

Methanol Thermodynamic Properties From 176 to 673 K at Pressures to 700 Bar

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Available data for vapor pressures and for the orthobaric densities of methanol are examined and formulated. Then, $P\rho T$ data are correlated by an equation of state (EOS) which is constrained to the given coexistence boundary. Via ideal gas state specific heats, the thermodynamic properties of methanol then are obtained by numerical integrations of the EOS, and are tabulated along isobars. A comparison is made with some recent calorimetric enthalpy differences data over a wide range of the EOS surface.

Key words: compressibility factors; densities; enthalpies; entropies; equation of state; fugacities; heats of vaporization; ideal gas; Joule-Thomson coefficients; methanol; orthobaric densities; specific heats; speeds of sound; thermodynamic properties; vapor pressures; virial coefficients.

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Symbols and Units

Subscripts c and t refer to critical and liquid triple points
 Subscripts g and l refer to saturated vapor and liquid
 Subscript σ refers to liquid-vapor coexistence

$\alpha, \beta, \gamma, \delta, \epsilon, p$ exponents in various functions
 $B(T), C(T)$ virial coefficients, Eq. (4)
 $C_{\sigma}(T)$ saturated liquid specific heat, $\text{J mol}^{-1} \text{K}^{-1}$
 $C_v(\rho, T)$ isochoric specific heat, $\text{J mol}^{-1} \text{K}^{-1}$
 \bar{C}_v isochoric specific heat at the critical point (C.P.), $161.14 \text{ J mol}^{-1} \text{K}^{-1}$
 $C_v(T)_{\sigma}$ isochoric specific heat at the liquid boundary, $\text{J mol}^{-1} \text{K}^{-1}$
 $C_p(\rho, T)$ isobaric specific heat, $\text{J mol}^{-1} \text{K}^{-1}$
 $E(\rho, T)$ internal energy, J/mol
 $E_{\sigma}^{\circ} = H_{\sigma}^{\circ}$ $35\,374.762 \text{ J/mol}$ (arbitrary)
 f fugacity, bar
 f/P fugacity/pressure coefficient
 $F(\rho, T)$ defined function in the EOS
 $G(\rho, T)$ Gibbs energy, J/mol
 $H(\rho, T)$ enthalpy, J/mol
 H_0° enthalpy for ideal gas state at $T = 0$
 L liter, 10^{-3} m^3
 mol 32.0424 g of methanol (molecular weight)
 P pressure, bar ($1 \text{ bar} \equiv 10^5 \text{ N/m}^2$)
 P° $1.013\,25 \text{ bar}$ (1 atm)
 $P_{\sigma}(T)$ vapor pressure of saturated liquid, bar
 $P_{\sigma}(\rho)$ $P_{\sigma}[T_{\sigma}(\rho)]$, vapor pressure as function of density, bar
 Q_{vap} ΔH_{vap} , heat of vaporization, J/mol
 R gas constant, $8.3145 \text{ J mol}^{-1} \text{K}^{-1}$, $0.083\,145$ (bar L/mol)/K
 ρ density, mol/L
 σ ρ/ρ_c , reduced density
 σ_0 0.825 , reversal of isochore curvatures, Eq. (6)
 σ_c ρ_c/ρ_c , reduced liquid density at triple point

$S(\rho, T)$ entropy, $\text{J mol}^{-1} \text{K}^{-1}$
 T temperature, K
 $T_{\sigma}(\rho)$ liquid-vapor coexistence temperature
 $u(T)$ defined where used
 $x(T)$ defined where used
 v $1/\rho$, molal volume, L/mol
 $W(\rho, T)$ speed of sound, m/s
 $Z(P, \rho, T)$ $P/(\rho \cdot R \cdot T)$, the "compressibility factor"

1. Introduction

Methanol is a major commodity chemical whose heavy industrial use has been described by Machado and Streett.⁴² Thermodynamic charts for methanol have been prepared by Smith,⁶⁰ and a $P\rho T$ surface was correlated by Bhattacharyya and Thodos.⁶ In an ongoing series of reports, fundamental properties were collected by Wilhoit, *et al.*⁶⁸ A valuable survey was presented by Eubank,¹⁷ and a book on the thermophysical properties was published in Russian by Zubarev, Prusakov, and Sergeyeva.⁷⁴

Polymerization of methanol in the vapor state is a troublesome phenomenon for the experimentalist and correlator. This has been examined by Weltner and Pitzer,⁶⁷ Inskeep,²⁹ Kell,³³ Tucker,⁶⁶ Kudchadker,³⁸ Bartczak,⁵ Francis,²¹ and Nath.⁴⁷

In the present correlation of the thermodynamic properties of methanol we rely heavily on the $P\rho T$ data of Machado and Streett⁴² and on the recent data of Straty.⁶³ Isochore curvatures in Straty's $P\rho T$ data change sign at a reduced density near 0.83, not at the critical density. We thus obtain a specific heat $C_v(\rho, T)$, which is finite at the critical point, via Eq. (10), below.

Symbols and units are given in the list above, and the coexistence phase diagram is outlined in Fig. 1. Selected fixed-point values are listed in Table 1. The triple-point tem-

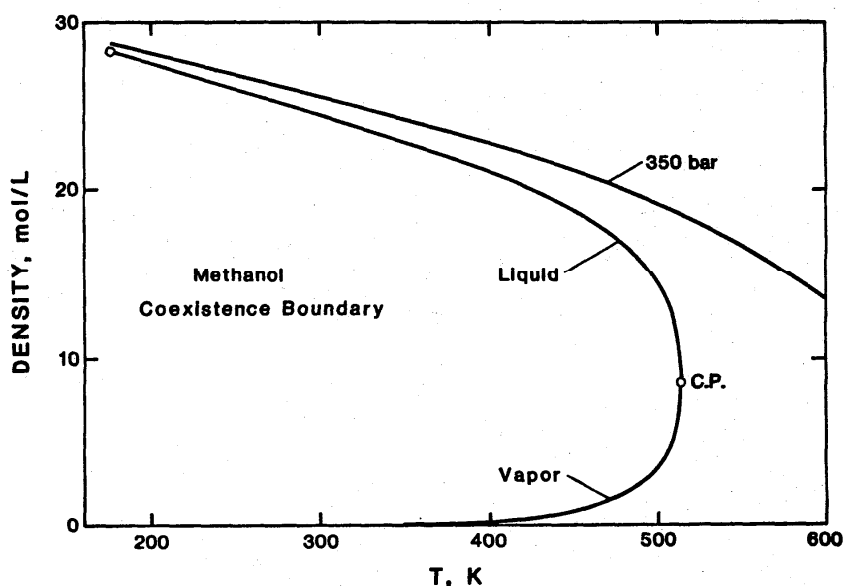


FIG. 1. Methanol coexistence boundary.

TABLE 1. Selected fixed-point values for methanol

	Triple point	Boiling point	Critical point
Temperature, K	175.59	337.668	512.60
Pressure, bar	$1.835 \cdot 10^{-6}$	1.013 25	80.9464
Density, mol/L, vapor	$1.271 \cdot 10^{-7}$	$3.8131 \cdot 10^{-2}$	8.40
liquid	28.226	23.352	8.40

perature is from Carlson and Westrum.¹⁰ Young⁷⁰ reported $T_c = 513.15$ K, $P_c = 79.59 \pm 0.08$ bar, $\rho_c = 8.455$ mol/L. The only recent determination of critical parameters apparently is that of Kay and Donham³²: $T_c = 512.58$ K, $P_c = 80.972$ bar, $\rho_c = 8.49$ mol/L.

Our critical density, $\rho_c = 8.40$ mol/L, was adjusted in the course of fitting orthobaric densities. The boiling-point temperature in Table 1 is from Eq. (1) at $P^* = 1.013 25$ bar, and the triple-point pressure is from Eq. (1) at $T = T_t$. Other fixed-point orthobaric densities are from Eqs. (2) and (3) at appropriate temperatures.

2. Developing the Equation of State

The present isochoric equation of state (EOS) is constrained to the formulated coexistence boundary (vapor pressures and orthobaric densities). The winnowing of masses of data, to cull inaccurate but often precise sets, is a difficult but necessary process. Hence, some excluded data are presented in this report, but are used with zero weight for the least-squares determination of the coefficients in fitting functions. The selected virial EOS for low-density regions also is presented below [Eq. (4)]. Apparently no high-pressure melting line $P_m(T)$ has been established for methanol, which forms glasses under these conditions. See, however, e.g., Carlson and Westrum¹⁰ for calorimetric transitions at low pressures and temperatures.

2.1. Methanol Vapor Pressures

Some of the available vapor-pressure data for methanol are listed in Table 2. Deviations from Eq. (1) are given in Table 3 using $x(T) = T/T_c$, $P_\sigma(T)$ in bar, and exponent $p = 1.70$. Then

$$\ln(P_\sigma) = a/x + b + cx + dx^2 + ex^3 + f(1-x)^p, \quad (1)$$

where

$$\begin{aligned} a &= -10.752\ 848\ 790, & d &= 4.373\ 231\ 941, \\ b &= 16.758\ 206\ 642, & e &= -2.381\ 377\ 449, \\ c &= -3.603\ 424\ 623, & f &= 4.572\ 198\ 698. \end{aligned}$$

The root-mean-square (rms) relative pressure deviation of 0.34% for 83 selected data is not as precise as obtained for many other substances. Data of Straty⁶³ at ID = 99 [(ID) identification of data sources] were used before discovering that he doubted their accuracy, based on apparatus limitations. The data of Young,⁷⁰ ID = 10, based on those of Ramsay and Young,⁵³ are included to provide information on possible temperature-scale adjustments (column ΔT), which would be useful to salvage their extensive and precise orthobaric densities and $P\rho T$ data.

Column Resid. in Table 3 gives values of the residual,

$$\ln(P_\sigma/P_t)/\ln(P_c/P_t) - (1 - T_t/T)/(1 - T_t/T_c),$$

the examination of which is most helpful for developing any vapor-pressure equation.

2.2. Methanol Orthobaric Densities

Table 4 presents some sources of orthobaric density data for methanol.

2.2.a. Saturated Liquid Densities

Deviations from Eq. (2) are given in Table 5 using $x(T) \equiv T/T_c$, $u(T) \equiv (1-x)$, and exponent $\beta = 0.35$. Then

$$(\rho_l/\rho_c - 1) = au^\beta + b(x-1) + c(x^2-1) + d(x^3-1), \quad (2)$$

where

$$\begin{aligned} a &= 2.517\ 309\ 06, & c &= 3.066\ 817\ 68, \\ b &= -2.466\ 694\ 19, & d &= -1.325\ 076\ 80. \end{aligned}$$

The rms relative density deviation is 0.17% for 43 selected data. Data at ID = 72 have been obtained from formulated

TABLE 2. Summary of vapor-pressure data for methanol

ID	Author/year	Range of T , K	Range of P , bar
87	Ramsay, 1887 (Ref. 53)	263–512	0.02–78.3
10	Young, 1910 (Ref. 70)	263–512	0.02–78.3
13	Mundel, 1913 (Ref. 46)	205–229	$1.4 \cdot 10^{-4}$ – $1.3 \cdot 10^{-3}$
51	Waltner, 1951	313–338	0.35–1.00
55	Kay, 1955 (Ref. 32)	403–503	8.4–69.0
64	Skaates, 1964 (Ref. 59)	403–503	8.4–69.0
67	Hirata, 1967 (Ref. 28)	363–473	2.5–39.4
70	Ambrose/Sprake, 1970 (Ref. 3)	222–357	0.1–2.1
73	Zubarev, 1972	175–510	$1.9 \cdot 10^{-6}$ –77.4
74	Counsell, 1973 (Ref. 13)	306–338	0.25–1.0
71	Gibbard, 1974 (Ref. 23)	288–338	0.10–1.0
75	Ambrose/Sprake/Townsend, 1975 (Ref. 4)	353–463	1.8–33.1
83	Machado, 1983	298–473	0.2–40.1
65	Miller, 1984 (Ref. 45)	175–180	$1.7 \cdot 10^{-6}$ – $4.1 \cdot 10^{-6}$
99	Straty, 1985	488–508	53–74

Table 3. Comparison of reported vapor pressures with values calculated from Eq. (1)

ID	Wt.	T K	T/T _c	P bar	Calc. P bar	% Dev.	Resid.	ΔT
55	1.00	403.162	0.78650	0.83771E+01	0.84168E+01	-0.47	0.01257	-0.178
55	1.00	413.166	0.80602	0.10880E+02	0.10899E+02	-0.17	0.01138	-0.068
55	1.00	423.170	0.82554	0.13921E+02	0.13926E+02	-0.04	0.01010	-0.015
55	1.00	433.175	0.84505	0.17582E+02	0.17578E+02	0.02	0.00879	0.010
55	1.00	443.179	0.86457	0.21946E+02	0.21940E+02	0.03	0.00746	0.013
55	1.00	453.184	0.88409	0.27110E+02	0.27104E+02	0.02	0.00616	0.010
55	1.00	463.188	0.90361	0.33191E+02	0.33171E+02	0.06	0.00493	0.030
55	1.00	473.193	0.92312	0.40252E+02	0.40253E+02	-0.00	0.00370	-0.001
55	1.00	483.197	0.94264	0.48449E+02	0.48475E+02	-0.05	0.00254	-0.029
55	1.00	493.201	0.96216	0.57971E+02	0.57987E+02	-0.03	0.00153	-0.016
55	1.00	503.204	0.98167	0.68975E+02	0.68984E+02	-0.01	0.00064	-0.007
64	1.00	403.160	0.78650	0.83770E+01	0.84164E+01	-0.47	0.01257	-0.176
64	1.00	413.170	0.80603	0.10880E+02	0.10900E+02	-0.18	0.01137	-0.072
64	1.00	423.170	0.82554	0.13920E+02	0.13926E+02	-0.04	0.01009	-0.018
64	1.00	433.180	0.84506	0.17581E+02	0.17580E+02	0.01	0.00878	0.003
64	1.00	443.180	0.86457	0.21946E+02	0.21940E+02	0.03	0.00746	0.012
64	1.00	453.180	0.88408	0.27110E+02	0.27102E+02	0.03	0.00617	0.014
64	1.00	463.190	0.90361	0.33191E+02	0.33173E+02	0.06	0.00493	0.028
64	1.00	473.190	0.92312	0.40251E+02	0.40251E+02	0.00	0.00370	0.000
64	1.00	483.200	0.94265	0.48449E+02	0.48478E+02	-0.06	0.00254	-0.032
64	1.00	493.200	0.96215	0.57971E+02	0.57986E+02	-0.03	0.00153	-0.015
64	1.00	503.200	0.98166	0.68974E+02	0.68979E+02	-0.01	0.00064	-0.004
65	0.20	175.063	0.34152	0.16930E-05	0.16824E-05	0.63	-0.00001	0.038
65	0.20	175.603	0.34257	0.18270E-05	0.18394E-05	-0.67	-0.00037	-0.041
65	0.20	176.484	0.34429	0.20150E-05	0.21248E-05	-5.17	-0.00240	-0.317
65	0.20	177.145	0.34558	0.24000E-05	0.23653E-05	1.47	0.00188	0.091
65	0.20	178.136	0.34751	0.27330E-05	0.27734E-05	-1.46	0.00088	-0.091
65	0.20	179.077	0.34935	0.32400E-05	0.32204E-05	0.61	0.00267	0.039
65	0.20	180.278	0.35169	0.41060E-05	0.38875E-05	5.62	0.00619	0.361
70	1.00	288.049	0.56194	0.98150E-01	0.98303E-01	-0.16	0.02468	-0.028
70	1.00	292.386	0.57040	0.12468E+00	0.12487E+00	-0.15	0.02451	-0.028
70	1.00	296.473	0.57837	0.15519E+00	0.15534E+00	-0.09	0.02436	-0.018
70	1.00	300.233	0.58571	0.18858E+00	0.18879E+00	-0.11	0.02415	-0.022
70	1.00	303.061	0.59122	0.21769E+00	0.21784E+00	-0.07	0.02400	-0.014
70	1.00	306.035	0.59702	0.25206E+00	0.25243E+00	-0.15	0.02377	-0.030
70	1.00	309.008	0.60282	0.29128E+00	0.29158E+00	-0.10	0.02359	-0.021
70	1.00	313.787	0.61215	0.36493E+00	0.36529E+00	-0.10	0.02323	-0.021
70	1.00	318.557	0.62145	0.45347E+00	0.45401E+00	-0.12	0.02282	-0.027
70	1.00	322.026	0.62822	0.52884E+00	0.52941E+00	-0.11	0.02253	-0.024
70	1.00	326.465	0.63688	0.64036E+00	0.64101E+00	-0.10	0.02212	-0.024
70	1.00	329.578	0.64295	0.72975E+00	0.73053E+00	-0.11	0.02182	-0.026
70	1.00	333.964	0.65151	0.87345E+00	0.87422E+00	-0.09	0.02139	-0.022
70	1.00	336.934	0.65730	0.98330E+00	0.98434E+00	-0.11	0.02107	-0.027
70	1.00	337.867	0.65912	0.10200E+01	0.10212E+01	-0.12	0.02096	-0.031
70	1.00	341.553	0.66631	0.11771E+01	0.11784E+01	-0.11	0.02057	-0.028
70	1.00	344.920	0.67288	0.13374E+01	0.13390E+01	-0.12	0.02019	-0.032
70	1.00	348.833	0.68052	0.15464E+01	0.15480E+01	-0.10	0.01975	-0.028
70	1.00	352.776	0.68821	0.17831E+01	0.17851E+01	-0.12	0.01929	-0.032
70	1.00	356.828	0.69611	0.20565E+01	0.20592E+01	-0.13	0.01879	-0.037
71	5.00	288.000	0.56184	0.98030E-01	0.98033E-01	-0.00	0.02476	-0.001
71	5.00	293.000	0.57160	0.12909E+00	0.12909E+00	0.00	0.02457	0.000
71	5.00	298.000	0.58135	0.16826E+00	0.16825E+00	0.00	0.02434	0.001
71	5.00	303.000	0.59110	0.21719E+00	0.21718E+00	0.01	0.02405	0.001
71	5.00	308.000	0.60086	0.27779E+00	0.27777E+00	0.01	0.02372	0.002
71	5.00	313.000	0.61061	0.35221E+00	0.35216E+00	0.01	0.02335	0.003
71	5.00	318.000	0.62037	0.44286E+00	0.44280E+00	0.01	0.02295	0.003
71	5.00	323.000	0.63012	0.55246E+00	0.55238E+00	0.01	0.02251	0.003
71	5.00	328.000	0.63988	0.68403E+00	0.68393E+00	0.02	0.02204	0.004
71	5.00	333.000	0.64963	0.84090E+00	0.84077E+00	0.02	0.02155	0.004
71	5.00	338.000	0.65938	0.10267E+01	0.10266E+01	0.01	0.02102	0.003
74	1.00	306.130	0.59721	0.25333E+00	0.25361E+00	-0.11	0.02378	-0.023
74	1.00	321.050	0.62632	0.50667E+00	0.50720E+00	-0.10	0.02262	-0.024
74	1.00	330.560	0.64487	0.76002E+00	0.76085E+00	-0.11	0.02172	-0.026
74	1.00	337.610	0.65862	0.10098E+01	0.10110E+01	-0.11	0.02099	-0.029
75	1.00	353.460	0.68954	0.18300E+01	0.18292E+01	0.05	0.01930	0.013
75	1.00	362.960	0.70808	0.25443E+01	0.25387E+01	0.22	0.01824	0.066
75	1.00	373.660	0.72895	0.35957E+01	0.35919E+01	0.11	0.01682	0.033
75	1.00	383.280	0.74772	0.48181E+01	0.48179E+01	0.00	0.01551	0.001
75	1.00	392.860	0.76641	0.63511E+01	0.63531E+01	-0.03	0.01421	-0.011
75	1.00	403.380	0.78693	0.84676E+01	0.84656E+01	0.02	0.01282	0.009
75	1.00	413.110	0.80591	0.10879E+02	0.10883E+02	-0.04	0.01146	-0.016

THERMODYNAMIC PROPERTIES OF METHANE

Table 3. Comparison of reported vapor pressures with values calculated from Eq. (1) - Continued

ID	Wt.	T K	T/T _c	P bar	Calc. P bar	% Dev.	Resid.	ΔT
75	1.00	423.190	0.82558	0.13934E+02	0.13933E+02	0.01	0.01012	0.004
75	1.00	432.920	0.84456	0.17478E+02	0.17476E+02	0.01	0.00881	0.004
75	1.00	443.040	0.86430	0.21897E+02	0.21874E+02	0.11	0.00753	0.049
75	1.00	453.270	0.88426	0.27187E+02	0.27152E+02	0.13	0.00621	0.062
75	1.00	462.900	0.90304	0.33108E+02	0.32983E+02	0.38	0.00515	0.192
99	1.00	488.137	0.95228	0.52857E+02	0.53000E+02	-0.27	0.00190	-0.151
99	1.00	493.175	0.96210	0.57916E+02	0.57961E+02	-0.08	0.00150	-0.044
99	1.00	498.178	0.97187	0.63180E+02	0.63258E+02	-0.12	0.00101	-0.071
99	1.00	503.133	0.98153	0.68912E+02	0.68900E+02	0.02	0.00066	0.010
99	1.00	503.202	0.98167	0.68962E+02	0.68981E+02	-0.03	0.00063	-0.016
99	1.00	508.130	0.99128	0.75135E+02	0.75029E+02	0.14	0.00035	0.083
99	1.00	508.148	0.99131	0.75128E+02	0.75052E+02	0.10	0.00033	0.059
10	0.00	263.150	0.51336	0.20665E-01	0.20999E-01	-1.59	0.02389	-0.232
10	0.00	273.150	0.53287	0.39463E-01	0.40521E-01	-2.61	0.02349	-0.414
10	0.00	283.150	0.55238	0.72927E-01	0.74295E-01	-1.84	0.02384	-0.316
10	0.00	293.150	0.57189	0.12799E+00	0.13014E+00	-1.65	0.02362	-0.306
10	0.00	303.150	0.59140	0.21332E+00	0.21882E+00	-2.51	0.02259	-0.502
10	0.00	313.150	0.61091	0.34730E+00	0.35463E+00	-2.07	0.02215	-0.444
10	0.00	323.150	0.63041	0.54129E+00	0.55599E+00	-2.64	0.02097	-0.609
10	0.00	333.150	0.64992	0.83326E+00	0.84591E+00	-1.49	0.02067	-0.368
10	0.00	353.150	0.68894	0.17879E+01	0.18091E+01	-1.17	0.01864	-0.330
10	0.00	363.150	0.70845	0.25291E+01	0.25549E+01	-1.01	0.01752	-0.302
10	0.00	373.150	0.72796	0.34944E+01	0.35348E+01	-1.14	0.01617	-0.363
10	0.00	383.150	0.74746	0.47476E+01	0.47993E+01	-1.08	0.01491	-0.363
10	0.00	393.150	0.76697	0.63341E+01	0.64051E+01	-1.11	0.01355	-0.395
10	0.00	403.150	0.78648	0.83220E+01	0.84141E+01	-1.10	0.01221	-0.413
10	0.00	413.150	0.80599	0.10760E+02	0.10894E+02	-1.23	0.01078	-0.489
10	0.00	423.150	0.82550	0.13780E+02	0.13919E+02	-1.00	0.00955	-0.418
10	0.00	433.150	0.84501	0.17368E+02	0.17568E+02	-1.14	0.00813	-0.502
10	0.00	443.150	0.86451	0.21721E+02	0.21926E+02	-0.94	0.00692	-0.432
10	0.00	453.150	0.88402	0.26783E+02	0.27085E+02	-1.12	0.00552	-0.540
10	0.00	463.150	0.90353	0.32817E+02	0.33146E+02	-0.99	0.00434	-0.502
10	0.00	473.150	0.92304	0.39713E+02	0.40220E+02	-1.26	0.00299	-0.666
10	0.00	483.150	0.94255	0.47689E+02	0.48433E+02	-1.54	0.00170	-0.843
10	0.00	493.150	0.96206	0.56759E+02	0.57935E+02	-2.03	0.00038	-1.152
10	0.00	498.150	0.97181	0.61724E+02	0.63227E+02	-2.38	-0.00029	-1.370
10	0.00	503.150	0.98156	0.67213E+02	0.68920E+02	-2.48	-0.00078	-1.445
10	0.00	505.150	0.98547	0.69597E+02	0.71318E+02	-2.41	-0.00090	-1.414
10	0.00	507.150	0.98937	0.71913E+02	0.73790E+02	-2.54	-0.00112	-1.495
10	0.00	509.150	0.99327	0.74159E+02	0.76340E+02	-2.86	-0.00144	-1.683
10	0.00	510.150	0.99522	0.75987E+02	0.77647E+02	-2.14	-0.00109	-1.260
10	0.00	511.150	0.99717	0.76762E+02	0.78975E+02	-2.80	-0.00154	-1.651
10	0.00	511.650	0.99815	0.77766E+02	0.79649E+02	-2.36	-0.00131	-1.392
10	0.00	512.150	0.99912	0.78315E+02	0.80328E+02	-2.51	-0.00142	-1.474
13	0.00	205.750	0.40139	0.13600E-03	0.12147E-03	11.96	0.02164	1.021
13	0.00	206.850	0.40353	0.14670E-03	0.13808E-03	6.25	0.01904	0.539
13	0.00	210.650	0.41094	0.22130E-03	0.21261E-03	4.09	0.01910	0.367
13	0.00	212.750	0.41504	0.28260E-03	0.26796E-03	5.46	0.02048	0.501
13	0.00	216.150	0.42167	0.39330E-03	0.38574E-03	1.96	0.01951	0.186
13	0.00	218.650	0.42655	0.50530E-03	0.50031E-03	1.00	0.01962	0.097
13	0.00	221.250	0.43162	0.65460E-03	0.65127E-03	0.51	0.01997	0.051
13	0.00	225.050	0.43904	0.93590E-03	0.94617E-03	-1.09	0.01990	-0.113
13	0.00	226.650	0.44216	0.10930E-02	0.11028E-02	-0.89	0.02033	-0.094
13	0.00	228.750	0.44625	0.13150E-02	0.13437E-02	-2.13	0.02002	-0.229
51	0.00	313.100	0.61081	0.34664E+00	0.35381E+00	-2.03	0.02218	-0.435
51	0.00	327.900	0.63968	0.66661E+00	0.68106E+00	-2.12	0.02082	-0.505
51	0.00	337.800	0.65899	0.10066E+01	0.10185E+01	-1.17	0.02037	-0.299
67	0.00	362.850	0.70786	0.25230E+01	0.25294E+01	-0.25	0.01799	-0.075
67	0.00	368.750	0.71937	0.30499E+01	0.30717E+01	-0.71	0.01698	-0.220
67	0.00	373.650	0.72893	0.35565E+01	0.35908E+01	-0.95	0.01622	-0.304
67	0.00	388.350	0.75761	0.55222E+01	0.55880E+01	-1.18	0.01416	-0.408
67	0.00	391.350	0.76346	0.60086E+01	0.60882E+01	-1.31	0.01368	-0.461
67	0.00	412.250	0.80423	0.10426E+02	0.10650E+02	-2.10	0.01039	-0.831
67	0.00	414.050	0.80774	0.10913E+02	0.11143E+02	-2.07	0.01017	-0.826
67	0.00	426.850	0.83272	0.14824E+02	0.15192E+02	-2.42	0.00823	-1.035
67	0.00	444.350	0.86686	0.22180E+02	0.22501E+02	-1.43	0.00648	-0.663
67	0.00	449.350	0.87661	0.24632E+02	0.25024E+02	-1.57	0.00575	-0.746
67	0.00	453.850	0.88539	0.27064E+02	0.27479E+02	-1.51	0.00520	-0.734
67	0.00	458.050	0.89358	0.29516E+02	0.29936E+02	-1.40	0.00473	-0.694

Table 3. Comparison of reported vapor pressures with values calculated from Eq. (1) - Continued

ID	Wt.	T K	T/T _c	P bar	Calc. P bar	% Dev.	Resid.	ΔT
67	0.00	462.050	0.90139	0.31968E+02	0.32432E+02	-1.43	0.00422	-0.721
67	0.00	465.850	0.90880	0.34430E+02	0.34952E+02	-1.49	0.00372	-0.764
67	0.00	469.250	0.91543	0.36882E+02	0.37333E+02	-1.21	0.00348	-0.628
67	0.00	472.650	0.92206	0.39355E+02	0.39841E+02	-1.22	0.00307	-0.643
73	0.00	175.400	0.34218	0.18870E-05	0.17788E-05	6.08	0.00322	0.368
73	0.00	180.000	0.35115	0.39090E-05	0.37226E-05	5.01	0.00568	0.321
73	0.00	190.000	0.37066	0.16930E-04	0.16255E-04	4.15	0.01087	0.299
73	0.00	200.000	0.39017	0.62740E-04	0.60635E-04	3.47	0.01500	0.279
73	0.00	210.000	0.40968	0.20350E-03	0.19771E-03	2.93	0.01826	0.261
73	0.00	220.000	0.42918	0.58810E-03	0.57421E-03	2.42	0.02074	0.239
73	0.00	230.000	0.44869	0.15390E-02	0.15085E-02	2.02	0.02261	0.220
73	0.00	240.000	0.46820	0.36870E-02	0.36312E-02	1.54	0.02386	0.183
73	0.00	250.000	0.48771	0.81890E-02	0.80965E-02	1.14	0.02469	0.149
73	0.00	260.000	0.50722	0.17000E-01	0.16875E-01	0.74	0.02509	0.105
73	0.00	270.000	0.52673	0.33270E-01	0.33134E-01	0.41	0.02519	0.063
73	0.00	280.000	0.54623	0.62080E-01	0.61698E-01	0.62	0.02530	0.104
73	0.00	290.000	0.56574	0.10940E+00	0.10958E+00	-0.16	0.02460	-0.030
73	0.00	300.000	0.58525	0.18600E+00	0.18655E+00	-0.30	0.02406	-0.058
73	0.00	310.000	0.60476	0.30430E+00	0.30574E+00	-0.47	0.02330	-0.099
73	0.00	320.000	0.62427	0.48170E+00	0.48419E+00	-0.51	0.02248	-0.116
73	0.00	330.000	0.64378	0.73950E+00	0.74343E+00	-0.53	0.02154	-0.128
73	0.00	340.000	0.66329	0.11044E+01	0.11099E+01	-0.49	0.02052	-0.128
73	0.00	350.000	0.68279	0.16082E+01	0.16153E+01	-0.44	0.01943	-0.121
73	0.00	360.000	0.70230	0.22880E+01	0.22970E+01	-0.39	0.01826	-0.114
73	0.00	370.000	0.72181	0.31880E+01	0.31979E+01	-0.31	0.01705	-0.097
73	0.00	380.000	0.74132	0.43570E+01	0.43670E+01	-0.23	0.01581	-0.076
73	0.00	390.000	0.76083	0.58450E+01	0.58588E+01	-0.24	0.01448	-0.083
73	0.00	400.000	0.78034	0.77030E+01	0.77338E+01	-0.40	0.01304	-0.147
73	0.00	410.000	0.79984	0.10000E+02	0.10058E+02	-0.58	0.01158	-0.225
73	0.00	420.000	0.81935	0.12830E+02	0.12903E+02	-0.57	0.01023	-0.233
73	0.00	430.000	0.83886	0.16260E+02	0.16346E+02	-0.53	0.00890	-0.229
73	0.00	440.000	0.85837	0.20400E+02	0.20471E+02	-0.35	0.00767	-0.158
73	0.00	450.000	0.87788	0.25300E+02	0.25368E+02	-0.27	0.00641	-0.127
73	0.00	460.000	0.89739	0.31080E+02	0.31133E+02	-0.17	0.00520	-0.085
73	0.00	470.000	0.91689	0.37800E+02	0.37875E+02	-0.20	0.00396	-0.104
73	0.00	480.000	0.93640	0.45610E+02	0.45715E+02	-0.23	0.00280	-0.124
73	0.00	490.000	0.95591	0.54660E+02	0.54793E+02	-0.24	0.00172	-0.136
73	0.00	500.000	0.97542	0.65170E+02	0.65285E+02	-0.18	0.00081	-0.102
73	0.00	510.000	0.99493	0.77430E+02	0.77449E+02	-0.02	0.00013	-0.015
83	0.00	298.150	0.58164	0.16900E+00	0.16957E+00	-0.34	0.02413	-0.065
83	0.00	313.150	0.61091	0.35300E+00	0.35463E+00	-0.46	0.02307	-0.099
83	0.00	323.150	0.63041	0.55300E+00	0.55599E+00	-0.54	0.02218	-0.124
83	0.00	333.150	0.64992	0.84100E+00	0.84591E+00	-0.58	0.02119	-0.143
83	0.00	343.150	0.66943	0.12460E+01	0.12525E+01	-0.52	0.02016	-0.136
83	0.00	353.150	0.68894	0.18010E+01	0.18091E+01	-0.45	0.01905	-0.126
83	0.00	363.150	0.70845	0.25460E+01	0.25549E+01	-0.35	0.01789	-0.104
83	0.00	373.150	0.72796	0.35240E+01	0.35348E+01	-0.30	0.01665	-0.097
83	0.00	383.150	0.74746	0.47900E+01	0.47993E+01	-0.19	0.01541	-0.066
83	0.00	393.150	0.76697	0.63870E+01	0.64051E+01	-0.28	0.01403	-0.101
83	0.00	403.150	0.78648	0.83760E+01	0.84141E+01	-0.45	0.01258	-0.171
83	0.00	413.150	0.80599	0.10834E+02	0.10894E+02	-0.55	0.01116	-0.220
83	0.00	423.150	0.82550	0.13843E+02	0.13919E+02	-0.55	0.00981	-0.229
83	0.00	433.150	0.84501	0.17490E+02	0.17568E+02	-0.44	0.00852	-0.196
83	0.00	443.150	0.86451	0.21855E+02	0.21926E+02	-0.32	0.00727	-0.150
83	0.00	453.150	0.88402	0.27024E+02	0.27085E+02	-0.23	0.00603	-0.109
83	0.00	463.150	0.90353	0.33083E+02	0.33146E+02	-0.19	0.00480	-0.097
83	0.00	473.150	0.92304	0.40137E+02	0.40220E+02	-0.21	0.00359	-0.109

83 data points, rms deviation 0.339%.

ID code: (10) Young, (13) Mundell, (51) Weltner, (55) Kay, (64) Skaates, (65) Miller, (67) Hirata, (70) Ambrose / Sprake, (71) Gibbard, (73) Zubarev, (74) Counsell, (75) Ambrose / Sprake / Townsend, (83) Machado, (99) Straty.

Table 5. Comparison of reported saturated liquid densities with values calculated from Eq. (2) - Continued

ID	Wt.	T K	T/T _c	ρ mol/l	Calc. ρ mol/l	% Dev.	d ρ_l /dT (mol/l)/K
10	0.00	453.150	0.88402	18.663	18.563	0.54	-0.0610
10	0.00	463.150	0.90353	18.007	17.916	0.51	-0.0688
10	0.00	473.150	0.92304	17.258	17.177	0.47	-0.0796
10	0.00	483.150	0.94255	16.400	16.306	0.58	-0.0960
10	0.00	493.150	0.96206	15.292	15.216	0.50	-0.1251
10	0.00	498.150	0.97181	14.590	14.531	0.41	-0.1511
10	0.00	503.150	0.98156	13.763	13.672	0.67	-0.1981
10	0.00	505.150	0.98547	13.404	13.245	1.20	-0.2306
10	0.00	507.150	0.98937	12.936	12.737	1.56	-0.2816
10	0.00	509.150	0.99327	12.343	12.090	2.09	-0.3775
10	0.00	510.150	0.99522	12.015	11.671	2.95	-0.4704
10	0.00	511.150	0.99717	11.563	11.119	3.99	-0.6596
10	0.00	511.650	0.99815	11.344	10.744	5.59	-0.8667
55	0.00	403.162	0.78650	20.966	21.030	-0.31	-0.0411
55	0.00	413.166	0.80602	20.517	20.607	-0.44	-0.0437
55	0.00	423.170	0.82554	20.036	20.155	-0.59	-0.0468
55	0.00	433.175	0.84505	19.530	19.669	-0.71	-0.0505
55	0.00	443.179	0.86457	18.978	19.141	-0.85	-0.0552
55	0.00	453.184	0.88409	18.385	18.561	-0.95	-0.0611
55	0.00	463.188	0.90361	17.730	17.913	-1.02	-0.0688
55	0.00	473.193	0.92312	17.002	17.174	-1.00	-0.0797
55	0.00	483.197	0.94264	16.135	16.301	-1.02	-0.0961
55	0.00	493.201	0.96216	15.014	15.210	-1.29	-0.1253
55	0.00	503.204	0.98167	13.485	13.661	-1.29	-0.1988
72	0.00	494.178	0.96406	15.000	15.086	-0.57	-0.1295
72	0.00	501.279	0.97791	14.000	14.021	-0.15	-0.1765
72	0.00	506.223	0.98756	13.000	12.985	0.11	-0.2546
72	0.00	509.029	0.99303	12.000	12.135	-1.12	-0.3692
72	0.00	510.633	0.99616	11.000	11.427	-3.74	-0.5418
72	0.00	512.001	0.99883	10.000	10.393	-3.78	-1.1679
73	0.00	330.000	0.64378	23.589	23.591	-0.01	-0.0310
73	0.00	340.000	0.66329	23.255	23.278	-0.10	-0.0317
73	0.00	350.000	0.68279	22.931	22.957	-0.11	-0.0326
73	0.00	360.000	0.70230	22.599	22.625	-0.12	-0.0337
73	0.00	370.000	0.72181	22.244	22.282	-0.17	-0.0350
73	0.00	380.000	0.74132	21.885	21.925	-0.18	-0.0365
73	0.00	390.000	0.76083	21.494	21.552	-0.27	-0.0382
73	0.00	400.000	0.78034	21.087	21.159	-0.34	-0.0403
73	0.00	410.000	0.79984	20.668	20.744	-0.37	-0.0428
73	0.00	420.000	0.81935	20.226	20.302	-0.37	-0.0457
73	0.00	430.000	0.83886	19.740	19.828	-0.44	-0.0492
73	0.00	440.000	0.85837	19.217	19.314	-0.50	-0.0536
73	0.00	450.000	0.87788	18.643	18.752	-0.58	-0.0590
73	0.00	460.000	0.89739	18.008	18.128	-0.66	-0.0661
73	0.00	470.000	0.91689	17.281	17.422	-0.81	-0.0758
73	0.00	480.000	0.93640	16.460	16.598	-0.83	-0.0900
73	0.00	490.000	0.95591	15.442	15.592	-0.96	-0.1137
73	0.00	500.000	0.97542	14.096	14.239	-1.00	-0.1649
73	0.00	510.000	0.99493	11.602	11.740	-1.18	-0.4527
85	0.00	298.120	0.58158	24.547	24.551	-0.01	-0.0294
85	0.00	322.540	0.62922	23.825	23.820	0.02	-0.0305
85	0.00	342.830	0.66881	23.188	23.188	-0.00	-0.0319
85	0.00	362.900	0.70796	22.527	22.527	0.00	-0.0340
85	0.00	382.600	0.74639	21.847	21.830	0.08	-0.0369
85	0.00	402.340	0.78490	21.088	21.064	0.11	-0.0409
85	0.00	421.610	0.82249	20.268	20.228	0.20	-0.0462
85	0.00	441.900	0.86208	19.262	19.212	0.26	-0.0545
85	0.00	463.060	0.90336	17.980	17.922	0.32	-0.0687
85	0.00	478.620	0.93371	16.808	16.721	0.52	-0.0876
85	0.00	488.860	0.95369	15.807	15.719	0.56	-0.1102
99	0.00	510.898	0.99668	11.078	11.277	-1.76	-0.5948

43 data points, rms deviation 0.170%

ID code: (10) Young, (55) Kay, (72) RDG / Zubarev, (73) Zubarev,
(83) Machado, (85) Machado / v.p. / Tait, (99) Straty.

Table 6. Comparison of reported saturated vapor densities with values calculated from Eq. (3) - Continued

ID	Wt.	T K	T/T _c	ρ mol/l	Calc. ρ mol/l	% Dev.	d ρ_g /dT (mol/l)/K	Z (exp.)	f(Z)
73	0.00	430.000	0.83886	0.57581E+00	0.59364E+00	-3.00	0.1466E-01	0.79403	0.26614
73	0.00	440.000	0.85837	0.73432E+00	0.75807E+00	-3.13	0.1837E-01	0.76202	0.30750
73	0.00	450.000	0.87788	0.93720E+00	0.96463E+00	-2.84	0.2315E-01	0.72344	0.35736
73	0.00	460.000	0.89739	0.11866E+01	0.12261E+01	-3.22	0.2946E-01	0.68598	0.40576
73	0.00	470.000	0.91689	0.15450E+01	0.15616E+01	-1.07	0.3816E-01	0.62734	0.48154
73	0.00	480.000	0.93640	0.20006E+01	0.20027E+01	-0.11	0.5097E-01	0.57257	0.55231
73	0.00	490.000	0.95591	0.27138E+01	0.26083E+01	4.05	0.7219E-01	0.49558	0.65179
73	0.00	500.000	0.97542	0.37153E+01	0.35202E+01	5.54	0.1171E+00	0.42268	0.74599
73	0.00	510.000	0.99493	0.52896E+01	0.54267E+01	-2.53	0.3665E+00	0.34529	0.84599
99	0.00	510.025	0.99498	0.53494E+01	0.54359E+01	-1.59	0.3690E+00	0.34156	0.85081

53 data points, rms deviation 0.211%.

ID code: (10) Young, (20) Eubank, (31) Fiock, (39) Lashakov, (49) Staveley, (51) Weltner, (55) Kay, (69) virial / v.p., (70) Kudchadker, (72) RDG / Zubarev, (73) Zubarev, (74) Counsell, (75) Counsell / Q_{vap} , (76) Svoboda, (90) via C_p , (99) Straty.

2.2.c. Alternative Vapor Density Equation

After completing the present report, we reinvestigated the formulation of saturated vapor densities to obtain $Z_\sigma \rightarrow 1$ as $\rho \rightarrow 0$. The argument is temperature, T . On integrating Eq. (9) along isotherms using EOS (6), however, $T = T_\sigma(\rho)$, $P = P_\sigma[T_\sigma(\rho)]$ for Eq. (2a), and then the argument is density, ρ . In either case, symbols refer to the state of saturated vapor at coexistence, where $x \equiv T/T_c$, $u \equiv (1-x)$, $Z \equiv P/(\rho RT)$, $\beta = 0.35$,

$$Z = 1 + (Z_c - 1)\exp[f(x)], \quad (3c)$$

$$f(x) = A_1(1 - 1/x) + A_2u^\beta + \sum_{i=3}^7 A_i u^i - 2, \quad (3d)$$

$$A_1 = 77.027\ 624\ 2, \quad A_5 = 270.449\ 459,$$

$$A_2 = -0.797\ 401\ 6, \quad A_6 = -600.239\ 197,$$

$$A_3 = 73.261\ 311\ 3, \quad A_7 = 887.047\ 221.$$

$$A_4 = 51.823\ 505\ 7,$$

This equation yields $Z = 1$ in the limit of low temperatures.

2.3. The Virial Equation

For the virial equation of state,

$$Z(P, \rho, T) = 1 + B(T)\rho + C(T)\rho^2 + \dots, \quad (4)$$

we used 18 mixed $P\rho T$ data from Kell³³ and from Kudchadker,³⁷ at 298 to 573 K, to formulate $B(T)$ in L/mol, using $x(T) \equiv T/1000$,

$$B(T) = B_1 + \frac{B_2}{x} + \frac{B_3}{x^2} + \frac{B_4}{x^5}, \quad (4a)$$

$$B_1 = 3.6922, \quad B_3 = 1.3098,$$

$$B_2 = -4.3214, \quad B_4 = -0.015\ 008.$$

with an average absolute deviation of 0.021 L/mol.

Corresponding data for $C(T)$ in (L/mol)² have been formulated graphically,

$$C(T) = -\exp[C_1 - C_2(T/100)], \quad (4b)$$

$$C_1 = 17.1634, \quad C_2 = 4.4545.$$

For methanol, $C(T)$ always is negative in the present range of reduced temperatures of 0.58 to 0.97, quite in contrast to simple substances.

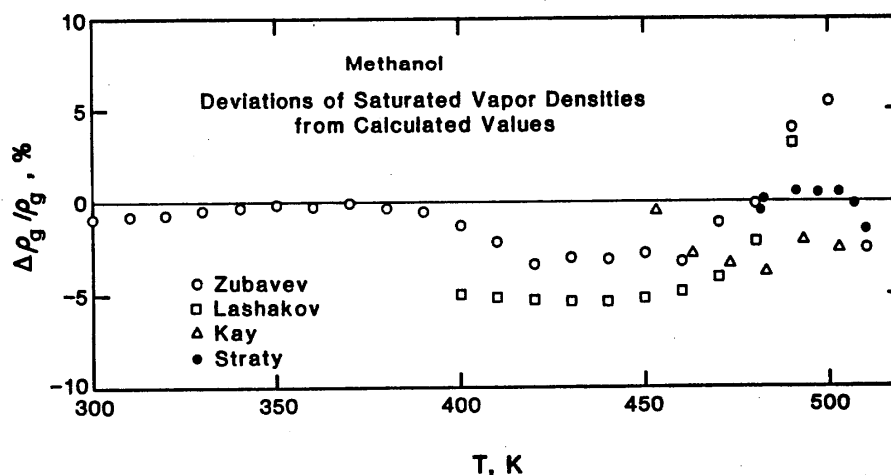


FIG. 2. Methanol vapor densities deviations

2.4. Pressure–Density–Temperature Data

The location of available $P\rho T$ data for methanol was plotted in P - T coordinates by Machado and Streett.⁴² Recent data of Straty⁶³ along isochores (at densities from 0.25 to $2.62 \times$ the critical) extend from 378 to 573 K at pressures from 26 to 342 bar. Sources of data are given in Table 7. To obtain least-squares coefficients of the EOS, we used 164 data of Machado and Streett⁴²; 220 data of Straty⁶³; and 16 low-density data generated by virial Eq. (4), above, which constitute 400 points from more than 1606 available data points. The vapor pressures, Eq. (1), and the orthobaric densities, Eqs. (2) and (3), also contribute to the EOS as constraints.

The $P\rho T$ data of Zubarev and Bagdonas^{71,72} were given first as raw data (with some typographic errors), and then as smoothed tables. We corrected the raw data errors where possible and arranged these data onto isotherms. Each isotherm then is represented by a polynomial, in which the number of terms n were selected:

$$\ln(Z) = \sum_{i=1}^n A_i \sigma^i, \quad (5)$$

where $\sigma \equiv \rho/\rho_c$ is the reduced density. In Table 8 we give T , ρ , P , Z , Z_{calc} , and the differences of Z in percent. The coefficients A_i are given at the top of each isotherm in Table 8. By reading these isotherms at rounded densities, we obtain the isochoric Zubarev data given in Table 9 at ID = 90.

2.5. The Equation of State

An outline of this EOS was given by Goodwin.²⁵ At present (see the Introduction) the specific heat $C_v(\rho, T)$ is finite at the critical point. The following isochoric EOS gives pressure as a function of temperature along paths of constant density (isochores) which originate on the liquid–vapor coexistence boundary, specified by vapor pressure Eq. (1), and by the orthobaric densities Eqs. (2) and (3). For any iso-

chore (density) the coexistence temperature $T_\sigma(\rho)$, as found by iteration from Eqs. (2) and (3), and thus the vapor pressure, $P_\sigma[T_\sigma(\rho)]$ becomes a function of density. In outline

$$P - P_\sigma(\rho) = \rho R [T - T_\sigma(\rho)] + \sigma(\rho R T_c) F(\rho, T). \quad (6)$$

The function $F(\rho, T)$ consists of two temperature-dependent functions, each with an isochoric (density dependent) coefficient. Let $x(T) \equiv T/T_c$, $u(\rho, T) \equiv T/T_\sigma(\rho)$, then,

$$F(\rho, T) \equiv B(\rho)\Phi(\rho, T) + C(\rho)\Psi(\rho, T), \quad (6a)$$

$$\Phi(\rho, T) \equiv \ln[(1 + u^2)/2], \quad (6b)$$

$$\Psi(\rho, T) \equiv (1/x)\ln[1 + \epsilon(u - 1)]/\epsilon, \quad (6c)$$

$$B(\rho) \equiv B_1 \sigma \exp(-\gamma\sigma), \quad (6d)$$

and

$$C(\rho) = [C_1 + C_2\sigma + C_3\sigma^2](\sigma - \sigma_0)\exp(-\delta\sigma). \quad (6e)$$

Function $\Phi(\rho, T)$ has an inflection versus $u(T)$ at coexistence (zero curvature). Function $\Psi(\rho, T)$ has large curvature versus $u(T)$ approaching coexistence, but its coefficient, $C(\rho)$, changes sign at a reduced density, $\sigma_0 = 0.825$. The coefficients $B(\rho)$, $C(\rho)$ were tediously formulated by trial fitting of the $P\rho T$ data. To obtain a well-behaved critical isotherm, we constrain the slope of the critical isochore to equal the slope of vapor-pressure Eq. (1), both at the critical point, via the least-squares program of McCarty.⁴³

Parameters and coefficients for Eq. (6) are

$$\gamma = 0.82, \quad \delta = 3.3, \quad \epsilon = 7.0, \quad \sigma_0 = 0.825$$

$$B_1 = 3.271\,666\,57, \quad C_2 = 24.384\,012\,46,$$

$$C_1 = -20.376\,962\,79, \quad C_3 = -75.609\,064\,80.$$

Deviations of experimental densities and pressures from the EOS, Eq. (6), are presented in Table 9. At the bottom of each author's individual table in Table 9, $\Delta\rho/\rho$ av. is the trend of density deviations, obtained as the average of signed relative deviations in percent. $|\Delta P/P|$ av. is the average of

TABLE 7. Summary of $P\rho T$ data for methanol

ID	Author/year	Rel. wt. ^a %	T, K	Range of the data			Relative deviations in percent			
				ρ , mol/L	P, bar	NP ^b	$\Delta\rho/\rho$		$\Delta P/P$ av. ^d	
							rms	trend ^c		
87	Ramsay, 1887 (Ref. 53)	0.1	373–513	0.07–7.8	2.1–80	192	7.0	+1.8	1.2	
93	Amagat, 1893, (Ref. 2)	0.0	273–303	25.5–27.6	100–2000	46	0.7	–0.6	12.5	
13	Bridgman, 1913 (Ref. 9)	0.0	293–353	24.5–28.8	490–2942	42	1.1	–1.0	13.1	
16	Seltz, 1916 (Ref. 57)	0.0	175–273	25.5–29.5	101–1013	70	0.5	–0.5	20.8	
39	Lashakov, 1939 (Ref. 39)	0.0	443–563	0.3–3.7	10–97	97	3.5	+2.1	1.3	
54	Kretschmer, 1954 (Ref. 35)	0.0	310–390	0.006–0.037	0.2–1.0	36	1.5	–1.4	1.4	
55	Petty, 1955 (Ref. 50)	0.0	366–411	0.02–0.29	0.7–8.6	23	0.7	–0.4	0.6	
67	Zubarev, 1967 (Ref. 71)	0.1	413–573	0.1–20.4	4.0–218	189	1.4	–0.1	0.5	
68	Kudchadker, 1970 (Ref. 38)	0.0	298–473	0.002–1.6	0.05–40	103	11.2	+4.3	3.9	
70	Finkelstein, 1970 (Ref. 19)	0.1	473–573	6.1–20.9	86–727	162	1.3	–0.1	6.9	
83	Machado, 1983 (Ref. 42)	12.3	298–489	15.8–25.4	5–1038	164	0.2	+0.1	3.3	
99	Straty, 1985 (Ref. 63)	81.1	378–573	2.1–22.1	25–342	220	0.7	–0.0	0.6	
69	Virial Eq., 1985	6.1	430–570	0.2–0.4	6.7–18	16	0.7	–0.2	0.6	

^a Rel. wt., %, see Sec. 2.4.

^b NP = number of $P\rho T$ data.

^c Trend = average of signed relative density deviations.

^d Av. = average of absolute relative pressure deviations.

Table 8. Comparison of ID code (73) Zubarev $P\rho T$ data with values calculated from Eq. (5)

Isotherm 1: $T = 413.150$ K					
$A_1 = -0.34736588E+01$					
$A_2 = 0.52462056E+02$					
$A_3 = -0.22110983E+04$					
Wt.	ρ mol/l	P bar	Z (data)	Z (calc.)	% Dev.
1.00	0.1222	4.018	0.95685	0.95480	0.21
1.00	0.1298	4.228	0.94849	0.95190	-0.36
1.00	0.1613	5.196	0.93785	0.93894	-0.12
1.00	0.2285	7.127	0.90811	0.90470	0.38
1.00	0.2450	7.536	0.89555	0.89447	0.12
1.00	0.3361	9.411	0.81517	0.82151	-0.77
1.00	0.3614	9.930	0.79982	0.79576	0.51

7 data points, average deviation 0.35%.

