 27.579 | 10.672 | 41.165 | 41.000 | 0.403 | 0.000 |
| 394.261 | 34.474 | 11.632 | 47.556 | 47.300 | 0.542 | 0.000 |
| 394.261 | 41.368 | 12.342 | 53.226 | 52.700 | 0.999 | 0.000 |
| 394.261 | 48.263 | 12.907 | 58.464 | 57.800 | 1.149 | 0.000 |
| 394.261 | 55.158 | 13.377 | 63.424 | 62.000 | 2.297 | 0.000 |
| 394.261 | 62.053 | 13.780 | 68.198 | 66.600 | 2.399 | 0.000 |
| 394.261 | 68.948 | 14.134 | 72.845 | 70.800 | 2.888 | 0.000 |
| 410.928 | 0.690 | 0.206 | 12.632 | 12.600 | 0.252 | 0.000 |
| 410.928 | 1.379 | 0.419 | 12.800 | 12.800 | 0.003 | 0.000 |
| 410.928 | 2.068 | 0.641 | 12.992 | 13.100 | −0.825 | 0.000 |
| 410.928 | 2.758 | 0.871 | 13.208 | 13.400 | −1.429 | 0.000 |
| 410.928 | 3.447 | 1.111 | 13.453 | 13.600 | −1.084 | 0.000 |
| 410.928 | 4.137 | 1.361 | 13.727 | 13.800 | −0.529 | 0.000 |
| 410.928 | 5.516 | 1.892 | 14.378 | 14.500 | −0.845 | 0.000 |
| 410.928 | 6.895 | 2.466 | 15.184 | 15.200 | −0.102 | 0.000 |
| 410.928 | 10.342 | 4.078 | 18.021 | 17.800 | 1.243 | 0.000 |
| 410.928 | 13.790 | 5.778 | 21.985 | 21.700 | 1.315 | 0.000 |
| 410.928 | 20.684 | 8.417 | 30.625 | 30.500 | 0.410 | 0.000 |
| 410.928 | 27.579 | 10.003 | 37.944 | 37.500 | 1.185 | 0.000 |
| 410.928 | 34.474 | 11.053 | 44.130 | 43.700 | 0.985 | 0.000 |
| 410.928 | 41.368 | 11.824 | 49.625 | 49.000 | 1.275 | 0.000 |
| 410.928 | 48.263 | 12.433 | 54.691 | 54.000 | 1.279 | 0.000 |
| 410.928 | 55.158 | 12.937 | 59.476 | 58.100 | 2.369 | 0.000 |
| 410.928 | 62.053 | 13.367 | 64.073 | 62.500 | 2.517 | 0.000 |
| 410.928 | 68.948 | 13.742 | 68.538 | 66.600 | 2.910 | 0.000 |
| 444.261 | 0.690 | 0.189 | 13.498 | 13.500 | −0.017 | 0.000 |
| 444.261 | 1.379 | 0.384 | 13.656 | 13.800 | −1.047 | 0.000 |
| 444.261 | 2.068 | 0.584 | 13.831 | 14.000 | −1.207 | 0.000 |
| 444.261 | 2.758 | 0.790 | 14.025 | 14.300 | −1.920 | 0.000 |
| 444.261 | 3.447 | 1.001 | 14.240 | 14.500 | −1.795 | 0.000 |
| 444.261 | 4.137 | 1.218 | 14.475 | 14.700 | −1.530 | 0.000 |
| 444.261 | 5.516 | 1.671 | 15.014 | 15.200 | −1.223 | 0.000 |
| 444.261 | 6.895 | 2.146 | 15.652 | 15.800 | −0.939 | 0.000 |
| 444.261 | 10.342 | 3.421 | 17.718 | 17.800 | −0.459 | 0.000 |
| 444.261 | 13.790 | 4.753 | 20.445 | 20.400 | 0.223 | 0.000 |

Data from Eakin et al. [71] (continued)

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\eta$, calc $\mu Pa \cdot s$ | $\eta$, expt $\mu Pa \cdot s$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 444.261 | 20.684 | 7.118 | 26.940 | 26.500 | 1.661 | 0.000 |
| 444.261 | 27.579 | 8.795 | 33.237 | 32.800 | 1.334 | 0.000 |
| 444.261 | 34.474 | 9.969 | 38.859 | 38.100 | 1.993 | 0.000 |
| 444.261 | 41.368 | 10.842 | 43.939 | 43.100 | 1.947 | 0.000 |
| 444.261 | 48.263 | 11.530 | 48.641 | 47.700 | 1.972 | 0.000 |
| 444.261 | 55.158 | 12.095 | 53.081 | 51.800 | 2.474 | 0.000 |
| 444.261 | 62.053 | 12.574 | 57.339 | 55.500 | 3.314 | 0.000 |
| 444.261 | 68.948 | 12.990 | 61.468 | 59.600 | 3.134 | 0.000 |
| 477.594 | 0.690 | 0.175 | 14.339 | 14.400 | −0.426 | 0.000 |
| 477.594 | 1.379 | 0.355 | 14.487 | 14.700 | −1.447 | 0.000 |
| 477.594 | 2.068 | 0.537 | 14.650 | 14.900 | −1.678 | 0.000 |
| 477.594 | 2.758 | 0.724 | 14.827 | 15.200 | −2.451 | 0.000 |
| 477.594 | 3.447 | 0.914 | 15.020 | 15.400 | −2.467 | 0.000 |
| 477.594 | 4.137 | 1.108 | 15.228 | 15.600 | −2.382 | 0.000 |
| 477.594 | 5.516 | 1.506 | 15.695 | 16.000 | −1.909 | 0.000 |
| 477.594 | 6.895 | 1.918 | 16.230 | 16.500 | −1.638 | 0.000 |
| 477.594 | 10.342 | 2.994 | 17.882 | 17.800 | 0.459 | 0.000 |
| 477.594 | 13.790 | 4.099 | 19.965 | 19.500 | 2.386 | 0.000 |
| 477.594 | 20.684 | 6.161 | 24.994 | 24.400 | 2.436 | 0.000 |
| 477.594 | 27.579 | 7.791 | 30.264 | 29.700 | 1.901 | 0.000 |
| 477.594 | 34.474 | 9.013 | 35.235 | 34.700 | 1.542 | 0.000 |
| 477.594 | 41.368 | 9.950 | 39.847 | 39.200 | 1.649 | 0.000 |
| 477.594 | 48.263 | 10.696 | 44.165 | 43.100 | 2.471 | 0.000 |
| 477.594 | 55.158 | 11.311 | 48.264 | 47.200 | 2.254 | 0.000 |
| 477.594 | 62.053 | 11.832 | 52.200 | 50.700 | 2.959 | 0.000 |
| 477.594 | 68.948 | 12.284 | 56.017 | 54.300 | 3.163 | 0.000 |
| 510.928 | 0.690 | 0.164 | 15.156 | 15.200 | −0.289 | 0.000 |
| 510.928 | 1.379 | 0.330 | 15.297 | 15.500 | −1.312 | 0.000 |
| 510.928 | 2.068 | 0.498 | 15.449 | 15.800 | −2.223 | 0.000 |
| 510.928 | 2.758 | 0.669 | 15.613 | 16.100 | −3.027 | 0.000 |
| 510.928 | 3.447 | 0.843 | 15.788 | 16.300 | −3.138 | 0.000 |
| 510.928 | 4.137 | 1.019 | 15.977 | 16.500 | −3.172 | 0.000 |
| 510.928 | 5.516 | 1.377 | 16.391 | 16.800 | −2.435 | 0.000 |
| 510.928 | 6.895 | 1.743 | 16.856 | 17.200 | −1.997 | 0.000 |
| 510.928 | 10.342 | 2.685 | 18.248 | 18.100 | 0.816 | 0.000 |
| 510.928 | 13.790 | 3.640 | 19.945 | 19.500 | 2.284 | 0.000 |

Table 14. VISCOSITY AT ELEVATED PRESSURES (continued)

**Data from Eakin et al. [71]** (continued)

| T<br>K | P<br>MPa | $\rho$<br>mol•dm$^{-3}$ | $\eta$, calc<br>$\mu$Pa•s | $\eta$, expt<br>$\mu$Pa•s | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 510.928 | 20.684 | 5.453 | 24.012 | 23.300 | 3.056 | 0.000 |
| 510.928 | 27.579 | 6.982 | 28.435 | 27.700 | 2.655 | 0.000 |
| 510.928 | 34.474 | 8.196 | 32.785 | 32.200 | 1.818 | 0.000 |
| 510.928 | 41.368 | 9.160 | 36.929 | 36.300 | 1.732 | 0.000 |
| 510.928 | 48.263 | 9.942 | 40.866 | 39.700 | 2.938 | 0.000 |
| 510.928 | 55.158 | 10.592 | 44.633 | 43.200 | 3.317 | 0.000 |
| 510.928 | 62.053 | 11.146 | 48.265 | 46.700 | 3.351 | 0.000 |
| 510.928 | 68.948 | 11.626 | 51.794 | 50.200 | 3.176 | 0.000 |

Comparisons based on experimental pressures:

Number of Points [71] 198

AAD% = 1.33 BIAS% = 0.69 RMS% = 1.61
AAD = 0.53 BIAS = 0.41 RMS = 0.77 $\mu$Pa•s

Comparisons based on experimental densities:

Number of Points [71] 198

AAD% = 1.07 BIAS% = 0.41 RMS% = 1.46
AAD = 0.36 BIAS = 0.22 RMS = 0.61 $\mu$Pa•s

Table 14. **VISCOSITY AT ELEVATED PRESSURES** (continued)

Data from Gerf et al. [93]

| T K | P MPa | $\rho$ mol•dm$^{-3}$ | $\eta$, calc $\mu$Pa•s | $\eta$, expt $\mu$Pa•s | Dev % | wt |
|---|---|---|---|---|---|---|
| 101.200 | 0.143E-04 | 21.280 | 841.053 | 878.000 | -4.208 | 0.000 |
| 103.300 | 0.218E-04 | 21.204 | 783.604 | 787.000 | -0.431 | 0.000 |
| 105.700 | 0.345E-04 | 21.118 | 725.311 | 729.000 | -0.506 | 0.000 |
| 108.000 | 0.526E-04 | 21.035 | 675.757 | 675.000 | 0.112 | 0.000 |
| 111.100 | 0.900E-04 | 20.922 | 617.205 | 624.000 | -1.089 | 0.000 |
| 111.400 | 0.946E-04 | 20.911 | 611.982 | 615.000 | -0.491 | 0.000 |
| 112.000 | 0.105E-03 | 20.890 | 601.753 | 570.000 | 5.571 | 0.000 |
| 113.400 | 0.131E-03 | 20.839 | 578.951 | 556.000 | 4.128 | 0.000 |
| 115.400 | 0.180E-03 | 20.766 | 548.771 | 526.000 | 4.329 | 0.000 |
| 121.000 | 0.408E-03 | 20.560 | 476.852 | 458.000 | 4.116 | 0.000 |
| 126.800 | 0.875E-03 | 20.346 | 417.631 | 412.000 | 1.367 | 0.000 |
| 127.200 | 0.920E-03 | 20.331 | 414.008 | 403.000 | 2.731 | 0.000 |
| 141.200 | 0.431E-02 | 19.806 | 314.155 | 310.000 | 1.340 | 0.000 |
| 149.500 | 0.926E-02 | 19.489 | 272.561 | 277.000 | -1.603 | 0.000 |
| 150.300 | 0.992E-02 | 19.458 | 269.038 | 271.000 | -0.724 | 0.000 |
| 150.800 | 0.104E-01 | 19.439 | 266.874 | 270.000 | -1.158 | 0.000 |
| 159.800 | 0.211E-01 | 19.089 | 232.310 | 236.000 | -1.564 | 0.000 |
| 160.100 | 0.216E-01 | 19.077 | 231.284 | 225.000 | 2.793 | 0.000 |
| 166.800 | 0.347E-01 | 18.812 | 210.119 | 207.000 | 1.507 | 0.000 |
| 167.300 | 0.359E-01 | 18.792 | 208.662 | 203.000 | 2.789 | 0.000 |

Comparisons based on experimental pressures:

Number of Points [93] 20

AAD% = 2.13 BIAS% = 0.95 RMS% = 2.46
AAD = 10.00 BIAS = 3.29 RMS = 14.03 $\mu$Pa•s

Comparisons based on experimental densities:

Number of Points [93] 20

AAD% = 21.17 BIAS% = -18.84 RMS% = 39.44
AAD = 51.25 BIAS = -39.63 RMS = 87.70 $\mu$Pa•s

**Data from Gerf et al. [94]**

| T<br>K | P<br>MPa | $\rho$<br>mol•dm$^{-3}$ | $\eta$, calc<br>$\mu$Pa•s | $\eta$, expt<br>$\mu$Pa•s | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 172.800 | 0.512E-01 | 18.571 | 193.610 | 175.000 | 10.634 | 0.000 |
| 186.000 | 0.109 | 18.026 | 163.457 | 137.000 | 19.312 | 0.000 |
| 201.000 | 0.227 | 17.379 | 136.564 | 114.000 | 19.793 | 0.000 |
| 215.400 | 0.414 | 16.719 | 115.769 | 97.000 | 19.349 | 0.000 |
| 230.000 | 0.700 | 15.999 | 98.189 | 90.000 | 9.099 | 0.000 |
| 231.800 | 0.744 | 15.906 | 96.213 | 92.000 | 4.580 | 0.000 |
| 243.400 | 1.073 | 15.277 | 84.297 | 82.000 | 2.801 | 0.000 |
| 247.600 | 1.214 | 15.034 | 80.287 | 76.000 | 5.640 | 0.000 |
| 270.000 | 2.210 | 13.551 | 60.847 | 67.000 | −9.183 | 0.000 |
| 273.100 | 2.383 | 13.310 | 58.333 | 63.000 | −7.409 | 0.000 |
| 288.000 | 3.363 | 11.916 | 46.281 | 55.000 | −15.853 | 0.000 |

Comparisons based on experimental pressures:

Number of Points [94] 11

AAD% = 11.24 BIAS% = 5.34 RMS% = 11.57
AAD = 11.36 BIAS = 7.80 RMS = 11.61 $\mu$Pa•s

Comparisons based on experimental densities:

Number of Points [94] 11

AAD% = 11.43 BIAS% = 5.58 RMS% = 11.64
AAD = 11.55 BIAS = 8.03 RMS = 11.69 $\mu$Pa•s

**Data from Iwasaki et al. [73]**

| T<br>K | P<br>MPa | $\rho$<br>mol•dm$^{-3}$ | $\eta$, calc<br>$\mu$Pa•s | $\eta$, expt<br>$\mu$Pa•s | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 298.150 | 0.201 | 0.082 | 9.377 | 9.270 | 1.152 | 0.000 |
| 298.150 | 0.343 | 0.142 | 9.411 | 9.290 | 1.299 | 0.000 |
| 298.150 | 0.491 | 0.206 | 9.448 | 9.300 | 1.596 | 0.000 |
| 298.150 | 0.644 | 0.273 | 9.490 | 9.310 | 1.934 | 0.000 |
| 298.150 | 0.834 | 0.360 | 9.546 | 9.340 | 2.203 | 0.000 |
| 298.150 | 1.036 | 0.455 | 9.611 | 9.390 | 2.348 | 0.000 |
| 298.150 | 1.264 | 0.568 | 9.691 | 9.450 | 2.552 | 0.000 |
| 298.150 | 1.523 | 0.702 | 9.793 | 9.510 | 2.979 | 0.000 |

Table 14. VISCOSITY AT ELEVATED PRESSURES (continued)

Data from Iwasaki et al. [73] (continued)

| T K | P MPa | $\rho$ mol•dm$^{-3}$ | $\eta$, calc $\mu$Pa•s | $\eta$, expt $\mu$Pa•s | Dev % | wt |
|---|---|---|---|---|---|---|
| 298.150 | 1.788 | 0.848 | 9.912 | 9.600 | 3.249 | 0.000 |
| 298.150 | 2.070 | 1.015 | 10.057 | 9.720 | 3.469 | 0.000 |
| 298.150 | 2.351 | 1.196 | 10.225 | 9.840 | 3.915 | 0.000 |
| 298.150 | 2.624 | 1.388 | 10.417 | 10.000 | 4.169 | 0.000 |
| 298.150 | 2.920 | 1.620 | 10.666 | 10.210 | 4.469 | 0.000 |
| 298.150 | 3.243 | 1.913 | 11.008 | 10.510 | 4.743 | 0.000 |
| 298.150 | 3.477 | 2.163 | 11.325 | 10.780 | 5.052 | 0.000 |
| 298.150 | 3.795 | 2.588 | 11.914 | 11.310 | 5.343 | 0.000 |
| 298.150 | 4.029 | 3.026 | 12.587 | 11.800 | 6.674 | 0.000 |
| 298.150 | 4.134 | 3.303 | 13.050 | 12.330 | 5.838 | 0.000 |
| 305.650 | 0.298 | 0.120 | 9.619 | 9.480 | 1.466 | 0.000 |
| 305.650 | 0.599 | 0.246 | 9.696 | 9.530 | 1.740 | 0.000 |
| 305.650 | 0.906 | 0.382 | 9.785 | 9.580 | 2.138 | 0.000 |
| 305.650 | 1.210 | 0.523 | 9.884 | 9.650 | 2.429 | 0.000 |
| 305.650 | 1.566 | 0.699 | 10.019 | 9.750 | 2.758 | 0.000 |
| 305.650 | 1.939 | 0.897 | 10.184 | 9.860 | 3.288 | 0.000 |
| 305.650 | 2.335 | 1.128 | 10.394 | 10.010 | 3.838 | 0.000 |
| 305.650 | 2.688 | 1.356 | 10.620 | 10.220 | 3.912 | 0.000 |
| 305.650 | 3.059 | 1.624 | 10.909 | 10.470 | 4.195 | 0.000 |
| 305.650 | 3.358 | 1.870 | 11.196 | 10.710 | 4.541 | 0.000 |
| 305.650 | 3.696 | 2.191 | 11.603 | 11.060 | 4.914 | 0.000 |
| 305.650 | 4.045 | 2.598 | 12.172 | 11.570 | 5.205 | 0.000 |
| 305.650 | 4.256 | 2.905 | 12.641 | 12.010 | 5.251 | 0.000 |
| 305.650 | 4.360 | 3.084 | 12.928 | 12.270 | 5.361 | 0.000 |
| 305.650 | 4.453 | 3.266 | 13.233 | 12.580 | 5.188 | 0.000 |
| 305.650 | 4.477 | 3.317 | 13.320 | 12.660 | 5.216 | 0.000 |
| 305.650 | 4.536 | 3.452 | 13.556 | 12.850 | 5.498 | 0.000 |
| 305.650 | 4.606 | 3.636 | 13.889 | 13.230 | 4.982 | 0.000 |
| 305.650 | 4.666 | 3.820 | 14.233 | 13.570 | 4.889 | 0.000 |
| 305.650 | 4.718 | 4.010 | 14.602 | 13.950 | 4.672 | 0.000 |
| 305.650 | 4.759 | 4.192 | 14.965 | 14.340 | 4.360 | 0.000 |
| 305.650 | 4.793 | 4.375 | 15.345 | 14.750 | 4.035 | 0.000 |
| 305.650 | 4.819 | 4.544 | 15.707 | 15.210 | 3.264 | 0.000 |
| 305.650 | 4.839 | 4.704 | 16.060 | 15.660 | 2.555 | 0.000 |
| 305.650 | 4.853 | 4.841 | 16.369 | 16.110 | 1.610 | 0.000 |
| 305.650 | 4.862 | 4.954 | 16.630 | 16.550 | 0.485 | 0.000 |

Data from Iwasaki et al. [73] (continued)

| T K | P MPa | $\rho$ mol•dm$^{-3}$ | $\eta$, calc $\mu$Pa•s | $\eta$, expt $\mu$Pa•s | Dev % | wt |
|---|---|---|---|---|---|---|
| 305.650 | 4.868 | 5.041 | 16.832 | 16.950 | −0.693 | 0.000 |
| 305.650 | 4.874 | 5.124 | 17.030 | 17.440 | −2.353 | 0.000 |
| 305.650 | 4.877 | 5.189 | 17.187 | 17.940 | −4.199 | 0.000 |
| 305.650 | 4.879 | 5.216 | 17.251 | 18.190 | −5.159 | 0.000 |
| 305.650 | 4.880 | 5.243 | 17.320 | 18.530 | −6.532 | 0.000 |
| 305.650 | 4.881 | 5.258 | 17.355 | 18.850 | −7.930 | 0.000 |
| 305.650 | 4.882 | 5.279 | 17.408 | 19.200 | −9.336 | 0.000 |
| 305.650 | 4.882 | 5.290 | 17.435 | 19.580 | −10.957 | 0.000 |
| 305.650 | 4.883 | 5.315 | 17.496 | 20.010 | −12.563 | 0.000 |
| 305.650 | 4.884 | 5.325 | 17.519 | 20.460 | −14.373 | 0.000 |
| 305.650 | 4.884 | 5.337 | 17.549 | 20.920 | −16.114 | 0.000 |
| 305.650 | 4.885 | 5.349 | 17.579 | 21.380 | −17.777 | 0.000 |
| 305.650 | 4.885 | 5.351 | 17.585 | 21.810 | −19.370 | 0.000 |
| 305.650 | 4.885 | 5.361 | 17.610 | 22.210 | −20.710 | 0.000 |
| 305.650 | 4.885 | 5.364 | 17.617 | 22.560 | −21.913 | 0.000 |
| 305.650 | 4.886 | 5.377 | 17.648 | 22.870 | −22.831 | 0.000 |
| 305.650 | 4.886 | 5.382 | 17.661 | 23.080 | −23.477 | 0.000 |
| 305.650 | 4.887 | 5.395 | 17.695 | 23.260 | −23.927 | 0.000 |
| 305.650 | 4.887 | 5.406 | 17.722 | 23.450 | −24.427 | 0.000 |
| 305.650 | 4.888 | 5.417 | 17.750 | 23.670 | −25.012 | 0.000 |
| 305.650 | 4.888 | 5.431 | 17.785 | 23.850 | −25.429 | 0.000 |
| 305.650 | 4.888 | 5.443 | 17.814 | 24.080 | −26.020 | 0.000 |
| 305.650 | 4.889 | 5.464 | 17.867 | 24.280 | −26.411 | 0.000 |
| 305.650 | 4.890 | 5.495 | 17.947 | 24.550 | −26.895 | 0.000 |
| 305.650 | 4.891 | 5.543 | 18.069 | 24.840 | −27.260 | 0.000 |
| 305.650 | 4.893 | 5.615 | 18.256 | 25.100 | −27.268 | 0.000 |
| 305.650 | 4.896 | 5.725 | 18.544 | 25.490 | −27.252 | 0.000 |
| 305.650 | 4.900 | 5.977 | 19.220 | 25.860 | −25.679 | 0.000 |
| 305.650 | 4.904 | 6.638 | 21.133 | 26.240 | −19.464 | 0.000 |
| 305.650 | 4.910 | 7.679 | 24.567 | 26.670 | −7.884 | 0.000 |
| 305.650 | 4.917 | 8.081 | 26.050 | 27.110 | −3.911 | 0.000 |
| 305.650 | 4.928 | 8.335 | 27.034 | 27.600 | −2.049 | 0.000 |
| 305.650 | 4.940 | 8.532 | 27.827 | 28.050 | −0.795 | 0.000 |
| 305.650 | 4.956 | 8.700 | 28.526 | 28.580 | −0.188 | 0.000 |
| 305.650 | 4.979 | 8.875 | 29.269 | 29.080 | 0.649 | 0.000 |
| 305.650 | 5.011 | 9.059 | 30.079 | 29.660 | 1.413 | 0.000 |

Data from Iwasaki et al. [73] (continued)

| T<br>K | P<br>MPa | $\rho$<br>$mol \cdot dm^{-3}$ | $\eta$, calc<br>$\mu Pa \cdot s$ | $\eta$, expt<br>$\mu Pa \cdot s$ | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 305.650 | 5.032 | 9.155 | 30.512 | 30.220 | 0.965 | 0.000 |
| 305.650 | 5.068 | 9.297 | 31.159 | 30.850 | 1.002 | 0.000 |
| 305.650 | 5.113 | 9.438 | 31.824 | 31.450 | 1.188 | 0.000 |
| 305.650 | 5.169 | 9.585 | 32.528 | 32.150 | 1.174 | 0.000 |
| 305.650 | 5.232 | 9.723 | 33.210 | 32.790 | 1.280 | 0.000 |
| 305.650 | 5.307 | 9.863 | 33.919 | 33.540 | 1.131 | 0.000 |
| 305.650 | 5.398 | 10.009 | 34.675 | 34.230 | 1.299 | 0.000 |
| 305.850 | 0.351 | 0.142 | 9.638 | 9.500 | 1.449 | 0.000 |
| 305.850 | 0.598 | 0.246 | 9.701 | 9.540 | 1.692 | 0.000 |
| 305.850 | 0.878 | 0.369 | 9.782 | 9.580 | 2.106 | 0.000 |
| 305.850 | 1.174 | 0.505 | 9.878 | 9.640 | 2.465 | 0.000 |
| 305.850 | 1.468 | 0.649 | 9.986 | 9.730 | 2.627 | 0.000 |
| 305.850 | 1.817 | 0.830 | 10.133 | 9.840 | 2.974 | 0.000 |
| 305.850 | 2.170 | 1.028 | 10.307 | 9.980 | 3.278 | 0.000 |
| 305.850 | 2.482 | 1.219 | 10.488 | 10.130 | 3.533 | 0.000 |
| 305.850 | 2.888 | 1.494 | 10.772 | 10.350 | 4.073 | 0.000 |
| 305.850 | 3.359 | 1.867 | 11.199 | 10.700 | 4.663 | 0.000 |
| 305.850 | 3.680 | 2.169 | 11.581 | 11.050 | 4.807 | 0.000 |
| 305.850 | 4.044 | 2.587 | 12.164 | 11.580 | 5.039 | 0.000 |
| 305.850 | 4.416 | 3.174 | 13.084 | 12.430 | 5.259 | 0.000 |
| 305.850 | 4.531 | 3.420 | 13.506 | 12.840 | 5.185 | 0.000 |
| 305.850 | 4.669 | 3.797 | 14.196 | 13.520 | 4.999 | 0.000 |
| 305.850 | 4.768 | 4.177 | 14.943 | 14.300 | 4.497 | 0.000 |
| 305.850 | 4.822 | 4.473 | 15.560 | 14.980 | 3.875 | 0.000 |
| 305.850 | 4.867 | 4.847 | 16.388 | 16.050 | 2.105 | 0.000 |
| 305.850 | 4.877 | 4.954 | 16.636 | 16.300 | 2.064 | 0.000 |
| 305.850 | 4.882 | 5.018 | 16.787 | 16.660 | 0.760 | 0.000 |
| 305.850 | 4.890 | 5.136 | 17.066 | 17.200 | −0.780 | 0.000 |
| 305.850 | 4.894 | 5.209 | 17.243 | 17.540 | −1.695 | 0.000 |
| 305.850 | 4.898 | 5.278 | 17.411 | 17.990 | −3.221 | 0.000 |
| 305.850 | 4.901 | 5.333 | 17.546 | 18.370 | −4.484 | 0.000 |
| 305.850 | 4.902 | 5.374 | 17.649 | 18.790 | −6.074 | 0.000 |
| 305.850 | 4.903 | 5.403 | 17.722 | 19.100 | −7.216 | 0.000 |
| 305.850 | 4.904 | 5.426 | 17.779 | 19.410 | −8.402 | 0.000 |
| 305.850 | 4.905 | 5.453 | 17.846 | 19.760 | −9.685 | 0.000 |
| 305.850 | 4.906 | 5.469 | 17.888 | 20.110 | −11.049 | 0.000 |

Data from Iwasaki et al. [73] (continued)

| T<br>K | P<br>MPa | $\rho$<br>$mol \cdot dm^{-3}$ | $\eta$, calc<br>$\mu Pa \cdot s$ | $\eta$, expt<br>$\mu Pa \cdot s$ | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 305.850 | 4.907 | 5.507 | 17.983 | 20.480 | −12.190 | 0.000 |
| 305.850 | 4.908 | 5.513 | 17.999 | 20.830 | −13.592 | 0.000 |
| 305.850 | 4.908 | 5.528 | 18.038 | 21.180 | −14.836 | 0.000 |
| 305.850 | 4.908 | 5.541 | 18.070 | 21.510 | −15.993 | 0.000 |
| 305.850 | 4.909 | 5.560 | 18.120 | 21.820 | −16.959 | 0.000 |
| 305.850 | 4.909 | 5.577 | 18.162 | 22.190 | −18.150 | 0.000 |
| 305.850 | 4.910 | 5.605 | 18.234 | 22.440 | −18.743 | 0.000 |
| 305.850 | 4.911 | 5.619 | 18.271 | 22.770 | −19.757 | 0.000 |
| 305.850 | 4.911 | 5.645 | 18.339 | 23.040 | −20.402 | 0.000 |
| 305.850 | 4.912 | 5.669 | 18.400 | 23.270 | −20.926 | 0.000 |
| 305.850 | 4.913 | 5.697 | 18.475 | 23.570 | −21.614 | 0.000 |
| 305.850 | 4.914 | 5.745 | 18.603 | 23.830 | −21.936 | 0.000 |
| 305.850 | 4.915 | 5.793 | 18.730 | 24.100 | −22.283 | 0.000 |
| 305.850 | 4.917 | 5.885 | 18.977 | 24.440 | −22.352 | 0.000 |
| 305.850 | 4.918 | 6.002 | 19.297 | 24.710 | −21.907 | 0.000 |
| 305.850 | 4.921 | 6.204 | 19.861 | 25.080 | −20.811 | 0.000 |
| 305.850 | 4.924 | 6.597 | 21.013 | 25.400 | −17.270 | 0.000 |
| 305.850 | 4.929 | 7.253 | 23.100 | 25.900 | −10.811 | 0.000 |
| 305.850 | 4.934 | 7.724 | 24.735 | 26.290 | −5.916 | 0.000 |
| 305.850 | 4.941 | 8.031 | 25.866 | 26.690 | −3.086 | 0.000 |
| 305.850 | 4.949 | 8.258 | 26.737 | 27.170 | −1.595 | 0.000 |
| 305.850 | 4.961 | 8.447 | 27.487 | 27.630 | −0.517 | 0.000 |
| 305.850 | 4.974 | 8.608 | 28.146 | 28.140 | 0.021 | 0.000 |
| 305.850 | 4.993 | 8.773 | 28.838 | 28.660 | 0.621 | 0.000 |
| 305.850 | 5.018 | 8.938 | 29.552 | 29.280 | 0.929 | 0.000 |
| 305.850 | 5.048 | 9.090 | 30.221 | 29.870 | 1.174 | 0.000 |
| 305.850 | 5.082 | 9.230 | 30.855 | 30.490 | 1.198 | 0.000 |
| 305.850 | 5.123 | 9.368 | 31.499 | 31.060 | 1.415 | 0.000 |
| 305.850 | 5.173 | 9.509 | 32.165 | 31.730 | 1.371 | 0.000 |
| 305.850 | 5.232 | 9.649 | 32.849 | 32.400 | 1.386 | 0.000 |
| 305.850 | 5.303 | 9.791 | 33.558 | 33.110 | 1.352 | 0.000 |
| 306.150 | 0.359 | 0.145 | 9.648 | 9.510 | 1.454 | 0.000 |
| 306.150 | 0.595 | 0.244 | 9.709 | 9.550 | 1.668 | 0.000 |
| 306.150 | 0.847 | 0.354 | 9.781 | 9.590 | 1.992 | 0.000 |
| 306.150 | 1.119 | 0.479 | 9.867 | 9.650 | 2.253 | 0.000 |
| 306.150 | 1.486 | 0.657 | 10.001 | 9.740 | 2.677 | 0.000 |

Table 14. **VISCOSITY AT ELEVATED PRESSURES** (continued)

Data from Iwasaki et al. [73] (continued)

| T<br>K | P<br>MPa | $\rho$<br>$mol \cdot dm^{-3}$ | $\eta$, calc<br>$\mu Pa \cdot s$ | $\eta$, expt<br>$\mu Pa \cdot s$ | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 306.150 | 1.872 | 0.858 | 10.166 | 9.860 | 3.102 | 0.000 |
| 306.150 | 2.248 | 1.073 | 10.357 | 10.000 | 3.571 | 0.000 |
| 306.150 | 2.589 | 1.286 | 10.564 | 10.180 | 3.768 | 0.000 |
| 306.150 | 3.058 | 1.617 | 10.917 | 10.470 | 4.265 | 0.000 |
| 306.150 | 3.459 | 1.950 | 11.310 | 10.910 | 4.628 | 0.000 |
| 306.150 | 3.853 | 2.346 | 11.829 | 11.270 | 4.964 | 0.000 |
| 306.150 | 4.090 | 2.636 | 12.245 | 11.650 | 5.109 | 0.000 |
| 306.150 | 4.326 | 2.989 | 12.791 | 12.160 | 5.187 | 0.000 |
| 306.150 | 4.530 | 3.386 | 13.456 | 12.780 | 5.293 | 0.000 |
| 306.150 | 4.651 | 3.693 | 14.011 | 13.330 | 5.107 | 0.000 |
| 306.150 | 4.754 | 4.040 | 14.677 | 14.000 | 4.834 | 0.000 |
| 306.150 | 4.816 | 4.325 | 15.258 | 14.620 | 4.365 | 0.000 |
| 306.150 | 4.851 | 4.538 | 15.712 | 15.140 | 3.775 | 0.000 |
| 306.150 | 4.869 | 4.670 | 16.000 | 15.470 | 3.423 | 0.000 |
| 306.150 | 4.887 | 4.823 | 16.343 | 15.920 | 2.657 | 0.000 |
| 306.150 | 4.902 | 4.989 | 16.728 | 16.430 | 1.811 | 0.000 |
| 306.150 | 4.911 | 5.102 | 16.995 | 16.830 | 0.983 | 0.000 |
| 306.150 | 4.917 | 5.191 | 17.209 | 17.160 | 0.285 | 0.000 |
| 306.150 | 4.921 | 5.259 | 17.373 | 17.490 | −0.667 | 0.000 |
| 306.150 | 4.925 | 5.338 | 17.568 | 17.880 | −1.743 | 0.000 |
| 306.150 | 4.928 | 5.401 | 17.725 | 18.250 | −2.875 | 0.000 |
| 306.150 | 4.931 | 5.456 | 17.864 | 18.620 | −4.059 | 0.000 |
| 306.150 | 4.933 | 5.519 | 18.024 | 19.080 | −5.533 | 0.000 |
| 306.150 | 4.934 | 5.555 | 18.115 | 19.380 | −6.528 | 0.000 |
| 306.150 | 4.936 | 5.604 | 18.242 | 19.710 | −7.446 | 0.000 |
| 306.150 | 4.937 | 5.635 | 18.323 | 20.030 | −8.524 | 0.000 |
| 306.150 | 4.938 | 5.671 | 18.416 | 20.360 | −9.547 | 0.000 |
| 306.150 | 4.939 | 5.702 | 18.497 | 20.700 | −10.642 | 0.000 |
| 306.150 | 4.940 | 5.734 | 18.583 | 21.000 | −11.511 | 0.000 |
| 306.150 | 4.941 | 5.764 | 18.663 | 21.340 | −12.545 | 0.000 |
| 306.150 | 4.941 | 5.784 | 18.715 | 21.640 | −13.517 | 0.000 |
| 306.150 | 4.943 | 5.851 | 18.894 | 21.960 | −13.960 | 0.000 |
| 306.150 | 4.944 | 5.883 | 18.979 | 22.280 | −14.814 | 0.000 |
| 306.150 | 4.944 | 5.887 | 18.992 | 22.580 | −15.890 | 0.000 |
| 306.150 | 4.946 | 5.981 | 19.248 | 22.870 | −15.836 | 0.000 |
| 306.150 | 4.947 | 6.042 | 19.415 | 23.160 | −16.169 | 0.000 |

Table 14. VISCOSITY AT ELEVATED PRESSURES (continued)

Data from Iwasaki et al. [73] (continued)

| T<br>K | P<br>MPa | $\rho$<br>$mol \cdot dm^{-3}$ | $\eta$, calc<br>$\mu Pa \cdot s$ | $\eta$, expt<br>$\mu Pa \cdot s$ | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 306.150 | 4.948 | 6.113 | 19.615 | 23.490 | −16.497 | 0.000 |
| 306.150 | 4.950 | 6.233 | 19.953 | 23.770 | −16.058 | 0.000 |
| 306.150 | 4.954 | 6.542 | 20.858 | 24.410 | −14.553 | 0.000 |
| 306.150 | 4.960 | 7.116 | 22.656 | 25.190 | −10.059 | 0.000 |
| 306.150 | 4.970 | 7.750 | 24.838 | 25.940 | −4.250 | 0.000 |
| 306.150 | 4.976 | 7.993 | 25.731 | 26.350 | −2.348 | 0.000 |
| 306.150 | 4.985 | 8.193 | 26.495 | 26.800 | −1.140 | 0.000 |
| 306.150 | 4.996 | 8.378 | 27.219 | 27.260 | −0.149 | 0.000 |
| 306.150 | 5.009 | 8.537 | 27.865 | 27.720 | 0.524 | 0.000 |
| 306.150 | 5.024 | 8.684 | 28.473 | 28.250 | 0.791 | 0.000 |
| 306.150 | 5.044 | 8.829 | 29.087 | 28.790 | 1.030 | 0.000 |
| 306.150 | 5.069 | 8.969 | 29.694 | 29.300 | 1.345 | 0.000 |
| 306.150 | 5.098 | 9.107 | 30.306 | 29.860 | 1.494 | 0.000 |
| 306.150 | 5.135 | 9.248 | 30.950 | 30.390 | 1.841 | 0.000 |
| 306.150 | 5.178 | 9.385 | 31.585 | 31.120 | 1.495 | 0.000 |
| 306.150 | 5.229 | 9.522 | 32.239 | 31.760 | 1.508 | 0.000 |
| 306.150 | 5.291 | 9.661 | 32.914 | 32.430 | 1.492 | 0.000 |
| 306.150 | 5.364 | 9.802 | 33.618 | 33.120 | 1.504 | 0.000 |
| 306.150 | 5.449 | 9.941 | 34.332 | 33.850 | 1.423 | 0.000 |
| 306.450 | 0.297 | 0.119 | 9.642 | 9.520 | 1.281 | 0.000 |
| 306.450 | 0.592 | 0.243 | 9.717 | 9.560 | 1.644 | 0.000 |
| 306.450 | 0.895 | 0.375 | 9.804 | 9.610 | 2.021 | 0.000 |
| 306.450 | 1.224 | 0.528 | 9.912 | 9.690 | 2.291 | 0.000 |
| 306.450 | 1.588 | 0.707 | 10.050 | 9.780 | 2.760 | 0.000 |
| 306.450 | 2.095 | 0.982 | 10.283 | 9.950 | 3.348 | 0.000 |
| 306.450 | 2.525 | 1.242 | 10.529 | 10.150 | 3.732 | 0.000 |
| 306.450 | 2.823 | 1.441 | 10.734 | 10.320 | 4.013 | 0.000 |
| 306.450 | 3.255 | 1.769 | 11.101 | 10.640 | 4.330 | 0.000 |
| 306.450 | 3.644 | 2.117 | 11.533 | 11.020 | 4.655 | 0.000 |
| 306.450 | 3.978 | 2.481 | 12.030 | 11.470 | 4.880 | 0.000 |
| 306.450 | 4.209 | 2.788 | 12.485 | 11.880 | 5.092 | 0.000 |
| 306.450 | 4.438 | 3.169 | 13.095 | 12.470 | 5.011 | 0.000 |
| 306.450 | 4.586 | 3.483 | 13.637 | 13.000 | 4.903 | 0.000 |
| 306.450 | 4.679 | 3.729 | 14.087 | 13.450 | 4.733 | 0.000 |
| 306.450 | 4.756 | 3.984 | 14.577 | 13.920 | 4.719 | 0.000 |
| 306.450 | 4.818 | 4.244 | 15.100 | 14.560 | 3.706 | 0.000 |

Table 14. VISCOSITY AT ELEVATED PRESSURES (continued)

Data from Iwasaki et al. [73] (continued)

| T<br>K | P<br>MPa | $\rho$<br>$mol \cdot dm^{-3}$ | $\eta$, calc<br>$\mu Pa \cdot s$ | $\eta$, expt<br>$\mu Pa \cdot s$ | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 306.450 | 4.861 | 4.471 | 15.576 | 15.140 | 2.880 | 0.000 |
| 306.450 | 4.886 | 4.641 | 15.946 | 15.600 | 2.217 | 0.000 |
| 306.450 | 4.907 | 4.812 | 16.328 | 16.130 | 1.230 | 0.000 |
| 306.450 | 4.921 | 4.953 | 16.653 | 16.620 | 0.196 | 0.000 |
| 306.450 | 4.931 | 5.067 | 16.920 | 17.130 | −1.227 | 0.000 |
| 306.450 | 4.938 | 5.156 | 17.132 | 17.830 | −3.912 | 0.000 |
| 306.450 | 4.943 | 5.233 | 17.320 | 18.370 | −5.717 | 0.000 |
| 306.450 | 4.946 | 5.283 | 17.443 | 18.970 | −8.050 | 0.000 |
| 306.450 | 4.946 | 5.285 | 17.447 | 19.180 | −9.035 | 0.000 |
| 306.450 | 4.948 | 5.312 | 17.515 | 19.600 | −10.639 | 0.000 |
| 306.450 | 4.949 | 5.335 | 17.572 | 19.870 | −11.565 | 0.000 |
| 306.450 | 4.950 | 5.350 | 17.608 | 20.190 | −12.787 | 0.000 |
| 306.450 | 4.951 | 5.375 | 17.669 | 20.490 | −13.768 | 0.000 |
| 306.450 | 4.953 | 5.404 | 17.742 | 20.920 | −15.191 | 0.000 |
| 306.450 | 4.954 | 5.420 | 17.782 | 21.220 | −16.200 | 0.000 |
| 306.450 | 4.953 | 5.406 | 17.747 | 21.540 | −17.609 | 0.000 |
| 306.450 | 4.956 | 5.464 | 17.894 | 21.870 | −18.182 | 0.000 |
| 306.450 | 4.957 | 5.490 | 17.961 | 22.150 | −18.914 | 0.000 |
| 306.450 | 4.958 | 5.513 | 18.019 | 22.470 | −19.810 | 0.000 |
| 306.450 | 4.959 | 5.544 | 18.097 | 22.780 | −20.556 | 0.000 |
| 306.450 | 4.961 | 5.584 | 18.200 | 23.090 | −21.179 | 0.000 |
| 306.450 | 4.964 | 5.662 | 18.403 | 23.700 | −22.351 | 0.000 |
| 306.450 | 4.969 | 5.831 | 18.849 | 24.490 | −23.033 | 0.000 |
| 306.450 | 4.977 | 6.150 | 19.727 | 25.290 | −21.996 | 0.000 |
| 306.450 | 4.989 | 6.884 | 21.918 | 26.100 | −16.021 | 0.000 |
| 306.450 | 5.007 | 7.810 | 25.064 | 27.040 | −7.306 | 0.000 |
| 306.450 | 5.032 | 8.341 | 27.084 | 27.940 | −3.062 | 0.000 |
| 306.450 | 5.050 | 8.543 | 27.895 | 28.480 | −2.055 | 0.000 |
| 306.450 | 5.072 | 8.726 | 28.656 | 29.030 | −1.288 | 0.000 |
| 306.450 | 5.099 | 8.894 | 29.375 | 29.560 | −0.626 | 0.000 |
| 306.450 | 5.131 | 9.049 | 30.056 | 30.090 | −0.114 | 0.000 |
| 306.450 | 5.170 | 9.203 | 30.750 | 30.720 | 0.097 | 0.000 |
| 306.450 | 5.216 | 9.352 | 31.437 | 31.360 | 0.246 | 0.000 |
| 306.450 | 5.272 | 9.500 | 32.141 | 32.010 | 0.410 | 0.000 |
| 306.450 | 5.338 | 9.647 | 32.857 | 32.670 | 0.571 | 0.000 |
| 306.450 | 5.415 | 9.794 | 33.589 | 33.400 | 0.565 | 0.000 |

Data from Iwasaki et al. [73] (continued)

| T<br>K | P<br>MPa | $\rho$<br>$mol \cdot dm^{-3}$ | $\eta$, calc<br>$\mu Pa \cdot s$ | $\eta$, expt<br>$\mu Pa \cdot s$ | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 308.150 | 0.349 | 0.140 | 9.704 | 9.570 | 1.401 | 0.000 |
| 308.150 | 0.590 | 0.240 | 9.766 | 9.600 | 1.728 | 0.000 |
| 308.150 | 0.833 | 0.345 | 9.835 | 9.640 | 2.018 | 0.000 |
| 308.150 | 1.062 | 0.448 | 9.906 | 9.690 | 2.226 | 0.000 |
| 308.150 | 1.345 | 0.582 | 10.004 | 9.760 | 2.495 | 0.000 |
| 308.150 | 1.551 | 0.683 | 10.082 | 9.820 | 2.668 | 0.000 |
| 308.150 | 1.868 | 0.847 | 10.217 | 9.910 | 3.100 | 0.000 |
| 308.150 | 2.167 | 1.013 | 10.364 | 10.030 | 3.329 | 0.000 |
| 308.150 | 2.534 | 1.234 | 10.574 | 10.220 | 3.463 | 0.000 |
| 308.150 | 2.911 | 1.485 | 10.834 | 10.410 | 4.069 | 0.000 |
| 308.150 | 3.346 | 1.816 | 11.210 | 10.750 | 4.283 | 0.000 |
| 308.150 | 3.745 | 2.175 | 11.664 | 11.180 | 4.325 | 0.000 |
| 308.150 | 4.234 | 2.741 | 12.467 | 11.870 | 5.033 | 0.000 |
| 308.150 | 4.584 | 3.311 | 13.391 | 12.750 | 5.028 | 0.000 |
| 308.150 | 4.855 | 3.996 | 14.655 | 13.980 | 4.830 | 0.000 |
| 308.150 | 4.992 | 4.580 | 15.868 | 15.270 | 3.913 | 0.000 |
| 308.150 | 5.070 | 5.154 | 17.185 | 16.860 | 1.928 | 0.000 |
| 308.150 | 5.079 | 5.248 | 17.411 | 17.130 | 1.641 | 0.000 |
| 308.150 | 5.093 | 5.413 | 17.821 | 17.680 | 0.797 | 0.000 |
| 308.150 | 5.103 | 5.544 | 18.153 | 18.130 | 0.128 | 0.000 |
| 308.150 | 5.111 | 5.672 | 18.483 | 18.580 | -0.524 | 0.000 |
| 308.150 | 5.120 | 5.828 | 18.897 | 19.150 | -1.319 | 0.000 |
| 308.150 | 5.125 | 5.920 | 19.145 | 19.490 | -1.772 | 0.000 |
| 308.150 | 5.130 | 6.015 | 19.406 | 19.900 | -2.482 | 0.000 |
| 308.150 | 5.133 | 6.089 | 19.609 | 20.180 | -2.829 | 0.000 |
| 308.150 | 5.137 | 6.169 | 19.836 | 20.500 | -3.241 | 0.000 |
| 308.150 | 5.140 | 6.244 | 20.047 | 20.790 | -3.572 | 0.000 |
| 308.150 | 5.143 | 6.309 | 20.234 | 21.090 | -4.059 | 0.000 |
| 308.150 | 5.147 | 6.411 | 20.533 | 21.440 | -4.231 | 0.000 |
| 308.150 | 5.151 | 6.497 | 20.786 | 21.730 | -4.346 | 0.000 |
| 308.150 | 5.155 | 6.589 | 21.061 | 22.080 | -4.614 | 0.000 |
| 308.150 | 5.159 | 6.694 | 21.382 | 22.420 | -4.628 | 0.000 |
| 308.150 | 5.163 | 6.803 | 21.718 | 22.750 | -4.537 | 0.000 |
| 308.150 | 5.172 | 7.020 | 22.406 | 23.400 | -4.247 | 0.000 |
| 308.150 | 5.183 | 7.283 | 23.270 | 24.100 | -3.445 | 0.000 |
| 308.150 | 5.196 | 7.551 | 24.191 | 24.770 | -2.337 | 0.000 |

Table 14. VISCOSITY AT ELEVATED PRESSURES (continued)

Data from Iwasaki et al. [73] (continued)

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\eta$, calc $\mu Pa \cdot s$ | $\eta$, expt $\mu Pa \cdot s$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 308.150 | 5.212 | 7.837 | 25.212 | 25.520 | −1.205 | 0.000 |
| 308.150 | 5.234 | 8.120 | 26.270 | 26.380 | −0.416 | 0.000 |
| 308.150 | 5.249 | 8.270 | 26.853 | 26.780 | 0.274 | 0.000 |
| 308.150 | 5.267 | 8.420 | 27.448 | 27.300 | 0.542 | 0.000 |
| 308.150 | 5.289 | 8.571 | 28.062 | 27.790 | 0.980 | 0.000 |
| 308.150 | 5.313 | 8.711 | 28.642 | 28.340 | 1.064 | 0.000 |
| 308.150 | 5.342 | 8.848 | 29.226 | 28.840 | 1.339 | 0.000 |
| 308.150 | 5.375 | 8.984 | 29.819 | 29.380 | 1.493 | 0.000 |
| 308.150 | 5.415 | 9.121 | 30.427 | 29.990 | 1.456 | 0.000 |
| 308.150 | 5.462 | 9.257 | 31.048 | 30.610 | 1.432 | 0.000 |
| 308.150 | 5.516 | 9.394 | 31.683 | 31.220 | 1.482 | 0.000 |
| 308.150 | 5.585 | 9.542 | 32.388 | 31.940 | 1.403 | 0.000 |
| 308.150 | 5.661 | 9.681 | 33.069 | 32.590 | 1.471 | 0.000 |
| 308.150 | 5.749 | 9.821 | 33.773 | 33.300 | 1.420 | 0.000 |
| 308.150 | 5.850 | 9.962 | 34.498 | 34.000 | 1.466 | 0.000 |
| 308.150 | 5.968 | 10.106 | 35.255 | 34.810 | 1.279 | 0.000 |
| 308.150 | 6.100 | 10.247 | 36.018 | 35.620 | 1.117 | 0.000 |
| 323.150 | 0.202 | 0.076 | 10.103 | 10.020 | 0.824 | 0.000 |
| 323.150 | 0.349 | 0.133 | 10.137 | 10.020 | 1.168 | 0.000 |
| 323.150 | 0.497 | 0.191 | 10.173 | 10.040 | 1.330 | 0.000 |
| 323.150 | 0.746 | 0.291 | 10.239 | 10.090 | 1.480 | 0.000 |
| 323.150 | 1.026 | 0.407 | 10.321 | 10.140 | 1.781 | 0.000 |
| 323.150 | 1.358 | 0.551 | 10.428 | 10.220 | 2.032 | 0.000 |
| 323.150 | 1.650 | 0.684 | 10.533 | 10.300 | 2.265 | 0.000 |
| 323.150 | 1.960 | 0.832 | 10.658 | 10.390 | 2.578 | 0.000 |
| 323.150 | 2.268 | 0.988 | 10.797 | 10.500 | 2.832 | 0.000 |
| 323.150 | 2.544 | 1.134 | 10.936 | 10.620 | 2.979 | 0.000 |
| 323.150 | 2.892 | 1.331 | 11.135 | 10.770 | 3.390 | 0.000 |
| 323.150 | 3.274 | 1.565 | 11.389 | 10.990 | 3.627 | 0.000 |
| 323.150 | 3.848 | 1.962 | 11.863 | 11.410 | 3.968 | 0.000 |
| 323.150 | 4.266 | 2.297 | 12.304 | 11.830 | 4.007 | 0.000 |
| 323.150 | 4.639 | 2.640 | 12.797 | 12.290 | 4.123 | 0.000 |
| 323.150 | 4.972 | 2.995 | 13.350 | 12.790 | 4.375 | 0.000 |
| 323.150 | 5.258 | 3.351 | 13.948 | 13.360 | 4.404 | 0.000 |
| 323.150 | 5.528 | 3.748 | 14.666 | 14.070 | 4.238 | 0.000 |
| 323.150 | 5.774 | 4.178 | 15.509 | 14.880 | 4.225 | 0.000 |

Data from Iwasaki et al. [73] (continued)

| T<br>K | P<br>MPa | $\rho$<br>$mol \cdot dm^{-3}$ | $\eta$, calc<br>$\mu Pa \cdot s$ | $\eta$, expt<br>$\mu Pa \cdot s$ | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 323.150 | 5.895 | 4.421 | 16.014 | 15.410 | 3.922 | 0.000 |
| 323.150 | 6.066 | 4.810 | 16.867 | 16.250 | 3.796 | 0.000 |
| 323.150 | 6.237 | 5.259 | 17.924 | 17.340 | 3.370 | 0.000 |
| 323.150 | 6.327 | 5.522 | 18.581 | 17.990 | 3.283 | 0.000 |
| 323.150 | 6.401 | 5.748 | 19.166 | 18.630 | 2.877 | 0.000 |
| 323.150 | 6.446 | 5.890 | 19.546 | 19.000 | 2.871 | 0.000 |
| 323.150 | 6.525 | 6.145 | 20.245 | 19.700 | 2.768 | 0.000 |
| 323.150 | 6.562 | 6.265 | 20.586 | 20.050 | 2.672 | 0.000 |
| 323.150 | 6.596 | 6.375 | 20.904 | 20.330 | 2.823 | 0.000 |
| 323.150 | 6.624 | 6.468 | 21.175 | 20.630 | 2.641 | 0.000 |
| 323.150 | 6.653 | 6.561 | 21.452 | 20.960 | 2.345 | 0.000 |
| 323.150 | 6.682 | 6.657 | 21.740 | 21.230 | 2.404 | 0.000 |
| 323.150 | 6.712 | 6.754 | 22.036 | 21.530 | 2.352 | 0.000 |
| 323.150 | 6.744 | 6.853 | 22.344 | 21.850 | 2.260 | 0.000 |
| 323.150 | 6.775 | 6.951 | 22.655 | 22.140 | 2.327 | 0.000 |
| 323.150 | 6.809 | 7.054 | 22.982 | 22.450 | 2.369 | 0.000 |
| 323.150 | 6.846 | 7.165 | 23.345 | 22.810 | 2.345 | 0.000 |
| 323.150 | 6.846 | 7.166 | 23.347 | 22.800 | 2.399 | 0.000 |
| 323.150 | 6.925 | 7.390 | 24.097 | 23.550 | 2.324 | 0.000 |
| 323.150 | 6.965 | 7.497 | 24.464 | 23.900 | 2.359 | 0.000 |
| 323.150 | 7.069 | 7.760 | 25.390 | 24.830 | 2.257 | 0.000 |
| 323.150 | 7.275 | 8.207 | 27.058 | 26.460 | 2.262 | 0.000 |
| 323.150 | 7.547 | 8.670 | 28.914 | 28.350 | 1.991 | 0.000 |
| 323.150 | 7.821 | 9.038 | 30.494 | 29.940 | 1.849 | 0.000 |
| 323.150 | 8.110 | 9.354 | 31.931 | 31.440 | 1.563 | 0.000 |
| 323.150 | 8.355 | 9.581 | 33.011 | 32.550 | 1.417 | 0.000 |
| 348.150 | 0.202 | 0.070 | 10.812 | 10.720 | 0.861 | 0.000 |
| 348.150 | 0.345 | 0.121 | 10.845 | 10.750 | 0.883 | 0.000 |
| 348.150 | 0.591 | 0.210 | 10.904 | 10.780 | 1.152 | 0.000 |
| 348.150 | 0.880 | 0.317 | 10.979 | 10.830 | 1.379 | 0.000 |
| 348.150 | 1.175 | 0.430 | 11.063 | 10.900 | 1.494 | 0.000 |
| 348.150 | 1.507 | 0.561 | 11.166 | 10.970 | 1.784 | 0.000 |
| 348.150 | 1.749 | 0.660 | 11.247 | 11.030 | 1.967 | 0.000 |
| 348.150 | 2.115 | 0.814 | 11.381 | 11.150 | 2.073 | 0.000 |
| 348.150 | 2.456 | 0.965 | 11.519 | 11.260 | 2.302 | 0.000 |
| 348.150 | 2.729 | 1.090 | 11.640 | 11.380 | 2.287 | 0.000 |

Data from Iwasaki et al. [73] (continued)

| T<br>K | P<br>MPa | $\rho$<br>mol•dm$^{-3}$ | $\eta$, calc<br>$\mu$Pa•s | $\eta$, expt<br>$\mu$Pa•s | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 348.150 | 3.067 | 1.251 | 11.804 | 11.520 | 2.467 | 0.000 |
| 348.150 | 3.333 | 1.383 | 11.945 | 11.630 | 2.709 | 0.000 |
| 348.150 | 3.598 | 1.520 | 12.098 | 11.790 | 2.611 | 0.000 |
| 348.150 | 3.819 | 1.639 | 12.235 | 11.900 | 2.812 | 0.000 |
| 348.150 | 4.243 | 1.878 | 12.525 | 12.160 | 3.005 | 0.000 |
| 348.150 | 4.595 | 2.090 | 12.799 | 12.440 | 2.887 | 0.000 |
| 348.150 | 5.073 | 2.400 | 13.227 | 12.840 | 3.014 | 0.000 |
| 348.150 | 5.735 | 2.880 | 13.952 | 13.520 | 3.199 | 0.000 |
| 348.150 | 6.366 | 3.403 | 14.831 | 14.320 | 3.572 | 0.000 |
| 348.150 | 6.922 | 3.926 | 15.806 | 15.240 | 3.715 | 0.000 |
| 348.150 | 7.362 | 4.388 | 16.744 | 16.150 | 3.679 | 0.000 |
| 348.150 | 7.640 | 4.701 | 17.423 | 16.790 | 3.773 | 0.000 |
| 348.150 | 7.951 | 5.067 | 18.264 | 17.610 | 3.715 | 0.000 |
| 348.150 | 8.171 | 5.336 | 18.912 | 18.220 | 3.798 | 0.000 |
| 348.150 | 8.496 | 5.738 | 19.938 | 19.240 | 3.627 | 0.000 |
| 348.150 | 8.681 | 5.968 | 20.553 | 19.860 | 3.488 | 0.000 |
| 348.150 | 8.924 | 6.268 | 21.387 | 20.670 | 3.470 | 0.000 |
| 348.150 | 9.105 | 6.487 | 22.022 | 21.290 | 3.440 | 0.000 |
| 348.150 | 9.188 | 6.585 | 22.314 | 21.540 | 3.592 | 0.000 |
| 348.150 | 9.391 | 6.820 | 23.030 | 22.350 | 3.041 | 0.000 |
| 348.150 | 9.481 | 6.921 | 23.346 | 22.590 | 3.345 | 0.000 |
| 348.150 | 9.653 | 7.110 | 23.950 | 23.220 | 3.144 | 0.000 |
| 348.150 | 9.760 | 7.223 | 24.320 | 23.600 | 3.052 | 0.000 |
| 348.150 | 9.865 | 7.333 | 24.684 | 23.970 | 2.979 | 0.000 |
| 348.150 | 10.075 | 7.541 | 25.394 | 24.740 | 2.645 | 0.000 |
| 348.150 | 10.339 | 7.787 | 26.264 | 25.570 | 2.716 | 0.000 |
| 348.150 | 10.528 | 7.953 | 26.871 | 26.190 | 2.602 | 0.000 |
| 348.150 | 10.799 | 8.176 | 27.710 | 27.030 | 2.515 | 0.000 |
| 348.150 | 11.089 | 8.398 | 28.577 | 27.910 | 2.388 | 0.000 |
| 348.150 | 11.497 | 8.682 | 29.731 | 29.050 | 2.343 | 0.000 |
| 348.150 | 11.869 | 8.916 | 30.726 | 30.090 | 2.114 | 0.000 |
| 348.150 | 12.267 | 9.145 | 31.736 | 31.120 | 1.979 | 0.000 |
| 348.150 | 12.624 | 9.334 | 32.599 | 32.090 | 1.587 | 0.000 |
| 348.150 | 12.941 | 9.489 | 33.331 | 32.840 | 1.495 | 0.000 |

Table 14. **VISCOSITY AT ELEVATED PRESSURES** (continued)

**Data from Iwasaki et al. [73]** (continued)

Comparisons based on experimental pressures:

Number of Points [73] 402

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AAD% | = | 5.64 | BIAS% | = | −2.03 | RMS% | = | 8.30 |
| AAD | = | 1.15 | BIAS | = | −0.60 | RMS | = | 1.84 μPa•s |

Comparisons based on experimental densities:

Number of Points [73] 402

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AAD% | = | 2.42 | BIAS% | = | 2.12 | RMS% | = | 1.89 |
| AAD | = | 0.40 | BIAS | = | 0.33 | RMS | = | 0.30 μPa•s |

**Data from Smith et al. [95]**

| T<br>K | P<br>MPa | ρ<br>mol•dm$^{-3}$ | η, calc<br>μPa•s | η, expt<br>μPa•s | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 290.064 | 3.994 | 11.935 | 46.466 | 41.400 | 12.237 | 0.000 |
| 290.064 | 9.986 | 13.375 | 59.359 | 55.300 | 7.340 | 0.000 |
| 290.064 | 19.973 | 14.463 | 72.539 | 70.000 | 3.627 | 0.000 |
| 305.330 | 4.491 | 3.382 | 13.422 | 13.700 | −2.026 | 0.000 |
| 305.330 | 9.986 | 12.266 | 49.463 | 45.200 | 9.432 | 0.000 |
| 305.330 | 19.973 | 13.746 | 63.906 | 59.800 | 6.866 | 0.000 |
| 320.597 | 4.988 | 3.134 | 13.496 | 13.200 | 2.243 | 0.000 |
| 320.597 | 9.986 | 10.868 | 39.970 | 34.600 | 15.522 | 0.000 |
| 320.597 | 19.973 | 12.988 | 56.369 | 50.500 | 11.622 | 0.000 |
| 335.863 | 7.487 | 5.773 | 19.640 | 17.600 | 11.589 | 0.000 |
| 335.863 | 9.986 | 9.052 | 30.942 | 26.300 | 17.649 | 0.000 |
| 335.863 | 19.973 | 12.190 | 49.791 | 43.300 | 14.990 | 0.000 |
| 381.663 | 4.988 | 1.915 | 13.569 | 11.800 | 14.987 | 0.000 |
| 381.663 | 9.986 | 4.852 | 18.810 | 15.700 | 19.808 | 0.000 |
| 381.663 | 19.973 | 9.664 | 35.248 | 29.100 | 21.126 | 0.000 |

Data from Smith et al. [95] (continued)

Comparisons based on experimental pressures:

Number of Points [95] 15

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AAD% | = | 11.40 | BIAS% | = | 11.13 | RMS% | = | 6.39 |
| AAD | = | 3.74 | BIAS | = | 3.70 | RMS | = | 2.00 μPa•s |

Comparisons based on experimental densities:

Number of Points [95] 15

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AAD% | = | 11.46 | BIAS% | = | 11.23 | RMS% | = | 6.43 |
| AAD | = | 3.75 | BIAS | = | 3.72 | RMS | = | 2.01 μPa•s |

Data from Strumpf et al. [96]

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\eta$, calc μPa•s | $\eta$, expt μPa•s | Dev % | wt |
|---|---|---|---|---|---|---|
| 316.482 | 6.002 | 6.652 | 21.516 | 18.900 | 13.844 | 0.000 |
| 310.918 | 5.438 | 6.654 | 21.346 | 18.880 | 13.063 | 0.000 |
| 308.141 | 5.156 | 6.655 | 21.261 | 18.880 | 12.611 | 0.000 |
| 307.140 | 5.055 | 6.655 | 21.231 | 19.010 | 11.681 | 0.000 |
| 306.139 | 4.954 | 6.655 | 21.200 | 19.200 | 10.418 | 0.000 |
| 305.741 | 4.913 | 6.655 | 21.188 | 19.460 | 8.878 | 0.000 |
| 305.640 | 4.903 | 6.655 | 21.185 | 19.630 | 7.919 | 0.000 |
| 305.538 | 4.893 | 6.655 | 21.181 | 19.940 | 6.225 | 0.000 |
| 305.442 | 4.883 | 6.655 | 21.178 | 20.300 | 4.327 | 0.000 |
| 305.395 | 4.878 | 6.656 | 21.178 | 20.840 | 1.621 | 0.000 |
| 322.032 | 6.566 | 6.651 | 21.686 | 18.930 | 14.561 | 0.000 |
| 319.139 | 6.272 | 6.652 | 21.598 | 18.900 | 14.276 | 0.000 |
| 316.472 | 6.001 | 6.652 | 21.516 | 18.890 | 13.902 | 0.000 |
| 313.643 | 5.714 | 6.653 | 21.429 | 18.890 | 13.441 | 0.000 |
| 305.445 | 4.883 | 6.655 | 21.178 | 20.250 | 4.585 | 0.000 |
| 305.411 | 4.880 | 6.656 | 21.178 | 20.580 | 2.908 | 0.000 |
| 305.392 | 4.878 | 6.656 | 21.178 | 20.810 | 1.767 | 0.000 |
| 305.382 | 4.877 | 6.656 | 21.177 | 20.980 | 0.941 | 0.000 |
| 316.472 | 6.058 | 6.964 | 22.487 | 19.930 | 12.830 | 0.000 |
| 313.638 | 5.754 | 6.965 | 22.402 | 19.930 | 12.402 | 0.000 |
| 311.139 | 5.487 | 6.966 | 22.326 | 19.920 | 12.078 | 0.000 |
| 308.142 | 5.169 | 6.967 | 22.235 | 19.990 | 11.229 | 0.000 |

Table 14. VISCOSITY AT ELEVATED PRESSURES (continued)

Data from Strumpf et al. [96] (continued)

| T<br>K | P<br>MPa | $\rho$<br>$mol \cdot dm^{-3}$ | $\eta$, calc<br>$\mu Pa \cdot s$ | $\eta$, expt<br>$\mu Pa \cdot s$ | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 307.138 | 5.063 | 6.967 | 22.205 | 20.050 | 10.746 | 0.000 |
| 306.141 | 4.957 | 6.967 | 22.175 | 20.310 | 9.182 | 0.000 |
| 305.737 | 4.915 | 6.968 | 22.163 | 20.620 | 7.484 | 0.000 |
| 305.643 | 4.905 | 6.968 | 22.160 | 20.900 | 6.030 | 0.000 |
| 305.539 | 4.894 | 6.968 | 22.157 | 21.140 | 4.811 | 0.000 |
| 305.424 | 4.882 | 6.968 | 22.154 | 22.010 | 0.652 | 0.000 |
| 305.411 | 4.880 | 6.968 | 22.153 | 22.200 | −0.211 | 0.000 |
| 305.393 | 4.878 | 6.968 | 22.153 | 22.510 | −1.588 | 0.000 |
| 305.385 | 4.878 | 6.968 | 22.152 | 22.640 | −2.154 | 0.000 |
| 322.139 | 6.669 | 6.963 | 22.659 | 20.020 | 13.183 | 0.000 |
| 319.144 | 6.346 | 6.963 | 22.567 | 19.900 | 13.405 | 0.000 |
| 316.471 | 6.058 | 6.964 | 22.487 | 19.900 | 13.000 | 0.000 |
| 305.457 | 4.885 | 6.968 | 22.155 | 21.560 | 2.758 | 0.000 |
| 305.440 | 4.883 | 6.968 | 22.154 | 21.740 | 1.905 | 0.000 |
| 305.421 | 4.881 | 6.968 | 22.153 | 21.960 | 0.881 | 0.000 |
| 305.398 | 4.879 | 6.968 | 22.153 | 22.380 | −1.015 | 0.000 |
| 305.390 | 4.878 | 6.968 | 22.153 | 22.520 | −1.632 | 0.000 |
| 310.919 | 6.139 | 9.640 | 32.947 | 31.090 | 5.971 | 0.000 |
| 308.142 | 5.637 | 9.641 | 32.875 | 30.860 | 6.530 | 0.000 |
| 306.144 | 5.281 | 9.642 | 32.823 | 30.910 | 6.189 | 0.000 |
| 305.371 | 5.144 | 9.640 | 32.792 | 30.970 | 5.883 | 0.000 |
| 304.141 | 4.930 | 9.643 | 32.773 | 30.860 | 6.198 | 0.000 |
| 303.632 | 4.841 | 9.643 | 32.761 | 30.840 | 6.227 | 0.000 |
| 303.123 | 4.754 | 9.644 | 32.748 | 30.890 | 6.016 | 0.000 |
| 302.742 | 4.688 | 9.644 | 32.738 | 30.860 | 6.085 | 0.000 |
| 302.642 | 4.671 | 9.644 | 32.735 | 30.880 | 6.008 | 0.000 |
| 302.544 | 4.654 | 9.644 | 32.733 | 30.980 | 5.657 | 0.000 |
| 302.444 | 4.637 | 9.644 | 32.731 | 31.020 | 5.517 | 0.000 |
| 302.248 | 4.603 | 9.644 | 32.726 | 31.300 | 4.556 | 0.000 |
| 301.852 | 4.536 | 9.644 | 32.715 | 30.860 | 6.012 | 0.000 |
| 322.146 | 8.229 | 9.635 | 33.246 | 30.960 | 7.383 | 0.000 |
| 319.142 | 7.662 | 9.637 | 33.165 | 30.740 | 7.887 | 0.000 |
| 316.472 | 7.163 | 9.638 | 33.092 | 30.830 | 7.337 | 0.000 |
| 313.645 | 6.638 | 9.639 | 33.017 | 30.790 | 7.234 | 0.000 |
| 310.925 | 6.140 | 9.640 | 32.947 | 31.000 | 6.280 | 0.000 |
| 303.151 | 4.758 | 9.644 | 32.749 | 30.820 | 6.259 | 0.000 |