Isotherm 2: $T = 433.150$ K

$A_1 = -0.19932800E+01$

$A_2 = -0.40014274E+02$

$A_3 = 0.68906431E+03$

$A_4 = -0.71360918E+04$

Wt.	ρ mol/l	P bar	Z (data)	Z (calc.)	% Dev.
1.00	0.1111	3.877	0.96860	0.96851	0.01
1.00	0.1168	4.069	0.96697	0.96669	0.03
1.00	0.2042	6.892	0.93696	0.93734	-0.04
1.00	0.2448	8.134	0.92271	0.92297	-0.03
1.00	0.3637	11.506	0.87854	0.87770	0.10
1.00	0.4289	13.117	0.84914	0.84969	-0.06
1.00	0.5633	15.799	0.77874	0.77868	0.01

7 data points, average deviation 0.04%.

Isotherm 3: $T = 453.150$ K

$A_1 = -0.19170507E+01$

$A_2 = -0.10340721E+02$

$A_3 = 0.76187032E+01$

$A_4 = -0.12849398E+01$

Wt.	ρ mol/l	P bar	Z (data)	Z (calc.)	% Dev.
1.00	0.1488	5.379	0.95974	0.96353	-0.39
1.00	0.2752	9.623	0.92805	0.92900	-0.10
1.00	0.4932	16.068	0.86472	0.86358	0.13
1.00	0.6005	18.830	0.83224	0.82932	0.35
1.00	0.8075	23.079	0.75860	0.76096	-0.31
1.00	0.9492	25.525	0.71375	0.71329	0.06
1.00	18.4798	27.177	0.03903	0.03903	0.00
1.00	20.3526	216.140	0.28186	0.28186	-0.00

8 data points, average deviation 0.17%.

Table 8. Comparison of ID code (73) Zubarev $P\rho T$ data with values calculated from Eq. (5) - Continued

Isotherm 4: $T = 473.150$ K					
$A_1 = -0.17880657E+01$					
$A_2 = -0.43182251E+01$					
$A_3 = 0.31219773E+01$					
$A_4 = -0.44020608E+00$					
Wt.	ρ mol/l	P bar	Z (data)	Z (calc.)	% Dev.
1.00	0.1456	5.557	0.97041	0.96825	0.22
1.00	0.3190	11.674	0.93021	0.92871	0.16
1.00	0.4915	17.169	0.88799	0.88800	-0.00
1.00	0.6387	21.395	0.85144	0.85251	-0.12
1.00	0.7974	25.482	0.81235	0.81383	-0.18
1.00	0.9617	29.299	0.77439	0.77359	0.10
1.00	1.2966	35.327	0.69258	0.69236	0.03
1.00	17.3961	51.291	0.07495	0.07495	-0.00
1.00	19.2682	200.590	0.26463	0.26463	0.00

9 data points, average deviation 0.09%.

Isotherm 5: $T = 493.150$ K

$A_1 = -0.14795422E+01$

$A_2 = -0.35842775E+01$

$A_3 = 0.67540983E+01$

$A_4 = -0.41617149E+01$

$A_5 = 0.87259346E+00$

Wt.	ρ mol/l	P bar	Z (data)	Z (calc.)	% Dev.
1.00	0.1650	6.574	0.97147	0.97006	0.15
1.00	0.1842	7.295	0.96571	0.96647	-0.08
1.00	0.2939	11.394	0.94561	0.94567	-0.01
1.00	0.4697	17.529	0.91025	0.91139	-0.12
1.00	0.7280	25.685	0.86048	0.85987	0.07
1.00	0.9873	32.716	0.80815	0.80798	0.02
1.00	1.3124	40.117	0.74550	0.74431	0.16
1.00	1.3920	41.513	0.72733	0.72913	-0.25
1.00	1.4303	42.365	0.72239	0.72190	0.07
1.00	1.9088	49.774	0.63596	0.63597	-0.00
1.00	2.2356	53.420	0.58277	0.58273	0.01
1.00	16.5537	94.010	0.13850	0.13850	-0.00
1.00	18.4252	218.030	0.28859	0.28859	0.00

13 data points, average deviation 0.07%.

Isotherm 6: $T = 503.150$ K

$A_1 = -0.14774971E+01$

$A_2 = -0.20129723E+01$

$A_3 = 0.35286904E+01$

$A_4 = -0.27690155E+01$

$A_5 = 0.11383922E+01$

$A_6 = -0.17069560E+00$

Wt.	ρ mol/l	P bar	Z (data)	Z (calc.)	% Dev.
1.00	0.2015	8.134	0.96504	0.96411	0.10
1.00	0.3828	14.905	0.93077	0.93129	-0.06
1.00	0.7777	28.032	0.86162	0.85947	0.25
1.00	1.0935	36.752	0.80339	0.80298	0.05
1.00	1.5048	46.086	0.73210	0.73225	-0.02
1.00	1.9265	53.365	0.66216	0.66423	-0.31
1.00	2.7915	63.220	0.54136	0.54162	-0.05
1.00	3.0037	64.850	0.51608	0.51512	0.19
1.00	13.9924	71.480	0.12211	0.12211	0.00
1.00	14.8740	83.760	0.13461	0.13489	-0.21
1.00	15.8460	107.360	0.16195	0.16115	0.50
1.00	16.7213	140.570	0.20095	0.20174	-0.39
1.00	17.7121	207.590	0.28016	0.27990	0.09

13 data points, average deviation 0.17%.

Table 8. Comparison of ID code (73) Zubarev $P\rho T$ data with values calculated from Eq. (5) - Continued

Isotherm 7: $T = 509.530$ K					
A ₁ = -0.20312018E+01					
A ₂ = 0.99821982E+00					
A ₃ = -0.83396654E+00					
A ₄ = 0.33442346E+00					
Wt.	ρ mol/l	P bar	Z (data)	Z (calc.)	% Dev.
1.00	3.2717	70.130	0.50597	0.50597	-0.00
1.00	12.8983	79.670	0.14580	0.14580	0.00
1.00	14.7552	100.870	0.16137	0.16137	-0.00
1.00	16.6092	165.260	0.23486	0.23486	0.00

4 data points, average deviation 0.00%.

Isotherm 8: $T = 513.150$ K

A ₁ = -0.13869434E+01					
A ₂ = -0.19332905E+01					
A ₃ = 0.49930021E+01					
A ₄ = -0.73027561E+01					
A ₅ = 0.78330417E+01					
A ₆ = -0.53834432E+01					
A ₇ = 0.20008806E+01					
A ₈ = -0.29739445E+00					
Wt.	ρ mol/l	P bar	Z (data)	Z (calc.)	% Dev.
1.00	1.7007	52.231	0.71980	0.71995	-0.02
1.00	2.4867	64.940	0.61207	0.61140	0.11
1.00	2.7741	68.130	0.57562	0.57619	-0.10
1.00	3.5380	74.570	0.49400	0.49376	0.05
1.00	4.2484	77.970	0.43015	0.43038	-0.05
1.00	4.3765	78.450	0.42013	0.42018	-0.01
1.00	4.6518	79.220	0.39915	0.39940	-0.06
1.00	5.3836	80.730	0.35147	0.35121	0.07
1.00	6.0682	81.420	0.31448	0.31410	0.12
1.00	6.4018	81.500	0.29838	0.29839	-0.00
1.00	7.2511	81.610	0.26379	0.26419	-0.15
1.00	7.8969	81.820	0.24284	0.24279	0.02
1.00	8.2958	81.830	0.23119	0.23120	-0.00
1.00	9.1040	81.850	0.21072	0.21081	-0.04
1.00	9.7284	82.060	0.19770	0.19750	0.10
1.00	10.1922	82.140	0.18889	0.18883	0.03
1.00	10.9735	82.650	0.17653	0.17652	0.01
1.00	11.5545	83.410	0.16919	0.16935	-0.09
1.00	13.3943	92.300	0.16151	0.16146	0.03
1.00	15.2171	124.220	0.19133	0.19134	-0.01
1.00	17.0614	208.600	0.28656	0.28656	0.00

21 data points, average deviation 0.05%.

Isotherm 9: $T = 514.150$ K

A ₁ = -0.16086341E+01					
A ₂ = -0.85034633E+00					
A ₃ = 0.20399674E+01					
A ₄ = -0.14097368E+01					
A ₅ = 0.36561771E+00					
Wt.	ρ mol/l	P bar	Z (data)	Z (calc.)	% Dev.
1.00	6.2693	82.470	0.30772	0.30761	0.03
1.00	8.1655	83.020	0.23783	0.23815	-0.13
1.00	10.0608	83.490	0.19412	0.19370	0.22
1.00	11.9573	86.030	0.16830	0.16861	-0.18
1.00	13.8582	99.670	0.16824	0.16810	0.08
1.00	15.6741	145.290	0.21683	0.21687	-0.02

6 data points, average deviation 0.11%.

Table 8. Comparison of ID code (73) Zubarev $P\rho T$ data with values calculated from Eq. (5) - Continued

Isotherm 10: $T = 517.950$ K					
A ₁ = -0.16183303E+01					
A ₂ = 0.51149640E+00					
A ₃ = -0.28969726E+01					
A ₄ = 0.62763540E+01					
A ₅ = -0.56832515E+01					
A ₆ = 0.23750067E+01					
A ₇ = -0.37041775E+00					

Wt.	ρ mol/l	P bar	Z (data)	Z (calc.)	% Dev.
1.00	2.6766	69.240	0.60070	0.60106	-0.06
1.00	3.0477	73.470	0.55977	0.55987	-0.02
1.00	3.2914	75.980	0.53604	0.53455	0.28
1.00	3.9792	80.400	0.46918	0.47027	-0.23
1.00	4.5427	83.040	0.42447	0.42510	-0.15
1.00	4.9357	84.310	0.39665	0.39727	-0.16
1.00	5.0970	85.130	0.38784	0.38667	0.30
1.00	5.7955	86.310	0.34582	0.34569	0.04
1.00	6.3952	87.090	0.31622	0.31617	0.01
1.00	6.8275	87.470	0.29749	0.29764	-0.05
1.00	6.9896	87.820	0.29175	0.29122	0.18
1.00	7.6137	88.130	0.26878	0.26882	-0.01
1.00	8.2650	88.430	0.24845	0.24886	-0.16
1.00	8.8888	88.920	0.23229	0.23243	-0.06
1.00	9.4314	89.350	0.21998	0.22000	-0.01
1.00	10.7802	91.070	0.19617	0.19587	0.15
1.00	11.2545	91.960	0.18974	0.18973	0.00
1.00	13.0733	101.480	0.18025	0.18040	-0.08
1.00	14.8989	131.830	0.20546	0.20540	0.03
1.00	16.7401	209.570	0.29070	0.29071	-0.00

20 data points, average deviation 0.10%.

Isotherm 11: $T = 523.150$ K

A ₁ = -0.12965102E+01					
A ₂ = -0.12984460E+01					
A ₃ = 0.20446507E+01					
A ₄ = -0.34527581E+00					
A ₅ = -0.10411478E+01					
A ₆ = 0.74574276E+00					
A ₇ = -0.14515165E+00					

Wt.	ρ mol/l	P bar	Z (data)	Z (calc.)	% Dev.
1.00	0.2972	12.326	0.95340	0.95370	-0.03
1.00	0.8801	33.032	0.86285	0.86261	0.03
1.00	1.1279	40.472	0.82495	0.82473	0.03
1.00	1.1839	42.040	0.81634	0.81628	0.01
1.00	1.7946	56.852	0.72830	0.72801	0.04
1.00	2.9387	74.880	0.58580	0.58608	-0.05
1.00	3.4719	80.100	0.53040	0.53124	-0.16
1.00	3.5810	81.100	0.52066	0.52088	-0.04
1.00	4.7999	88.510	0.42394	0.42296	0.23
1.00	5.2744	90.100	0.39273	0.39258	0.04
1.00	5.4116	90.540	0.38464	0.38449	0.04
1.00	6.6736	93.550	0.32227	0.32211	0.05
1.00	7.2470	94.230	0.29893	0.29967	-0.25
1.00	8.5470	96.150	0.25863	0.25884	-0.08
1.00	9.0003	96.910	0.24754	0.24733	0.09
1.00	10.4345	99.500	0.21922	0.21892	0.14
1.00	10.8153	100.420	0.21346	0.21342	0.02
1.00	12.6376	110.240	0.20054	0.20083	-0.14
1.00	14.4652	138.300	0.21980	0.21964	0.08
1.00	16.3021	206.880	0.29175	0.29255	-0.27
1.00	16.3388	210.020	0.29551	0.29477	0.25

21 data points, average deviation 0.10%.

Table 8. Comparison of ID code (73) Zubarev $P\rho T$ data with values calculated from Eq. (5) - Continued

Isotherm 12: $T = 533.150$ K
 $A_1 = -0.11905675E+01$
 $A_2 = -0.13346006E+01$
 $A_3 = 0.27445200E+01$
 $A_4 = -0.21280175E+03$
 $A_5 = 0.79583776E+00$
 $A_6 = -0.10255988E+00$

Wt.	ρ mol/l	P bar	Z (data)	Z (calc.)	% Dev.
1.00	1.3796	49.050	0.80203	0.80185	0.02
1.00	2.3607	70.720	0.67579	0.67637	-0.09
1.00	3.1131	82.050	0.59457	0.59471	-0.02
1.00	3.1979	83.180	0.58676	0.58631	0.08
1.00	4.1407	92.450	0.50367	0.50339	0.06
1.00	4.4205	94.460	0.48205	0.48219	-0.03
1.00	4.9428	97.760	0.44618	0.44632	-0.03
1.00	5.0142	98.240	0.44197	0.44176	0.05
1.00	5.9502	102.730	0.38948	0.38894	0.14
1.00	6.7826	105.300	0.35023	0.35117	-0.27
1.00	6.2480	103.660	0.37427	0.37454	-0.07
1.00	7.7662	108.760	0.31592	0.31541	0.16
1.00	9.5867	114.360	0.26910	0.26893	0.06
1.00	11.4092	123.390	0.24397	0.24420	-0.09
1.00	13.2341	143.260	0.24420	0.24410	0.04
1.00	15.0672	189.800	0.28417	0.28419	-0.01

16 data points, average deviation 0.08%.

Isotherm 13: $T = 543.150$ K

$$A_1 = -0.11044012E+01$$

$$A_2 = -0.12391635E+01$$

$$A_3 = 0.27030339E+01$$

$$A_4 = -0.22672008E+01$$

$$A_5 = 0.94277755E+00$$

$$A_6 = -0.14311807E+00$$

Wt.	ρ mol/l	P bar	Z (data)	Z (calc.)	% Dev.
1.00	0.8621	34.469	0.88533	0.88363	0.19
1.00	1.1645	44.421	0.84468	0.84324	0.17
1.00	1.7702	61.170	0.76517	0.76601	-0.11
1.00	2.0044	66.570	0.73542	0.73785	-0.33
1.00	2.8843	83.690	0.64250	0.64201	0.08
1.00	3.7990	96.020	0.55968	0.55927	0.07
1.00	4.7315	104.920	0.49103	0.49091	0.03
1.00	5.4810	110.520	0.44651	0.44584	0.15
1.00	5.6630	111.450	0.43579	0.43605	-0.06
1.00	6.5976	116.660	0.39154	0.39189	-0.09
1.00	7.3021	120.180	0.36444	0.36449	-0.01
1.00	7.5225	121.210	0.35680	0.35683	-0.01
1.00	8.4783	125.570	0.32796	0.32810	-0.04
1.00	9.1296	128.720	0.31220	0.31240	-0.06
1.00	9.3954	130.330	0.30717	0.30684	0.11
1.00	10.3601	136.130	0.29096	0.29079	0.06
1.00	10.9600	140.540	0.28394	0.28414	-0.07
1.00	12.2401	154.580	0.27965	0.27937	0.10
1.00	12.8014	162.840	0.28167	0.28193	-0.09
1.00	14.6526	210.200	0.31766	0.31763	0.01

20 data points, average deviation 0.09%.

Table 8. Comparison of ID code (73) Zubarev $P\rho T$ data with values calculated from Eq. (5) - Continued

Isotherm 14: $T = 553.150$ K
 $A_1 = -0.11142259E+01$
 $A_2 = -0.57574298E+00$
 $A_3 = 0.12409446E+01$
 $A_4 = -0.75816358E+00$
 $A_5 = 0.19499884E+00$

Wt.	ρ mol/l	P bar	Z (data)	Z (calc.)	% Dev.
1.00	2.4230	78.970	0.70864	0.70866	-0.00
1.00	4.1178	106.400	0.56182	0.56178	0.01
1.00	5.8784	123.240	0.45584	0.45588	-0.01
1.00	7.6569	135.540	0.38489	0.38486	0.01
1.00	9.4489	147.830	0.34018	0.34019	-0.00
1.00	11.2512	165.010	0.31888	0.31888	0.00

6 data points, average deviation 0.00%.

Isotherm 15: $T = 563.150$ K

$$A_1 = -0.10343831E+01$$

$$A_2 = -0.51530284E+00$$

$$A_3 = 0.11244725E+01$$

$$A_4 = -0.66972068E+00$$

$$A_5 = 0.16935352E+00$$

Wt.	ρ mol/l	P bar	Z (data)	Z (calc.)	% Dev.
1.00	1.6297	61.680	0.80831	0.80834	-0.00
1.00	3.2748	99.860	0.65125	0.65123	0.00
1.00	5.0142	124.540	0.53045	0.53042	0.01
1.00	6.7913	141.930	0.44634	0.44641	-0.02
1.00	8.5823	157.520	0.39199	0.39192	0.02
1.00	10.3859	175.860	0.36163	0.36166	-0.01
1.00	12.2023	204.020	0.35708	0.35708	0.00

7 data points, average deviation 0.01%.

Isotherm 16: $T = 573.150$ K

$$A_1 = -0.95078540E+00$$

$$A_2 = -0.50658628E+00$$

$$A_3 = 0.10542908E+01$$

$$A_4 = -0.59380764E+00$$

$$A_5 = 0.14361683E+00$$

Wt.	ρ mol/l	P bar	Z (data)	Z (calc.)	% Dev.
1.00	1.4342	57.540	0.84188	0.84169	0.02
1.00	3.0507	100.230	0.68944	0.69001	-0.08
1.00	3.9555	117.260	0.62208	0.62137	0.11
1.00	4.7661	129.290	0.56924	0.56945	-0.04
1.00	5.7222	141.400	0.51854	0.51877	-0.04
1.00	6.5294	150.610	0.48403	0.48384	0.04
1.00	7.4904	160.780	0.45043	0.45042	0.00
1.00	8.3145	169.590	0.42801	0.42803	-0.00
1.00	9.2748	180.540	0.40848	0.40857	-0.02
1.00	10.1143	191.460	0.39723	0.39713	0.02
1.00	11.0810	206.250	0.39058	0.39060	-0.01

11 data points, average deviation 0.04%.

Table 9a. Comparison of HD code (13) Bridgeman $P\rho T$ data with values calculated from Eq. (6)

Wt.	T K	ρ mol/l	Calc. ρ mol/l	$\Delta\rho/\rho$ %	P bar	Calc. P bar	$\Delta P/P$ %
0.001	293.150	25.7348	25.8805	-0.56	490.333	419.812	16.80
0.001	293.150	26.5260	26.7667	-0.90	980.665	837.029	17.16
0.001	293.150	27.2524	27.5045	-0.92	1470.998	1294.824	13.61
0.001	293.150	27.8192	28.1466	-1.16	1961.330	1703.662	15.12
0.001	293.150	28.3083	28.7192	-1.43	2451.663	2094.541	17.05
0.001	293.150	28.7526	29.2376	-1.66	2941.995	2481.900	18.54
0.001	303.150	25.5115	25.6307	-0.47	490.333	434.063	12.96
0.001	303.150	26.3134	26.5394	-0.85	980.665	848.536	15.57
0.001	303.150	27.0454	27.2923	-0.90	1470.998	1301.588	13.02
0.001	303.150	27.6246	27.9463	-1.15	1961.330	1712.456	14.53
0.001	303.150	28.1256	28.5291	-1.41	2451.663	2106.686	16.38
0.001	303.150	28.5803	29.0568	-1.64	2941.995	2497.279	17.81
0.001	313.150	25.2793	25.3819	-0.40	490.333	443.261	10.62
0.001	313.150	26.1042	26.3143	-0.80	980.665	860.300	13.99
0.001	313.150	26.8500	27.0828	-0.86	1470.998	1314.068	11.94
0.001	313.150	27.4387	27.7487	-1.12	1961.330	1725.337	13.68
0.001	313.150	27.9515	28.3416	-1.38	2451.663	2123.192	15.47
0.001	313.150	28.4133	28.8784	-1.61	2941.995	2514.560	17.00
0.001	323.150	25.0389	25.1335	-0.38	490.333	448.227	9.39
0.001	323.150	25.8930	26.0912	-0.76	980.665	869.517	12.78
0.001	323.150	26.6631	26.8758	-0.79	1470.998	1330.031	10.60
0.001	323.150	27.2671	27.5536	-1.04	1961.330	1746.333	12.31
0.001	323.150	27.7856	28.1565	-1.32	2451.663	2143.777	14.36
0.001	323.150	28.2545	28.7022	-1.56	2941.995	2536.391	15.99
0.001	333.150	24.7909	24.8851	-0.38	490.333	449.776	9.02
0.001	333.150	25.6799	25.8698	-0.73	980.665	876.594	11.87
0.001	333.150	26.4732	26.6710	-0.74	1470.998	1342.184	9.60
0.001	333.150	27.0917	27.3610	-0.98	1961.330	1762.337	11.29
0.001	333.150	27.6246	27.9738	-1.25	2451.663	2165.809	13.20
0.001	333.150	28.0975	28.5283	-1.51	2941.995	2557.109	15.05
0.001	343.150	24.5335	24.6360	-0.42	490.333	447.724	9.52
0.001	343.150	25.4601	25.6497	-0.74	980.665	879.233	11.54
0.001	343.150	26.2751	26.4683	-0.73	1470.998	1347.525	9.16
0.001	343.150	26.9129	27.1707	-0.95	1961.330	1773.793	10.57
0.001	343.150	27.4626	27.7934	-1.19	2451.663	2184.550	12.23
0.001	343.150	27.9422	28.3564	-1.46	2941.995	2576.831	14.17
0.001	353.150	24.2697	24.3858	-0.48	490.333	443.915	10.46
0.001	353.150	25.2213	25.4306	-0.82	980.665	871.750	12.49
0.001	353.150	26.0692	26.2674	-0.75	1470.998	1346.821	9.22
0.001	353.150	26.7336	26.9825	-0.92	1961.330	1783.111	9.99
0.001	353.150	27.2995	27.6151	-1.14	2451.663	2200.276	11.43
0.001	353.150	27.7947	28.1867	-1.39	2941.995	2600.805	13.12

42 data points, $|\Delta\rho/\rho|$ rms = 1.059%, $\Delta\rho/\rho$ av. = -0.99%, $|\Delta P/P|$ av. = 13.11%,
weight = 0.02%.

Table 9b. Comparison of ID code (16) Seitz P_pT data with values calculated from Eq. (6)

Wt.	T K	ρ mol/l	Calc. ρ mol/l	$\Delta\rho/\rho$ %	P bar	Calc. P bar	$\Delta P/P$ %
0.001	175.200	28.3607	28.4318	-0.25	101.325	63.060	60.68
0.001	175.200	28.5046	28.6111	-0.37	202.650	141.654	43.06
0.001	175.200	28.6451	28.7797	-0.47	303.975	222.607	36.55
0.001	175.200	28.7804	28.9394	-0.55	405.300	304.434	33.13
0.001	175.200	28.9105	29.0914	-0.62	506.625	386.567	31.06
0.001	175.200	29.0333	29.2367	-0.70	607.950	467.354	30.08
0.001	175.200	29.1522	29.3760	-0.76	709.275	548.472	29.32
0.001	175.200	29.2686	29.5100	-0.82	810.600	630.797	28.50
0.001	175.200	29.3792	29.6390	-0.88	911.925	711.603	28.15
0.001	175.200	29.4871	29.7635	-0.93	1013.250	793.040	27.77
0.001	181.800	28.1538	28.2220	-0.24	101.325	65.309	55.15
0.001	181.800	28.3004	28.4051	-0.37	202.650	143.848	40.88
0.001	181.800	28.4421	28.5771	-0.47	303.975	223.927	35.75
0.001	181.800	28.5819	28.7401	-0.55	405.300	306.894	32.07
0.001	181.800	28.7134	28.8952	-0.63	506.625	388.382	30.45
0.001	181.800	28.8412	29.0435	-0.70	607.950	470.816	29.13
0.001	181.800	28.9684	29.1857	-0.74	709.275	556.123	27.54
0.001	181.800	29.0901	29.3224	-0.79	810.600	640.720	26.51
0.001	181.800	29.2061	29.4541	-0.84	911.925	724.128	25.93
0.001	181.800	29.3161	29.5812	-0.90	1013.250	805.871	25.73
0.001	204.250	27.4730	27.5299	-0.21	101.325	73.191	38.44
0.001	204.250	27.6367	27.7255	-0.32	202.650	155.804	30.07
0.001	204.250	27.7963	27.9091	-0.40	303.975	240.998	26.13
0.001	204.250	27.9468	28.0828	-0.48	405.300	325.537	24.50
0.001	204.250	28.0912	28.2482	-0.56	506.625	410.342	23.46
0.001	204.250	28.2261	28.4062	-0.63	607.950	492.837	23.36
0.001	204.250	28.3575	28.5577	-0.70	709.275	576.276	23.08
0.001	204.250	28.4869	28.7034	-0.75	810.600	661.438	22.55
0.001	204.250	28.6094	28.8438	-0.81	911.925	744.809	22.44
0.001	204.250	28.7314	28.9794	-0.86	1013.250	830.487	22.01
0.001	223.210	26.9244	26.9669	-0.16	101.325	81.354	24.55
0.001	223.210	27.1063	27.1735	-0.25	202.650	168.868	20.00
0.001	223.210	27.2788	27.3670	-0.32	303.975	257.033	18.26
0.001	223.210	27.4402	27.5499	-0.40	405.300	343.886	17.86
0.001	223.210	27.5930	27.7237	-0.47	506.625	429.978	17.83
0.001	223.210	27.7398	27.8897	-0.54	607.950	516.293	17.75
0.001	223.210	27.8790	28.0487	-0.61	709.275	601.327	17.95
0.001	223.210	28.0150	28.2017	-0.66	810.600	687.416	17.92
0.001	223.210	28.1475	28.3490	-0.71	911.925	774.294	17.78
0.001	223.210	28.2782	28.4913	-0.75	1013.250	862.782	17.44
0.001	235.700	26.5706	26.6046	-0.13	101.325	85.935	17.91
0.001	235.700	26.7647	26.8189	-0.20	202.650	176.337	14.92
0.001	235.700	26.9488	27.0192	-0.26	303.975	267.625	13.58
0.001	235.700	27.1194	27.2082	-0.33	405.300	356.970	13.54
0.001	235.700	27.2803	27.3877	-0.39	506.625	445.414	13.74
0.001	235.700	27.4313	27.5589	-0.46	607.950	532.002	14.28
0.001	235.700	27.5764	27.7229	-0.53	709.275	618.561	14.67
0.001	235.700	27.7185	27.8805	-0.58	810.600	706.494	14.74
0.001	235.700	27.8575	28.0323	-0.62	911.925	795.551	14.63
0.001	235.700	27.9932	28.1789	-0.66	1013.250	885.477	14.43
0.001	252.350	26.1055	26.1296	-0.09	101.325	90.989	11.36
0.001	252.350	26.3134	26.3549	-0.16	202.650	183.398	10.50
0.001	252.350	26.5066	26.5649	-0.22	303.975	275.148	10.48
0.001	252.350	26.6885	26.7626	-0.28	405.300	366.634	10.55
0.001	252.350	26.8614	26.9498	-0.33	506.625	458.160	10.58
0.001	252.350	27.0251	27.1283	-0.38	607.950	548.805	10.78
0.001	252.350	27.1820	27.2990	-0.43	709.275	639.400	10.93
0.001	252.350	27.3319	27.4628	-0.48	810.600	729.325	11.14
0.001	252.350	27.4790	27.6206	-0.51	911.925	820.804	11.10
0.001	252.350	27.6186	27.7727	-0.55	1013.250	910.640	11.27

Table 9b. Comparison of IJ code (16) Seitz $P\rho T$ data with values calculated from Eq. (6) - Continued

Wt.	T K	ρ mol/l	Calc. ρ mol/l	$\Delta\rho/\rho$ %	P bar	Calc. P bar	$\Delta P/P$ %
0.001	273.150	25.5230	25.5441	-0.08	101.325	92.876	9.10
0.001	273.150	25.7519	25.7853	-0.13	202.650	188.079	7.75
0.001	273.150	25.9634	26.0089	-0.17	303.975	282.815	7.48
0.001	273.150	26.1582	26.2183	-0.23	405.300	375.601	7.91
0.001	273.150	26.3436	26.4162	-0.27	506.625	468.822	8.06
0.001	273.150	26.5205	26.6041	-0.31	607.950	562.235	8.13
0.001	273.150	26.6913	26.7836	-0.34	709.275	656.581	8.03
0.001	273.150	26.8529	26.9555	-0.38	810.600	749.604	8.14
0.001	273.150	27.0078	27.1208	-0.42	911.925	842.225	8.28
0.001	273.150	27.1558	27.2801	-0.46	1013.250	933.862	8.50

70 data points, $|\Delta\rho/\rho|$ rms = 0.529%, $\Delta\rho/\rho$ av. = -0.48%, $|\Delta P/P|$ av. = 20.82%,
weight = 0.03%.

Table 9c. Comparison of ID code (39) Lashakov $P\rho T$ data with values calculated from Eq. (6)

Wt.	T K	ρ mol/l	Calc. ρ mol/l	$\Delta\rho/\rho$ %	P bar	Calc. P bar	$\Delta P/P$ %
0.001	443.150	0.3121	0.3144	-0.73	10.436	10.368	0.66
0.001	453.150	0.3121	0.3126	-0.16	10.740	10.725	0.15
0.001	463.150	0.3121	0.3114	0.22	11.044	11.067	-0.21
0.001	473.150	0.3121	0.3106	0.47	11.348	11.399	-0.44
0.001	483.150	0.3121	0.3102	0.62	11.652	11.721	-0.58
0.001	493.150	0.3121	0.3099	0.69	11.956	12.035	-0.65
0.001	503.150	0.3121	0.3099	0.70	12.260	12.342	-0.66
0.001	513.150	0.3121	0.3100	0.66	12.564	12.644	-0.63
0.001	523.150	0.3121	0.3103	0.58	12.868	12.940	-0.56
0.001	533.150	0.3121	0.3106	0.47	13.172	13.233	-0.46
0.001	543.150	0.3121	0.3110	0.34	13.476	13.521	-0.33
0.001	553.150	0.3121	0.3115	0.20	13.780	13.806	-0.19
0.001	563.150	0.3121	0.3120	0.03	14.084	14.089	-0.03
0.001	443.150	0.6242	0.6470	-3.52	18.796	18.319	2.60
0.001	453.150	0.6242	0.6310	-1.08	19.454	19.294	0.83
0.001	463.150	0.6242	0.6209	0.53	20.113	20.198	-0.42
0.001	473.150	0.6242	0.6143	1.60	20.772	21.046	-1.30
0.001	483.150	0.6242	0.6117	2.03	21.481	21.850	-1.69
0.001	493.150	0.6242	0.6106	2.23	22.190	22.616	-1.88
0.001	503.150	0.6242	0.6104	2.25	22.899	23.352	-1.94
0.001	513.150	0.6242	0.6110	2.16	23.609	24.061	-1.88
0.001	523.150	0.6242	0.6121	1.97	24.318	24.749	-1.74
0.001	533.150	0.6242	0.6136	1.72	25.027	25.418	-1.54
0.001	543.150	0.6242	0.6155	1.41	25.737	26.070	-1.28
0.001	553.150	0.6242	0.6175	1.07	26.446	26.708	-0.98
0.001	563.150	0.6242	0.6198	0.71	27.155	27.333	-0.65
0.001	463.150	0.9363	0.9449	-0.92	27.355	27.190	0.61
0.001	473.150	0.9363	0.9241	1.32	28.467	28.732	-0.92
0.001	483.150	0.9363	0.9162	2.19	29.683	30.164	-1.59
0.001	493.150	0.9363	0.9088	3.02	30.793	31.508	-2.27
0.001	503.150	0.9363	0.9086	3.04	32.009	32.780	-2.35
0.001	513.150	0.9363	0.9103	2.85	33.224	33.993	-2.26
0.001	523.150	0.9363	0.9095	2.94	34.319	35.155	-2.38
0.001	533.150	0.9363	0.9137	2.47	35.535	36.274	-2.04
0.001	543.150	0.9363	0.9185	1.93	36.751	37.357	-1.62
0.001	553.150	0.9363	0.9238	1.35	37.966	38.409	-1.15
0.001	563.150	0.9363	0.9270	1.00	39.091	39.433	-0.87
0.001	473.150	1.2483	1.2395	0.71	34.451	34.593	-0.41
0.001	483.150	1.2483	1.2167	2.60	36.173	36.772	-1.63
0.001	493.150	1.2483	1.2062	3.49	37.896	38.791	-2.31
0.001	503.150	1.2483	1.2071	3.42	39.719	40.683	-2.37
0.001	513.150	1.2483	1.2068	3.44	41.422	42.470	-2.47
0.001	523.150	1.2483	1.2141	2.82	43.246	44.171	-2.10
0.001	533.150	1.2483	1.2201	2.32	44.988	45.799	-1.77
0.001	543.150	1.2483	1.2261	1.82	46.691	47.365	-1.42
0.001	553.150	1.2483	1.2369	0.93	48.514	48.878	-0.74
0.001	563.150	1.2483	1.2457	0.21	50.257	50.345	-0.17
0.001	483.150	1.5604	1.5090	3.41	41.138	41.889	-1.79
0.001	493.150	1.5604	1.5145	3.03	43.874	44.656	-1.75
0.001	503.150	1.5604	1.5126	3.16	46.306	47.228	-1.95
0.001	513.150	1.5604	1.5133	3.12	48.636	49.642	-2.03
0.001	523.150	1.5604	1.5234	2.43	51.068	51.928	-1.66
0.001	533.150	1.5604	1.5361	1.58	53.500	54.107	-1.12
0.001	543.150	1.5604	1.5467	0.89	55.830	56.195	-0.65
0.001	553.150	1.5604	1.5624	-0.13	58.262	58.206	0.10
0.001	563.150	1.5604	1.5753	-0.95	60.592	60.150	0.74
0.001	483.150	1.8725	1.7839	4.97	44.763	45.741	-2.14
0.001	493.150	1.8725	1.8138	3.24	48.514	49.306	-1.61
0.001	503.150	1.8725	1.8126	3.31	51.651	52.601	-1.81
0.001	513.150	1.8725	1.8175	3.03	54.691	55.681	-1.78
0.001	523.150	1.8725	1.8296	2.34	57.731	58.587	-1.46
0.001	533.150	1.8725	1.8413	1.70	60.667	61.348	-1.11
0.001	543.150	1.8725	1.8582	0.77	63.652	63.988	-0.52
0.001	483.150	2.1846	2.0563	6.24	47.500	48.587	-2.24
0.001	493.150	2.1846	2.1013	3.96	52.054	52.930	-1.66
0.001	503.150	2.1846	2.1093	3.57	56.004	56.977	-1.71
0.001	513.150	2.1846	2.1190	3.10	59.756	60.749	-1.63
0.001	523.150	2.1846	2.1381	2.18	63.501	64.298	-1.24
0.001	533.150	2.1846	2.1625	1.02	67.246	67.666	-0.62
0.001	543.150	2.1846	2.1854	-0.04	70.899	70.882	0.02

Table 9c. Comparison of ID code (39) Lashakov $P\rho T$ data with values calculated from Eq. (6) - Continued

Wt.	T K	ρ mol/l	Calc. ρ mol/l	$\Delta\rho/\rho$ %	P bar	Calc. P bar	$\Delta P/P$ %
0.001	493.150	2.4967	2.3639	5.62	54.610	55.686	-1.93
0.001	503.150	2.4967	2.3981	4.11	59.474	60.504	-1.70
0.001	513.150	2.4967	2.4137	3.44	63.932	64.984	-1.62
0.001	523.150	2.4967	2.4490	1.95	68.496	69.196	-1.01
0.001	533.150	2.4967	2.4884	0.33	73.051	73.188	-0.19
0.001	543.150	2.4967	2.5134	-0.66	77.307	76.999	0.40
0.001	493.150	2.8088	2.5998	8.04	56.430	57.711	-2.22
0.001	503.150	2.8088	2.6655	5.38	62.102	63.306	-1.90
0.001	513.150	2.8088	2.7019	3.96	67.373	68.504	-1.65
0.001	523.150	2.8088	2.7568	1.89	72.735	73.389	-0.89
0.001	533.150	2.8088	2.8079	0.03	78.006	78.019	-0.02
0.001	543.150	2.8088	2.8415	-1.15	82.976	82.441	0.65
0.001	503.150	3.1209	2.8907	7.96	63.936	65.492	-2.38
0.001	513.150	3.1209	2.9744	4.92	70.117	71.409	-1.81
0.001	523.150	3.1209	3.0583	2.05	76.298	76.971	-0.87
0.001	533.150	3.1209	3.1392	-0.58	82.479	82.248	0.28
0.001	543.150	3.1209	3.1732	-1.65	88.051	87.291	0.87
0.001	503.150	3.4330	3.0641	12.04	65.136	67.152	-3.00
0.001	513.150	3.4330	3.2098	6.95	72.135	73.781	-2.23
0.001	523.150	3.4330	3.3358	2.91	79.124	80.020	-1.12
0.001	533.150	3.4330	3.4571	-0.70	86.212	85.947	0.31
0.001	543.150	3.4330	3.5088	-2.16	92.599	91.619	1.07
0.001	503.150	3.7450	3.2179	16.38	66.060	68.372	-3.38
0.001	513.150	3.7450	3.4436	8.75	73.854	75.697	-2.43
0.001	523.150	3.7450	3.6369	2.97	81.757	82.604	-1.03
0.001	533.150	3.7450	3.7852	-1.06	89.563	89.179	0.43
0.001	543.150	3.7450	3.8566	-2.89	96.761	95.483	1.34

97 data points, $|\Delta\rho/\rho|$ rms = 3.526%, $\Delta\rho/\rho$ av. = 2.11%, $|\Delta P/P|$ av. = 1.30%, weight = 0.02%.

Table 9d. Comparison of ID code (54) Kretschmer $P\rho T$ data with values calculated from Eq. (6)

Wt.	T K	ρ mol/l	Calc. ρ mol/l	$\Delta\rho/\rho$ %	P bar	Calc. P bar	$\Delta P/P$ %
0.001	310.000	0.0079	0.0080	-1.21	0.200	0.198	1.21
0.001	320.000	0.0076	0.0077	-1.40	0.200	0.197	1.41
0.001	320.000	0.0154	0.0156	-0.93	0.400	0.396	0.92
0.001	330.000	0.0073	0.0075	-1.45	0.200	0.197	1.46
0.001	330.000	0.0148	0.0150	-1.39	0.400	0.395	1.38
0.001	330.000	0.0226	0.0228	-0.95	0.600	0.594	0.93
0.001	340.000	0.0071	0.0072	-1.45	0.200	0.197	1.46
0.001	340.000	0.0143	0.0146	-1.52	0.400	0.394	1.52
0.001	340.000	0.0217	0.0220	-1.44	0.600	0.592	1.42
0.001	340.000	0.0292	0.0296	-1.16	0.800	0.791	1.14
0.001	340.000	0.0370	0.0373	-0.62	1.000	0.994	0.60
0.001	350.000	0.0069	0.0070	-1.43	0.200	0.197	1.44
0.001	350.000	0.0139	0.0141	-1.54	0.400	0.394	1.55
0.001	350.000	0.0210	0.0213	-1.57	0.600	0.591	1.57
0.001	350.000	0.0281	0.0286	-1.53	0.800	0.788	1.51
0.001	350.000	0.0355	0.0360	-1.39	1.000	0.987	1.36
0.001	360.000	0.0067	0.0068	-1.40	0.200	0.197	1.41
0.001	360.000	0.0135	0.0137	-1.53	0.400	0.394	1.53
0.001	360.000	0.0203	0.0206	-1.59	0.600	0.591	1.59
0.001	360.000	0.0272	0.0277	-1.62	0.800	0.787	1.61
0.001	360.000	0.0342	0.0348	-1.61	1.000	0.984	1.60
0.001	370.000	0.0065	0.0066	-1.37	0.200	0.197	1.38
0.001	370.000	0.0131	0.0133	-1.50	0.400	0.394	1.51
0.001	370.000	0.0197	0.0200	-1.58	0.600	0.591	1.58
0.001	370.000	0.0264	0.0268	-1.62	0.800	0.787	1.62
0.001	370.000	0.0331	0.0337	-1.65	1.000	0.984	1.64
0.001	380.000	0.0064	0.0064	-1.34	0.200	0.197	1.35
0.001	380.000	0.0127	0.0129	-1.47	0.400	0.394	1.48
0.001	380.000	0.0192	0.0195	-1.54	0.600	0.591	1.55
0.001	380.000	0.0257	0.0261	-1.59	0.800	0.787	1.60
0.001	380.000	0.0322	0.0327	-1.63	1.000	0.984	1.63
0.001	390.000	0.0062	0.0063	-1.31	0.200	0.197	1.32
0.001	390.000	0.0124	0.0126	-1.44	0.400	0.394	1.45
0.001	390.000	0.0187	0.0189	-1.51	0.600	0.591	1.51
0.001	390.000	0.0250	0.0253	-1.55	0.800	0.788	1.56
0.001	390.000	0.0313	0.0318	-1.59	1.000	0.984	1.59

36 data points, $|\Delta\rho/\rho|$ rms = 1.445%, $\Delta\rho/\rho$ av. = -1.43%, $|\Delta P/P|$ av. = 1.43%,
weight = 0.01%.

Table 9c. Comparison of ID code (55) Petty P,T data with values calculated from Eq. (6)

Wt.	T K	ρ mol/l	Calc. ρ mol/l	$\Delta\rho/\rho$ %	P bar	Calc. P bar	$\Delta P/P$ %
0.001	366.483	0.0231	0.0233	-0.81	0.689	0.684	0.80
0.001	366.483	0.0343	0.0345	-0.60	1.014	1.008	0.59
0.001	366.483	0.0473	0.0474	-0.39	1.379	1.374	0.38
0.001	366.483	0.0726	0.0726	0.04	2.068	2.069	-0.04
0.001	366.483	0.1002	0.0990	1.22	2.758	2.788	-1.10
0.001	388.706	0.0217	0.0219	-0.86	0.689	0.684	0.85
0.001	388.706	0.0321	0.0323	-0.66	1.014	1.007	0.65
0.001	388.706	0.0441	0.0443	-0.45	1.379	1.373	0.45
0.001	388.706	0.0671	0.0672	-0.15	2.068	2.065	0.14
0.001	388.706	0.0908	0.0908	0.01	2.758	2.758	-0.01
0.001	388.706	0.1153	0.1152	0.14	3.447	3.452	-0.13
0.001	388.706	0.1409	0.1405	0.31	4.137	4.148	-0.28
0.001	388.706	0.1966	0.1947	1.00	5.516	5.563	-0.84
0.001	410.928	0.0204	0.0206	-1.03	0.689	0.682	1.03
0.001	410.928	0.0302	0.0304	-0.91	1.014	1.004	0.91
0.001	410.928	0.0413	0.0416	-0.80	1.379	1.368	0.79
0.001	410.928	0.0625	0.0629	-0.67	2.068	2.055	0.65
0.001	410.928	0.0840	0.0846	-0.66	2.758	2.740	0.64
0.001	410.928	0.1060	0.1067	-0.64	3.447	3.426	0.62
0.001	410.928	0.1285	0.1293	-0.63	4.137	4.112	0.60
0.001	410.928	0.1750	0.1761	-0.62	5.516	5.485	0.57
0.001	410.928	0.2240	0.2256	-0.71	6.895	6.851	0.63
0.001	410.928	0.2901	0.2928	-0.91	8.618	8.554	0.76

23 data points, $|\Delta\rho/\rho|$ rms = 0.694%, $\Delta\rho/\rho$ av. = -0.38%, $|\Delta P/P|$ av. = 0.59%,
weight = 0.01%.

Table 9f. Comparison of ID code (67) Zubarev $P\rho T$ data with values calculated from Eq. (6)

Wt.	T K	ρ mol/l	Calc. ρ mol/l	$\Delta\rho/\rho$ %	P bar	Calc. P bar	$\Delta P/P$ %
0.001	413.150	0.1222	0.1244	-1.76	4.018	3.951	1.70
0.001	413.150	0.1298	0.1313	-1.18	4.228	4.181	1.13
0.001	413.150	0.1613	0.1637	-1.45	5.196	5.126	1.37
0.001	413.150	0.2285	0.2320	-1.51	7.127	7.032	1.35
0.001	413.150	0.2450	0.2472	-0.91	7.536	7.476	0.80
0.001	413.150	0.3361	0.3218	4.45	9.411	9.747	-3.44
0.001	413.150	0.3614	0.3440	5.05	9.930	10.321	-3.79
0.001	433.150	0.1111	0.1129	-1.54	3.877	3.819	1.51
0.001	433.150	0.1168	0.1187	-1.54	4.069	4.009	1.51
0.001	433.150	0.2042	0.2068	-1.25	6.892	6.812	1.18
0.001	433.150	0.2448	0.2477	-1.19	8.134	8.046	1.09
0.001	433.150	0.3637	0.3677	-1.09	11.506	11.400	0.93
0.001	433.150	0.4289	0.4311	-0.51	13.117	13.063	0.41
0.001	433.150	0.5633	0.5499	2.45	15.799	16.075	-1.72
0.001	453.150	0.1488	0.1499	-0.77	5.379	5.339	0.75
0.001	453.150	0.2752	0.2772	-0.73	9.623	9.559	0.67
0.001	453.150	0.4932	0.4962	-0.61	16.068	15.986	0.51
0.001	453.150	0.6005	0.6047	-0.70	18.830	18.728	0.55
0.001	453.150	0.8075	0.8001	0.92	23.079	23.221	-0.61
0.001	453.150	0.9492	0.9373	1.26	25.525	25.716	-0.74
0.000	453.150	18.4798	18.5647	-0.46	27.177	19.631	38.44
0.001	453.150	20.3526	20.3042	0.24	216.140	223.700	-3.38
0.001	473.150	0.1456	0.1472	-1.10	5.557	5.497	1.09
0.001	473.150	0.3190	0.3202	-0.38	11.674	11.633	0.35
0.001	473.150	0.4915	0.4910	0.10	17.169	17.183	-0.08
0.001	473.150	0.6387	0.6368	0.30	21.395	21.448	-0.25
0.001	473.150	0.7974	0.7946	0.35	25.482	25.549	-0.26
0.001	473.150	0.9617	0.9628	-0.11	29.299	29.276	0.08
0.001	473.150	1.2966	1.2950	0.13	35.327	35.352	-0.07
0.001	473.150	17.3961	17.4294	-0.19	51.291	49.728	3.14
0.001	473.150	19.2682	19.2971	-0.15	200.590	197.194	1.72
0.001	493.150	0.1650	0.1666	-0.96	6.574	6.513	0.94
0.001	493.150	0.1842	0.1854	-0.64	7.295	7.250	0.62
0.001	493.150	0.2939	0.2946	-0.25	11.394	11.367	0.23
0.001	493.150	0.4697	0.4680	0.35	17.529	17.584	-0.31
0.001	493.150	0.7280	0.7254	0.36	25.685	25.761	-0.30
0.001	493.150	0.9873	0.9837	0.36	32.716	32.805	-0.27
0.001	493.150	1.3124	1.3131	-0.05	40.117	40.104	0.03
0.001	493.150	1.3920	1.3846	0.54	41.513	41.654	-0.34
0.001	493.150	1.4303	1.4301	0.02	42.365	42.369	-0.01
0.001	493.150	1.9088	1.9086	0.01	49.774	49.777	-0.01
0.001	493.150	2.2356	2.2340	0.07	53.420	53.435	-0.03
0.001	493.150	16.5537	16.5411	0.08	94.010	94.513	-0.53
0.001	493.150	18.4252	18.4292	-0.02	218.030	217.652	0.17
0.001	503.150	0.2015	0.2025	-0.51	8.134	8.094	0.50
0.001	503.150	0.3828	0.3810	0.46	14.905	14.969	-0.43
0.001	503.150	0.7777	0.7725	0.67	28.032	28.188	-0.55
0.001	503.150	1.0935	1.0859	0.70	36.752	36.943	-0.52
0.001	503.150	1.5048	1.5014	0.22	46.086	46.151	-0.14
0.001	503.150	1.9265	1.9225	0.21	53.365	53.425	-0.11
0.001	503.150	2.7915	2.7979	-0.23	63.220	63.168	0.08
0.001	503.150	3.0037	3.0205	-0.55	64.850	64.738	0.17
0.001	503.150	13.9924	14.0016	-0.07	71.480	71.397	0.12
0.001	503.150	14.8740	14.9189	-0.30	83.760	82.944	0.98
0.001	503.150	15.8460	15.8570	-0.07	107.360	107.000	0.34
0.001	503.150	16.7213	16.7498	-0.17	144.570	143.111	1.02
0.001	503.150	17.7121	17.7265	-0.08	207.590	206.452	0.55
0.001	509.530	3.2717	3.2330	1.20	70.130	70.397	-0.38
0.001	509.530	12.8983	12.8762	0.17	79.670	79.777	-0.13
0.001	509.530	14.7552	14.7659	-0.07	100.870	100.655	0.21
0.001	509.530	16.6092	16.6265	-0.10	165.260	164.350	0.55
0.001	513.150	1.7007	1.6876	0.78	52.231	52.488	-0.49
0.001	513.150	2.4867	2.4931	-0.26	64.940	64.861	0.12
0.001	513.150	2.7741	2.7726	0.05	68.130	68.145	-0.02
0.001	513.150	3.5380	3.5533	-0.43	74.570	74.473	0.13
0.001	513.150	4.2484	4.2428	0.13	77.970	77.991	-0.03
0.001	513.150	4.3765	4.3787	-0.05	78.450	78.443	0.01
0.001	513.150	4.6518	4.6356	0.35	79.220	79.263	-0.05
0.001	513.150	5.3836	5.4413	-1.06	80.730	80.658	0.09
0.001	513.150	6.0682	6.3603	-4.59	81.420	81.277	0.18

Table 9f. Comparison of ID code (67) Zubarev $P\rho T$ data with values calculated from Eq. (6) - Continued

Wt.	T K	ρ mol/l	Calc. ρ mol/l	$\Delta\rho/\rho$ %	P bar	Calc. P bar	$\Delta P/P$ %
0.001	513.150	6.4018	6.5921	-2.89	81.500	81.436	0.08
0.001	513.150	7.2511	7.1304	1.69	81.610	81.625	-0.02
0.000	513.150	7.8969	9.6737	-18.37	81.820	81.678	0.17
0.000	513.150	8.2958	9.7322	-14.76	81.830	81.701	0.16
0.001	513.150	9.1040	9.8364	-7.45	81.850	81.754	0.12
0.001	513.150	9.7284	10.4656	-7.04	82.060	81.829	0.28
0.001	513.150	10.1922	10.6107	-3.94	82.140	81.946	0.24
0.001	513.150	10.9735	11.1861	-1.90	82.650	82.419	0.28
0.001	513.150	11.5545	11.6584	-0.89	83.410	83.208	0.24
0.001	513.150	13.3943	13.4266	-0.24	92.300	92.001	0.33
0.001	513.150	15.2171	15.2362	-0.13	124.220	123.679	0.44
0.001	513.150	17.0614	17.0866	-0.15	208.600	206.932	0.81
0.001	514.150	6.2693	6.1712	1.59	82.470	82.530	-0.07
0.001	514.150	8.1655	7.9503	2.71	83.020	83.056	-0.04
0.001	514.150	10.0608	10.0057	0.55	83.490	83.514	-0.03
0.001	514.150	11.9573	11.9099	0.40	86.030	86.172	-0.16
0.001	514.150	13.8582	13.8488	0.07	99.670	99.793	-0.12
0.001	514.150	15.6741	15.7663	-0.58	145.290	141.892	2.40
0.001	517.950	2.6766	2.6689	0.29	69.240	69.334	-0.14
0.001	517.950	3.0477	3.0538	-0.20	73.470	73.411	0.08
0.001	517.950	3.2914	3.3297	-1.15	75.980	75.655	0.43
0.001	517.950	3.9792	3.9661	0.33	80.400	80.474	-0.09
0.001	517.950	4.5427	4.5253	0.38	83.040	83.107	-0.08
0.001	517.950	4.9357	4.8977	0.78	84.310	84.422	-0.13
0.001	517.950	5.0970	5.2054	-2.08	85.130	84.862	0.32
0.001	517.950	5.7955	5.8253	-0.51	86.310	86.265	0.05
0.001	517.950	6.3952	6.4732	-1.21	87.090	87.013	0.09
0.001	517.950	6.8275	6.9206	-1.35	87.470	87.398	0.08
0.001	517.950	6.9896	7.4296	-5.92	87.820	87.521	0.34
0.001	517.950	7.6137	7.9322	-4.02	88.130	87.935	0.22
0.001	517.950	8.2650	8.4198	-1.84	88.430	88.333	0.11
0.001	517.950	8.8888	9.1488	-2.84	88.920	88.736	0.21
0.001	517.950	9.4314	9.6773	-2.54	89.350	89.138	0.24
0.001	517.950	10.7802	10.9427	-1.48	91.070	90.760	0.34
0.001	517.950	11.2545	11.3252	-0.62	91.960	91.776	0.20
0.001	517.950	13.0733	13.0975	-0.18	101.480	101.257	0.22
0.001	517.950	14.8989	14.9139	-0.10	131.830	131.435	0.30
0.001	517.950	16.7401	16.7627	-0.13	209.570	208.195	0.66
0.001	523.150	0.2972	0.2967	0.17	12.326	12.346	-0.16
0.001	523.150	0.8801	0.8690	1.28	33.032	33.388	-1.07
0.001	523.150	1.1279	1.1147	1.19	40.472	40.849	-0.92
0.001	523.150	1.1839	1.1703	1.17	42.040	42.419	-0.89
0.001	523.150	1.7946	1.7865	0.46	56.852	57.019	-0.29
0.001	523.150	2.9387	2.9327	0.20	74.880	74.949	-0.09
0.001	523.150	3.4719	3.4419	0.87	80.100	80.366	-0.33
0.001	523.150	3.5810	3.5571	0.67	81.100	81.300	-0.25
0.001	523.150	4.7999	4.7657	0.72	88.510	88.654	-0.16
0.001	523.150	5.2744	5.1876	1.67	90.100	90.381	-0.31
0.001	523.150	5.4116	5.3255	1.62	90.540	90.798	-0.28
0.001	523.150	6.6736	6.7180	-0.66	93.550	93.481	0.07
0.001	523.150	7.2470	7.1892	0.81	94.230	94.308	-0.08
0.001	523.150	8.5470	8.6473	-1.16	96.150	96.013	0.14
0.001	523.150	9.0003	9.1702	-1.85	96.910	96.654	0.27
0.001	523.150	10.4345	10.4888	-0.52	99.500	99.362	0.14
0.001	523.150	10.8153	10.8163	-0.01	100.420	100.417	0.00
0.001	523.150	12.6376	12.6406	-0.02	110.240	110.214	0.02
0.001	523.150	14.4652	14.4870	-0.15	138.300	137.787	0.37
0.001	523.150	16.3021	16.3249	-0.14	206.880	205.652	0.60
0.001	523.150	16.3388	16.3823	-0.27	210.020	207.631	1.15
0.001	533.150	1.3796	1.3654	1.04	49.050	49.434	-0.78
0.001	533.150	2.3607	2.3520	0.37	70.720	70.873	-0.22
0.001	533.150	3.1131	3.1053	0.25	82.050	82.149	-0.12
0.001	533.150	3.1979	3.1957	0.07	83.180	83.208	-0.03
0.001	533.150	4.1407	4.1113	0.72	92.450	92.691	-0.26
0.001	533.150	4.4205	4.3696	1.17	94.460	94.830	-0.39
0.001	533.150	4.9428	4.8702	1.49	97.760	98.181	-0.43
0.001	533.150	5.0142	4.9530	1.24	98.240	98.584	-0.35
0.001	533.150	5.9502	5.9086	0.70	102.730	102.890	-0.16
0.001	533.150	6.7826	6.6502	1.99	105.300	105.709	-0.39
0.000	533.150	6.2480	6.7666	-7.66	105.660	103.976	1.62

Table 9f. Comparison of ID code (67) Zubarev P, T data with values calculated from Eq. (6) - Continued

Wt.	T K	ρ mol/l	Calc. ρ mol/l	$\Delta\rho/\rho$ %	P bar	Calc. P bar	$\Delta P/P$ %
0.001	533.150	7.7662	7.8442	-0.99	108.760	108.541	0.20
0.001	533.150	9.5867	9.6327	-0.48	114.360	114.191	0.15
0.001	533.150	11.4092	11.4015	0.07	123.390	123.444	-0.04
0.001	533.150	13.2341	13.2105	0.18	143.260	143.644	-0.27
0.001	533.150	15.0672	15.0626	0.03	189.800	189.969	-0.09
0.001	543.150	0.8621	0.8529	1.08	34.469	34.794	-0.93
0.001	543.150	1.1645	1.1524	1.05	44.421	44.797	-0.84
0.001	543.150	1.7702	1.7552	0.86	61.170	61.539	-0.60
0.001	543.150	2.0044	1.9850	0.98	66.570	67.004	-0.65
0.001	543.150	2.8843	2.8858	-0.05	83.690	83.667	0.03
0.001	543.150	3.7990	3.7913	0.20	96.020	96.108	-0.09
0.001	543.150	4.7315	4.6983	0.71	104.920	105.194	-0.26
0.001	543.150	5.4810	5.4627	0.33	110.520	110.637	-0.11
0.001	543.150	5.6630	5.6101	0.94	111.450	111.774	-0.29
0.001	543.150	6.5976	6.5613	0.55	116.660	116.839	-0.15
0.001	543.150	7.3021	7.3073	-0.07	120.180	120.156	0.02
0.001	543.150	7.5225	7.5328	-0.14	121.210	121.163	0.04
0.001	543.150	8.4783	8.4702	0.10	125.570	125.609	-0.03
0.001	543.150	9.1296	9.0970	0.36	128.720	128.892	-0.13
0.001	543.150	9.3954	9.3939	0.02	130.330	130.338	-0.01
0.001	543.150	10.3601	10.3210	0.38	136.130	136.407	-0.20
0.001	543.150	10.9600	10.8915	0.63	140.540	141.127	-0.42
0.001	543.150	12.2401	12.1952	0.37	154.580	155.196	-0.40
0.001	543.150	12.8014	12.7405	0.48	162.840	163.878	-0.63
0.001	543.150	14.6526	14.6356	0.12	210.200	210.805	-0.29
0.001	553.150	2.4230	2.4148	0.34	78.970	79.143	-0.22
0.001	553.150	4.1178	4.1189	-0.03	106.400	106.387	0.01
0.001	553.150	5.8784	5.8670	0.19	123.240	123.327	-0.07
0.001	553.150	7.6569	7.6719	-0.20	135.540	135.442	0.07
0.001	553.150	9.4489	9.4186	0.32	147.830	148.070	-0.16
0.001	553.150	11.2512	11.1722	0.71	165.010	165.997	-0.59
0.001	563.150	1.6297	1.6123	1.08	61.680	62.189	-0.82
0.001	563.150	3.2748	3.2886	-0.42	99.860	99.614	0.25
0.001	563.150	5.0142	5.0228	-0.17	124.540	124.442	0.08
0.001	563.150	6.7913	6.8096	-0.27	141.930	141.771	0.11
0.001	563.150	8.5823	8.5929	-0.12	157.520	157.422	0.06
0.001	563.150	10.3859	10.3239	0.60	175.860	176.640	-0.44
0.001	563.150	12.2023	12.1004	0.84	204.020	206.105	-1.01
0.001	573.150	1.4342	1.4199	1.01	57.540	58.007	-0.81
0.001	573.150	3.0507	3.0654	-0.48	100.230	99.926	0.30
0.001	573.150	3.9555	3.9826	-0.68	117.260	116.806	0.39
0.001	573.150	4.7661	4.7662	-0.00	129.290	129.289	0.00
0.001	573.150	5.7222	5.6990	0.41	141.400	141.677	-0.20
0.001	573.150	6.5294	6.5050	0.38	150.610	150.878	-0.18
0.001	573.150	7.4904	7.4469	0.58	160.780	161.248	-0.29
0.001	573.150	8.3145	8.2491	0.79	169.590	170.330	-0.43
0.001	573.150	9.2748	9.1742	1.10	180.540	181.809	-0.70
0.001	573.150	10.1143	9.9901	1.24	191.460	193.267	-0.94
0.001	573.150	11.0810	10.9221	1.45	206.250	209.097	-1.36

189 data points, $|\Delta\rho/\rho|$ rms = 1.438%, $\Delta\rho/\rho$ av. = -0.10%, $|\Delta P/P|$ av. = 0.46%,
weight = 0.07%.