Table 14. **VISCOSITY AT ELEVATED PRESSURES** (continued)

Data from Strumpf et al. [96] (continued)

| T<br>K | P<br>MPa | $\rho$<br>$mol \cdot dm^{-3}$ | $\eta$, calc<br>$\mu Pa \cdot s$ | $\eta$, expt<br>$\mu Pa \cdot s$ | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 303.045 | 4.740 | 9.644 | 32.746 | 30.920 | 5.906 | 0.000 |
| 302.900 | 4.715 | 9.644 | 32.742 | 30.980 | 5.688 | 0.000 |
| 301.946 | 4.552 | 9.644 | 32.718 | 30.860 | 6.021 | 0.000 |
| 301.847 | 4.535 | 9.644 | 32.715 | 30.810 | 6.184 | 0.000 |
| 316.471 | 6.102 | 7.193 | 23.227 | 20.630 | 12.590 | 0.000 |
| 313.642 | 5.786 | 7.194 | 23.143 | 21.020 | 10.099 | 0.000 |
| 311.146 | 5.509 | 7.194 | 23.068 | 20.660 | 11.654 | 0.000 |
| 308.144 | 5.178 | 7.195 | 22.978 | 20.700 | 11.006 | 0.000 |
| 307.152 | 5.070 | 7.196 | 22.949 | 20.810 | 10.278 | 0.000 |
| 306.141 | 4.960 | 7.196 | 22.919 | 21.010 | 9.085 | 0.000 |
| 305.747 | 4.917 | 7.196 | 22.907 | 21.250 | 7.796 | 0.000 |
| 305.639 | 4.905 | 7.196 | 22.903 | 21.450 | 6.776 | 0.000 |
| 305.551 | 4.896 | 7.196 | 22.901 | 21.730 | 5.387 | 0.000 |
| 305.443 | 4.884 | 7.196 | 22.897 | 22.090 | 3.655 | 0.000 |
| 305.421 | 4.882 | 7.196 | 22.897 | 22.210 | 3.092 | 0.000 |
| 305.405 | 4.880 | 7.196 | 22.896 | 22.410 | 2.170 | 0.000 |
| 305.393 | 4.879 | 7.196 | 22.896 | 22.570 | 1.444 | 0.000 |
| 305.387 | 4.878 | 7.196 | 22.896 | 22.620 | 1.219 | 0.000 |
| 305.379 | 4.877 | 7.196 | 22.895 | 22.770 | 0.551 | 0.000 |
| 305.369 | 4.876 | 7.196 | 22.895 | 22.970 | -0.326 | 0.000 |
| 322.143 | 6.741 | 7.191 | 23.398 | 20.910 | 11.900 | 0.000 |
| 319.138 | 6.401 | 7.192 | 23.307 | 20.640 | 12.921 | 0.000 |
| 316.479 | 6.103 | 7.193 | 23.227 | 20.580 | 12.864 | 0.000 |
| 315.152 | 5.954 | 7.193 | 23.187 | 20.630 | 12.396 | 0.000 |
| 314.157 | 5.843 | 7.193 | 23.158 | 20.680 | 11.981 | 0.000 |
| 313.642 | 5.786 | 7.194 | 23.143 | 21.010 | 10.151 | 0.000 |
| 313.149 | 5.731 | 7.194 | 23.127 | 20.710 | 11.673 | 0.000 |
| 305.643 | 4.906 | 7.196 | 22.904 | 21.410 | 6.976 | 0.000 |
| 316.474 | 6.070 | 7.027 | 22.686 | 20.100 | 12.867 | 0.000 |
| 313.640 | 5.763 | 7.028 | 22.601 | 20.190 | 11.942 | 0.000 |
| 311.141 | 5.493 | 7.028 | 22.526 | 20.120 | 11.956 | 0.000 |
| 308.146 | 5.172 | 7.029 | 22.436 | 20.170 | 11.233 | 0.000 |
| 307.143 | 5.065 | 7.030 | 22.406 | 20.230 | 10.755 | 0.000 |
| 306.144 | 4.958 | 7.030 | 22.375 | 20.480 | 9.252 | 0.000 |
| 305.746 | 4.916 | 7.030 | 22.364 | 20.810 | 7.465 | 0.000 |
| 305.645 | 4.905 | 7.030 | 22.360 | 21.080 | 6.074 | 0.000 |

Data from Strumpf et al. [96] (continued)

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\eta$, calc $\mu Pa \cdot s$ | $\eta$, expt $\mu Pa \cdot s$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 305.542 | 4.894 | 7.030 | 22.357 | 21.340 | 4.767 | 0.000 |
| 305.443 | 4.884 | 7.030 | 22.354 | 21.870 | 2.214 | 0.000 |
| 305.422 | 4.882 | 7.030 | 22.354 | 22.120 | 1.056 | 0.000 |
| 305.410 | 4.880 | 7.030 | 22.353 | 22.300 | 0.238 | 0.000 |
| 305.401 | 4.879 | 7.030 | 22.353 | 22.450 | −0.433 | 0.000 |
| 305.390 | 4.878 | 7.030 | 22.353 | 22.630 | −1.226 | 0.000 |
| 305.382 | 4.877 | 7.030 | 22.352 | 22.790 | −1.921 | 0.000 |
| 322.149 | 6.689 | 7.025 | 22.858 | 20.240 | 12.937 | 0.000 |
| 319.151 | 6.362 | 7.026 | 22.767 | 20.110 | 13.211 | 0.000 |
| 316.478 | 6.070 | 7.027 | 22.686 | 20.110 | 12.812 | 0.000 |
| 313.648 | 5.764 | 7.028 | 22.601 | 20.170 | 12.055 | 0.000 |

Pressures were not tabulated in [96].
The pressures were computed from our equation of state. These deviations are included in the overall pressure comparisons below.

Comparisons based on experimental densities:

Number of Points [96] 105

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AAD% | = | 7.35 | BIAS% | = | 7.15 | RMS% | = | 4.65 |
| AAD | = | 1.63 | BIAS | = | 1.59 | RMS | = | 0.94 $\mu Pa \cdot s$ |

Table 14. **VISCOSITY AT ELEVATED PRESSURES** (continued)

Data from Swift et al. [97]

| T K | P MPa | $\rho$ mol•dm$^{-3}$ | $\eta$, calc $\mu$Pa•s | $\eta$, expt $\mu$Pa•s | Dev % | wt |
|---|---|---|---|---|---|---|
| 193.150 | 0.172 | 17.725 | 149.955 | 147.000 | 2.010 | 0.000 |
| 193.150 | 4.137 | 17.867 | 155.446 | 149.000 | 4.326 | 0.000 |
| 213.150 | 0.448 | 16.829 | 118.868 | 119.000 | −0.111 | 0.000 |
| 213.150 | 4.082 | 17.001 | 123.732 | 121.000 | 2.258 | 0.000 |
| 233.150 | 0.793 | 15.836 | 94.762 | 95.900 | −1.187 | 0.000 |
| 253.150 | 1.586 | 14.721 | 75.506 | 75.500 | 0.008 | 0.000 |
| 253.150 | 4.137 | 14.980 | 79.436 | 78.600 | 1.063 | 0.000 |
| 273.150 | 2.551 | 13.356 | 58.810 | 58.000 | 1.396 | 0.000 |
| 273.150 | 4.102 | 13.645 | 61.935 | 60.400 | 2.542 | 0.000 |
| 293.150 | 3.895 | 11.382 | 42.559 | 41.800 | 1.816 | 0.000 |
| 293.150 | 4.137 | 11.540 | 43.651 | 42.800 | 1.989 | 0.000 |
| 298.150 | 4.309 | 10.637 | 37.966 | 37.000 | 2.610 | 0.000 |
| 303.150 | 4.792 | 9.738 | 33.216 | 32.700 | 1.577 | 0.000 |
| 305.450 | 4.970 | 9.003 | 29.826 | 30.600 | −2.530 | 0.000 |

Comparisons based on experimental pressures:

Number of Points [97] 14

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AAD% | = | 1.82 | BIAS% | = | 1.27 | RMS% | = | 1.67 |
| AAD | = | 1.46 | BIAS | = | 1.17 | RMS | = | 1.83 $\mu$Pa•s |

Comparisons based on experimental densities:

Number of Points [97] 14

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AAD% | = | 6.62 | BIAS% | = | −3.31 | RMS% | = | 18.21 |
| AAD | = | 3.04 | BIAS | = | −0.06 | RMS | = | 6.11 $\mu$Pa•s |

Table 14. VISCOSITY AT ELEVATED PRESSURES (continued)

Data from Van Itterbeek et al. [98]

| T K | P MPa | $\rho$ mol•dm$^{-3}$ | $\eta$, calc $\mu$Pa•s | $\eta$, expt $\mu$Pa•s | Dev % | wt |
|---|---|---|---|---|---|---|
| 126.000 | 0.792E-03 | 20.376 | 425.041 | 402.000 | 5.732 | 0.000 |
| 128.100 | 0.103E-02 | 20.298 | 406.046 | 369.000 | 10.040 | 0.000 |
| 134.100 | 0.206E-02 | 20.074 | 358.986 | 333.000 | 7.804 | 0.000 |
| 141.200 | 0.431E-02 | 19.806 | 314.155 | 281.000 | 11.799 | 0.000 |
| 155.000 | 0.146E-01 | 19.277 | 249.772 | 215.000 | 16.173 | 0.000 |
| 160.000 | 0.215E-01 | 19.081 | 231.625 | 207.000 | 11.896 | 0.000 |
| 168.300 | 0.384E-01 | 18.752 | 205.795 | 181.000 | 13.699 | 0.000 |
| 168.700 | 0.394E-01 | 18.736 | 204.665 | 178.000 | 14.980 | 0.000 |

Comparisons based on experimental pressures:

Number of Points [98] 8

AAD% = 11.52 BIAS% = 11.52 RMS% = 3.32
AAD = 28.76 BIAS = 28.76 RMS = 5.02 $\mu$Pa•s

Comparisons based on experimental densities:

Number of Points [98] 8

AAD% = 10.25 BIAS% = 10.25 RMS% = 4.57
AAD = 26.05 BIAS = 26.05 RMS = 9.47 $\mu$Pa•s

Comparisons based on experimental pressures:

Overall Results:

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| N =1279 | AAD% | = | 3.31 | BIAS% | = | 0.33 | RMS% | = | 5.86 |
| | AAD | = | 1.39 | BIAS | = | 0.38 | RMS | = | 3.68 μPa•s |

Overall Results (excluding Gerf, Iwasaki, Smith, Strumpf, and Van Itterbeek):

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| N = 718 | AAD% | = | 1.05 | BIAS% | = | 0.20 | RMS% | = | 1.42 |
| | AAD | = | 0.75 | BIAS | = | 0.16 | RMS | = | 1.76 μPa•s |

Weighted Data:

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| N = 438 | AAD% | = | 0.75 | BIAS% | = | −0.01 | RMS% | = | 0.96 |
| | AAD | = | 0.78 | BIAS | = | −0.04 | RMS | = | 1.85 μPa•s |

Comparisons based on experimental densities:

Overall Results:

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| N =1053 | AAD% | = | 2.98 | BIAS% | = | 1.50 | RMS% | = | 7.41 |
| | AAD | = | 2.11 | BIAS | = | −0.05 | RMS | = | 13.67 μPa•s |

Weighted Data:

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| N = 216 | AAD% | = | 0.78 | BIAS% | = | 0.04 | RMS% | = | 0.95 |
| | AAD | = | 1.40 | BIAS | = | 0.09 | RMS | = | 2.63 μPa•s |

Table 15. THERMAL CONDUCTIVITY AT ELEVATED PRESSURES

Data from Carmichael et al. [99]

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 277.594 | 0.12 | 0.054 | 18.988 | 18.492 | -2.609 | 0.000 |
| 277.594 | 1.51 | 0.780 | 20.507 | 20.613 | 0.515 | 0.000 |
| 277.594 | 2.27 | 1.346 | 22.667 | 22.980 | 1.379 | 0.000 |
| 277.594 | 3.30 | 13.114 | 86.151 | 89.003 | 3.311 | 0.000 |
| 277.594 | 6.94 | 13.762 | 92.028 | 96.226 | 4.561 | 0.000 |
| 277.594 | 20.42 | 15.053 | 112.430 | 114.307 | 1.670 | 0.000 |
| 277.594 | 33.13 | 15.788 | 122.283 | 127.116 | 3.953 | 0.000 |
| 310.928 | 0.12 | 0.046 | 22.859 | 22.652 | -0.906 | 0.000 |
| 310.928 | 2.83 | 1.398 | 26.513 | 26.580 | 0.253 | 0.000 |
| 310.928 | 5.00 | 3.964 | 43.681 | 43.338 | -0.785 | 0.000 |
| 310.928 | 6.93 | 10.447 | 66.345 | 70.569 | 6.367 | 0.000 |
| 310.928 | 13.44 | 12.569 | 83.456 | 86.292 | 3.398 | 0.000 |
| 310.928 | 20.67 | 13.548 | 92.627 | 96.919 | 4.634 | 0.000 |
| 310.928 | 34.76 | 14.680 | 106.646 | 112.408 | 5.403 | 0.000 |
| 344.261 | 0.12 | 0.041 | 27.407 | 27.301 | -0.389 | 0.000 |
| 344.261 | 2.88 | 1.180 | 29.896 | 30.085 | 0.630 | 0.000 |
| 344.261 | 6.73 | 3.932 | 40.074 | 41.751 | 4.184 | 0.000 |
| 344.261 | 14.07 | 10.284 | 68.487 | 71.590 | 4.531 | 0.000 |
| 344.261 | 20.77 | 11.872 | 79.690 | 83.397 | 4.651 | 0.000 |
| 344.261 | 36.61 | 13.617 | 95.606 | 101.889 | 6.572 | 0.000 |
| 410.928 | 0.12 | 0.036 | 36.810 | 37.841 | 2.800 | 0.000 |
| 410.928 | 2.93 | 0.930 | 38.529 | 39.588 | 2.750 | 0.000 |
| 410.928 | 7.15 | 2.577 | 42.679 | 44.261 | 3.707 | 0.000 |
| 410.928 | 20.68 | 8.417 | 65.002 | 68.704 | 5.696 | 0.000 |
| 410.928 | 35.14 | 11.137 | 80.547 | 86.125 | 6.926 | 0.000 |
| 444.261 | 0.12 | 0.034 | 41.230 | 43.611 | 5.775 | 0.000 |
| 444.261 | 2.91 | 0.836 | 42.868 | 45.049 | 5.089 | 0.000 |
| 444.261 | 6.60 | 2.042 | 45.656 | 48.012 | 5.160 | 0.000 |
| 444.261 | 19.82 | 6.860 | 62.018 | 66.010 | 6.438 | 0.000 |
| 444.261 | 20.68 | 7.118 | 63.008 | 67.172 | 6.609 | 0.000 |
| 444.261 | 32.58 | 9.683 | 75.896 | 80.818 | 6.484 | 0.000 |

Data from Carmichael et al. [99] (continued)

Comparisons based on experimental pressures:

Number of Points [99] 31

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AAD% | = | 3.81 | BIAS% | = | 3.51 | RMS% | = | 2.59 |
| AAD | = | 2.59 | BIAS | = | 2.52 | RMS | = | 1.99 $mW \cdot m^{-1} \cdot K^{-1}$ |

Densities were not tabulated in [99].

**Data from Desmarest et al. [100]**

| T<br>K | P<br>MPa | $\rho$<br>$mol \cdot dm^{-3}$ | $\lambda$, expt<br>$mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc<br>$mW \cdot m^{-1} \cdot K^{-1}$ | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 308.390 | 9.58 | 11.902 | 78.210 | 80.103 | 2.421 | 0.380 |
| 308.750 | 5.23 | 6.901 | 83.770 | 79.491 | -5.108 | 0.400 |
| 308.750 | 5.21 | 6.553 | 80.740 | 78.549 | -2.713 | 0.410 |
| 308.820 | 5.19 | 5.964 | 70.690 | 73.092 | 3.398 | 0.470 |
| 308.870 | 5.17 | 5.596 | 64.630 | 67.687 | 4.729 | 0.490 |
| 308.990 | 5.13 | 5.092 | 57.350 | 59.345 | 3.479 | 0.480 |
| 309.010 | 5.05 | 4.564 | 49.360 | 51.426 | 4.185 | 0.490 |
| 309.050 | 4.90 | 3.991 | 42.850 | 44.226 | 3.210 | 0.490 |
| 309.170 | 4.62 | 3.294 | 36.320 | 37.418 | 3.024 | 0.500 |
| 309.190 | 4.04 | 2.460 | 30.600 | 31.496 | 2.930 | 0.530 |
| 308.750 | 2.49 | 1.203 | 24.970 | 25.609 | 2.559 | 0.580 |
| 308.800 | 1.00 | 0.418 | 22.960 | 23.246 | 1.247 | 0.640 |
| 311.330 | 9.28 | 11.538 | 76.000 | 77.469 | 1.934 | 0.380 |
| 311.310 | 7.39 | 10.696 | 71.150 | 71.906 | 1.063 | 0.390 |
| 311.350 | 6.53 | 10.024 | 68.910 | 68.691 | -0.318 | 0.390 |
| 311.360 | 6.06 | 9.384 | 68.040 | 67.040 | -1.470 | 0.400 |
| 311.350 | 5.80 | 8.764 | 68.630 | 67.236 | -2.031 | 0.400 |
| 311.330 | 5.65 | 8.174 | 69.370 | 68.898 | -0.680 | 0.410 |
| 311.300 | 5.56 | 7.542 | 71.600 | 70.772 | -1.157 | 0.420 |
| 311.320 | 5.51 | 7.025 | 72.220 | 70.939 | -1.774 | 0.420 |
| 311.340 | 5.47 | 6.550 | 70.500 | 69.578 | -1.308 | 0.420 |
| 311.340 | 5.41 | 5.910 | 64.920 | 65.184 | 0.407 | 0.440 |
| 311.380 | 5.33 | 5.230 | 56.470 | 57.673 | 2.130 | 0.470 |
| 311.420 | 5.21 | 4.577 | 48.590 | 49.804 | 2.499 | 0.480 |
| 311.450 | 5.03 | 3.957 | 41.780 | 43.136 | 3.246 | 0.490 |
| 311.510 | 4.75 | 3.349 | 36.250 | 37.711 | 4.030 | 0.520 |

Table 15. THERMAL CONDUCTIVITY AT ELEVATED PRESSURES (continued)

Data from Desmarest et al. [100] (continued)

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 311.570 | 4.30 | 2.672 | 31.870 | 32.913 | 3.272 | 0.530 |
| 311.580 | 4.05 | 2.396 | 30.260 | 31.281 | 3.374 | 0.540 |
| 315.190 | 10.90 | 11.687 | 77.150 | 78.918 | 2.291 | 0.380 |
| 315.150 | 9.86 | 11.366 | 74.920 | 76.468 | 2.067 | 0.380 |
| 315.150 | 8.29 | 10.693 | 71.160 | 72.018 | 1.205 | 0.390 |
| 315.150 | 7.32 | 10.035 | 68.440 | 68.597 | 0.230 | 0.400 |
| 315.170 | 6.72 | 9.378 | 67.110 | 66.295 | -1.215 | 0.400 |
| 315.150 | 6.36 | 8.748 | 66.360 | 65.370 | -1.492 | 0.400 |
| 315.160 | 6.15 | 8.120 | 66.600 | 65.457 | -1.716 | 0.410 |
| 315.190 | 5.99 | 7.361 | 65.860 | 65.409 | -0.685 | 0.420 |
| 315.150 | 5.92 | 6.970 | 64.990 | 64.800 | -0.293 | 0.430 |
| 315.170 | 5.84 | 6.443 | 62.830 | 62.897 | 0.106 | 0.440 |
| 315.220 | 5.73 | 5.792 | 58.280 | 58.801 | 0.894 | 0.450 |
| 315.240 | 5.60 | 5.126 | 51.780 | 53.084 | 2.519 | 0.470 |
| 315.280 | 5.47 | 4.612 | 46.950 | 48.239 | 2.746 | 0.480 |
| 315.350 | 5.26 | 4.006 | 41.360 | 42.760 | 3.384 | 0.500 |
| 315.380 | 4.90 | 3.321 | 36.110 | 37.346 | 3.423 | 0.510 |
| 315.440 | 4.42 | 2.666 | 32.090 | 33.078 | 3.078 | 0.530 |
| 315.480 | 4.05 | 2.289 | 30.010 | 31.010 | 3.332 | 0.540 |
| 322.510 | 13.17 | 11.705 | 77.380 | 79.697 | 2.994 | 0.380 |
| 322.510 | 11.81 | 11.336 | 75.420 | 76.828 | 1.866 | 0.380 |
| 322.520 | 10.06 | 10.697 | 71.230 | 72.449 | 1.711 | 0.390 |
| 322.530 | 8.97 | 10.123 | 67.590 | 69.132 | 2.281 | 0.400 |
| 322.540 | 7.98 | 9.337 | 65.570 | 65.574 | 0.007 | 0.410 |
| 322.540 | 7.44 | 8.645 | 64.250 | 63.423 | -1.287 | 0.410 |
| 322.580 | 7.10 | 8.009 | 62.640 | 62.034 | -0.967 | 0.420 |
| 322.550 | 6.84 | 7.346 | 60.730 | 60.636 | -0.155 | 0.430 |
| 322.580 | 6.71 | 6.930 | 59.560 | 59.451 | -0.183 | 0.430 |
| 322.580 | 6.61 | 6.597 | 58.020 | 58.252 | 0.400 | 0.440 |
| 322.610 | 6.40 | 5.906 | 54.520 | 54.913 | 0.721 | 0.450 |
| 322.630 | 6.20 | 5.270 | 50.060 | 50.925 | 1.727 | 0.470 |
| 322.560 | 5.96 | 4.643 | 45.300 | 46.513 | 2.677 | 0.480 |
| 322.710 | 5.65 | 3.998 | 40.720 | 41.875 | 2.836 | 0.500 |
| 322.730 | 5.19 | 3.280 | 35.950 | 37.120 | 3.255 | 0.520 |
| 322.790 | 4.65 | 2.662 | 32.670 | 33.559 | 2.722 | 0.530 |
| 322.820 | 4.05 | 2.127 | 30.200 | 30.926 | 2.405 | 0.540 |

Data from Desmarest et al. [100] (continued)

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 335.230 | 15.53 | 11.374 | 76.490 | 78.301 | 2.367 | 0.390 |
| 335.230 | 13.01 | 10.650 | 71.840 | 73.128 | 1.793 | 0.400 |
| 335.250 | 11.39 | 9.981 | 68.030 | 69.054 | 1.505 | 0.400 |
| 335.280 | 10.24 | 9.313 | 65.080 | 65.603 | 0.803 | 0.410 |
| 335.280 | 9.40 | 8.635 | 62.600 | 62.649 | 0.078 | 0.420 |
| 335.290 | 8.78 | 7.960 | 60.310 | 60.119 | -0.316 | 0.420 |
| 335.280 | 8.31 | 7.295 | 57.940 | 57.791 | -0.257 | 0.430 |
| 335.290 | 8.10 | 6.949 | 56.270 | 56.534 | 0.470 | 0.440 |
| 335.310 | 7.92 | 6.649 | 54.970 | 55.377 | 0.740 | 0.440 |
| 335.330 | 7.55 | 5.967 | 51.810 | 52.413 | 1.165 | 0.460 |
| 335.340 | 7.17 | 5.293 | 48.250 | 49.012 | 1.580 | 0.470 |
| 335.370 | 6.79 | 4.655 | 44.600 | 45.469 | 1.949 | 0.480 |
| 335.380 | 6.52 | 4.253 | 42.080 | 43.171 | 2.593 | 0.500 |
| 335.410 | 5.75 | 3.328 | 37.150 | 38.019 | 2.340 | 0.510 |
| 335.430 | 5.06 | 2.667 | 34.120 | 34.700 | 1.701 | 0.520 |
| 335.470 | 4.64 | 2.334 | 32.600 | 33.192 | 1.815 | 0.540 |
| 335.510 | 4.05 | 1.921 | 30.990 | 31.488 | 1.606 | 0.550 |
| 335.220 | 2.52 | 1.056 | 28.180 | 28.485 | 1.083 | 0.580 |
| 335.250 | 0.99 | 0.376 | 26.570 | 26.712 | 0.533 | 0.620 |
| 364.440 | 28.19 | 12.007 | 84.840 | 87.103 | 2.668 | 0.380 |
| 364.490 | 23.83 | 11.367 | 79.590 | 81.579 | 2.499 | 0.390 |
| 364.490 | 20.14 | 10.650 | 74.620 | 76.181 | 2.092 | 0.400 |
| 364.490 | 17.57 | 9.985 | 70.500 | 71.803 | 1.848 | 0.410 |
| 364.490 | 15.56 | 9.306 | 67.050 | 67.849 | 1.192 | 0.420 |
| 364.450 | 14.12 | 8.684 | 63.850 | 64.599 | 1.172 | 0.430 |
| 364.490 | 12.77 | 7.951 | 60.570 | 61.131 | 0.926 | 0.440 |
| 364.490 | 11.75 | 7.281 | 57.520 | 58.186 | 1.159 | 0.450 |
| 364.490 | 11.33 | 6.965 | 56.050 | 56.838 | 1.406 | 0.450 |
| 364.510 | 10.91 | 6.635 | 54.830 | 55.438 | 1.109 | 0.460 |
| 364.540 | 10.16 | 6.001 | 51.960 | 52.721 | 1.465 | 0.470 |
| 364.530 | 9.42 | 5.350 | 49.160 | 49.855 | 1.414 | 0.480 |
| 364.570 | 8.66 | 4.681 | 46.280 | 46.837 | 1.204 | 0.490 |
| 364.580 | 7.89 | 4.041 | 43.520 | 43.923 | 0.926 | 0.500 |
| 364.590 | 6.98 | 3.350 | 40.420 | 40.856 | 1.078 | 0.510 |
| 364.620 | 5.97 | 2.673 | 37.700 | 38.047 | 0.920 | 0.530 |
| 364.650 | 5.41 | 2.337 | 36.430 | 36.762 | 0.910 | 0.540 |

Data from Desmarest et al. [100] (continued)

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 364.670 | 4.57 | 1.876 | 34.880 | 35.127 | 0.709 | 0.550 |
| 364.720 | 2.53 | 0.933 | 31.660 | 32.332 | 2.124 | 0.700 |
| 364.770 | 1.00 | 0.345 | 30.270 | 30.975 | 2.328 | 1.970 |
| 308.450 | 7.97 | 11.354 | 76.760 | 75.943 | -1.065 | 0.370 |
| 308.530 | 6.73 | 10.693 | 72.010 | 71.836 | -0.242 | 0.390 |
| 308.590 | 6.03 | 10.076 | 70.170 | 69.094 | -1.533 | 0.390 |
| 308.630 | 5.57 | 9.338 | 69.300 | 67.958 | -1.936 | 0.400 |
| 308.630 | 5.42 | 8.892 | 71.030 | 68.978 | -2.889 | 0.400 |
| 308.750 | 5.33 | 8.286 | 73.600 | 72.383 | -1.653 | 0.410 |
| 308.690 | 5.29 | 7.983 | 77.310 | 74.916 | -3.097 | 0.400 |
| 308.730 | 5.27 | 7.661 | 79.430 | 77.191 | -2.818 | 0.400 |
| 308.730 | 5.26 | 7.505 | 81.300 | 78.136 | -3.892 | 0.400 |
| 308.750 | 5.25 | 7.291 | 82.330 | 78.982 | -4.066 | 0.400 |

Comparisons based on experimental pressures:

Number of Points [100] 111

AAD% = 1.85 BIAS% = 0.98 RMS% = 1.93
AAD = 1.03 BIAS = 0.39 RMS = 1.22 $mW \cdot m^{-1} \cdot K^{-1}$

Weighted Data:

Number of Points [100] 111

AAD% = 1.85 BIAS% = 0.98 RMS% = 1.93
AAD = 1.03 BIAS = 0.39 RMS = 1.22 $mW \cdot m^{-1} \cdot K^{-1}$

**Data from Desmarest et al. [100]** (continued)

Comparisons based on experimental densities:

Number of Points [100] 111

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AAD% | = | 1.88 | BIAS% | = | 1.08 | RMS% | = | 2.04 |
| AAD | = | 1.05 | BIAS | = | 0.46 | RMS | = | 1.28 $mW \cdot m^{-1} \cdot K^{-1}$ |

Weighted Data:

Number of Points [100] 111

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AAD% | = | 1.88 | BIAS% | = | 1.08 | RMS% | = | 2.04 |
| AAD | = | 1.05 | BIAS | = | 0.46 | RMS | = | 1.28 $mW \cdot m^{-1} \cdot K^{-1}$ |

**Data from Fleeter et al. [72]**

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 301.470 | 0.60 | 0.251 | 22.560 | 21.893 | -2.954 | 0.000 |
| 301.370 | 0.80 | 0.340 | 22.750 | 22.102 | -2.847 | 0.000 |
| 301.270 | 1.00 | 0.432 | 22.890 | 22.327 | -2.457 | 0.000 |
| 301.190 | 1.19 | 0.524 | 23.130 | 22.563 | -2.452 | 0.000 |
| 301.080 | 1.39 | 0.623 | 23.400 | 22.830 | -2.437 | 0.000 |
| 300.980 | 1.60 | 0.733 | 23.600 | 23.140 | -1.949 | 0.000 |
| 300.940 | 1.85 | 0.870 | 24.000 | 23.562 | -1.825 | 0.000 |
| 300.940 | 2.10 | 1.016 | 24.280 | 24.045 | -0.967 | 0.000 |
| 300.850 | 2.33 | 1.161 | 24.730 | 24.544 | -0.752 | 0.000 |
| 300.730 | 2.60 | 1.344 | 25.300 | 25.228 | -0.284 | 0.000 |
| 300.760 | 2.83 | 1.512 | 25.990 | 25.929 | -0.235 | 0.000 |
| 300.370 | 3.41 | 2.030 | 28.400 | 28.428 | 0.099 | 0.000 |

Comparisons based on experimental pressures:

Number of Points [72] 12

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AAD% | = | 1.60 | BIAS% | = | -1.59 | RMS% | = | 1.05 |
| AAD | = | 0.37 | BIAS | = | -0.37 | RMS | = | 0.24 $mW \cdot m^{-1} \cdot K^{-1}$ |

Table 15. **THERMAL CONDUCTIVITY AT ELEVATED PRESSURES** (continued)

**Data from Fleeter et al. [72]** (continued)

Comparisons based on experimental densities:

Number of Points [72] 12

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AAD% | = | 1.68 | BIAS% | = | -1.68 | RMS% | = | 0.95 |
| AAD | = | 0.40 | BIAS | = | -0.40 | RMS | = | 0.21 $mW \cdot m^{-1} \cdot K^{-1}$ |

**Data from Gilmore et al. [80]**

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 348.150 | 5.07 | 2.396 | 35.146 | 34.904 | -0.688 | 0.000 |
| 348.150 | 8.11 | 5.256 | 48.534 | 48.599 | 0.134 | 0.000 |
| 348.150 | 10.13 | 7.596 | 59.413 | 58.649 | -1.285 | 0.000 |
| 348.150 | 15.20 | 10.366 | 72.802 | 72.485 | -0.435 | 0.000 |
| 348.150 | 20.27 | 11.576 | 81.170 | 81.325 | 0.191 | 0.000 |
| 348.150 | 30.40 | 12.925 | 94.140 | 94.219 | 0.084 | 0.000 |
| 348.150 | 50.66 | 14.408 | 112.968 | 113.359 | 0.346 | 0.000 |
| 348.150 | 75.99 | 15.538 | 130.959 | 132.537 | 1.205 | 0.000 |
| 348.150 | 101.33 | 16.341 | 146.440 | 149.205 | 1.888 | 0.000 |
| 348.150 | 202.65 | 18.333 | 194.138 | 204.549 | 5.363 | 0.000 |
| 348.150 | 303.98 | 19.557 | 230.120 | 251.160 | 9.143 | 0.000 |
| 348.150 | 5.07 | 2.396 | 35.355 | 34.904 | -1.276 | 0.000 |
| 348.150 | 8.11 | 5.256 | 49.790 | 48.599 | -2.391 | 0.000 |
| 348.150 | 10.13 | 7.596 | 60.668 | 58.649 | -3.327 | 0.000 |
| 348.150 | 15.20 | 10.366 | 72.383 | 72.485 | 0.141 | 0.000 |
| 348.150 | 20.27 | 11.576 | 80.333 | 81.325 | 1.235 | 0.000 |
| 348.150 | 30.40 | 12.925 | 92.885 | 94.219 | 1.436 | 0.000 |
| 348.150 | 50.66 | 14.408 | 111.294 | 113.359 | 1.855 | 0.000 |

Comparisons based on experimental pressures:

Number of Points [80] 18

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AAD% | = | 1.80 | BIAS% | = | 0.76 | RMS% | = | 2.74 |
| AAD | = | 2.55 | BIAS | = | 2.00 | RMS | = | 5.29 $mW \cdot m^{-1} \cdot K^{-1}$ |

Densities were not tabulated in [80].

Table 15. **THERMAL CONDUCTIVITY AT ELEVATED PRESSURES** (continued)

**Data from Keyes [81]**

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 325.050 | 0.99 | 0.390 | 25.983 | 25.332 | -2.504 | 0.000 |
| 325.050 | 1.72 | 0.712 | 26.861 | 26.149 | -2.650 | 0.000 |
| 325.050 | 2.50 | 1.101 | 27.865 | 27.283 | -2.092 | 0.000 |
| 325.050 | 3.24 | 1.526 | 30.041 | 28.725 | -4.380 | 0.000 |
| 325.050 | 3.99 | 2.039 | 32.049 | 30.772 | -3.986 | 0.000 |

Comparisons based on experimental pressures:

Number of Points [81] 5

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AAD% | = | 3.12 | BIAS% | = | -3.12 | RMS% | = | 0.89 |
| AAD | = | 0.91 | BIAS | = | -0.91 | RMS | = | 0.32 $mW \cdot m^{-1} \cdot K^{-1}$ |

Densities were not tabulated in [81].

**Data from Le Neindre et al. [82]**

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 306.550 | 1.93 | 0.888 | 24.300 | 24.295 | -0.020 | 0.000 |
| 307.350 | 3.31 | 1.799 | 28.100 | 27.872 | -0.813 | 0.000 |
| 307.250 | 7.86 | 11.442 | 76.600 | 76.500 | -0.130 | 0.000 |
| 309.250 | 10.79 | 12.144 | 82.700 | 82.225 | -0.575 | 0.000 |
| 309.250 | 14.70 | 12.883 | 89.500 | 89.276 | -0.250 | 0.000 |
| 309.050 | 19.20 | 13.480 | 96.300 | 95.898 | -0.417 | 0.000 |
| 308.850 | 24.90 | 14.043 | 103.400 | 102.991 | -0.395 | 0.000 |
| 308.650 | 30.10 | 14.454 | 109.400 | 108.730 | -0.613 | 0.000 |
| 308.350 | 35.40 | 14.812 | 114.700 | 114.135 | -0.492 | 0.000 |
| 308.150 | 41.20 | 15.146 | 120.300 | 119.586 | -0.594 | 0.000 |
| 307.450 | 47.80 | 15.493 | 126.600 | 125.596 | -0.793 | 0.000 |
| 307.350 | 56.00 | 15.847 | 132.600 | 132.293 | -0.232 | 0.000 |
| 307.050 | 68.50 | 16.312 | 141.800 | 141.858 | 0.041 | 0.000 |
| 307.050 | 78.50 | 16.628 | 148.800 | 148.943 | 0.096 | 0.000 |
| 347.250 | 2.40 | 0.943 | 29.900 | 29.825 | -0.251 | 0.000 |
| 343.450 | 7.80 | 5.315 | 49.600 | 48.848 | -1.517 | 0.000 |
| 344.050 | 9.20 | 7.127 | 58.200 | 56.757 | -2.480 | 0.000 |
| 342.050 | 11.10 | 9.086 | 66.000 | 64.851 | -1.740 | 0.000 |
| 341.150 | 14.70 | 10.729 | 74.900 | 74.201 | -0.933 | 0.000 |

Table 15. THERMAL CONDUCTIVITY AT ELEVATED PRESSURES (continued)

Data from Le Neindre et al. [82] (continued)

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 337.850 | 17.20 | 11.576 | 80.700 | 80.178 | -0.647 | 0.000 |
| 336.050 | 18.00 | 11.842 | 83.000 | 82.210 | -0.951 | 0.000 |
| 339.450 | 21.80 | 12.281 | 86.700 | 86.566 | -0.155 | 0.000 |
| 410.050 | 0.10 | 0.029 | 37.400 | 37.681 | 0.752 | 0.000 |
| 408.950 | 3.70 | 1.210 | 40.200 | 39.932 | -0.668 | 0.000 |
| 408.250 | 6.10 | 2.155 | 43.000 | 42.482 | -1.204 | 0.000 |
| 407.050 | 11.30 | 4.674 | 52.100 | 51.597 | -0.966 | 0.000 |
| 407.450 | 16.40 | 7.092 | 62.800 | 61.901 | -1.432 | 0.000 |
| 407.150 | 20.30 | 8.475 | 69.300 | 68.498 | -1.157 | 0.000 |
| 406.850 | 24.70 | 9.601 | 75.400 | 74.775 | -0.829 | 0.000 |
| 406.550 | 32.40 | 10.930 | 84.500 | 83.849 | -0.770 | 0.000 |
| 403.950 | 38.10 | 11.710 | 91.000 | 89.948 | -1.157 | 0.000 |
| 406.250 | 45.60 | 12.349 | 97.100 | 96.409 | -0.712 | 0.000 |
| 403.450 | 46.40 | 12.497 | 98.400 | 97.505 | -0.910 | 0.000 |
| 402.950 | 51.40 | 12.891 | 102.600 | 101.732 | -0.846 | 0.000 |
| 405.550 | 66.50 | 13.742 | 113.500 | 112.747 | -0.663 | 0.000 |
| 405.250 | 76.80 | 14.245 | 120.200 | 119.906 | -0.245 | 0.000 |
| 404.950 | 87.90 | 14.708 | 127.200 | 127.184 | -0.013 | 0.000 |
| 404.650 | 98.30 | 15.087 | 133.700 | 133.685 | -0.011 | 0.000 |
| 404.350 | 108.40 | 15.416 | 139.200 | 139.756 | 0.400 | 0.000 |
| 404.050 | 119.40 | 15.740 | 144.800 | 146.135 | 0.922 | 0.000 |
| 482.250 | 0.30 | 0.075 | 50.400 | 50.568 | 0.333 | 0.000 |
| 482.050 | 3.70 | 0.973 | 51.700 | 52.088 | 0.750 | 0.000 |
| 481.950 | 6.40 | 1.746 | 53.700 | 53.811 | 0.207 | 0.000 |
| 481.350 | 9.90 | 2.816 | 57.000 | 56.660 | -0.597 | 0.000 |
| 480.950 | 13.70 | 4.018 | 61.100 | 60.523 | -0.944 | 0.000 |
| 480.550 | 17.50 | 5.190 | 65.600 | 64.780 | -1.250 | 0.000 |
| 484.550 | 21.10 | 6.105 | 69.500 | 69.115 | -0.555 | 0.000 |
| 484.250 | 27.90 | 7.680 | 76.400 | 76.134 | -0.348 | 0.000 |
| 484.050 | 34.80 | 8.895 | 82.600 | 82.501 | -0.119 | 0.000 |
| 483.850 | 41.80 | 9.846 | 88.200 | 88.334 | 0.152 | 0.000 |
| 483.550 | 48.00 | 10.530 | 92.900 | 93.106 | 0.221 | 0.000 |
| 483.550 | 54.70 | 11.140 | 97.600 | 97.944 | 0.352 | 0.000 |
| 483.550 | 55.40 | 11.198 | 97.900 | 98.433 | 0.544 | 0.000 |
| 483.350 | 59.00 | 11.486 | 100.600 | 100.911 | 0.309 | 0.000 |
| 483.150 | 67.60 | 12.086 | 106.200 | 106.578 | 0.356 | 0.000 |

Table 15. **THERMAL CONDUCTIVITY AT ELEVATED PRESSURES** (continued)

Data from Le Neindre et al. [82]

| T<br>K | P<br>MPa | $\rho$<br>$mol \cdot dm^{-3}$ | $\lambda$, expt<br>$mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc<br>$mW \cdot m^{-1} \cdot K^{-1}$ | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 482.950 | 81.30 | 12.864 | 114.200 | 115.032 | 0.728 | 0.000 |
| 482.750 | 93.70 | 13.442 | 121.000 | 122.225 | 1.012 | 0.000 |
| 482.550 | 106.70 | 13.958 | 128.000 | 129.405 | 1.098 | 0.000 |
| 482.450 | 115.50 | 14.267 | 132.400 | 134.091 | 1.277 | 0.000 |
| 482.450 | 116.70 | 14.306 | 132.800 | 134.720 | 1.446 | 0.000 |
| 571.550 | 0.30 | 0.063 | 65.900 | 67.736 | 2.786 | 0.000 |
| 571.350 | 3.70 | 0.797 | 67.400 | 68.771 | 2.034 | 0.000 |
| 570.950 | 8.80 | 1.940 | 70.400 | 70.957 | 0.791 | 0.000 |
| 570.850 | 15.50 | 3.453 | 73.900 | 74.918 | 1.378 | 0.000 |
| 570.650 | 23.10 | 5.059 | 80.000 | 80.169 | 0.212 | 0.000 |
| 570.450 | 32.20 | 6.689 | 86.100 | 86.600 | 0.580 | 0.000 |
| 570.550 | 39.60 | 7.762 | 91.000 | 91.614 | 0.675 | 0.000 |
| 571.850 | 47.20 | 8.653 | 96.000 | 96.582 | 0.607 | 0.000 |
| 571.350 | 56.40 | 9.569 | 101.400 | 102.078 | 0.668 | 0.000 |
| 572.650 | 66.50 | 10.363 | 106.700 | 107.899 | 1.123 | 0.000 |
| 572.450 | 78.20 | 11.143 | 112.300 | 114.175 | 1.670 | 0.000 |
| 570.750 | 82.20 | 11.403 | 114.500 | 116.173 | 1.461 | 0.000 |
| 572.150 | 93.20 | 11.959 | 119.600 | 121.804 | 1.843 | 0.000 |
| 571.950 | 107.90 | 12.618 | 126.300 | 128.929 | 2.082 | 0.000 |
| 571.950 | 108.90 | 12.659 | 126.800 | 129.404 | 2.053 | 0.000 |
| 571.950 | 115.70 | 12.924 | 129.600 | 132.595 | 2.311 | 0.000 |
| 571.950 | 117.70 | 12.999 | 130.500 | 133.523 | 2.316 | 0.000 |
| 571.550 | 119.00 | 13.052 | 131.000 | 134.115 | 2.378 | 0.000 |
| 647.650 | 0.40 | 0.074 | 80.400 | 83.136 | 3.403 | 0.000 |
| 647.050 | 3.70 | 0.694 | 82.100 | 83.824 | 2.100 | 0.000 |
| 649.450 | 3.90 | 0.729 | 82.000 | 84.367 | 2.887 | 0.000 |
| 649.350 | 6.50 | 1.219 | 83.200 | 85.131 | 2.321 | 0.000 |
| 649.250 | 12.50 | 2.347 | 85.400 | 87.344 | 2.276 | 0.000 |
| 649.250 | 19.30 | 3.579 | 88.600 | 90.435 | 2.071 | 0.000 |
| 649.050 | 39.90 | 6.662 | 99.500 | 101.169 | 1.678 | 0.000 |
| 648.950 | 50.10 | 7.801 | 104.500 | 106.461 | 1.876 | 0.000 |
| 648.850 | 59.70 | 8.691 | 109.100 | 111.265 | 1.985 | 0.000 |
| 648.750 | 71.60 | 9.607 | 114.100 | 116.990 | 2.533 | 0.000 |
| 648.750 | 81.80 | 10.267 | 118.300 | 121.723 | 2.893 | 0.000 |
| 648.850 | 93.90 | 10.937 | 123.300 | 127.158 | 3.129 | 0.000 |

Table 15. THERMAL CONDUCTIVITY AT ELEVATED PRESSURES (continued)

Data from Le Neindre et al. [82]

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 648.950 | 114.50 | 11.877 | 131.300 | 136.014 | 3.590 | 0.000 |
| 649.250 | 116.40 | 11.950 | 132.200 | 136.832 | 3.504 | 0.000 |
| 649.450 | 118.50 | 12.030 | 132.500 | 137.722 | 3.941 | 0.000 |
| 725.450 | 4.00 | 0.663 | 96.100 | 100.056 | 4.116 | 0.000 |
| 725.250 | 8.40 | 1.390 | 97.500 | 101.139 | 3.732 | 0.000 |
| 724.950 | 19.40 | 3.134 | 101.500 | 104.789 | 3.240 | 0.000 |
| 724.550 | 29.40 | 4.563 | 105.200 | 108.774 | 3.398 | 0.000 |
| 724.250 | 40.60 | 5.942 | 110.100 | 113.552 | 3.136 | 0.000 |
| 724.150 | 50.30 | 6.954 | 113.700 | 117.737 | 3.551 | 0.000 |
| 724.850 | 51.00 | 7.013 | 114.500 | 118.151 | 3.188 | 0.000 |
| 724.750 | 58.50 | 7.688 | 117.300 | 121.329 | 3.434 | 0.000 |
| 724.550 | 72.20 | 8.740 | 122.400 | 126.992 | 3.752 | 0.000 |
| 724.550 | 80.70 | 9.297 | 125.500 | 130.431 | 3.929 | 0.000 |
| 724.450 | 91.10 | 9.901 | 129.300 | 134.537 | 4.050 | 0.000 |
| 724.450 | 101.80 | 10.449 | 133.200 | 138.682 | 4.115 | 0.000 |
| 724.550 | 111.80 | 10.906 | 136.700 | 142.489 | 4.235 | 0.000 |
| 800.650 | 71.90 | 7.966 | 131.700 | 138.632 | 5.264 | 0.000 |
| 800.250 | 86.50 | 8.885 | 136.100 | 143.728 | 5.605 | 0.000 |
| 799.950 | 99.00 | 9.559 | 140.200 | 148.008 | 5.569 | 0.000 |
| 799.750 | 113.60 | 10.243 | 144.800 | 152.931 | 5.616 | 0.000 |

Comparisons based on experimental pressures:

Number of Points [82] 113

AAD% = 1.63 BIAS% = 1.07 RMS% = 1.88
AAD = 1.74 BIAS = 1.34 RMS = 2.17 $mW \cdot m^{-1} \cdot K^{-1}$

Comparisons based on experimental densities:

Number of Points [82] 113

AAD% = 1.82 BIAS% = 0.09 RMS% = 3.25
AAD = 1.89 BIAS = 0.22 RMS = 3.02 $mW \cdot m^{-1} \cdot K^{-1}$

Data from Leng et al. [83]

| T K | P MPa | ρ $mol \cdot dm^{-3}$ | λ, expt $mW \cdot m^{-1} \cdot K^{-1}$ | λ, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 340.928 | 0.96 | 0.357 | 28.037 | 27.474 | -2.008 | 0.000 |
| 340.928 | 2.07 | 0.818 | 28.730 | 28.599 | -0.454 | 0.000 |
| 340.928 | 3.24 | 1.389 | 30.806 | 30.282 | -1.701 | 0.000 |
| 340.928 | 4.37 | 2.050 | 32.191 | 32.646 | 1.414 | 0.000 |
| 340.928 | 6.23 | 3.576 | 38.941 | 39.694 | 1.934 | 0.000 |
| 340.928 | 7.95 | 5.833 | 50.536 | 51.402 | 1.712 | 0.000 |
| 340.928 | 9.66 | 8.068 | 60.575 | 60.424 | -0.249 | 0.000 |
| 340.928 | 11.04 | 9.176 | 66.978 | 65.222 | -2.622 | 0.000 |
| 340.928 | 14.21 | 10.591 | 74.593 | 73.257 | -1.792 | 0.000 |
| 340.928 | 18.27 | 11.606 | 81.170 | 80.761 | -0.503 | 0.000 |
| 340.928 | 21.89 | 12.219 | 88.958 | 86.156 | -3.150 | 0.000 |
| 340.928 | 26.45 | 12.804 | 94.842 | 92.007 | -2.990 | 0.000 |

Comparisons based on experimental pressures:

Number of Points [83] 12

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AAD% | = | 1.71 | BIAS% | = | -0.87 | RMS% | = | 1.73 |
| AAD | = | 1.05 | BIAS | = | -0.70 | RMS | = | 1.20 $mW \cdot m^{-1} \cdot K^{-1}$ |

Densities were not tabulated in [83].

Data from Lenoir et al. [84]

| T K | P MPa | ρ $mol \cdot dm^{-3}$ | λ, expt $mW \cdot m^{-1} \cdot K^{-1}$ | λ, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 315.206 | 1.16 | 0.477 | 25.268 | 24.229 | -4.111 | 0.000 |
| 315.206 | 2.00 | 0.884 | 26.307 | 25.358 | -3.606 | 0.000 |
| 315.206 | 2.84 | 1.365 | 28.210 | 26.956 | -4.448 | 0.000 |
| 315.206 | 3.83 | 2.093 | 30.980 | 30.016 | -3.109 | 0.000 |
| 315.206 | 4.33 | 2.574 | 32.883 | 32.531 | -1.072 | 0.000 |
| 315.206 | 4.71 | 3.045 | 35.306 | 35.436 | 0.367 | 0.000 |
| 315.206 | 5.14 | 3.758 | 40.844 | 40.702 | -0.350 | 0.000 |
| 315.206 | 5.38 | 4.346 | 44.306 | 45.802 | 3.378 | 0.000 |
| 315.206 | 5.66 | 5.424 | 55.036 | 55.800 | 1.388 | 0.000 |
| 315.206 | 6.02 | 7.515 | 71.478 | 65.504 | -8.358 | 0.000 |
| 315.206 | 6.45 | 8.927 | 68.882 | 65.487 | -4.928 | 0.000 |
| 315.206 | 6.66 | 9.281 | 68.536 | 66.061 | -3.612 | 0.000 |

Table 15. **THERMAL CONDUCTIVITY AT ELEVATED PRESSURES** (continued)

**Data from Lenoir et al. [84]** (continued)

| T<br>K | P<br>MPa | $\rho$<br>$mol \cdot dm^{-3}$ | $\lambda$, expt<br>$mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc<br>$mW \cdot m^{-1} \cdot K^{-1}$ | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 315.206 | 7.11 | 9.837 | 68.882 | 67.773 | -1.609 | 0.000 |
| 315.206 | 7.88 | 10.447 | 70.093 | 70.626 | 0.759 | 0.000 |
| 315.206 | 8.96 | 11.011 | 72.862 | 74.009 | 1.574 | 0.000 |
| 315.206 | 10.21 | 11.479 | 77.535 | 77.312 | -0.288 | 0.000 |
| 315.206 | 11.57 | 11.866 | 80.131 | 80.363 | 0.289 | 0.000 |
| 315.206 | 12.87 | 12.165 | 82.554 | 82.940 | 0.468 | 0.000 |
| 315.206 | 14.10 | 12.409 | 84.977 | 85.176 | 0.233 | 0.000 |
| 315.206 | 15.42 | 12.637 | 86.535 | 87.378 | 0.974 | 0.000 |
| 315.206 | 17.46 | 12.941 | 89.996 | 90.504 | 0.564 | 0.000 |
| 315.206 | 19.52 | 13.206 | 95.881 | 93.401 | -2.586 | 0.000 |
| 315.094 | 0.86 | 0.348 | 23.884 | 23.895 | 0.034 | 0.000 |
| 315.094 | 1.82 | 0.796 | 24.922 | 25.083 | 0.634 | 0.000 |
| 315.094 | 2.43 | 1.122 | 26.480 | 26.098 | -1.453 | 0.000 |
| 315.094 | 3.07 | 1.518 | 26.999 | 27.517 | 1.904 | 0.000 |
| 315.094 | 3.48 | 1.808 | 28.557 | 28.703 | 0.499 | 0.000 |
| 315.094 | 3.96 | 2.213 | 30.634 | 30.593 | -0.144 | 0.000 |
| 315.094 | 4.36 | 2.611 | 32.192 | 32.737 | 1.684 | 0.000 |
| 315.094 | 4.66 | 2.982 | 34.269 | 35.016 | 2.171 | 0.000 |
| 315.094 | 5.02 | 3.533 | 38.249 | 38.936 | 1.784 | 0.000 |
| 315.094 | 5.33 | 4.224 | 44.134 | 44.720 | 1.319 | 0.000 |
| 315.094 | 5.58 | 5.086 | 53.480 | 52.808 | -1.268 | 0.000 |
| 315.094 | 5.74 | 5.861 | 59.883 | 59.441 | -0.749 | 0.000 |
| 315.094 | 5.91 | 6.947 | 72.344 | 64.805 | -10.434 | 0.000 |
| 315.094 | 6.19 | 8.294 | 71.479 | 65.417 | -8.491 | 0.000 |
| 315.094 | 6.53 | 9.095 | 66.287 | 65.734 | -0.846 | 0.000 |
| 315.094 | 6.99 | 9.734 | 66.287 | 67.390 | 1.653 | 0.000 |
| 315.094 | 7.84 | 10.437 | 68.883 | 70.569 | 2.436 | 0.000 |
| 315.094 | 8.99 | 11.036 | 71.479 | 74.172 | 3.756 | 0.000 |
| 315.094 | 11.23 | 11.785 | 79.787 | 79.694 | -0.128 | 0.000 |
| 315.094 | 13.56 | 12.313 | 85.844 | 84.268 | -1.847 | 0.000 |
| 315.094 | 16.29 | 12.780 | 92.421 | 88.807 | -3.922 | 0.000 |
| 315.094 | 19.86 | 13.253 | 93.806 | 93.918 | 0.108 | 0.000 |
| 329.817 | 0.90 | 0.346 | 26.307 | 25.884 | -1.617 | 0.000 |
| 329.817 | 1.72 | 0.698 | 26.999 | 26.752 | -0.927 | 0.000 |

Data from Lenoir et al. [84] (continued)

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 329.817 | 2.43 | 1.038 | 27.346 | 27.711 | 1.326 | 0.000 |
| 329.817 | 3.06 | 1.375 | 28.730 | 28.788 | 0.190 | 0.000 |
| 329.817 | 3.31 | 1.523 | 28.903 | 29.301 | 1.365 | 0.000 |
| 329.817 | 3.84 | 1.857 | 29.596 | 30.559 | 3.246 | 0.000 |
| 329.817 | 4.37 | 2.238 | 31.326 | 32.157 | 2.642 | 0.000 |
| 329.817 | 5.00 | 2.776 | 33.057 | 34.716 | 5.005 | 0.000 |
| 329.817 | 5.34 | 3.124 | 35.480 | 36.553 | 3.011 | 0.000 |
| 329.817 | 5.68 | 3.524 | 37.038 | 38.817 | 4.792 | 0.000 |
| 329.817 | 5.95 | 3.876 | 38.076 | 40.910 | 7.432 | 0.000 |
| 329.817 | 6.19 | 4.243 | 40.499 | 43.168 | 6.577 | 0.000 |
| 329.817 | 6.40 | 4.604 | 44.480 | 45.411 | 2.081 | 0.000 |
| 329.817 | 6.93 | 5.673 | 48.460 | 51.683 | 6.637 | 0.000 |
| 329.817 | 7.71 | 7.379 | 56.249 | 58.766 | 4.464 | 0.000 |
| 329.817 | 8.71 | 8.814 | 62.999 | 63.399 | 0.623 | 0.000 |
| 329.817 | 11.28 | 10.477 | 70.441 | 71.585 | 1.613 | 0.000 |
| 329.817 | 13.82 | 11.326 | 79.267 | 77.410 | -2.355 | 0.000 |
| 329.817 | 16.48 | 11.928 | 83.940 | 82.291 | -1.976 | 0.000 |
| 329.817 | 18.07 | 12.215 | 85.152 | 84.859 | -0.355 | 0.000 |
| 340.372 | 1.12 | 0.422 | 28.384 | 27.541 | -2.981 | 0.000 |
| 340.372 | 2.36 | 0.954 | 29.769 | 28.894 | -2.949 | 0.000 |
| 340.372 | 3.24 | 1.393 | 30.980 | 30.222 | -2.458 | 0.000 |
| 340.372 | 4.63 | 2.236 | 33.922 | 33.329 | -1.760 | 0.000 |
| 340.372 | 5.64 | 3.032 | 37.211 | 36.916 | -0.805 | 0.000 |
| 340.372 | 6.65 | 4.068 | 41.884 | 42.271 | 0.913 | 0.000 |
| 340.372 | 8.87 | 7.240 | 54.518 | 57.280 | 5.054 | 0.000 |
| 340.372 | 11.23 | 9.350 | 63.172 | 66.045 | 4.536 | 0.000 |
| 340.372 | 13.78 | 10.494 | 69.229 | 72.565 | 4.806 | 0.000 |
| 340.372 | 16.33 | 11.221 | 74.421 | 77.663 | 4.343 | 0.000 |
| 340.372 | 19.44 | 11.857 | 78.402 | 82.816 | 5.618 | 0.000 |

**Data from Lenoir et al. [84]** (continued)

Comparisons based on experimental pressures:

Number of Points [84] 75

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AAD% | = | 2.53 | BIAS% | = | 0.26 | RMS% | = | 3.36 |
| AAD | = | 1.36 | BIAS | = | 0.05 | RMS | = | 2.01 $mW \cdot m^{-1} \cdot K^{-1}$ |

Densities were not tabulated in [84].

**Data from Millat et al. [85]**
These data were not available during the development of the correlations [1].

| T<br>K | P<br>MPa | $\rho$<br>$mol \cdot dm^{-3}$ | $\lambda$, expt<br>$mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc<br>$mW \cdot m^{-1} \cdot K^{-1}$ | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 425.780 | 0.65 | 0.186 | 42.320 | 40.623 | -4.011 | 0.000 |
| 425.630 | 0.98 | 0.283 | 42.480 | 40.763 | -4.041 | 0.000 |
| 425.630 | 1.34 | 0.391 | 42.430 | 40.956 | -3.474 | 0.000 |
| 425.580 | 1.67 | 0.491 | 42.530 | 41.134 | -3.282 | 0.000 |
| 425.590 | 2.05 | 0.608 | 42.730 | 41.364 | -3.197 | 0.000 |
| 425.560 | 2.35 | 0.703 | 42.900 | 41.549 | -3.149 | 0.000 |
| 425.590 | 2.76 | 0.834 | 43.300 | 41.829 | -3.398 | 0.000 |
| 425.620 | 3.49 | 1.073 | 43.990 | 42.368 | -3.687 | 0.000 |
| 425.670 | 3.78 | 1.171 | 44.120 | 42.605 | -3.434 | 0.000 |
| 425.580 | 4.24 | 1.329 | 44.740 | 42.974 | -3.947 | 0.000 |
| 425.660 | 4.60 | 1.455 | 44.790 | 43.305 | -3.316 | 0.000 |
| 425.690 | 4.82 | 1.532 | 45.260 | 43.511 | -3.863 | 0.000 |
| 425.960 | 5.62 | 1.821 | 45.930 | 44.338 | -3.465 | 0.000 |
| 425.920 | 6.16 | 2.024 | 46.550 | 44.911 | -3.522 | 0.000 |
| 425.830 | 6.25 | 2.059 | 46.520 | 44.998 | -3.271 | 0.000 |
| 425.880 | 6.64 | 2.208 | 47.180 | 45.452 | -3.663 | 0.000 |
| 425.880 | 6.64 | 2.208 | 47.300 | 45.452 | -3.908 | 0.000 |
| 331.500 | 0.66 | 0.248 | 26.590 | 25.899 | -2.598 | 0.000 |
| 331.560 | 0.87 | 0.332 | 26.610 | 26.093 | -1.943 | 0.000 |
| 331.610 | 1.12 | 0.433 | 27.050 | 26.336 | -2.641 | 0.000 |
| 331.690 | 1.48 | 0.586 | 27.210 | 26.718 | -1.807 | 0.000 |
| 331.800 | 2.16 | 0.895 | 28.110 | 27.559 | -1.960 | 0.000 |
| 331.780 | 2.47 | 1.047 | 28.520 | 27.999 | -1.827 | 0.000 |
| 331.790 | 2.84 | 1.239 | 28.940 | 28.595 | -1.193 | 0.000 |
| 331.480 | 3.25 | 1.470 | 29.880 | 29.325 | -1.856 | 0.000 |

Table 15. **THERMAL CONDUCTIVITY AT ELEVATED PRESSURES** (continued)

Data from Millat et al. [85] (continued)

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 331.530 | 3.55 | 1.649 | 30.480 | 29.972 | -1.667 | 0.000 |
| 331.800 | 4.01 | 1.945 | 31.750 | 31.141 | -1.918 | 0.000 |
| 331.770 | 4.30 | 2.151 | 32.400 | 31.991 | -1.262 | 0.000 |
| 331.550 | 4.82 | 2.568 | 34.580 | 33.852 | -2.104 | 0.000 |
| 331.930 | 5.69 | 3.419 | 39.200 | 38.308 | -2.274 | 0.000 |
| 331.920 | 6.31 | 4.241 | 44.010 | 43.114 | -2.036 | 0.000 |
| 380.110 | 0.54 | 0.174 | 34.220 | 33.028 | -3.482 | 0.000 |
| 380.010 | 0.72 | 0.234 | 34.450 | 33.125 | -3.848 | 0.000 |
| 379.490 | 0.94 | 0.308 | 34.460 | 33.186 | -3.697 | 0.000 |
| 379.970 | 1.16 | 0.383 | 34.600 | 33.411 | -3.437 | 0.000 |
| 379.990 | 1.36 | 0.452 | 34.660 | 33.556 | -3.185 | 0.000 |
| 380.090 | 1.62 | 0.544 | 34.850 | 33.765 | -3.113 | 0.000 |
| 379.710 | 1.88 | 0.638 | 35.110 | 33.912 | -3.412 | 0.000 |
| 380.020 | 1.91 | 0.648 | 35.160 | 33.984 | -3.346 | 0.000 |
| 380.020 | 2.47 | 0.857 | 35.520 | 34.468 | -2.963 | 0.000 |
| 380.020 | 2.78 | 0.977 | 35.920 | 34.761 | -3.227 | 0.000 |
| 379.850 | 3.50 | 1.268 | 36.890 | 35.497 | -3.776 | 0.000 |
| 379.980 | 3.80 | 1.394 | 37.090 | 35.867 | -3.298 | 0.000 |
| 380.090 | 4.48 | 1.693 | 38.030 | 36.764 | -3.330 | 0.000 |
| 379.930 | 4.78 | 1.833 | 38.420 | 37.175 | -3.241 | 0.000 |
| 307.710 | 0.62 | 0.253 | 23.270 | 22.700 | -2.451 | 0.000 |
| 307.690 | 0.71 | 0.292 | 23.460 | 22.790 | -2.855 | 0.000 |
| 307.800 | 0.82 | 0.340 | 23.400 | 22.922 | -2.043 | 0.000 |
| 307.730 | 0.95 | 0.398 | 23.550 | 23.058 | -2.088 | 0.000 |
| 308.160 | 1.08 | 0.457 | 23.750 | 23.263 | -2.049 | 0.000 |
| 307.590 | 1.22 | 0.523 | 23.850 | 23.366 | -2.030 | 0.000 |
| 307.650 | 1.36 | 0.590 | 23.950 | 23.555 | -1.649 | 0.000 |
| 307.630 | 1.53 | 0.674 | 24.160 | 23.788 | -1.541 | 0.000 |
| 307.500 | 1.70 | 0.761 | 24.280 | 24.025 | -1.050 | 0.000 |
| 307.630 | 1.87 | 0.851 | 24.550 | 24.311 | -0.975 | 0.000 |
| 307.620 | 2.00 | 0.922 | 24.870 | 24.531 | -1.362 | 0.000 |
| 307.640 | 2.14 | 1.000 | 24.980 | 24.787 | -0.771 | 0.000 |
| 307.620 | 2.30 | 1.094 | 25.320 | 25.098 | -0.878 | 0.000 |
| 307.640 | 3.23 | 1.730 | 27.250 | 27.586 | 1.233 | 0.000 |
| 307.750 | 3.33 | 1.809 | 27.560 | 27.956 | 1.439 | 0.000 |

Table 15. **THERMAL CONDUCTIVITY AT ELEVATED PRESSURES** (continued)

**Data from Millat et al. [85]** (continued)

| T K | P MPa | $\rho$ mol•dm$^{-3}$ | $\lambda$, expt mW•m$^{-1}$•K$^{-1}$ | $\lambda$, calc mW•m$^{-1}$•K$^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 307.670 | 3.61 | 2.057 | 28.670 | 29.153 | 1.685 | 0.000 |
| 307.600 | 3.67 | 2.115 | 28.890 | 29.452 | 1.946 | 0.000 |
| 307.520 | 3.77 | 2.217 | 29.340 | 29.992 | 2.222 | 0.000 |
| 307.540 | 3.90 | 2.354 | 30.000 | 30.773 | 2.576 | 0.000 |

Comparisons based on experimental pressures:

Number of Points [85] 64

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AAD% | = | 2.62 | BIAS% | = | -2.28 | RMS% | = | 1.60 |
| AAD | = | 0.95 | BIAS | = | -0.85 | RMS | = | 0.65 mW•m$^{-1}$•K$^{-1}$ |

Comparisons based on experimental densities:

Number of Points [85] 64

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AAD% | = | 2.61 | BIAS% | = | -2.24 | RMS% | = | 1.62 |
| AAD | = | 0.94 | BIAS | = | -0.84 | RMS | = | 0.65 mW•m$^{-1}$•K$^{-1}$ |