Table 9g. Comparison of ID code (68) Kudchadker $P\rho T$ data with values calculated from Eq. (6)

Wt.	T K	ρ mol/l	Calc. ρ mol/l	$\Delta\rho/\rho$ %	P bar	Calc. P bar	$\Delta P/P$ %
0.001	298.150	0.0021	0.0021	-0.84	0.051	0.050	0.84
0.001	298.150	0.0025	0.0025	-0.52	0.061	0.060	0.52
0.001	298.150	0.0029	0.0029	-0.04	0.071	0.071	0.04
0.001	298.150	0.0034	0.0033	0.58	0.081	0.082	-0.57
0.001	298.150	0.0038	0.0038	1.43	0.091	0.092	-1.40
0.001	298.150	0.0043	0.0042	2.54	0.101	0.104	-2.45
0.001	298.150	0.0048	0.0046	3.96	0.111	0.116	-3.77
0.001	298.150	0.0053	0.0050	5.87	0.122	0.129	-5.49
0.001	298.150	0.0059	0.0054	8.26	0.132	0.142	-7.55
0.001	298.150	0.0065	0.0059	11.28	0.142	0.158	-10.02
0.001	323.150	0.0023	0.0023	-1.17	0.061	0.060	1.18
0.001	323.150	0.0030	0.0031	-1.08	0.081	0.080	1.08
0.001	323.150	0.0038	0.0038	-0.87	0.101	0.100	0.87
0.001	323.150	0.0058	0.0058	0.19	0.152	0.152	-0.18
0.001	323.150	0.0079	0.0077	2.30	0.203	0.207	-2.23
0.001	323.150	0.0103	0.0097	5.98	0.253	0.268	-5.57
0.001	323.150	0.0130	0.0116	11.95	0.304	0.340	-10.51
0.001	323.150	0.0165	0.0136	21.53	0.355	0.429	-17.39
0.001	323.150	0.0214	0.0156	37.02	0.405	0.551	-26.43
0.001	323.150	0.0288	0.0176	63.89	0.456	0.738	-38.21
0.000	323.150	0.0425	0.0196	116.95	0.507	1.075	-52.88
0.001	348.150	0.0021	0.0021	-1.21	0.061	0.060	1.22
0.001	348.150	0.0035	0.0036	-1.28	0.101	0.100	1.29
0.001	348.150	0.0071	0.0071	-1.15	0.203	0.200	1.16
0.001	348.150	0.0144	0.0144	0.14	0.405	0.406	-0.14
0.001	348.150	0.0183	0.0180	1.51	0.507	0.514	-1.46
0.001	348.150	0.0225	0.0217	3.54	0.608	0.629	-3.36
0.001	348.150	0.0322	0.0291	10.47	0.811	0.893	-9.21
0.001	348.150	0.0455	0.0367	23.91	1.013	1.245	-18.59
0.001	348.150	0.0546	0.0405	34.83	1.115	1.481	-24.74
0.001	348.150	0.0669	0.0444	50.68	1.216	1.796	-32.30
0.001	373.150	0.0020	0.0020	-1.15	0.061	0.060	1.16
0.001	373.150	0.0033	0.0033	-1.22	0.101	0.100	1.23
0.001	373.150	0.0066	0.0066	-1.26	0.203	0.200	1.27
0.001	373.150	0.0132	0.0134	-1.13	0.405	0.401	1.13
0.001	373.150	0.0200	0.0201	-0.79	0.608	0.603	0.79
0.001	373.150	0.0269	0.0269	-0.27	0.811	0.808	0.26
0.001	373.150	0.0340	0.0338	0.45	1.013	1.018	-0.44
0.001	373.150	0.0413	0.0408	1.36	1.216	1.232	-1.31
0.001	373.150	0.0490	0.0478	2.48	1.419	1.453	-2.34
0.001	373.150	0.0570	0.0549	3.80	1.621	1.680	-3.52
0.001	373.150	0.0654	0.0620	5.36	1.824	1.917	-4.87
0.001	373.150	0.0742	0.0693	7.16	2.027	2.164	-6.35
0.001	398.150	0.0031	0.0031	-1.19	0.101	0.100	1.20
0.001	398.150	0.0154	0.0156	-1.38	0.507	0.500	1.38
0.001	398.150	0.0311	0.0315	-1.11	1.013	1.002	1.11
0.001	398.150	0.0473	0.0476	-0.59	1.520	1.511	0.58
0.001	398.150	0.0640	0.0639	0.19	2.027	2.030	-0.18
0.001	398.150	0.0815	0.0805	1.23	2.533	2.563	-1.17
0.001	398.150	0.1005	0.0974	3.12	3.040	3.130	-2.88
0.001	398.150	0.1194	0.1147	4.09	3.546	3.682	-3.69
0.001	398.150	0.1402	0.1323	5.98	4.053	4.277	-5.23
0.001	398.150	0.1627	0.1503	8.22	4.560	4.899	-6.93
0.001	398.150	0.1872	0.1689	10.84	5.066	5.553	-8.77
0.001	398.150	0.2141	0.1879	13.94	5.573	6.244	-10.75
0.001	398.150	0.2440	0.2076	17.55	6.080	6.973	-12.81
0.001	398.150	0.2570	0.2156	19.19	6.282	7.277	-13.67
0.001	423.150	0.0590	0.0596	-1.04	2.027	2.006	1.03
0.001	423.150	0.0899	0.0903	-0.48	3.040	3.026	0.47
0.001	423.150	0.1220	0.1217	0.28	4.053	4.064	-0.27
0.001	423.150	0.1559	0.1539	1.26	5.066	5.127	-1.18
0.001	423.150	0.1916	0.1871	2.43	6.080	6.216	-2.19
0.001	423.150	0.2298	0.2213	3.85	7.093	7.339	-3.36
0.001	423.150	0.2711	0.2569	5.55	8.106	8.502	-4.65
0.001	423.150	0.3160	0.2939	7.52	9.119	9.703	-6.01
0.001	423.150	0.3652	0.3327	9.78	10.133	10.943	-7.41
0.001	423.150	0.4200	0.3736	12.44	11.146	12.227	-8.84
0.001	423.150	0.4815	0.4170	15.47	12.159	13.540	-10.20
0.001	448.150	0.0068	0.0069	-1.20	0.253	0.250	1.21
0.001	448.150	0.0136	0.0138	-1.33	0.507	0.500	1.34

Table 9g. Comparison of ID code (68) Kudchadker $P\rho T$ data with values calculated from Eq. (6) - Continued

Wt.	T K	ρ mol/l	Calc. ρ mol/l	$\Delta\rho/\rho$ %	P bar	Calc. P bar	$\Delta P/P$ %
0.001	448.150	0.0274	0.0278	-1.41	1.013	0.999	1.42
0.001	448.150	0.0552	0.0560	-1.28	2.027	2.001	1.28
0.001	448.150	0.0836	0.0845	-1.08	3.040	3.008	1.07
0.001	448.150	0.1123	0.1134	-0.97	4.053	4.015	0.95
0.001	448.150	0.1418	0.1428	-0.70	5.066	5.032	0.68
0.001	448.150	0.1720	0.1727	-0.43	6.080	6.055	0.41
0.001	448.150	0.2029	0.2032	-0.15	7.093	7.083	0.14
0.001	448.150	0.2346	0.2342	0.15	8.106	8.117	-0.14
0.001	448.150	0.2671	0.2660	0.43	9.119	9.155	-0.39
0.001	448.150	0.3005	0.2985	0.66	10.133	10.193	-0.59
0.001	448.150	0.3706	0.3662	1.20	12.159	12.287	-1.04
0.001	448.150	0.4451	0.4380	1.62	14.186	14.378	-1.34
0.001	448.150	0.5246	0.5151	1.84	16.212	16.451	-1.45
0.001	448.150	0.6095	0.5988	1.78	18.239	18.484	-1.33
0.001	448.150	0.6540	0.6438	1.59	19.252	19.475	-1.15
0.001	448.150	0.7002	0.6912	1.30	20.265	20.451	-0.91
0.001	473.150	0.0129	0.0131	-1.33	0.507	0.500	1.34
0.001	473.150	0.0259	0.0263	-1.45	1.013	0.999	1.46
0.001	473.150	0.0520	0.0528	-1.51	2.027	1.996	1.52
0.001	473.150	0.1051	0.1066	-1.44	4.053	3.996	1.44
0.001	473.150	0.1595	0.1614	1.21	6.080	6.008	1.18
0.001	473.150	0.2154	0.2176	-0.98	8.106	8.030	0.94
0.001	473.150	0.2732	0.2752	-0.72	10.133	10.064	0.68
0.001	473.150	0.3329	0.3346	-0.51	12.159	12.102	0.47
0.001	473.150	0.3949	0.3961	-0.30	14.186	14.146	0.28
0.001	473.150	0.4594	0.4599	-0.11	16.212	16.197	0.10
0.001	473.150	0.5269	0.5265	0.07	18.239	18.250	-0.06
0.001	473.150	0.5979	0.5963	0.27	20.265	20.311	-0.23
0.001	473.150	0.7919	0.7884	0.44	25.331	25.417	-0.34
0.001	473.150	1.0180	1.0162	0.18	30.398	30.435	-0.12
0.001	473.150	1.1201	1.1219	-0.16	32.424	32.391	0.10
0.001	473.150	1.2304	1.2395	-0.73	34.451	34.303	0.43
0.001	473.150	1.5572	1.6280	-4.35	39.618	38.838	2.01

103 data points, $|\Delta\rho/\rho|$ rms = 11.172%, $\Delta\rho/\rho$ av. = 4.25%, $|\Delta P/P|$ av. = 3.92%, weight = 0.04%.

Table 9h. Comparison of ID code (69) virial equation $P\rho T$ data with values calculated from Eq. (6)

Wt.	T K	ρ mol/l	Calc. ρ mol/l	$\Delta\rho/\rho$ %	P bar	Calc. P bar	$\Delta P/P$ %
1.000	430.000	0.2000	0.2025	-1.23	6.690	6.614	1.16
1.000	450.000	0.2000	0.2017	-0.86	7.083	7.025	0.82
1.000	470.000	0.2000	0.2010	-0.51	7.453	7.417	0.49
1.000	490.000	0.2000	0.2005	-0.27	7.814	7.794	0.26
1.000	510.000	0.2000	0.2003	-0.16	8.174	8.161	0.16
1.000	530.000	0.2000	0.2004	-0.19	8.535	8.519	0.19
1.000	550.000	0.2000	0.2007	-0.34	8.902	8.872	0.34
1.000	570.000	0.2000	0.2012	-0.60	9.275	9.220	0.60
1.000	430.000	0.4000	0.4055	-1.37	12.303	12.167	1.12
1.000	450.000	0.4000	0.4027	-0.67	13.299	13.222	0.58
1.000	470.000	0.4000	0.3994	0.14	14.153	14.170	-0.12
1.000	490.000	0.4000	0.3971	0.73	14.948	15.048	-0.66
1.000	510.000	0.4000	0.3960	1.01	15.727	15.876	-0.94
1.000	530.000	0.4000	0.3961	0.99	16.513	16.668	-0.93
1.000	550.000	0.4000	0.3972	0.71	17.316	17.433	-0.67
1.000	570.000	0.4000	0.3992	0.19	18.143	18.177	-0.18

16 data points, $|\Delta\rho/\rho|$ rms = 0.730%, $\Delta\rho/\rho$ av. = -0.15%, $|\Delta P/P|$ av. = 0.58%, weight = 6.15%.

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Table 9i. Comparison of ID code (70) Finkelstein $P\rho T$ data with values calculated from Eq. (6)

Wt.	T K	ρ mol/l	Calc. ρ mol/l	$\Delta\rho/\rho$ %	P bar	Calc. P bar	$\Delta P/P$ %
0.001	473.150	16.9170	18.0422	-6.24	86.184	25.969	231.87
0.001	473.150	17.5729	18.2842	-3.89	103.421	58.410	77.06
0.001	473.150	18.7144	18.6972	0.09	137.895	139.476	-1.13
0.001	473.150	18.9471	18.8429	0.55	151.685	162.091	-6.42
0.001	473.150	19.1454	18.9800	0.87	165.474	183.224	-9.69
0.001	473.150	19.3165	19.1095	1.08	179.264	202.894	-11.65
0.001	473.150	19.4657	19.2324	1.21	193.053	221.168	-12.71
0.001	473.150	19.5968	19.3495	1.28	206.843	238.138	-13.14
0.001	473.150	19.7199	19.4614	1.33	220.632	254.865	-13.43
0.001	473.150	19.8166	19.5686	1.27	234.422	268.563	-12.71
0.001	473.150	19.9097	19.6716	1.21	248.211	282.212	-12.05
0.001	473.150	19.9997	19.7707	1.16	262.001	295.864	-11.45
0.001	473.150	20.0757	19.8663	1.05	275.790	307.734	-10.38
0.001	473.150	20.1449	19.9586	0.93	289.580	318.837	-9.18
0.001	473.150	20.2082	20.0480	0.80	303.369	329.238	-7.86
0.001	473.150	20.2664	20.1345	0.66	317.159	338.998	-6.44
0.001	473.150	20.3201	20.2185	0.50	330.948	348.172	-4.95
0.001	473.150	20.3744	20.3001	0.37	344.738	357.640	-3.61
0.001	473.150	20.4831	20.4945	-0.06	379.212	377.115	0.56
0.001	473.150	20.5745	20.6769	-0.50	413.685	394.071	4.98
0.001	473.150	20.6525	20.8489	-0.94	448.159	408.954	9.59
0.001	473.150	20.7199	21.0117	-1.39	482.633	422.116	14.34
0.001	473.150	20.7786	21.1665	-1.83	517.107	433.835	19.19
0.001	473.150	20.8302	21.3141	-2.27	551.581	444.331	24.14
0.001	473.150	20.8760	21.4552	-2.70	586.054	453.786	29.15
0.001	473.150	20.9169	21.5905	-3.12	620.528	462.344	34.21
0.001	473.150	20.9325	21.7205	-3.63	655.002	465.647	40.66
0.001	473.150	20.9893	21.8457	-3.92	689.476	477.777	44.31
0.001	493.150	15.8038	16.3337	-3.24	86.184	70.122	22.91
0.001	493.150	16.6378	16.7625	-0.74	103.421	97.980	5.55
0.001	493.150	17.4071	17.4084	-0.01	137.895	137.817	0.06
0.001	493.150	17.6496	17.6195	0.17	151.685	153.764	-1.35
0.001	493.150	17.8648	17.8122	0.30	165.474	169.442	-2.34
0.001	493.150	18.0660	17.9901	0.42	179.264	185.474	-3.35
0.001	493.150	18.2491	18.1555	0.52	193.053	201.291	-4.09
0.001	493.150	18.4176	18.3103	0.59	206.843	216.919	-4.65
0.001	493.150	18.5740	18.4560	0.64	220.632	232.392	-5.06
0.001	493.150	18.7203	18.5938	0.68	234.422	247.747	-5.38
0.001	493.150	18.8582	18.7246	0.71	248.211	263.021	-5.63
0.001	493.150	18.9947	18.8493	0.77	262.001	278.924	-6.07
0.001	493.150	19.1191	18.9683	0.80	275.790	294.146	-6.24
0.001	493.150	19.2331	19.0824	0.79	289.580	308.708	-6.20
0.001	493.150	19.3481	19.1919	0.81	303.369	324.001	-6.37
0.001	493.150	19.4543	19.2973	0.81	317.159	338.685	-6.36
0.001	493.150	19.5574	19.3988	0.82	330.948	353.473	-6.37
0.001	493.150	19.6578	19.4969	0.83	344.738	368.389	-6.42
0.001	493.150	19.8805	19.7285	0.77	379.212	403.341	-5.98
0.001	493.150	20.0819	19.9433	0.69	413.685	437.270	-5.39
0.001	493.150	20.2594	20.1439	0.57	448.159	469.059	-4.46
0.001	493.150	20.4140	20.3321	0.40	482.633	498.272	-3.14
0.001	493.150	20.5432	20.5098	0.16	517.107	523.807	-1.28
0.001	493.150	20.6576	20.6780	-0.10	551.581	547.295	0.78
0.001	493.150	20.7596	20.8380	-0.38	586.054	568.949	3.01
0.001	493.150	20.8511	20.9905	-0.66	620.528	588.963	5.36
0.001	493.150	20.9337	21.1363	-0.96	655.002	607.505	7.82
0.001	493.150	21.0086	21.2761	-1.26	689.476	624.722	10.37
0.001	513.150	12.3320	12.5251	-1.54	86.184	85.363	0.96
0.001	513.150	13.8276	14.2980	-3.29	103.421	96.632	7.03
0.001	513.150	15.2668	15.6666	-2.55	137.895	125.095	10.23
0.001	513.150	15.8219	16.0241	-1.26	151.685	143.595	5.63
0.001	513.150	16.2547	16.3304	-0.46	165.474	161.886	2.22
0.001	513.150	16.6070	16.5997	0.04	179.264	179.662	-0.22
0.001	513.150	16.9087	16.8409	0.40	193.053	197.188	-2.10
0.001	513.150	17.1609	17.0600	0.59	206.843	213.622	-3.17
0.001	513.150	17.3762	17.2612	0.67	220.632	229.027	-3.67
0.001	513.150	17.5651	17.4475	0.67	234.422	243.653	-3.79
0.001	513.150	17.7311	17.6213	0.62	248.211	257.408	-3.57
0.001	513.150	17.8822	17.7842	0.55	262.001	270.706	-3.22
0.001	513.150	18.0255	17.9379	0.49	275.790	284.015	-2.90
0.001	513.150	18.1572	18.0833	0.41	289.580	296.868	-2.46

Table 9i. Comparison of ID code (70) Finkelstein $P\rho T$ data with values calculated from Eq. (6) - Continued

Wt.	T K	ρ mol/l	Calc. ρ mol/l	$\Delta\rho/\rho$ %	P bar	Calc. P bar	$\Delta P/P$ %
0.001	513.150	18.2832	18.2215	0.34	303.369	309.758	-2.06
0.001	513.150	18.4090	18.3532	0.30	317.159	323.202	-1.87
0.001	513.150	18.5302	18.4790	0.28	330.948	336.735	-1.72
0.001	513.150	18.6518	18.5996	0.28	344.738	350.885	-1.75
0.001	513.150	18.9549	18.8810	0.39	379.212	388.821	-2.47
0.001	513.150	19.2494	19.1381	0.58	413.685	429.534	-3.69
0.001	513.150	19.5204	19.3753	0.75	448.159	470.579	-4.76
0.001	513.150	19.7554	19.5957	0.81	482.633	509.136	-5.21
0.001	513.150	19.9439	19.8019	0.72	517.107	542.182	-4.62
0.001	513.150	20.0900	19.9956	0.47	551.581	569.130	-3.08
0.001	513.150	20.2207	20.1785	0.21	586.054	594.271	-1.38
0.001	513.150	20.4010	20.3519	0.24	620.528	630.627	-1.60
0.001	513.150	20.6481	20.5168	0.64	655.002	683.692	-4.20
0.001	513.150	20.8380	20.6740	0.79	689.476	727.147	-5.18
0.001	533.150	6.1656	6.0924	1.20	103.421	103.685	-0.25
0.001	533.150	12.7542	12.8506	-0.75	137.895	136.602	0.95
0.001	533.150	13.4400	13.6778	-1.74	151.685	147.173	3.07
0.001	533.150	13.9756	14.2788	-2.12	165.474	158.060	4.69
0.001	533.150	14.4634	14.7544	-1.97	179.264	170.495	5.14
0.001	533.150	14.8992	15.1503	-1.66	193.053	184.046	4.89
0.001	533.150	15.2887	15.4908	-1.30	206.843	198.431	4.24
0.001	533.150	15.6466	15.7906	-0.91	220.632	213.806	3.19
0.001	533.150	15.9718	16.0590	-0.54	234.422	229.783	2.02
0.001	533.150	16.2629	16.3026	-0.24	248.211	245.879	0.95
0.001	533.150	16.5326	16.5259	0.04	262.001	262.433	-0.16
0.001	533.150	16.7740	16.7323	0.25	275.790	278.703	1.05
0.001	533.150	16.9986	16.9245	0.44	289.580	295.155	-1.89
0.001	533.150	17.2037	17.1044	0.58	303.369	311.361	-2.57
0.001	533.150	17.3953	17.2737	0.70	317.159	327.578	-3.18
0.001	533.150	17.5707	17.4336	0.79	330.948	343.373	-3.62
0.001	533.150	17.7311	17.5853	0.83	344.738	358.661	-3.88
0.001	533.150	18.0895	17.9340	0.87	379.212	395.901	-4.22
0.001	533.150	18.3958	18.2470	0.82	413.685	431.338	-4.09
0.001	533.150	18.6598	18.5314	0.69	448.159	464.759	-3.57
0.001	533.150	18.8988	18.7926	0.57	482.633	497.468	-2.98
0.001	533.150	19.1140	19.0342	0.42	517.107	529.050	-2.26
0.001	533.150	19.3184	19.2594	0.31	551.581	560.999	-1.68
0.001	533.150	19.5167	19.4703	0.24	586.054	593.932	-1.33
0.001	533.150	19.7104	19.6689	0.21	620.528	627.992	-1.19
0.001	533.150	19.9084	19.8566	0.26	655.002	664.858	-1.48
0.001	533.150	20.1082	20.0346	0.37	689.476	704.255	-2.10
0.001	553.150	7.8943	8.0304	-1.70	137.895	136.996	0.66
0.001	553.150	9.6014	9.8830	-2.85	151.685	149.303	1.59
0.001	553.150	11.1322	11.2096	-0.69	165.474	164.520	0.58
0.001	553.150	12.3151	12.1575	1.30	179.264	182.003	-1.50
0.001	553.150	13.0117	12.8767	1.05	193.053	196.046	-1.53
0.001	553.150	13.5057	13.4517	0.40	206.843	208.285	-0.69
0.001	553.150	13.9414	13.9299	0.08	220.632	220.991	-0.16
0.001	553.150	14.3256	14.3393	-0.10	234.422	233.928	0.21
0.001	553.150	14.6694	14.6974	-0.19	248.211	247.070	0.46
0.001	553.150	14.9834	15.0160	-0.22	262.001	260.519	0.57
0.001	553.150	15.2700	15.3033	-0.22	275.790	274.121	0.61
0.001	553.150	15.5389	15.5651	-0.17	289.580	288.142	0.50
0.001	553.150	15.7955	15.8058	-0.07	303.369	302.752	0.20
0.001	553.150	16.0335	16.0287	0.03	317.159	317.464	-0.10
0.001	553.150	16.2618	16.2365	0.16	330.948	332.691	-0.52
0.001	553.150	16.4812	16.4311	0.31	344.738	348.431	-1.06
0.001	553.150	16.9725	16.8704	0.60	379.212	387.925	-2.25
0.001	553.150	17.3846	17.2564	0.74	413.685	426.077	-2.91
0.001	553.150	17.7074	17.6013	0.60	448.159	459.507	-2.47
0.001	553.150	17.9322	17.9136	0.10	482.633	484.795	-0.45
0.001	553.150	18.0734	18.1992	-0.69	517.107	501.569	3.10
0.001	553.150	18.1768	18.4627	-1.55	551.581	514.296	7.25
0.001	553.150	18.2978	18.7075	-2.19	586.054	529.701	10.64
0.001	553.150	18.5332	18.9362	-2.13	620.528	561.260	10.56
0.001	553.150	18.6532	19.1510	-2.60	655.002	578.200	13.28
0.001	553.150	18.7861	19.3535	-2.93	689.476	597.649	15.36
0.001	573.150	6.5400	6.6031	-0.96	151.685	150.994	0.46
0.001	573.150	7.8295	7.8791	-0.63	165.474	164.930	0.33
0.001	573.150	9.0907	9.0715	0.21	179.264	179.501	-0.13

Table 9i. Comparison of ID code (70) Linkelstein P, T data with values calculated from Eq. (6) - Continued

Wt.	T K	ρ mol/l	Calc. ρ mol/l	$\Delta\rho/\rho$ %	P bar	Calc. P bar	$\Delta P/P$ %
0.001	573.150	9.9830	10.0997	-1.16	193.053	191.358	0.89
0.001	573.150	10.8865	10.9557	-0.63	206.843	205.627	0.59
0.001	573.150	11.7927	11.6679	1.07	220.632	223.318	-1.20
0.001	573.150	12.5266	12.2687	2.10	234.422	241.069	-2.76
0.001	573.150	13.1099	12.7843	2.55	248.211	258.017	-3.80
0.001	573.150	13.5718	13.2339	2.55	262.001	273.611	-4.24
0.001	573.150	13.9385	13.6316	2.25	275.790	287.587	-4.10
0.001	573.150	14.2444	13.9877	1.83	289.580	300.454	-3.62
0.001	573.150	14.5111	14.3100	1.41	303.369	312.666	-2.97
0.001	573.150	14.7504	14.6041	1.00	317.159	324.475	-2.25
0.001	573.150	14.9800	14.8747	0.71	330.948	336.622	-1.69
0.001	573.150	15.2041	15.1252	0.52	344.738	349.294	-1.30
0.001	573.150	15.7450	15.6809	0.41	379.212	383.560	-1.13
0.001	573.150	16.2473	16.1588	0.55	413.685	420.609	-1.65
0.001	573.150	16.6655	16.5786	0.52	448.159	455.828	-1.68
0.001	573.150	16.9929	16.9533	0.23	482.633	486.488	-0.79
0.001	573.150	17.3092	17.2921	0.10	517.107	518.938	-0.35
0.001	573.150	17.6066	17.6015	0.03	551.581	552.173	-0.11
0.001	573.150	17.8776	17.8864	-0.05	586.054	584.945	0.19
0.001	573.150	18.2066	18.1506	0.31	620.528	628.169	-1.22
0.001	573.150	18.4247	18.3970	0.15	655.002	659.019	-0.61
0.001	573.150	18.6662	18.6280	0.21	689.476	695.397	-0.85

162 data points, $|\Delta\rho/\rho|$ rms = 1.313%, $\Delta\rho/\rho$ av. = -0.05%, $|\Delta P/P|$ av. = 6.87%,
weight = 0.06%.

Table 9j. Comparison of ID code (83) Machado $P\rho T$ data with values calculated from Eq. (6)

Wt.	T K	ρ mol/l	Calc. ρ mol/l	$\Delta\rho/\rho$ %	P bar	Calc. P bar	$\Delta P/P$ %
0.000	298.120	24.5621	24.5659	-0.02	5.140	3.929	30.82
0.000	298.120	24.5815	24.5869	-0.02	12.030	10.256	17.30
0.200	298.120	24.6028	24.6077	-0.02	18.920	17.289	9.43
0.200	298.120	24.6455	24.6496	-0.02	32.970	31.588	4.38
0.200	298.120	24.7060	24.7105	-0.02	53.830	52.263	3.00
0.200	298.120	24.7452	24.7467	-0.01	66.470	65.930	0.82
0.200	298.120	24.8378	24.8433	-0.02	101.080	99.067	2.03
0.200	298.120	25.1358	25.1482	-0.05	218.720	213.724	2.34
0.200	298.120	25.2865	25.2975	-0.04	280.920	276.237	1.70
0.200	298.120	25.4536	25.4639	-0.04	353.660	349.054	1.32
0.200	298.120	25.6187	25.6186	0.00	424.610	424.629	-0.00
0.200	298.120	25.7561	25.7499	0.02	487.290	490.295	-0.61
0.200	298.120	26.0246	26.0232	0.01	625.060	625.774	-0.11
0.200	298.120	26.2721	26.2787	-0.03	762.840	759.172	0.48
0.200	298.120	26.5042	26.5195	-0.06	900.630	891.640	1.01
0.200	298.120	26.7152	26.7476	-0.12	1038.430	1018.390	1.97
0.000	322.540	23.8416	23.8365	0.02	5.140	6.609	-22.23
0.000	322.540	23.8635	23.8604	0.01	12.030	12.927	-6.94
0.200	322.540	23.8854	23.8840	0.01	18.920	19.319	-2.06
0.200	322.540	23.9367	23.9315	0.02	32.970	34.522	-4.50
0.200	322.540	24.0085	24.0002	0.03	53.830	56.376	-4.52
0.200	322.540	24.0473	24.0410	0.03	66.470	68.474	-2.93
0.200	322.540	24.1534	24.1491	0.02	101.080	102.485	-1.37
0.200	322.540	24.4985	24.4871	0.05	218.720	222.930	-1.89
0.200	322.540	24.6631	24.6510	0.05	280.920	285.618	-1.64
0.200	322.540	24.8536	24.8324	0.09	353.660	362.418	-2.42
0.200	322.540	25.0170	25.0002	0.07	424.610	431.890	-1.69
0.200	322.540	25.1601	25.1419	0.07	487.290	495.540	-1.66
0.200	322.540	25.4536	25.4352	0.07	625.060	634.052	-1.42
0.200	322.540	25.7264	25.7077	0.07	762.840	772.614	-1.27
0.200	322.540	25.9747	25.9632	0.04	900.630	907.080	-0.71
0.200	322.540	26.2059	26.2043	0.01	1038.430	1039.417	-0.09
0.000	342.830	23.1948	23.2035	-0.04	5.140	2.950	74.22
0.200	342.830	23.2294	23.2307	-0.01	12.030	11.701	2.81
0.200	342.830	23.2553	23.2574	-0.01	18.920	18.373	2.98
0.200	342.830	23.3127	23.3111	0.01	32.970	33.386	-1.25
0.200	342.830	23.3895	23.3885	0.00	53.830	54.123	-0.54
0.200	342.830	23.4422	23.4341	0.03	66.470	68.739	-3.30
0.200	342.830	23.5644	23.5549	0.04	101.080	103.854	-2.67
0.200	342.830	23.7220	23.7157	0.03	149.780	151.741	-1.29
0.200	342.830	23.9385	23.9281	0.04	218.720	222.251	-1.59
0.200	342.830	24.1198	24.1070	0.05	280.920	285.516	-1.61
0.200	342.830	24.3247	24.3038	0.09	353.660	361.684	-2.22
0.200	342.830	24.5120	24.4847	0.11	424.610	435.642	-2.53
0.200	342.830	24.6689	24.6368	0.13	487.290	500.873	-2.71
0.200	342.830	24.9909	24.9498	0.16	625.060	644.048	-2.95
0.200	342.830	25.2804	25.2386	0.17	762.840	783.620	-2.65
0.200	342.830	25.5474	25.5079	0.15	900.630	921.560	-2.27
0.200	342.830	25.7923	25.7610	0.12	1038.430	1055.989	-1.66
0.200	362.900	22.5382	22.5390	-0.00	5.140	4.971	3.39
0.200	362.900	22.5675	22.5704	-0.01	12.030	11.394	5.59
0.200	362.900	22.6002	22.6014	-0.01	18.920	18.655	1.42
0.200	362.900	22.6642	22.6632	0.00	32.970	33.199	-0.69
0.200	362.900	22.7551	22.7520	0.01	53.830	54.588	-1.39
0.200	362.900	22.8117	22.8041	0.03	66.470	68.333	-2.73
0.200	362.900	22.9577	22.9412	0.07	101.080	105.373	-4.07
0.200	362.900	23.1329	23.1221	0.05	149.780	152.822	-1.99
0.200	362.900	23.3773	23.3585	0.08	218.720	224.445	-2.55
0.200	362.900	23.5822	23.5559	0.11	280.920	289.504	-2.97
0.200	362.900	23.8089	23.7713	0.16	353.660	366.871	-3.60
0.200	362.900	24.0030	23.9680	0.15	424.610	437.693	-2.99
0.200	362.900	24.1834	24.1324	0.21	487.290	507.366	-3.96
0.200	362.900	24.5235	24.4683	0.23	625.060	648.977	-3.69
0.200	362.900	24.8318	24.7759	0.23	762.840	789.124	-3.33
0.200	362.900	25.1176	25.0609	0.23	900.630	929.256	-3.08
0.200	362.900	25.3749	25.3273	0.19	1038.430	1063.970	-2.40
0.000	382.600	21.8854	21.8692	0.07	12.030	15.061	-20.13
0.000	382.600	21.9193	21.9059	0.06	18.920	21.450	-11.79
0.200	382.600	21.9919	21.9789	0.06	32.970	35.516	-7.17
0.200	382.600	22.0993	22.0829	0.07	53.830	57.225	-5.93

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Table 9j. Comparison of ID code (83) Machado $P\rho T$ data with values calculated from Eq. (6) - Continued

Wt.	T K	ρ mol/l	Calc. ρ mol/l	$\Delta\rho/\rho$ %	P bar	Calc. P bar	$\Delta P/P$ %
0.200	382.600	22.1637	22.1435	0.09	66.470	70.735	-6.03
0.200	382.600	22.3302	22.3020	0.13	101.080	107.488	-5.96
0.200	382.600	22.5415	22.5086	0.15	149.780	157.896	-5.14
0.200	382.600	22.8117	22.7753	0.16	218.720	228.650	-4.34
0.200	382.600	23.0373	22.9955	0.18	280.920	293.280	-4.21
0.200	382.600	23.2831	23.2334	0.21	353.660	369.579	-4.31
0.200	382.600	23.4969	23.4489	0.20	424.610	441.109	-3.74
0.200	382.600	23.6824	23.6278	0.23	487.290	507.091	-3.90
0.200	382.600	24.0548	23.9905	0.27	625.060	650.995	-3.98
0.200	382.600	24.3875	24.3196	0.28	762.840	792.815	-3.78
0.200	382.600	24.6884	24.6223	0.27	900.630	932.172	-3.38
0.200	382.600	24.9629	24.9037	0.24	1038.430	1068.646	-2.83
0.000	402.340	21.1083	21.0893	0.09	12.030	14.905	-19.29
0.000	402.340	21.1484	21.1345	0.07	18.920	21.058	-10.15
0.200	402.340	21.2390	21.2237	0.07	32.970	35.447	-6.99
0.200	402.340	21.3685	21.3494	0.09	53.830	57.100	-5.73
0.200	402.340	21.4433	21.4222	0.10	66.470	70.232	-5.36
0.200	402.340	21.6306	21.6100	0.10	101.080	105.050	-3.78
0.200	402.340	21.8778	21.8513	0.12	149.780	155.429	-3.63
0.200	402.340	22.1873	22.1575	0.13	218.720	225.871	-3.17
0.200	402.340	22.4377	22.4066	0.14	280.920	289.090	-2.83
0.200	402.340	22.7038	22.6727	0.14	353.660	362.599	-2.47
0.200	402.340	22.9442	22.9113	0.14	424.610	434.832	-2.35
0.200	402.340	23.1364	23.1078	0.12	487.290	496.706	-1.90
0.200	402.340	23.5484	23.5026	0.19	625.060	642.103	-2.65
0.200	402.340	23.9092	23.8569	0.22	762.840	784.311	-2.74
0.200	402.340	24.2341	24.1802	0.22	900.630	924.731	-2.61
0.200	402.340	24.5235	24.4787	0.18	1038.430	1060.000	-2.03
0.200	421.610	20.4112	20.3882	0.11	32.970	35.907	-8.18
0.200	421.610	20.5740	20.5460	0.14	53.830	57.690	-6.69
0.200	421.610	20.6652	20.6361	0.14	66.470	70.666	-5.94
0.200	421.610	20.8963	20.8653	0.15	101.080	106.044	-4.68
0.200	421.610	21.1785	21.1533	0.12	149.780	154.332	-2.95
0.200	421.610	21.5395	21.5108	0.13	218.720	224.696	-2.66
0.200	421.610	21.8181	21.7963	0.10	280.920	285.940	-1.76
0.200	421.610	22.1291	22.0971	0.14	353.660	361.860	-2.27
0.200	421.610	22.6182	22.5811	0.16	487.290	498.436	-2.24
0.200	421.610	23.0526	23.0133	0.17	625.060	638.511	-2.11
0.200	421.610	23.4334	23.3968	0.16	762.840	776.817	-1.80
0.200	421.610	23.7798	23.7434	0.15	900.630	915.875	-1.66
0.200	421.610	24.0845	24.0611	0.10	1038.430	1049.024	-1.01
0.200	441.900	19.3686	19.3436	0.13	32.970	35.273	-6.53
0.200	441.900	19.5874	19.5591	0.14	53.830	56.748	-5.14
0.200	441.900	19.7161	19.6790	0.19	66.470	70.537	-5.77
0.200	441.900	20.0081	19.9757	0.16	101.080	105.153	-3.87
0.200	441.900	20.3513	20.3357	0.08	149.780	152.062	-1.50
0.200	441.900	20.7947	20.7678	0.13	218.720	223.412	-2.10
0.200	441.900	21.1183	21.1041	0.07	280.920	283.727	-0.99
0.200	441.900	21.4669	21.4516	0.07	353.660	357.075	-0.96
0.200	441.900	21.7679	21.7548	0.06	424.610	427.840	-0.76
0.200	441.900	22.0089	21.9996	0.04	487.290	489.774	-0.51
0.200	441.900	22.4911	22.4795	0.05	625.060	628.641	-0.57
0.200	441.900	22.9138	22.8993	0.06	762.840	767.921	-0.66
0.200	441.900	23.2866	23.2746	0.05	900.630	905.256	-0.51
0.200	441.900	23.6143	23.6156	-0.01	1038.430	1037.880	0.05
0.200	463.060	18.2967	18.2677	0.16	53.830	55.764	-3.47
0.200	463.060	18.4623	18.4492	0.07	66.470	67.427	-1.42
0.200	463.060	18.8891	18.8734	0.08	101.080	102.511	-1.40
0.200	463.060	19.3494	19.3548	-0.03	149.780	149.173	0.41
0.200	463.060	19.9060	19.9017	0.02	218.720	219.331	-0.28
0.200	463.060	20.3089	20.3111	-0.01	280.920	280.554	0.13
0.200	463.060	20.7174	20.7233	-0.03	353.660	352.542	0.32
0.200	463.060	21.0599	21.0756	-0.07	424.610	421.263	0.79
0.200	463.060	21.3568	21.3560	0.00	487.290	487.469	-0.04
0.200	463.060	21.8701	21.8969	-0.12	625.060	617.691	1.19
0.200	463.060	22.3382	22.3620	-0.11	762.840	755.325	0.99
0.200	463.060	22.7369	22.7725	-0.16	900.630	888.037	1.42
0.200	463.060	23.0953	23.1418	-0.20	1038.430	1020.322	1.77
0.200	478.620	17.0241	16.9749	0.29	53.830	55.809	-3.55
0.200	478.620	17.3102	17.2662	0.26	66.470	68.580	-3.08

Table 9j. Comparison of ID code (83) Machado $P\rho T$ data with values calculated from Eq. (6) - Continued

Wt.	T K	ρ mol/l	Calc. ρ mol/l	$\Delta\rho/\rho$ %	P bar	Calc. P bar	$\Delta P/P$ %
0.200	478.620	17.8897	17.8804	0.05	101.080	101.695	-0.60
0.200	478.620	18.5149	18.5130	0.01	149.780	149.943	-0.11
0.200	478.620	19.1912	19.1854	0.03	218.720	219.398	-0.31
0.200	478.620	19.6664	19.6685	-0.01	280.920	280.623	0.11
0.200	478.620	20.1242	20.1427	-0.09	353.660	350.596	0.87
0.200	478.620	20.5118	20.5405	-0.14	424.610	419.159	1.30
0.200	478.620	20.8335	20.8531	-0.09	487.290	483.180	0.85
0.200	478.620	21.4125	21.4478	-0.16	625.060	616.145	1.45
0.200	478.620	21.9023	21.9520	-0.23	762.840	748.348	1.94
0.200	478.620	22.3318	22.3925	-0.27	900.630	880.609	2.27
0.200	478.620	22.7121	22.7855	-0.32	1038.430	1011.565	2.66
0.200	488.860	15.7923	15.7259	0.42	53.830	55.278	-2.62
0.200	488.860	16.2765	16.2195	0.35	66.470	68.227	-2.57
0.200	488.860	17.0763	17.0894	-0.08	101.080	100.421	0.66
0.200	488.860	17.8795	17.8804	-0.01	149.780	149.713	0.04
0.200	488.860	18.6498	18.6668	-0.09	218.720	216.989	0.80
0.200	488.860	19.1805	19.2118	-0.16	280.920	276.997	1.42
0.200	488.860	19.6838	19.7357	-0.26	353.660	345.837	2.26
0.200	488.860	20.1126	20.1690	-0.28	424.610	414.773	2.37
0.200	488.860	20.4352	20.5062	-0.35	487.290	473.523	2.91
0.200	488.860	21.0627	21.1413	-0.37	625.060	606.531	3.05
0.200	488.860	21.5827	21.6743	-0.42	762.840	737.627	3.42
0.200	488.860	22.0384	22.1366	-0.44	900.630	869.879	3.54
0.200	488.860	22.4377	22.5467	-0.48	1038.430	1000.326	3.81

164 data points, $|\Delta\rho/\rho|$ rms = 0.154%, $\Delta\rho/\rho$ av. = 0.05%, $|\Delta P/P|$ av. = 2.52%,
weight = 0.02%.