**Data from Mostert et al. [101]**
These data were not available during the development of the correlations [1].

| T K | P MPa | $\rho$ mol•dm$^{-3}$ | $\lambda$, expt mW•m$^{-1}$•K$^{-1}$ | $\lambda$, calc mW•m$^{-1}$•K$^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 333.140 | 1.95 | 0.789 | 27.500 | 27.449 | -0.185 | 0.000 |
| 319.983 | - | 0.789 | 25.700 | 25.694 | -0.024 | 0.000 |
| 312.028 | - | 0.789 | 24.600 | 24.674 | 0.300 | 0.000 |
| 308.037 | - | 0.789 | 24.200 | 24.174 | -0.107 | 0.000 |
| 306.995 | - | 0.789 | 24.000 | 24.045 | 0.187 | 0.000 |
| 305.962 | - | 0.789 | 23.900 | 23.917 | 0.073 | 0.000 |
| 305.620 | - | 0.789 | 23.900 | 23.875 | -0.103 | 0.000 |
| 333.132 | 4.81 | 2.519 | 33.100 | 33.779 | 2.050 | 0.000 |
| 333.120 | 4.81 | 2.520 | 34.100 | 33.779 | -0.942 | 0.000 |
| 320.005 | - | 2.520 | 32.500 | 32.588 | 0.270 | 0.000 |
| 319.993 | - | 2.520 | 32.300 | 32.587 | 0.888 | 0.000 |
| 312.007 | - | 2.520 | 32.100 | 32.019 | -0.254 | 0.000 |
| 308.041 | - | 2.520 | 31.200 | 31.799 | 1.919 | 0.000 |
| 308.041 | - | 2.520 | 31.500 | 31.799 | 0.949 | 0.000 |
| 306.997 | - | 2.520 | 31.700 | 31.750 | 0.156 | 0.000 |

Table 15. **THERMAL CONDUCTIVITY AT ELEVATED PRESSURES** (continued)

Data from Mostert et al. [101] (continued)

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 305.966 | - | 2.520 | 31.900 | 31.705 | -0.612 | 0.000 |
| 305.613 | - | 2.520 | 31.900 | 31.691 | -0.657 | 0.000 |
| 305.494 | - | 2.520 | 31.800 | 31.686 | -0.359 | 0.000 |
| 305.488 | - | 2.520 | 32.100 | 31.686 | -1.291 | 0.000 |
| 333.114 | 6.22 | 4.022 | 41.600 | 41.814 | 0.514 | 0.000 |
| 319.962 | - | 4.020 | 42.300 | 42.253 | -0.111 | 0.000 |
| 308.021 | - | 4.020 | 44.400 | 44.971 | 1.286 | 0.000 |
| 306.974 | - | 4.020 | 44.600 | 45.461 | 1.931 | 0.000 |
| 305.942 | - | 4.020 | 45.500 | 46.019 | 1.140 | 0.000 |
| 305.592 | - | 4.020 | 45.300 | 46.227 | 2.046 | 0.000 |
| 305.471 | - | 4.020 | 45.300 | 46.301 | 2.210 | 0.000 |
| 305.459 | - | 4.020 | 44.400 | 46.309 | 4.299 | 0.000 |
| 333.109 | 7.02 | 5.315 | 50.000 | 49.309 | -1.381 | 0.000 |
| 319.946 | - | 5.320 | 52.200 | 52.226 | 0.049 | 0.000 |
| 311.985 | - | 5.320 | 57.600 | 57.963 | 0.629 | 0.000 |
| 308.012 | - | 5.320 | 65.500 | 65.560 | 0.092 | 0.000 |
| 306.961 | - | 5.320 | 70.800 | 69.355 | -2.041 | 0.000 |
| 305.978 | - | 5.320 | 74.000 | 74.642 | 0.868 | 0.000 |
| 305.925 | - | 5.320 | 77.700 | 75.004 | -3.470 | 0.000 |
| 305.924 | - | 5.320 | 74.600 | 75.011 | 0.550 | 0.000 |
| 305.576 | - | 5.320 | 78.700 | 77.666 | -1.314 | 0.000 |
| 305.576 | - | 5.320 | 83.600 | 77.666 | -7.098 | 0.000 |
| 333.103 | 7.42 | 6.104 | 54.700 | 53.317 | -2.528 | 0.000 |
| 319.948 | - | 6.110 | 56.900 | 57.319 | 0.737 | 0.000 |
| 311.992 | - | 6.110 | 66.100 | 65.565 | -0.809 | 0.000 |
| 308.022 | - | 6.110 | 70.900 | 79.116 | 11.588 | 0.000 |
| 306.961 | - | 6.110 | 92.600 | 88.494 | -4.434 | 0.000 |
| 305.922 | - | 6.110 | 123.000 | 110.583 | -10.095 | 0.000 |
| 305.575 | - | 6.110 | 134.000 | 129.721 | -3.193 | 0.000 |
| 305.574 | - | 6.110 | 142.000 | 129.802 | -8.590 | 0.000 |
| 305.455 | - | 6.110 | 162.000 | 141.356 | -12.743 | 0.000 |
| 333.171 | 7.82 | 6.869 | 58.300 | 56.487 | -3.110 | 0.000 |
| 319.947 | - | 6.870 | 62.400 | 60.602 | -2.881 | 0.000 |
| 314.860 | - | 6.870 | 65.200 | 64.869 | -0.508 | 0.000 |
| 312.008 | - | 6.870 | 70.900 | 69.208 | -2.387 | 0.000 |
| 308.011 | - | 6.870 | 85.800 | 83.998 | -2.101 | 0.000 |

Table 15. THERMAL CONDUCTIVITY AT ELEVATED PRESSURES (continued)

Data from Mostert et al. [101] (continued)

| T<br>K | P<br>MPa | $\rho$<br>$mol \cdot dm^{-3}$ | $\lambda$, expt<br>$mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc<br>$mW \cdot m^{-1} \cdot K^{-1}$ | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 306.972 | - | 6.870 | 103.000 | 94.772 | -7.989 | 0.000 |
| 306.964 | - | 6.870 | 98.900 | 94.891 | -4.053 | 0.000 |
| 305.910 | - | 6.870 | 131.000 | 127.629 | -2.573 | 0.000 |
| 305.743 | - | 6.870 | 174.000 | 142.387 | -18.169 | 0.000 |
| 305.724 | - | 6.870 | 160.000 | 144.631 | -9.606 | 0.000 |
| 305.624 | - | 6.870 | 169.000 | 159.790 | -5.449 | 0.000 |
| 305.588 | - | 6.870 | 195.000 | 167.281 | -14.215 | 0.000 |
| 305.567 | - | 6.870 | 204.000 | 172.411 | -15.485 | 0.000 |
| 305.567 | - | 6.870 | 205.000 | 172.411 | -15.897 | 0.000 |
| 305.522 | - | 6.900 | 206.000 | 185.565 | -9.920 | 0.000 |
| 305.482 | - | 6.900 | 231.000 | 202.370 | -12.394 | 0.000 |
| 305.447 | - | 6.900 | 245.000 | 223.609 | -8.731 | 0.000 |
| 305.442 | - | 6.900 | 255.000 | 227.425 | -10.814 | 0.000 |
| 333.114 | 8.03 | 7.257 | 59.700 | 57.882 | -3.045 | 0.000 |
| 319.938 | - | 7.260 | 63.500 | 61.667 | -2.887 | 0.000 |
| 311.980 | - | 7.260 | 71.700 | 69.732 | -2.745 | 0.000 |
| 308.021 | - | 7.260 | 88.700 | 83.116 | -6.296 | 0.000 |
| 306.953 | - | 7.260 | 102.000 | 93.060 | -8.764 | 0.000 |
| 305.566 | - | 7.260 | 172.000 | 155.241 | -9.744 | 0.000 |
| 333.116 | 8.53 | 8.015 | 66.900 | 60.431 | -9.670 | 0.000 |
| 319.944 | - | 8.030 | 63.700 | 62.939 | -1.195 | 0.000 |
| 311.993 | - | 8.030 | 74.700 | 68.509 | -8.288 | 0.000 |
| 308.007 | - | 8.030 | 76.900 | 76.654 | -0.320 | 0.000 |
| 306.952 | - | 8.030 | 80.100 | 81.363 | 1.577 | 0.000 |
| 305.914 | - | 8.030 | 86.500 | 89.963 | 4.004 | 0.000 |
| 305.565 | - | 8.030 | 93.200 | 95.121 | 2.061 | 0.000 |
| 305.448 | - | 8.030 | 89.400 | 97.392 | 8.940 | 0.000 |
| 305.447 | - | 8.030 | 92.500 | 97.413 | 5.312 | 0.000 |
| 333.105 | 9.45 | 8.995 | 67.200 | 64.111 | -4.596 | 0.000 |
| 319.945 | - | 9.020 | 65.400 | 64.741 | -1.007 | 0.000 |
| 311.980 | - | 9.020 | 66.500 | 66.651 | 0.228 | 0.000 |
| 308.005 | - | 9.020 | 72.200 | 69.033 | -4.387 | 0.000 |
| 306.958 | - | 9.020 | 71.700 | 70.033 | -2.325 | 0.000 |
| 305.924 | - | 9.020 | 73.100 | 71.292 | -2.474 | 0.000 |
| 305.571 | - | 9.020 | 73.500 | 71.805 | -2.307 | 0.000 |
| 305.461 | - | 9.020 | 75.500 | 71.975 | -4.669 | 0.000 |

Table 15. **THERMAL CONDUCTIVITY AT ELEVATED PRESSURES** (continued)

Data from Mostert et al. [101] (continued)

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 305.461 | - | 9.020 | 78.200 | 71.975 | -7.960 | 0.000 |
| 333.105 | 12.05 | 10.483 | 74.400 | 71.872 | -3.397 | 0.000 |
| 319.861 | - | 10.490 | 74.100 | 71.044 | -4.125 | 0.000 |
| 312.034 | - | 10.490 | 72.200 | 70.795 | -1.945 | 0.000 |
| 308.047 | - | 10.490 | 77.000 | 70.811 | -8.037 | 0.000 |
| 306.969 | - | 10.490 | 72.300 | 70.841 | -2.018 | 0.000 |
| 305.928 | - | 10.490 | 73.200 | 70.883 | -3.165 | 0.000 |
| 305.579 | - | 10.490 | 74.200 | 70.900 | -4.447 | 0.000 |
| 305.465 | - | 10.490 | 74.200 | 70.906 | -4.439 | 0.000 |
| 305.462 | - | 10.490 | 74.000 | 70.907 | -4.180 | 0.000 |
| 333.115 | 18.27 | 12.061 | 84.000 | 83.821 | -0.213 | 0.000 |
| 319.955 | - | 12.060 | 84.400 | 82.458 | -2.301 | 0.000 |
| 308.017 | - | 12.060 | 82.700 | 81.393 | -1.580 | 0.000 |
| 305.464 | - | 12.060 | 81.400 | 81.191 | -0.257 | 0.000 |
| 305.459 | - | 12.060 | 81.600 | 81.190 | -0.502 | 0.000 |

Comparisons based on experimental pressures (for 12 points):

Number of Points [101] 12

AAD% = 2.64 BIAS% = -2.21 RMS% = 2.89
AAD = 1.60 BIAS = -1.45 RMS = 1.87 $mW \cdot m^{-1} \cdot K^{-1}$

Comparisons based on experimental densities (for all points):

Number of Points [101] 102

AAD% = 3.81 BIAS% = -2.69 RMS% = 4.89
AAD = 4.69 BIAS = -3.95 RMS = 8.15 $mW \cdot m^{-1} \cdot K^{-1}$

**Data from Mostert et al. [102]**
These data were not available during the development of the correlations [1].

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 305.455 | 4.88 | 6.170 | 161.980 | 149.377 | -7.781 | 0.000 |
| 305.574 | 4.89 | 6.134 | 141.590 | 131.965 | -6.798 | 0.000 |
| 305.575 | 4.89 | 6.121 | 134.300 | 130.716 | -2.669 | 0.000 |
| 305.922 | 4.93 | 6.157 | 123.100 | 112.774 | -8.389 | 0.000 |
| 306.961 | 5.02 | 6.127 | 92.632 | 88.821 | -4.114 | 0.000 |
| 308.022 | 5.12 | 6.124 | 70.913 | 79.291 | 11.814 | 0.000 |
| 311.992 | 5.49 | 6.089 | 66.106 | 65.405 | -1.060 | 0.000 |
| 319.948 | 6.22 | 6.088 | 56.916 | 57.199 | 0.497 | 0.000 |
| 333.103 | 7.41 | 6.090 | 54.732 | 53.252 | -2.703 | 0.000 |

Comparisons based on experimental pressures:

Number of Points [102] 9

AAD% = 5.09 BIAS% = -2.36 RMS% = 5.77
AAD = 5.64 BIAS = -3.72 RMS = 6.09 $mW \cdot m^{-1} \cdot K^{-1}$

Comparisons based on experimental densities:

Number of Points [102] 9

AAD% = 6.55 BIAS% = -3.92 RMS% = 7.00
AAD = 7.79 BIAS = -5.94 RMS = 8.64 $mW \cdot m^{-1} \cdot K^{-1}$

**Data from Prasad et al. [86]**

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 293.850 | 1.44 | 0.675 | 21.910 | 22.111 | 0.917 | 0.060 |
| 293.720 | 1.44 | 0.675 | 22.160 | 22.095 | -0.292 | 0.050 |
| 293.590 | 1.44 | 0.676 | 22.060 | 22.081 | 0.097 | 0.050 |
| 293.200 | 3.12 | 1.896 | 25.630 | 27.158 | 5.961 | 0.000 |
| 297.160 | 18.98 | 14.041 | 103.840 | 101.651 | -2.108 | 0.030 |
| 295.490 | 17.64 | 13.993 | 101.470 | 100.838 | -0.623 | 0.030 |
| 295.390 | 20.05 | 14.223 | 105.170 | 103.912 | -1.196 | 0.030 |
| 295.360 | 20.09 | 14.229 | 105.430 | 103.979 | -1.376 | 0.030 |
| 295.360 | 25.13 | 14.631 | 111.790 | 109.763 | -1.813 | 0.030 |
| 295.370 | 29.98 | 14.957 | 116.750 | 114.832 | -1.643 | 0.030 |

Data from Prasad et al. [86] (continued)

| T<br>K | P<br>MPa | $\rho$<br>$mol \cdot dm^{-3}$ | $\lambda$, expt<br>$mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc<br>$mW \cdot m^{-1} \cdot K^{-1}$ | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 294.170 | 3.78 | 2.822 | 31.740 | 34.527 | 8.781 | 0.000 |
| 294.140 | 3.81 | 2.879 | 33.120 | 35.183 | 6.229 | 0.000 |
| 294.250 | 4.48 | 11.563 | 80.990 | 76.831 | -5.136 | 0.040 |
| 294.300 | 5.01 | 11.818 | 82.080 | 78.592 | -4.250 | 0.040 |
| 294.340 | 5.02 | 11.815 | 81.730 | 78.571 | -3.865 | 0.040 |
| 294.420 | 6.03 | 12.181 | 83.840 | 81.443 | -2.859 | 0.040 |
| 294.510 | 7.03 | 12.462 | 85.640 | 83.889 | -2.045 | 0.040 |
| 294.610 | 8.02 | 12.687 | 87.920 | 86.004 | -2.179 | 0.040 |
| 294.700 | 9.00 | 12.883 | 89.630 | 87.937 | -1.888 | 0.030 |
| 294.810 | 10.11 | 13.074 | 91.310 | 89.930 | -1.511 | 0.030 |
| 294.910 | 15.01 | 13.743 | 98.300 | 97.600 | -0.712 | 0.030 |
| 294.510 | 18.88 | 14.160 | 103.690 | 102.946 | -0.718 | 0.030 |
| 294.400 | 30.00 | 14.995 | 117.210 | 115.331 | -1.603 | 0.030 |
| 294.350 | 35.00 | 15.287 | 122.450 | 120.202 | -1.836 | 0.030 |
| 294.310 | 39.99 | 15.545 | 126.650 | 124.779 | -1.477 | 0.030 |
| 294.250 | 45.01 | 15.780 | 130.520 | 129.161 | -1.041 | 0.030 |
| 294.250 | 50.03 | 15.993 | 136.250 | 133.328 | -2.145 | 0.030 |
| 294.240 | 55.04 | 16.189 | 139.860 | 137.328 | -1.810 | 0.030 |
| 294.240 | 60.04 | 16.370 | 143.730 | 141.185 | -1.771 | 0.030 |
| 294.250 | 65.01 | 16.538 | 146.960 | 144.903 | -1.400 | 0.030 |
| 294.270 | 69.92 | 16.694 | 150.640 | 148.459 | -1.448 | 0.030 |
| 293.150 | 0.69 | 0.300 | 20.660 | 20.978 | 1.539 | 0.070 |
| 293.050 | 1.37 | 0.638 | 21.680 | 21.904 | 1.034 | 0.060 |
| 293.140 | 2.07 | 1.048 | 23.100 | 23.270 | 0.734 | 0.050 |
| 294.720 | 2.08 | 1.046 | 22.670 | 23.437 | 3.383 | 0.060 |
| 294.720 | 2.08 | 1.047 | 22.790 | 23.439 | 2.849 | 0.060 |
| 294.740 | 2.76 | 1.536 | 24.440 | 25.436 | 4.075 | 0.060 |
| 294.820 | 3.46 | 2.247 | 29.380 | 29.471 | 0.311 | 0.050 |
| 295.740 | 0.69 | 0.297 | 21.410 | 21.289 | -0.565 | 0.050 |
| 295.840 | 1.38 | 0.634 | 21.930 | 22.223 | 1.337 | 0.060 |
| 295.980 | 0.18 | 0.073 | 20.540 | 20.778 | 1.159 | 0.080 |
| 318.030 | 59.93 | 15.702 | 134.450 | 131.045 | -2.532 | 0.300 |
| 318.360 | 60.11 | 15.700 | 133.720 | 131.056 | -1.992 | 0.300 |
| 318.440 | 65.14 | 15.892 | 136.640 | 134.829 | -1.326 | 0.300 |
| 318.500 | 70.10 | 16.068 | 139.770 | 138.445 | -0.948 | 0.300 |
| 318.680 | 55.27 | 15.490 | 130.160 | 127.150 | -2.312 | 0.310 |

Table 15. THERMAL CONDUCTIVITY AT ELEVATED PRESSURES (continued)

Data from Prasad et al. [86] (continued)

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 318.690 | 55.00 | 15.479 | 129.800 | 126.938 | -2.205 | 0.310 |
| 318.710 | 55.00 | 15.478 | 128.900 | 126.930 | -1.528 | 0.310 |
| 318.740 | 50.03 | 15.252 | 124.930 | 122.877 | -1.643 | 0.310 |
| 318.760 | 45.07 | 15.005 | 121.100 | 118.656 | -2.018 | 0.320 |
| 318.790 | 40.04 | 14.726 | 116.380 | 114.154 | -1.913 | 0.320 |
| 318.980 | 34.97 | 14.403 | 111.840 | 109.276 | -2.292 | 0.330 |
| 318.990 | 30.04 | 14.047 | 106.620 | 104.261 | -2.213 | 0.330 |
| 319.010 | 25.02 | 13.614 | 102.010 | 98.650 | -3.293 | 0.340 |
| 319.100 | 20.14 | 13.085 | 95.900 | 92.477 | -3.569 | 0.340 |
| 319.260 | 15.05 | 12.323 | 86.850 | 84.765 | -2.400 | 0.360 |
| 319.520 | 15.02 | 12.300 | 87.150 | 84.578 | -2.951 | 0.360 |
| 315.570 | 3.94 | 2.179 | 30.350 | 30.466 | 0.381 | 0.500 |
| 314.990 | 3.82 | 2.089 | 29.820 | 29.975 | 0.520 | 0.510 |
| 314.990 | 5.00 | 3.505 | 37.890 | 38.724 | 2.201 | 0.500 |
| 315.500 | 7.01 | 9.672 | 72.090 | 67.146 | -6.858 | 0.380 |
| 315.580 | 8.20 | 10.588 | 74.540 | 71.427 | -4.177 | 0.380 |
| 315.690 | 8.07 | 10.494 | 73.470 | 70.898 | -3.500 | 0.380 |
| 315.750 | 9.04 | 10.986 | 75.480 | 73.881 | -2.118 | 0.380 |
| 315.860 | 10.05 | 11.365 | 78.170 | 76.514 | -2.118 | 0.370 |
| 316.410 | 13.90 | 12.291 | 86.700 | 84.187 | -2.898 | 0.360 |
| 316.550 | 20.10 | 13.208 | 96.150 | 93.575 | -2.678 | 0.340 |
| 315.530 | 0.18 | 0.069 | 23.070 | 23.316 | 1.068 | 0.660 |
| 316.130 | 0.35 | 0.134 | 23.340 | 23.539 | 0.854 | 1.020 |
| 316.280 | 0.69 | 0.274 | 23.740 | 23.875 | 0.569 | 0.620 |
| 316.400 | 1.38 | 0.576 | 24.410 | 24.643 | 0.955 | 0.600 |
| 316.790 | 2.07 | 0.915 | 25.770 | 25.652 | -0.457 | 0.510 |
| 316.880 | 2.76 | 1.301 | 26.830 | 26.928 | 0.363 | 0.530 |
| 316.990 | 3.45 | 1.759 | 28.620 | 28.700 | 0.279 | 0.510 |
| 317.140 | 4.07 | 2.260 | 30.690 | 31.010 | 1.042 | 0.510 |
| 317.430 | 4.09 | 2.271 | 30.640 | 31.092 | 1.476 | 0.520 |
| 314.630 | 3.75 | 2.038 | 29.330 | 29.697 | 1.252 | 0.520 |
| 315.120 | 4.83 | 3.218 | 37.520 | 36.615 | -2.411 | 0.460 |
| 316.470 | 5.17 | 3.703 | 39.300 | 40.153 | 2.170 | 0.490 |
| 316.550 | 5.18 | 3.715 | 39.270 | 40.236 | 2.460 | 0.490 |
| 316.620 | 5.20 | 3.735 | 39.270 | 40.387 | 2.845 | 0.500 |
| 316.700 | 5.18 | 3.688 | 39.760 | 40.014 | 0.638 | 0.480 |

Data from Prasad et al. [86] (continued)

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 318.680 | 5.72 | 4.692 | 48.430 | 47.775 | -1.353 | 0.450 |
| 318.660 | 5.89 | 5.245 | 52.650 | 52.221 | -0.815 | 0.450 |
| 318.640 | 6.22 | 6.660 | 64.720 | 60.715 | -6.188 | 0.400 |
| 318.630 | 5.52 | 4.193 | 43.080 | 43.756 | 1.569 | 0.480 |
| 318.650 | 5.18 | 3.530 | 38.350 | 38.760 | 1.069 | 0.490 |
| 318.700 | 4.85 | 3.050 | 35.130 | 35.556 | 1.214 | 0.500 |
| 318.740 | 4.49 | 2.630 | 32.300 | 33.087 | 2.437 | 0.520 |
| 318.790 | 4.34 | 2.477 | 31.870 | 32.263 | 1.233 | 0.510 |
| 318.820 | 7.12 | 9.066 | 70.920 | 65.007 | -8.337 | 0.000 |
| 350.490 | 4.39 | 1.936 | 33.690 | 33.424 | -0.789 | 0.510 |
| 350.330 | 4.82 | 2.200 | 34.710 | 34.395 | -0.909 | 0.500 |
| 348.420 | 47.28 | 14.205 | 111.570 | 110.410 | -1.040 | 0.330 |
| 349.530 | 35.02 | 13.299 | 101.820 | 98.684 | -3.080 | 0.340 |
| 349.920 | 45.15 | 14.027 | 111.220 | 108.111 | -2.796 | 0.330 |
| 350.780 | 45.61 | 14.030 | 111.230 | 108.273 | -2.659 | 0.330 |
| 351.160 | 50.19 | 14.293 | 113.720 | 112.085 | -1.438 | 0.330 |
| 351.280 | 54.99 | 14.549 | 117.760 | 115.979 | -1.512 | 0.320 |
| 351.330 | 60.04 | 14.797 | 122.010 | 119.930 | -1.705 | 0.320 |
| 350.600 | 10.06 | 7.241 | 60.600 | 57.277 | -5.484 | 0.410 |
| 350.780 | 10.16 | 7.317 | 60.280 | 57.592 | -4.459 | 0.410 |
| 350.900 | 15.06 | 10.115 | 73.620 | 71.176 | -3.319 | 0.390 |
| 350.910 | 15.05 | 10.111 | 74.100 | 71.158 | -3.970 | 0.390 |
| 350.980 | 20.02 | 11.374 | 82.700 | 80.015 | -3.246 | 0.370 |
| 351.180 | 24.93 | 12.159 | 89.640 | 86.821 | -3.145 | 0.360 |
| 349.170 | 22.96 | 11.970 | 87.560 | 84.843 | -3.103 | 0.360 |
| 349.030 | 25.07 | 12.276 | 90.160 | 87.665 | -2.768 | 0.360 |
| 349.000 | 30.07 | 12.857 | 96.060 | 93.596 | -2.565 | 0.350 |
| 348.990 | 35.32 | 13.344 | 101.890 | 99.151 | -2.688 | 0.340 |
| 349.050 | 40.01 | 13.707 | 106.410 | 103.698 | -2.548 | 0.340 |
| 349.070 | 7.02 | 3.977 | 42.650 | 42.294 | -0.834 | 0.480 |
| 349.070 | 7.19 | 4.151 | 43.350 | 43.163 | -0.431 | 0.480 |
| 349.160 | 6.15 | 3.183 | 38.290 | 38.468 | 0.464 | 0.500 |
| 349.210 | 8.03 | 5.076 | 48.620 | 47.757 | -1.776 | 0.450 |
| 349.310 | 9.03 | 6.266 | 54.480 | 53.223 | -2.307 | 0.440 |
| 350.380 | 7.31 | 4.202 | 43.460 | 43.499 | 0.089 | 0.480 |
| 351.150 | 68.78 | 15.185 | 129.330 | 126.516 | -2.176 | 0.310 |

Table 15. THERMAL CONDUCTIVITY AT ELEVATED PRESSURES (continued)

Data from Prasad et al. [86] (continued)

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 351.210 | 70.08 | 15.236 | 130.580 | 127.441 | -2.404 | 0.310 |
| 349.870 | 0.34 | 0.120 | 28.000 | 28.281 | 1.004 | 1.210 |
| 349.980 | 1.38 | 0.506 | 28.970 | 29.120 | 0.516 | 0.620 |
| 349.990 | 2.07 | 0.789 | 30.000 | 29.809 | -0.637 | 0.530 |
| 350.000 | 2.76 | 1.094 | 30.880 | 30.632 | -0.803 | 0.520 |
| 350.010 | 3.45 | 1.429 | 31.610 | 31.638 | 0.090 | 0.540 |
| 350.020 | 3.79 | 1.608 | 32.140 | 32.220 | 0.250 | 0.540 |
| 350.050 | 4.14 | 1.797 | 32.820 | 32.869 | 0.151 | 0.530 |
| 350.220 | 4.13 | 1.793 | 32.870 | 32.880 | 0.029 | 0.530 |
| 350.140 | 4.48 | 1.995 | 33.660 | 33.593 | -0.199 | 0.520 |
| 350.100 | 4.83 | 2.205 | 34.390 | 34.384 | -0.016 | 0.520 |
| 350.090 | 5.17 | 2.433 | 35.370 | 35.289 | -0.228 | 0.510 |
| 350.090 | 5.43 | 2.606 | 36.300 | 36.005 | -0.813 | 0.500 |
| 350.080 | 5.42 | 2.603 | 35.800 | 35.993 | 0.538 | 0.520 |
| 394.170 | 4.92 | 1.777 | 39.640 | 39.146 | -1.247 | 0.520 |
| 395.900 | 4.98 | 1.789 | 40.580 | 39.445 | -2.796 | 0.490 |
| 396.200 | 4.94 | 1.769 | 40.810 | 39.434 | -3.372 | 0.470 |
| 396.420 | 5.03 | 1.804 | 40.790 | 39.573 | -2.984 | 0.480 |
| 396.730 | 10.04 | 4.318 | 48.560 | 48.794 | 0.482 | 0.500 |
| 397.750 | 14.98 | 6.949 | 59.830 | 60.056 | 0.378 | 0.460 |
| 397.540 | 19.99 | 8.844 | 69.110 | 69.189 | 0.114 | 0.430 |
| 398.330 | 29.99 | 10.890 | 80.670 | 82.359 | 2.093 | 0.400 |
| 397.980 | 33.90 | 11.431 | 84.470 | 86.649 | 2.580 | 0.390 |
| 397.750 | 33.84 | 11.432 | 84.820 | 86.619 | 2.121 | 0.390 |
| 397.660 | 35.04 | 11.579 | 86.250 | 87.867 | 1.874 | 0.390 |
| 397.670 | 45.06 | 12.557 | 95.350 | 97.256 | 1.999 | 0.370 |
| 397.700 | 45.14 | 12.562 | 95.680 | 97.317 | 1.711 | 0.370 |
| 397.750 | 50.04 | 12.937 | 99.810 | 101.457 | 1.650 | 0.360 |
| 397.850 | 59.95 | 13.572 | 107.470 | 109.233 | 1.640 | 0.350 |
| 397.870 | 70.01 | 14.100 | 114.810 | 116.531 | 1.499 | 0.340 |
| 397.960 | 69.81 | 14.088 | 113.770 | 116.370 | 2.285 | 0.340 |
| 397.960 | 40.21 | 12.116 | 91.500 | 92.842 | 1.467 | 0.380 |
| 397.970 | 25.08 | 10.060 | 76.380 | 76.455 | 0.098 | 0.410 |
| 397.980 | 20.08 | 8.849 | 68.860 | 69.273 | 0.600 | 0.430 |
| 397.800 | 15.02 | 6.963 | 60.250 | 60.125 | -0.207 | 0.450 |
| 397.710 | 10.01 | 4.273 | 48.710 | 48.739 | 0.059 | 0.500 |

Table 15. **THERMAL CONDUCTIVITY AT ELEVATED PRESSURES** (continued)

Data from Prasad et al. [86] (continued)

| T<br>K | P<br>MPa | $\rho$<br>$mol \cdot dm^{-3}$ | $\lambda$, expt<br>$mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc<br>$mW \cdot m^{-1} \cdot K^{-1}$ | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 398.210 | 4.73 | 1.668 | 40.940 | 39.449 | -3.643 | 0.470 |
| 398.160 | 4.83 | 1.707 | 40.030 | 39.555 | -1.188 | 0.520 |
| 398.350 | 4.49 | 1.569 | 39.730 | 39.189 | -1.362 | 0.520 |
| 398.350 | 4.18 | 1.443 | 39.300 | 38.840 | -1.172 | 0.530 |
| 398.360 | 4.14 | 1.429 | 39.180 | 38.804 | -0.959 | 0.530 |
| 398.830 | 0.38 | 0.115 | 35.780 | 35.954 | 0.486 | 1.960 |
| 398.880 | 0.69 | 0.212 | 36.190 | 36.132 | -0.159 | 0.570 |
| 398.930 | 1.38 | 0.433 | 36.740 | 36.558 | -0.496 | 0.540 |
| 398.990 | 2.07 | 0.663 | 37.460 | 37.042 | -1.115 | 0.510 |
| 399.030 | 2.76 | 0.905 | 37.910 | 37.589 | -0.848 | 0.540 |
| 399.070 | 3.45 | 1.158 | 38.910 | 38.207 | -1.808 | 0.500 |
| 399.090 | 3.44 | 1.157 | 39.120 | 38.208 | -2.332 | 0.490 |
| 398.080 | 5.15 | 1.842 | 40.320 | 39.941 | -0.940 | 0.530 |
| 397.920 | 5.52 | 2.002 | 41.010 | 40.408 | -1.469 | 0.510 |
| 397.890 | 6.21 | 2.311 | 41.950 | 41.393 | -1.327 | 0.510 |
| 397.870 | 6.90 | 2.634 | 43.050 | 42.488 | -1.306 | 0.510 |
| 500.660 | 4.10 | 1.034 | 55.370 | 55.642 | 0.492 | 0.690 |
| 500.920 | 30.03 | 7.676 | 77.820 | 78.904 | 1.393 | 0.470 |
| 500.300 | 35.15 | 8.546 | 81.790 | 83.291 | 1.836 | 0.450 |
| 499.820 | 40.11 | 9.253 | 87.130 | 87.286 | 0.179 | 0.430 |
| 498.590 | 60.02 | 11.241 | 100.030 | 101.447 | 1.416 | 0.400 |
| 497.380 | 15.70 | 4.362 | 65.500 | 64.553 | -1.446 | 0.500 |
| 497.080 | 10.03 | 2.711 | 59.740 | 59.135 | -1.013 | 0.540 |
| 494.960 | 4.97 | 1.285 | 56.300 | 55.109 | -2.116 | 0.500 |
| 495.720 | 45.01 | 9.932 | 90.730 | 90.941 | 0.233 | 0.420 |
| 495.740 | 50.00 | 10.446 | 94.670 | 94.591 | -0.084 | 0.410 |
| 495.790 | 49.96 | 10.441 | 94.710 | 94.561 | -0.157 | 0.410 |
| 501.150 | 3.74 | 0.939 | 55.170 | 55.545 | 0.680 | 0.740 |
| 500.400 | 65.13 | 11.574 | 103.840 | 104.731 | 0.858 | 0.390 |
| 500.260 | 65.07 | 11.573 | 104.070 | 104.697 | 0.602 | 0.390 |
| 499.930 | 60.27 | 11.233 | 101.130 | 101.610 | 0.474 | 0.390 |
| 499.790 | 55.09 | 10.820 | 97.410 | 98.168 | 0.778 | 0.400 |
| 497.370 | 49.54 | 10.365 | 94.460 | 94.278 | -0.193 | 0.410 |
| 497.100 | 45.10 | 9.911 | 90.930 | 91.033 | 0.113 | 0.420 |
| 497.080 | 40.12 | 9.318 | 87.420 | 87.214 | -0.235 | 0.430 |
| 497.120 | 35.20 | 8.629 | 83.420 | 83.209 | -0.253 | 0.440 |

Table 15. **THERMAL CONDUCTIVITY AT ELEVATED PRESSURES** (continued)