Table 9k. Comparison of ID code (87) Ramsay $P\rho T$ data with values calculated from Eq. (6)

Wt.	T K	ρ mol/l	Calc. ρ mol/l	$\Delta\rho/\rho$ %	P bar	Calc. P bar	$\Delta P/P$ %
0.001	373.150	0.0691	0.0712	-3.03	2.080	2.020	2.96
0.001	373.150	0.0779	0.0799	-2.44	2.318	2.265	2.35
0.001	373.150	0.0939	0.0960	-2.21	2.753	2.697	2.09
0.001	373.150	0.1106	0.1127	-1.87	3.188	3.134	1.72
0.001	373.150	0.1175	0.1182	-0.56	3.328	3.311	0.51
0.001	373.150	0.1254	0.1232	1.75	3.454	3.508	-1.53
0.001	393.150	0.0690	0.0710	-2.79	2.210	2.151	2.77
0.001	393.150	0.0779	0.0800	-2.66	2.480	2.417	2.62
0.001	393.150	0.0939	0.0960	-2.20	2.949	2.887	2.14
0.001	393.150	0.1105	0.1132	-2.33	3.445	3.370	2.24
0.001	393.150	0.1253	0.1281	-2.19	3.866	3.788	2.07
0.001	393.150	0.1565	0.1594	-1.82	4.718	4.641	1.67
0.001	393.150	0.1873	0.1893	-1.06	5.493	5.442	0.93
0.001	393.150	0.2195	0.2200	-0.21	6.245	6.234	0.18
0.001	413.150	0.3068	0.3123	-1.77	9.186	9.052	1.48
0.001	413.150	0.3649	0.3697	-1.30	10.503	10.397	1.02
0.001	413.150	0.3791	0.3787	0.11	10.698	10.707	-0.08
0.001	413.150	0.4030	0.3801	6.02	10.727	11.253	-4.68
0.001	433.150	0.0689	0.0708	-2.59	2.461	2.399	2.61
0.001	433.150	0.0938	0.0959	-2.27	3.312	3.239	2.26
0.001	433.150	0.1174	0.1200	-2.20	4.113	4.026	2.17
0.001	433.150	0.1563	0.1594	-1.94	5.398	5.299	1.88
0.001	433.150	0.1871	0.1900	-1.53	6.369	6.278	1.45
0.001	433.150	0.2326	0.2368	-1.78	7.806	7.678	1.66
0.001	433.150	0.3067	0.3125	-1.86	10.006	9.843	1.66
0.001	433.150	0.3647	0.3716	-1.86	11.608	11.427	1.59
0.001	433.150	0.4496	0.4557	-1.35	13.708	13.562	1.08
0.001	433.150	0.5092	0.5153	-1.19	15.064	14.929	0.90
0.001	433.150	0.5864	0.5943	-1.33	16.689	16.536	0.93
0.001	433.150	0.6245	0.6259	-0.22	17.285	17.260	0.14
0.001	453.150	0.3065	0.3126	-1.96	10.742	10.550	1.82
0.001	453.150	0.3645	0.3696	-1.39	12.482	12.328	1.25
0.001	453.150	0.4494	0.4550	-1.23	14.941	14.786	1.05
0.001	453.150	0.5862	0.5931	-1.17	18.548	18.378	0.92
0.001	453.150	0.6912	0.6959	-0.67	20.926	20.824	0.49
0.001	453.150	0.8430	0.8507	-0.91	24.031	23.890	0.59
0.001	453.150	0.9701	0.9820	-1.21	26.230	26.047	0.70
0.001	473.150	0.0689	0.0701	-1.80	2.684	2.636	1.81
0.001	473.150	0.0937	0.0953	-1.67	3.629	3.569	1.67
0.001	473.150	0.1172	0.1192	-1.61	4.521	4.450	1.60
0.001	473.150	0.1562	0.1585	-1.43	5.970	5.887	1.41
0.001	473.150	0.1869	0.1893	-1.25	7.091	7.006	1.22
0.001	473.150	0.2323	0.2353	-1.27	8.735	8.630	1.22
0.001	473.150	0.3063	0.3098	-1.12	11.320	11.203	1.05
0.001	473.150	0.3643	0.3687	-1.19	13.291	13.147	1.10
0.001	473.150	0.4491	0.4540	-1.08	16.028	15.875	0.97
0.001	473.150	0.5859	0.5889	-0.52	20.054	19.968	0.43
0.001	473.150	0.6908	0.6979	-1.02	23.037	22.849	0.82
0.001	473.150	0.8426	0.8557	-1.53	26.931	26.626	1.15
0.001	473.150	1.0420	1.0858	-4.03	31.753	30.911	2.72
0.001	473.150	1.4954	1.5282	-2.15	38.498	38.100	1.04
0.001	493.150	0.7815	0.7891	-0.96	27.524	27.309	0.79
0.001	493.150	1.0628	1.0697	-0.64	34.809	34.646	0.47
0.001	493.150	1.3302	1.3413	-0.83	40.677	40.458	0.54
0.001	493.150	1.7722	1.7822	-0.56	48.073	47.932	0.30
0.001	493.150	2.1212	2.0980	1.11	52.017	52.268	-0.48
0.001	493.150	2.3516	2.3080	1.89	54.116	54.504	-0.71
0.001	493.150	2.4879	2.4335	2.24	55.191	55.619	-0.77
0.001	493.150	2.5739	2.5074	2.65	55.767	56.251	-0.86
0.001	493.150	2.6359	2.5714	2.51	56.233	56.672	-0.78
0.001	493.150	2.6683	2.5815	3.36	56.303	56.883	-1.02
0.001	498.150	0.7814	0.7878	-0.81	27.996	27.810	0.67
0.001	498.150	1.0627	1.0674	-0.44	35.526	35.410	0.33
0.001	498.150	1.3300	1.3398	-0.73	41.706	41.502	0.49
0.001	498.150	1.7718	1.7745	-0.15	49.524	49.482	0.08
0.001	498.150	2.1206	2.1039	0.79	54.044	54.244	-0.37
0.001	498.150	2.3509	2.3101	1.77	56.354	56.769	-0.73
0.001	498.150	2.6350	2.5832	2.00	58.882	59.299	-0.70
0.001	498.150	2.8058	2.7585	1.71	60.219	60.545	-0.54
0.001	498.150	2.9979	2.9085	3.07	61.204	61.727	-0.85

Table 9k. Comparison of ID code (87) Ramsay $P\rho T$ data with values calculated from Eq. (6) - Continued

Wt.	T K	ρ mol/l	Calc. ρ mol/l	$\Delta\rho/\rho$ %	P bar	Calc. P bar	$\Delta P/P$ %
0.001	498.150	3.0391	2.9317	3.66	61.344	61.952	-0.98
0.001	498.150	3.0823	2.9557	4.29	61.486	62.178	-1.11
0.001	503.150	0.0673	0.0690	-2.50	2.820	2.750	2.54
0.001	503.150	0.0915	0.0937	-2.32	3.816	3.728	2.35
0.001	503.150	0.1146	0.1177	-2.62	4.777	4.653	2.65
0.001	503.150	0.1527	0.1566	-2.55	6.329	6.171	2.56
0.001	503.150	0.1827	0.1874	-2.52	7.543	7.358	2.52
0.001	503.150	0.2271	0.2340	-2.97	9.361	9.091	2.97
0.001	503.150	0.2994	0.3070	-2.47	12.151	11.864	2.42
0.001	503.150	0.3561	0.3656	-2.61	14.337	13.985	2.52
0.001	503.150	0.4389	0.4490	-2.24	17.361	17.002	2.11
0.001	503.150	0.5726	0.5822	-1.64	21.961	21.641	1.48
0.001	503.150	0.6752	0.6876	-1.81	25.398	25.003	1.58
0.001	503.150	0.8234	0.8349	-1.37	29.892	29.555	1.14
0.001	503.150	1.0536	1.0609	-0.68	36.110	35.924	0.52
0.001	503.150	1.4618	1.4559	0.40	45.175	45.294	-0.26
0.001	503.150	0.7814	0.7863	-0.62	28.447	28.300	0.52
0.001	503.150	1.0626	1.0664	-0.36	36.253	36.155	0.27
0.001	503.150	1.3297	1.3354	-0.42	42.636	42.513	0.29
0.001	503.150	1.7712	1.7678	0.19	50.917	50.974	-0.11
0.001	503.150	2.1202	2.1000	0.96	55.881	56.148	-0.48
0.001	503.150	2.3500	2.3155	1.49	58.553	58.944	-0.66
0.001	503.150	2.6359	2.5826	2.06	61.343	61.836	-0.80
0.001	503.150	2.8040	2.7134	3.34	62.520	63.268	-1.18
0.001	503.150	2.9979	2.8632	4.70	63.729	64.698	-1.50
0.001	503.150	3.2187	3.0436	5.75	65.003	66.065	-1.61
0.001	503.150	3.4746	3.2635	6.47	66.311	67.339	-1.53
0.001	503.150	3.5980	3.3006	9.01	66.507	67.847	-1.98
0.001	505.150	0.7814	0.7890	-0.96	28.724	28.493	0.81
0.001	505.150	1.0626	1.0672	-0.43	36.568	36.448	0.33
0.001	505.150	1.3297	1.3342	-0.33	43.010	42.911	0.23
0.001	505.150	1.7712	1.7774	-0.35	51.666	51.561	0.21
0.001	505.150	2.1202	2.0992	1.00	56.605	56.892	-0.51
0.001	505.150	2.3500	2.3350	0.64	59.619	59.796	-0.30
0.001	505.150	2.6359	2.5865	1.91	62.343	62.823	-0.76
0.001	505.150	2.9979	2.8979	3.45	65.100	65.856	-1.15
0.001	505.150	3.2187	3.0781	4.57	66.421	67.327	-1.34
0.001	505.150	3.4746	3.2754	6.08	67.662	68.720	-1.54
0.001	505.150	3.7760	3.5055	7.72	68.868	69.989	-1.60
0.001	507.150	0.7814	0.7892	-0.99	28.927	28.685	0.84
0.001	507.150	1.0626	1.0663	-0.35	36.837	36.739	0.27
0.001	507.150	1.3297	1.3333	-0.26	43.384	43.304	0.18
0.001	507.150	1.7712	1.7695	0.09	52.110	52.140	-0.06
0.001	507.150	2.1202	2.1079	0.58	57.454	57.627	-0.30
0.001	507.150	2.3500	2.3207	1.26	60.276	60.636	-0.59
0.001	507.150	2.6359	2.5814	2.11	63.239	63.795	-0.87
0.001	507.150	2.9979	2.9103	3.01	66.297	66.998	-1.05
0.001	507.150	3.4746	3.3333	4.24	69.286	70.081	-1.13
0.001	507.150	3.7760	3.5354	6.81	70.396	71.486	-1.53
0.001	507.150	4.1325	3.8169	8.27	71.649	72.706	-1.45
0.001	507.150	4.2946	3.8359	11.96	71.722	73.127	-1.92
0.001	509.150	0.7812	0.7899	-1.10	29.139	28.870	0.93
0.001	509.150	1.0622	1.0680	-0.54	37.172	37.016	0.42
0.001	509.150	1.3292	1.3371	-0.60	43.864	43.680	0.42
0.001	509.150	1.7702	1.7696	0.04	52.682	52.694	-0.02
0.001	509.150	2.1187	2.1111	0.36	58.221	58.331	-0.19
0.001	509.150	2.6336	2.6113	0.86	64.495	64.731	-0.37
0.001	509.150	2.9951	2.9034	3.16	67.322	68.101	-1.14
0.001	509.150	3.4746	3.2924	5.53	70.300	71.425	-1.58
0.001	509.150	3.7760	3.5693	5.79	71.950	72.964	-1.39
0.001	509.150	4.1325	3.7756	9.45	72.962	74.336	-1.85
0.001	509.150	4.5640	4.0006	14.08	73.879	75.474	-2.11
0.001	511.150	0.7812	0.7878	-0.84	29.266	29.059	0.71
0.001	511.150	1.0622	1.0672	-0.46	37.434	37.301	0.36
0.001	511.150	1.3292	1.3340	-0.36	44.179	44.065	0.26
0.001	511.150	1.7702	1.7646	0.32	53.154	53.258	-0.19
0.001	511.150	2.1187	2.1068	0.57	58.867	59.046	-0.30
0.001	511.150	2.6336	2.5860	1.84	65.148	65.677	-0.81
0.001	511.150	2.9951	2.9009	3.25	68.368	69.211	-1.22
0.001	511.150	3.4746	3.3228	4.57	71.757	72.752	-1.37

Table 9k. Comparison of ID code (87) Ramsay $P\rho T$ data with values calculated from Eq. (6) - Continued

Wt.	T K	ρ mol/l	Calc. ρ mol/l	$\Delta\rho/\rho$ %	P bar	Calc. P bar	$\Delta P/P$ %
0.001	511.150	4.1325	3.8174	8.26	74.623	75.947	-1.74
0.001	511.150	4.5640	4.0926	11.52	75.798	77.258	-1.89
0.001	511.150	4.8604	4.1869	16.08	76.142	77.889	-2.24
0.001	512.150	0.7812	0.7877	-0.82	29.358	29.152	0.70
0.001	512.150	1.0622	1.0700	-0.73	37.654	37.442	0.57
0.001	512.150	1.3292	1.3313	-0.16	44.306	44.256	0.11
0.001	512.150	1.7702	1.7740	-0.21	53.608	53.538	0.13
0.001	512.150	2.1187	2.1019	0.80	59.143	59.400	-0.43
0.001	512.150	2.6336	2.6122	0.82	65.904	66.145	-0.37
0.001	512.150	2.9951	2.9254	2.38	69.126	69.760	-0.91
0.001	512.150	3.4746	3.3214	4.61	72.370	73.408	-1.41
0.001	512.150	4.1325	3.8966	6.05	75.738	76.745	-1.31
0.001	512.150	4.5640	4.0472	12.77	76.403	78.142	-2.23
0.001	512.150	5.0936	4.4302	14.98	77.764	79.243	-1.87
0.001	512.150	5.4790	4.5424	20.62	78.084	79.735	-2.07
0.001	512.650	2.6336	2.6156	0.69	66.173	66.378	-0.31
0.001	512.650	2.9951	2.9616	1.13	69.729	70.034	-0.44
0.001	512.650	3.4746	3.3312	4.30	72.751	73.735	-1.33
0.001	512.650	4.1325	3.8702	6.78	75.983	77.143	-1.50
0.001	512.650	4.5640	4.1239	10.67	77.108	78.583	-1.88
0.001	512.650	5.0936	4.4538	14.37	78.264	79.732	-1.84
0.001	512.650	5.7687	4.4863	28.58	78.362	80.523	-2.68
0.001	513.150	0.0673	0.0685	-1.80	2.857	2.806	1.81
0.001	513.150	0.0728	0.0744	-2.15	3.101	3.035	2.18
0.001	513.150	0.0760	0.0775	-2.04	3.229	3.164	2.06
0.001	513.150	0.0831	0.0849	-2.17	3.533	3.457	2.20
0.001	513.150	0.0915	0.0934	-2.03	3.884	3.805	2.05
0.001	513.150	0.1146	0.1173	-2.31	4.862	4.751	2.33
0.001	513.150	0.1526	0.1565	-2.47	6.461	6.304	2.49
0.001	513.150	0.1827	0.1871	-2.38	7.699	7.520	2.39
0.001	513.150	0.2270	0.2335	-2.79	9.557	9.297	2.79
0.001	513.150	0.2993	0.3067	-2.42	12.436	12.148	2.37
0.001	513.150	0.3560	0.3643	-2.30	14.653	14.334	2.23
0.001	513.150	0.4388	0.4482	-2.09	17.799	17.452	1.99
0.001	513.150	0.5714	0.5818	-1.79	22.597	22.232	1.64
0.001	513.150	0.6751	0.6870	-1.74	26.183	25.784	1.55
0.001	513.150	0.8232	0.8295	-0.76	30.765	30.569	0.64
0.001	513.150	1.0533	1.0564	-0.29	37.421	37.335	0.23
0.001	513.150	1.4618	1.4608	0.07	47.484	47.506	-0.05
0.001	513.150	0.7812	0.7881	-0.87	29.464	29.246	0.75
0.001	513.150	1.0622	1.0706	-0.78	37.812	37.583	0.61
0.001	513.150	1.3292	1.3357	-0.49	44.602	44.446	0.35
0.001	513.150	1.7702	1.7906	-1.14	54.197	53.816	0.71
0.001	513.150	2.1187	2.1065	0.58	59.564	59.753	-0.31
0.001	513.150	2.6336	2.6103	0.90	66.343	66.611	-0.40
0.001	513.150	2.9951	2.9478	1.60	69.869	70.306	-0.62
0.001	513.150	3.4746	3.3667	3.20	73.318	74.061	-1.00
0.001	513.150	4.1325	3.8185	8.22	76.088	77.539	-1.87
0.001	513.150	5.0936	4.3427	17.29	78.328	80.220	-2.36
0.001	513.150	5.7687	4.7237	22.12	79.447	81.064	-2.00
0.001	513.150	6.6444	4.8284	37.61	79.693	81.515	-2.23
0.001	513.150	7.8335	4.9973	56.75	80.044	81.674	-2.00

192 data points, $|\Delta\rho/\rho|$ rms = 7.032%, $\Delta\rho/\rho$ av. = 1.78%, $|\Delta P/P|$ av. = 1.24%,
weight = 0.07%.

Table 91. Comparison of ID code (90) RDG / Zubarev $P\rho T$ data with values calculated from Eq. (6)

Wt.	T K	ρ mol/l	Calc. ρ mol/l	$\Delta\rho/\rho$ %	P bar	Calc. P bar	$\Delta P/P$ %
0.001	413.150	0.1000	0.1015	-1.48	3.308	3.261	1.44
0.001	433.150	0.1000	0.1016	-1.56	3.501	3.448	1.54
0.001	453.150	0.1000	0.1013	-1.33	3.677	3.629	1.32
0.001	473.150	0.1000	0.1011	-1.12	3.849	3.807	1.11
0.001	493.150	0.1000	0.1012	-1.15	4.027	3.982	1.14
0.001	503.150	0.1000	0.1010	-1.01	4.109	4.068	1.01
0.001	509.530	0.1000	0.1003	-0.32	4.136	4.123	0.31
0.001	513.150	0.1000	0.1010	-1.01	4.196	4.154	1.01
0.001	514.150	0.1000	0.1007	-0.73	4.193	4.163	0.73
0.001	517.950	0.1000	0.1007	-0.71	4.225	4.195	0.71
0.001	523.150	0.1000	0.1010	-0.99	4.282	4.240	0.99
0.001	533.150	0.1000	0.1010	-1.03	4.370	4.325	1.03
0.001	543.150	0.1000	0.1010	-1.03	4.456	4.410	1.03
0.001	553.150	0.1000	0.1010	-0.95	4.538	4.495	0.95
0.001	563.150	0.1000	0.1010	-0.98	4.625	4.580	0.99
0.001	573.150	0.1000	0.1010	-1.00	4.711	4.664	1.00
0.001	413.150	0.2000	0.2029	-1.42	6.324	6.243	1.30
0.001	433.150	0.2000	0.2026	-1.30	6.762	6.680	1.23
0.001	453.150	0.2000	0.2021	-1.03	7.158	7.088	0.98
0.001	473.150	0.2000	0.2012	-0.62	7.522	7.477	0.60
0.001	493.150	0.2000	0.2013	0.64	7.901	7.852	0.62
0.001	503.150	0.2000	0.2008	-0.42	8.069	8.036	0.41
0.001	509.530	0.2000	0.1981	0.95	8.077	8.152	-0.92
0.001	513.150	0.2000	0.2007	-0.37	8.247	8.218	0.36
0.001	514.150	0.2000	0.1997	0.13	8.225	8.236	-0.13
0.001	517.950	0.2000	0.1997	0.17	8.290	8.304	-0.17
0.001	523.150	0.2000	0.2008	-0.39	8.429	8.397	0.38
0.001	533.150	0.2000	0.2009	-0.43	8.612	8.575	0.43
0.001	543.150	0.2000	0.2009	-0.46	8.792	8.752	0.46
0.001	553.150	0.2000	0.2006	-0.31	8.955	8.927	0.31
0.001	563.150	0.2000	0.2007	-0.36	9.134	9.101	0.36
0.001	573.150	0.2000	0.2009	-0.44	9.315	9.275	0.43
0.001	433.150	0.5000	0.4977	0.47	14.674	14.726	-0.35
0.001	453.150	0.5000	0.5022	-0.44	16.228	16.169	0.37
0.001	473.150	0.5000	0.4995	0.10	17.427	17.442	-0.09
0.001	493.150	0.5000	0.4987	0.26	18.562	18.605	-0.23
0.001	503.150	0.5000	0.4965	0.71	19.034	19.156	-0.64
0.001	509.530	0.5000	0.4814	3.86	18.833	19.499	-3.42
0.001	513.150	0.5000	0.4955	0.92	19.527	19.691	-0.83
0.001	514.150	0.5000	0.4898	2.09	19.372	19.744	-1.88
0.001	517.950	0.5000	0.4902	2.01	19.580	19.943	-1.82
0.001	523.150	0.5000	0.4957	0.87	20.050	20.212	-0.80
0.001	533.150	0.5000	0.4959	0.83	20.562	20.721	-0.77
0.001	543.150	0.5000	0.4960	0.80	21.062	21.220	-0.74
0.001	553.150	0.5000	0.4945	1.12	21.482	21.709	-1.05
0.001	563.150	0.5000	0.4949	1.02	21.978	22.191	-0.96
0.001	573.150	0.5000	0.4957	0.86	22.481	22.666	-0.81
0.001	453.150	1.0000	0.9819	1.84	26.229	26.502	-1.03
0.001	473.150	1.0000	0.9998	0.02	30.065	30.070	-0.02
0.001	493.150	1.0000	0.9962	0.38	33.026	33.121	-0.29
0.001	503.150	1.0000	0.9915	0.86	34.285	34.514	-0.66
0.001	509.530	1.0000	0.9409	6.28	33.694	35.366	-4.73
0.001	513.150	1.0000	0.9863	1.39	35.446	35.838	-1.09
0.001	514.150	1.0000	0.9660	3.51	34.986	35.967	-2.73
0.001	517.950	1.0000	0.9725	2.82	35.643	36.453	-2.22
0.001	523.150	1.0000	0.9872	1.29	36.720	37.106	-1.04
0.001	533.150	1.0000	0.9870	1.32	37.910	38.325	-1.08
0.001	543.150	1.0000	0.9869	1.32	39.068	39.503	-1.10
0.001	553.150	1.0000	0.9823	1.80	40.029	40.645	-1.52
0.001	563.150	1.0000	0.9838	1.65	41.170	41.757	-1.41
0.001	573.150	1.0000	0.9861	1.41	42.321	42.841	-1.21
0.001	493.150	2.0000	1.9996	0.02	50.896	50.901	-0.01
0.001	503.150	2.0000	2.0089	-0.44	54.627	54.500	0.23
0.001	509.530	2.0000	1.8804	6.36	54.721	56.669	-3.44
0.001	513.150	2.0000	1.9920	0.40	57.728	57.860	-0.23
0.001	514.150	2.0000	1.9222	4.05	56.858	58.185	-2.28
0.001	517.950	2.0000	1.9743	1.30	58.949	59.402	-0.76
0.001	523.150	2.0000	1.9936	0.32	60.908	61.026	-0.19
0.001	533.150	2.0000	1.9908	0.46	63.844	64.033	-0.29
0.001	543.150	2.0000	1.9904	0.48	66.690	66.905	-0.32

Table 91. Comparison of ID code (90) RDG / Zubarev $P\rho T$ data with values calculated from Eq. (6) - Continued

Wt.	T K	ρ mol/l	Calc. ρ mol/l	$\Delta\rho/\rho$ %	P bar	Calc. P bar	$\Delta P/P$ %
0.001	553.150	2.0000	1.9840	0.81	69.279	69.665	-0.55
0.001	563.150	2.0000	1.9887	0.57	72.037	72.329	-0.40
0.001	573.150	2.0000	1.9950	0.25	74.773	74.909	-0.18
0.001	503.150	3.0000	2.9991	0.03	64.706	64.712	-0.01
0.001	509.530	3.0000	2.9168	2.85	67.645	68.353	-1.04
0.001	513.150	3.0000	3.0075	-0.25	70.419	70.351	0.10
0.001	514.150	3.0000	2.8688	4.57	69.623	70.895	-1.79
0.001	517.950	3.0000	3.0059	-0.20	72.993	72.933	0.08
0.001	523.150	3.0000	2.9963	0.12	75.609	75.651	-0.06
0.001	533.150	3.0000	2.9950	0.17	80.610	80.677	-0.08
0.001	543.150	3.0000	2.9972	0.09	85.436	85.478	-0.05
0.001	553.150	3.0000	3.0010	-0.03	90.110	90.092	0.02
0.001	563.150	3.0000	3.0101	-0.34	94.741	94.548	0.20
0.001	573.150	3.0000	3.0181	-0.60	99.247	98.868	0.38
0.001	509.530	4.0000	4.2807	-6.56	75.104	74.174	1.25
0.001	513.150	4.0000	4.0075	-0.19	77.003	76.969	0.04
0.001	514.150	4.0000	3.7928	5.46	76.672	77.731	-1.36
0.001	517.950	4.0000	4.0201	-0.50	80.700	80.590	0.14
0.001	523.150	4.0000	3.9607	0.99	84.150	84.412	-0.31
0.001	533.150	4.0000	3.9698	0.76	91.248	91.511	-0.29
0.001	543.150	4.0000	3.9814	0.47	98.133	98.332	-0.20
0.001	553.150	4.0000	4.0016	-0.04	104.942	104.921	0.02
0.001	563.150	4.0000	4.0153	-0.38	111.541	111.318	0.20
0.001	573.150	4.0000	4.0185	-0.46	117.857	117.550	0.26
0.000	509.530	5.0000	12.6675	-60.53	78.766	76.552	2.89
0.001	513.150	5.0000	5.0030	-0.06	80.055	80.049	0.01
0.001	514.150	5.0000	4.7275	5.76	80.363	81.006	-0.79
0.001	517.950	5.0000	5.0060	-0.12	84.620	84.603	0.02
0.001	523.150	5.0000	4.9101	1.83	89.099	89.441	-0.38
0.001	533.150	5.0000	4.9308	1.40	98.113	98.504	-0.40
0.001	543.150	5.0000	4.9590	0.83	106.993	107.302	-0.29
0.001	553.150	5.0000	4.9904	0.19	115.791	115.882	-0.08
0.001	563.150	5.0000	5.0080	-0.16	124.370	124.279	0.07
0.001	573.150	5.0000	4.9979	0.04	132.492	132.520	-0.02
0.001	513.150	6.0000	6.0685	-1.13	81.277	81.235	0.05
0.001	514.150	6.0000	5.7843	3.73	82.160	82.348	-0.23
0.001	517.950	6.0000	6.0205	-0.34	86.583	86.556	0.03
0.001	523.150	6.0000	5.9246	1.27	92.098	92.260	-0.18
0.001	533.150	6.0000	5.9236	1.29	102.788	103.079	-0.28
0.001	543.150	6.0000	5.9641	0.60	113.531	113.731	-0.18
0.001	553.150	6.0000	5.9915	0.14	124.181	124.245	-0.05
0.001	563.150	6.0000	6.0102	-0.17	134.738	134.642	0.07
0.001	573.150	6.0000	5.9772	0.38	144.675	144.938	-0.18
0.001	513.150	7.0000	8.0860	-13.43	81.689	81.591	0.12
0.001	514.150	7.0000	7.3751	-5.09	82.916	82.827	0.11
0.001	517.950	7.0000	7.1980	-2.75	87.668	87.529	0.16
0.001	523.150	7.0000	7.0738	-1.04	94.071	93.967	0.11
0.001	533.150	7.0000	6.9738	0.38	106.282	106.359	-0.07
0.001	543.150	7.0000	6.9998	0.00	118.760	118.761	-0.00
0.001	553.150	7.0000	7.0086	-0.12	131.224	131.167	0.04
0.001	563.150	7.0000	7.0237	-0.34	143.778	143.574	0.14
0.001	573.150	7.0000	6.9642	0.51	155.593	155.978	-0.25
0.001	513.150	8.0000	9.6231	-16.87	81.812	81.684	0.16
0.001	514.150	8.0000	8.5725	-6.68	83.125	83.028	0.12
0.001	517.950	8.0000	8.3800	-4.53	88.405	88.171	0.27
0.001	523.150	8.0000	8.1813	-2.22	95.525	95.289	0.25
0.001	533.150	8.0000	8.0230	-0.29	109.266	109.201	0.06
0.001	543.150	8.0000	8.0132	-0.17	123.413	123.352	0.05
0.001	553.150	8.0000	8.0105	-0.13	137.763	137.693	0.05
0.001	563.150	8.0000	8.0217	-0.27	152.379	152.188	0.13
0.001	573.150	8.0000	7.9445	0.70	166.194	166.807	-0.37
0.001	513.150	8.2000	9.7035	-15.49	81.825	81.696	0.16
0.001	514.150	8.2000	8.6125	-4.79	83.132	83.062	0.08
0.001	517.950	8.2000	8.5834	-4.47	88.534	88.293	0.27
0.001	523.150	8.2000	8.3789	-2.13	95.786	95.550	0.25
0.001	533.150	8.2000	8.2270	-0.33	109.850	109.772	0.07
0.001	543.150	8.2000	8.2099	-0.12	124.331	124.284	0.04
0.001	553.150	8.2000	8.2071	-0.09	139.075	139.027	0.03
0.001	563.150	8.2000	8.2178	-0.22	154.115	153.956	0.10
0.001	573.150	8.2000	8.1388	0.75	168.351	169.037	-0.41

Table 91. Comparison of ID code (90) RDG / Zubarev $P\rho T$ data with values calculated from Eq. (6) - Continued

Wt.	T K	ρ mol/l	Calc. ρ mol/l	$\Delta\rho/\rho$ %	P bar	Calc. P bar	$\Delta P/P$ %
0.001	513.150	8.4000	9.7705	-14.03	81.837	81.707	0.16
0.001	514.150	8.4000	8.6181	-2.53	83.133	83.095	0.05
0.001	517.950	8.4000	8.7790	-4.32	88.662	88.418	0.28
0.001	523.150	8.4000	8.5694	-1.98	96.043	95.814	0.24
0.001	533.150	8.4000	8.4287	-0.34	110.438	110.354	0.08
0.001	543.150	8.4000	8.4053	-0.06	125.258	125.233	0.02
0.001	553.150	8.4000	8.4025	-0.03	140.401	140.384	0.01
0.001	563.150	8.4000	8.4129	-0.15	155.871	155.754	0.08
0.001	573.150	8.4000	8.3326	0.81	170.535	171.304	-0.45
0.001	513.150	8.6000	9.8316	-12.53	81.849	81.719	0.16
0.001	514.150	8.6000	8.6125	-0.14	83.132	83.130	0.00
0.001	517.950	8.6000	8.9641	-4.06	88.788	88.545	0.27
0.001	523.150	8.6000	8.7542	-1.76	96.299	96.085	0.22
0.001	533.150	8.6000	8.6298	-0.35	111.037	110.947	0.08
0.001	543.150	8.6000	8.5997	0.00	126.199	126.200	-0.00
0.001	553.150	8.6000	8.5974	0.03	141.748	141.767	-0.01
0.001	563.150	8.6000	8.6072	-0.08	157.653	157.586	0.04
0.001	573.150	8.6000	8.5260	0.87	172.753	173.613	-0.50
0.001	513.150	8.8000	9.8922	-11.04	81.862	81.732	0.16
0.001	514.150	8.8000	8.6011	2.31	83.130	83.166	-0.04
0.001	517.950	8.8000	9.1434	-3.76	88.916	88.676	0.27
0.001	523.150	8.8000	8.9358	-1.52	96.559	96.364	0.20
0.001	533.150	8.8000	8.8297	-0.34	111.649	111.557	0.08
0.001	543.150	8.8000	8.7934	0.07	127.159	127.192	-0.03
0.001	553.150	8.8000	8.7914	0.10	143.120	143.182	-0.04
0.001	563.150	8.8000	8.8009	-0.01	159.467	159.458	0.01
0.001	573.150	8.8000	8.7192	0.93	175.012	175.971	-0.54
0.001	513.150	9.0000	9.9562	-9.60	81.877	81.746	0.16
0.001	514.150	9.0000	8.6011	4.64	83.130	83.204	-0.09
0.001	517.950	9.0000	9.3180	-3.41	89.048	88.813	0.26
0.001	523.150	9.0000	9.1153	-1.27	96.826	96.653	0.18
0.001	533.150	9.0000	9.0291	-0.32	112.280	112.186	0.08
0.001	543.150	9.0000	8.9867	0.15	128.144	128.213	-0.05
0.001	553.150	9.0000	8.9852	0.16	144.526	144.635	-0.08
0.001	563.150	9.0000	8.9940	0.07	161.320	161.378	-0.04
0.001	573.150	9.0000	8.9123	0.98	177.319	178.385	-0.60
0.001	513.150	10.0000	10.4392	-4.21	82.047	81.888	0.19
0.001	514.150	10.0000	9.3666	6.76	83.284	83.488	-0.24
0.001	517.950	10.0000	10.1681	-1.65	89.861	89.670	0.21
0.001	523.150	10.0000	10.0207	-0.21	98.418	98.375	0.04
0.001	533.150	10.0000	10.0229	-0.23	115.894	115.799	0.08
0.001	543.150	10.0000	9.9569	0.43	133.685	133.962	-0.21
0.001	553.150	10.0000	9.9517	0.49	152.289	152.719	-0.28
0.001	563.150	10.0000	9.9547	0.46	171.437	171.961	-0.30
0.001	573.150	10.0000	9.8767	1.25	189.847	191.602	-0.92
0.001	513.150	11.0000	11.2046	-1.83	82.673	82.445	0.28
0.001	514.150	11.0000	10.8651	1.24	84.086	84.239	-0.18
0.001	517.950	11.0000	11.0803	-0.72	91.362	91.188	0.19
0.001	523.150	11.0000	10.9957	0.04	100.996	101.011	-0.01
0.001	533.150	11.0000	11.0138	-0.12	120.853	120.770	0.07
0.001	543.150	11.0000	10.9425	0.53	140.975	141.475	-0.35
0.001	553.150	11.0000	10.9248	0.69	162.071	162.942	-0.53
0.001	563.150	11.0000	10.9167	0.76	183.814	185.030	-0.66
0.001	573.150	11.0000	10.8440	1.44	204.890	207.631	-1.32
0.000	509.530	12.0000	4.5590	163.21	75.804	76.934	-1.47
0.001	513.150	12.0000	12.1019	-0.84	84.552	84.245	0.36
0.001	514.150	12.0000	12.0074	-0.06	86.329	86.305	0.03
0.001	517.950	12.0000	12.0514	-0.43	94.516	94.287	0.24
0.001	523.150	12.0000	12.0123	-0.10	105.641	105.567	0.07
0.001	533.150	12.0000	11.9979	0.02	128.234	128.253	-0.01
0.001	543.150	12.0000	11.9423	0.48	151.303	152.023	-0.47
0.001	553.150	12.0000	11.9200	0.67	175.400	176.667	-0.72
0.001	563.150	12.0000	11.8977	0.86	200.056	202.027	-0.98
0.001	573.150	12.0000	11.8258	1.47	224.044	227.978	-1.73
0.001	509.530	13.0000	13.0002	-0.00	80.300	80.299	0.00
0.001	513.150	13.0000	13.0442	-0.34	89.179	88.873	0.34
0.001	514.150	13.0000	13.0073	-0.06	91.337	91.284	0.06
0.001	517.950	13.0000	13.0348	-0.27	100.910	100.604	0.30
0.001	523.150	13.0000	13.0226	-0.17	113.975	113.730	0.22
0.001	533.150	13.0000	12.9770	0.18	139.679	140.015	-0.24

Table 91. Comparison of ID code (90) RDG / Zubarev $P\rho T$ data with values calculated from Eq. (6) - Continued

Wt.	T K	ρ mol/l	Calc. ρ mol/l	$\Delta\rho/\rho$ %	P bar	Calc. P bar	$\Delta P/P$ %
0.001	543.150	13.0000	12.9496	0.39	166.508	167.437	-0.55
0.001	553.150	13.0000	12.9549	0.35	194.770	195.781	-0.52
0.001	563.150	13.0000	12.9185	0.63	222.742	224.881	-0.95
0.001	573.150	13.0000	12.8396	1.25	249.813	254.605	-1.88
0.001	503.150	14.0000	14.0108	-0.08	71.563	71.465	0.14
0.001	509.530	14.0000	14.0485	-0.35	89.331	88.734	0.67
0.001	513.150	14.0000	14.0138	-0.10	99.078	98.886	0.19
0.001	514.150	14.0000	13.9821	0.13	101.478	101.732	-0.25
0.001	517.950	14.0000	14.0191	-0.14	113.007	112.698	0.27
0.001	523.150	14.0000	14.0196	-0.14	128.427	128.062	0.28
0.001	533.150	14.0000	13.9660	0.24	157.840	158.620	-0.49
0.001	543.150	14.0000	13.9643	0.26	189.308	190.287	-0.51
0.001	553.150	14.0000	14.0515	-0.37	224.522	222.854	0.75
0.001	503.150	15.0000	15.0487	-0.32	86.260	85.296	1.13
0.001	509.530	15.0000	14.9976	0.02	105.851	105.907	-0.05
0.001	513.150	15.0000	15.0148	-0.10	118.290	117.917	0.32
0.001	514.150	15.0000	15.0069	-0.05	121.448	121.272	0.15
0.001	517.950	15.0000	15.0136	-0.09	134.533	134.156	0.28
0.001	523.150	15.0000	15.0172	-0.11	152.633	152.110	0.34
0.001	533.150	15.0000	14.9918	0.05	187.260	187.551	-0.16
0.001	543.150	15.0000	14.9964	0.02	223.855	223.999	-0.06
0.001	493.150	16.0000	16.2842	-1.75	84.451	75.452	11.93
0.001	503.150	16.0000	15.9853	0.09	111.711	112.230	-0.46
0.001	509.530	16.0000	15.9771	0.14	135.696	136.591	-0.66
0.001	513.150	16.0000	16.0436	-0.27	152.502	150.678	1.21
0.001	514.150	16.0000	16.1660	-1.03	161.853	154.600	4.69
0.001	517.950	16.0000	16.0228	-0.14	170.635	169.619	0.60
0.001	523.150	16.0000	16.0279	-0.17	191.771	190.444	0.70
0.001	533.150	16.0000	16.0929	-0.58	236.265	231.267	2.16
0.001	493.150	17.0000	16.8279	1.02	106.423	114.826	-7.32
0.001	503.150	17.0000	16.9630	0.22	156.111	158.234	-1.34
0.001	509.530	17.0000	17.0765	-0.45	191.442	186.626	2.58
0.001	513.150	17.0000	17.0314	-0.18	204.974	202.942	1.00
0.001	473.150	18.0000	17.8950	0.59	76.700	83.390	-8.02
0.001	493.150	18.0000	17.8128	1.05	165.518	180.064	-8.08
0.001	503.150	18.0000	18.0525	-0.29	235.016	230.354	2.02

246 data points, $|\Delta\rho/\rho|$ rms = 2.854%, $\Delta\rho/\rho$ av. = -0.33%, $|\Delta P/P|$ av. = 0.67%,
weight = 0.09%.

Table 9m. Comparison of ID code (93) Amagat $P\rho T$ data with values calculated from Eq. (6)

Wt.	T K	ρ mol/l	Calc. ρ mol/l	$\Delta\rho/\rho$ %	P bar	Calc. P bar	$\Delta P/P$ %
0.001	273.150	25.5166	25.5441	-0.11	101.325	90.307	12.20
0.001	273.150	25.7374	25.7853	-0.19	202.650	181.855	11.43
0.001	273.150	25.9435	26.0089	-0.25	303.975	273.596	11.10
0.001	273.150	26.1393	26.2183	-0.30	405.300	366.349	10.63
0.001	273.150	26.3216	26.4162	-0.36	506.625	457.537	10.73
0.001	273.150	26.4927	26.6041	-0.42	607.950	547.268	11.09
0.001	273.150	26.6575	26.7836	-0.47	709.275	637.602	11.24
0.001	273.150	26.8187	26.9555	-0.51	810.600	729.621	11.10
0.001	273.150	26.9675	27.1208	-0.57	911.925	817.783	11.51
0.001	273.150	27.1121	27.2801	-0.62	1013.250	906.482	11.78
0.001	273.150	27.3823	27.5827	-0.73	1215.900	1080.207	12.56
0.001	273.150	27.7642	28.0030	-0.85	1519.875	1343.922	13.09
0.001	273.150	28.3305	28.6328	-1.06	2026.500	1775.450	14.14
0.001	282.350	25.5012	25.5355	-0.13	202.650	188.147	7.71
0.001	282.350	25.7139	25.7657	-0.20	303.975	280.510	8.37
0.001	282.350	25.9142	25.9809	-0.26	405.300	373.205	8.60
0.001	282.350	26.1015	26.1838	-0.31	506.625	464.834	8.99
0.001	282.350	26.2806	26.3763	-0.36	607.950	556.924	9.16
0.001	282.350	26.4539	26.5599	-0.40	709.275	650.182	9.09
0.001	282.350	26.6154	26.7356	-0.45	810.600	740.837	9.42
0.001	282.350	26.7704	26.9043	-0.50	911.925	831.210	9.71
0.001	282.350	26.9187	27.0667	-0.55	1013.250	920.742	10.05
0.001	282.350	27.2025	27.3752	-0.63	1215.900	1100.781	10.46
0.001	282.350	27.5945	27.8033	-0.75	1519.875	1368.229	11.08
0.001	282.350	28.1632	28.4443	-0.99	2026.500	1796.505	12.80
0.001	297.000	25.3554	25.3806	-0.10	303.975	293.055	3.73
0.001	297.000	25.5631	25.6058	-0.17	405.300	385.569	5.12
0.001	297.000	25.7610	25.8174	-0.22	506.625	479.079	5.75
0.001	297.000	25.9514	26.0175	-0.25	607.950	573.906	5.93
0.001	297.000	26.1339	26.2080	-0.28	709.275	669.273	5.98
0.001	297.000	26.3025	26.3899	-0.33	810.600	761.341	6.47
0.001	297.000	26.4622	26.5644	-0.38	911.925	852.060	7.03
0.001	297.000	26.6126	26.7321	-0.45	1013.250	940.658	7.72
0.001	297.000	26.9043	27.0502	-0.54	1215.900	1121.235	8.44
0.001	297.000	27.3083	27.4908	-0.66	1519.875	1390.677	9.29
0.001	297.000	27.9021	28.1494	-0.88	2026.500	1828.754	10.81
0.001	303.200	25.2238	25.4477	-0.88	405.300	306.492	32.24
0.001	303.200	25.4242	25.6632	-0.93	506.625	394.640	28.38
0.001	303.200	25.6123	25.8669	-0.98	607.950	482.120	26.10
0.001	303.200	25.7952	26.0604	-1.02	709.275	571.666	24.07
0.001	303.200	25.9728	26.2451	-1.04	810.600	662.776	22.30
0.001	303.200	26.1420	26.4221	-1.06	911.925	753.459	21.03
0.001	303.200	26.3052	26.5922	-1.08	1013.250	844.518	19.98
0.001	303.200	26.6098	26.9144	-1.13	1215.900	1023.944	18.75
0.001	303.200	27.0194	27.3603	-1.25	1519.875	1284.954	18.28
0.001	303.200	27.6337	28.0264	-1.40	2026.500	1720.028	17.82

46 data points, $|\Delta\rho/\rho|$ rms = 0.680%, $\Delta\rho/\rho$ av. = -0.59%, $|\Delta P/P|$ av. = 12.46%,
weight = 0.02%.

Table 9n. Comparison of ID code (99) Straty $P\rho T$ data with values calculated from Eq. (6)

Wt.	T K	ρ mol/l	Calc. ρ mol/l	$\Delta\rho/\rho$ %	P bar	Calc. P bar	$\Delta P/P$ %
1.000	483.127	2.0612	2.0719	-0.52	47.624	47.533	0.19
1.000	488.158	2.0605	2.0597	0.04	49.610	49.617	-0.02
1.000	493.154	2.0599	2.0591	0.04	51.587	51.596	-0.02
1.000	498.157	2.0592	2.0784	-0.92	53.734	53.495	0.45
1.000	503.196	2.0586	2.0765	-0.86	55.582	55.337	0.44
1.000	508.204	2.0579	2.0743	-0.79	57.344	57.102	0.42
1.000	513.206	2.0573	2.0721	-0.72	59.045	58.809	0.40
1.000	518.085	2.0567	2.0712	-0.70	60.669	60.423	0.41
1.000	523.178	2.0560	2.0668	-0.52	62.255	62.060	0.31
1.000	528.160	2.0554	2.0673	-0.58	63.844	63.619	0.35
1.000	533.157	2.0548	2.0619	-0.34	65.285	65.144	0.22
1.000	543.130	2.0536	2.0585	-0.24	68.192	68.084	0.16
1.000	553.208	2.0524	2.0555	-0.15	71.006	70.932	0.10
1.000	563.196	2.0512	2.0547	-0.17	73.739	73.650	0.12
1.000	573.175	2.0500	2.0549	-0.24	76.409	76.276	0.18
1.000	488.133	2.1117	2.1090	0.13	50.079	50.105	-0.05
1.000	493.158	2.1111	2.0980	0.62	52.020	52.163	-0.27
1.000	498.169	2.1104	2.1002	0.49	54.006	54.130	-0.23
1.000	503.052	2.1097	2.1158	-0.29	56.053	55.973	0.14
1.000	508.058	2.1091	2.1152	-0.29	57.887	57.799	0.15
1.000	513.082	2.1084	2.1144	-0.28	59.662	59.569	0.15
1.000	518.053	2.1078	2.1132	-0.26	61.359	61.269	0.15
1.000	523.176	2.1071	2.1106	-0.16	63.030	62.969	0.10
1.000	528.136	2.1065	2.1109	-0.21	64.655	64.572	0.13
1.000	533.126	2.1058	2.1076	-0.08	66.178	66.143	0.05
1.000	543.111	2.1046	2.1051	-0.02	69.193	69.182	0.02
1.000	553.162	2.1033	2.1055	-0.11	72.164	72.112	0.07
1.000	563.210	2.1021	2.1060	-0.19	75.032	74.934	0.13
1.000	573.129	2.1009	2.1064	-0.26	77.774	77.628	0.19
1.000	493.122	2.6907	2.6719	0.70	56.890	57.008	-0.21
1.000	498.179	2.6899	2.6539	1.36	59.462	59.736	-0.46
1.000	503.127	2.6890	2.6534	1.34	61.983	62.297	-0.50
1.000	508.165	2.6882	2.6454	1.62	64.382	64.811	-0.66
1.000	513.179	2.6873	2.6627	0.92	66.953	67.226	-0.41
1.000	518.204	2.6865	2.6702	0.61	69.373	69.572	-0.29
1.000	523.140	2.6857	2.6727	0.49	71.637	71.808	-0.24
1.000	528.196	2.6849	2.6702	0.55	73.827	74.038	-0.28
1.000	533.205	2.6841	2.6687	0.58	75.953	76.189	-0.31
1.000	543.208	2.6825	2.6704	0.45	80.129	80.338	-0.26
1.000	553.207	2.6809	2.6717	0.34	84.138	84.314	-0.21
1.000	563.067	2.6794	2.6733	0.23	87.965	88.092	-0.14
1.000	573.171	2.6778	2.6736	0.16	91.739	91.835	-0.11
1.000	503.116	3.2324	3.2054	0.84	65.968	66.119	-0.23
1.000	508.115	3.2314	3.1869	1.40	68.948	69.251	-0.44
1.000	513.191	3.2304	3.2010	0.92	72.089	72.322	-0.32
1.000	518.107	3.2294	3.2126	0.52	75.054	75.205	-0.20
1.000	523.139	3.2284	3.2090	0.61	77.876	78.072	-0.25
1.000	528.137	3.2274	3.2093	0.56	80.642	80.843	-0.25
1.000	533.101	3.2265	3.2115	0.47	83.347	83.529	-0.22
1.000	543.110	3.2245	3.2151	0.29	88.630	88.762	-0.15
1.000	553.153	3.2226	3.2163	0.20	93.703	93.805	-0.11
1.000	563.206	3.2207	3.2177	0.09	98.620	98.674	-0.05
1.000	573.184	3.2189	3.2198	-0.03	103.375	103.357	0.02
1.000	508.144	3.8884	3.8611	0.71	72.573	72.679	-0.15
1.000	513.176	3.8872	3.8673	0.51	76.356	76.455	-0.13
1.000	518.155	3.8860	3.8695	0.43	79.984	80.083	-0.12
1.000	523.150	3.8848	3.8674	0.45	83.503	83.626	-0.15
1.000	528.187	3.8836	3.8681	0.40	86.985	87.111	-0.14
1.000	533.127	3.8825	3.8710	0.30	90.349	90.453	-0.12
1.000	543.143	3.8801	3.8762	0.10	96.977	97.020	-0.04
1.000	553.151	3.8779	3.8795	-0.04	103.368	103.346	0.02
1.000	563.165	3.8756	3.8822	-0.17	109.575	109.475	0.09
1.000	573.132	3.8733	3.8841	-0.28	115.587	115.403	0.16
1.000	508.162	4.5855	4.5735	0.26	74.604	74.627	-0.03
1.000	513.203	4.5841	4.5438	0.89	79.010	79.125	-0.15

Table 9n. Comparison of ID code (99) Straty $P\rho T$ data with values calculated from Eq. (6) - Continued

Wt.	T K	ρ mol/l	Calc. ρ mol/l	$\Delta\rho/\rho$ %	P bar	Calc. P bar	$\Delta P/P$ %
1.000	518.147	4.5827	4.5433	0.87	83.277	83.428	-0.18
1.000	523.186	4.5813	4.5370	0.98	87.499	87.712	-0.24
1.000	528.074	4.5799	4.5450	0.77	91.581	91.781	-0.22
1.000	533.179	4.5785	4.5419	0.81	95.702	95.949	-0.26
1.000	543.117	4.5758	4.5510	0.55	103.638	103.854	-0.21
1.000	553.180	4.5731	4.5550	0.40	111.419	111.613	-0.17
1.000	563.124	4.5704	4.5599	0.23	118.945	119.078	-0.11
1.000	573.087	4.5678	4.5616	0.14	126.292	126.383	-0.07
1.000	513.177	5.3485	5.3728	-0.45	80.671	80.639	0.04
1.000	518.125	5.3469	5.3565	-0.18	85.645	85.624	0.02
1.000	523.133	5.3452	5.3361	0.17	90.556	90.584	-0.03
1.000	528.149	5.3436	5.3269	0.31	95.408	95.474	-0.07
1.000	533.129	5.3420	5.3276	0.27	100.189	100.259	-0.07
1.000	543.169	5.3388	5.3266	0.23	109.640	109.722	-0.07
1.000	553.191	5.3356	5.3258	0.18	118.871	118.956	-0.07
1.000	563.191	5.3325	5.3241	0.16	127.902	127.992	-0.07
1.000	573.185	5.3294	5.3190	0.20	136.734	136.867	-0.10
0.000	513.111	6.7130	8.1595	-17.73	81.641	81.486	0.19
1.000	518.135	6.7110	6.9236	-3.07	87.699	87.525	0.20
1.000	523.131	6.7089	6.8151	-1.56	93.674	93.513	0.17
1.000	528.136	6.7069	6.7756	-1.01	99.651	99.495	0.16
1.000	533.127	6.7049	6.7529	-0.71	105.591	105.443	0.14
1.000	543.127	6.7009	6.7283	-0.41	117.446	117.314	0.11
1.000	553.181	6.6969	6.7037	-0.10	129.238	129.192	0.04
1.000	563.191	6.6930	6.6848	0.12	140.892	140.963	-0.05
1.000	573.161	6.6891	6.6672	0.33	152.396	152.634	-0.16
0.000	513.189	6.7561	7.8249	-13.66	81.725	81.590	0.17
1.000	518.197	6.7540	6.9518	-2.85	87.798	87.637	0.18
1.000	523.196	6.7520	6.8473	-1.39	93.802	93.658	0.15
1.000	528.187	6.7499	6.8136	-0.93	99.798	99.654	0.14
1.000	533.181	6.7479	6.7955	-0.70	105.785	105.640	0.14
1.000	543.127	6.7439	6.7725	-0.42	117.659	117.522	0.12
1.000	553.109	6.7399	6.7532	-0.20	129.484	129.395	0.07
1.000	563.124	6.7359	6.7323	0.05	141.227	141.258	-0.02
1.000	573.112	6.7320	6.7147	0.26	152.854	153.042	-0.12
0.000	513.117	8.3698	10.1425	-17.48	81.875	81.659	0.26
1.000	518.161	8.3672	8.7054	-3.88	88.919	88.693	0.25
1.000	523.187	8.3647	8.5398	-2.05	96.057	95.820	0.25
1.000	528.148	8.3622	8.4968	-1.58	103.238	102.954	0.28
1.000	533.134	8.3597	8.4587	-1.17	110.503	110.212	0.26
1.000	543.113	8.3547	8.4042	-0.59	125.198	124.961	0.19
1.000	553.123	8.3497	8.3524	-0.03	140.017	139.999	0.01
1.000	563.218	8.3447	8.3011	0.53	154.965	155.358	-0.25
1.000	573.187	8.3399	8.2605	0.96	169.776	170.676	-0.53
0.000	513.129	9.7789	10.2962	-5.02	81.949	81.805	0.18
1.000	518.165	9.7760	9.8881	-1.13	89.903	89.788	0.13
1.000	523.178	9.7730	9.8521	-0.80	98.128	97.977	0.15
1.000	528.134	9.7701	9.8478	-0.79	106.502	106.279	0.21
1.000	533.193	9.7671	9.8112	-0.45	115.115	114.944	0.15
1.000	543.186	9.7612	9.7665	-0.05	132.563	132.530	0.02
1.000	553.211	9.7554	9.7121	0.45	150.334	150.700	-0.24
1.000	563.218	9.7496	9.6603	0.92	168.274	169.253	-0.58
1.000	573.177	9.7439	9.6142	1.35	186.291	188.052	-0.94
1.000	513.137	11.0766	11.2722	-1.74	82.737	82.500	0.29
1.000	523.168	11.0698	11.1357	-0.59	101.521	101.285	0.23
1.000	533.129	11.0631	11.0966	-0.30	121.318	121.111	0.17
1.000	553.179	11.0498	10.9890	0.55	162.876	163.593	-0.44
1.000	573.164	11.0366	10.8923	1.32	205.760	208.322	-1.23
1.000	513.094	12.3824	12.4278	-0.37	85.630	85.442	0.22
1.000	518.104	12.3786	12.4075	-0.23	96.699	96.531	0.17
1.000	523.176	12.3747	12.3776	-0.02	108.169	108.147	0.02
1.000	528.184	12.3709	12.3616	0.08	119.868	119.954	-0.07
1.000	533.172	12.3671	12.3439	0.19	131.758	132.011	-0.19

Table 9n. Comparison of ID code (99) Straty $P\rho T$ data with values calculated from Eq. (6) - Continued

Wt.	T K	ρ mol/l	Calc. ρ mol/l	$\Delta\rho/\rho$ %	P bar	Calc. P bar	$\Delta P/P$ %
1.000	543.099	12.3596	12.3087	0.41	156.027	156.757	-0.47
1.000	553.143	12.3521	12.2617	0.74	181.038	182.648	-0.88
1.000	563.198	12.3447	12.2131	1.08	206.457	209.258	-1.34
1.000	573.200	12.3373	12.1689	1.38	232.108	236.282	-1.77
1.000	508.166	13.4168	13.4388	-0.16	79.772	79.613	0.20
1.000	513.177	13.4126	13.4276	-0.11	92.379	92.238	0.15
1.000	518.130	13.4084	13.4225	-0.11	105.305	105.144	0.15
1.000	523.168	13.4042	13.4024	0.01	118.628	118.652	-0.02
1.000	528.108	13.4001	13.3910	0.07	132.089	132.230	-0.11
1.000	533.127	13.3959	13.3733	0.17	145.929	146.324	-0.27
1.000	543.162	13.3876	13.3368	0.38	174.186	175.279	-0.62
1.000	553.111	13.3795	13.3025	0.58	202.876	204.836	-0.96
1.000	563.117	13.3714	13.2660	0.79	232.157	235.253	-1.32
1.000	573.116	13.3633	13.2300	1.01	261.770	266.207	-1.67
1.000	498.122	14.7640	14.7945	-0.21	66.474	66.051	0.64
1.000	503.121	14.7591	14.7907	-0.21	81.409	80.881	0.65
1.000	508.109	14.7544	14.7821	-0.19	96.712	96.176	0.56
1.000	513.119	14.7496	14.7720	-0.15	112.455	111.966	0.44
1.000	518.110	14.7449	14.7617	-0.11	128.490	128.080	0.32
1.000	523.121	14.7403	14.7491	-0.06	144.833	144.596	0.16
1.000	528.175	14.7356	14.7337	0.01	161.501	161.557	-0.03
1.000	533.193	14.7310	14.7203	0.07	178.328	178.666	-0.19
1.000	543.107	14.7219	14.6999	0.15	212.348	213.147	-0.38
1.000	553.109	14.7129	14.6736	0.27	247.094	248.700	-0.65
1.000	563.205	14.7038	14.6440	0.41	282.496	285.206	-0.95
1.000	573.121	14.6949	14.6231	0.49	317.986	321.556	-1.11
1.000	488.117	16.1127	16.1249	-0.08	61.053	60.714	0.56
1.000	493.112	16.1072	16.1233	-0.10	79.024	78.523	0.64
1.000	498.169	16.1017	16.1160	-0.09	97.544	97.052	0.51
1.000	503.123	16.0965	16.1143	-0.11	116.298	115.632	0.58
1.000	508.189	16.0912	16.1044	-0.08	135.543	135.008	0.40
1.000	513.178	16.0860	16.0995	-0.08	155.014	154.428	0.38
1.000	518.102	16.0810	16.0973	-0.10	174.632	173.882	0.43
1.000	523.119	16.0759	16.0899	-0.09	194.649	193.964	0.35
1.000	528.086	16.0708	16.0852	-0.09	214.812	214.070	0.35
1.000	533.210	16.0657	16.0749	-0.06	235.535	235.033	0.21
1.000	543.106	16.0557	16.0668	-0.07	276.695	276.036	0.24
1.000	553.203	16.0457	16.0512	-0.03	318.834	318.479	0.11
0.000	478.140	17.0218	17.0738	-0.30	55.934	53.799	3.97
1.000	483.166	17.0158	17.0705	-0.32	76.288	73.833	3.33
1.000	488.146	17.0100	17.0692	-0.35	97.043	94.173	3.05
1.000	493.156	17.0043	17.0658	-0.36	118.268	115.073	2.78
1.000	498.116	16.9987	17.0652	-0.39	139.805	136.129	2.70
1.000	503.104	16.9932	17.0628	-0.41	161.712	157.639	2.58
1.000	508.170	16.9876	17.0569	-0.41	184.049	179.779	2.38
1.000	513.173	16.9823	17.0293	-0.28	204.943	201.915	1.50
1.000	518.122	16.9769	17.0232	-0.27	227.137	224.024	1.39
1.000	523.107	16.9715	17.0189	-0.28	249.817	246.493	1.35
1.000	528.115	16.9662	17.0144	-0.28	272.779	269.256	1.31
1.000	533.115	16.9609	17.0086	-0.28	295.757	292.138	1.24
1.000	538.118	16.9555	17.0051	-0.29	319.071	315.171	1.24
1.000	538.177	16.9555	17.0035	-0.28	319.220	315.446	1.20
0.000	448.138	18.8836	18.8750	0.05	25.435	26.095	-2.53
1.000	453.164	18.8214	18.8204	0.01	46.036	46.114	-0.17
1.000	458.137	18.8144	18.8172	-0.01	70.792	70.561	0.33
1.000	463.168	18.8077	18.8123	-0.02	96.198	95.794	0.42
1.000	468.170	18.8012	18.8099	-0.05	122.095	121.291	0.66
1.000	473.119	18.7949	18.8096	-0.08	148.291	146.877	0.96
1.000	478.094	18.7886	18.8086	-0.11	174.889	172.895	1.15
1.000	483.179	18.7823	18.8052	-0.12	202.151	199.779	1.19
1.000	488.169	18.7762	18.8050	-0.15	229.486	226.396	1.36
1.000	493.111	18.7702	18.8075	-0.20	257.090	252.962	1.63
1.000	498.130	18.7641	18.8084	-0.24	285.176	280.121	1.80
1.000	503.112	18.7581	18.8109	-0.28	313.445	307.239	2.02
1.000	508.165	18.7520	18.8118	-0.32	342.100	334.875	2.16

Table 9n. Comparison of ID code (99) Straty $P\rho T$ data with values calculated from Eq. (6) - Continued

Wt.	T K	ρ mol/l	Calc. ρ mol/l	$\Delta\rho/\rho$ %	P bar	Calc. P bar	$\Delta P/P$ %
0.000	443.181	19.2634	19.2185	0.23	28.485	32.421	-12.14
1.000	448.168	19.1994	19.1693	0.16	49.946	52.662	-5.16
1.000	453.131	19.1923	19.1652	0.14	75.674	78.251	-3.29
1.000	458.175	19.1854	19.1610	0.13	102.300	104.729	-2.32
1.000	463.153	19.1788	19.1576	0.11	129.056	131.255	-1.68
1.000	468.182	19.1723	19.1552	0.09	156.563	158.401	-1.16
1.000	473.184	19.1659	19.1536	0.06	184.319	185.698	-0.74
1.000	478.177	19.1596	19.1525	0.04	212.374	213.198	-0.39
1.000	483.176	19.1533	19.1530	0.00	240.915	240.948	-0.01
1.000	488.121	19.1471	19.1558	-0.05	269.660	268.592	0.40
1.000	493.104	19.1409	19.1566	-0.08	298.594	296.615	0.67
1.000	498.180	19.1347	19.1566	-0.11	328.161	325.321	0.87
0.000	433.112	20.1080	20.0861	0.11	63.077	65.763	-4.09
1.000	443.132	20.0935	20.0726	0.10	120.849	123.607	-2.23
1.000	453.116	20.0798	20.0638	0.08	180.444	182.706	-1.24
1.000	463.157	20.0664	20.0579	0.04	241.934	243.208	-0.52
1.000	473.134	20.0533	20.0580	-0.02	304.838	304.106	0.24
0.000	378.164	22.1156	22.1053	0.05	26.325	28.396	-7.29
1.000	383.118	22.0516	22.0518	-0.00	51.245	51.195	0.10
1.000	388.164	22.0430	22.0364	0.03	84.802	86.181	-1.60
1.000	393.122	22.0351	22.0239	0.05	118.666	121.089	-2.00
1.000	398.142	22.0273	22.0101	0.08	153.008	156.820	-2.43
1.000	403.144	22.0198	21.9984	0.10	187.935	192.787	-2.52
1.000	408.159	22.0123	21.9873	0.11	223.326	229.105	-2.52
1.000	413.133	22.0049	21.9783	0.12	259.051	265.330	-2.37
1.000	418.150	21.9976	21.9698	0.13	295.386	302.090	-2.22
1.000	423.134	21.9903	21.9629	0.12	331.991	338.730	-1.99

220 data points, $\ln|\Delta\rho/\rho|$ rms = 0.675%, $\Delta\rho/\rho$ av. = -0.02%, $\ln|\Delta P/P|$ av. = 0.59%, weight = 81.09%.

absolute relative pressure deviations in percent. The weight gives the relative least-squares weight assigned to this data source, obtained as the sum of weights for all of his points, divided by the sum of weights for all of the 400 data used, in percent. The largest relative density deviations in the data of Straty⁶³ at ID = 99 in Table 9 apparently occur near $\sigma_0 = 0.825$ rather than near $\sigma = 1.0$, the critical density.

Behavior of the calculated critical isotherm is given in Table 10. As a consequence of constraints on the EOS, there are no negative slopes, $(\partial P/\partial\rho)_T$, along this isotherm.

3. Thermal Properties and Computations

3.1. Functions for Ideal Gas States

For the hypothetical ideal gas states at $P^\circ = 1.01325$ bar (1 atm), spectroscopic specific heats, enthalpies, and entropies have been generously contributed by Dr. Jing Chao.¹¹ His "molecular model treats the methanol vapor as a mixture of monomers, dimers, and tetramers." We have formulated these data (Table 11), and have given interpolated results in Table 12.

Enthalpies are represented by using $x(T) \equiv T/100$, $c = 2.0$,

$$[H^\circ(T) - E_0^\circ]/RT = 4 + \sum_{i=1}^9 A_i [\exp(-\epsilon/x)]^i, \quad (7)$$

where

$$\begin{aligned} A_1 &= 3.638\ 616\ 27, & A_6 &= -3286.183\ 71, \\ A_2 &= -31.383\ 548\ 8, & A_7 &= 3538.294\ 44, \\ A_3 &= 197.493\ 130, & A_8 &= -2181.106\ 71, \\ A_4 &= -769.861\ 023, & A_9 &= 585.635\ 19, \\ A_5 &= 1956.074\ 28. \end{aligned}$$

Specific heats are obtained from $C_p^\circ(T) = dH^\circ(T)/dT$.

Entropies are represented using $x(T) \equiv T/100$,

$$\frac{S^\circ(T)}{R} = B_1 \ln(1+T) + f(x) \sum_{i=2}^9 B_i \left(\frac{cx}{1+cx} \right)^{i-2}, \quad (8)$$

$$f(x) \equiv 1/[1 + d \ln(1 + 1/x)],$$

where $c = 0.30$, $d = 0.25$, and

$$\begin{aligned} B_1 &= 4.956\ 945\ 73, & B_6 &= -1462.316\ 95, \\ B_2 &= 3.625\ 593\ 78, & B_7 &= 2666.793\ 01, \\ B_3 &= -20.482\ 766\ 8, & B_8 &= -2295.923\ 87, \\ B_4 &= 10.181\ 779\ 4, & B_9 &= 786.755\ 36, \\ B_5 &= 340.165\ 534. \end{aligned}$$

The rms relative deviations in percent are given at the bottom of Table 11, where for $C_p^\circ(T)/R$ the first three data are ignored.

3.2. The Homogeneous Domain

The homogeneous domain of Fig. 1 includes all regions which can be reached by integration along isotherms, starting at zero density, without crossing the vapor-liquid coexis-

Table 10. The critical isotherm for methanol

ρ/ρ_c	P bar	Z	$\partial P/\partial \rho$ bar/(mol/l)	$\partial \rho/\partial T$ (mol/l)/K	$\partial P/\partial T$ bar/K	$\partial^2 P/\partial T^2$ (bar/K)/K
0.50	77.363	0.43219	3.75351	-0.2153E+00	0.80804	-0.004435
0.52	77.952	0.41872	3.25868	-0.2584E+00	0.84196	-0.004460
0.54	78.461	0.40585	2.81265	-0.3111E+00	0.87496	-0.004448
0.56	78.899	0.39354	2.41265	-0.3759E+00	0.90695	-0.004399
0.58	79.274	0.38178	2.05585	-0.4562E+00	0.93787	-0.004310
0.60	79.592	0.37053	1.73941	-0.5563E+00	0.96768	-0.004181
0.62	79.861	0.35979	1.46045	-0.6822E+00	0.99634	-0.004010
0.64	80.085	0.34952	1.21609	-0.8419E+00	1.02384	-0.003798
0.66	80.271	0.33972	1.00349	-0.1047E+01	1.05018	-0.003545
0.68	80.424	0.33036	0.81984	-0.1312E+01	1.07539	-0.003250
0.70	80.548	0.32141	0.66239	-0.1660E+01	1.09948	-0.002914
0.72	80.648	0.31287	0.52853	-0.2124E+01	1.12251	-0.002540
0.74	80.727	0.30471	0.41576	-0.2753E+01	1.14454	-0.002128
0.76	80.789	0.29692	0.32171	-0.3623E+01	1.16564	-0.001680
0.78	80.836	0.28948	0.24418	-0.4857E+01	1.18590	-0.001198
0.80	80.871	0.28237	0.18112	-0.6655E+01	1.20540	-0.000684
0.82	80.897	0.27557	0.13065	-0.9371E+01	1.22425	-0.000141
0.84	80.916	0.26907	0.09103	-0.1365E+02	1.24255	0.000429
0.86	80.929	0.26285	0.06069	-0.2077E+02	1.26040	0.001024
0.88	80.937	0.25690	0.03818	-0.3347E+02	1.27792	0.001641
0.90	80.942	0.25121	0.02217	-0.5842E+02	1.29521	0.002278
0.92	80.944	0.24576	0.01147	-0.1144E+03	1.31239	0.002931
0.94	80.946	0.24053	0.00494	-0.2691E+03	1.32956	0.003599
0.96	80.946	0.23552	0.00152	-0.8862E+03	1.34682	0.004279
0.98	80.946	0.23072	0.00020	-0.6656E+04	1.36428	0.004969
1.00	80.946	0.22610	0.00000		1.38202	0.005667
1.02	80.946	0.22167	0.00021	-0.6585E+04	1.40014	0.006371
1.04	80.947	0.21741	0.00158	-0.8992E+03	1.41875	0.007078
1.06	80.947	0.21331	0.00518	-0.2774E+03	1.43797	0.007785
1.08	80.949	0.20936	0.01210	-0.1204E+03	1.45793	0.008490
1.10	80.951	0.20556	0.02356	-0.6276E+02	1.47873	0.009191
1.12	80.957	0.20190	0.04090	-0.3669E+02	1.50051	0.009884
1.14	80.966	0.19838	0.06561	-0.2322E+02	1.52340	0.010566
1.16	80.979	0.19499	0.09937	-0.1557E+02	1.54750	0.011235
1.18	81.000	0.19174	0.14407	-0.1092E+02	1.57294	0.011888
1.20	81.028	0.18861	0.20177	-0.7929E+01	1.59984	0.012522
1.22	81.068	0.18561	0.27479	-0.5926E+01	1.62831	0.013135
1.24	81.122	0.18273	0.36564	-0.4536E+01	1.65846	0.013723
1.26	81.192	0.17999	0.47710	-0.3543E+01	1.69039	0.014286
1.28	81.283	0.17738	0.61215	-0.2817E+01	1.72421	0.014819
1.30	81.399	0.17490	0.77402	-0.2274E+01	1.76000	0.015321
1.32	81.545	0.17256	0.96614	-0.1861E+01	1.79786	0.015790
1.34	81.726	0.17036	1.19221	-0.1542E+01	1.83787	0.016224
1.36	81.948	0.16831	1.45608	-0.1291E+01	1.88009	0.016621
1.38	82.218	0.16641	1.76186	-0.1092E+01	1.92459	0.016980
1.40	82.542	0.16469	2.11380	-0.9326E+00	1.97142	0.017300
1.42	82.931	0.16313	2.51635	-0.8030E+00	2.02063	0.017579
1.44	83.391	0.16176	2.97410	-0.6968E+00	2.07225	0.017817
1.46	83.933	0.16058	3.49180	-0.6089E+00	2.12632	0.018013
1.48	84.568	0.15961	4.07431	-0.5358E+00	2.18286	0.018168
1.50	85.306	0.15885	4.72660	-0.4743E+00	2.24186	0.018280

Table 11. Ideal gas state functions for methanol

T K	$[H^{\circ}(T) - E_0^{\circ}]/RT$		%	$S^{\circ}(T)/R$		%	$C_p^{\circ}(T)/R$		%
	(data)	(calc.)		(data)	(calc.)		(data)	(calc.)	
250.0	4.5132	4.5133	-0.0013	27.9259	27.9259	-0.0000	4.981	4.981	0.003
300.0	4.6171	4.6171	0.0009	28.8616	28.8615	0.0005	5.311	5.310	0.005
350.0	4.7456	4.7456	0.0003	29.7107	29.7112	-0.0015	5.734	5.734	-0.006
400.0	4.8984	4.8985	-0.0009	30.5081	30.5076	0.0017	6.208	6.208	-0.004
450.0	5.0711	5.0712	-0.0005	31.2671	31.2671	-0.0000	6.697	6.697	0.001
500.0	5.2579	5.2580	-0.0007	31.9971	31.9977	-0.0018	7.179	7.179	0.006
550.0	5.4538	5.4538	0.0014	32.7043	32.7038	0.0016	7.642	7.641	0.003
600.0	5.6546	5.6545	0.0005	33.3875	33.3877	-0.0008	8.081	8.081	-0.001
650.0	5.8572	5.8573	-0.0004	34.0514	34.0511	0.0009	8.494	8.495	-0.004
700.0	6.0597	6.0597	-0.0006	34.6948	34.6950	-0.0005	8.883	8.884	-0.005
750.0	6.2603	6.2603	-0.0002	35.3202	35.3205	-0.0007	9.249	9.249	-0.004
800.0	6.4579	6.4579	-0.0008	35.9288	35.9284	0.0010	9.592	9.592	-0.000
850.0	6.6519	6.6519	0.0000	36.5193	36.5197	0.0009	9.915	9.914	0.003
900.0	6.8417	6.8416	0.0006	37.0954	37.0950	0.0012	10.218	10.217	0.004
950.0	7.0269	7.0269	0.0004	37.6547	37.6551	-0.0010	10.502	10.502	0.002
1000.0	7.2074	7.2074	0.0007	38.2007	38.2006	0.0003	10.769	10.770	-0.006

rms = 0.0007% rms = 0.0010% rms = 0.004%

tence boundaries. In this report, the numerical values of E and H are based on $E = 0$ for saturated liquid at the triple point. They were determined by adding the selected value $H_0^{\circ} = E_0^{\circ} = 35\,374.762\text{ J/mol}$ to the ideal gas state values of $(E^{\circ} - E_0^{\circ})$ and $(H^{\circ} - E_0^{\circ})$ from Eq. (7).

We start computations for thermal properties in the homogeneous domain with ideal gas state functions at zero density, and then integrate numerically along isotherms (see Goodwin²⁶) using the EOS in the following relations,

$$\Delta E = \int \left[P - T \left(\frac{\partial P}{\partial T} \right) \right] \frac{d\rho}{\rho^2}, \quad (9)$$

$$\Delta C_v = -T \int \left(\frac{\partial^2 P}{\partial T^2} \right) \frac{d\rho}{\rho^2}, \quad (10)$$

and

$$\Delta S = R \ln \left(\frac{P^{\circ}}{\rho RT} \right) + \int_0^{\rho} \left[R - \left(\frac{\partial P}{\partial T} \right) / \rho \right] \frac{d\rho}{\rho}. \quad (11)$$

Equation (11) is for use with initial entropies in hypothetical ideal gas states at $P^{\circ} = 1.013\,25\text{ bar}$ (1 atm). For all other initial states,

$$\Delta S = - \int \left(\frac{\partial P}{\partial T} \right) \frac{d\rho}{\rho^2}. \quad (11a)$$

In each (ρ, T) state, reached by above integrations, we compute

$$H = E + P/\rho, \quad (12)$$

$$C_p = C_v + T \left[\left(\frac{\partial P}{\partial T} \right)^2 / \left(\frac{\partial P}{\partial \rho} \right) \right] / \rho^2, \quad (13)$$

and

$$W^2 = C_p \left(\frac{\partial P}{\partial \rho} \right) / C_v. \quad (14)$$

The fugacity/pressure coefficient f/P for any state is computed by reference to the hypothetical ideal gas state at the same temperature and at $P^{\circ} = 1.013\,25\text{ bar}$,

$$\frac{f}{P} = \left(\frac{P^{\circ}}{P} \right) \exp \left(\frac{\Delta G}{RT} \right), \quad (15)$$

and

$$\Delta G = (H - E_0^{\circ}) - H^{\circ} - T(S - S^{\circ}),$$

where ΔG is the isothermal Gibbs free-energy change, and the selected value E_0° was added to our tabulated values for $H(\rho, T)$ relative to $(H^{\circ} - E_0^{\circ})$ from Eq. (7).

3.3. Properties at Coexistence

To obtain specific heats for compressed liquid states via Eq. (10) it is necessary to start with values $C_v(T)_{\sigma}$ for the isochoric specific heat, $C_v(\rho, T)$ at the liquid coexistence boundary. Also, for the computation of properties along isobars, it is economical to have formulas for isochoric specific heats at the saturated vapor boundary, and for enthalpies and entropies on the saturated liquid boundary.

3.3.a. Specific Heats on the Vapor Boundary

Data for $C_v(T)_{\sigma}$, the isochoric specific heat at the vapor boundary, are produced with Eq. (10), and have a "hook" approaching T_c due to the behavior of isochore curvatures. At the critical point, $C_v(T)_{\sigma}$ has the value $\bar{C}_v = 161.14\text{ (J/mol)/K}$. Let $x(T) \equiv T/T_c$, $u(T) \equiv (1 - x)$, then

$$\ln \left(\frac{\sigma C_v(T)_{\sigma}}{\bar{C}_v} \right) = A_1 u^{\epsilon} + \sum_{i=2}^6 A_i u^{i-1}, \quad (16)$$

where $\sigma \equiv \rho/\rho_c$, $\epsilon = 0.37$, and

$$A_1 = 2.619\,990, \quad A_4 = 63.387\,330,$$

$$A_2 = 8.540\,236, \quad A_5 = -189.708\,463,$$

$$A_3 = 9.176\,559, \quad A_6 = 205.567\,230.$$

For 42 data at $180.0 \leq T \leq 512.3\text{ K}$ the rms relative deviation for $C_v(T)_{\sigma}$ is 0.24%, and the largest deviation of a datum from the calculated value is -0.60% at 180 K.

Table 12. Interpolated ideal gas state functions for methanol

T K	$E^{\circ}(T)-E_0^{\circ}$ J/mol	$H^{\circ}(T)-E_0^{\circ}$ J/mol	$S^{\circ}(T)$ J/(mol·K)	$C_v^{\circ}(T)$ J/(mol·K)	$C_p^{\circ}(T)$ J/(mol·K)
175.59	4936.4	6396.3	218.043	30.81	39.12
180.00	5072.4	6569.0	219.015	30.90	39.22
190.00	5382.6	6962.3	221.142	31.13	39.44
200.00	5695.0	7357.9	223.170	31.37	39.68
210.00	6010.1	7756.1	225.112	31.64	39.96
220.00	6328.0	8157.2	226.977	31.95	40.26
230.00	6649.1	8561.5	228.773	32.29	40.60
240.00	6973.9	8969.4	230.509	32.67	40.99
250.00	7302.8	9381.4	232.190	33.10	41.41
260.00	7636.1	9797.8	233.823	33.57	41.88
270.00	7974.3	10219.2	235.413	34.08	42.39
273.15	8081.9	10353.0	235.906	34.25	42.56
280.00	8317.8	10645.8	236.965	34.63	42.94
290.00	8667.0	11078.2	238.482	35.22	43.53
298.15	8956.1	11435.0	239.696	35.72	44.04
300.00	9022.2	11516.6	239.969	35.84	44.15
310.00	9383.9	11961.4	241.427	36.49	44.81
320.00	9752.2	12412.8	242.861	37.18	45.49
330.00	10127.5	12871.3	244.272	37.88	46.20
337.67	10420.2	13227.7	245.340	38.44	46.76
340.00	10510.0	13336.9	245.662	38.61	46.93
350.00	10899.8	13809.9	247.034	39.36	47.68
360.00	11297.3	14290.5	248.388	40.13	48.44
370.00	11702.5	14778.9	249.726	40.91	49.22
380.00	12115.5	15275.0	251.049	41.70	50.02
390.00	12536.5	15779.2	252.359	42.50	50.81
400.00	12965.6	16291.4	253.656	43.31	51.62
410.00	13402.7	16811.6	254.940	44.12	52.43
420.00	13847.9	17340.0	256.213	44.93	53.24
430.00	14301.2	17876.5	257.476	45.74	54.06
440.00	14762.7	18421.1	258.728	46.56	54.87
450.00	15232.4	18973.9	259.970	47.37	55.68
460.00	15710.1	19534.8	261.203	48.18	56.49
470.00	16195.9	20103.7	262.426	48.98	57.30
480.00	16689.8	20680.7	263.641	49.79	58.10
490.00	17191.6	21265.7	264.847	50.58	58.90
500.00	17701.4	21858.6	266.045	51.37	59.69
510.00	18219.0	22459.4	267.235	52.16	60.47
520.00	18744.5	23068.0	268.416	52.93	61.25
530.00	19277.7	23684.4	269.590	53.70	62.02
540.00	19818.5	24308.4	270.757	54.47	62.78
550.00	20367.0	24939.9	271.916	55.22	63.53
560.00	20922.9	25579.0	273.067	55.97	64.28
570.00	21486.3	26225.6	274.211	56.71	65.02
580.00	22057.0	26879.4	275.349	57.44	65.75
590.00	22635.0	27540.5	276.479	58.16	66.47
600.00	23220.1	28208.8	277.602	58.87	67.19
610.00	23812.4	28884.2	278.719	59.58	67.89
620.00	24411.7	29566.7	279.828	60.27	68.59
630.00	25017.9	30256.0	280.931	60.96	69.28
640.00	25630.9	30952.2	282.028	61.64	69.96
650.00	26250.7	31655.1	283.117	62.31	70.63
660.00	26877.2	32364.7	284.201	62.98	71.29
670.00	27510.2	33080.9	285.278	63.63	71.95
680.00	28149.8	33803.7	286.349	64.28	72.59
690.00	28795.8	34532.8	287.413	64.92	73.23
700.00	29448.2	35268.3	288.471	65.55	73.86

3.3.b. Saturated Liquid Enthalpies and Entropies

The heat of vaporization in J/mol from the Clapeyron equation,

$$Q_{\text{vap}} \equiv \Delta H_{\text{vap}} = 100T \left(\frac{dP_{\sigma}}{dT} \right) (v_g - v_l), \quad (17)$$

yields the enthalpy and entropy of saturated liquid,

$$H_{\sigma} \equiv H_l = (H_g - Q_{\text{vap}}), \quad (18)$$

$$S_{\sigma} \equiv S_l = (S_g - Q_{\text{vap}}/T). \quad (19)$$

The following formula for $H_{\sigma}(T)$, the enthalpy of saturated liquid, uses arguments $u(T) \equiv (T_c - T)/(T_c - T_l)$ and the exponent $\beta = 0.35$,

$$\frac{(H_{\sigma} - H_c)}{(H_l - H_c)} = u + (u^{\beta} - u) \sum_{i=1}^6 A_i u^{i-1}, \quad (20)$$

$$H_l = 0.0, \quad H_c = 30\,030.1 \text{ J/mol},$$

$$A_1 = 0.421\,081\,10, \quad A_4 = 5.541\,314\,57,$$

$$A_2 = 0.689\,955\,69, \quad A_5 = -5.079\,075\,50,$$

$$A_3 = -2.575\,065\,38, \quad A_6 = 1.468\,990\,92.$$

For 41 data at $190.0 \leq T \leq 512.3$ K, the rms relative deviation for $H_{\sigma}(T)$ is 0.34%. The maximum deviations of data from the calculated values are -1.70% at 190 K, and -2.61% at 180 K.

The following formula for $S_{\sigma}(T)$, the entropy of saturated liquid, uses arguments $x(T) \equiv T/T_c$, $u(T) \equiv (1-x)$, and exponent $\beta = 0.35$,

$$\frac{(S_{\sigma} - S_c)}{(S_l - S_c)} = A_1 u^{\beta} + A_2 \ln(x) + \sum_{i=3}^5 A_i (x^{i-2} - 1), \quad (21)$$

$$S_l = 90.083, \quad S_c = 196.128 \text{ (J/mol)/K},$$

$$A_1 = 0.351\,885\,933, \quad A_4 = -3.604\,841\,554,$$

$$A_2 = -1.315\,787\,023, \quad A_5 = 1.274\,787\,183.$$

$$A_3 = 4.062\,495\,073,$$

For 44 $S_{\sigma}(T)$ data at $175.59 \leq T \leq 512.60$ the rms relative deviation is 0.11%, and the maximum deviation of a datum from the calculated value is $+0.26$ (J/mol)/K at 200 K.

3.3.c. Saturated Liquid Specific Heats

Specific heats $C_{\sigma}(T)$ along the saturated liquid path, are computed using the relation $C_{\sigma}(T) = T dS_{\sigma}(T)/dT$. From Eq. (21) with $x = T/T_c$, $u = (1-x)$, $S_n = (S_l - S_c)$, $\beta = 0.35$,

$$C_{\sigma}(T) = S_n x f(x),$$

$$f(x) = -A_1 \beta u^{\beta-1} + \frac{A_2}{x} + \sum_{i=3}^5 A_i (i-2) x^{i-3}. \quad (22)$$

Experimental data of Carlson and Westrum¹⁰ for $C_{\sigma}(T)$ were used in simultaneous fitting with our derived $S_{\sigma}(T)$ data to obtain coefficients A_i for Eq. (21). These data are compared with calculated results in Table 13. The isochoric specific heat at this liquid boundary is computed by the relation

$$C_v(T)_{\sigma} = C_{\sigma}(T) + T \left(\frac{\partial P}{\partial T} \right) \left(\frac{d\rho_l}{dT} \right) / \rho_l^2, \quad (23)$$

where ρ_l is the density of saturated liquid.

Table 13. Comparison of ID code (10) Carlson / Westrum $C_{\sigma}(T)$ data with values calculated from Eq. (22)

T K	C_{σ} J/(mol-K) (data)	C_{σ} J/(mol-K) (calc.)	% Dev.
180.00	70.75	71.04	-0.41
190.00	70.79	70.78	0.02
200.00	70.96	70.77	0.26
210.00	71.25	71.01	0.34
220.00	71.71	71.48	0.33
230.00	72.34	72.15	0.26
240.00	73.09	73.02	0.10
250.00	74.06	74.07	-0.02
260.00	75.14	75.29	-0.19
270.00	76.44	76.65	-0.28
273.15	76.90	77.11	-0.27
280.00	77.95	78.16	-0.27
290.00	79.62	79.78	-0.20
298.15	81.13	81.19	-0.08
300.00	81.50	81.52	-0.02
310.00	83.60	83.36	0.28
320.00	85.94	85.29	0.76

The following formula for $C_v(T)_{\sigma}$, the isochoric specific heat at the liquid boundary, uses arguments $x \equiv (T/T_c)$, $u \equiv (1-x)$, and parameters $\alpha = 1$, $\epsilon = 0.70$. The critical-point value of $C_v(T)_{\sigma}$ is $\bar{C}_v = 161.14$ (J/mol)/K,

$$C_v(T)_{\sigma} / \bar{C}_v = A_0 + (1 - A_0) f(x) \exp[\alpha(1 - 1/x)],$$

$$f(x) \equiv 1 + A_1 u^{\epsilon} + \sum_{i=2}^6 A_i u^{i-1}, \quad (24)$$

where $A_0 = 58/\bar{C}_v$, and

$$A_1 = -18.505\,575, \quad A_4 = 136.856\,019,$$

$$A_2 = 35.208\,953, \quad A_5 = -175.234\,460,$$

$$A_3 = -64.875\,865, \quad A_6 = 94.705\,808.$$

For 37 $C_v(T)_{\sigma}$ data derived by Eq. (23) at $175.59 \leq T \leq 500$ K, the rms relative deviation is 0.10%. The behavior of these data is shown in Fig. 3.

3.4. Compressed Liquid States

For thermal properties along isobars, Table 17, we use Eq. (24) for $C_v(T)_{\sigma}$, and the formulated $H_{\sigma}(T)$, $S_{\sigma}(T)$, Eqs. (20) and (21).

Then, starting with E , S , C_v on the saturated liquid boundary, we integrate along isotherms up to any given (ρ, T) , (P, T) point, using Eqs. (9), (10), and (11a), and then apply Eqs. (12), (13), and (14) at that point on the $P\rho T$ surface.

3.5. Comparisons

Saturated liquid specific heat data $C_{\sigma}(T)$ of Carlson and Westrum¹⁰ are compared with our results from Eq. (22) in Table 13. Deviations are under 0.5% except at their highest temperature, 320 K.

Single-phase enthalpy differences data of Wormald, *et al.*⁶⁹ have as reference state the saturated liquid at 298.15 K, where our value of the enthalpy from Table 16 is 9146.7 J/mol. In Table 14 we compare enthalpy differences at their

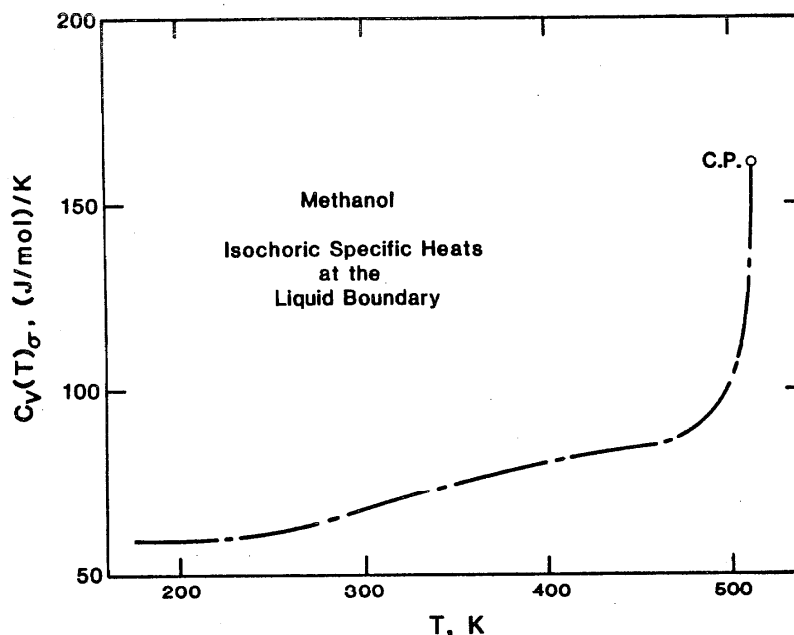


Fig. 3. Derived $C_v(T)_\sigma$ at the liquid boundary.

pressures along their isotherms. The largest differences occur along the near-critical isotherm at 515.2 K, as seen in Fig. 4.

4. Tables of Thermophysical Properties

All of the following tabulated properties are interpolated or extrapolated in regions for which no $P\rho T$ data exist; see Table 7. No melting line is used here.

4.1. The Joule-Thomson Inversion Locus

The P - ρ - T coordinates of the Joule-Thomson inversion, $(\partial T/\partial P)_H = 0$, are presented in Table 15. For each temperature the density is iterated to satisfy the condition, $T(\partial P/\partial T) = \rho(\partial P/\partial \rho)$, by starting with an initial trial density, ρ_i ,

$$\rho_i/\rho_c = \exp[1.01322 - 0.16444(T/T_c)], \quad (25)$$

which is a good approximation of the $\rho(T)$ relation for the Joule-Thomson locus.

4.2. Properties at Coexistence

Table 16 gives some properties at the liquid coexistence boundary, computed by methods of Sec. 3.3. Here, dP_σ/dT is the slope of the vapor-pressure curve, Eq. (1); $d\rho_l/dT$ is the slope of the saturated liquid densities curve, Eq. (2); whereas $\partial P/\partial T$ and $\partial P/\partial \rho$ are slopes of the single-phase $P\rho T$ surface at the liquid boundary. In the second part of Table 16, C_v is the isochoric specific heat at the liquid boundary, whereas C_σ is the specific heat along the saturated liquid path; and C_p is the isobaric specific heat at the saturated liquid boundary. Properties of the saturated vapor are given in Table 17 at the coexistence boundary.

In Table 17 are given values of the Joule-Thomson coefficient, $\mu \equiv (\partial T/\partial P)_H$, computed by the relation,

$$\mu = 100 \left[T \left(\frac{\partial v}{\partial T} \right)_P - v \right] / C_p, \text{ K/bar.} \quad (26)$$

4.3. Properties Along Selected Isobars

Table 17 gives properties along isobars, computed by methods of Sec. 3, using EOS Eq. (6). Each isobar starts at the triple-point temperature, hence is extrapolated into the pseudosolid region. Each page for isobars at $P < P_c$ contains a blank line for the transition from saturated liquid to saturated vapor at the coexistence temperature. As described in Sec. 3.4, the properties for compressed liquid states at $T < T_c$ are based on formulated enthalpies and entropies for the saturated liquid, Eqs. (20) and (21). Small discontinuities at $T = T_c$ along isobars at $P > P_c$ are expected, due to change in the paths of computation from $T < T_c$ to $T > T_c$, Sec. 3.

5. Comments

The consistency among various data for saturated vapor densities in Table 6 (see Fig. 2) is very poor, and the EOS representation of some of the Straty $P\rho T$ data (at reduced densities near 0.8 and near coexistence) is seen in Table 9 to be rather poor.

Thus a meticulous experimental examination of all $P\rho T$ characteristics of the coexistence region is needed for an improved correlation of the thermodynamic properties of methanol. Specific heat and speed of sound data over wide ranges of the $P\rho T$ surface clearly would strengthen confidence in derived properties. The formulation of a BWR-type of EOS, by simultaneous fitting of $P\rho T$ and enthalpy data, may be desirable, aided by the background given in the present report.

Table 14. Comparison of ID code (69) Wormaid ΔH data with calculated values

<i>P</i> bar	ρ mol/l	ΔH kJ/mol (data)	ΔH kJ/mol (calc.)	Diff.	% Dev.
<i>T</i> = 373.2 K					
1.0	0.033	41.162	40.637	0.524	1.29
2.1	0.072	40.819	40.176	0.643	1.60
3.4	0.121	39.665	39.483	0.183	0.46
7.4	22.189	6.796	6.744	0.052	0.77
30.2	22.300	6.873	6.786	0.087	1.28
50.7	22.395	6.831	6.825	0.006	0.09
117.2	22.678	7.129	6.959	0.171	2.45
<i>T</i> = 398.2 K					
1.0	0.031	42.751	41.985	0.766	1.82
1.8	0.057	42.517	41.766	0.751	1.80
3.4	0.110	42.027	41.271	0.755	1.83
4.6	0.152	41.726	40.833	0.893	2.19
5.9	0.200	40.790	40.277	0.513	1.27
9.0	21.242	9.475	9.226	0.249	2.69
43.0	21.448	9.360	9.267	0.093	1.00
118.4	21.846	9.654	9.379	0.276	2.94
<i>T</i> = 423.2 K					
1.0	0.029	43.828	43.351	0.477	1.10
2.7	0.080	43.453	43.009	0.444	1.03
4.4	0.133	43.523	42.632	0.891	2.09
6.8	0.211	42.825	42.010	0.815	1.94
12.0	0.410	41.085	40.176	0.909	2.26
13.2	0.465	40.537	39.615	0.922	2.33
18.9	20.197	12.477	11.843	0.634	5.35
33.6	20.319	12.487	11.843	0.644	5.44
71.6	20.603	12.442	11.855	0.588	4.96
120.0	20.918	12.481	11.890	0.591	4.97
<i>T</i> = 448.2 K					
1.0	0.027	45.260	44.749	0.511	1.14
3.3	0.092	44.866	44.403	0.463	1.04
5.6	0.158	44.831	44.034	0.797	1.81
8.2	0.237	44.273	43.562	0.711	1.63
12.0	0.361	43.731	42.752	0.979	2.29
15.8	0.499	42.866	41.773	1.093	2.62
18.5	0.610	42.216	40.945	1.270	3.10
21.9	0.774	41.283	39.683	1.600	4.03
27.3	18.895	15.358	14.688	0.670	4.56
47.8	19.143	15.704	14.640	1.064	7.27
73.6	19.415	15.646	14.599	1.047	7.17
112.5	19.768	15.534	14.566	0.968	6.64
<i>T</i> = 473.2 K					
1.0	0.026	46.923	46.188	0.735	1.59
6.8	0.181	46.394	45.509	0.885	1.94
12.7	0.351	45.321	44.694	0.626	1.40
16.8	0.479	44.923	44.024	0.899	2.04
22.0	0.659	44.142	43.036	1.106	2.57
28.2	0.912	43.004	41.605	1.399	3.36
33.0	1.153	41.953	40.232	1.721	4.28
37.8	1.470	40.771	38.469	2.302	5.98
42.3	17.223	19.447	18.007	1.440	8.00
49.4	17.385	19.306	17.944	1.362	7.59
49.8	17.393	19.408	17.940	1.468	8.18
66.3	17.715	19.315	17.822	1.493	8.38
90.4	18.101	19.104	17.695	1.409	7.96
118.3	18.469	18.966	17.592	1.374	7.81

Table 14. Comparison of ID code (69) Wormaid ΔH data with calculated values - Continued

<i>P</i> bar	ρ mol/l	ΔH kJ/mol (data)	ΔH kJ/mol (calc.)	Diff.	% Dev.
<i>T</i> = 498.2 K					
1.0	0.025	48.483	47.669	0.814	1.71
8.3	0.209	47.919	47.013	0.906	1.93
14.7	0.381	47.343	46.363	0.979	2.11
21.8	0.587	46.458	45.511	0.948	2.08
29.8	0.850	45.564	44.374	1.190	2.68
33.8	0.999	44.984	43.727	1.257	2.87
36.0	1.086	44.520	43.346	1.173	2.71
43.0	1.403	43.597	41.993	1.604	3.82
52.0	1.944	41.790	39.809	1.980	4.97
57.5	2.424	40.181	38.034	2.148	5.65
62.5	3.141	38.162	35.662	2.500	7.01
68.0	14.883	23.833	22.201	1.632	7.35
73.9	15.223	23.750	22.008	1.741	7.91
83.0	15.627	23.455	21.787	1.668	7.66
96.4	16.079	22.997	21.550	1.447	6.71
117.0	16.605	22.789	21.293	1.496	7.02
129.2	16.860	22.507	21.177	1.330	6.28
<i>T</i> = 510.2 K					
35.6	1.005	45.930	44.841	1.089	2.43
48.6	1.544	43.930	42.789	1.141	2.67
58.8	2.125	42.325	40.736	1.589	3.90
64.5	2.567	41.078	39.306	1.772	4.51
69.0	3.033	39.617	37.919	1.698	4.48
74.0	3.834	38.217	35.794	2.423	6.77
75.5	4.228	37.269	34.862	2.406	6.90
81.2	12.875	27.169	25.006	2.163	8.65
83.7	13.286	26.858	24.734	2.124	8.59
86.0	13.570	26.441	24.548	1.893	7.71
89.5	13.909	26.140	24.330	1.811	7.44
100.5	14.639	25.429	23.873	1.556	6.52
113.5	15.216	25.035	23.529	1.505	6.40
<i>T</i> = 515.2 K					
54.2	1.761	43.687	42.579	1.108	2.60
60.8	2.140	42.815	41.318	1.497	3.62
67.2	2.604	41.469	39.882	1.587	3.98
77.7	3.842	38.509	36.584	1.924	5.26
82.2	5.089	36.897	33.939	2.957	8.71
85.4	10.320	34.183	27.620	6.563	23.76
85.8	10.739	33.872	27.289	6.583	24.12
88.7	12.059	29.127	26.309	2.818	10.71
89.5	12.259	28.582	26.167	2.415	9.23
91.6	12.670	26.765	25.878	0.887	3.43
99.2	13.573	26.637	25.263	1.374	5.44
105.5	14.051	26.534	24.950	1.585	6.35
121.3	14.861	25.945	24.441	1.504	6.15
<i>T</i> = 523.2 K					
1.0	0.023	49.820	49.195	0.624	1.27
19.1	0.470	48.221	47.850	0.370	0.77
34.0	0.899	47.208	46.391	0.817	1.76
49.4	1.453	45.593	44.485	1.108	2.49
63.6	2.143	43.440	42.278	1.162	2.75
75.8	3.011	41.460	39.831	1.628	4.09
85.0	4.085	39.037	37.265	1.772	4.76
91.2	5.536	36.935	34.477	2.458	7.13
97.4	9.427	33.215	29.666	3.549	11.96
103.3	11.552	29.844	27.888	1.956	7.01
107.4	12.264	28.989	27.350	1.639	5.99
112.9	12.909	28.313	26.881	1.432	5.33
121.4	13.592	27.822	26.402	1.420	5.38

Table 14. Comparison of ID code (69) Wormald ΔH data with calculated values - Continued

<i>P</i> bar	ρ mol/l	ΔH kJ/mol (data)	ΔH kJ/mol (calc.)	Diff.	% Dev.
<i>T</i> = 548.2 K					
1.0	0.022	51.386	50.767	0.620	1.22
17.4	0.401	50.399	49.843	0.556	1.12
33.0	0.799	49.179	48.762	0.417	0.85
49.1	1.280	48.028	47.391	0.637	1.35
61.8	1.733	46.872	46.129	0.742	1.61
76.0	2.353	45.523	44.516	1.007	2.26
90.2	3.149	43.764	42.644	1.119	2.62
98.6	3.747	42.664	41.374	1.290	3.12
106.4	4.433	41.027	40.041	0.986	2.46
114.2	5.314	39.668	38.507	1.161	3.02
130.4	7.969	36.862	34.842	2.020	5.80
<i>T</i> = 573.2 K					
1.0	0.021	52.966	52.383	0.583	1.11
18.0	0.393	51.915	51.626	0.289	0.56
33.3	0.754	51.409	50.827	0.582	1.15
47.4	1.124	50.422	49.944	0.478	0.96
62.0	1.559	49.685	48.900	0.785	1.60
75.2	2.010	48.455	47.852	0.603	1.26
89.0	2.555	47.455	46.655	0.800	1.71
102.8	3.191	46.093	45.355	0.738	1.63
111.8	3.665	45.276	44.447	0.829	1.86
122.3	4.293	44.068	43.320	0.748	1.73
136.4	5.292	42.504	41.682	0.823	1.97

Table 15. The Joule-Thomson inversion locus for methanol

<i>T</i> K	ρ mol/l	<i>P</i> bar	<i>T</i> K	ρ mol/l	<i>P</i> bar
425	20.255	36.31	620	18.980	1025.45
430	20.211	60.23	630	18.921	1073.34
440	20.127	109.17	640	18.863	1120.69
450	20.049	159.26	650	18.805	1167.49
460	19.974	210.16	660	18.746	1213.70
470	19.903	261.63	670	18.687	1259.34
480	19.834	313.48	680	18.628	1304.37
490	19.767	365.54	690	18.569	1348.78
500	19.702	417.69	700	18.509	1392.57
510	19.638	469.84	710	18.449	1435.71
520	19.575	521.89	720	18.388	1478.21
530	19.513	573.78	730	18.327	1520.04
540	19.452	625.44	740	18.266	1561.20
550	19.392	676.81	750	18.204	1601.68
560	19.332	727.87	760	18.142	1641.45
570	19.273	778.56	770	18.079	1680.53
580	19.214	828.84	780	18.015	1718.88
590	19.155	878.70	790	17.950	1756.50
600	19.097	928.11	800	17.885	1793.37
610	19.038	977.03	810	17.819	1829.50

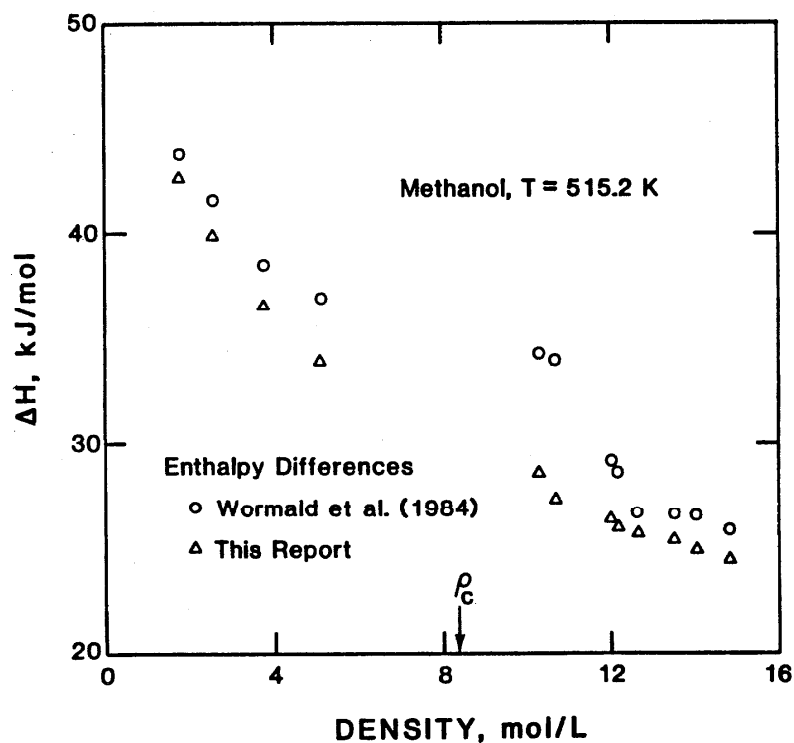


FIG. 4. Comparison of enthalpy differences at 515.2 K.