Data from Prasad et al. [86] (continued)

| T K | P MPa | ρ mol•dm⁻³ | λ, expt mW•m⁻¹•K⁻¹ | λ, calc mW•m⁻¹•K⁻¹ | Dev % | wt |
|---|---|---|---|---|---|---|
| 497.170 | 30.15 | 7.787 | 79.080 | 78.816 | -0.334 | 0.450 |
| 497.190 | 25.07 | 6.764 | 74.280 | 74.046 | -0.315 | 0.470 |
| 497.420 | 20.00 | 5.539 | 69.330 | 68.974 | -0.514 | 0.490 |
| 97.400 | 15.01 | 4.164 | 65.160 | 63.858 | -1.998 | 0.490 |
| 497.480 | 10.22 | 2.764 | 60.210 | 59.361 | -1.411 | 0.530 |
| 497.540 | 8.98 | 2.403 | 59.250 | 58.344 | -1.530 | 0.530 |
| 497.590 | 7.06 | 1.854 | 57.890 | 56.915 | -1.685 | 0.520 |
| 498.110 | 6.24 | 1.623 | 57.510 | 56.452 | -1.840 | 0.520 |
| 498.130 | 5.04 | 1.294 | 56.320 | 55.713 | -1.077 | 0.550 |
| 498.200 | 5.11 | 1.311 | 56.720 | 55.764 | -1.686 | 0.520 |
| 498.220 | 5.53 | 1.425 | 57.130 | 56.019 | -1.945 | 0.510 |
| 498.220 | 5.55 | 1.431 | 57.310 | 56.031 | -2.231 | 0.500 |
| 495.660 | 3.88 | 0.987 | 55.710 | 54.621 | -1.956 | 0.490 |
| 495.610 | 4.09 | 1.044 | 55.170 | 54.724 | -0.808 | 0.560 |
| 495.580 | 4.05 | 1.036 | 55.420 | 54.702 | -1.296 | 0.530 |
| 495.540 | 4.88 | 1.260 | 56.510 | 55.162 | -2.386 | 0.480 |
| 495.520 | 0.34 | 0.084 | 54.090 | 53.055 | -1.913 | 0.220 |
| 495.530 | 0.69 | 0.169 | 54.110 | 53.180 | -1.719 | 0.300 |
| 495.540 | 1.38 | 0.340 | 54.350 | 53.443 | -1.668 | 0.400 |
| 495.550 | 2.07 | 0.515 | 54.360 | 53.731 | -1.157 | 0.490 |
| 495.580 | 2.76 | 0.693 | 55.080 | 54.047 | -1.875 | 0.460 |
| 495.600 | 3.45 | 0.873 | 55.220 | 54.387 | -1.509 | 0.500 |
| 495.640 | 3.45 | 0.873 | 55.200 | 54.39 | -1.460 | 0.510 |
| 600.270 | 34.55 | 6.593 | 91.560 | 91.583 | 0.025 | 0.490 |
| 600.350 | 40.24 | 7.366 | 95.140 | 95.075 | -0.068 | 0.470 |
| 600.230 | 40.08 | 7.348 | 94.400 | 94.967 | 0.600 | 0.480 |
| 600.140 | 45.03 | 7.948 | 97.640 | 97.910 | 0.277 | 0.460 |
| 599.760 | 49.76 | 8.468 | 99.930 | 100.624 | 0.694 | 0.460 |
| 599.750 | 50.02 | 8.495 | 99.700 | 100.769 | 1.072 | 0.460 |
| 599.750 | 54.98 | 8.978 | 102.110 | 103.567 | 1.427 | 0.450 |
| 599.790 | 59.95 | 9.416 | 105.180 | 106.307 | 1.072 | 0.440 |
| 599.760 | 62.99 | 9.665 | 106.650 | 107.944 | 1.213 | 0.430 |
| 599.710 | 64.99 | 9.822 | 107.600 | 109.004 | 1.305 | 0.430 |
| 599.630 | 50.04 | 8.499 | 100.050 | 100.770 | 0.720 | 0.450 |
| 599.580 | 35.06 | 6.676 | 92.250 | 91.814 | -0.472 | 0.480 |
| 599.560 | 25.03 | 5.061 | 86.400 | 85.487 | -1.057 | 0.500 |

Data from Prasad et al. [86] (continued)

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 599.520 | 15.04 | 3.128 | 80.630 | 79.434 | -1.483 | 0.530 |
| 599.490 | 10.00 | 2.076 | 77.910 | 76.821 | -1.398 | 0.540 |
| 599.270 | 10.02 | 2.080 | 78.060 | 76.787 | -1.631 | 0.530 |
| 599.320 | 14.99 | 3.120 | 81.050 | 79.375 | -2.066 | 0.510 |
| 599.360 | 10.03 | 2.083 | 77.770 | 76.812 | -1.232 | 0.550 |
| 599.450 | 3.97 | 0.811 | 75.290 | 74.371 | -1.220 | 0.510 |
| 599.240 | 19.93 | 4.111 | 83.530 | 82.259 | -1.522 | 0.510 |
| 597.770 | 6.81 | 1.409 | 76.670 | 75.095 | -2.055 | 0.490 |
| 597.770 | 6.22 | 1.283 | 76.450 | 74.856 | -2.084 | 0.480 |
| 597.770 | 5.54 | 1.140 | 76.560 | 74.595 | -2.566 | 0.450 |
| 597.770 | 4.84 | 0.995 | 76.220 | 74.342 | -2.464 | 0.440 |
| 597.840 | 4.13 | 0.847 | 75.800 | 74.108 | -2.233 | 0.440 |
| 597.900 | 4.14 | 0.849 | 76.080 | 74.122 | -2.573 | 0.420 |

Comparisons based on experimental pressures:

Number of Points [86] 239

AAD% = 1.67 BIAS% = -0.76 RMS% = 2.01
AAD = 1.22 BIAS = -0.74 RMS = 1.43 $mW \cdot m^{-1} \cdot K^{-1}$

Weighted Data:

Number of Points [86] 235

AAD% = 1.58 BIAS% = -0.83 RMS% = 1.75
AAD = 1.19 BIAS = -0.75 RMS = 1.37 $mW \cdot m^{-1} \cdot K^{-1}$

Table 15. **THERMAL CONDUCTIVITY AT ELEVATED PRESSURES** (continued)

**Data from Prasad et al. [86]** (continued)

Comparisons based on experimental densities:

Number of Points [86] 239

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AAD% | = | 1.89 | BIAS% | = | -0.58 | RMS% | = | 2.55 |
| AAD | = | 1.30 | BIAS | = | -0.67 | RMS | = | 1.61 $mW{\bullet}m^{-1}{\bullet}K^{-1}$ |

Weighted Data:

Number of Points [82] 235

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| AAD% | = | 1.78 | BIAS% | = | -0.65 | RMS% | = | 2.32 |
| AAD | = | 1.26 | BIAS | = | -0.68 | RMS | = | 1.54 $mW{\bullet}m^{-1}{\bullet}K^{-1}$ |

**Data from Roder [103]**

| T K | P MPa | $\rho$ $mol{\bullet}dm^{-3}$ | $\lambda$, expt $mW{\bullet}m^{-1}{\bullet}K^{-1}$ | $\lambda$, calc $mW{\bullet}m^{-1}{\bullet}K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 112.472 | 0.72 | 20.882 | 237.280 | 237.668 | 0.164 | 0.240 |
| 112.265 | 0.72 | 20.890 | 237.650 | 237.855 | 0.086 | 0.240 |
| 112.125 | 0.71 | 20.895 | 238.420 | 237.981 | -0.184 | 0.240 |
| 111.929 | 0.71 | 20.902 | 238.520 | 238.158 | -0.152 | 0.240 |
| 112.488 | 14.44 | 21.073 | 244.360 | 244.655 | 0.121 | 0.240 |
| 112.263 | 14.43 | 21.081 | 244.540 | 244.844 | 0.124 | 0.240 |
| 111.945 | 14.43 | 21.092 | 244.550 | 245.111 | 0.230 | 0.240 |
| 111.866 | 14.42 | 21.095 | 246.050 | 245.176 | -0.355 | 0.240 |
| 112.380 | 27.53 | 21.247 | 250.660 | 251.187 | 0.210 | 0.240 |
| 112.271 | 27.52 | 21.250 | 250.830 | 251.269 | 0.175 | 0.240 |
| 112.016 | 27.51 | 21.258 | 251.070 | 251.468 | 0.159 | 0.240 |
| 111.860 | 27.51 | 21.264 | 251.580 | 251.589 | 0.003 | 0.240 |
| 112.368 | 41.11 | 21.411 | 256.640 | 257.662 | 0.398 | 0.230 |
| 112.085 | 41.09 | 21.420 | 256.440 | 257.865 | 0.556 | 0.230 |
| 111.867 | 41.11 | 21.427 | 256.710 | 258.033 | 0.515 | 0.230 |
| 111.688 | 41.09 | 21.433 | 256.980 | 258.161 | 0.460 | 0.230 |
| 112.228 | 54.61 | 21.569 | 261.860 | 263.998 | 0.817 | 0.230 |
| 112.043 | 54.60 | 21.574 | 262.270 | 264.126 | 0.708 | 0.230 |
| 111.958 | 54.59 | 21.577 | 262.800 | 264.180 | 0.525 | 0.230 |
| 111.824 | 54.58 | 21.581 | 262.770 | 264.270 | 0.571 | 0.230 |
| 111.681 | 69.19 | 21.740 | 268.690 | 270.900 | 0.823 | 0.230 |
| 112.147 | 69.19 | 21.727 | 268.530 | 270.598 | 0.770 | 0.230 |
| 112.291 | 69.18 | 21.722 | 268.080 | 270.501 | 0.903 | 0.230 |

Table 15. **THERMAL CONDUCTIVITY AT ELEVATED PRESSURES** (continued)

Data from Roder [103] (continued)

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 111.984 | 69.18 | 21.731 | 268.730 | 270.702 | 0.734 | 0.230 |
| 134.971 | 0.44 | 20.048 | 217.240 | 216.123 | -0.514 | 0.250 |
| 134.640 | 0.44 | 20.060 | 217.700 | 216.446 | -0.576 | 0.250 |
| 134.361 | 0.44 | 20.070 | 217.620 | 216.717 | -0.415 | 0.250 |
| 134.071 | 0.44 | 20.081 | 218.170 | 217.000 | -0.536 | 0.250 |
| 134.854 | 13.90 | 20.287 | 225.580 | 224.378 | -0.533 | 0.240 |
| 134.565 | 13.90 | 20.297 | 225.910 | 224.643 | -0.561 | 0.240 |
| 134.184 | 13.89 | 20.310 | 225.790 | 224.992 | -0.353 | 0.240 |
| 134.078 | 13.89 | 20.314 | 226.670 | 225.086 | -0.699 | 0.240 |
| 134.744 | 27.79 | 20.510 | 233.210 | 232.479 | -0.314 | 0.240 |
| 134.456 | 27.78 | 20.520 | 233.570 | 232.726 | -0.361 | 0.240 |
| 134.246 | 27.78 | 20.527 | 233.950 | 232.906 | -0.446 | 0.240 |
| 134.088 | 27.77 | 20.532 | 234.340 | 233.041 | -0.554 | 0.240 |
| 134.918 | 40.17 | 20.685 | 239.970 | 239.179 | -0.329 | 0.240 |
| 134.690 | 40.16 | 20.692 | 240.010 | 239.363 | -0.270 | 0.240 |
| 134.471 | 40.15 | 20.699 | 240.290 | 239.542 | -0.311 | 0.240 |
| 134.226 | 40.15 | 20.707 | 240.660 | 239.743 | -0.381 | 0.240 |
| 134.401 | 53.22 | 20.878 | 247.020 | 246.569 | -0.182 | 0.240 |
| 134.180 | 53.22 | 20.885 | 247.090 | 246.743 | -0.140 | 0.240 |
| 134.994 | 53.21 | 20.860 | 246.470 | 246.091 | -0.154 | 0.240 |
| 134.748 | 53.20 | 20.868 | 246.770 | 246.283 | -0.197 | 0.240 |
| 134.363 | 66.73 | 21.050 | 253.550 | 253.573 | 0.009 | 0.230 |
| 135.047 | 66.73 | 21.030 | 253.890 | 253.053 | -0.330 | 0.230 |
| 134.838 | 66.73 | 21.036 | 253.060 | 253.211 | 0.060 | 0.230 |
| 134.711 | 66.73 | 21.040 | 253.380 | 253.307 | -0.029 | 0.230 |
| 156.011 | 0.95 | 19.260 | 197.210 | 195.701 | -0.765 | 0.260 |
| 155.629 | 0.95 | 19.275 | 197.660 | 196.078 | -0.800 | 0.250 |
| 155.403 | 0.95 | 19.283 | 197.830 | 196.301 | -0.773 | 0.250 |
| 155.076 | 0.95 | 19.296 | 198.150 | 196.623 | -0.771 | 0.250 |
| 156.240 | 13.36 | 19.521 | 205.470 | 204.084 | -0.675 | 0.250 |
| 155.886 | 13.37 | 19.534 | 205.890 | 204.419 | -0.715 | 0.250 |
| 155.578 | 13.37 | 19.544 | 206.010 | 204.705 | -0.633 | 0.250 |
| 155.271 | 13.37 | 19.556 | 206.550 | 204.997 | -0.752 | 0.250 |
| 156.006 | 27.36 | 19.799 | 214.550 | 213.422 | -0.526 | 0.250 |
| 155.801 | 27.34 | 19.805 | 214.830 | 213.588 | -0.578 | 0.250 |

Table 15. THERMAL CONDUCTIVITY AT ELEVATED PRESSURES (continued)

Data from Roder [103] (continued)

| T K | P MPa | ρ $mol \cdot dm^{-3}$ | λ, expt $mW \cdot m^{-1} \cdot K^{-1}$ | λ, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 155.382 | 27.36 | 19.820 | 215.340 | 213.974 | -0.634 | 0.250 |
| 155.255 | 27.34 | 19.824 | 215.460 | 214.079 | -0.641 | 0.250 |
| 155.870 | 40.84 | 20.037 | 222.500 | 221.863 | -0.286 | 0.240 |
| 155.644 | 40.84 | 20.044 | 223.090 | 222.058 | -0.463 | 0.240 |
| 155.268 | 40.85 | 20.056 | 223.150 | 222.382 | -0.344 | 0.240 |
| 155.129 | 40.87 | 20.061 | 223.450 | 222.508 | -0.422 | 0.240 |
| 156.283 | 53.81 | 20.231 | 229.870 | 229.193 | -0.294 | 0.240 |
| 155.908 | 53.81 | 20.242 | 230.180 | 229.498 | -0.296 | 0.240 |
| 155.688 | 53.81 | 20.248 | 230.560 | 229.677 | -0.383 | 0.240 |
| 155.405 | 53.81 | 20.257 | 230.660 | 229.905 | -0.327 | 0.240 |
| 156.172 | 67.36 | 20.433 | 237.580 | 236.993 | -0.247 | 0.240 |
| 155.796 | 67.36 | 20.443 | 237.700 | 237.288 | -0.173 | 0.240 |
| 155.602 | 67.35 | 20.449 | 238.140 | 237.438 | -0.295 | 0.240 |
| 155.390 | 67.35 | 20.455 | 238.020 | 237.602 | -0.176 | 0.240 |
| 175.465 | 1.02 | 18.493 | 177.140 | 176.685 | -0.257 | 0.270 |
| 175.148 | 1.02 | 18.506 | 177.540 | 176.991 | -0.309 | 0.260 |
| 174.727 | 1.01 | 18.523 | 178.160 | 177.396 | -0.429 | 0.260 |
| 174.391 | 1.01 | 18.537 | 178.520 | 177.722 | -0.447 | 0.260 |
| 175.765 | 13.93 | 18.827 | 187.210 | 186.387 | -0.440 | 0.260 |
| 175.298 | 13.93 | 18.844 | 187.330 | 186.812 | -0.277 | 0.260 |
| 174.912 | 13.92 | 18.858 | 187.700 | 187.162 | -0.287 | 0.260 |
| 174.645 | 13.92 | 18.868 | 188.130 | 187.402 | -0.387 | 0.260 |
| 175.447 | 27.80 | 19.158 | 197.030 | 196.610 | -0.213 | 0.260 |
| 175.218 | 27.79 | 19.165 | 197.260 | 196.808 | -0.229 | 0.260 |
| 174.668 | 27.80 | 19.184 | 197.830 | 197.288 | -0.274 | 0.260 |
| 174.450 | 27.80 | 19.191 | 198.220 | 197.477 | -0.375 | 0.250 |
| 175.339 | 41.32 | 19.435 | 205.910 | 205.777 | -0.064 | 0.250 |
| 174.999 | 41.32 | 19.446 | 206.350 | 206.060 | -0.141 | 0.250 |
| 174.650 | 41.32 | 19.457 | 206.810 | 206.350 | -0.222 | 0.250 |
| 174.355 | 41.31 | 19.466 | 207.170 | 206.591 | -0.279 | 0.250 |
| 175.581 | 53.96 | 19.659 | 213.720 | 213.644 | -0.036 | 0.250 |
| 175.267 | 53.96 | 19.668 | 213.950 | 213.892 | -0.027 | 0.250 |
| 175.004 | 53.95 | 19.676 | 214.260 | 214.102 | -0.074 | 0.250 |
| 174.706 | 53.95 | 19.685 | 214.300 | 214.338 | 0.018 | 0.250 |
| 175.540 | 66.41 | 19.869 | 221.040 | 221.285 | 0.111 | 0.250 |
| 175.276 | 66.40 | 19.877 | 221.360 | 221.486 | 0.057 | 0.250 |

Table 15. **THERMAL CONDUCTIVITY AT ELEVATED PRESSURES** (continued)

Data from Roder [103] (continued)

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 174.808 | 66.38 | 19.889 | 221.670 | 221.838 | 0.076 | 0.240 |
| 174.635 | 66.38 | 19.894 | 222.020 | 221.971 | -0.022 | 0.240 |
| 195.294 | 0.95 | 17.661 | 157.720 | 157.669 | -0.032 | 0.280 |
| 194.868 | 0.95 | 17.679 | 158.030 | 158.069 | 0.025 | 0.280 |
| 194.550 | 0.95 | 17.693 | 158.490 | 158.368 | -0.077 | 0.280 |
| 194.219 | 0.95 | 17.707 | 158.920 | 158.678 | -0.152 | 0.280 |
| 195.460 | 14.52 | 18.110 | 169.380 | 169.280 | -0.059 | 0.270 |
| 195.134 | 14.52 | 18.122 | 170.050 | 169.564 | -0.286 | 0.270 |
| 194.717 | 14.52 | 18.138 | 170.510 | 169.929 | -0.341 | 0.270 |
| 194.349 | 14.52 | 18.152 | 170.750 | 170.249 | -0.293 | 0.270 |
| 195.334 | 27.38 | 18.472 | 179.820 | 179.442 | -0.210 | 0.260 |
| 194.895 | 27.37 | 18.487 | 180.350 | 179.800 | -0.305 | 0.260 |
| 194.640 | 27.37 | 18.496 | 180.520 | 180.008 | -0.283 | 0.260 |
| 194.243 | 27.36 | 18.509 | 180.980 | 180.334 | -0.357 | 0.260 |
| 195.664 | 39.33 | 18.751 | 187.980 | 187.850 | -0.069 | 0.260 |
| 195.269 | 39.33 | 18.763 | 188.600 | 188.161 | -0.233 | 0.260 |
| 194.871 | 39.33 | 18.776 | 188.880 | 188.479 | -0.212 | 0.260 |
| 194.474 | 39.32 | 18.788 | 189.340 | 188.791 | -0.290 | 0.260 |
| 195.893 | 53.39 | 19.045 | 197.320 | 197.312 | -0.004 | 0.260 |
| 195.491 | 53.39 | 19.057 | 197.620 | 197.621 | 0.000 | 0.260 |
| 195.045 | 53.39 | 19.071 | 198.090 | 197.962 | -0.064 | 0.260 |
| 194.639 | 53.38 | 19.083 | 198.420 | 198.270 | -0.076 | 0.260 |
| 195.695 | 67.21 | 19.316 | 205.940 | 206.433 | 0.239 | 0.250 |
| 195.277 | 67.21 | 19.328 | 206.100 | 206.742 | 0.312 | 0.250 |
| 194.985 | 67.21 | 19.336 | 206.460 | 206.961 | 0.243 | 0.250 |
| 194.585 | 67.22 | 19.347 | 206.920 | 207.262 | 0.165 | 0.250 |
| 195.273 | 0.93 | 17.661 | 157.020 | 157.667 | 0.412 | 0.280 |
| 194.811 | 0.93 | 17.681 | 157.550 | 158.102 | 0.350 | 0.280 |
| 194.391 | 0.93 | 17.699 | 157.940 | 158.497 | 0.353 | 0.280 |
| 194.165 | 0.93 | 17.709 | 158.320 | 158.710 | 0.246 | 0.280 |
| 195.518 | 11.51 | 18.015 | 166.330 | 166.742 | 0.248 | 0.270 |
| 195.096 | 11.51 | 18.031 | 166.770 | 167.114 | 0.207 | 0.270 |
| 194.602 | 11.50 | 18.050 | 167.400 | 167.543 | 0.086 | 0.270 |
| 194.370 | 11.50 | 18.059 | 167.410 | 167.745 | 0.200 | 0.270 |
| 195.405 | 20.84 | 18.295 | 174.220 | 174.376 | 0.089 | 0.270 |
| 195.011 | 20.84 | 18.309 | 174.630 | 174.708 | 0.045 | 0.270 |

Table 15. **THERMAL CONDUCTIVITY AT ELEVATED PRESSURES** (continued)

**Data from Roder [103]** (continued)

| T<br>K | P<br>MPa | $\rho$<br>$mol \cdot dm^{-3}$ | $\lambda$, expt<br>$mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc<br>$mW \cdot m^{-1} \cdot K^{-1}$ | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 194.625 | 20.84 | 18.323 | 175.140 | 175.037 | -0.059 | 0.270 |
| 194.297 | 20.83 | 18.335 | 175.180 | 175.311 | 0.075 | 0.270 |
| 195.695 | 29.52 | 18.514 | 180.630 | 180.743 | 0.062 | 0.260 |
| 195.272 | 29.52 | 18.529 | 180.990 | 181.087 | 0.054 | 0.260 |
| 194.914 | 29.51 | 18.541 | 181.510 | 181.376 | -0.074 | 0.260 |
| 194.507 | 29.50 | 18.554 | 182.010 | 181.705 | -0.167 | 0.260 |
| 215.119 | 1.07 | 16.766 | 139.230 | 139.512 | 0.203 | 0.290 |
| 214.672 | 1.07 | 16.787 | 139.350 | 139.916 | 0.406 | 0.290 |
| 214.330 | 1.07 | 16.804 | 139.920 | 140.224 | 0.218 | 0.290 |
| 213.891 | 1.07 | 16.824 | 140.070 | 140.621 | 0.393 | 0.290 |
| 215.378 | 14.22 | 17.327 | 151.840 | 152.158 | 0.209 | 0.280 |
| 214.926 | 14.22 | 17.345 | 152.420 | 152.528 | 0.071 | 0.280 |
| 214.510 | 14.22 | 17.361 | 152.760 | 152.868 | 0.071 | 0.280 |
| 214.110 | 14.22 | 17.377 | 152.990 | 153.196 | 0.135 | 0.280 |
| 215.508 | 27.59 | 17.778 | 163.120 | 163.458 | 0.207 | 0.280 |
| 215.106 | 27.59 | 17.792 | 163.720 | 163.766 | 0.028 | 0.270 |
| 214.652 | 27.59 | 17.808 | 164.040 | 164.115 | 0.046 | 0.270 |
| 214.335 | 27.59 | 17.819 | 164.450 | 164.362 | -0.054 | 0.270 |
| 215.396 | 40.92 | 18.159 | 173.570 | 173.860 | 0.167 | 0.270 |
| 215.020 | 40.93 | 18.172 | 173.430 | 174.144 | 0.412 | 0.270 |
| 214.622 | 40.93 | 18.184 | 174.140 | 174.441 | 0.173 | 0.270 |
| 214.260 | 40.93 | 18.196 | 174.470 | 174.713 | 0.139 | 0.270 |
| 215.637 | 53.96 | 18.472 | 182.530 | 183.068 | 0.295 | 0.260 |
| 215.290 | 53.96 | 18.482 | 182.750 | 183.317 | 0.310 | 0.260 |
| 214.860 | 53.96 | 18.495 | 183.370 | 183.623 | 0.138 | 0.260 |
| 214.434 | 53.95 | 18.507 | 183.610 | 183.924 | 0.171 | 0.260 |
| 215.446 | 67.54 | 18.772 | 191.850 | 192.402 | 0.287 | 0.260 |
| 214.923 | 67.54 | 18.787 | 192.110 | 192.767 | 0.342 | 0.260 |
| 214.749 | 67.54 | 18.792 | 192.330 | 192.889 | 0.291 | 0.260 |
| 214.269 | 67.54 | 18.805 | 192.300 | 193.221 | 0.479 | 0.260 |
| 226.278 | 0.28 | 0.158 | 13.710 | 13.368 | -2.497 | 0.350 |
| 225.462 | 0.28 | 0.159 | 13.580 | 13.294 | -2.106 | 0.360 |
| 224.462 | 0.28 | 0.160 | 13.470 | 13.204 | -1.973 | 0.370 |
| 223.753 | 0.28 | 0.160 | 13.480 | 13.141 | -2.516 | 0.350 |
| 223.604 | 0.40 | 0.234 | 13.590 | 13.381 | -1.539 | 0.400 |

Table 15. **THERMAL CONDUCTIVITY AT ELEVATED PRESSURES** (continued)

Data from Roder [103] (continued)

| T<br>K | P<br>MPa | $\rho$<br>$mol \cdot dm^{-3}$ | $\lambda$, expt<br>$mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc<br>$mW \cdot m^{-1} \cdot K^{-1}$ | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 226.046 | 0.41 | 0.234 | 13.880 | 13.602 | -2.000 | 0.390 |
| 225.279 | 0.41 | 0.237 | 13.800 | 13.543 | -1.865 | 0.390 |
| 224.256 | 0.41 | 0.239 | 13.730 | 13.459 | -1.973 | 0.390 |
| 232.979 | 0.27 | 0.146 | 14.110 | 13.964 | -1.038 | 0.400 |
| 235.295 | 0.27 | 0.144 | 14.460 | 14.183 | -1.916 | 0.360 |
| 234.388 | 0.27 | 0.145 | 14.330 | 14.098 | -1.616 | 0.380 |
| 233.661 | 0.27 | 0.146 | 14.250 | 14.030 | -1.546 | 0.380 |
| 235.876 | 0.41 | 0.223 | 14.740 | 14.490 | -1.693 | 0.400 |
| 235.098 | 0.41 | 0.226 | 14.630 | 14.424 | -1.405 | 0.410 |
| 234.239 | 0.42 | 0.229 | 14.510 | 14.352 | -1.092 | 0.420 |
| 233.532 | 0.42 | 0.231 | 14.460 | 14.291 | -1.169 | 0.420 |
| 235.696 | 0.60 | 0.342 | 15.060 | 14.874 | -1.238 | 0.430 |
| 234.802 | 0.61 | 0.347 | 14.960 | 14.806 | -1.032 | 0.430 |
| 234.098 | 0.61 | 0.350 | 14.890 | 14.752 | -0.924 | 0.440 |
| 233.468 | 0.61 | 0.354 | 14.810 | 14.708 | -0.686 | 0.440 |
| 235.623 | 1.74 | 15.769 | 121.040 | 122.177 | 0.940 | 0.310 |
| 235.120 | 1.74 | 15.796 | 121.560 | 122.612 | 0.866 | 0.310 |
| 234.688 | 1.74 | 15.819 | 121.800 | 122.986 | 0.974 | 0.310 |
| 235.837 | 14.81 | 16.517 | 135.840 | 136.557 | 0.528 | 0.300 |
| 235.390 | 14.81 | 16.535 | 136.100 | 136.890 | 0.581 | 0.300 |
| 234.896 | 14.81 | 16.556 | 136.450 | 137.265 | 0.597 | 0.290 |
| 234.395 | 14.79 | 16.576 | 136.310 | 137.634 | 0.972 | 0.300 |
| 236.015 | 29.75 | 17.127 | 149.320 | 150.123 | 0.538 | 0.290 |
| 235.493 | 29.75 | 17.145 | 149.830 | 150.489 | 0.440 | 0.280 |
| 235.039 | 29.74 | 17.161 | 149.970 | 150.806 | 0.558 | 0.280 |
| 234.575 | 29.74 | 17.177 | 150.370 | 151.131 | 0.506 | 0.280 |
| 235.715 | 46.69 | 17.678 | 163.100 | 163.897 | 0.488 | 0.280 |
| 235.230 | 46.68 | 17.692 | 163.140 | 164.218 | 0.660 | 0.280 |
| 234.817 | 46.68 | 17.705 | 163.440 | 164.493 | 0.644 | 0.280 |
| 234.553 | 46.67 | 17.713 | 163.340 | 164.666 | 0.812 | 0.280 |
| 235.860 | 67.10 | 18.197 | 177.020 | 178.478 | 0.824 | 0.270 |
| 235.408 | 67.09 | 18.209 | 177.300 | 178.765 | 0.826 | 0.270 |
| 235.000 | 67.10 | 18.221 | 177.760 | 179.029 | 0.714 | 0.270 |
| 234.578 | 67.10 | 18.233 | 178.150 | 179.302 | 0.646 | 0.270 |
| 246.118 | 0.29 | 0.150 | 15.480 | 15.281 | -1.289 | 0.400 |
| 245.283 | 0.29 | 0.150 | 15.370 | 15.197 | -1.126 | 0.400 |

Table 15. **THERMAL CONDUCTIVITY AT ELEVATED PRESSURES** (continued)

Data from Roder [103] (continued)

| T<br>K | P<br>MPa | $\rho$<br>$mol \cdot dm^{-3}$ | $\lambda$, expt<br>$mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc<br>$mW \cdot m^{-1} \cdot K^{-1}$ | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 244.378 | 0.29 | 0.151 | 15.250 | 15.107 | -0.939 | 0.410 |
| 243.664 | 0.30 | 0.152 | 15.250 | 15.038 | -1.393 | 0.390 |
| 245.875 | 0.48 | 0.253 | 15.780 | 15.568 | -1.344 | 0.420 |
| 245.065 | 0.48 | 0.254 | 15.530 | 15.490 | -0.259 | 0.470 |
| 244.183 | 0.48 | 0.255 | 15.580 | 15.405 | -1.121 | 0.430 |
| 243.466 | 0.48 | 0.256 | 15.410 | 15.337 | -0.474 | 0.450 |
| 245.735 | 0.63 | 0.342 | 15.900 | 15.839 | -0.385 | 0.460 |
| 244.967 | 0.64 | 0.345 | 15.820 | 15.774 | -0.292 | 0.470 |
| 244.163 | 0.64 | 0.350 | 15.760 | 15.710 | -0.316 | 0.460 |
| 243.571 | 0.65 | 0.353 | 15.690 | 15.665 | -0.162 | 0.470 |
| 253.199 | 0.31 | 0.153 | 16.100 | 16.025 | -0.466 | 0.450 |
| 255.368 | 0.31 | 0.151 | 16.300 | 16.251 | -0.301 | 0.460 |
| 254.535 | 0.31 | 0.152 | 16.290 | 16.164 | -0.774 | 0.430 |
| 253.732 | 0.31 | 0.152 | 16.140 | 16.080 | -0.370 | 0.460 |
| 255.761 | 0.71 | 0.367 | 17.010 | 16.934 | -0.449 | 0.470 |
| 254.898 | 0.71 | 0.368 | 16.930 | 16.850 | -0.474 | 0.470 |
| 254.158 | 0.71 | 0.370 | 16.840 | 16.778 | -0.366 | 0.470 |
| 253.565 | 0.71 | 0.371 | 16.720 | 16.721 | 0.008 | 0.480 |
| 253.366 | 1.08 | 0.607 | 17.500 | 17.517 | 0.096 | 0.480 |
| 255.373 | 1.08 | 0.601 | 17.690 | 17.688 | -0.013 | 0.480 |
| 254.680 | 1.09 | 0.605 | 17.650 | 17.637 | -0.071 | 0.480 |
| 253.937 | 1.09 | 0.610 | 17.570 | 17.584 | 0.079 | 0.480 |
| 254.449 | 2.68 | 14.756 | 106.450 | 107.504 | 0.991 | 0.320 |
| 253.940 | 2.67 | 14.787 | 106.960 | 107.918 | 0.896 | 0.320 |
| 253.325 | 2.66 | 14.825 | 107.290 | 108.421 | 1.054 | 0.320 |
| 252.902 | 2.65 | 14.850 | 107.310 | 108.760 | 1.351 | 0.320 |
| 254.110 | 12.53 | 15.581 | 119.720 | 120.672 | 0.795 | 0.310 |
| 253.594 | 12.53 | 15.605 | 120.220 | 121.037 | 0.679 | 0.310 |
| 253.101 | 12.52 | 15.628 | 120.810 | 121.384 | 0.475 | 0.310 |
| 252.573 | 12.52 | 15.653 | 120.850 | 121.766 | 0.758 | 0.310 |
| 254.403 | 20.23 | 16.019 | 127.990 | 128.731 | 0.579 | 0.300 |
| 253.858 | 20.22 | 16.041 | 128.230 | 129.093 | 0.673 | 0.300 |
| 253.388 | 20.23 | 16.061 | 128.610 | 129.412 | 0.623 | 0.300 |
| 252.994 | 20.22 | 16.076 | 129.210 | 129.674 | 0.359 | 0.300 |
| 254.159 | 33.11 | 16.616 | 140.450 | 140.933 | 0.344 | 0.290 |
| 253.660 | 33.11 | 16.634 | 140.540 | 141.249 | 0.504 | 0.290 |

Data from Roder [103] (continued)