Table 16. Properties of saturated liquid methanol

T K	P bar	ρ_l mol/l	ρ_g mol/l	Z_l	Z_g	dP_σ/dT bar/K	$d\rho_l/dT$ (mol/l)/K	$\partial P/\partial T$ bar/K	$\partial P/\partial \rho$ bar/(mol/l)
175.590	0.00000	28.226	0.00000	0.00000	0.98929	0.000000	-0.03260	16.3765	502.3808
180.000	0.00000	28.083	0.00000	0.00000	0.98868	0.000001	-0.03228	15.9926	495.3595
185.000	0.00001	27.922	0.00000	0.00000	0.98809	0.000001	-0.03195	15.5773	487.6127
190.000	0.00002	27.763	0.00000	0.00000	0.98759	0.000002	-0.03162	15.1817	480.0603
195.000	0.00003	27.606	0.00000	0.00000	0.98718	0.000004	-0.03132	14.8043	472.6711
200.000	0.00006	27.450	0.00000	0.00000	0.98685	0.000008	-0.03103	14.4438	465.4163
205.000	0.00011	27.296	0.00001	0.00000	0.98657	0.000013	-0.03077	14.0989	458.2697
210.000	0.00020	27.143	0.00001	0.00000	0.98635	0.000022	-0.03051	13.7686	451.2072
215.000	0.00034	26.991	0.00002	0.00000	0.98616	0.000036	-0.03028	13.4519	444.2069
220.000	0.00057	26.840	0.00003	0.00000	0.98599	0.000058	-0.03007	13.1478	437.2484
225.000	0.00094	26.690	0.00005	0.00000	0.98582	0.000091	-0.02987	12.8556	430.3134
230.000	0.00151	26.541	0.00008	0.00000	0.98565	0.000139	-0.02970	12.5744	423.3849
235.000	0.00236	26.393	0.00012	0.00000	0.98545	0.000208	-0.02954	12.3035	416.4478
240.000	0.00363	26.245	0.00018	0.00001	0.98520	0.000304	-0.02941	12.0423	409.4882
245.000	0.00547	26.099	0.00027	0.00001	0.98489	0.000438	-0.02929	11.7902	402.4938
250.000	0.00810	25.952	0.00040	0.00002	0.98451	0.000621	-0.02920	11.5465	395.4535
255.000	0.01178	25.807	0.00056	0.00002	0.98403	0.000865	-0.02912	11.3109	388.3576
260.000	0.01688	25.661	0.00079	0.00003	0.98345	0.001187	-0.02907	11.0826	381.1976
265.000	0.02381	25.516	0.00110	0.00004	0.98273	0.001606	-0.02904	10.8615	373.9664
270.000	0.03313	25.371	0.00150	0.00006	0.98186	0.002144	-0.02903	10.6468	366.6578
273.150	0.04052	25.279	0.00182	0.00007	0.98123	0.002556	-0.02904	10.5148	362.0115
275.000	0.04550	25.226	0.00203	0.00008	0.98083	0.002827	-0.02905	10.4384	359.2671
280.000	0.06170	25.080	0.00271	0.00011	0.97962	0.003684	-0.02909	10.2357	351.7904
285.000	0.08268	24.935	0.00357	0.00014	0.97820	0.004748	-0.02915	10.0385	344.2251
290.000	0.10958	24.789	0.00465	0.00018	0.97657	0.006054	-0.02924	9.8464	336.5696
295.000	0.14369	24.642	0.00601	0.00024	0.97470	0.007643	-0.02935	9.6590	328.8235
298.150	0.16957	24.550	0.00703	0.00028	0.97339	0.008809	-0.02944	9.5433	323.8970
300.000	0.18655	24.495	0.00769	0.00031	0.97257	0.009558	-0.02949	9.4761	320.9870
305.000	0.23990	24.347	0.00975	0.00039	0.97017	0.011848	-0.02966	9.2974	313.0614
310.000	0.30574	24.199	0.01226	0.00049	0.96747	0.014562	-0.02986	9.1225	305.0491
315.000	0.38632	24.049	0.01529	0.00061	0.96447	0.017756	-0.03008	8.9513	296.9532
320.000	0.48419	23.898	0.01893	0.00076	0.96114	0.021486	-0.03034	8.7834	288.7775
325.000	0.60218	23.745	0.02327	0.00094	0.95746	0.025814	-0.03063	8.6186	280.5268
330.000	0.74343	23.591	0.02842	0.00115	0.95342	0.030801	-0.03095	8.4567	272.2064
335.000	0.91140	23.436	0.03448	0.00140	0.94900	0.036514	-0.03131	8.2974	263.8224
337.668	1.01325	23.352	0.03813	0.00155	0.94648	0.039882	-0.03152	8.2134	259.3256
340.000	1.10989	23.278	0.04158	0.00169	0.94418	0.043019	-0.03171	8.1404	255.3816
345.000	1.34303	23.118	0.04986	0.00203	0.93894	0.050386	-0.03214	7.9857	246.8909
350.000	1.61530	22.957	0.05948	0.00242	0.93328	0.058685	-0.03262	7.8329	238.3583
355.000	1.93155	22.792	0.07058	0.00287	0.92716	0.067987	-0.03313	7.6819	229.7917
360.000	2.29697	22.625	0.08336	0.00339	0.92057	0.078365	-0.03370	7.5323	221.1997
365.000	2.71711	22.455	0.09801	0.00399	0.91351	0.089891	-0.03431	7.3841	212.5910
370.000	3.19791	22.282	0.11474	0.00467	0.90594	0.102638	-0.03498	7.2369	203.9747
375.000	3.74565	22.105	0.13380	0.00543	0.89786	0.116679	-0.03570	7.0906	195.3601
380.000	4.36698	21.925	0.15543	0.00630	0.88925	0.132086	-0.03648	6.9449	186.7564
385.000	5.06891	21.740	0.17993	0.00728	0.88009	0.148931	-0.03733	6.7996	178.1732
390.000	5.85881	21.552	0.20759	0.00838	0.87036	0.167286	-0.03825	6.6546	169.6201
395.000	6.74441	21.358	0.23877	0.00962	0.86006	0.187222	-0.03924	6.5094	161.1064
400.000	7.73378	21.159	0.27385	0.01099	0.84915	0.208809	-0.04032	6.3640	152.6418
405.000	8.83536	20.954	0.31324	0.01252	0.83764	0.232117	-0.04150	6.2179	144.2357
410.000	10.05794	20.744	0.35742	0.01422	0.82549	0.257218	-0.04278	6.0711	135.8975
415.000	11.41065	20.526	0.40691	0.01611	0.81269	0.284181	-0.04418	5.9231	127.6365
420.000	12.90297	20.302	0.46231	0.01820	0.79922	0.313079	-0.04571	5.7736	119.4620
425.000	14.54478	20.069	0.52430	0.02051	0.78506	0.343983	-0.04739	5.6224	111.3831
430.000	16.34628	19.828	0.59364	0.02306	0.77018	0.376970	-0.04924	5.4690	103.4092
435.000	18.31808	19.576	0.67122	0.02587	0.75456	0.412119	-0.05129	5.3131	95.5494
440.000	20.47121	19.314	0.75807	0.02897	0.73815	0.449512	-0.05358	5.1542	87.8132
445.000	22.81710	19.040	0.85539	0.03239	0.72094	0.489241	-0.05613	4.9918	80.2102
450.000	25.36768	18.752	0.96463	0.03616	0.70287	0.531406	-0.05902	4.8254	72.7506
455.000	28.13540	18.449	1.08749	0.04031	0.68388	0.576117	-0.06231	4.6542	65.4450

Table 16. Properties of saturated liquid methanol - Continued

T K	P bar	ρ_l mol/l	ρ_g mol/l	Z_l	Z_g	dP_σ/dT bar/K	$d\rho_l/dT$ (mol/l)/K	$\partial P/\partial T$ bar/K	$\partial P/\partial \rho$ bar/(mol/l)
460.000	31.13331	18.128	1.22609	0.04490	0.66391	0.623504	-0.06610	4.4776	58.3051
465.000	34.37514	17.787	1.38303	0.04999	0.64287	0.673714	-0.07052	4.2946	51.3439
470.000	37.87545	17.422	1.56164	0.05563	0.62064	0.726927	-0.07576	4.1042	44.5764
475.000	41.64978	17.028	1.76625	0.06193	0.59708	0.783360	-0.08210	3.9049	38.0202
480.000	45.71487	16.598	2.00270	0.06901	0.57196	0.843286	-0.08997	3.6951	31.6968
485.000	50.08904	16.124	2.27926	0.07703	0.54497	0.907058	-0.10008	3.4725	25.6337
490.000	54.79264	15.592	2.60826	0.08626	0.51563	0.975149	-0.11369	3.2338	19.8670
495.000	59.84883	14.978	3.00968	0.09709	0.48316	1.048234	-0.13331	2.9742	14.4471
500.000	65.28500	14.239	3.52022	0.11029	0.44611	1.127355	-0.16491	2.6856	9.4486
505.000	71.13544	13.279	4.22307	0.12758	0.40117	1.214378	-0.22764	2.3514	4.9948
510.000	77.44920	11.740	5.42672	0.15558	0.33657	1.314067	-0.45275	1.9192	1.3365
511.000	78.77455	11.215	5.85653	0.16532	0.31658	1.336902	-0.61898	1.8015	0.7506
511.500	79.44602	10.867	6.14682	0.17189	0.30391	1.349086	-0.78834	1.7317	0.4853
512.000	80.12378	10.394	6.55016	0.18107	0.28734	1.362154	-1.16663	1.6462	0.2435
512.300	80.53370	9.964	6.92642	0.18975	0.27297	1.370795	-1.82781	1.5774	0.1131
512.600	80.94644	8.400	8.40000	0.22610	0.22610	1.382020		1.3820	0.0000

Table 16. Properties of saturated liquid methanol - Continued

T K	Q_{vap} J/mol	E J/mol	H J/mol	S J/(mol·K)	C_v J/(mol·K)	C_σ J/(mol·K)	C_p J/(mol·K)	f/P	W m/s
175.590	41755.4	.0	.0	90.083	59.41	71.25	71.18	1.00006	1370
180.000	41592.3	334.6	334.6	91.902	59.27	71.04	71.05	1.00006	1361
185.000	41410.9	711.0	711.0	93.894	59.13	70.88	70.94	1.00007	1351
190.000	41233.1	1084.4	1084.4	95.816	59.03	70.78	70.87	1.00008	1341
195.000	41058.7	1455.2	1455.2	97.674	58.97	70.74	70.84	1.00008	1331
200.000	40887.1	1823.7	1823.7	99.473	58.95	70.77	70.85	1.00009	1321
205.000	40718.0	2190.6	2190.6	101.220	58.98	70.86	70.92	1.00009	1311
210.000	40550.9	2556.1	2556.1	102.919	59.06	71.01	71.04	1.00009	1301
215.000	40385.4	2920.9	2920.9	104.576	59.19	71.22	71.21	1.00010	1291
220.000	40221.0	3285.3	3285.3	106.194	59.37	71.48	71.44	1.00010	1281
225.000	40057.0	3650.1	3650.1	107.777	59.60	71.79	71.73	1.00010	1271
230.000	39893.1	4015.7	4015.7	109.331	59.88	72.15	72.08	1.00010	1261
235.000	39728.6	4376.5	4376.5	110.856	60.21	72.56	72.48	.99715	1250
240.000	39563.0	4732.7	4732.7	112.355	60.59	73.02	72.93	.99134	1240
245.000	39395.7	5091.2	5091.2	113.833	61.01	73.53	73.43	.98585	1229
250.000	39226.1	5452.6	5452.6	115.293	61.48	74.07	73.99	.98065	1218
255.000	39053.7	5817.2	5817.3	116.737	61.98	74.66	74.59	.97570	1207
260.000	38877.9	6185.5	6185.6	118.167	62.51	75.29	75.24	.97095	1196
265.000	38698.1	6557.8	6557.9	119.584	63.08	75.95	75.92	.96636	1185
270.000	38513.7	6934.3	6934.4	120.992	63.68	76.65	76.64	.96189	1173
273.150	38394.9	7173.9	7174.1	121.873	64.06	77.11	77.12	.95912	1166
275.000	38324.1	7315.4	7315.6	122.390	64.30	77.39	77.40	.95749	1161
280.000	38128.8	7701.5	7701.7	123.780	64.94	78.16	78.19	.95316	1149
285.000	37927.0	8092.5	8092.8	125.164	65.59	78.96	79.01	.94880	1137
290.000	37718.2	8488.7	8489.1	126.541	66.26	79.78	79.86	.94445	1125
295.000	37501.9	8890.1	8890.7	127.897	66.95	80.64	80.73	.94187	1112
298.150	37361.4	9145.9	9146.6	128.763	67.38	81.19	81.29	.93864	1104
300.000	37277.3	9297.1	9297.9	129.259	67.64	81.52	81.62	.93802	1099
305.000	37044.0	9709.6	9710.6	130.611	68.33	82.43	82.54	.93465	1086
310.000	36801.2	10127.7	10129.0	131.945	69.03	83.36	83.47	.93281	1072
315.000	36548.3	10551.5	10553.1	133.302	69.73	84.31	84.42	.92786	1059
320.000	36284.8	10981.0	10983.0	134.664	70.43	85.29	85.40	.92174	1045
325.000	36010.0	11415.9	11418.4	136.008	71.12	86.28	86.38	.91703	1031
330.000	35723.3	11856.2	11859.3	137.331	71.81	87.30	87.39	.91401	1016
335.000	35424.1	12302.0	12305.9	138.674	72.50	88.33	88.41	.90823	1002
337.668	35259.1	12541.9	12546.2	139.373	72.86	88.89	88.97	.90684	994
340.000	35111.8	12752.9	12757.7	139.996	73.18	89.38	89.46	.90415	987
345.000	34785.6	13208.9	13214.7	141.319	73.85	90.45	90.52	.89912	971
350.000	34445.1	13669.8	13676.9	142.631	74.51	91.53	91.61	.89468	956
355.000	34089.5	14135.5	14143.9	143.946	75.17	92.63	92.72	.88904	940
360.000	33718.2	14605.7	14615.8	145.258	75.81	93.75	93.85	.88298	924
365.000	33330.6	15080.3	15092.4	146.557	76.45	94.89	95.01	.87754	908
370.000	32926.1	15559.2	15573.5	147.844	77.07	96.05	96.21	.87249	891
375.000	32504.0	16042.2	16059.1	149.138	77.68	97.23	97.43	.86597	874
380.000	32063.6	16529.3	16549.2	150.423	78.28	98.42	98.70	.85947	857
385.000	31604.2	17020.3	17043.6	151.703	78.87	99.65	100.01	.85282	839
390.000	31125.2	17515.4	17542.5	152.960	79.44	100.90	101.36	.84766	821
395.000	30625.8	18014.5	18046.1	154.228	80.00	102.18	102.77	.84069	803
400.000	30105.2	18518.0	18554.5	155.489	80.54	103.50	104.24	.83383	785
405.000	29562.7	19025.9	19068.1	156.749	81.05	104.86	105.78	.82647	766
410.000	28997.5	19538.8	19587.3	158.005	81.55	106.28	107.39	.81921	747
415.000	28408.4	20057.2	20112.7	159.264	82.03	107.75	109.10	.81137	727
420.000	27794.7	20581.8	20645.3	160.521	82.48	109.29	110.91	.80362	708
425.000	27155.0	21113.4	21185.9	161.782	82.91	110.91	112.85	.79563	687
430.000	26488.2	21653.3	21735.8	163.048	83.31	112.64	114.95	.78763	667
435.000	25792.6	22202.8	22296.3	164.321	83.70	114.50	117.23	.77957	646
440.000	25066.7	22763.3	22869.3	165.607	84.06	116.51	119.74	.77129	624
445.000	24308.3	23336.9	23456.8	166.908	84.42	118.71	122.55	.76307	602
450.000	23515.0	23925.7	24060.9	168.229	84.77	121.15	125.73	.75471	580

Table 16. Properties of saturated liquid methanol - Continued

<i>T</i> K	<i>Q</i> _{vap} J/mol	<i>E</i> J/mol	<i>H</i> J/mol	<i>S</i> J/(mol·K)	<i>C</i> _v J/(mol·K)	<i>C</i> _σ J/(mol·K)	<i>C</i> _p J/(mol·K)	<i>f/P</i>	<i>W</i> m/s
455.000	22683.6	24532.2	24684.7	169.570	85.15	123.89	129.39	.74670	557
460.000	21810.3	25159.1	25330.9	170.945	85.57	127.03	133.70	.73836	533
465.000	20890.2	25810.0	26003.2	172.357	86.07	130.67	138.87	.73002	508
470.000	19917.0	26487.8	26705.2	173.818	86.72	135.00	145.23	.72104	482
475.000	18881.8	27197.4	27442.0	175.331	87.58	140.26	153.29	.71203	455
480.000	17772.9	27944.1	28219.5	176.908	88.79	146.84	163.84	.70294	427
485.000	16572.8	28734.4	29045.0	178.563	90.52	155.39	178.27	.69357	396
490.000	15255.0	29577.4	29928.9	180.311	93.06	167.06	199.16	.68420	364
495.000	13775.9	30488.1	30887.7	182.188	96.88	184.13	231.99	.67441	328
500.000	12053.9	31494.2	31952.7	184.242	102.81	212.03	291.05	.66491	288
505.000	9903.5	32660.3	33196.0	186.641	112.62	268.13	429.63	.65326	243
510.000	6641.0	34240.3	34900.0	189.891	131.77	471.38	1151.55	.64232	190
511.000	5573.4	34714.1	35416.5	190.877	138.52	621.79	1895.16	.64014	179
511.500	4876.5	35014.7	35745.7	191.509	142.85	775.07	2819.01	.63890	172
512.000	3937.8	35411.4	36182.2	192.350	148.35	1117.42	5422.70	.63759	166
512.300	3090.8	35763.8	36572.0	193.104	152.79	1715.70	11509.98	.63683	163
512.600	0.0	37065.9	38029.5	195.939	161.14			.63603	0

Table 17. Properties of methanol along isobars - Continued

T	ρ	Z	$\partial P/\partial T$	$\partial P/\partial \rho$	E	H	S	C_v	C_p	f/P	μ	W
K	mol/l		bar/K	bar/(mol/l)	J/mol	J/mol	J/(mol·K)	J/(mol·K)	J/(mol·K)		K/bar	m/s
1.50000 bar												
175.590	28.22897	0.00364	16.394298	503.0753	-1.1	4.2	89.980	59.40	71.18	0.00000	-0.0397	1371
180.000	28.08595	0.00357	16.010031	496.0467	342.5	347.8	91.744	59.26	71.05	0.00000	-0.0397	1362
190.000	27.76656	0.00342	15.198363	480.7342	1102.0	1107.4	95.577	59.03	70.87	0.00001	-0.0398	1342
200.000	27.45342	0.00329	14.459723	466.0801	1840.4	1845.9	99.206	58.95	70.85	0.00004	-0.0398	1322
210.000	27.14584	0.00316	13.783955	451.8636	2564.7	2570.2	102.664	59.05	71.04	0.00014	-0.0396	1302
220.000	26.84308	0.00305	13.162639	437.8997	3281.2	3286.8	105.978	59.36	71.44	0.00039	-0.0393	1282
230.000	26.54441	0.00295	12.588721	424.0332	3995.9	4001.5	109.169	59.87	72.07	0.00102	-0.0388	1262
240.000	26.24906	0.00286	12.056231	410.1351	4714.0	4719.7	112.257	60.58	72.93	0.00241	-0.0382	1241
250.000	25.95623	0.00278	11.560042	396.0989	5440.2	5445.9	115.259	61.47	73.99	0.00530	-0.0374	1219
260.000	25.66508	0.00270	11.095769	381.8415	6178.3	6184.1	118.187	62.51	75.23	0.01089	-0.0365	1197
270.000	25.37476	0.00263	10.659554	367.2983	6931.6	6937.5	121.053	63.67	76.64	0.02112	-0.0355	1174
280.000	25.08434	0.00257	10.247999	352.4230	7702.4	7708.4	123.868	64.93	78.19	0.03891	-0.0344	1150
290.000	24.79285	0.00251	9.858073	337.1867	8492.7	8498.7	126.639	66.26	79.85	0.06846	-0.0332	1126
300.000	24.49926	0.00245	9.487033	321.5755	9303.4	9309.5	129.373	67.63	81.62	0.11562	-0.0319	1100
310.000	24.20243	0.00240	9.132365	305.5900	10135.2	10141.4	132.076	69.02	83.46	0.18807	-0.0306	1073
320.000	23.90114	0.00236	8.791722	289.2429	10988.1	10994.4	134.753	70.42	85.39	0.29562	-0.0291	1046
330.000	23.59404	0.00232	8.462877	272.5573	11861.9	11868.2	137.409	71.81	87.38	0.45023	-0.0274	1017
340.000	23.27960	0.00228	8.143672	255.5648	12755.9	12762.3	140.048	73.17	89.45	0.66590	-0.0257	987
347.975	23.02245	0.00225	7.894590	241.8190	13483.0	13489.5	142.142	74.24	91.16	0.89210	-0.0241	962
347.975	0.05541	0.93562	0.005676	25.4290	45367.3	48074.3	241.531	49.87	64.22	0.89210	11.2880	319
350.000	0.05497	0.93774	0.005565	25.7225	45474.3	48203.2	241.943	49.23	63.17	0.88932	10.8731	320
360.000	0.05295	0.94647	0.005119	27.0613	45982.8	48815.7	243.670	47.25	59.69	0.89703	9.0538	326
370.000	0.05116	0.95307	0.004788	28.2683	46470.0	49401.9	245.277	46.28	57.74	0.90347	7.6129	331
380.000	0.04955	0.95822	0.004527	29.3877	46945.9	49973.4	246.801	45.87	56.66	0.90896	6.4628	336
390.000	0.04807	0.96233	0.004313	30.4454	47416.5	50537.0	248.266	45.81	56.13	0.91371	5.5366	341
400.000	0.04671	0.96567	0.004132	31.4578	47885.5	51097.1	249.684	45.99	55.94	0.91787	4.7836	345
410.000	0.04544	0.96841	0.003976	32.4360	48355.3	51656.6	251.066	46.32	55.99	0.92155	4.1662	349
420.000	0.04425	0.97071	0.003838	33.3878	48827.7	52217.5	252.417	46.75	56.22	0.92485	3.6560	353
430.000	0.04314	0.97265	0.003714	34.3188	49303.9	52781.3	253.744	47.27	56.56	0.92782	3.2313	357
440.000	0.04208	0.97430	0.003602	35.2331	49784.7	53349.1	255.049	47.85	57.00	0.93052	2.8755	361
450.000	0.04109	0.97572	0.003500	36.1340	50270.9	53921.6	256.336	48.47	57.51	0.93298	2.5756	365
460.000	0.04014	0.97695	0.003406	37.0239	50762.9	54499.4	257.606	49.12	58.06	0.93525	2.3214	369
470.000	0.03925	0.97803	0.003319	37.9047	51261.0	55083.0	258.861	49.79	58.66	0.93734	2.1050	373
480.000	0.03839	0.97897	0.003237	38.7779	51765.6	55672.7	260.102	50.49	59.29	0.93928	1.9198	376
490.000	0.03758	0.97981	0.003161	39.6449	52276.9	56268.8	261.331	51.19	59.93	0.94109	1.7607	380
500.000	0.03680	0.98056	0.003089	40.5066	52794.8	56871.3	262.549	51.90	60.60	0.94276	1.6235	384
510.000	0.03605	0.98124	0.003021	41.3638	53319.8	57480.7	263.756	52.62	61.28	0.94435	1.5047	387
515.000	0.03569	0.98155	0.002989	41.7910	53584.9	57787.9	264.355	52.98	61.62	0.94511	1.4513	389
520.000	0.03534	0.98185	0.002957	42.2172	53851.8	58096.8	264.952	53.34	61.96	0.94585	1.4014	391
530.000	0.03465	0.98240	0.002896	43.0674	54390.8	58719.9	266.139	54.06	62.65	0.94726	1.3115	394
540.000	0.03399	0.98290	0.002838	43.9149	54936.8	59349.9	267.317	54.78	63.35	0.94860	1.2328	398
560.000	0.03275	0.98380	0.002729	45.6031	56050.1	60630.8	269.646	56.21	64.74	0.95108	1.1032	404
580.000	0.03159	0.98456	0.002630	47.2843	57191.4	61939.4	271.942	57.62	66.12	0.95333	1.0024	411
600.000	0.03052	0.98523	0.002538	48.9604	58360.5	63275.5	274.206	59.02	67.49	0.95538	0.9233	418
620.000	0.02952	0.98581	0.002453	50.6326	59557.0	64638.9	276.442	60.39	68.84	0.95727	0.8606	424
640.000	0.02858	0.98634	0.002373	52.3019	60780.5	66029.1	278.648	61.73	70.17	0.95902	0.8104	430
660.000	0.02770	0.98682	0.002300	53.9691	62030.3	67445.6	280.828	63.05	71.47	0.96063	0.7700	436
680.000	0.02687	0.98726	0.002230	55.6347	63306.1	68887.9	282.980	64.33	72.75	0.96214	0.7370	443
700.000	0.02609	0.98766	0.002165	57.2991	64607.1	70355.4	285.107	65.59	74.00	0.96355	0.7099	449
720.000	0.02536	0.98803	0.002104	58.9627	65932.9	71847.7	287.209	66.82	75.22	0.96486	0.6875	455
740.000	0.02467	0.98838	0.002046	60.6257	67282.9	73364.2	289.287	68.02	76.42	0.96610	0.6687	461
760.000	0.02401	0.98871	0.001992	62.2882	68656.6	74904.2	291.340	69.19	77.58	0.96727	0.6529	466
780.000	0.02339	0.98901	0.001940	63.9504	70053.2	76467.3	293.370	70.33	78.72	0.96837	0.6394	472
800.000	0.02279	0.98930	0.001891	65.6125	71472.4	78052.9	295.377	71.44	79.83	0.96941	0.6279	478

Table 17. Properties of methanol along isobars - Continued

T K	ρ mol/l	Z	$\partial P/\partial T$ bar/K	$\partial P/\partial \rho$ bar/(mol/l)	E J/mol	H J/mol	S J/(mol·K)	C_v J/(mol·K)	C_p J/(mol·K)	f/P	μ K/bar	W m/s
2.00000 bar												
175.590	28.22996	0.00485	16.400202	503.3056	-1.4	5.6	89.978	59.40	71.18	0.00000	-0.0397	1371
180.000	28.08696	0.00476	16.015821	496.2752	342.1	349.2	91.742	59.26	71.05	0.00000	-0.0397	1362
190.000	27.76760	0.00456	15.203895	480.9584	1101.6	1108.8	95.575	59.02	70.87	0.00001	-0.0398	1342
200.000	27.45449	0.00438	14.465028	466.3009	1840.0	1847.3	99.204	58.94	70.85	0.00003	-0.0398	1322
210.000	27.14694	0.00422	13.789060	452.0820	2564.3	2571.6	102.662	59.05	71.03	0.00010	-0.0396	1302
220.000	26.84422	0.00407	13.167567	438.1165	3280.7	3288.2	105.975	59.36	71.44	0.00030	-0.0393	1282
230.000	26.54559	0.00394	12.593493	424.2490	3995.4	4002.9	109.167	59.87	72.07	0.00076	-0.0388	1262
240.000	26.25028	0.00382	12.060865	410.3506	4713.5	4721.1	112.255	60.58	72.93	0.00181	-0.0382	1241
250.000	25.95749	0.00371	11.564556	396.3147	5439.6	5447.3	115.257	61.46	73.99	0.00398	-0.0374	1220
260.000	25.66639	0.00360	11.100179	382.0581	6177.7	6185.5	118.185	62.50	75.23	0.00817	-0.0365	1197
270.000	25.37612	0.00351	10.663874	367.5161	6931.0	6938.8	121.051	63.67	76.64	0.01585	-0.0355	1175
280.000	25.08576	0.00342	10.252245	352.6425	7701.8	7709.8	123.866	64.92	78.19	0.02920	-0.0344	1151
290.000	24.79434	0.00335	9.862259	337.4081	8492.0	8500.0	126.636	66.25	79.85	0.05139	-0.0332	1126
300.000	24.50081	0.00327	9.491173	321.7991	9302.7	9310.8	129.370	67.62	81.61	0.08678	-0.0319	1100
310.000	24.20406	0.00321	9.136475	305.8161	10134.4	10142.7	132.073	69.02	83.46	0.14116	-0.0306	1074
320.000	23.90287	0.00314	8.795818	289.4716	10987.3	10995.6	134.751	70.41	85.38	0.22189	-0.0291	1046
330.000	23.59587	0.00309	8.466977	272.7888	11860.9	11869.4	137.407	71.80	87.38	0.33794	-0.0274	1017
340.000	23.28156	0.00304	8.147795	255.7994	12754.9	12763.5	140.045	73.17	89.45	0.49981	-0.0257	987
350.000	22.95821	0.00299	7.836132	238.5414	13668.5	13677.2	142.670	74.51	91.60	0.71929	-0.0237	956
355.992	22.75931	0.00297	7.652066	228.0880	14225.1	14233.9	144.237	75.30	92.94	0.88364	-0.0225	937
355.992	0.07298	0.92589	0.007819	25.3708	45510.4	48250.9	239.793	53.03	69.14	0.88364	9.9754	321
360.000	0.07178	0.93080	0.007491	26.0057	45740.3	48526.4	240.610	51.55	66.63	0.88250	9.2951	323
370.000	0.06911	0.94074	0.006853	27.4367	46276.3	49170.4	242.375	49.27	62.53	0.89088	7.8053	329
380.000	0.06675	0.94827	0.006382	28.7152	46786.7	49782.8	244.010	48.07	60.16	0.89788	6.6007	334
390.000	0.06464	0.95416	0.006013	29.8911	47282.9	50376.9	245.553	47.49	58.78	0.90384	5.6238	339
400.000	0.06272	0.95885	0.005713	30.9944	47771.4	50960.4	247.031	47.30	58.01	0.90897	4.8270	344
410.000	0.06095	0.96266	0.005461	32.0441	48256.7	51538.3	248.458	47.36	57.64	0.91346	4.1728	348
420.000	0.05930	0.96579	0.005245	33.0530	48741.4	52114.1	249.846	47.61	57.55	0.91743	3.6321	353
430.000	0.05777	0.96840	0.005056	34.0303	49227.7	52689.9	251.201	47.98	57.66	0.92097	3.1823	357
440.000	0.05633	0.97060	0.004888	34.9827	49716.8	53267.7	252.530	48.44	57.91	0.92415	2.8059	361
450.000	0.05497	0.97246	0.004737	35.9149	50210.0	53848.5	253.835	48.96	58.27	0.92702	2.4891	365
460.000	0.05368	0.97406	0.004599	36.8310	50707.8	54433.3	255.120	49.54	58.71	0.92965	2.2212	369
470.000	0.05247	0.97544	0.004473	37.7336	51210.9	55022.8	256.388	50.15	59.21	0.93205	1.9935	372
480.000	0.05131	0.97664	0.004357	38.6252	51719.8	55617.5	257.640	50.79	59.75	0.93427	1.7991	376
490.000	0.05021	0.97770	0.004249	39.5077	52234.7	56217.9	258.878	51.45	60.33	0.93632	1.6325	380
500.000	0.04916	0.97862	0.004148	40.3824	52755.8	56824.2	260.103	52.13	60.94	0.93820	1.4891	383
510.000	0.04816	0.97945	0.004053	41.2507	53283.5	57436.8	261.316	52.82	61.57	0.93998	1.3654	387
515.000	0.04767	0.97983	0.004007	41.6827	53549.9	57745.5	261.919	53.16	61.90	0.94083	1.3099	389
520.000	0.04719	0.98018	0.003963	42.1135	53817.9	58055.7	262.518	53.51	62.22	0.94166	1.2582	390
530.000	0.04627	0.98084	0.003879	42.9716	54359.0	58681.2	263.710	54.21	62.88	0.94323	1.1651	394
540.000	0.04539	0.98144	0.003799	43.8257	54906.8	59313.3	264.891	54.91	63.54	0.94471	1.0840	397
560.000	0.04372	0.98248	0.003650	45.5243	56023.1	60597.7	267.226	56.31	64.89	0.94744	0.9510	404
580.000	0.04218	0.98335	0.003515	47.2127	57166.8	61908.9	269.527	57.71	66.24	0.94990	0.8486	411
600.000	0.04074	0.98410	0.003390	48.8937	58337.8	63247.1	271.795	59.08	67.58	0.95214	0.7690	417
620.000	0.03940	0.98475	0.003275	50.5691	59535.7	64612.1	274.033	60.44	68.91	0.95419	0.7066	424
640.000	0.03814	0.98532	0.003168	52.2403	60760.3	66003.5	276.242	61.77	70.22	0.95608	0.6573	430
660.000	0.03697	0.98584	0.003069	53.9084	62011.1	67421.0	278.423	63.08	71.52	0.95783	0.6181	436
680.000	0.03587	0.98630	0.002976	55.5742	63287.6	68864.0	280.577	64.36	72.78	0.95946	0.5867	442
700.000	0.03483	0.98673	0.002889	57.2382	64589.2	70332.1	282.704	65.61	74.02	0.96097	0.5614	448
720.000	0.03384	0.98712	0.002807	58.9010	65915.5	71824.8	284.807	66.83	75.24	0.96239	0.5409	454
740.000	0.03292	0.98748	0.002730	60.5629	67265.8	73341.6	286.884	68.03	76.43	0.96373	0.5242	460
760.000	0.03204	0.98782	0.002657	62.2241	68639.7	74881.8	288.938	69.20	77.59	0.96498	0.5105	466
780.000	0.03121	0.98814	0.002587	63.8849	70036.6	76445.1	290.968	70.34	78.73	0.96617	0.4991	472
800.000	0.03042	0.98845	0.002522	65.5454	71456.0	78030.8	292.975	71.45	79.84	0.96729	0.4896	478

Table 17. Properties of methanol along isobars - Continued

T	ρ	Z	$\partial P/\partial T$	$\partial P/\partial \rho$	E	H	S	C_v	C_p	J/P	μ	W
K	mol/l		bar/K	bar/(mol/l)	J/mol	J/mol	J/(mol-K)	J/(mol-K)	J/(mol-K)		K/bar	m/s
3.00000 bar												
175.590	28.23195	0.00728	16.412009	503.7666	-2.2	8.5	89.974	59.40	71.18	0.00000	-0.0397	1372
180.000	28.08897	0.00714	16.027378	496.7315	341.3	352.0	91.738	59.26	71.05	0.00000	-0.0397	1363
190.000	27.76968	0.00684	15.214936	481.4060	1100.8	1111.6	95.571	59.02	70.87	0.00001	-0.0398	1343
200.000	27.45664	0.00657	14.475616	466.7418	1839.2	1850.1	99.200	58.94	70.85	0.00002	-0.0398	1323
210.000	27.14915	0.00633	13.799248	452.5180	2563.4	2574.4	102.658	59.05	71.03	0.00007	-0.0396	1303
220.000	26.84651	0.00611	13.177402	438.5492	3279.8	3291.0	105.971	59.35	71.44	0.00020	-0.0393	1283
230.000	26.54795	0.00591	12.603016	424.6799	3994.4	4005.7	109.163	59.87	72.07	0.00051	-0.0388	1263
240.000	26.25272	0.00573	12.070114	410.7810	4712.5	4723.9	112.251	60.57	72.92	0.00121	-0.0382	1242
250.000	25.96001	0.00556	11.573565	396.7456	5438.5	5450.1	115.252	61.46	73.98	0.00266	-0.0374	1220
260.000	25.66901	0.00541	11.108979	382.4907	6176.6	6188.3	118.180	62.50	75.23	0.00546	-0.0366	1198
270.000	25.37884	0.00527	10.672496	367.9511	6929.7	6941.6	121.047	63.66	76.64	0.01059	-0.0355	1175
280.000	25.08859	0.00514	10.260717	353.0807	7700.5	7712.5	123.861	64.92	78.18	0.01950	-0.0344	1151
290.000	24.79730	0.00502	9.870611	337.8501	8490.6	8502.7	126.631	66.25	79.85	0.03432	-0.0332	1127
300.000	24.50391	0.00491	9.499434	322.2456	9301.2	9313.4	129.365	67.62	81.61	0.05795	-0.0320	1101
310.000	24.20733	0.00481	9.144674	306.2675	10132.8	10145.2	132.068	69.01	83.46	0.09426	-0.0306	1075
320.000	23.90632	0.00472	8.803988	289.9283	10985.6	10998.1	134.745	70.41	85.38	0.14816	-0.0291	1047
330.000	23.59953	0.00463	8.475154	273.2511	11859.1	11871.8	137.401	71.79	87.37	0.22564	-0.0275	1018
340.000	23.28547	0.00456	8.156018	256.2677	12752.9	12765.8	140.039	73.16	89.44	0.33371	-0.0257	988
350.000	22.96240	0.00449	7.844446	239.0162	13666.3	13679.4	142.663	74.50	91.59	0.48024	-0.0238	957
360.000	22.62836	0.00443	7.538260	221.5382	14598.7	14612.0	145.277	75.80	93.84	0.67367	-0.0216	925
368.021	22.35093	0.00439	7.295020	207.3847	15360.2	15373.6	147.368	76.83	95.73	0.86859	-0.0197	898
368.021	0.10786	0.90900	0.012466	25.0594	45680.4	48461.9	237.276	58.54	78.16	0.86859	8.2721	323
370.000	0.10689	0.91229	0.012148	25.4375	45817.4	48623.9	237.741	57.42	76.21	0.86829	8.0166	324
380.000	0.10253	0.92609	0.010878	27.1520	46423.3	49349.3	239.678	53.72	69.48	0.87861	6.8064	331
390.000	0.09880	0.93641	0.009975	28.6341	46986.1	50022.6	241.429	51.63	65.51	0.88715	5.7956	336
400.000	0.09552	0.94438	0.009292	29.9636	47523.8	50664.6	243.055	50.45	63.08	0.89435	4.9567	341
410.000	0.09257	0.95069	0.008751	31.1865	48046.5	51287.3	244.594	49.83	61.58	0.90052	4.2606	346
420.000	0.08988	0.95576	0.008309	32.3314	48560.6	51898.3	246.067	49.58	60.68	0.90586	3.6816	351
430.000	0.08741	0.95991	0.007937	33.4175	49070.5	52502.4	247.489	49.59	60.19	0.91053	3.1981	355
440.000	0.08512	0.96334	0.007617	34.4582	49578.8	53103.1	248.870	49.77	59.99	0.91467	2.7927	360
450.000	0.08299	0.96620	0.007338	35.4630	50087.8	53702.9	250.218	50.07	59.99	0.91836	2.4512	364
460.000	0.08098	0.96861	0.007091	36.4391	50598.9	54303.5	251.538	50.48	60.15	0.92168	2.1623	368
470.000	0.07909	0.97066	0.006869	37.3919	51113.2	54906.3	252.835	50.95	60.43	0.92468	1.9169	372
480.000	0.07730	0.97241	0.006668	38.3256	51631.5	55512.4	254.111	51.48	60.79	0.92742	1.7076	375
490.000	0.07561	0.97393	0.006484	39.2436	52154.5	56122.4	255.369	52.04	61.22	0.92992	1.5285	379
500.000	0.07400	0.97524	0.006315	40.1483	52682.6	56736.9	256.611	52.64	61.71	0.93220	1.3746	383
510.000	0.07246	0.97639	0.006158	41.0420	53216.3	57356.6	257.838	53.26	62.24	0.93433	1.2421	386
515.000	0.07172	0.97691	0.006083	41.4853	53485.4	57668.5	258.446	53.58	62.51	0.93534	1.1827	388
520.000	0.07099	0.97739	0.006012	41.9264	53755.9	57981.7	259.052	53.90	62.79	0.93632	1.1275	390
530.000	0.06959	0.97828	0.005875	42.8029	54301.6	58612.6	260.254	54.55	63.38	0.93817	1.0282	393
540.000	0.06825	0.97907	0.005746	43.6726	54853.5	59249.3	261.444	55.21	63.98	0.93990	0.9419	397
560.000	0.06572	0.98041	0.005510	45.3957	55976.3	60541.2	263.793	56.55	65.22	0.94306	0.8012	404
580.000	0.06338	0.98150	0.005298	47.1017	57125.1	61858.3	266.104	57.89	66.49	0.94588	0.6935	410
600.000	0.06121	0.98241	0.005104	48.7950	58300.1	63201.0	268.380	59.23	67.78	0.94842	0.6106	417
620.000	0.05919	0.98317	0.004927	50.4788	59501.2	64569.5	270.623	60.55	69.06	0.95074	0.5462	423
640.000	0.05730	0.98383	0.004763	52.1555	60728.3	65963.6	272.836	61.86	70.34	0.95285	0.4960	430
660.000	0.05553	0.98441	0.004611	53.8268	61981.1	67383.1	275.020	63.15	71.61	0.95481	0.4567	436
680.000	0.05387	0.98492	0.004470	55.4941	63259.1	68827.7	277.177	64.42	72.85	0.95662	0.4258	442
700.000	0.05231	0.98538	0.004338	57.1583	64562.0	70297.0	279.306	65.66	74.08	0.95830	0.4014	448
720.000	0.05084	0.98580	0.004214	58.8203	65889.2	71790.7	281.410	66.87	75.28	0.95988	0.3821	454
740.000	0.04944	0.98619	0.004097	60.4806	67240.3	73308.1	283.489	68.06	76.46	0.96136	0.3668	460
760.000	0.04812	0.98654	0.003987	62.1398	68614.9	74848.8	285.543	69.22	77.61	0.96274	0.3546	466
780.000	0.04687	0.98687	0.003883	63.7980	70012.2	76412.4	287.573	70.35	78.74	0.96405	0.3450	472
800.000	0.04569	0.98719	0.003784	65.4558	71432.0	77998.3	289.581	71.46	79.85	0.96529	0.3373	477

Table 17. Properties of methanol along isobars - Continued

T K	ρ mol/l	Z	$\partial P/\partial T$ bar/K	$\partial P/\partial \rho$ bar/(mol/l)	E J/mol	H J/mol	S J/(mol-K)	C_v J/(mol-K)	C_p J/(mol-K)	f/P	μ K/bar	W m/s
4.00000 bar												
175.590	28.23393	0.00970	16.423783	504.2266	-2.9	11.3	89.970	59.39	71.18	0.00000	-0.0397	1373
180.000	28.09099	0.00951	16.038902	497.1869	340.6	354.9	91.734	59.25	71.05	0.00000	-0.0397	1364
190.000	27.77175	0.00912	15.225946	481.8526	1100.1	1114.5	95.567	59.02	70.87	0.00000	-0.0398	1343
200.000	27.45878	0.00876	14.486173	467.1817	1838.4	1853.0	99.196	58.93	70.85	0.00002	-0.0398	1323
210.000	27.15136	0.00844	13.809406	452.9531	2562.5	2577.3	102.654	59.04	71.03	0.00005	-0.0396	1304
220.000	26.84879	0.00814	13.187208	438.9810	3278.9	3293.8	105.967	59.35	71.44	0.00015	-0.0393	1284
230.000	26.55030	0.00788	12.612511	425.1099	3993.4	4008.5	109.158	59.86	72.07	0.00038	-0.0388	1263
240.000	26.25515	0.00763	12.079336	411.2104	4711.4	4726.7	112.247	60.57	72.92	0.00091	-0.0382	1243
250.000	25.96253	0.00741	11.582547	397.1756	5437.5	5452.9	115.248	61.45	73.98	0.00200	-0.0374	1221
260.000	25.67162	0.00721	11.117753	382.9223	6175.4	6191.0	118.176	62.49	75.23	0.00410	-0.0366	1199
270.000	25.38156	0.00702	10.681091	368.3852	6928.5	6944.3	121.042	63.65	76.63	0.00795	-0.0356	1176
280.000	25.09142	0.00685	10.269163	353.5180	7699.2	7715.1	123.856	64.91	78.18	0.01465	-0.0345	1152
290.000	24.80026	0.00669	9.878936	338.2913	8489.2	8505.4	126.627	66.24	79.84	0.02578	-0.0333	1128
300.000	24.50702	0.00654	9.507667	322.6912	9299.7	9316.0	129.360	67.61	81.60	0.04353	-0.0320	1102
310.000	24.21059	0.00641	9.152846	306.7179	10131.2	10147.8	132.063	69.00	83.45	0.07081	-0.0306	1075
320.000	23.90977	0.00629	8.812131	290.3840	10983.9	11000.6	134.740	70.40	85.37	0.11129	-0.0291	1048
330.000	23.60319	0.00618	8.483302	273.7125	11857.3	11874.2	137.395	71.79	87.36	0.16949	-0.0275	1019
340.000	23.28936	0.00608	8.164211	256.7351	12750.9	12768.1	140.033	73.15	89.43	0.25066	-0.0257	989
350.000	22.96658	0.00598	7.852728	239.4899	13664.1	13681.5	142.657	74.49	91.57	0.36072	-0.0238	958
360.000	22.63287	0.00590	7.546684	222.0189	14596.3	14614.0	145.270	75.79	93.82	0.50600	-0.0216	926
370.000	22.28592	0.00583	7.243812	204.3662	15547.2	15565.2	147.876	77.06	96.19	0.69302	-0.0192	892
377.122	22.02922	0.00579	7.028683	191.7062	16236.0	16254.1	149.729	77.94	97.97	0.85521	-0.0173	867
377.122	0.14265	0.89427	0.017557	24.6277	45769.4	48573.4	235.429	63.35	86.55	0.85521	7.1656	324
380.000	0.14067	0.90001	0.016839	25.2513	45986.5	48830.1	236.114	61.43	82.99	0.85828	6.8650	326
390.000	0.13463	0.91625	0.014916	27.1566	46643.0	49614.1	238.154	56.96	74.59	0.86980	5.8866	333
400.000	0.12955	0.92837	0.013566	28.7800	47245.4	50333.0	239.975	54.35	69.59	0.87930	5.0506	339
410.000	0.12513	0.93772	0.012555	30.2187	47815.4	51012.1	241.653	52.80	66.46	0.88729	4.3440	344
420.000	0.12120	0.94510	0.011763	31.5282	48365.5	51665.9	243.230	51.91	64.46	0.89411	3.7491	349
430.000	0.11764	0.95104	0.011121	32.7435	48903.5	52303.7	244.731	51.45	63.19	0.89999	3.2483	354
440.000	0.11438	0.95588	0.010587	33.8875	49434.3	52931.3	246.175	51.29	62.41	0.90513	2.8260	358
450.000	0.11138	0.95988	0.010132	34.9763	49961.6	53553.0	247.572	51.33	61.98	0.90966	2.4688	363
460.000	0.10858	0.96320	0.009738	36.0215	50487.7	54171.7	248.932	51.53	61.80	0.91368	2.1659	367
470.000	0.10596	0.96600	0.009392	37.0318	51014.6	54789.6	250.261	51.84	61.81	0.91728	1.9081	371
480.000	0.10350	0.96837	0.009084	38.0136	51543.6	55408.3	251.564	52.23	61.96	0.92053	1.6880	375
490.000	0.10118	0.97039	0.008807	38.9721	52075.7	56029.1	252.844	52.69	62.22	0.92348	1.4995	378
500.000	0.09898	0.97213	0.008555	39.9111	52611.5	56652.8	254.105	53.20	62.56	0.92614	1.3374	382
510.000	0.09689	0.97363	0.008324	40.8340	53151.9	57280.4	255.348	53.75	62.97	0.92860	1.1978	386
515.000	0.09588	0.97430	0.008216	41.2902	53423.9	57595.8	255.963	54.03	63.19	0.92976	1.1353	388
520.000	0.09490	0.97493	0.008112	41.7433	53697.2	57912.4	256.575	54.32	63.43	0.93088	1.0771	390
530.000	0.09300	0.97607	0.007915	42.6410	54247.9	58549.1	257.788	54.92	63.92	0.93298	0.9725	393
540.000	0.09118	0.97707	0.007731	43.5289	54804.1	59191.0	258.988	55.54	64.45	0.93494	0.8817	397
560.000	0.08778	0.97873	0.007397	45.2809	55934.2	60491.3	261.352	56.80	65.58	0.93849	0.7337	403
580.000	0.08463	0.98005	0.007100	47.0080	57088.5	61814.8	263.674	58.09	66.77	0.94162	0.6207	410
600.000	0.08172	0.98113	0.006832	48.7166	58267.9	63162.4	265.959	59.39	67.99	0.94442	0.5338	417
620.000	0.07902	0.98201	0.006589	50.4113	59472.4	64534.7	268.209	60.68	69.23	0.94694	0.4666	423
640.000	0.07649	0.98276	0.006365	52.0956	60702.2	65931.7	270.426	61.96	70.47	0.94924	0.4144	430
660.000	0.07412	0.98339	0.006159	53.7719	61957.1	67353.6	272.614	63.23	71.71	0.95136	0.3738	436
680.000	0.07190	0.98395	0.005968	55.4422	63236.8	68800.0	274.773	64.48	72.93	0.95331	0.3420	442
700.000	0.06981	0.98444	0.005789	57.1079	64541.1	70270.6	276.904	65.71	74.14	0.95512	0.3172	448
720.000	0.06784	0.98488	0.005622	58.7702	65869.4	71765.3	279.009	66.91	75.32	0.95680	0.2977	454
740.000	0.06598	0.98527	0.005465	60.4300	67221.4	73283.5	281.089	68.09	76.49	0.95838	0.2825	460
760.000	0.06422	0.98564	0.005318	62.0878	68596.5	74824.8	283.144	69.24	77.64	0.95987	0.2707	466
780.000	0.06256	0.98597	0.005178	63.7443	69994.4	76388.8	285.175	70.37	78.76	0.96127	0.2615	471
800.000	0.06097	0.98629	0.005046	65.3998	71414.5	77974.9	287.183	71.48	79.86	0.96259	0.2543	477

Table 17. Properties of methanol along isobars - Continued

T	ρ	Z	$\partial P/\partial T$	$\partial P/\partial \rho$	E	H	S	C_v	C_p	f/P	μ	W
K	mol/l		bar/K	bar/(mol/l)	J/mol	J/mol	J/(mol-K)	J/(mol-K)	J/(mol-K)		K/bar	m/s
6.00000 bar												
175.590	28.23790	0.01455	16.447232	505.1437	-4.3	16.9	89.961	59.38	71.18	0.00000	-0.0397	1374
180.000	28.09500	0.01427	16.061854	498.0949	339.1	360.5	91.726	59.24	71.05	0.00000	-0.0397	1365
190.000	27.77590	0.01367	15.247872	482.7432	1098.5	1120.1	95.559	59.01	70.87	0.00000	-0.0398	1345
200.000	27.46306	0.01314	14.507198	468.0589	1836.7	1858.6	99.188	58.93	70.85	0.00001	-0.0398	1325
210.000	27.15577	0.01265	13.829636	453.8205	2560.8	2582.9	102.646	59.03	71.03	0.00003	-0.0396	1305
220.000	26.85334	0.01222	13.206736	439.8419	3277.1	3299.4	105.959	59.34	71.44	0.00010	-0.0393	1285
230.000	26.55500	0.01182	12.631420	425.9671	3991.5	4014.1	109.150	59.85	72.07	0.00026	-0.0388	1265
240.000	26.26001	0.01145	12.097698	412.0665	4709.4	4732.2	112.238	60.56	72.92	0.00061	-0.0382	1244
250.000	25.96756	0.01112	11.600432	398.0329	5435.3	5458.4	115.239	61.44	73.98	0.00134	-0.0374	1222
260.000	25.67684	0.01081	11.135222	383.7827	6173.2	6196.5	118.167	62.48	75.22	0.00274	-0.0366	1200
270.000	25.38698	0.01053	10.698204	369.2505	6926.1	6949.7	121.033	63.64	76.63	0.00532	-0.0356	1177
280.000	25.09707	0.01027	10.285977	354.3897	7696.6	7720.5	123.847	64.90	78.17	0.00980	-0.0345	1154
290.000	24.80616	0.01003	9.895509	339.1707	8486.5	8510.7	126.617	66.23	79.83	0.01725	-0.0333	1129
300.000	24.51321	0.00981	9.524056	323.5794	9296.8	9321.3	129.350	67.60	81.59	0.02912	-0.0320	1104
310.000	24.21710	0.00961	9.169111	307.6158	10128.1	10152.9	132.053	68.99	83.44	0.04736	-0.0306	1077
320.000	23.91664	0.00943	8.828335	291.2924	10980.5	11005.6	134.729	70.39	85.35	0.07443	-0.0291	1049
330.000	23.61049	0.00926	8.499515	274.6322	11853.6	11879.0	137.384	71.77	87.34	0.11334	-0.0275	1021
340.000	23.29714	0.00911	8.180509	257.6668	12746.9	12772.7	140.022	73.13	89.40	0.16762	-0.0258	991
350.000	22.97492	0.00897	7.869200	240.4344	13659.8	13685.9	142.645	74.47	91.55	0.24120	-0.0238	960
360.000	22.64186	0.00885	7.563432	222.9771	14591.6	14618.1	145.257	75.77	93.79	0.33833	-0.0217	928
370.000	22.29568	0.00875	7.260960	205.3393	15542.0	15568.9	147.861	77.04	96.15	0.46336	-0.0193	894
380.000	21.93364	0.00866	6.959348	187.5642	16511.1	16538.5	150.462	78.26	98.66	0.62057	-0.0165	859
390.000	21.55235	0.00859	6.655855	169.6911	17500.1	17527.9	153.061	79.44	101.36	0.81399	-0.0133	822
390.836	21.51948	0.00858	6.630302	168.1936	17583.7	17611.6	153.279	79.54	101.60	0.83191	-0.0130	818
390.836	0.21255	0.86868	0.028929	23.6315	45831.9	48654.7	232.706	71.68	102.32	0.83191	5.7522	324
400.000	0.20261	0.89042	0.025055	25.8990	46576.6	49537.9	234.884	64.83	88.45	0.85151	5.0777	332
410.000	0.19386	0.90790	0.022200	27.9274	47279.6	50374.5	236.953	60.38	79.63	0.86354	4.4123	339
420.000	0.18653	0.92114	0.020154	29.6618	47924.8	51141.5	238.803	57.64	74.17	0.87355	3.8307	345
430.000	0.18017	0.93148	0.018607	31.1975	48533.9	51864.2	240.506	55.92	70.62	0.88202	3.3284	350
440.000	0.17453	0.93970	0.017389	32.5911	49119.9	52557.7	242.102	54.85	68.26	0.88927	2.8971	355
450.000	0.16945	0.94636	0.016401	33.8792	49691.0	53231.9	243.617	54.24	66.68	0.89554	2.5276	360
460.000	0.16482	0.95182	0.015579	35.0862	50252.7	53893.1	245.072	53.93	65.64	0.90102	2.2112	365
470.000	0.16055	0.95634	0.014881	36.2297	50808.8	54546.0	246.476	53.85	64.99	0.90585	1.9398	369
480.000	0.15659	0.96011	0.014278	37.3225	51362.1	55193.9	247.841	53.93	64.62	0.91013	1.7068	373
490.000	0.15288	0.96329	0.013751	38.3743	51914.7	55839.2	249.172	54.14	64.47	0.91396	1.5063	377
500.000	0.14941	0.96598	0.013283	39.3922	52467.9	56483.7	250.474	54.44	64.48	0.91738	1.3334	381
510.000	0.14613	0.96828	0.012864	40.3823	53023.2	57129.1	251.753	54.82	64.61	0.92050	1.1839	385
515.000	0.14456	0.96930	0.012670	40.8683	53301.8	57452.4	252.383	55.03	64.71	0.92196	1.1169	387
520.000	0.14303	0.97025	0.012486	41.3489	53581.3	57776.2	253.009	55.26	64.84	0.92335	1.0544	389
530.000	0.14009	0.97194	0.012141	42.2959	54143.1	58426.1	254.248	55.74	65.15	0.92595	0.9420	392
540.000	0.13729	0.97341	0.011824	43.2262	54709.0	59079.4	255.469	56.25	65.52	0.92834	0.8442	396
560.000	0.13206	0.97581	0.011260	45.0462	55854.8	60398.3	257.867	57.36	66.39	0.93260	0.6845	403
580.000	0.12726	0.97766	0.010770	46.8242	57021.4	61736.1	260.215	58.53	67.40	0.93629	0.5623	410
600.000	0.12284	0.97910	0.010336	48.5707	58210.3	63094.7	262.518	59.73	68.48	0.93954	0.4682	416
620.000	0.11874	0.98026	0.009946	50.2936	59422.3	64475.6	264.782	60.96	69.61	0.94243	0.3954	423
640.000	0.11492	0.98119	0.009594	51.9985	60658.1	65879.3	267.010	62.19	70.77	0.94504	0.3388	429
660.000	0.11135	0.98196	0.009272	53.6896	61917.7	67306.3	269.206	63.41	71.93	0.94741	0.2948	435
680.000	0.10800	0.98261	0.008975	55.3702	63201.2	68756.7	271.370	64.63	73.11	0.94958	0.2604	442
700.000	0.10486	0.98316	0.008700	57.0426	64508.4	70230.5	273.507	65.82	74.27	0.95158	0.2336	448
720.000	0.10189	0.98364	0.008444	58.7089	65839.1	71727.5	275.615	67.01	75.43	0.95344	0.2127	454
740.000	0.09910	0.98406	0.008205	60.3704	67192.9	73247.6	277.697	68.17	76.57	0.95517	0.1965	460
760.000	0.09645	0.98443	0.007981	62.0282	68569.6	74790.2	279.754	69.30	77.69	0.95679	0.1839	465
780.000	0.09395	0.98477	0.007769	63.6834	69968.6	76355.2	281.786	70.42	78.80	0.95832	0.1743	471
800.000	0.09157	0.98509	0.007570	65.3365	71389.6	77942.0	283.795	71.51	79.88	0.95976	0.1670	477

Table 17. Properties of methanol along isobars - Continued

T K	ρ mol/l	Z	$\partial P/\partial T$ bar/K	$\partial P/\partial \rho$ bar/(mol/l)	E J/mol	H J/mol	S J/(mol·K)	C_v J/(mol·K)	C_p J/(mol·K)	J/P	μ K/bar	W m/s
8.00000 bar												
175.590	28.24185	0.01940	16.470551	506.0571	-5.7	22.6	89.953	59.38	71.18	0.00000	-0.0397	1375
180.000	28.09902	0.01902	16.084678	498.9992	337.7	366.1	91.718	59.23	71.05	0.00000	-0.0397	1366
190.000	27.78004	0.01823	15.269676	483.6300	1096.9	1125.7	95.551	59.00	70.87	0.00000	-0.0398	1346
200.000	27.46732	0.01751	14.528105	468.9324	1835.1	1864.2	99.180	58.92	70.85	0.00001	-0.0398	1326
210.000	27.16018	0.01687	13.849753	454.6843	2559.1	2588.5	102.637	59.02	71.03	0.00003	-0.0396	1306
220.000	26.85788	0.01628	13.226154	440.6992	3275.2	3305.0	105.950	59.33	71.44	0.00007	-0.0393	1286
230.000	26.55969	0.01575	12.650220	426.8207	3989.6	4019.7	109.141	59.84	72.07	0.00019	-0.0388	1266
240.000	26.26486	0.01526	12.115955	412.9190	4707.4	4737.8	112.230	60.55	72.92	0.00046	-0.0382	1245
250.000	25.97258	0.01482	11.618212	398.8865	5433.1	5464.0	115.231	61.43	73.97	0.00101	-0.0375	1224
260.000	25.68204	0.01441	11.152588	384.6395	6170.9	6202.0	118.158	62.47	75.22	0.00207	-0.0366	1202
270.000	25.39239	0.01403	10.715214	370.1122	6923.7	6955.2	121.024	63.63	76.62	0.00401	-0.0356	1179
280.000	25.10271	0.01369	10.302689	355.2578	7694.1	7725.9	123.838	64.89	78.17	0.00738	-0.0345	1155
290.000	24.81205	0.01337	9.911978	340.0464	8483.7	8516.0	126.608	66.22	79.83	0.01298	-0.0333	1131
300.000	24.51938	0.01308	9.540341	324.4639	9293.8	9326.5	129.341	67.59	81.58	0.02191	-0.0320	1105
310.000	24.22360	0.01281	9.185270	308.5100	10124.9	10158.0	132.043	68.98	83.42	0.03563	-0.0306	1079
320.000	23.92350	0.01257	8.844431	292.1971	10977.1	11010.5	134.719	70.37	85.34	0.05600	-0.0292	1051
330.000	23.61776	0.01235	8.515616	275.5481	11850.0	11883.8	137.373	71.75	87.32	0.08527	-0.0276	1023
340.000	23.30489	0.01214	8.196691	258.5945	12743.0	12777.3	140.010	73.12	89.38	0.12610	-0.0258	993
350.000	22.98322	0.01196	7.885549	241.3748	13655.5	13690.3	142.632	74.45	91.52	0.18144	-0.0239	962
360.000	22.65081	0.01180	7.580050	223.9310	14586.8	14622.1	145.244	75.75	93.76	0.25450	-0.0218	930
370.000	22.30540	0.01166	7.277968	206.3079	15536.7	15572.6	147.847	77.02	96.11	0.34854	-0.0194	896
380.000	21.94427	0.01154	6.976893	188.5492	16505.3	16541.8	150.446	78.24	98.61	0.46677	-0.0166	861
390.000	21.56410	0.01144	6.674127	170.6948	17493.5	17530.6	153.045	79.41	101.30	0.61224	-0.0134	824
400.000	21.16070	0.01137	6.366511	152.7781	18503.5	18541.3	155.647	80.53	104.23	0.78773	-0.0096	785
401.258	21.10805	0.01136	6.327290	150.5212	18632.2	18670.1	155.975	80.67	104.62	0.81206	-0.0091	780
401.258	0.28333	0.84632	0.041697	22.5845	45817.4	48640.9	230.667	78.87	117.35	0.81206	4.8564	323
410.000	0.26922	0.87169	0.035714	25.1081	46622.8	49594.4	232.906	70.67	99.40	0.83819	4.3579	331
420.000	0.25654	0.89298	0.031165	27.4327	47405.7	50524.0	235.150	64.98	87.57	0.85192	3.8273	339
430.000	0.24416	0.90899	0.027971	29.3846	48110.9	51360.7	237.121	61.42	80.32	0.86330	3.3523	346
440.000	0.23732	0.92143	0.025594	31.0884	48767.7	52138.7	238.912	59.13	75.59	0.87289	2.9339	352
450.000	0.22959	0.93130	0.023747	32.6163	49393.1	52877.6	240.574	57.64	72.40	0.88107	2.5689	357
460.000	0.22269	0.93928	0.022265	34.0142	49997.6	53590.0	242.141	56.70	70.22	0.88813	2.2519	362
470.000	0.21645	0.94581	0.021045	35.3126	50588.2	54284.2	243.634	56.13	68.72	0.89426	1.9773	367
480.000	0.21074	0.95121	0.020020	36.5331	51169.7	54966.0	245.070	55.84	67.70	0.89965	1.7395	371
490.000	0.20546	0.95571	0.019143	37.6914	51745.8	55639.4	246.459	55.76	67.04	0.90441	1.5336	376
500.000	0.20056	0.95950	0.018382	38.7993	52318.7	56307.6	247.810	55.82	66.65	0.90862	1.3550	380
510.000	0.19597	0.96270	0.017713	39.8658	52890.7	56973.0	249.128	56.01	66.46	0.91241	1.1999	384
515.000	0.19378	0.96412	0.017407	40.3857	53176.8	57305.2	249.776	56.14	66.43	0.91417	1.1302	386
520.000	0.19166	0.96543	0.017118	40.8978	53463.2	57637.3	250.418	56.28	66.43	0.91583	1.0651	388
530.000	0.18759	0.96776	0.016584	41.9011	54037.3	58301.9	251.684	56.63	66.52	0.91893	0.9476	391
540.000	0.18374	0.96977	0.016101	42.8800	54613.9	58967.9	252.930	57.03	66.70	0.92176	0.8451	395
560.000	0.17658	0.97300	0.015256	44.7789	55777.1	60307.5	255.366	57.96	67.29	0.92672	0.6771	402
580.000	0.17007	0.97545	0.014536	46.6167	56957.1	61661.1	257.741	59.00	68.09	0.93096	0.5479	409
600.000	0.16408	0.97733	0.013910	48.4090	58156.4	63032.0	260.065	60.11	69.02	0.93463	0.4480	416
620.000	0.15855	0.97879	0.013357	50.1669	59376.7	64422.3	262.344	61.26	70.03	0.93785	0.3704	423
640.000	0.15342	0.97995	0.012861	51.8984	60618.9	65833.5	264.585	62.43	71.09	0.94072	0.3099	429
660.000	0.14862	0.98089	0.012412	53.6097	61883.7	67266.4	266.789	63.61	72.19	0.94331	0.2626	435
680.000	0.14414	0.98165	0.012003	55.3054	63171.3	68721.4	268.961	64.78	73.31	0.94566	0.2255	441
700.000	0.13993	0.98227	0.011626	56.9890	64481.8	70198.8	271.102	65.95	74.43	0.94781	0.1965	448
720.000	0.13597	0.98280	0.011276	58.6631	65815.2	71698.7	273.215	67.11	75.55	0.94980	0.1738	453
740.000	0.13224	0.98326	0.010952	60.3298	67171.1	73220.8	275.300	68.25	76.66	0.95165	0.1561	459
760.000	0.12871	0.98365	0.010648	61.9909	68549.5	74765.2	277.359	69.37	77.76	0.95337	0.1423	465
780.000	0.12536	0.98400	0.010363	63.6476	69949.8	76331.3	279.393	70.48	78.85	0.95498	0.1317	471
800.000	0.12219	0.98431	0.010094	65.3010	71371.9	77919.1	281.403	71.56	79.92	0.95651	0.1236	477

Table 17. Properties of methanol along isobars - Continued

T K	ρ mol/l	Z	$\partial P/\partial T$ bar/K	$\partial P/\partial \rho$ bar/(mol/l)	E J/mol	H J/mol	S J/(mol·K)	C_v J/(mol·K)	C_p J/(mol·K)	f/P	μ K/bar	W m/s
10.00000 bar												
175.590	28.24580	0.02425	16.493741	506.9668	-7.2	28.2	89.945	59.37	71.18	0.00000	-0.0397	1377
180.000	28.10302	0.02378	16.107377	499.8998	336.2	371.8	91.710	59.22	71.05	0.00000	-0.0397	1368
190.000	27.78417	0.02278	15.291359	484.5133	1095.4	1131.4	95.542	58.99	70.87	0.00000	-0.0398	1347
200.000	27.47159	0.02189	14.548896	469.8024	1833.5	1869.9	99.172	58.91	70.85	0.00001	-0.0398	1327
210.000	27.16457	0.02108	13.869756	455.5445	2557.3	2594.1	102.629	59.01	71.03	0.00002	-0.0396	1308
220.000	26.86241	0.02035	13.245462	441.5529	3273.4	3310.7	105.942	59.32	71.43	0.00006	-0.0393	1288
230.000	26.56437	0.01969	12.668914	427.6708	3987.7	4025.3	109.133	59.83	72.06	0.00016	-0.0388	1267
240.000	26.26970	0.01908	12.134106	413.7679	4705.3	4743.4	112.221	60.54	72.91	0.00037	-0.0382	1247
250.000	25.97759	0.01852	11.635889	399.7366	5431.0	5469.5	115.222	61.42	73.97	0.00081	-0.0375	1225
260.000	25.68724	0.01801	11.169851	385.4927	6168.6	6207.5	118.150	62.46	75.21	0.00166	-0.0366	1203
270.000	25.39779	0.01754	10.732123	370.9702	6921.3	6960.6	121.015	63.62	76.62	0.00322	-0.0356	1180
280.000	25.10833	0.01711	10.319299	356.1222	7691.5	7731.3	123.829	64.88	78.16	0.00592	-0.0345	1157
290.000	24.81792	0.01671	9.928346	340.9185	8481.0	8521.3	126.598	66.20	79.82	0.01042	-0.0333	1132
300.000	24.52553	0.01635	9.556523	325.3447	9290.9	9331.7	129.331	67.57	81.57	0.01759	-0.0320	1107
310.000	24.23007	0.01601	9.201324	309.4005	10121.8	10163.1	132.033	68.96	83.41	0.02860	-0.0307	1080
320.000	23.93033	0.01571	8.860420	293.0980	10973.7	11015.5	134.708	70.36	85.32	0.04494	-0.0292	1053
330.000	23.62500	0.01543	8.531607	276.4601	11846.3	11888.6	137.362	71.74	87.31	0.06843	-0.0276	1024
340.000	23.31261	0.01517	8.212758	259.5184	12739.0	12781.9	139.998	73.10	89.36	0.10118	-0.0258	995
350.000	22.99149	0.01495	7.901778	242.3111	13651.2	13694.7	142.620	74.43	91.49	0.14559	-0.0239	964
360.000	22.65972	0.01474	7.596540	224.8808	14582.1	14626.2	145.231	75.73	93.72	0.20420	-0.0218	931
370.000	22.31507	0.01457	7.294837	207.2723	15531.5	15576.3	147.833	76.99	96.07	0.27964	-0.0194	898
380.000	21.95485	0.01442	6.994287	189.5296	16499.5	16545.1	150.431	78.21	98.56	0.37449	-0.0167	863
390.000	21.57579	0.01429	6.692229	171.6936	17487.0	17533.4	153.028	79.38	101.23	0.49119	-0.0135	826
400.000	21.17375	0.01420	6.385561	153.7984	18496.1	18543.3	155.629	80.50	104.15	0.63198	-0.0098	788
409.774	20.75343	0.01414	6.077726	136.2724	19506.5	19554.7	158.181	81.53	107.32	0.79484	-0.0054	748
409.774	0.35531	0.82605	0.055683	21.5425	45763.7	48578.1	229.009	85.26	131.97	0.79484	4.2246	322
410.000	0.35473	0.82695	0.055404	21.6259	45798.5	48617.5	228.937	84.92	131.17	0.81149	4.2147	322
420.000	0.33308	0.85974	0.045881	24.8028	46789.6	49791.9	231.773	74.37	106.50	0.82955	3.7564	332
430.000	0.31671	0.88316	0.039801	27.2982	47626.0	50783.5	234.109	68.13	93.01	0.84422	3.3255	341
440.000	0.30345	0.90079	0.035547	29.3832	48373.5	51669.0	236.148	64.16	84.71	0.85639	2.9337	347
450.000	0.29226	0.91450	0.032389	31.1948	49065.5	52487.1	237.988	61.56	79.27	0.86664	2.5839	354
460.000	0.28253	0.92541	0.029943	32.8123	49720.8	53260.2	239.688	59.82	75.57	0.87538	2.2750	359
470.000	0.27391	0.93424	0.027987	34.2857	50351.3	54002.2	241.285	58.68	72.99	0.88291	2.0040	364
480.000	0.26614	0.94148	0.026382	35.6487	50965.1	54722.5	242.802	57.95	71.18	0.88946	1.7670	369
490.000	0.25906	0.94747	0.025038	36.9250	51567.5	55427.6	244.257	57.52	69.92	0.89519	1.5600	374
500.000	0.25255	0.95248	0.023893	38.1319	52162.4	56122.1	245.661	57.32	69.06	0.90023	1.3794	378
510.000	0.24650	0.95669	0.022903	39.2822	52752.9	56809.6	247.023	57.29	68.49	0.90473	1.2217	382
515.000	0.24364	0.95855	0.022456	39.8394	53047.1	57151.6	247.690	57.32	68.30	0.90679	1.1505	384
520.000	0.24086	0.96026	0.022036	40.3859	53341.0	57492.7	248.349	57.38	68.16	0.90875	1.0840	386
530.000	0.23557	0.96330	0.021268	41.4509	53928.5	58173.4	249.646	57.58	68.01	0.91236	0.9635	390
540.000	0.23059	0.96590	0.020581	42.4833	54516.6	58853.3	250.917	57.86	67.99	0.91563	0.8580	394
560.000	0.22140	0.97006	0.019399	44.4693	55698.6	60215.3	253.395	58.60	68.27	0.92131	0.6842	402
580.000	0.21308	0.97318	0.018411	46.3740	56893.0	61586.1	255.800	59.50	68.84	0.92608	0.5498	409
600.000	0.20548	0.97555	0.017565	48.2181	58103.5	62970.2	258.146	60.51	69.60	0.93017	0.4454	416
620.000	0.19848	0.97738	0.016827	50.0163	59332.5	64370.9	260.443	61.58	70.49	0.93372	0.3639	422
640.000	0.19199	0.97880	0.016173	51.7794	60581.7	65790.2	262.696	62.68	71.45	0.93685	0.3000	429
660.000	0.18596	0.97992	0.015586	53.5154	61852.0	67229.4	264.910	63.81	72.48	0.93964	0.2499	435
680.000	0.18033	0.98082	0.015055	55.2302	63144.1	68689.5	267.090	64.95	73.53	0.94215	0.2103	441
700.000	0.17505	0.98155	0.014569	56.9285	64458.2	70171.0	269.237	66.09	74.61	0.94444	0.1792	447
720.000	0.17008	0.98215	0.014122	58.6138	65794.4	71674.0	271.354	67.22	75.69	0.94653	0.1547	453
740.000	0.16540	0.98265	0.013707	60.2889	67152.7	73198.6	273.442	68.34	76.77	0.94847	0.1355	459
760.000	0.16098	0.98307	0.013321	61.9561	68532.8	74744.9	275.504	69.45	77.85	0.95028	0.1204	465
780.000	0.15679	0.98343	0.012960	63.6169	69934.7	76312.5	277.540	70.54	78.92	0.95196	0.1087	471
800.000	0.15282	0.98375	0.012621	65.2729	71357.9	77901.4	279.551	71.61	79.97	0.95355	0.0997	476

Table 17. Properties of methanol along isobars - Continued

T K	ρ mol/l	Z	$\partial P/\partial T$ bar/K	$\partial P/\partial \rho$ bar/(mol/l)	E J/mol	H J/mol	S J/(mol·K)	C_v J/(mol·K)	C_p J/(mol·K)	f/P	μ K/bar	W m/s
12.00000 bar												
175.590	28.24974	0.02910	16.516805	507.8729	-8.6	33.9	89.937	59.36	71.18	0.00000	-0.0397	1378
180.000	28.10702	0.02853	16.129951	500.7969	334.8	377.4	91.702	59.22	71.05	0.00000	-0.0397	1369
190.000	27.78829	0.02734	15.312924	485.3930	1093.9	1137.0	95.534	58.98	70.87	0.00000	-0.0398	1349
200.000	27.47584	0.02626	14.569573	470.6688	1831.8	1875.5	99.163	58.90	70.85	0.00001	-0.0398	1329
210.000	27.16896	0.02530	13.889650	456.4012	2555.6	2599.8	102.621	59.00	71.03	0.00002	-0.0396	1309
220.000	26.86694	0.02442	13.264663	442.4031	3271.6	3316.3	105.934	59.31	71.43	0.00005	-0.0393	1289
230.000	26.56905	0.02362	12.687503	428.5173	3985.7	4030.9	109.125	59.82	72.06	0.00013	-0.0388	1269
240.000	26.27453	0.02289	12.152155	414.6133	4703.3	4749.0	112.213	60.53	72.91	0.00031	-0.0382	1248
250.000	25.98259	0.02222	11.653464	400.5832	5428.9	5475.0	115.213	61.41	73.97	0.00068	-0.0375	1227
260.000	25.69642	0.02161	11.187015	386.3424	6166.3	6213.0	118.141	62.45	75.21	0.00139	-0.0366	1205
270.000	25.40317	0.02104	10.748932	371.8248	6918.9	6966.1	121.006	63.61	76.61	0.00269	-0.0356	1182
280.000	25.11394	0.02052	10.335810	356.9831	7688.9	7736.7	123.820	64.87	78.15	0.00495	-0.0345	1158
290.000	24.82378	0.02005	9.944615	341.7871	8478.3	8526.6	126.589	66.19	79.81	0.00871	-0.0333	1134
300.000	24.53167	0.01961	9.572604	326.2219	9288.0	9336.9	129.321	67.56	81.56	0.01470	-0.0320	1108
310.000	24.23652	0.01921	9.217277	310.2873	10118.7	10168.2	132.022	68.95	83.40	0.02391	-0.0307	1082
320.000	23.93714	0.01884	8.876305	293.9952	10970.4	11020.5	134.698	70.34	85.31	0.03757	-0.0292	1054
330.000	23.63222	0.01851	8.547490	277.3684	11842.7	11893.5	137.351	71.72	87.29	0.05720	-0.0276	1026
340.000	23.32030	0.01820	8.228714	260.4384	12735.1	12786.5	139.987	73.08	89.34	0.08458	-0.0259	996
350.000	22.99973	0.01793	7.917889	243.2435	13646.9	13699.0	142.608	74.42	91.47	0.12169	-0.0240	965
360.000	22.66860	0.01769	7.612908	225.8267	14577.4	14630.3	145.217	75.71	93.69	0.17067	-0.0219	933
370.000	22.32470	0.01747	7.311570	208.2323	15526.3	15580.1	147.819	76.97	96.03	0.23372	-0.0195	900
380.000	21.96538	0.01729	7.011532	190.5055	16493.7	16548.4	150.416	78.19	98.51	0.31298	-0.0168	865
390.000	21.58740	0.01714	6.710164	172.6875	17480.5	17536.1	153.011	79.35	101.17	0.41050	-0.0136	828
400.000	21.18671	0.01703	6.404420	154.8134	18488.7	18545.3	155.610	80.46	104.07	0.52815	-0.0099	790
410.000	20.75801	0.01696	6.090586	136.9079	19521.7	19579.5	158.219	81.51	107.29	0.66764	-0.0054	749
417.033	20.43600	0.01693	5.862507	124.3020	20265.9	20324.6	160.064	82.71	109.82	0.77974	-0.0017	719
417.033	0.42869	0.80730	0.070743	20.5263	45687.4	48486.6	227.593	91.03	146.36	0.77974	3.7500	320
420.000	0.41908	0.81998	0.066105	21.6873	46044.0	48907.4	228.388	86.63	134.82	0.80627	3.6368	324
430.000	0.39329	0.85343	0.054923	24.9172	47066.5	50117.7	231.240	76.31	109.97	0.82466	3.2601	334
440.000	0.37379	0.87755	0.047687	27.4750	47931.8	51142.2	233.598	70.06	96.13	0.83966	2.9031	342
450.000	0.35802	0.89583	0.042582	29.6208	48705.5	52057.3	235.657	66.02	87.51	0.85215	2.5756	350
460.000	0.34473	0.91014	0.038772	31.4886	49420.9	52901.9	237.515	63.31	81.79	0.86269	2.2806	356
470.000	0.33321	0.92157	0.035812	33.1572	50097.6	53698.9	239.230	61.48	77.85	0.87170	2.0178	361
480.000	0.32301	0.93086	0.033439	34.6767	50747.7	54462.7	240.839	60.24	75.07	0.87947	1.7854	367
490.000	0.31384	0.93850	0.031490	36.0812	51379.5	55203.0	242.366	59.42	73.10	0.88623	1.5806	372
500.000	0.30550	0.94485	0.029857	37.3948	51998.5	55926.4	243.829	58.92	71.69	0.89212	1.4005	376
510.000	0.29783	0.95017	0.028465	38.6353	52609.0	56638.1	245.239	58.65	70.70	0.89735	1.2424	381
515.000	0.29422	0.95251	0.027843	39.2324	52912.1	56990.7	245.927	58.58	70.34	0.89974	1.1707	383
520.000	0.29073	0.95466	0.027263	39.8159	53214.1	57341.6	246.605	58.55	70.03	0.90199	1.1035	385
530.000	0.28411	0.95846	0.026211	40.9470	53816.0	58039.6	247.935	58.59	69.61	0.90614	0.9815	389
540.000	0.27791	0.96171	0.025280	42.0367	54416.5	58734.4	249.234	58.74	69.37	0.90987	0.8742	393
560.000	0.26655	0.96689	0.023701	44.1163	55618.4	60120.4	251.755	59.27	69.31	0.91628	0.6967	401
580.000	0.25634	0.97075	0.022403	46.0934	56828.0	61509.3	254.192	60.03	69.64	0.92161	0.5586	408
600.000	0.24705	0.97367	0.021307	47.9941	58050.3	62907.6	256.562	60.92	70.22	0.92612	0.4507	415
620.000	0.23853	0.97590	0.020362	49.8371	59288.6	64319.3	258.877	61.91	70.97	0.93000	0.3661	422
640.000	0.23067	0.97762	0.019534	51.6357	60545.1	65747.3	261.144	62.95	71.84	0.93338	0.2994	428
660.000	0.22337	0.97896	0.018798	53.4000	61821.3	67193.4	263.369	64.03	72.78	0.93636	0.2468	435
680.000	0.21657	0.98003	0.018136	55.1373	63118.1	68659.0	265.557	65.13	73.78	0.93903	0.2051	441
700.000	0.21020	0.98087	0.017534	56.8535	64436.0	70144.8	267.710	66.24	74.80	0.94145	0.1721	447
720.000	0.20422	0.98156	0.016983	58.5529	65775.2	71651.3	269.832	67.34	75.85	0.94365	0.1459	453
740.000	0.19859	0.98212	0.016475	60.2391	67136.0	73178.7	271.924	68.44	76.89	0.94567	0.1252	459
760.000	0.19327	0.98258	0.016003	61.9148	68518.1	74727.1	273.989	69.53	77.94	0.94755	0.1089	465
780.000	0.18824	0.98297	0.015564	63.5821	69921.6	76296.4	276.027	70.60	78.99	0.94929	0.0961	471
800.000	0.18347	0.98331	0.015152	65.2429	71346.1	77886.6	278.039	71.66	80.03	0.95093	0.0861	476

Table 17. Properties of methanol along isobars - Continued

T	ρ	Z	$\partial P/\partial T$	$\partial P/\partial \rho$	E	H	S	C_v	C_p	f/P	μ	W
K	mol/l		bar/K	bar/(mol/l)	J/mol	J/mol	J/(mol-K)	J/(mol-K)	J/(mol-K)		K/bar	m/s
15.00000 bar												
175.590	28.25564	0.03636	16.551170	509.2255	-10.7	42.4	89.925	59.35	71.18	0.00000	-0.0397	1380
180.000	28.11300	0.03565	16.163585	502.1358	332.6	385.9	91.689	59.20	71.05	0.00000	-0.0397	1371
190.000	27.79447	0.03416	15.345052	486.7059	1091.5	1145.5	95.522	58.97	70.87	0.00000	-0.0398	1351
200.000	27.48220	0.03282	14.600377	471.9618	1829.4	1884.0	99.151	58.88	70.85	0.00000	-0.0398	1331
210.000	27.17552	0.03161	13.919285	457.6798	2553.0	2608.2	102.609	58.99	71.03	0.00001	-0.0396	1311
220.000	26.87371	0.03051	13.293265	443.6719	3268.9	3324.7	105.921	59.30	71.43	0.00004	-0.0393	1291
230.000	26.57604	0.02951	12.715192	429.7806	3982.9	4039.3	109.112	59.81	72.06	0.00010	-0.0388	1271
240.000	26.28175	0.02860	12.179038	415.8749	4700.2	4757.3	112.200	60.52	72.91	0.00025	-0.0382	1250
250.000	25.99006	0.02777	11.679641	401.8465	5425.6	5483.3	115.200	61.40	73.96	0.00054	-0.0375	1229
260.000	25.70017	0.02700	11.212575	387.6103	6162.9	6221.3	118.128	62.43	75.20	0.00112	-0.0366	1207
270.000	25.41123	0.02629	10.773962	373.1000	6915.3	6974.3	120.993	63.59	76.60	0.00216	-0.0356	1184
280.000	25.12233	0.02565	10.360394	358.2678	7685.1	7744.8	123.806	64.85	78.14	0.00398	-0.0345	1160
290.000	24.83254	0.02505	9.968833	343.0832	8474.2	8534.6	126.575	66.18	79.80	0.00700	-0.0333	1136
300.000	24.54085	0.02450	9.596541	327.5311	9283.6	9344.8	129.307	67.54	81.55	0.01182	-0.0321	1110
310.000	24.24617	0.02400	9.241017	311.6108	10114.0	10175.9	132.007	68.93	83.38	0.01922	-0.0307	1084
320.000	23.94733	0.02354	8.899940	295.3342	10965.3	11028.0	134.682	70.32	85.29	0.03020	-0.0292	1057
330.000	23.64301	0.02312	8.571117	278.7239	11837.3	11900.7	137.335	71.70	87.26	0.04597	-0.0277	1028
340.000	23.33179	0.02274	8.252441	261.8113	12729.2	12793.5	139.969	73.06	89.31	0.06797	-0.0259	999
350.000	23.01202	0.02240	7.941839	244.6349	13640.4	13705.6	142.589	74.39	91.43	0.09779	-0.0241	968
360.000	22.68184	0.02209	7.637224	227.2377	14570.4	14636.5	145.198	75.68	93.64	0.13714	-0.0220	936
370.000	22.33905	0.02183	7.336423	209.6646	15518.5	15585.7	147.798	76.94	95.97	0.18779	-0.0196	903
380.000	21.98106	0.02160	7.037127	191.9611	16485.1	16553.3	150.393	78.15	98.44	0.25147	-0.0169	868
390.000	21.60470	0.02141	6.736764	174.1695	17470.9	17540.3	152.986	79.31	101.08	0.32981	-0.0138	832
400.000	21.20599	0.02127	6.432361	156.3261	18477.7	18548.5	155.583	80.41	103.96	0.42432	-0.0102	794
410.000	20.77980	0.02118	6.120323	138.4578	19509.1	19581.3	158.188	81.45	107.14	0.53638	-0.0057	753
420.000	20.31924	0.02114	5.796058	120.5764	20570.4	20644.2	160.811	82.43	110.77	0.66735	-0.0003	711
426.307	20.00682	0.02115	5.582525	109.2876	21258.7	21333.7	162.480	83.02	113.39	0.76031	0.0039	682
426.307	0.54169	0.78124	0.095091	19.0677	45547.9	48317.0	225.775	98.77	167.67	0.76031	3.2202	317
430.000	0.52482	0.79943	0.086808	20.6817	46038.1	48896.3	226.860	92.50	149.38	0.79390	3.1111	322
440.000	0.48984	0.83704	0.071360	24.2089	47161.2	50223.5	229.916	80.91	119.48	0.81376	2.8154	334
450.000	0.46400	0.86402	0.061494	26.9783	48096.8	51329.6	232.404	73.87	103.17	0.82995	2.5289	342
460.000	0.44343	0.88445	0.054586	29.2883	48924.5	52307.2	234.550	69.28	93.08	0.84385	2.2615	350
470.000	0.42629	0.90044	0.049458	31.2897	49683.6	53202.4	236.477	66.17	86.38	0.85521	2.0169	357
480.000	0.41156	0.91324	0.045490	33.0700	50397.0	54041.6	238.245	64.01	81.75	0.86491	1.7963	363
490.000	0.39861	0.92365	0.042323	34.6849	51078.7	54841.7	239.896	62.52	78.45	0.87328	1.5988	368
500.000	0.38704	0.93224	0.039731	36.1719	51738.0	55613.5	241.456	61.50	76.07	0.88052	1.4230	373
510.000	0.37657	0.93939	0.037568	37.5576	52381.7	56365.1	242.945	60.83	74.34	0.88689	1.2671	378
515.000	0.37167	0.94251	0.036613	38.2188	52699.2	56735.1	243.667	60.59	73.66	0.88979	1.1959	380
520.000	0.36698	0.94539	0.035731	38.8616	53014.5	57101.9	244.377	60.41	73.09	0.89251	1.1289	383
530.000	0.35813	0.95046	0.034149	40.0986	53639.8	57828.1	245.760	60.19	72.20	0.89748	1.0067	387
540.000	0.34991	0.95477	0.032770	41.2800	54260.2	58546.9	247.104	60.12	71.59	0.90192	0.8986	391
560.000	0.33501	0.96162	0.030474	43.5097	55494.1	59971.5	249.695	60.33	70.98	0.90948	0.7182	399
580.000	0.32176	0.96671	0.028627	45.6034	56727.9	61389.7	252.184	60.85	70.91	0.91567	0.5765	407
600.000	0.30981	0.97053	0.027097	47.5963	57968.8	62810.5	254.593	61.57	71.21	0.92083	0.4650	414
620.000	0.29892	0.97344	0.025801	49.5129	59221.8	64239.9	256.936	62.42	71.75	0.92521	0.3768	421
640.000	0.28892	0.97567	0.024680	51.3708	60490.0	65681.8	259.225	63.37	72.46	0.92897	0.3068	428
660.000	0.27966	0.97740	0.023695	53.1830	61775.5	67139.0	261.468	64.37	73.28	0.93226	0.2511	434
680.000	0.27106	0.97876	0.022818	54.9593	63079.7	68613.4	263.668	65.41	74.17	0.93517	0.2067	441
700.000	0.26303	0.97982	0.022029	56.7072	64403.6	70106.3	265.832	66.46	75.12	0.93777	0.1712	447
720.000	0.25551	0.98067	0.021312	58.4324	65747.8	71618.5	267.962	67.53	76.10	0.94012	0.1428	453
740.000	0.24843	0.98135	0.020654	60.1395	67112.5	73150.5	270.061	68.59	77.10	0.94227	0.1202	459
760.000	0.24175	0.98190	0.020048	61.8320	68497.9	74702.5	272.130	69.66	78.11	0.94424	0.1021	465
780.000	0.23545	0.98236	0.019485	63.5128	69903.9	76274.8	274.172	70.71	79.12	0.94607	0.0877	470
800.000	0.22947	0.98273	0.018960	65.1842	71330.5	77867.3	276.187	71.75	80.13	0.94777	0.0763	476

THERMODYNAMIC PROPERTIES OF METHANE

Table 17. Properties of methanol along isobars - Continued

T	ρ	Z	$\partial P/\partial T$	$\partial P/\partial \rho$	E	H	S	C_v	C_p	f/P	μ	W
K	mol/l		bar/K	bar/(mol/l)	J/mol	J/mol	J/(mol·K)	J/(mol·K)	J/(mol·K)		K/bar	m/s
20.00000 bar												
175.590	28.26544	0.04847	16.607837	511.4623	-14.3	56.5	89.904	59.32	71.18	0.00000	-0.0397	1383
180.000	28.12294	0.04752	16.219047	504.3500	328.9	400.0	91.669	59.18	71.05	0.00000	-0.0397	1374
190.000	27.80472	0.04553	15.398029	488.8771	1087.7	1159.6	95.502	58.94	70.86	0.00000	-0.0398	1354
200.000	27.49277	0.04375	14.651167	474.1000	1825.3	1898.1	99.131	58.86	70.84	0.00000	-0.0398	1334
210.000	27.18642	0.04213	13.968146	459.7938	2548.7	2622.3	102.588	58.97	71.02	0.00001	-0.0396	1314
220.000	26.88495	0.04067	13.340419	445.7697	3264.3	3338.7	105.901	59.27	71.43	0.00003	-0.0393	1294
230.000	26.58764	0.03934	12.760836	431.8693	3978.1	4053.3	109.091	59.79	72.05	0.00008	-0.0389	1274
240.000	26.29374	0.03812	12.223349	417.9607	4695.2	4771.3	112.179	60.49	72.90	0.00019	-0.0382	1253
250.000	26.00247	0.03700	11.722781	403.9351	5420.3	5497.2	115.179	61.37	73.95	0.00041	-0.0375	1232
260.000	25.71304	0.03598	11.254694	389.7067	6157.3	6235.0	118.106	62.41	75.19	0.00084	-0.0366	1210
270.000	25.42459	0.03504	10.815201	375.2083	6909.3	6987.9	120.970	63.57	76.59	0.00164	-0.0356	1187
280.000	25.13625	0.03418	10.400889	360.3919	7678.7	7758.3	123.783	64.82	78.13	0.00301	-0.0346	1164
290.000	24.84707	0.03338	10.008720	345.2261	8467.4	8547.9	126.551	66.15	79.78	0.00530	-0.0334	1139
300.000	24.55607	0.03265	9.635954	329.6956	9276.4	9357.9	129.282	67.51	81.52	0.00894	-0.0321	1114
310.000	24.26216	0.03198	9.280096	313.7991	10106.3	10188.7	131.982	68.90	83.35	0.01453	-0.0308	1088
320.000	23.96419	0.03137	8.938831	297.5481	10957.0	11040.5	134.656	70.29	85.25	0.02283	-0.0293	1061
330.000	23.66088	0.03081	8.609980	280.9650	11828.7	11912.8	137.307	71.66	87.22	0.03475	-0.0277	1033
340.000	23.35081	0.03030	8.291451	264.0811	12719.4	12805.1	139.940	73.02	89.25	0.05136	-0.0260	1003
350.000	23.03237	0.02984	7.981195	246.9350	13629.8	13716.7	142.559	74.35	91.37	0.07389	-0.0242	973
360.000	22.70373	0.02943	7.677155	229.5699	14558.7	14646.8	145.165	75.64	93.57	0.10362	-0.0221	941
370.000	22.36277	0.02907	7.377202	212.0313	15505.7	15595.1	147.763	76.89	95.88	0.14187	-0.0198	908
380.000	22.00695	0.02876	7.079085	194.3657	16470.8	16561.7	150.355	78.09	98.32	0.18996	-0.0172	873
390.000	21.63321	0.02851	6.780314	176.6165	17454.9	17547.3	152.945	79.24	100.93	0.24913	-0.0141	837
400.000	21.23772	0.02832	6.478037	158.8223	18459.7	18553.8	155.537	80.33	103.77	0.32050	-0.0105	800
410.000	20.81559	0.02819	6.168838	141.0129	19488.4	19584.5	158.137	81.36	106.89	0.40513	-0.0062	760
420.000	20.36026	0.02813	5.848408	123.2050	20546.3	20644.5	160.753	82.31	110.44	0.50404	-0.0009	718
430.000	19.86258	0.02816	5.510974	105.3952	21641.3	21742.0	163.397	83.21	114.61	0.61833	0.0058	673
438.942	19.37067	0.02829	5.188105	89.4391	22661.5	22764.7	165.799	83.98	119.19	0.73461	0.0136	629
438.942	0.73886	0.74169	0.139578	16.8273	45280.8	47987.7	223.262	109.80	202.89	0.73461	2.6201	311
440.000	0.73037	0.74851	0.135316	17.3952	45442.2	48180.6	223.363	107.48	194.31	0.76787	2.5975	313
450.000	0.66914	0.79885	0.106840	21.7755	46846.3	49835.2	227.086	91.09	143.77	0.79145	2.3903	327
460.000	0.62737	0.83351	0.089895	25.0709	47950.3	51138.2	229.946	81.55	119.22	0.81116	2.1779	338
470.000	0.59561	0.85928	0.078479	27.7562	48894.8	52252.7	232.345	75.42	104.82	0.82687	1.9721	346
480.000	0.56995	0.87926	0.070212	30.0464	49742.0	53251.1	234.449	71.25	95.50	0.84009	1.7785	354
490.000	0.54839	0.89518	0.063930	32.0595	50525.2	54172.2	236.349	68.34	89.11	0.85137	1.5999	361
500.000	0.52977	0.90811	0.058987	33.8677	51264.0	55039.3	238.102	66.27	84.57	0.86103	1.4370	367
510.000	0.51336	0.91876	0.054989	35.5188	51971.8	55867.8	239.736	64.80	81.27	0.87025	1.2896	372
515.000	0.50582	0.92340	0.053263	36.2962	52316.8	56270.8	240.522	64.23	79.96	0.87404	1.2215	375
520.000	0.49867	0.92764	0.051686	37.0461	52657.0	56667.7	241.290	63.76	78.84	0.87758	1.1570	378
530.000	0.48536	0.93509	0.048907	38.4736	53325.9	57446.6	242.774	63.04	77.03	0.88401	1.0381	383
540.000	0.47318	0.94141	0.046534	39.8193	53983.1	58209.8	244.202	62.58	75.69	0.88970	0.9316	387
560.000	0.45149	0.95140	0.042686	42.3182	55275.3	59705.1	246.922	62.19	74.02	0.89927	0.7515	396
580.000	0.43256	0.95878	0.039686	44.6220	56552.7	61176.3	249.504	62.28	73.22	0.90697	0.6078	404
600.000	0.41574	0.96433	0.037266	46.7821	57827.1	62637.9	251.982	62.70	73.00	0.91328	0.4931	412
620.000	0.40057	0.96854	0.035262	48.8340	59106.2	64099.0	254.378	63.33	73.16	0.91853	0.4013	419
640.000	0.38677	0.97178	0.033563	50.8026	60395.0	65566.1	256.707	64.09	73.58	0.92298	0.3276	426
660.000	0.37408	0.97428	0.032097	52.7060	61697.1	67043.5	258.980	64.96	74.18	0.92679	0.2683	433
680.000	0.36236	0.97622	0.030812	54.5579	63014.6	68534.1	261.205	65.89	74.90	0.93011	0.2204	439
700.000	0.35145	0.97775	0.029670	56.3687	64349.4	70040.0	263.388	66.86	75.71	0.93303	0.1817	446
720.000	0.34127	0.97895	0.028644	58.1465	65702.4	71562.8	265.532	67.85	76.58	0.93564	0.1504	452
740.000	0.33172	0.97991	0.027713	59.8975	67074.3	73103.4	267.643	68.86	77.49	0.93799	0.1250	458
760.000	0.32274	0.98067	0.026862	61.6267	68465.6	74662.4	269.722	69.88	78.42	0.94013	0.1044	464
780.000	0.31427	0.98128	0.026078	63.3382	69876.4	76240.4	271.771	70.89	79.37	0.94209	0.0877	470
800.000	0.30626	0.98178	0.025352	65.0351	71307.0	77837.4	273.792	71.90	80.33	0.94390	0.0742	476

Table 17. Properties of methanol along isobars - Continued

T K	ρ mol/l	Z	$\partial P/\partial T$ bar/K	$\partial P/\partial \rho$ bar/(mol/l)	E J/mol	H J/mol	S J/(mol·K)	C_v J/(mol·K)	C_p J/(mol·K)	f/P	μ K/bar	W m/s
25.00000 bar												
175.590	28.27519	0.06056	16.663768	513.6781	-17.8	70.6	89.884	59.30	71.18	0.00000	-0.0397	1387
180.000	28.13283	0.05938	16.273788	506.5434	325.3	414.2	91.649	59.16	71.05	0.00000	-0.0397	1377
190.000	27.81492	0.05689	15.450315	491.0276	1083.8	1173.7	95.481	58.92	70.86	0.00000	-0.0398	1357
200.000	27.50330	0.05466	14.701292	476.2176	1821.3	1912.2	99.110	58.84	70.84	0.00000	-0.0398	1337
210.000	27.19727	0.05265	14.016362	461.8873	2544.4	2636.4	102.567	58.95	71.02	0.00001	-0.0396	1317
220.000	26.89614	0.05081	13.386947	447.8471	3259.8	3352.8	105.880	59.25	71.42	0.00002	-0.0393	1297
230.000	26.59919	0.04915	12.805869	433.9375	3973.3	4067.3	109.070	59.76	72.05	0.00006	-0.0389	1277
240.000	26.30568	0.04763	12.267061	420.0260	4690.2	4785.2	112.157	60.47	72.89	0.00015	-0.0383	1257
250.000	26.01482	0.04623	11.765333	406.0032	5415.0	5511.1	115.158	61.35	73.95	0.00033	-0.0375	1235
260.000	25.72583	0.04495	11.296230	391.7824	6151.6	6248.8	118.084	62.38	75.18	0.00068	-0.0366	1213
270.000	25.43788	0.04378	10.855862	377.2960	6903.3	7001.6	120.948	63.54	76.58	0.00132	-0.0357	1191
280.000	25.15008	0.04270	10.440808	362.4952	7672.4	7771.8	123.760	64.80	78.11	0.00243	-0.0346	1167
290.000	24.86151	0.04170	10.048028	347.3482	8460.7	8561.2	126.528	66.12	79.76	0.00427	-0.0334	1143
300.000	24.57118	0.04079	9.674784	331.8390	9269.2	9371.0	129.258	67.48	81.50	0.00721	-0.0322	1118
310.000	24.27804	0.03995	9.318584	315.9661	10098.5	10201.5	131.957	68.87	83.32	0.01172	-0.0308	1092
320.000	23.98094	0.03918	8.977119	299.7404	10948.7	11053.0	134.629	70.26	85.22	0.01840	-0.0294	1065
330.000	23.67861	0.03848	8.648222	283.1842	11819.3	11924.9	137.280	71.63	87.17	0.02801	-0.0278	1037
340.000	23.36966	0.03784	8.329817	266.3287	12709.8	12816.7	139.912	72.98	89.20	0.04140	-0.0261	1007
350.000	23.05252	0.03727	8.019875	249.2123	13619.3	13727.7	142.528	74.30	91.30	0.05955	-0.0243	977
360.000	22.72540	0.03675	7.716369	231.8786	14547.2	14657.2	145.133	75.59	93.49	0.08350	-0.0223	946
370.000	22.38622	0.03630	7.417210	214.3735	15493.0	15604.7	147.728	76.83	95.78	0.11432	-0.0200	913
380.000	22.03252	0.03591	7.120202	196.7444	16456.7	16570.2	150.318	78.03	98.20	0.15307	-0.0174	879
390.000	21.66132	0.03559	6.822929	179.0359	17439.1	17554.5	152.904	79.18	100.79	0.20073	-0.0144	843
400.000	21.26896	0.03534	6.522651	161.2884	18441.8	18559.4	155.492	80.26	103.58	0.25822	-0.0109	806
410.000	20.85073	0.03517	6.216112	143.5345	19468.0	19587.9	158.087	81.27	106.65	0.32640	-0.0067	766
420.000	20.40042	0.03509	5.899258	125.7951	20522.7	20645.2	160.697	82.20	110.12	0.40608	-0.0015	725
430.000	19.90942	0.03512	5.566732	108.0735	21613.3	21738.9	163.331	83.07	114.17	0.49815	0.0049	680
440.000	19.36511	0.03529	5.210945	90.3449	22751.4	22880.5	166.008	83.90	119.16	0.60369	0.0135	632
449.304	18.79329	0.03561	4.848795	73.7798	23868.0	24001.0	168.560	84.72	125.26	0.71519	0.0243	583
449.304	0.94865	0.70544	0.188012	14.8153	44993.3	47628.6	221.147	119.02	238.14	0.71519	2.2179	304
450.000	0.94004	0.71079	0.183804	15.2369	45107.5	47767.0	221.081	117.28	230.19	0.75010	2.2065	305
460.000	0.84887	0.77002	0.141971	20.1237	46727.3	49672.4	225.267	97.90	161.84	0.77653	2.0549	322
470.000	0.78992	0.80988	0.118048	23.7318	47956.1	51120.9	228.383	86.88	131.11	0.79739	1.8921	334
480.000	0.74636	0.83930	0.102216	26.6491	48987.7	52337.3	230.947	79.82	113.60	0.81452	1.7299	344
490.000	0.71183	0.86205	0.090872	29.1257	49901.6	53413.7	233.168	75.01	102.43	0.82896	1.5741	352
500.000	0.68322	0.88019	0.082313	31.2949	50738.3	54397.4	235.156	71.62	94.81	0.84124	1.4279	359
510.000	0.65878	0.89494	0.075613	33.2375	51522.2	55317.1	236.967	69.17	89.38	0.85304	1.2926	366
515.000	0.64777	0.90131	0.072778	34.1410	51899.2	55758.6	237.829	68.21	87.26	0.85777	1.2292	369
520.000	0.63743	0.90712	0.070218	35.0062	52268.2	56190.2	238.663	67.40	85.43	0.86219	1.1686	372
530.000	0.61847	0.91730	0.065778	36.6378	52986.7	57029.0	240.262	66.12	82.48	0.87019	1.0557	377
540.000	0.60139	0.92588	0.062056	38.1587	53685.2	57842.2	241.783	65.20	80.27	0.87722	0.9534	382
560.000	0.57156	0.93940	0.056156	40.9430	55041.6	59415.6	244.645	64.14	77.35	0.88894	0.7777	392
580.000	0.54605	0.94939	0.051676	43.4698	56366.4	60944.8	247.329	63.79	75.74	0.89825	0.6352	401
600.000	0.52371	0.95688	0.048142	45.8087	57676.8	62450.4	249.882	63.87	74.94	0.90579	0.5198	409
620.000	0.50382	0.96259	0.045269	48.0064	58983.9	63946.0	252.335	64.26	74.69	0.91200	0.4264	417
640.000	0.48586	0.96698	0.042875	50.0957	60294.8	65440.3	254.707	64.85	74.79	0.91717	0.3506	424
660.000	0.46948	0.97038	0.040839	52.1001	61614.4	66939.5	257.014	65.57	75.15	0.92156	0.2890	431
680.000	0.45443	0.97304	0.039077	54.0371	62946.2	68447.7	259.265	66.39	75.69	0.92533	0.2387	438
700.000	0.44050	0.97513	0.037529	55.9200	64292.6	69968.0	261.469	67.27	76.35	0.92860	0.1977	445
720.000	0.42754	0.97678	0.036152	57.7592	65655.0	71502.5	263.630	68.19	77.11	0.93149	0.1641	451
740.000	0.41542	0.97809	0.034915	59.5627	67034.7	73052.7	265.754	69.15	77.92	0.93406	0.1365	457
760.000	0.40406	0.97914	0.033793	61.3369	68432.4	74619.7	267.843	70.11	78.78	0.93637	0.1139	463
780.000	0.39336	0.97998	0.032766	63.0869	69848.6	76204.1	269.901	71.09	79.67	0.93848	0.0954	469
800.000	0.38326	0.98066	0.031821	64.8169	71283.6	77806.5	271.929	72.06	80.57	0.94040	0.0801	475

THERMODYNAMIC PROPERTIES OF METHANE

Table 17. Properties of methanol along isobars - Continued

T	ρ	Z	$\partial P/\partial T$	$\partial P/\partial \rho$	E	H	S	C_v	C_p	f/P	μ	W
K	mol/l		bar/K	bar/(mol/l)	J/mol	J/mol	J/(mol-K)	J/(mol-K)	J/(mol-K)		K/bar	m/s
30.00000 bar												
175.590	28.28491	0.07265	16.718990	515.8736	-21.3	84.7	89.864	59.28	71.18	0.00000	-0.0397	1390
180.000	28.14268	0.07123	16.327834	508.7165	321.7	478.3	91.628	59.14	71.05	0.00000	-0.0397	1381
190.000	27.82508	0.06825	15.501934	493.1580	1080.0	1187.8	95.461	58.90	70.86	0.00000	-0.0398	1360
200.000	27.51377	0.06557	14.750774	478.3153	1817.2	1926.3	99.090	58.82	70.84	0.00000	-0.0398	1340
210.000	27.20807	0.06315	14.063957	463.9611	2540.2	2650.4	102.547	58.93	71.02	0.00001	-0.0396	1321
220.000	26.90728	0.06095	13.432870	449.9047	3255.3	3366.8	105.859	59.23	71.42	0.00002	-0.0393	1301
230.000	26.61069	0.05895	12.850312	435.9860	3968.6	4081.3	109.049	59.74	72.04	0.00005	-0.0389	1280
240.000	26.31755	0.05713	12.310196	422.0716	4685.2	4799.1	112.136	60.45	72.89	0.00013	-0.0383	1260
250.000	26.02711	0.05545	11.807315	408.0514	5409.7	5524.9	115.136	61.33	73.94	0.00028	-0.0375	1239
260.000	25.73856	0.05392	11.337206	393.8382	6146.0	6262.6	118.062	62.36	75.17	0.00057	-0.0367	1217
270.000	25.45109	0.05251	10.895966	379.3636	6897.4	7015.2	120.926	63.52	76.56	0.00111	-0.0357	1194
280.000	25.16383	0.05121	10.480172	364.5783	7666.1	7785.3	123.737	64.77	78.09	0.00204	-0.0346	1171
290.000	24.87586	0.05002	10.086780	349.4499	8453.9	8574.5	126.504	66.09	79.74	0.00359	-0.0335	1147
300.000	24.58620	0.04892	9.713054	333.9620	9262.0	9384.1	129.234	67.46	81.48	0.00606	-0.0322	1121
310.000	24.29381	0.04791	9.356503	318.1124	10090.9	10214.4	131.932	68.84	83.29	0.00984	-0.0309	1096
320.000	23.99756	0.04699	9.014827	301.9119	10940.5	11065.5	134.603	70.22	85.18	0.01546	-0.0294	1069
330.000	23.69619	0.04614	8.685868	285.3823	11810.4	11937.0	137.253	71.60	87.13	0.02352	-0.0279	1041
340.000	23.38835	0.04537	8.367564	268.5547	12700.1	12828.4	139.883	72.95	89.15	0.03477	-0.0262	1012
350.000	23.07249	0.04468	8.057907	251.4675	13608.8	13738.8	142.498	74.26	91.24	0.05000	-0.0244	981
360.000	22.74686	0.04406	7.754897	234.1645	14535.7	14667.6	145.101	75.55	93.41	0.07010	-0.0224	950
370.000	22.40942	0.04352	7.456483	216.6921	15480.4	15614.3	147.694	76.79	95.69	0.09596	-0.0201	918
380.000	22.05778	0.04305	7.160517	199.0983	16442.8	16578.8	150.280	77.98	98.09	0.12847	-0.0176	884
390.000	21.68907	0.04266	6.864656	181.4289	17423.5	17561.8	152.864	79.11	100.65	0.16847	-0.0146	848
400.000	21.29973	0.04235	6.566258	163.7259	18424.2	18565.1	155.448	80.18	103.40	0.21671	-0.0112	811
410.000	20.88527	0.04214	6.262217	146.0244	19448.0	19591.6	158.038	81.18	106.42	0.27392	-0.0071	772
420.000	20.43977	0.04203	5.948704	128.3491	20499.5	20646.2	160.641	82.10	109.81	0.34078	-0.0021	731
430.000	19.95513	0.04205	5.620731	110.7090	21586.0	21736.3	163.267	82.94	113.75	0.41805	0.0041	688
440.000	19.41962	0.04223	5.271359	93.0892	22718.4	22872.8	165.932	83.73	118.55	0.50663	0.0123	641
450.000	18.81489	0.04262	4.890067	75.4341	23913.0	24072.4	168.661	84.56	124.85	0.60771	0.0234	589
458.156	18.24894	0.04316	4.543417	60.9183	24951.1	25115.5	170.963	85.41	132.03	0.70045	0.0362	542
458.156	1.17299	0.67139	0.239684	13.0043	44695.5	47253.1	219.282	126.84	273.94	0.70045	1.9291	296
460.000	1.14148	0.68716	0.225071	14.1834	45079.7	47707.9	219.886	121.49	247.58	0.73955	1.9089	300
470.000	1.02325	0.75025	0.173416	19.1947	46810.4	49742.3	224.263	101.48	171.81	0.76645	1.7917	318
480.000	0.94828	0.79270	0.143978	22.9151	48111.4	51275.0	227.493	90.04	138.33	0.78795	1.6622	331
490.000	0.89351	0.82412	0.124488	25.9371	49197.9	52555.5	230.136	82.65	119.32	0.80582	1.5308	341
500.000	0.85046	0.84852	0.110507	28.5110	50156.2	53683.7	232.417	77.58	107.18	0.82090	1.4028	350
510.000	0.81502	0.86805	0.099947	30.7705	51031.1	54711.9	234.440	73.95	98.88	0.83524	1.2812	358
515.000	0.79940	0.87642	0.095574	31.8090	51445.3	55198.1	235.389	72.54	95.68	0.84099	1.2233	361
520.000	0.78492	0.88401	0.091672	32.7968	51847.4	55669.5	236.300	71.32	92.95	0.84634	1.1674	365
530.000	0.75875	0.89725	0.085006	34.6433	52622.2	56576.1	238.029	69.39	88.59	0.85598	1.0621	371
540.000	0.73559	0.90835	0.079516	36.3471	53366.6	57444.9	239.653	67.97	85.33	0.86442	0.9654	377
560.000	0.69597	0.92578	0.070996	39.4277	54793.4	59104.0	242.672	66.19	80.97	0.87841	0.7966	387
580.000	0.66278	0.93861	0.064676	42.1854	56169.2	60695.6	245.466	65.34	78.43	0.88944	0.6572	397
600.000	0.63417	0.94826	0.059785	44.7099	57517.9	62248.5	248.099	65.08	77.01	0.89829	0.5429	406
620.000	0.60899	0.95562	0.055873	47.0600	58854.5	63780.7	250.612	65.22	76.31	0.90551	0.4492	414
640.000	0.58647	0.96130	0.052658	49.2763	60188.6	65303.9	253.030	65.61	76.08	0.91147	0.3724	422
660.000	0.56610	0.96572	0.049958	51.3879	61526.8	66826.2	255.373	66.19	76.19	0.91648	0.3094	429
680.000	0.54748	0.96919	0.047647	53.4163	62873.6	68353.2	257.652	66.90	76.54	0.92073	0.2575	436
700.000	0.53034	0.97193	0.045637	55.3777	64232.1	69888.9	259.878	67.69	77.05	0.92439	0.2148	443
720.000	0.51445	0.97411	0.043866	57.2845	65604.6	71436.0	262.057	68.54	77.68	0.92759	0.1795	450
740.000	0.49965	0.97585	0.042287	59.1465	66992.5	72996.7	264.195	69.44	78.40	0.93040	0.1503	456
760.000	0.48581	0.97724	0.040864	60.9716	68397.1	74572.3	266.296	70.36	79.17	0.93291	0.1260	462
780.000	0.47281	0.97837	0.039571	62.7659	69819.0	76164.0	268.363	71.29	80.00	0.93517	0.1059	468
800.000	0.46057	0.97927	0.038388	64.5346	71258.6	77772.4	270.399	72.23	80.85	0.93722	0.0893	474