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 253.187 | 33.11 | 16.650 | 140.810 | 141.549 | 0.525 | 0.290 |
| 253.031 | 33.12 | 16.656 | 141.070 | 141.652 | 0.413 | 0.290 |
| 254.116 | 48.19 | 17.154 | 152.680 | 153.354 | 0.442 | 0.280 |
| 253.881 | 48.19 | 17.162 | 153.050 | 153.498 | 0.293 | 0.280 |
| 253.385 | 48.19 | 17.177 | 153.260 | 153.799 | 0.352 | 0.280 |
| 253.005 | 48.19 | 17.189 | 153.350 | 154.025 | 0.440 | 0.280 |
| 254.209 | 67.25 | 17.696 | 166.120 | 167.367 | 0.750 | 0.280 |
| 253.703 | 67.25 | 17.710 | 166.460 | 167.662 | 0.722 | 0.270 |
| 253.193 | 67.25 | 17.724 | 166.700 | 167.961 | 0.756 | 0.270 |
| 252.879 | 67.25 | 17.733 | 166.920 | 168.145 | 0.734 | 0.270 |
| 265.102 | 0.25 | 0.116 | 17.310 | 17.216 | -0.542 | 0.440 |
| 264.337 | 0.25 | 0.117 | 17.220 | 17.132 | -0.511 | 0.440 |
| 263.542 | 0.25 | 0.117 | 17.100 | 17.045 | -0.323 | 0.460 |
| 262.977 | 0.25 | 0.117 | 17.060 | 16.983 | -0.451 | 0.450 |
| 265.752 | 0.48 | 0.231 | 17.570 | 17.599 | 0.167 | 0.510 |
| 264.908 | 0.48 | 0.231 | 17.590 | 17.509 | -0.462 | 0.470 |
| 264.097 | 0.48 | 0.232 | 17.460 | 17.422 | -0.217 | 0.480 |
| 263.393 | 0.48 | 0.233 | 17.440 | 17.347 | -0.532 | 0.460 |
| 265.436 | 0.85 | 0.429 | 18.190 | 18.149 | -0.226 | 0.490 |
| 264.620 | 0.85 | 0.431 | 18.060 | 18.067 | 0.039 | 0.500 |
| 263.885 | 0.85 | 0.433 | 17.960 | 17.994 | 0.188 | 0.500 |
| 263.258 | 0.85 | 0.434 | 17.880 | 17.932 | 0.289 | 0.500 |
| 265.203 | 1.15 | 0.608 | 18.640 | 18.707 | 0.359 | 0.500 |
| 264.354 | 1.16 | 0.612 | 18.580 | 18.634 | 0.292 | 0.500 |
| 263.693 | 1.16 | 0.617 | 18.520 | 18.581 | 0.331 | 0.500 |
| 263.140 | 1.16 | 0.621 | 18.460 | 18.539 | 0.427 | 0.500 |
| 264.825 | 1.52 | 0.861 | 19.610 | 19.612 | 0.011 | 0.490 |
| 264.132 | 1.52 | 0.867 | 19.590 | 19.570 | -0.100 | 0.480 |
| 263.478 | 1.53 | 0.873 | 19.490 | 19.536 | 0.236 | 0.490 |
| 262.955 | 1.53 | 0.880 | 19.430 | 19.514 | 0.434 | 0.490 |
| 275.153 | 0.33 | 0.149 | 18.420 | 18.444 | 0.133 | 0.530 |
| 274.297 | 0.33 | 0.150 | 18.380 | 18.347 | -0.180 | 0.490 |
| 273.611 | 0.33 | 0.150 | 18.280 | 18.269 | -0.061 | 0.500 |
| 273.020 | 0.33 | 0.150 | 18.010 | 18.202 | 1.066 | 0.730 |
| 275.662 | 0.70 | 0.328 | 19.010 | 18.982 | -0.145 | 0.500 |
| 274.744 | 0.70 | 0.329 | 18.870 | 18.882 | 0.063 | 0.510 |

Table 15. **THERMAL CONDUCTIVITY AT ELEVATED PRESSURES** (continued)

**Data from Roder [103]** (continued)

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 274.038 | 0.70 | 0.330 | 18.790 | 18.805 | 0.079 | 0.510 |
| 273.395 | 0.70 | 0.331 | 18.700 | 18.735 | 0.187 | 0.520 |
| 275.327 | 1.04 | 0.508 | 19.520 | 19.473 | -0.239 | 0.490 |
| 274.544 | 1.04 | 0.510 | 19.400 | 19.393 | -0.037 | 0.500 |
| 273.897 | 1.04 | 0.512 | 19.230 | 19.327 | 0.503 | 0.520 |
| 273.274 | 1.04 | 0.514 | 19.160 | 19.263 | 0.538 | 0.520 |
| 275.168 | 1.30 | 0.660 | 19.890 | 19.942 | 0.260 | 0.510 |
| 274.374 | 1.30 | 0.665 | 19.840 | 19.872 | 0.162 | 0.500 |
| 273.772 | 1.31 | 0.674 | 19.760 | 19.836 | 0.384 | 0.510 |
| 273.259 | 1.32 | 0.678 | 19.710 | 19.796 | 0.437 | 0.510 |
| 275.682 | 1.61 | 0.855 | 20.650 | 20.679 | 0.140 | 0.500 |
| 274.976 | 1.61 | 0.861 | 20.590 | 20.631 | 0.198 | 0.500 |
| 274.238 | 1.62 | 0.869 | 20.490 | 20.584 | 0.458 | 0.500 |
| 273.649 | 1.62 | 0.874 | 20.440 | 20.539 | 0.487 | 0.500 |
| 275.238 | 2.06 | 1.196 | 22.120 | 22.045 | -0.337 | 0.480 |
| 274.610 | 2.06 | 1.204 | 22.170 | 22.029 | -0.637 | 0.480 |
| 273.904 | 2.07 | 1.214 | 22.110 | 22.012 | -0.444 | 0.480 |
| 273.369 | 2.07 | 1.223 | 22.060 | 22.007 | -0.239 | 0.480 |
| 276.523 | 4.96 | 13.531 | 92.360 | 93.433 | 1.161 | 0.350 |
| 275.924 | 4.96 | 13.577 | 92.740 | 93.906 | 1.258 | 0.340 |
| 275.201 | 4.96 | 13.631 | 93.560 | 94.480 | 0.983 | 0.340 |
| 274.611 | 4.96 | 13.675 | 93.960 | 94.948 | 1.052 | 0.340 |
| 274.197 | 4.96 | 13.706 | 94.370 | 95.277 | 0.961 | 0.340 |
| 276.148 | 11.79 | 14.419 | 103.740 | 104.632 | 0.860 | 0.330 |
| 275.546 | 11.79 | 14.451 | 104.070 | 105.029 | 0.921 | 0.330 |
| 274.955 | 11.79 | 14.483 | 104.550 | 105.421 | 0.833 | 0.330 |
| 274.440 | 11.79 | 14.510 | 105.030 | 105.760 | 0.695 | 0.330 |
| 275.840 | 19.38 | 15.057 | 113.520 | 114.185 | 0.586 | 0.320 |
| 275.289 | 19.38 | 15.082 | 113.810 | 114.520 | 0.623 | 0.320 |
| 274.798 | 19.38 | 15.103 | 114.230 | 114.815 | 0.512 | 0.320 |
| 274.335 | 19.38 | 15.124 | 114.550 | 115.096 | 0.476 | 0.320 |
| 274.466 | 32.56 | 15.872 | 128.020 | 128.325 | 0.238 | 0.300 |
| 276.141 | 32.56 | 15.812 | 126.810 | 127.392 | 0.459 | 0.310 |
| 275.511 | 32.56 | 15.835 | 127.240 | 127.742 | 0.394 | 0.310 |

Table 15. **THERMAL CONDUCTIVITY AT ELEVATED PRESSURES** (continued)

Data from Roder [103] (continued)

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 274.956 | 32.56 | 15.854 | 127.620 | 128.049 | 0.336 | 0.310 |
| 276.942 | 48.70 | 16.470 | 140.240 | 140.849 | 0.434 | 0.290 |
| 276.326 | 48.70 | 16.489 | 140.600 | 141.174 | 0.408 | 0.290 |
| 275.745 | 48.70 | 16.507 | 140.850 | 141.480 | 0.448 | 0.290 |
| 275.265 | 48.70 | 16.521 | 141.120 | 141.734 | 0.435 | 0.290 |
| 277.211 | 65.59 | 17.021 | 152.810 | 153.585 | 0.507 | 0.290 |
| 276.677 | 65.59 | 17.035 | 153.200 | 153.859 | 0.430 | 0.290 |
| 276.110 | 65.62 | 17.052 | 153.450 | 154.169 | 0.469 | 0.280 |
| 275.551 | 65.62 | 17.067 | 153.750 | 154.457 | 0.460 | 0.280 |
| 275.160 | 65.62 | 17.078 | 154.230 | 154.662 | 0.280 | 0.280 |
| 286.164 | 0.25 | 0.106 | 19.600 | 19.642 | 0.217 | 0.580 |
| 285.222 | 0.25 | 0.106 | 19.530 | 19.529 | -0.003 | 0.520 |
| 284.404 | 0.25 | 0.107 | 19.370 | 19.431 | 0.317 | 0.600 |
| 283.648 | 0.25 | 0.108 | 19.330 | 19.342 | 0.064 | 0.540 |
| 283.344 | 0.82 | 0.377 | 19.910 | 20.008 | 0.493 | 0.540 |
| 285.524 | 0.82 | 0.374 | 20.190 | 20.254 | 0.319 | 0.540 |
| 284.734 | 0.82 | 0.375 | 20.030 | 20.165 | 0.673 | 0.560 |
| 284.032 | 0.82 | 0.376 | 20.100 | 20.086 | -0.072 | 0.510 |
| 283.715 | 1.45 | 0.716 | 20.810 | 21.068 | 1.240 | 0.550 |
| 285.881 | 1.45 | 0.707 | 21.160 | 21.285 | 0.590 | 0.530 |
| 285.110 | 1.45 | 0.711 | 21.120 | 21.209 | 0.422 | 0.520 |
| 284.391 | 1.45 | 0.714 | 21.030 | 21.137 | 0.509 | 0.520 |
| 286.150 | 2.19 | 1.187 | 23.010 | 23.062 | 0.226 | 0.500 |
| 285.324 | 2.19 | 1.196 | 22.980 | 23.014 | 0.146 | 0.500 |
| 284.054 | 2.19 | 1.208 | 22.920 | 22.938 | 0.081 | 0.500 |
| 283.033 | 2.19 | 1.219 | 22.740 | 22.885 | 0.638 | 0.510 |
| 284.680 | 2.19 | 1.204 | 22.880 | 22.981 | 0.443 | 0.500 |
| 285.413 | 2.78 | 1.712 | 25.650 | 25.559 | -0.355 | 0.480 |
| 284.073 | 2.78 | 1.741 | 25.850 | 25.644 | -0.797 | 0.470 |
| 286.061 | 2.78 | 1.699 | 25.620 | 25.528 | -0.360 | 0.480 |
| 284.671 | 2.78 | 1.728 | 25.730 | 25.603 | -0.495 | 0.480 |
| 296.023 | 0.29 | 0.120 | 20.800 | 20.893 | 0.447 | 0.660 |
| 295.044 | 0.29 | 0.121 | 20.680 | 20.771 | 0.441 | 0.650 |
| 294.331 | 0.29 | 0.121 | 20.450 | 20.683 | 1.139 | 1.370 |
| 293.565 | 0.29 | 0.121 | 20.460 | 20.588 | 0.627 | 0.730 |
| 296.326 | 0.86 | 0.373 | 21.450 | 21.556 | 0.496 | 0.560 |

Table 15. **THERMAL CONDUCTIVITY AT ELEVATED PRESSURES** (continued)

**Data from Roder [103]** (continued)

| T<br>K | P<br>MPa | $\rho$<br>$mol \cdot dm^{-3}$ | $\lambda$, expt<br>$mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc<br>$mW \cdot m^{-1} \cdot K^{-1}$ | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 295.392 | 0.86 | 0.374 | 21.310 | 21.445 | 0.635 | 0.570 |
| 294.709 | 0.86 | 0.375 | 21.320 | 21.364 | 0.208 | 0.540 |
| 293.982 | 0.86 | 0.376 | 21.200 | 21.278 | 0.370 | 0.550 |
| 295.892 | 1.38 | 0.633 | 22.080 | 22.228 | 0.668 | 0.550 |
| 295.161 | 1.38 | 0.639 | 21.990 | 22.156 | 0.755 | 0.550 |
| 294.429 | 1.38 | 0.641 | 21.940 | 22.076 | 0.618 | 0.540 |
| 293.742 | 1.39 | 0.645 | 21.680 | 22.007 | 1.508 | 0.580 |
| 293.441 | 2.12 | 1.078 | 23.220 | 23.410 | 0.818 | 0.520 |
| 295.410 | 2.12 | 1.066 | 23.410 | 23.585 | 0.749 | 0.530 |
| 294.658 | 2.12 | 1.072 | 23.350 | 23.525 | 0.750 | 0.520 |
| 294.060 | 2.13 | 1.078 | 23.280 | 23.479 | 0.854 | 0.530 |
| 295.407 | 2.97 | 1.705 | 26.210 | 26.309 | 0.376 | 0.500 |
| 294.702 | 2.97 | 1.721 | 26.320 | 26.329 | 0.035 | 0.490 |
| 294.072 | 2.97 | 1.735 | 26.210 | 26.344 | 0.513 | 0.500 |
| 293.616 | 2.98 | 1.745 | 26.400 | 26.361 | -0.148 | 0.490 |
| 293.665 | 3.51 | 2.364 | 30.670 | 30.308 | -1.181 | 0.470 |
| 294.579 | 3.51 | 2.326 | 30.270 | 30.027 | -0.803 | 0.470 |
| 294.115 | 3.51 | 2.345 | 30.400 | 30.163 | -0.779 | 0.470 |
| 295.195 | 3.51 | 2.301 | 30.020 | 29.863 | -0.522 | 0.480 |
| 296.227 | 0.31 | 0.129 | 20.830 | 20.940 | 0.530 | 0.680 |
| 295.398 | 0.31 | 0.130 | 20.630 | 20.837 | 1.005 | 0.980 |
| 294.659 | 0.31 | 0.130 | 20.600 | 20.746 | 0.708 | 0.750 |
| 293.906 | 0.31 | 0.131 | 20.510 | 20.653 | 0.696 | 0.740 |
| 293.702 | 0.84 | 0.370 | 21.160 | 21.226 | 0.314 | 0.550 |
| 295.810 | 0.84 | 0.366 | 21.390 | 21.476 | 0.404 | 0.560 |
| 295.069 | 0.84 | 0.367 | 21.270 | 21.388 | 0.556 | 0.570 |
| 294.373 | 0.84 | 0.369 | 21.150 | 21.306 | 0.736 | 0.580 |
| 293.470 | 1.36 | 0.633 | 21.740 | 21.939 | 0.915 | 0.550 |
| 295.500 | 1.36 | 0.627 | 22.050 | 22.162 | 0.510 | 0.540 |
| 294.790 | 1.36 | 0.629 | 21.850 | 22.084 | 1.070 | 0.560 |
| 294.083 | 1.36 | 0.631 | 21.890 | 22.006 | 0.530 | 0.540 |
| 293.755 | 2.14 | 1.092 | 23.260 | 23.499 | 1.029 | 0.530 |
| 295.763 | 2.15 | 1.079 | 23.470 | 23.672 | 0.860 | 0.530 |
| 294.979 | 2.15 | 1.084 | 23.430 | 23.605 | 0.746 | 0.520 |
| 294.412 | 2.15 | 1.088 | 23.460 | 23.557 | 0.412 | 0.520 |
| 293.954 | 2.92 | 1.690 | 25.940 | 26.108 | 0.648 | 0.500 |

Table 15. **THERMAL CONDUCTIVITY AT ELEVATED PRESSURES** (continued)

Data from Roder [103] (continued)

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 295.783 | 2.92 | 1.660 | 25.930 | 26.117 | 0.722 | 0.510 |
| 295.168 | 2.92 | 1.670 | 25.990 | 26.111 | 0.467 | 0.500 |
| 294.546 | 2.92 | 1.681 | 25.790 | 26.113 | 1.252 | 0.510 |
| 295.866 | 3.39 | 2.128 | 28.720 | 28.726 | 0.020 | 0.490 |
| 295.244 | 3.39 | 2.148 | 28.820 | 28.817 | -0.010 | 0.480 |
| 294.681 | 3.39 | 2.165 | 28.830 | 28.909 | 0.275 | 0.490 |
| 294.168 | 3.39 | 2.184 | 29.010 | 29.011 | 0.002 | 0.480 |
| 295.599 | 5.51 | 11.862 | 78.770 | 78.971 | 0.255 | 0.370 |
| 295.240 | 5.51 | 11.904 | 79.180 | 79.276 | 0.122 | 0.370 |
| 294.776 | 5.50 | 11.959 | 79.390 | 79.672 | 0.355 | 0.370 |
| 294.211 | 5.50 | 12.024 | 79.980 | 80.156 | 0.220 | 0.370 |
| 293.548 | 5.50 | 12.100 | 80.400 | 80.724 | 0.403 | 0.370 |
| 296.074 | 11.96 | 13.283 | 91.600 | 92.312 | 0.777 | 0.350 |
| 295.642 | 11.97 | 13.310 | 91.770 | 92.576 | 0.879 | 0.350 |
| 294.974 | 11.97 | 13.352 | 92.020 | 92.985 | 1.049 | 0.350 |
| 294.359 | 11.97 | 13.390 | 92.210 | 93.358 | 1.244 | 0.350 |
| 293.856 | 11.97 | 13.421 | 92.790 | 93.667 | 0.946 | 0.350 |
| 296.312 | 18.85 | 14.070 | 101.340 | 101.935 | 0.587 | 0.340 |
| 295.386 | 18.85 | 14.114 | 101.670 | 102.431 | 0.748 | 0.340 |
| 294.831 | 18.85 | 14.141 | 102.040 | 102.732 | 0.678 | 0.340 |
| 294.201 | 18.85 | 14.171 | 102.460 | 103.071 | 0.597 | 0.330 |
| 293.719 | 18.85 | 14.194 | 102.450 | 103.332 | 0.861 | 0.330 |
| 295.782 | 25.89 | 14.668 | 109.750 | 110.367 | 0.563 | 0.330 |
| 295.166 | 25.89 | 14.693 | 110.080 | 110.678 | 0.543 | 0.330 |
| 294.560 | 25.88 | 14.718 | 110.210 | 110.981 | 0.700 | 0.330 |
| 293.962 | 25.89 | 14.742 | 110.780 | 111.288 | 0.459 | 0.320 |
| 296.260 | 35.69 | 15.257 | 119.730 | 119.928 | 0.166 | 0.320 |
| 295.539 | 35.69 | 15.282 | 119.700 | 120.275 | 0.481 | 0.320 |
| 294.984 | 35.69 | 15.302 | 120.550 | 120.540 | -0.009 | 0.310 |
| 294.374 | 35.69 | 15.323 | 120.170 | 120.835 | 0.553 | 0.310 |
| 296.694 | 49.71 | 15.905 | 131.480 | 131.932 | 0.344 | 0.300 |
| 295.818 | 49.71 | 15.932 | 131.870 | 132.336 | 0.353 | 0.300 |
| 295.280 | 49.71 | 15.949 | 132.130 | 132.585 | 0.344 | 0.300 |
| 294.618 | 49.70 | 15.968 | 132.240 | 132.889 | 0.491 | 0.300 |
| 296.067 | 66.76 | 16.546 | 144.580 | 145.359 | 0.539 | 0.290 |
| 295.429 | 66.76 | 16.564 | 144.920 | 145.649 | 0.503 | 0.290 |

Data from Roder [103] (continued)

| T<br>K | P<br>MPa | $\rho$<br>$mol \cdot dm^{-3}$ | $\lambda$, expt<br>$mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc<br>$mW \cdot m^{-1} \cdot K^{-1}$ | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 294.891 | 66.77 | 16.578 | 145.120 | 145.898 | 0.536 | 0.290 |
| 294.396 | 66.78 | 16.592 | 145.530 | 146.128 | 0.411 | 0.290 |
| 302.965 | 0.24 | 0.097 | 22.180 | 21.724 | -2.055 | 0.310 |
| 303.561 | 0.24 | 0.097 | 22.060 | 21.801 | -1.176 | 0.360 |
| 304.449 | 0.24 | 0.097 | 21.960 | 21.915 | -0.206 | 0.490 |
| 305.309 | 0.24 | 0.097 | 22.210 | 22.026 | -0.830 | 0.400 |
| 302.718 | 0.64 | 0.266 | 22.320 | 22.090 | -1.032 | 0.460 |
| 303.335 | 0.64 | 0.266 | 22.500 | 22.167 | -1.481 | 0.430 |
| 304.854 | 0.64 | 0.264 | 22.560 | 22.358 | -0.898 | 0.460 |
| 304.006 | 0.64 | 0.265 | 22.520 | 22.251 | -1.195 | 0.450 |
| 305.696 | 0.96 | 0.406 | 23.070 | 22.817 | -1.097 | 0.050 |
| 302.745 | 0.96 | 0.411 | 22.500 | 22.456 | -0.197 | 0.520 |
| 303.313 | 0.96 | 0.410 | 22.660 | 22.525 | -0.596 | 0.500 |
| 304.074 | 0.96 | 0.408 | 22.760 | 22.618 | -0.625 | 0.500 |
| 304.938 | 0.96 | 0.407 | 22.860 | 22.724 | -0.596 | 0.500 |
| 306.007 | 1.52 | 0.675 | 23.950 | 23.587 | -1.518 | 0.050 |
| 303.238 | 1.52 | 0.684 | 23.460 | 23.270 | -0.811 | 0.500 |
| 305.362 | 1.52 | 0.677 | 23.820 | 23.512 | -1.292 | 0.050 |
| 304.514 | 1.52 | 0.680 | 23.750 | 23.415 | -1.411 | 0.480 |
| 306.272 | 1.85 | 0.845 | 24.580 | 24.128 | -1.841 | 0.050 |
| 305.761 | 1.85 | 0.848 | 24.530 | 24.072 | -1.867 | 0.050 |
| 304.422 | 1.85 | 0.854 | 24.260 | 23.928 | -1.370 | 0.480 |
| 304.209 | 1.85 | 0.855 | 24.230 | 23.905 | -1.342 | 0.480 |
| 303.597 | 1.85 | 0.857 | 23.750 | 23.840 | 0.377 | 0.530 |
| 303.292 | 1.86 | 0.864 | 24.180 | 23.823 | -1.477 | 0.480 |
| 305.293 | 1.86 | 0.855 | 24.220 | 24.037 | -0.757 | 0.500 |
| 304.494 | 1.86 | 0.858 | 24.020 | 23.951 | -0.288 | 0.510 |
| 303.861 | 1.86 | 0.861 | 23.970 | 23.883 | -0.362 | 0.510 |
| 306.756 | 2.50 | 1.224 | 25.810 | 25.452 | -1.388 | 0.050 |
| 304.906 | 2.50 | 1.239 | 25.470 | 25.293 | -0.693 | 0.500 |
| 304.332 | 2.50 | 1.244 | 25.410 | 25.246 | -0.647 | 0.500 |
| 306.052 | 2.50 | 1.229 | 25.560 | 25.391 | -0.662 | 0.050 |
| 304.396 | 3.16 | 1.721 | 27.620 | 27.221 | -1.445 | 0.480 |
| 304.645 | 3.16 | 1.717 | 27.640 | 27.228 | -1.492 | 0.480 |
| 305.885 | 3.16 | 1.698 | 27.670 | 27.266 | -1.459 | 0.050 |
| 305.553 | 3.16 | 1.703 | 27.690 | 27.255 | -1.570 | 0.050 |

Table 15. THERMAL CONDUCTIVITY AT ELEVATED PRESSURES (continued)

Data from Roder [103] (continued)

| T<br>K | P<br>MPa | $\rho$<br>$mol \cdot dm^{-3}$ | $\lambda$, expt<br>$mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc<br>$mW \cdot m^{-1} \cdot K^{-1}$ | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 305.536 | 3.79 | 2.297 | 31.260 | 30.307 | -3.047 | 0.050 |
| 307.396 | 3.79 | 2.243 | 31.220 | 30.127 | -3.500 | 0.050 |
| 306.273 | 3.79 | 2.276 | 31.100 | 30.235 | -2.782 | 0.050 |
| 304.935 | 3.79 | 2.316 | 31.100 | 30.387 | -2.294 | 0.460 |
| 304.128 | 3.79 | 2.342 | 31.460 | 30.497 | -3.061 | 0.450 |
| 303.535 | 3.79 | 2.362 | 31.440 | 30.588 | -2.709 | 0.460 |
| 315.524 | 0.12 | 0.045 | 22.830 | 23.265 | 1.906 | 0.030 |
| 314.484 | 0.12 | 0.045 | 22.820 | 23.126 | 1.339 | 0.040 |
| 313.667 | 0.12 | 0.045 | 22.690 | 23.016 | 1.438 | 0.040 |
| 312.814 | 0.12 | 0.047 | 22.180 | 22.906 | 3.272 | 0.000 |
| 314.792 | 0.64 | 0.254 | 23.940 | 23.631 | -1.291 | 0.040 |
| 313.738 | 0.64 | 0.255 | 23.840 | 23.493 | -1.454 | 0.040 |
| 313.154 | 0.64 | 0.256 | 23.690 | 23.418 | -1.147 | 0.040 |
| 312.499 | 0.64 | 0.256 | 23.610 | 23.333 | -1.172 | 0.040 |
| 314.460 | 1.08 | 0.443 | 24.410 | 24.045 | -1.493 | 0.050 |
| 313.728 | 1.08 | 0.445 | 24.240 | 23.954 | -1.180 | 0.050 |
| 313.012 | 1.08 | 0.446 | 24.050 | 23.864 | -0.774 | 0.050 |
| 312.439 | 1.08 | 0.447 | 24.060 | 23.792 | -1.115 | 0.050 |
| 314.805 | 1.92 | 0.846 | 25.530 | 25.193 | -1.321 | 0.050 |
| 313.965 | 1.92 | 0.849 | 25.250 | 25.097 | -0.607 | 0.050 |
| 313.310 | 1.92 | 0.854 | 25.260 | 25.029 | -0.916 | 0.050 |
| 312.571 | 1.92 | 0.858 | 24.870 | 24.947 | 0.309 | 0.050 |
| 314.525 | 2.58 | 1.211 | 26.690 | 26.329 | -1.354 | 0.050 |
| 313.751 | 2.57 | 1.214 | 26.600 | 26.247 | -1.329 | 0.050 |
| 313.090 | 2.57 | 1.219 | 26.540 | 26.184 | -1.341 | 0.050 |
| 312.484 | 2.57 | 1.224 | 26.530 | 26.127 | -1.517 | 0.050 |
| 314.137 | 3.12 | 1.563 | 28.050 | 27.586 | -1.656 | 0.050 |
| 313.535 | 3.12 | 1.570 | 27.880 | 27.546 | -1.199 | 0.050 |
| 312.497 | 3.12 | 1.583 | 27.950 | 27.479 | -1.685 | 0.050 |
| 312.873 | 3.12 | 1.578 | 27.920 | 27.503 | -1.494 | 0.050 |
| 314.577 | 3.87 | 2.144 | 30.830 | 30.202 | -2.038 | 0.050 |
| 313.834 | 3.87 | 2.160 | 30.850 | 30.217 | -2.053 | 0.050 |
| 313.183 | 3.87 | 2.175 | 30.690 | 30.234 | -1.487 | 0.050 |
| 312.670 | 3.87 | 2.185 | 30.620 | 30.241 | -1.239 | 0.050 |
| 314.380 | 4.02 | 2.281 | 31.480 | 30.880 | -1.907 | 0.050 |
| 313.708 | 4.02 | 2.299 | 31.420 | 30.915 | -1.608 | 0.050 |

Table 15. THERMAL CONDUCTIVITY AT ELEVATED PRESSURES (continued)

Data from Roder [103] (continued)

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 313.054 | 4.02 | 2.316 | 31.210 | 30.955 | -0.818 | 0.050 |
| 309.155 | 4.02 | 2.432 | 32.050 | 31.328 | -2.254 | 0.050 |
| 311.722 | 4.56 | 3.014 | 34.840 | 35.185 | 0.990 | 0.050 |
| 312.873 | 4.56 | 2.952 | 35.500 | 34.768 | -2.063 | 0.050 |
| 311.752 | 4.56 | 3.012 | 35.280 | 35.173 | -0.303 | 0.050 |
| 312.101 | 4.56 | 2.993 | 35.390 | 35.039 | -0.992 | 0.050 |
| 312.375 | 4.56 | 2.978 | 35.040 | 34.939 | -0.289 | 0.050 |
| 312.983 | 4.75 | 3.235 | 37.280 | 36.772 | -1.363 | 0.050 |
| 312.000 | 4.75 | 3.306 | 36.990 | 37.342 | 0.951 | 0.050 |
| 311.899 | 4.75 | 3.313 | 38.290 | 37.406 | -2.308 | 0.050 |
| 312.323 | 4.75 | 3.280 | 38.310 | 37.130 | -3.080 | 0.040 |
| 316.546 | 4.75 | 3.028 | 36.930 | 35.351 | -4.275 | 0.040 |
| 312.203 | 4.90 | 3.569 | 39.660 | 39.466 | -0.488 | 0.050 |
| 313.324 | 4.91 | 3.486 | 39.030 | 38.686 | -0.882 | 0.050 |
| 312.858 | 4.91 | 3.528 | 39.450 | 39.056 | -0.999 | 0.050 |
| 312.449 | 4.91 | 3.566 | 39.410 | 39.411 | 0.003 | 0.050 |
| 313.386 | 5.11 | 3.910 | 42.620 | 42.263 | -0.837 | 0.050 |
| 312.085 | 5.11 | 4.099 | 44.150 | 44.365 | 0.488 | 0.050 |
| 312.980 | 5.11 | 3.964 | 43.090 | 42.839 | -0.582 | 0.050 |
| 312.558 | 5.11 | 4.025 | 43.580 | 43.509 | -0.163 | 0.050 |
| 311.923 | 5.11 | 4.127 | 44.090 | 44.689 | 1.359 | 0.050 |
| 312.042 | 5.20 | 4.407 | 47.040 | 47.568 | 1.122 | 0.050 |
| 313.007 | 5.20 | 4.215 | 45.130 | 45.232 | 0.225 | 0.050 |
| 312.519 | 5.20 | 4.306 | 45.830 | 46.314 | 1.055 | 0.050 |
| 312.071 | 5.20 | 4.400 | 46.240 | 47.485 | 2.692 | 0.050 |
| 312.095 | 5.43 | 5.514 | 59.620 | 59.939 | 0.536 | 0.040 |
| 312.909 | 5.43 | 5.120 | 55.470 | 54.791 | -1.224 | 0.040 |
| 312.497 | 5.43 | 5.300 | 56.260 | 57.143 | 1.570 | 0.050 |
| 312.524 | 5.43 | 5.287 | 57.890 | 56.975 | -1.581 | 0.040 |
| 313.140 | 5.42 | 4.983 | 54.820 | 53.141 | -3.063 | 0.040 |
| 312.429 | 5.42 | 5.277 | 55.180 | 56.974 | 3.252 | 0.050 |
| 312.065 | 5.42 | 5.467 | 56.880 | 59.483 | 4.577 | 0.000 |
| 311.837 | 5.42 | 5.607 | 57.700 | 61.298 | 6.236 | 0.000 |
| 312.754 | 5.50 | 5.636 | 60.680 | 60.271 | -0.674 | 0.040 |
| 312.452 | 5.50 | 5.830 | 62.560 | 62.489 | -0.114 | 0.040 |
| 312.430 | 5.50 | 5.845 | 64.330 | 62.658 | -2.599 | 0.000 |

Table 15. **THERMAL CONDUCTIVITY AT ELEVATED PRESSURES** (continued)

Data from Roder [103] (continued)

| T<br>K | P<br>MPa | $\rho$<br>$mol \cdot dm^{-3}$ | $\lambda$, expt<br>$mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc<br>$mW \cdot m^{-1} \cdot K^{-1}$ | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 311.620 | 5.50 | 6.551 | 65.160 | 68.950 | 5.816 | 0.000 |
| 312.283 | 5.58 | 6.655 | 67.440 | 68.019 | 0.859 | 0.040 |
| 311.910 | 5.58 | 7.029 | 68.220 | 69.698 | 2.167 | 0.040 |
| 311.810 | 5.58 | 7.134 | 69.300 | 70.005 | 1.018 | 0.040 |
| 311.444 | 5.58 | 7.517 | 70.080 | 70.541 | 0.658 | 0.040 |
| 312.282 | 5.60 | 6.909 | 68.770 | 68.771 | 0.001 | 0.040 |
| 311.992 | 5.60 | 7.198 | 68.970 | 69.693 | 1.048 | 0.040 |
| 311.693 | 5.60 | 7.499 | 70.080 | 70.109 | 0.041 | 0.040 |
| 311.488 | 5.60 | 7.706 | 70.840 | 70.082 | -1.070 | 0.040 |
| 312.441 | 5.67 | 7.348 | 69.330 | 68.932 | -0.575 | 0.040 |
| 312.179 | 5.67 | 7.585 | 69.530 | 69.179 | -0.505 | 0.040 |
| 311.801 | 5.67 | 7.909 | 70.280 | 69.083 | -1.703 | 0.040 |
| 311.720 | 5.67 | 7.980 | 69.920 | 68.997 | -1.319 | 0.040 |
| 312.490 | 5.77 | 7.979 | 69.200 | 68.034 | -1.684 | 0.040 |
| 312.170 | 5.77 | 8.198 | 68.980 | 67.871 | -1.607 | 0.040 |
| 311.442 | 5.77 | 8.628 | 69.100 | 67.449 | -2.389 | 0.040 |
| 311.609 | 5.77 | 8.537 | 69.760 | 67.530 | -3.196 | 0.040 |
| 312.513 | 5.83 | 8.263 | 69.210 | 67.381 | -2.642 | 0.040 |
| 312.199 | 5.83 | 8.445 | 69.380 | 67.258 | -3.059 | 0.040 |
| 311.858 | 5.83 | 8.627 | 68.930 | 67.146 | -2.587 | 0.040 |
| 311.788 | 5.83 | 8.662 | 69.590 | 67.129 | -3.536 | 0.040 |
| 312.939 | 5.92 | 8.408 | 68.830 | 66.748 | -3.025 | 0.040 |
| 312.434 | 5.92 | 8.659 | 68.910 | 66.711 | -3.191 | 0.040 |
| 312.183 | 5.92 | 8.774 | 69.490 | 66.717 | -3.990 | 0.040 |
| 311.910 | 5.92 | 8.891 | 68.770 | 66.748 | -2.940 | 0.040 |
| 313.330 | 6.07 | 8.697 | 68.630 | 66.167 | -3.589 | 0.040 |
| 313.030 | 6.07 | 8.820 | 68.350 | 66.250 | -3.072 | 0.040 |
| 312.630 | 6.07 | 8.974 | 68.940 | 66.391 | -3.698 | 0.040 |
| 312.361 | 6.07 | 9.072 | 68.840 | 66.506 | -3.391 | 0.040 |
| 312.057 | 6.07 | 9.177 | 69.300 | 66.654 | -3.818 | 0.040 |
| 313.149 | 6.21 | 9.098 | 68.620 | 66.256 | -3.445 | 0.040 |
| 312.903 | 6.21 | 9.178 | 68.930 | 66.398 | -3.673 | 0.040 |
| 312.603 | 6.21 | 9.272 | 68.970 | 66.584 | -3.459 | 0.040 |
| 311.863 | 6.21 | 9.489 | 69.020 | 67.090 | -2.797 | 0.040 |
| 314.216 | 6.24 | 8.803 | 68.830 | 65.745 | -4.482 | 0.040 |
| 313.237 | 6.24 | 9.139 | 68.300 | 66.265 | -2.979 | 0.040 |

Table 15. THERMAL CONDUCTIVITY AT ELEVATED PRESSURES (continued)

Data from Roder [103] (continued)

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 312.994 | 6.24 | 9.216 | 68.250 | 66.414 | -2.689 | 0.040 |
| 312.566 | 6.24 | 9.345 | 68.380 | 66.695 | -2.465 | 0.040 |
| 314.753 | 6.72 | 9.478 | 69.230 | 66.612 | -3.781 | 0.040 |
| 313.885 | 6.72 | 9.679 | 69.470 | 67.299 | -3.125 | 0.040 |
| 313.249 | 6.72 | 9.818 | 69.560 | 67.815 | -2.509 | 0.040 |
| 312.504 | 6.72 | 9.973 | 70.080 | 68.430 | -2.354 | 0.040 |
| 315.859 | 7.16 | 9.761 | 71.240 | 67.448 | -5.323 | 0.040 |
| 314.022 | 6.59 | 9.489 | 70.680 | 66.735 | -5.582 | 0.040 |
| 313.425 | 7.16 | 10.207 | 71.270 | 69.401 | -2.622 | 0.040 |
| 313.000 | 7.16 | 10.280 | 71.440 | 69.745 | -2.372 | 0.040 |
| 315.405 | 8.21 | 10.617 | 73.050 | 71.583 | -2.008 | 0.040 |
| 314.630 | 8.21 | 10.719 | 73.700 | 72.149 | -2.104 | 0.040 |
| 313.835 | 8.21 | 10.820 | 73.910 | 72.723 | -1.606 | 0.040 |
| 313.032 | 8.21 | 10.920 | 74.150 | 73.309 | -1.135 | 0.040 |
| 316.074 | 9.43 | 11.114 | 76.570 | 74.760 | -2.364 | 0.040 |
| 315.284 | 9.43 | 11.197 | 77.150 | 75.275 | -2.430 | 0.040 |
| 314.756 | 9.43 | 11.251 | 77.770 | 75.618 | -2.767 | 0.040 |
| 313.377 | 9.43 | 11.390 | 77.120 | 76.515 | -0.784 | 0.040 |
| 316.248 | 11.27 | 11.702 | 80.270 | 79.119 | -1.434 | 0.040 |
| 315.470 | 11.27 | 11.766 | 80.750 | 79.567 | -1.465 | 0.040 |
| 314.704 | 11.27 | 11.828 | 80.820 | 80.012 | -0.999 | 0.040 |
| 314.003 | 11.27 | 11.885 | 81.230 | 80.421 | -0.996 | 0.040 |
| 316.056 | 13.58 | 12.252 | 84.370 | 83.801 | -0.675 | 0.040 |
| 315.417 | 13.58 | 12.295 | 84.820 | 84.136 | -0.807 | 0.040 |
| 314.603 | 13.58 | 12.350 | 85.090 | 84.564 | -0.618 | 0.040 |
| 314.061 | 13.58 | 12.386 | 85.350 | 84.850 | -0.586 | 0.040 |
| 316.350 | 16.87 | 12.794 | 90.060 | 89.078 | -1.090 | 0.040 |
| 315.570 | 16.87 | 12.838 | 90.570 | 89.453 | -1.233 | 0.040 |
| 314.803 | 16.87 | 12.881 | 90.550 | 89.824 | -0.802 | 0.040 |
| 314.136 | 16.87 | 12.918 | 90.540 | 90.147 | -0.435 | 0.040 |
| 314.309 | 21.23 | 13.445 | 96.840 | 96.065 | -0.800 | 0.030 |
| 316.080 | 21.23 | 13.360 | 95.980 | 95.265 | -0.744 | 0.030 |
| 315.357 | 21.23 | 13.395 | 96.550 | 95.591 | -0.993 | 0.030 |
| 314.639 | 21.23 | 13.430 | 96.490 | 95.919 | -0.592 | 0.030 |
| 315.862 | 26.24 | 13.860 | 102.390 | 101.398 | -0.969 | 0.030 |
| 315.135 | 26.24 | 13.891 | 102.550 | 101.711 | -0.818 | 0.030 |

Table 15. **THERMAL CONDUCTIVITY AT ELEVATED PRESSURES** (continued)

Data from Roder [103] (continued)

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 314.700 | 26.24 | 13.909 | 102.730 | 101.899 | -0.808 | 0.030 |
| 313.834 | 26.24 | 13.946 | 102.730 | 102.277 | -0.441 | 0.030 |
| 314.272 | 32.90 | 14.435 | 109.700 | 109.153 | -0.499 | 0.030 |
| 315.836 | 32.90 | 14.377 | 109.580 | 108.501 | -0.985 | 0.030 |
| 315.195 | 32.90 | 14.401 | 109.840 | 108.768 | -0.976 | 0.030 |
| 314.436 | 32.90 | 14.429 | 109.830 | 109.083 | -0.680 | 0.030 |
| 316.300 | 41.60 | 14.898 | 117.750 | 116.564 | -1.007 | 0.030 |
| 315.651 | 41.60 | 14.920 | 117.830 | 116.825 | -0.853 | 0.030 |
| 314.843 | 41.60 | 14.946 | 118.040 | 117.150 | -0.754 | 0.030 |
| 314.511 | 41.59 | 14.957 | 118.150 | 117.281 | -0.735 | 0.030 |
| 315.977 | 52.11 | 15.431 | 126.950 | 125.667 | -1.010 | 0.030 |
| 315.292 | 52.10 | 15.450 | 127.020 | 125.928 | -0.860 | 0.030 |
| 314.743 | 52.09 | 15.466 | 127.190 | 126.138 | -0.827 | 0.030 |
| 314.133 | 52.07 | 15.483 | 127.370 | 126.368 | -0.786 | 0.030 |
| 315.536 | 64.28 | 15.938 | 136.180 | 135.317 | -0.634 | 0.030 |
| 315.223 | 64.27 | 15.945 | 136.370 | 135.428 | -0.691 | 0.030 |
| 314.630 | 64.27 | 15.961 | 136.700 | 135.661 | -0.760 | 0.030 |
| 314.152 | 64.27 | 15.974 | 136.950 | 135.851 | -0.802 | 0.030 |
| 315.798 | 68.12 | 16.069 | 139.040 | 138.051 | -0.712 | 0.030 |
| 315.147 | 68.12 | 16.086 | 139.230 | 138.305 | -0.664 | 0.030 |
| 314.575 | 68.12 | 16.101 | 139.850 | 138.529 | -0.945 | 0.030 |
| 313.879 | 68.12 | 16.119 | 140.240 | 138.803 | -1.025 | 0.030 |
| 315.282 | 2.58 | 1.207 | 26.200 | 26.408 | 0.793 | 0.000 |
| 314.669 | 2.58 | 1.212 | 26.050 | 26.349 | 1.147 | 0.000 |
| 314.116 | 2.58 | 1.216 | 26.010 | 26.296 | 1.099 | 0.000 |
| 313.470 | 2.58 | 1.221 | 26.270 | 26.235 | -0.135 | 0.000 |
| 313.851 | 5.39 | 4.645 | 51.310 | 49.189 | -4.134 | 0.000 |
| 313.411 | 5.39 | 4.761 | 52.410 | 50.614 | -3.427 | 0.000 |
| 313.264 | 5.39 | 4.804 | 53.970 | 51.148 | -5.229 | 0.000 |
| 313.035 | 5.39 | 4.874 | 55.280 | 52.049 | -5.846 | 0.000 |
| 312.901 | 5.39 | 4.918 | 56.540 | 52.619 | -6.936 | 0.000 |
| 312.630 | 5.39 | 5.014 | 57.730 | 53.884 | -6.661 | 0.000 |
| 313.283 | 5.49 | 5.319 | 60.080 | 56.525 | -5.918 | 0.000 |
| 313.023 | 5.49 | 5.443 | 61.830 | 58.045 | -6.121 | 0.000 |
| 312.802 | 5.49 | 5.560 | 63.530 | 59.474 | -6.385 | 0.000 |
| 312.702 | 5.49 | 5.618 | 64.540 | 60.162 | -6.783 | 0.000 |

Data from Roder [103] (continued)

| T<br>K | P<br>MPa | $\rho$<br>$mol \cdot dm^{-3}$ | $\lambda$, expt<br>$mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc<br>$mW \cdot m^{-1} \cdot K^{-1}$ | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 312.541 | 5.49 | 5.717 | 65.810 | 61.326 | -6.814 | 0.000 |
| 313.209 | 5.57 | 5.864 | 65.120 | 61.678 | -5.285 | 0.000 |
| 313.050 | 5.57 | 5.970 | 66.270 | 62.744 | -5.321 | 0.000 |
| 312.735 | 5.57 | 6.212 | 67.580 | 64.952 | -3.888 | 0.000 |
| 312.613 | 5.57 | 6.312 | 68.080 | 65.773 | -3.388 | 0.000 |
| 312.552 | 5.57 | 6.363 | 69.420 | 66.176 | -4.674 | 0.000 |
| 313.181 | 5.60 | 6.126 | 66.700 | 63.679 | -4.530 | 0.000 |
| 313.013 | 5.60 | 6.252 | 67.570 | 64.752 | -4.171 | 0.000 |
| 312.859 | 5.60 | 6.375 | 68.710 | 65.714 | -4.361 | 0.000 |
| 312.694 | 5.60 | 6.516 | 69.290 | 66.696 | -3.744 | 0.000 |
| 312.525 | 5.60 | 6.668 | 68.960 | 67.621 | -1.941 | 0.000 |
| 313.310 | 5.63 | 6.275 | 67.570 | 64.431 | -4.646 | 0.000 |
| 313.221 | 5.63 | 6.343 | 68.680 | 64.955 | -5.423 | 0.000 |
| 312.929 | 5.63 | 6.582 | 69.200 | 66.584 | -3.780 | 0.000 |
| 312.704 | 5.63 | 6.781 | 69.740 | 67.681 | -2.953 | 0.000 |
| 312.570 | 5.63 | 6.905 | 69.890 | 68.241 | -2.359 | 0.000 |
| 313.253 | 5.74 | 7.144 | 68.580 | 67.554 | -1.497 | 0.000 |
| 312.657 | 5.74 | 7.642 | 68.440 | 68.404 | -0.053 | 0.000 |
| 313.187 | 5.74 | 7.207 | 69.000 | 67.718 | -1.859 | 0.000 |
| 312.924 | 5.74 | 7.428 | 68.680 | 68.177 | -0.732 | 0.000 |
| 312.745 | 5.74 | 7.577 | 68.300 | 68.349 | 0.072 | 0.000 |
| 322.509 | 0.21 | 0.080 | 24.490 | 24.290 | -0.817 | 0.040 |
| 325.164 | 0.21 | 0.079 | 24.870 | 24.655 | -0.865 | 0.040 |
| 324.231 | 0.21 | 0.080 | 24.880 | 24.526 | -1.422 | 0.030 |
| 323.528 | 0.21 | 0.080 | 24.840 | 24.430 | -1.652 | 0.030 |
| 322.741 | 0.21 | 0.080 | 24.170 | 24.322 | 0.628 | 0.200 |
| 322.892 | 0.78 | 0.304 | 25.020 | 24.836 | -0.736 | 0.050 |
| 324.818 | 0.78 | 0.302 | 25.510 | 25.095 | -1.628 | 0.040 |
| 324.104 | 0.78 | 0.303 | 25.440 | 24.999 | -1.734 | 0.040 |
| 323.142 | 0.78 | 0.304 | 25.290 | 24.870 | -1.660 | 0.040 |
| 324.110 | 1.33 | 0.535 | 26.160 | 25.560 | -2.295 | 0.040 |
| 324.425 | 1.33 | 0.534 | 25.890 | 25.600 | -1.119 | 0.050 |
| 325.134 | 1.33 | 0.533 | 26.210 | 25.693 | -1.971 | 0.050 |
| 325.667 | 1.33 | 0.532 | 26.220 | 25.763 | -1.745 | 0.050 |
| 323.528 | 2.42 | 1.066 | 27.510 | 26.980 | -1.928 | 0.050 |
| 324.158 | 2.42 | 1.063 | 27.710 | 27.050 | -2.383 | 0.050 |

Table 15. THERMAL CONDUCTIVITY AT ELEVATED PRESSURES (continued)

Data from Roder [103] (continued)

| T<br>K | P<br>MPa | $\rho$<br>$mol \cdot dm^{-3}$ | $\lambda$, expt<br>$mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc<br>$mW \cdot m^{-1} \cdot K^{-1}$ | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 324.601 | 2.42 | 1.060 | 27.800 | 27.099 | -2.521 | 0.050 |
| 325.203 | 2.42 | 1.057 | 27.590 | 27.167 | -1.533 | 0.050 |
| 326.009 | 2.42 | 1.053 | 27.720 | 27.258 | -1.667 | 0.050 |
| 323.991 | 3.09 | 1.442 | 28.710 | 28.292 | -1.457 | 0.050 |
| 325.322 | 3.09 | 1.430 | 28.730 | 28.413 | -1.103 | 0.050 |
| 325.307 | 3.09 | 1.430 | 28.980 | 28.412 | -1.961 | 0.050 |
| 325.584 | 3.09 | 1.427 | 28.880 | 28.437 | -1.533 | 0.050 |
| 324.024 | 4.00 | 2.061 | 31.260 | 30.759 | -1.601 | 0.050 |
| 324.589 | 4.00 | 2.053 | 31.270 | 30.783 | -1.558 | 0.050 |
| 325.140 | 4.00 | 2.043 | 31.370 | 30.800 | -1.816 | 0.050 |
| 325.733 | 4.00 | 2.033 | 31.350 | 30.821 | -1.688 | 0.050 |
| 324.464 | 4.44 | 2.413 | 33.000 | 32.435 | -1.711 | 0.050 |
| 324.965 | 4.44 | 2.403 | 33.010 | 32.431 | -1.754 | 0.050 |
| 325.494 | 4.44 | 2.388 | 33.280 | 32.411 | -2.611 | 0.050 |
| 326.066 | 4.44 | 2.376 | 33.000 | 32.410 | -1.789 | 0.050 |
| 323.930 | 4.93 | 2.913 | 35.490 | 35.007 | -1.360 | 0.050 |
| 324.510 | 4.93 | 2.890 | 35.550 | 34.920 | -1.771 | 0.050 |
| 325.048 | 4.93 | 2.871 | 35.520 | 34.851 | -1.882 | 0.050 |
| 325.295 | 4.93 | 2.862 | 35.430 | 34.819 | -1.725 | 0.050 |
| 324.150 | 5.35 | 3.420 | 38.710 | 38.022 | -1.777 | 0.050 |
| 324.621 | 5.35 | 3.388 | 38.570 | 37.838 | -1.897 | 0.050 |
| 325.147 | 5.35 | 3.359 | 38.550 | 37.672 | -2.277 | 0.050 |
| 326.750 | 5.35 | 3.276 | 38.170 | 37.240 | -2.438 | 0.050 |
| 323.776 | 5.66 | 3.912 | 41.750 | 41.229 | -1.248 | 0.050 |
| 324.289 | 5.66 | 3.868 | 41.460 | 40.916 | -1.312 | 0.050 |
| 324.542 | 5.66 | 3.848 | 41.300 | 40.781 | -1.257 | 0.050 |
| 324.907 | 5.66 | 3.819 | 41.230 | 40.580 | -1.578 | 0.050 |
| 323.874 | 5.89 | 4.316 | 44.790 | 44.009 | -1.744 | 0.050 |
| 324.053 | 5.89 | 4.296 | 44.440 | 43.848 | -1.333 | 0.050 |
| 324.312 | 5.89 | 4.268 | 44.100 | 43.636 | -1.053 | 0.050 |
| 324.771 | 5.89 | 4.219 | 43.770 | 43.258 | -1.169 | 0.050 |
| 323.525 | 6.13 | 4.898 | 48.730 | 48.136 | -1.218 | 0.040 |
| 323.874 | 6.13 | 4.839 | 48.410 | 47.662 | -1.545 | 0.040 |
| 324.345 | 6.13 | 4.765 | 47.850 | 47.065 | -1.640 | 0.040 |
| 324.549 | 6.13 | 4.734 | 47.080 | 46.821 | -0.550 | 0.050 |
| 323.904 | 6.26 | 5.171 | 51.040 | 49.917 | -2.200 | 0.040 |

Table 15. THERMAL CONDUCTIVITY AT ELEVATED PRESSURES (continued)

Data from Roder [103] (continued)

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 324.325 | 6.26 | 5.091 | 50.190 | 49.286 | -1.801 | 0.040 |
| 324.505 | 6.26 | 5.058 | 50.210 | 49.029 | -2.353 | 0.040 |
| 324.897 | 6.26 | 4.990 | 49.510 | 48.494 | -2.053 | 0.040 |
| 325.266 | 6.26 | 4.929 | 48.660 | 48.019 | -1.317 | 0.040 |
| 325.846 | 6.27 | 4.861 | 49.520 | 47.473 | -4.135 | 0.040 |
| 324.760 | 6.27 | 5.038 | 49.680 | 48.839 | -1.692 | 0.040 |
| 324.005 | 6.27 | 5.178 | 50.000 | 49.936 | -0.127 | 0.050 |
| 323.494 | 6.27 | 5.282 | 50.460 | 50.757 | 0.589 | 0.050 |
| 324.172 | 6.46 | 5.667 | 54.020 | 52.974 | -1.937 | 0.040 |
| 326.309 | 6.46 | 5.221 | 51.230 | 49.714 | -2.958 | 0.040 |
| 325.022 | 6.46 | 5.476 | 52.000 | 51.584 | -0.801 | 0.040 |
| 324.185 | 6.46 | 5.667 | 53.330 | 52.968 | -0.678 | 0.040 |
| 323.175 | 6.46 | 5.930 | 54.950 | 54.826 | -0.225 | 0.040 |
| 325.811 | 6.78 | 6.187 | 56.400 | 55.242 | -2.053 | 0.040 |
| 324.856 | 6.78 | 6.448 | 57.420 | 56.740 | -1.183 | 0.040 |
| 323.931 | 6.79 | 6.731 | 58.270 | 58.206 | -0.110 | 0.040 |
| 323.040 | 6.79 | 7.021 | 59.100 | 59.543 | 0.749 | 0.040 |
| 325.765 | 6.88 | 6.459 | 57.700 | 56.487 | -2.103 | 0.040 |
| 324.914 | 6.88 | 6.705 | 58.950 | 57.753 | -2.031 | 0.040 |
| 324.042 | 6.88 | 6.972 | 59.870 | 58.999 | -1.455 | 0.040 |
| 323.136 | 6.88 | 7.265 | 60.560 | 60.200 | -0.594 | 0.040 |
| 325.695 | 7.18 | 7.274 | 61.250 | 59.376 | -3.060 | 0.040 |
| 324.714 | 7.18 | 7.558 | 61.850 | 60.422 | -2.309 | 0.040 |
| 323.969 | 7.18 | 7.774 | 62.700 | 61.147 | -2.477 | 0.040 |
| 323.059 | 7.18 | 8.037 | 63.010 | 61.961 | -1.666 | 0.040 |
| 325.677 | 7.41 | 7.805 | 62.980 | 60.796 | -3.467 | 0.040 |
| 324.723 | 7.41 | 8.055 | 63.410 | 61.614 | -2.833 | 0.040 |
| 323.985 | 7.41 | 8.247 | 63.860 | 62.217 | -2.572 | 0.040 |
| 323.084 | 7.41 | 8.475 | 64.240 | 62.919 | -2.056 | 0.040 |
| 326.504 | 7.62 | 7.984 | 63.380 | 61.092 | -3.609 | 0.040 |
| 325.489 | 7.62 | 8.228 | 64.100 | 61.904 | -3.426 | 0.040 |
| 324.602 | 7.62 | 8.439 | 64.550 | 62.592 | -3.033 | 0.040 |
| 323.783 | 7.62 | 8.628 | 64.470 | 63.208 | -1.957 | 0.040 |
| 326.641 | 8.06 | 8.637 | 65.620 | 62.943 | -4.080 | 0.040 |
| 325.669 | 8.06 | 8.830 | 66.230 | 63.637 | -3.915 | 0.040 |
| 324.766 | 8.06 | 9.005 | 66.550 | 64.284 | -3.405 | 0.040 |

Table 15. **THERMAL CONDUCTIVITY AT ELEVATED PRESSURES** (continued)

Data from Roder [103] (continued)

| T<br>K | P<br>MPa | $\rho$<br>$mol \cdot dm^{-3}$ | $\lambda$, expt<br>$mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc<br>$mW \cdot m^{-1} \cdot K^{-1}$ | Dev<br>% | wt |
|---|---|---|---|---|---|---|
| 323.950 | 8.06 | 9.160 | 66.690 | 64.870 | -2.730 | 0.040 |
| 327.097 | 8.77 | 9.313 | 68.690 | 65.407 | -4.779 | 0.040 |
| 326.417 | 8.77 | 9.420 | 69.240 | 65.861 | -4.880 | 0.040 |
| 325.389 | 8.77 | 9.577 | 69.690 | 66.544 | -4.514 | 0.040 |
| 324.053 | 8.77 | 9.775 | 69.520 | 67.438 | -2.995 | 0.040 |
| 328.172 | 9.52 | 9.733 | 71.790 | 67.353 | -6.180 | 0.000 |
| 327.339 | 9.52 | 9.842 | 72.450 | 67.866 | -6.326 | 0.000 |
| 327.636 | 9.52 | 9.804 | 73.380 | 67.687 | -7.759 | 0.000 |
| 328.307 | 9.52 | 9.717 | 75.110 | 67.277 | -10.428 | 0.000 |
| 327.433 | 10.69 | 10.461 | 74.640 | 71.318 | -4.450 | 0.040 |
| 327.360 | 10.69 | 10.468 | 75.290 | 71.357 | -5.224 | 0.040 |
| 325.038 | 10.69 | 10.706 | 74.770 | 72.677 | -2.799 | 0.040 |
| 323.933 | 10.69 | 10.817 | 74.460 | 73.314 | -1.539 | 0.040 |
| 327.970 | 11.99 | 10.921 | 78.030 | 74.327 | -4.746 | 0.040 |
| 327.699 | 11.99 | 10.945 | 79.260 | 74.468 | -6.046 | 0.000 |
| 326.348 | 11.99 | 11.063 | 79.110 | 75.177 | -4.972 | 0.040 |
| 325.540 | 11.99 | 11.133 | 78.700 | 75.603 | -3.936 | 0.040 |
| 324.688 | 11.99 | 11.206 | 78.780 | 76.056 | -3.457 | 0.040 |
| 324.292 | 14.47 | 11.876 | 82.320 | 81.291 | -1.250 | 0.040 |
| 326.347 | 14.47 | 11.735 | 81.240 | 80.310 | -1.145 | 0.040 |
| 325.441 | 14.47 | 11.798 | 81.480 | 80.742 | -0.905 | 0.040 |
| 324.670 | 14.47 | 11.850 | 81.590 | 81.111 | -0.587 | 0.040 |
| 324.214 | 17.22 | 12.396 | 86.230 | 85.969 | -0.303 | 0.040 |
| 324.757 | 17.22 | 12.365 | 86.650 | 85.725 | -1.068 | 0.040 |
| 326.145 | 17.22 | 12.284 | 85.750 | 85.111 | -0.746 | 0.040 |
| 325.425 | 17.22 | 12.326 | 86.080 | 85.427 | -0.758 | 0.040 |
| 324.063 | 20.96 | 12.938 | 92.720 | 91.435 | -1.386 | 0.040 |
| 326.081 | 20.96 | 12.837 | 91.900 | 90.591 | -1.424 | 0.040 |
| 325.404 | 20.96 | 12.871 | 92.270 | 90.873 | -1.514 | 0.040 |
| 325.014 | 20.96 | 12.890 | 92.960 | 91.036 | -2.070 | 0.040 |
| 323.871 | 25.56 | 13.454 | 98.710 | 97.283 | -1.446 | 0.030 |
| 325.636 | 25.56 | 13.378 | 97.610 | 96.582 | -1.053 | 0.030 |
| 324.837 | 25.56 | 13.413 | 97.890 | 96.900 | -1.011 | 0.030 |
| 324.029 | 25.56 | 13.448 | 97.830 | 97.225 | -0.618 | 0.030 |
| 326.318 | 31.50 | 13.877 | 104.130 | 102.911 | -1.171 | 0.030 |
| 325.408 | 31.50 | 13.912 | 104.420 | 103.258 | -1.113 | 0.030 |

Table 15. **THERMAL CONDUCTIVITY AT ELEVATED PRESSURES** (continued)

**Data from Roder [103]** (continued)

| T K | P MPa | $\rho$ $mol\cdot dm^{-3}$ | $\lambda$, expt $mW\cdot m^{-1}\cdot K^{-1}$ | $\lambda$, calc $mW\cdot m^{-1}\cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 324.644 | 31.50 | 13.942 | 104.800 | 103.550 | -1.192 | 0.030 |
| 324.054 | 31.50 | 13.964 | 104.790 | 103.780 | -0.964 | 0.030 |
| 323.917 | 38.52 | 14.460 | 112.650 | 110.770 | -1.669 | 0.030 |
| 326.025 | 38.52 | 14.388 | 111.360 | 109.979 | -1.240 | 0.030 |
| 325.271 | 38.52 | 14.414 | 111.610 | 110.260 | -1.209 | 0.030 |
| 323.442 | 38.52 | 14.477 | 112.270 | 110.950 | -1.176 | 0.030 |
| 323.767 | 47.48 | 14.973 | 120.370 | 118.821 | -1.287 | 0.030 |
| 327.091 | 47.48 | 14.871 | 118.640 | 117.600 | -0.877 | 0.030 |
| 324.947 | 47.48 | 14.937 | 119.840 | 118.383 | -1.216 | 0.030 |
| 324.170 | 47.48 | 14.961 | 120.200 | 118.671 | -1.272 | 0.030 |
| 326.213 | 51.75 | 15.111 | 123.220 | 121.495 | -1.400 | 0.030 |
| 325.387 | 51.76 | 15.136 | 123.340 | 121.800 | -1.248 | 0.030 |
| 324.761 | 51.76 | 15.155 | 123.570 | 122.030 | -1.246 | 0.030 |
| 324.049 | 51.76 | 15.175 | 123.480 | 122.290 | -0.963 | 0.030 |
| 325.860 | 64.21 | 15.658 | 133.130 | 131.371 | -1.321 | 0.030 |
| 325.163 | 64.21 | 15.677 | 133.280 | 131.622 | -1.244 | 0.030 |
| 324.496 | 64.20 | 15.694 | 133.300 | 131.864 | -1.078 | 0.030 |
| 324.124 | 64.20 | 15.704 | 133.310 | 131.997 | -0.985 | 0.030 |
| 325.753 | 67.17 | 15.774 | 134.990 | 133.608 | -1.024 | 0.030 |
| 325.167 | 67.18 | 15.790 | 135.150 | 133.824 | -0.981 | 0.030 |
| 324.588 | 67.17 | 15.805 | 135.150 | 134.034 | -0.826 | 0.030 |
| 323.892 | 67.17 | 15.823 | 135.300 | 134.288 | -0.748 | 0.030 |

Comparisons based on experimental pressures:

Number of Points [103] 797

AAD% = 1.19 BIAS% = -0.76 RMS% = 1.60
AAD = 0.81 BIAS = -0.44 RMS = 1.13 $mW\cdot m^{-1}\cdot K^{-1}$

Weighted Data:

Number of Points [103] 752

AAD% = 1.01 BIAS% = -0.61 RMS% = 1.25
AAD = 0.70 BIAS = -0.33 RMS = 0.92 $mW\cdot m^{-1}\cdot K^{-1}$

**Data from Roder [103] (continued)**

Comparisons based on experimental densities:

Number of Points [103] 797

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| AAD% | = | 1.19 | BIAS% | = | -0.69 | RMS% | = 1.59 |
| AAD | = | 0.84 | BIAS | = | -0.40 | RMS | = 1.17 $mW{\bullet}m^{-1}{\bullet}K^{-1}$ |

Weighted Data:

Number of Points [103] 752

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| AAD% | = | 1.03 | BIAS% | = | -0.56 | RMS% | = 1.28 |
| AAD | = | 0.74 | BIAS | = | -0.30 | RMS | = 0.99 $mW{\bullet}m^{-1}{\bullet}K^{-1}$ |

**Data from Tufeu et al. [88]**
(P not given)

| T K | P MPa | $\rho$ $mol{\bullet}dm^{-3}$ | $\lambda$, expt $mW{\bullet}m^{-1}{\bullet}K^{-1}$ | $\lambda$, calc $mW{\bullet}m^{-1}{\bullet}K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 500.300 | - | 0.121 | 52.150 | 54.008 | 3.562 | 0.000 |
| 500.300 | - | 0.251 | 52.500 | 54.198 | 3.235 | 0.000 |
| 500.300 | - | 0.648 | 53.000 | 54.849 | 3.489 | 0.000 |
| 500.300 | - | 1.264 | 54.450 | 56.050 | 2.938 | 0.000 |
| 500.300 | - | 1.929 | 56.150 | 57.596 | 2.575 | 0.000 |
| 500.300 | - | 2.627 | 58.000 | 59.472 | 2.537 | 0.000 |
| 500.300 | - | 3.359 | 60.050 | 61.681 | 2.716 | 0.000 |
| 500.300 | - | 4.024 | 62.600 | 63.878 | 2.041 | 0.000 |
| 500.300 | - | 4.756 | 65.000 | 66.479 | 2.275 | 0.000 |
| 500.300 | - | 5.421 | 67.800 | 68.999 | 1.769 | 0.000 |
| 500.300 | - | 6.019 | 70.150 | 71.397 | 1.778 | 0.000 |
| 500.300 | - | 6.718 | 72.800 | 74.365 | 2.150 | 0.000 |
| 500.300 | - | 7.150 | 74.750 | 76.308 | 2.084 | 0.000 |
| 500.300 | - | 7.582 | 76.700 | 78.344 | 2.144 | 0.000 |
| 500.300 | - | 7.715 | 77.150 | 78.992 | 2.387 | 0.000 |
| 307.050 | - | 6.870 | 99.800 | 93.646 | -6.166 | 0.000 |
| 307.800 | - | 6.870 | 91.000 | 85.638 | -5.893 | 0.000 |
| 311.800 | - | 6.870 | 73.000 | 69.629 | -4.618 | 0.000 |
| 313.350 | - | 6.870 | 67.800 | 66.884 | -1.350 | 0.000 |
| 322.750 | - | 6.870 | 58.500 | 59.179 | 1.161 | 0.000 |
| 343.150 | - | 6.870 | 56.600 | 55.762 | -1.481 | 0.000 |

Table 15. **THERMAL CONDUCTIVITY AT ELEVATED PRESSURES** (continued)

**Data from Tufeu et al. [88]** (continued)

| T K | P MPa | $\rho$ $mol \cdot dm^{-3}$ | $\lambda$, expt $mW \cdot m^{-1} \cdot K^{-1}$ | $\lambda$, calc $mW \cdot m^{-1} \cdot K^{-1}$ | Dev % | wt |
|---|---|---|---|---|---|---|
| 406.150 | - | 6.870 | 61.000 | 60.745 | -0.419 | 0.000 |
| 434.150 | - | 6.870 | 64.000 | 64.564 | 0.882 | 0.000 |
| 500.300 | - | 6.870 | 73.300 | 75.040 | 2.373 | 0.000 |

Comparisons based on experimental densities:

Number of Points [88]    24

AAD% = 2.58    BIAS% = 0.92    RMS% = 2.78
AAD = 1.80    BIAS = 0.39    RMS = 2.21 $mW \cdot m^{-1} \cdot K^{-1}$

Comparisons based on experimental pressures
Overall Results:

N =1498    AAD% = 1.59    BIAS% = -0.44    RMS% = 2.18
AAD = 1.09    BIAS = -0.22    RMS = 1.73    $mW \cdot m^{-1} \cdot K^{-1}$

Weighted Data:

N =1098    AAD% = 1.21    BIAS% = -0.50    RMS% = 1.53
AAD = 0.84    BIAS = -0.35    RMS = 1.10 $mW \cdot m^{-1} \cdot K^{-1}$

Comparisons based on experimental pressures (excluding Keyes, Lenoir, Millat, and Mostert; also experimental densities are used for Tufeu):

Overall Results:
N =1357    AAD% = 1.47    BIAS% = -0.33    RMS% = 2.02
AAD = 1.06    BIAS = -0.16    RMS = 1.65 $mW \cdot m^{-1} \cdot K^{-1}$

Comparisons based on experimental densities

Overall Results:

N =1471    AAD% = 1.71    BIAS% = -0.69    RMS% = 2.56
AAD = 1.34    BIAS = -0.62    RMS = 2.88 $mW \cdot m^{-1} \cdot K^{-1}$

Weighted Data:

N =1098    AAD% = 1.28    BIAS% = -0.41    RMS% = 1.72
AAD = 0.88    BIAS = -0.31    RMS = 1.20 $mW \cdot m^{-1} \cdot K^{-1}$

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