Table 17. Properties of methanol along isobars - Continued

T K	ρ mol/l	Z	$\partial P/\partial T$ bar/K	$\partial P/\partial \rho$ bar/(mol/l)	E J/mol	H J/mol	S J/(mol·K)	C_v J/(mol·K)	C_p J/(mol·K)	f/P	μ K/bar	W m/s
40.00000 bar												
175.590	28.30421	0.09680	16.827399	520.2067	-28.4	113.0	89.823	59.25	71.18	0.00000	-0.0397	1396
180.000	28.16225	0.09490	16.433930	513.0051	314.5	456.5	91.588	59.10	71.05	0.00000	-0.0397	1387
190.000	27.84527	0.09093	15.603259	497.3618	1072.4	1216.1	95.420	58.86	70.86	0.00000	-0.0398	1366
200.000	27.53459	0.08736	14.847897	482.4538	1809.2	1954.5	99.049	58.78	70.84	0.00000	-0.0398	1347
210.000	27.22953	0.08413	14.157363	468.0519	2531.7	2678.6	102.506	58.89	71.01	0.00001	-0.0397	1327
220.000	26.92941	0.08120	13.522985	453.9633	3246.4	3394.9	105.818	59.19	71.41	0.00002	-0.0393	1307
230.000	26.63352	0.07854	12.937510	440.0262	3959.1	4109.3	109.008	59.70	72.03	0.00004	-0.0389	1287
240.000	26.34113	0.07610	12.394810	426.1059	4675.2	4827.0	112.094	60.40	72.87	0.00010	-0.0383	1266
250.000	26.05149	0.07387	11.889653	412.0910	5399.2	5552.7	115.094	61.28	73.92	0.00021	-0.0376	1245
260.000	25.76382	0.07182	11.417548	397.8926	6134.9	6290.2	118.019	62.32	75.15	0.00044	-0.0367	1223
270.000	25.47731	0.06994	10.974579	383.4414	6885.6	7042.6	120.882	63.47	76.54	0.00085	-0.0357	1201
280.000	25.19111	0.06821	10.557309	368.6868	7653.6	7812.3	123.692	64.72	78.06	0.00156	-0.0347	1178
290.000	24.90431	0.06661	10.162692	353.5953	8440.6	8601.2	126.458	66.04	79.70	0.00274	-0.0335	1154
300.000	24.61596	0.06515	9.787990	338.1494	9247.8	9410.3	129.186	67.40	81.43	0.00462	-0.0323	1129
310.000	24.32504	0.06380	9.430718	322.3460	10075.7	10240.1	131.882	68.78	83.24	0.00750	-0.0310	1103
320.000	24.03044	0.06256	9.088588	306.1951	10924.2	11090.6	134.552	70.16	85.11	0.01178	-0.0296	1076
330.000	23.73097	0.06143	8.759459	289.7179	11792.9	11961.4	137.199	71.53	87.05	0.01792	-0.0281	1048
340.000	23.42529	0.06040	8.441297	272.9451	12681.1	12851.9	139.826	72.88	89.05	0.02647	-0.0264	1020
350.000	23.11191	0.05947	8.132130	255.9150	13588.1	13761.2	142.438	74.19	91.12	0.03806	-0.0246	990
360.000	22.78916	0.05864	7.830007	238.6716	14513.1	14688.6	145.037	75.46	93.27	0.05335	-0.0227	959
370.000	22.45508	0.05790	7.532945	221.2621	15455.5	15633.7	147.626	76.69	95.51	0.07302	-0.0205	927
380.000	22.10743	0.05727	7.238886	203.7356	16415.3	16592.2	150.207	77.87	97.87	0.09775	-0.0180	893
390.000	21.74348	0.05673	6.945613	186.1400	17392.8	17576.8	152.784	78.99	100.37	0.12816	-0.0152	859
400.000	21.35993	0.05631	6.650660	168.5200	18389.7	18577.0	155.360	80.05	103.06	0.16484	-0.0119	822
410.000	20.95262	0.05600	6.351178	150.9151	19408.7	19599.6	157.941	81.02	105.98	0.20834	-0.0079	784
420.000	20.51619	0.05583	6.043727	133.3561	20454.2	20649.2	160.531	81.90	109.23	0.25918	-0.0032	745
430.000	20.04341	0.05582	5.723937	115.8619	21532.9	21732.5	163.142	82.70	112.96	0.31795	0.0026	702
440.000	19.52406	0.05600	5.385925	98.4333	22654.7	22859.6	165.785	83.42	117.44	0.38535	0.0102	657
450.000	18.94273	0.05644	5.021153	81.0429	23834.2	24045.4	168.483	84.14	123.16	0.46228	0.0202	608
460.000	18.27390	0.05723	4.615947	63.6119	25093.8	25312.7	171.271	85.04	131.18	0.54996	0.0345	553
470.000	17.46876	0.05860	4.144906	45.9498	26472.4	26701.4	174.220	86.52	144.11	0.64988	0.0567	488
472.860	17.20025	0.05915	3.991362	40.7987	26898.1	27130.7	175.111	87.18	149.59	0.68093	0.0657	467
472.860	1.67517	0.60734	0.351805	9.8575	44075.9	46463.7	215.996	139.34	350.91	0.68093	1.5437	278
480.000	1.49059	0.67239	0.277186	14.3471	45785.7	48469.2	219.879	118.38	234.07	0.73103	1.4965	297
490.000	1.34182	0.73170	0.220566	18.9028	47473.5	50054.5	223.976	101.80	171.84	0.75701	1.4143	315
500.000	1.24392	0.77350	0.186078	22.4679	48790.5	52006.1	227.113	91.66	141.46	0.77828	1.3236	328
510.000	1.17139	0.80529	0.162406	25.4496	49908.9	53323.7	229.709	84.84	123.36	0.79758	1.2307	339
515.000	1.14120	0.81857	0.153099	26.7852	50418.6	53923.6	230.881	82.24	116.84	0.80551	1.1845	344
520.000	1.11403	0.83047	0.145016	28.0384	50903.3	54493.9	231.983	80.02	111.45	0.81286	1.1390	349
530.000	1.06671	0.85095	0.131652	30.3418	51814.6	55564.5	234.021	76.51	103.11	0.82631	1.0508	357
540.000	1.02650	0.86790	0.121042	32.4280	52667.0	56563.8	235.890	73.90	97.05	0.83775	0.9673	364
560.000	0.96071	0.89422	0.105233	36.1197	54254.1	58417.7	239.264	70.47	89.07	0.85656	0.8160	377
580.000	0.90803	0.91347	0.093999	39.3501	55742.7	60147.8	242.301	68.55	84.35	0.87125	0.6866	388
600.000	0.86409	0.92792	0.085589	42.2543	57174.6	61803.8	245.109	67.56	81.49	0.88292	0.5773	398
620.000	0.82637	0.93899	0.079041	44.9177	58574.7	63415.2	247.745	67.17	79.79	0.89312	0.4857	408
640.000	0.79329	0.94757	0.073784	47.3972	59958.4	65000.7	250.262	67.17	78.85	0.90079	0.4091	416
660.000	0.76381	0.95432	0.069456	49.7330	61335.9	66572.8	252.682	67.46	78.43	0.90714	0.3452	424
680.000	0.73722	0.95966	0.065819	51.9543	62714.4	68140.2	255.022	67.93	78.36	0.91247	0.2917	432
700.000	0.71299	0.96392	0.062707	54.0831	64098.8	69709.0	257.296	68.54	78.55	0.91699	0.2470	439
720.000	0.69073	0.96734	0.060004	56.1362	65492.6	71283.5	259.514	69.25	78.93	0.92087	0.2095	446
740.000	0.67015	0.97011	0.057626	58.1266	66898.2	72867.0	261.683	70.03	79.44	0.92424	0.1779	453
760.000	0.65101	0.97235	0.055511	60.0647	68317.5	74461.8	263.810	70.85	80.05	0.92720	0.1514	460
780.000	0.63313	0.97418	0.053609	61.9590	69751.7	76069.5	265.898	71.71	80.73	0.92983	0.1290	466
800.000	0.61635	0.97567	0.051886	63.8163	71201.4	77691.5	267.951	72.58	81.47	0.93218	0.1101	472

Table 17. Properties of methanol along isobars - Continued

<i>T</i> K	ρ mol/l	<i>Z</i>	$\partial P/\partial T$ bar/K	$\partial P/\partial \rho$ bar/(mol/l)	<i>E</i> J/mol	<i>H</i> J/mol	<i>S</i> J/(mol-K)	<i>C_v</i> J/(mol-K)	<i>C_p</i> J/(mol-K)	<i>f/P</i>	μ K/bar	<i>W</i> m/s
50.00000 bar												
175.590	28.32336	0.12092	16.933243	524.4667	-35.3	141.2	89.783	59.21	71.18	0.00000	-0.0397	1402
180.000	28.18167	0.11855	16.537512	517.2210	307.3	484.8	91.548	59.07	71.05	0.00000	-0.0397	1393
190.000	27.86530	0.11358	15.702183	501.4938	1064.9	1244.3	95.380	58.83	70.86	0.00000	-0.0398	1373
200.000	27.55523	0.10912	14.942696	486.5206	1801.2	1982.7	99.009	58.74	70.83	0.00000	-0.0398	1353
210.000	27.25080	0.10508	14.248523	472.0712	2523.3	2706.8	102.465	58.85	71.01	0.00000	-0.0397	1333
220.000	26.95134	0.10142	13.610917	457.9504	3237.5	3423.0	105.777	59.15	71.40	0.00001	-0.0394	1313
230.000	26.65614	0.09809	13.022578	443.9950	3949.8	4137.3	108.967	59.66	72.02	0.00003	-0.0389	1293
240.000	26.36449	0.09504	12.477339	430.0686	4665.3	4854.9	112.053	60.36	72.86	0.00008	-0.0383	1272
250.000	26.07564	0.09225	11.969948	416.0590	5388.7	5580.5	115.051	61.24	73.90	0.00017	-0.0376	1251
260.000	25.78883	0.08969	11.495866	401.8748	6123.9	6317.7	117.976	62.27	75.13	0.00036	-0.0367	1230
270.000	25.50326	0.08733	11.051184	387.4467	6873.9	7069.9	120.838	63.43	76.51	0.00069	-0.0358	1207
280.000	25.21808	0.08517	10.632448	372.7223	7641.2	7839.4	123.647	64.68	78.03	0.00127	-0.0347	1184
290.000	24.93243	0.08317	10.236603	357.6673	8427.4	8628.0	126.412	65.99	79.66	0.00223	-0.0336	1160
300.000	24.64535	0.08134	9.860913	342.2628	9233.8	9436.6	129.138	67.35	81.38	0.00375	-0.0324	1136
310.000	24.35586	0.07965	9.502896	326.5050	10060.6	10265.9	131.833	68.73	83.18	0.00610	-0.0311	1110
320.000	24.06288	0.07810	9.160273	310.4029	10908.0	11115.8	134.501	70.11	85.05	0.00957	-0.0297	1084
330.000	23.76524	0.07668	8.830921	293.9771	11775.5	11985.9	137.145	71.47	86.97	0.01455	-0.0282	1056
340.000	23.46164	0.07539	8.512828	277.2577	12662.4	12875.5	139.770	72.81	88.95	0.02150	-0.0266	1028
350.000	23.15066	0.07422	8.204055	260.2831	13567.8	13783.7	142.379	74.12	91.00	0.03091	-0.0248	998
360.000	22.83067	0.07317	7.902694	243.0972	14490.9	14709.9	144.975	75.38	93.13	0.04331	-0.0229	968
370.000	22.49983	0.07224	7.606824	225.7480	15431.1	15653.4	147.559	76.61	95.34	0.05927	-0.0208	936
380.000	22.15997	0.07143	7.314458	208.2849	16388.3	16614.0	150.135	77.78	97.66	0.07932	-0.0184	903
390.000	21.79654	0.07074	7.023493	190.7579	17362.8	17592.2	152.706	78.88	100.11	0.10399	-0.0156	869
400.000	21.41845	0.07019	6.731612	173.2140	18356.1	18589.5	155.275	79.92	102.73	0.13374	-0.0125	833
410.000	21.01785	0.06978	6.436183	155.6962	19370.5	19608.4	157.846	80.87	105.57	0.16902	-0.0087	796
420.000	20.58983	0.06954	6.134083	138.2403	20410.4	20653.2	160.425	81.73	108.69	0.21026	-0.0042	757
430.000	20.12790	0.06948	5.821439	120.8727	21481.9	21730.3	163.021	82.48	112.24	0.25793	0.0013	716
440.000	19.62306	0.06965	5.493179	103.6062	22594.1	22848.9	165.645	83.15	116.43	0.31261	0.0083	672
450.000	19.06217	0.07011	5.142221	86.4334	23760.1	24022.4	168.315	83.78	121.67	0.37506	0.0174	625
460.000	18.42440	0.07095	4.757802	69.3137	24999.5	25270.9	171.062	84.53	128.79	0.44628	0.0301	574
470.000	17.67278	0.07240	4.321528	52.1423	26343.9	26626.8	173.940	85.73	139.63	0.52753	0.0488	514
480.000	16.72747	0.07490	3.795234	34.6521	27853.8	28152.8	177.066	88.21	159.52	0.62012	0.0803	442
484.902	16.13408	0.07687	3.477009	25.7501	28695.3	29005.2	178.773	90.48	177.94	0.66990	0.1065	397
484.902	2.27337	0.54552	0.477972	7.1480	43403.2	45602.6	213.001	148.78	448.65	0.66990	1.3003	259
490.000	2.02675	0.60553	0.390710	10.7973	44993.9	47460.9	216.612	130.08	298.73	0.70419	1.2798	278
500.000	1.76904	0.67987	0.301024	15.9071	47043.8	49870.2	221.485	109.75	200.76	0.73290	1.2244	301
510.000	1.61527	0.72999	0.250093	19.8016	48554.3	51649.7	224.995	97.84	159.58	0.75798	1.1591	317
515.000	1.55697	0.74998	0.231621	21.4824	49202.3	52413.7	226.487	93.53	146.58	0.76828	1.1245	324
520.000	1.50670	0.76754	0.216161	23.0334	49801.7	53120.2	227.853	89.95	136.41	0.77778	1.0893	330
530.000	1.42341	0.79713	0.191641	25.8308	50892.5	54405.2	230.300	84.38	121.57	0.79498	1.0185	340
540.000	1.35617	0.82116	0.172993	28.3167	51879.9	55566.8	232.473	80.31	111.34	0.80962	0.9488	350
560.000	1.25181	0.85784	0.146392	32.6301	53657.6	57651.8	236.268	74.96	98.43	0.83355	0.8173	365
580.000	1.17238	0.88438	0.128272	36.3331	55274.6	59539.5	239.582	71.86	90.97	0.85213	0.7000	378
600.000	1.10842	0.90423	0.115108	39.6154	56798.9	61309.8	242.580	70.08	86.42	0.86723	0.5981	390
620.000	1.05492	0.91944	0.105096	42.5912	58268.0	63007.7	245.357	69.14	83.59	0.87977	0.5106	400
640.000	1.00896	0.93128	0.097209	45.3346	59705.0	64660.6	247.982	68.74	81.85	0.88931	0.4361	410
660.000	0.96865	0.94063	0.090822	47.8969	61124.6	66286.4	250.484	68.72	80.84	0.89716	0.3729	419
680.000	0.93277	0.94810	0.085530	50.3150	62537.0	67897.4	252.890	68.97	80.33	0.90369	0.3193	427
700.000	0.90041	0.95410	0.081060	52.6163	63949.0	69502.0	255.216	69.40	80.18	0.90919	0.2738	435
720.000	0.87096	0.95897	0.077224	54.8215	65365.5	71106.2	257.476	69.96	80.29	0.91386	0.2352	443
740.000	0.84393	0.96293	0.073884	56.9470	66790.0	72714.6	259.679	70.62	80.58	0.91788	0.2024	450
760.000	0.81896	0.96618	0.070941	59.0056	68225.1	74330.4	261.834	71.35	81.01	0.92137	0.1744	457
780.000	0.79575	0.96886	0.068321	61.0076	69672.6	75955.9	263.945	72.13	81.55	0.92443	0.1506	463
800.000	0.77409	0.97107	0.065966	62.9615	71133.8	77593.0	266.017	72.94	82.17	0.92714	0.1302	470

Table 17. Properties of methanol along isobars - Continued

T K	ρ mol/l	Z	$\partial P/\partial T$ bar/K	$\partial P/\partial \rho$ bar/(mol/l)	E J/mol	H J/mol	S J/(mol·K)	C_V J/(mol·K)	C_P J/(mol·K)	f/P	μ K/bar	W m/s
60.00000 bar												
175.590	28.34235	0.14500	17.036685	528.6584	-42.2	169.4	89.743	59.17	71.17	0.00000	-0.0397	1408
180.000	28.20092	0.14216	16.638737	521.3688	300.2	513.0	91.507	59.03	71.05	0.00000	-0.0397	1399
190.000	27.88516	0.13620	15.798833	505.5577	1057.3	1272.5	95.340	58.79	70.86	0.00000	-0.0398	1378
200.000	27.57570	0.13085	15.035320	490.5204	1793.3	2010.9	98.968	58.71	70.83	0.00000	-0.0398	1359
210.000	27.27190	0.12600	14.337578	476.0235	2514.9	2734.9	102.425	58.81	71.00	0.00000	-0.0397	1339
220.000	26.97308	0.12161	13.696805	461.8706	3228.7	3451.1	105.736	59.12	71.40	0.00001	-0.0394	1319
230.000	26.67857	0.11760	13.105652	447.8967	3940.5	4165.4	108.925	59.62	72.02	0.00003	-0.0389	1299
240.000	26.38764	0.11395	12.557917	433.9641	4655.5	4882.9	112.011	60.32	72.85	0.00007	-0.0383	1278
250.000	26.09957	0.11060	12.048316	419.9590	5378.4	5608.2	115.009	61.20	73.89	0.00015	-0.0376	1257
260.000	25.81359	0.10752	11.572292	405.7892	6112.9	6345.3	117.933	62.23	75.11	0.00030	-0.0368	1236
270.000	25.52894	0.10469	11.125914	391.3838	6862.3	7097.3	120.794	63.38	76.49	0.00058	-0.0358	1214
280.000	25.24477	0.10209	10.705719	376.6893	7628.9	7866.5	123.602	64.63	78.00	0.00107	-0.0348	1191
290.000	24.96023	0.09969	10.308647	361.6701	8414.4	8654.8	126.366	65.95	79.62	0.00189	-0.0337	1167
300.000	24.67440	0.09749	9.931960	346.3067	9219.9	9463.0	129.091	67.30	81.34	0.00318	-0.0325	1142
310.000	24.38630	0.09546	9.573176	330.5938	10045.8	10291.8	131.784	68.68	83.13	0.00516	-0.0312	1117
320.000	24.09488	0.09359	9.230028	314.5398	10892.1	11141.1	134.450	70.05	84.98	0.00810	-0.0298	1091
330.000	23.79901	0.09188	8.900406	298.1645	11758.4	12010.5	137.092	71.41	86.89	0.01232	-0.0283	1064
340.000	23.49743	0.09033	8.582318	281.4976	12643.8	12899.2	139.715	72.75	88.86	0.01819	-0.0268	1035
350.000	23.18876	0.08891	8.273854	264.5770	13547.7	13806.4	142.321	74.05	90.89	0.02614	-0.0251	1006
360.000	22.87144	0.08764	7.973144	247.4467	14469.0	14731.3	144.913	75.31	92.99	0.03662	-0.0232	976
370.000	22.54370	0.08651	7.678319	230.1550	15407.2	15673.3	147.493	76.52	95.17	0.05011	-0.0211	945
380.000	22.20347	0.08553	7.387462	212.7523	16361.9	16632.1	150.064	77.69	97.46	0.06705	-0.0188	912
390.000	21.84835	0.08469	7.098563	195.2896	17333.5	17608.1	152.629	78.78	99.86	0.08789	-0.0161	878
400.000	21.47543	0.08401	6.809435	177.8160	18323.2	18602.6	155.191	79.80	102.42	0.11302	-0.0130	843
410.000	21.08113	0.08349	6.517626	160.3772	19333.4	19618.0	157.753	80.74	105.17	0.14282	-0.0095	807
420.000	20.66095	0.08316	6.220280	143.0133	20367.9	20658.3	160.322	81.57	108.18	0.17766	-0.0052	769
430.000	20.20899	0.08304	5.913925	125.7567	21432.7	21729.6	162.904	82.29	111.57	0.21794	0.0000	729
440.000	19.71730	0.08318	5.594130	108.6292	22536.0	22840.3	165.510	82.90	115.51	0.26416	0.0066	687
450.000	19.17450	0.08363	5.254905	91.6381	23689.9	24002.8	168.155	83.47	120.35	0.31695	0.0150	642
460.000	18.56324	0.08451	4.887553	74.7686	24911.7	25234.9	170.866	84.10	126.75	0.37720	0.0263	593
470.000	17.85450	0.08599	4.478156	57.9684	26228.0	26564.0	173.687	85.10	136.10	0.44599	0.0425	537
480.000	16.99180	0.08848	4.000947	41.1047	27685.0	28038.1	176.704	87.12	151.87	0.52450	0.0678	472
490.000	15.83053	0.09303	3.393647	23.7988	29388.1	29767.1	180.134	91.88	186.50	0.61342	0.1156	388
495.144	14.95826	0.09743	2.966333	14.2967	30466.0	30867.1	182.285	97.02	233.22	0.66280	0.1682	327
495.144	3.02263	0.48217	0.627531	4.6913	42612.2	44597.3	210.014	156.09	611.01	0.66280	1.1323	239
500.000	2.60580	0.55386	0.501206	8.5303	44525.5	46828.1	214.435	135.55	352.39	0.68598	1.1189	263
510.000	2.21406	0.63908	0.379020	13.8952	46849.4	49559.3	219.851	113.83	221.39	0.71625	1.0778	290
515.000	2.09367	0.66927	0.341921	16.0236	47723.8	50589.6	221.863	106.87	192.59	0.72919	1.0537	300
520.000	1.99734	0.69480	0.312742	17.9327	48495.4	51499.4	223.623	101.33	172.43	0.74103	1.0280	308
530.000	1.84927	0.73627	0.269236	21.2835	49834.9	53079.4	226.632	93.05	145.83	0.76223	0.9736	322
540.000	1.73792	0.76894	0.238006	24.1907	50995.6	54448.0	229.193	87.18	129.04	0.78022	0.9172	334
560.000	1.57604	0.81764	0.195711	29.1303	53002.6	56809.6	233.488	79.61	109.26	0.80981	0.8056	353
580.000	1.45983	0.85228	0.168198	33.2956	54765.9	58875.9	237.116	75.23	98.35	0.83240	0.7014	368
600.000	1.36978	0.87804	0.148802	36.9439	56391.9	60772.1	240.329	72.62	91.78	0.85062	0.6079	381
620.000	1.29651	0.89774	0.134368	40.2213	57935.7	62563.6	243.260	71.10	87.66	0.86563	0.5258	393
640.000	1.23485	0.91311	0.123190	43.2202	59429.6	64288.5	245.999	70.30	85.04	0.87716	0.4545	403
660.000	1.18167	0.92528	0.114264	46.0028	60894.0	65971.5	248.590	69.98	83.39	0.88661	0.3930	413
680.000	1.13495	0.93504	0.106958	48.6133	62342.1	67628.7	251.064	69.99	82.41	0.89445	0.3402	422
700.000	1.09328	0.94294	0.100852	51.0843	63783.1	69271.2	253.445	70.24	81.90	0.90101	0.2949	431
720.000	1.05570	0.94938	0.095662	53.4405	65223.6	70907.0	255.750	70.66	81.73	0.90657	0.2560	439
740.000	1.02147	0.95468	0.091184	55.7009	66668.0	72541.9	257.990	71.21	81.80	0.91131	0.2225	446
760.000	0.99006	0.95905	0.087270	57.8807	68119.8	74180.0	260.174	71.85	82.05	0.91540	0.1938	454
780.000	0.96104	0.96267	0.083811	59.9921	69581.5	75824.7	262.310	72.55	82.44	0.91896	0.1690	461
800.000	0.93408	0.96570	0.080725	62.0448	71054.8	77478.2	264.403	73.30	82.93	0.92209	0.1476	468

Table 17. Properties of methanol along isobars - Continued

T K	ρ mol/l	Z	$\partial P/\partial T$ bar/K	$\partial P/\partial \rho$ bar/(mol/l)	E J/mol	H J/mol	S J/(mol-K)	C_v J/(mol-K)	C_p J/(mol-K)	f/P	μ K/bar	W m/s
70.00000 bar												
175.590	28.36119	0.16906	17.137853	532.7856	-49.1	197.7	89.703	59.14	71.17	0.00000	-0.0397	1414
180.000	28.22003	0.16574	16.737750	525.4531	293.2	541.2	91.467	59.00	71.05	0.00000	-0.0397	1405
190.000	27.90486	0.15879	15.893363	509.5586	1049.9	1300.7	95.300	58.76	70.85	0.00000	-0.0398	1384
200.000	27.59600	0.15254	15.125901	494.4571	1785.4	2039.1	98.928	58.68	70.83	0.00000	-0.0398	1364
210.000	27.29282	0.14689	14.424657	479.9130	2506.6	2763.1	102.384	58.78	71.00	0.00000	-0.0397	1345
220.000	26.99464	0.14176	13.780774	465.7280	3219.9	3479.2	105.696	59.08	71.39	0.00001	-0.0394	1325
230.000	26.70080	0.13709	13.186856	451.7355	3931.2	4193.4	108.884	59.59	72.01	0.00002	-0.0389	1305
240.000	26.41058	0.13282	12.636664	437.7964	4645.7	4910.8	111.969	60.29	72.84	0.00006	-0.0383	1284
250.000	26.12327	0.12891	12.124885	423.7956	5368.1	5636.0	114.967	61.16	73.87	0.00013	-0.0376	1263
260.000	25.83812	0.12532	11.646943	409.6398	6102.0	6373.0	117.890	62.19	75.09	0.00026	-0.0368	1242
270.000	25.55436	0.12202	11.198886	395.2566	6850.8	7124.7	120.751	63.34	76.46	0.00051	-0.0359	1220
280.000	25.27118	0.11898	10.777243	380.5916	7616.7	7893.7	123.558	64.59	77.97	0.00094	-0.0348	1197
290.000	24.98773	0.11618	10.378944	365.6080	8401.4	8681.6	126.320	65.90	79.59	0.00164	-0.0337	1173
300.000	24.70311	0.11360	10.001250	350.2850	9206.1	9489.4	129.044	67.26	81.29	0.00277	-0.0325	1149
310.000	24.41636	0.11123	9.641683	334.6165	10031.1	10317.8	131.736	68.63	83.07	0.00450	-0.0313	1124
320.000	24.12647	0.10905	9.297982	318.6100	10876.8	11166.5	134.400	70.00	84.92	0.00705	-0.0299	1098
330.000	23.83232	0.10705	8.968048	302.2844	11741.4	12035.1	137.040	71.36	86.82	0.01072	-0.0285	1071
340.000	23.53270	0.10522	8.649909	285.6690	12625.6	12923.0	139.660	72.69	88.77	0.01583	-0.0269	1043
350.000	23.22626	0.10357	8.341678	268.8012	13527.9	13829.3	142.263	73.99	90.78	0.02274	-0.0252	1014
360.000	22.91151	0.10207	8.041522	251.7249	14447.5	14753.0	144.851	75.24	92.86	0.03185	-0.0234	984
370.000	22.58674	0.10074	7.747616	234.4887	15383.6	15693.5	147.428	76.45	95.01	0.04357	-0.0214	953
380.000	22.25000	0.09957	7.458108	217.1437	16335.9	16650.5	149.994	77.60	97.26	0.05830	-0.0191	921
390.000	21.89898	0.09858	7.171059	199.7414	17304.7	17624.4	152.554	78.69	99.62	0.07640	-0.0165	888
400.000	21.53096	0.09775	6.884404	182.3331	18291.1	18616.2	155.109	79.70	102.12	0.09824	-0.0136	853
410.000	21.14260	0.09712	6.595844	164.9666	19297.2	19628.3	157.663	80.61	104.80	0.12413	-0.0101	818
420.000	20.72975	0.09670	6.302745	147.6854	20326.7	20664.4	160.221	81.42	107.71	0.15440	-0.0061	780
430.000	20.28704	0.09651	6.001964	130.5267	21385.1	21730.2	162.791	82.11	110.94	0.18941	-0.0011	741
440.000	19.80734	0.09660	5.689584	113.5195	22480.3	22833.7	165.380	82.69	114.67	0.22957	0.0050	700
450.000	19.28071	0.09703	5.360458	96.6819	23623.1	23986.2	168.003	83.19	119.17	0.27548	0.0128	657
460.000	18.69248	0.09791	5.007396	80.0175	24829.3	25203.8	170.682	83.73	124.98	0.32788	0.0231	610
470.000	18.01919	0.09941	4.619502	63.5071	26121.8	26510.3	173.454	84.57	133.21	0.38777	0.0374	558
480.000	17.21874	0.10186	4.178276	47.0918	27537.8	27944.3	176.387	86.28	146.30	0.45620	0.0585	499
490.000	16.19913	0.10607	3.645887	30.6162	29149.6	29581.8	179.628	90.24	171.31	0.53390	0.0938	425
500.000	14.65187	0.11492	2.907027	13.5390	31177.5	31655.3	183.656	100.48	245.86	0.61947	0.1756	321
504.058	13.48576	0.12385	2.419183	5.7834	32376.6	32895.7	186.072	110.33	390.80	0.65461	0.2777	252
504.058	4.06854	0.41053	0.822814	2.3807	41533.1	43253.6	206.621	161.77	1027.75	0.65461	1.0001	217
510.000	3.17553	0.51985	0.596519	7.4102	44428.7	46633.0	213.363	135.27	378.13	0.67191	0.9934	254
515.000	2.86317	0.57096	0.509308	10.3155	45803.6	48248.4	216.515	123.30	281.27	0.68829	0.9786	270
520.000	2.65512	0.60978	0.450233	12.7417	46884.1	49520.5	218.970	114.65	232.00	0.70332	0.9611	283
530.000	2.37727	0.66820	0.371636	16.7822	48603.4	51547.9	222.835	102.59	179.77	0.72871	0.9212	302
540.000	2.19035	0.71179	0.320062	20.1573	49997.3	53193.2	225.914	94.49	151.69	0.75015	0.8772	317
560.000	1.94118	0.77448	0.254823	25.7383	52285.6	55891.6	230.824	84.39	121.88	0.78515	0.7845	340
580.000	1.77439	0.81806	0.214628	30.3532	54216.3	58161.3	234.810	78.61	106.56	0.81185	0.6935	358
600.000	1.65051	0.85015	0.187186	34.3502	55954.6	60195.7	238.257	75.14	97.60	0.83328	0.6089	373
620.000	1.55261	0.87460	0.167204	37.9131	57579.1	62087.7	241.354	73.04	92.01	0.85084	0.5328	386
640.000	1.47198	0.89368	0.151982	41.1534	59133.7	63889.2	244.215	71.83	88.41	0.86443	0.4654	397
660.000	1.40360	0.90882	0.139982	44.1445	60645.2	65632.4	246.899	71.21	86.08	0.87557	0.4064	408
680.000	1.34430	0.92099	0.130264	46.9379	62130.9	67338.0	249.445	71.00	84.60	0.88479	0.3551	417
700.000	1.29201	0.93089	0.122220	49.5710	63602.3	69020.2	251.884	71.07	83.71	0.89250	0.3105	426
720.000	1.24528	0.93900	0.115439	52.0719	65067.8	70689.0	254.235	71.35	83.24	0.89899	0.2719	435
740.000	1.20304	0.94569	0.109631	54.4626	66533.1	72351.6	256.513	71.79	83.07	0.90453	0.2383	443
760.000	1.16453	0.95125	0.104591	56.7600	68002.4	74013.4	258.729	72.33	83.14	0.90928	0.2092	451
780.000	1.12916	0.95590	0.100165	58.9780	69478.9	75678.2	260.891	72.96	83.37	0.91339	0.1840	458
800.000	1.09646	0.95979	0.096239	61.1278	70964.9	77349.0	263.006	73.65	83.73	0.91698	0.1620	465

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Table 17. Properties of methanol along isobars - Continued

<i>T</i>	<i>v</i>	<i>Z</i>	$\partial P/\partial T$	$\partial P/\partial \rho$	<i>E</i>	<i>H</i>	<i>S</i>	<i>C_v</i>	<i>C_p</i>	<i>J/P</i>	μ	<i>W</i>
°C	mol/l		bar/K	bar/(mol/l)	J/mol	J/mol	J/(mol·K)	J/(mol·K)	J/(mol·K)		K/bar	m/s
75.00000 bar												
175.590	28.37055	0.18107	17.187638	534.8267	-52.6	211.8	89.683	59.12	71.17	0.00000	-0.0397	1417
180.000	28.22952	0.17752	16.786468	527.4725	289.7	555.3	91.447	58.98	71.05	0.00000	-0.0397	1408
190.000	27.91465	0.17007	15.939873	511.5365	1046.2	1314.9	95.280	58.74	70.85	0.00000	-0.0398	1387
200.000	27.60610	0.16338	15.170463	496.4031	1781.5	2053.2	98.908	58.66	70.83	0.00000	-0.0398	1367
210.000	27.30322	0.15732	14.467492	481.8354	2502.5	2777.2	102.364	58.76	71.00	0.00000	-0.0397	1347
220.000	27.00536	0.15183	13.822075	467.6342	3215.6	3493.3	105.675	59.06	71.39	0.00001	-0.0394	1328
230.000	26.71184	0.14682	13.226792	453.6324	3926.6	4207.4	108.864	59.57	72.00	0.00002	-0.0389	1308
240.000	26.42197	0.14225	12.675387	439.6900	4640.9	4924.8	111.949	60.27	72.83	0.00006	-0.0384	1287
250.000	26.13504	0.13806	12.162530	425.6913	5363.0	5649.9	114.946	61.15	73.87	0.00012	-0.0376	1266
260.000	25.85030	0.13421	11.683637	411.5424	6096.6	6386.8	117.869	62.17	75.08	0.00025	-0.0368	1245
270.000	25.56698	0.13067	11.234748	397.1702	6845.1	7138.4	120.729	63.33	76.45	0.00048	-0.0359	1223
280.000	25.28428	0.12741	10.812383	382.5198	7610.6	7907.3	123.536	64.57	77.96	0.00088	-0.0349	1200
290.000	25.00137	0.12441	10.413472	367.5537	8395.0	8695.0	126.297	65.88	79.57	0.00155	-0.0337	1177
300.000	24.71734	0.12165	10.035272	352.2508	9199.2	9502.7	129.021	67.23	81.27	0.00261	-0.0326	1152
310.000	24.43126	0.11910	9.675308	336.6043	10023.8	10330.7	131.712	68.61	83.05	0.00423	-0.0313	1127
320.000	24.14212	0.11676	9.331321	320.6213	10868.5	11179.2	134.375	69.98	84.89	0.00663	-0.0300	1101
330.000	23.84880	0.11462	9.001217	304.3203	11733.0	12047.5	137.014	71.33	86.78	0.01008	-0.0285	1074
340.000	23.55014	0.11266	8.683032	287.7303	12616.5	12935.0	139.633	72.66	88.72	0.01488	-0.0270	1047
350.000	23.24479	0.11087	8.374893	270.8885	13518.1	13840.7	142.234	73.96	90.73	0.02138	-0.0253	1018
360.000	22.93129	0.10927	8.074980	253.8387	14436.8	14763.9	144.821	75.21	92.79	0.02995	-0.0235	988
370.000	22.60797	0.10784	7.781490	236.6295	15371.9	15703.7	147.395	76.41	94.94	0.04096	-0.0215	957
380.000	22.27291	0.10658	7.492599	219.3123	16323.1	16659.8	149.960	77.56	97.17	0.05480	-0.0193	926
390.000	21.92388	0.10550	7.206406	201.9390	17290.6	17632.7	152.516	78.64	99.51	0.07181	-0.0167	892
400.000	21.55822	0.10460	6.920895	184.5617	18275.3	18623.2	155.068	79.64	101.98	0.09233	-0.0138	858
410.000	21.17271	0.10391	6.633836	167.2291	19279.5	19633.7	157.619	80.55	104.62	0.11666	-0.0105	823
420.000	20.76334	0.10344	6.342693	149.9863	20306.6	20667.8	160.172	81.35	107.48	0.14511	-0.0065	786
430.000	20.32500	0.10321	6.044468	132.8724	21362.0	21731.0	162.735	82.03	110.65	0.17800	-0.0017	747
440.000	19.85092	0.10327	5.735459	115.9194	22453.2	22831.0	165.316	82.58	114.27	0.21575	0.0043	707
450.000	19.33177	0.10369	5.410874	99.1499	23590.9	23978.9	167.929	83.06	118.62	0.25890	0.0118	664
460.000	18.75398	0.10456	5.064125	82.5744	24790.0	25189.9	170.594	83.56	124.18	0.30817	0.0217	618
470.000	18.09630	0.10606	4.685470	66.1861	26071.8	26486.3	173.344	84.34	131.94	0.36449	0.0351	568
480.000	17.32181	0.10849	4.258948	49.9503	27470.3	27903.3	176.241	85.93	144.02	0.42889	0.0546	511
490.000	16.35450	0.11256	3.753930	33.7725	29047.6	29506.2	179.411	89.61	166.05	0.50208	0.0858	441
500.000	14.97642	0.12046	3.090594	17.3671	30966.6	31467.4	183.212	98.83	221.43	0.58288	0.1490	348
508.107	12.45096	0.14258	2.102576	2.5998	33531.7	34134.1	188.418	122.60	679.94	0.64742	0.3780	212
508.107	4.86000	0.36529	0.956279	1.2721	40712.5	42255.7	204.402	163.99	1710.36	0.64742	0.9334	203
510.000	4.12584	0.42869	0.804646	3.4496	42391.7	44209.5	208.336	151.26	713.58	0.64820	0.9454	225
515.000	3.43822	0.50943	0.635977	7.2139	44515.6	46697.0	213.192	133.49	377.75	0.66690	0.9397	252
520.000	3.09559	0.56037	0.544773	10.0505	45892.9	48315.7	216.315	122.32	282.56	0.68362	0.9267	269
530.000	2.69704	0.63105	0.435951	14.5440	47901.2	50682.1	220.828	107.73	202.94	0.71139	0.8935	292
540.000	2.45141	0.68142	0.369330	18.1878	49447.3	52506.8	224.242	98.30	165.69	0.73467	0.8551	309
560.000	2.14191	0.75203	0.288707	24.1051	51902.3	55403.8	229.515	86.80	129.01	0.77247	0.7713	334
580.000	1.94309	0.80039	0.240595	28.9422	53926.1	57785.9	233.699	80.29	111.02	0.80126	0.6867	353
600.000	1.79878	0.83579	0.208315	33.1073	55724.8	59894.3	237.271	76.38	100.69	0.82433	0.6067	369
620.000	1.68646	0.86269	0.185075	36.8062	57392.1	61839.3	240.455	74.00	94.28	0.84319	0.5337	382
640.000	1.59497	0.88367	0.167512	40.1610	58978.5	63680.7	243.380	72.58	90.16	0.85784	0.4685	394
660.000	1.51803	0.90033	0.153754	43.2510	60514.4	65455.1	246.111	71.81	87.47	0.86985	0.4109	405
680.000	1.45176	0.91374	0.142670	46.1313	62019.5	67185.6	248.695	71.49	85.72	0.87978	0.3605	415
700.000	1.39363	0.92465	0.133534	48.8415	63506.6	68888.2	251.163	71.47	84.63	0.88808	0.3165	424
720.000	1.34191	0.93361	0.125862	51.4116	64985.0	70574.0	253.538	71.69	84.01	0.89507	0.2781	433
740.000	1.29536	0.94103	0.119314	53.8646	66461.0	72250.9	255.836	72.07	83.73	0.90102	0.2447	441
760.000	1.25305	0.94720	0.113649	56.2186	67939.4	73924.8	258.068	72.57	83.70	0.90611	0.2156	449
780.000	1.21430	0.95237	0.108689	58.4880	69423.5	75599.9	260.243	73.17	83.85	0.91052	0.1902	457
800.000	1.17856	0.95672	0.104300	60.6848	70916.1	77279.8	262.370	73.83	84.15	0.91436	0.1680	464

Table 17. Properties of methanol along isobars - Continued

T K	ρ mol/l	Z	$\partial P/\partial T$ bar/K	$\partial P/\partial \rho$ bar/(mol/l)	E J/mol	H J/mol	S J/(mol-K)	C_v J/(mol-K)	C_p J/(mol-K)	f/P	μ K/bar	W m/s
80.94644 bar												
175.590	28.38165	0.19535	17.246177	537.2352	-56.6	228.6	89.659	59.11	71.17	0.00000	-0.0397	1420
180.000	28.24077	0.19152	16.843752	529.8554	285.5	572.1	91.424	58.96	71.05	0.00000	-0.0397	1411
190.000	27.92625	0.18348	15.994559	513.8702	1041.8	1331.6	95.256	58.72	70.85	0.00000	-0.0398	1391
200.000	27.61805	0.17625	15.222855	498.6988	1776.8	2069.9	98.884	58.64	70.82	0.00000	-0.0398	1371
210.000	27.31553	0.16972	14.517851	484.1030	2497.6	2793.9	102.340	58.74	71.00	0.00000	-0.0397	1351
220.000	27.01804	0.16379	13.870626	469.8827	3210.4	3510.0	105.651	59.04	71.38	0.00001	-0.0394	1331
230.000	26.72492	0.15839	13.273734	455.8697	3921.2	4224.1	108.840	59.55	72.00	0.00002	-0.0389	1311
240.000	26.43546	0.15345	12.720896	441.9232	4635.2	4941.4	111.924	60.25	72.83	0.00005	-0.0384	1291
250.000	26.14897	0.14892	12.206769	427.9269	5356.9	5666.5	114.921	61.13	73.86	0.00011	-0.0377	1270
260.000	25.86471	0.14477	11.726753	413.7860	6090.3	6403.2	117.844	62.15	75.07	0.00023	-0.0368	1248
270.000	25.58191	0.14095	11.276878	399.4268	6838.3	7154.7	120.703	63.30	76.44	0.00045	-0.0359	1226
280.000	25.29978	0.13743	10.853659	384.7936	7603.5	7923.4	123.510	64.55	77.94	0.00083	-0.0349	1204
290.000	25.01750	0.13419	10.454019	369.8483	8387.4	8711.0	126.271	65.86	79.55	0.00145	-0.0338	1180
300.000	24.73417	0.13120	10.075217	354.5691	9191.1	9518.4	128.993	67.21	81.25	0.00244	-0.0326	1156
310.000	24.44887	0.12845	9.714776	338.9487	10015.1	10346.2	131.683	68.58	83.02	0.00396	-0.0314	1131
320.000	24.16059	0.12592	9.370440	322.9934	10859.3	11194.3	134.345	69.95	84.85	0.00620	-0.0300	1105
330.000	23.86827	0.12360	9.040123	306.7215	11723.1	12062.3	136.983	71.30	86.74	0.00943	-0.0286	1079
340.000	23.57072	0.12148	8.721869	290.1615	12605.8	12949.3	139.600	72.63	88.67	0.01391	-0.0271	1051
350.000	23.26664	0.11955	8.413818	273.3502	13506.5	13854.4	142.200	73.92	90.66	0.01998	-0.0255	1022
360.000	22.95460	0.11781	8.114168	256.3315	14424.2	14776.9	144.785	75.17	92.72	0.02799	-0.0237	993
370.000	22.63296	0.11626	7.821140	239.1538	15358.2	15715.9	147.357	76.37	94.85	0.03828	-0.0217	962
380.000	22.29987	0.11489	7.532939	221.8689	16308.0	16671.0	149.919	77.51	97.06	0.05120	-0.0195	931
390.000	21.95314	0.11371	7.247706	204.5293	17273.9	17642.6	152.472	78.59	99.37	0.06710	-0.0170	898
400.000	21.59021	0.11273	6.963481	187.1875	18256.7	18631.7	155.020	79.59	101.82	0.08626	-0.0141	864
410.000	21.20799	0.11196	6.678109	169.8936	19258.6	19640.3	157.566	80.49	104.41	0.10899	-0.0108	829
420.000	20.80263	0.11143	6.389163	152.6940	20283.0	20672.1	160.114	81.27	107.22	0.13556	-0.0070	792
430.000	20.36930	0.11115	6.093797	135.6302	21334.9	21732.3	162.670	81.93	110.31	0.16628	-0.0023	754
440.000	19.90161	0.11118	5.788543	118.7372	22421.7	22828.4	165.242	82.47	113.82	0.20154	0.0034	715
450.000	19.39089	0.11157	5.468976	102.0421	23553.5	23971.0	167.843	82.92	118.00	0.24185	0.0107	673
460.000	18.82472	0.11243	5.129129	85.5626	24744.5	25174.5	170.491	83.38	123.29	0.28790	0.0200	628
470.000	18.18409	0.11391	4.760402	69.3036	26014.7	26459.9	173.218	84.08	130.56	0.34056	0.0327	579
480.000	17.43706	0.11632	4.349235	53.2522	27394.4	27858.7	176.077	85.56	141.63	0.40081	0.0505	524
490.000	16.52177	0.12026	3.871207	37.3637	28936.8	29426.7	179.175	88.98	160.97	0.46935	0.0779	459
500.000	15.28299	0.12740	3.270779	21.5146	30764.1	31293.7	182.787	97.40	203.84	0.54519	0.1276	374
510.000	12.91577	0.14780	2.309992	5.1555	33479.5	34106.3	188.284	124.15	440.58	0.61832	0.2933	238
515.000	4.66372	0.40534	0.889090	2.9586	42150.1	43885.7	207.439	149.41	782.03	0.64017	0.8824	219
520.000	3.81552	0.49069	0.698513	6.6544	44413.7	46535.2	212.556	132.78	394.68	0.65947	0.8836	248
530.000	3.14880	0.58337	0.528603	11.8670	46963.0	49533.7	218.274	114.21	240.07	0.69053	0.8595	279
540.000	2.80108	0.64364	0.437051	15.8810	48739.8	51629.6	222.197	102.96	185.74	0.71609	0.8275	299
560.000	2.39882	0.72473	0.333363	22.2241	51423.6	54798.0	227.964	89.68	138.34	0.75726	0.7539	327
580.000	2.15455	0.77907	0.274131	27.3267	53567.5	57324.5	232.402	82.28	116.64	0.78856	0.6767	347
600.000	1.98239	0.81850	0.235268	31.6873	55442.3	59525.6	236.132	77.84	104.51	0.81357	0.6020	364
620.000	1.85088	0.84838	0.207675	35.5426	57162.4	61535.8	239.422	75.11	97.07	0.83398	0.5328	378
640.000	1.74518	0.87165	0.187026	39.0284	58787.8	63426.1	242.425	73.46	92.29	0.84990	0.4702	391
660.000	1.65718	0.89012	0.170969	42.2313	60353.7	65238.3	245.214	72.51	89.15	0.86295	0.4145	402
680.000	1.58198	0.90501	0.158109	45.2105	61882.3	66999.1	247.843	72.06	87.08	0.87375	0.3653	412
700.000	1.51644	0.91714	0.147562	48.0088	63388.5	68726.5	250.347	71.95	85.75	0.88276	0.3221	422
720.000	1.45844	0.92713	0.138743	50.6579	64882.5	70432.7	252.751	72.09	84.95	0.89035	0.2842	431
740.000	1.40647	0.93541	0.131245	53.1822	66371.5	72126.9	255.072	72.40	84.52	0.89680	0.2510	440
760.000	1.35941	0.94232	0.124781	55.6010	67860.9	73815.4	257.324	72.86	84.37	0.90232	0.2220	448
780.000	1.31646	0.94811	0.119140	57.9295	69354.3	75503.1	259.516	73.41	84.43	0.90709	0.1966	456
800.000	1.27696	0.95300	0.114164	60.1804	70854.8	77193.8	261.656	74.03	84.66	0.91124	0.1743	463

Table 17. Properties of methanol along isobars - Continued

T K	ρ mol/l	Z	$\partial P/\partial T$ bar/K	$\partial P/\partial \rho$ bar/(mol/l)	E J/mol	H J/mol	S J/(mol-K)	C_v J/(mol-K)	C_p J/(mol-K)	f/P	μ K/bar	W m/s
85.00000 bar												
175.590	28.38918	0.20508	17.285677	538.8656	-59.4	240.0	89.643	59.09	71.17	0.00000	-0.0397	1423
180.000	28.24841	0.20106	16.882403	531.4684	282.7	583.6	91.407	58.95	71.05	0.00000	-0.0397	1413
190.000	27.93413	0.19262	16.031456	515.4497	1038.8	1343.1	95.240	58.71	70.85	0.00000	-0.0398	1393
200.000	27.62616	0.18503	15.258204	500.2524	1773.7	2081.4	98.868	58.63	70.82	0.00000	-0.0398	1373
210.000	27.32389	0.17816	14.551825	485.6376	2494.3	2805.3	102.324	58.73	70.99	0.00000	-0.0397	1353
220.000	27.02666	0.17194	13.903378	471.4042	3206.9	3521.4	105.635	59.03	71.38	0.00001	-0.0394	1333
230.000	26.73380	0.16626	13.305398	457.3835	3917.5	4235.4	108.823	59.54	71.99	0.00002	-0.0390	1313
240.000	26.44462	0.16108	12.751592	443.4342	4631.3	4952.7	111.908	60.24	72.82	0.00005	-0.0384	1293
250.000	26.15843	0.15633	12.236603	429.4395	5352.8	5677.7	114.904	61.11	73.85	0.00011	-0.0377	1272
260.000	25.87449	0.15196	11.755834	415.3044	6085.9	6414.4	117.826	62.14	75.06	0.00022	-0.0368	1251
270.000	25.59204	0.14795	11.305283	400.9536	6833.7	7165.9	120.686	63.29	76.43	0.00043	-0.0359	1229
280.000	25.31030	0.14425	10.881484	386.3320	7598.6	7934.4	123.492	64.53	77.93	0.00079	-0.0349	1206
290.000	25.02843	0.14085	10.481349	371.4008	8382.2	8721.9	126.252	65.84	79.54	0.00139	-0.0338	1183
300.000	24.74558	0.13771	10.102135	356.1376	9185.7	9529.2	128.974	67.19	81.23	0.00234	-0.0326	1159
310.000	24.46080	0.13482	9.741366	340.5348	10009.3	10356.8	131.664	68.56	83.00	0.00379	-0.0314	1134
320.000	24.17311	0.13216	9.396788	324.5984	10853.0	11204.7	134.325	69.93	84.83	0.00594	-0.0301	1108
330.000	23.88145	0.12972	9.066319	308.3462	11716.4	12072.3	136.962	71.28	86.71	0.00903	-0.0287	1081
340.000	23.58465	0.12749	8.748009	291.8064	12598.6	12959.0	139.579	72.61	88.64	0.01333	-0.0272	1054
350.000	23.28142	0.12546	8.440006	275.0158	13498.7	13863.8	142.177	73.90	90.62	0.01915	-0.0255	1025
360.000	22.97036	0.12363	8.140520	258.0180	14415.7	14785.8	144.761	75.15	92.67	0.02681	-0.0237	996
370.000	22.64985	0.12199	7.847785	240.8616	15348.9	15724.2	147.331	76.34	94.79	0.03667	-0.0218	966
380.000	22.31806	0.12054	7.560028	223.5983	16297.9	16678.7	149.891	77.48	96.98	0.04904	-0.0196	934
390.000	21.97287	0.11930	7.275418	206.2810	17262.7	17649.5	152.443	78.56	99.28	0.06426	-0.0171	902
400.000	21.61176	0.11826	6.992026	188.9627	18244.2	18637.5	154.988	79.55	101.70	0.08261	-0.0143	868
410.000	21.23172	0.11744	6.707748	171.6941	19244.6	19645.0	157.531	80.44	104.28	0.10437	-0.0111	833
420.000	20.82902	0.11686	6.420223	154.5227	20267.1	20675.2	160.075	81.22	107.04	0.12981	-0.0073	797
430.000	20.39898	0.11655	6.126702	137.4911	21316.7	21733.4	162.627	81.87	110.08	0.15923	-0.0027	759
440.000	19.93547	0.11655	5.823863	120.6364	22400.6	22826.9	165.193	82.40	113.53	0.19300	0.0029	720
450.000	19.43024	0.11692	5.507502	103.9885	23528.6	23966.1	167.786	82.83	117.60	0.23161	0.0099	678
460.000	18.87155	0.11777	5.172023	87.5690	24714.4	25164.8	170.424	83.26	122.72	0.27572	0.0190	634
470.000	18.24172	0.11924	4.809493	71.3896	25977.1	26443.0	173.135	83.92	129.69	0.32617	0.0311	586
480.000	17.51165	0.12162	4.407688	55.4489	27345.1	27830.5	175.970	85.32	140.17	0.38392	0.0480	533
490.000	16.62695	0.12548	3.945416	39.7268	28866.6	29377.8	179.026	88.60	158.05	0.44966	0.0733	470
500.000	15.46058	0.13225	3.377879	24.1656	30645.4	31195.2	182.537	96.63	195.40	0.52250	0.1165	390
510.000	13.51448	0.14832	2.557061	8.5852	33083.0	33711.9	187.450	120.72	333.39	0.59310	0.2273	272
515.000	10.22909	0.19406	1.655381	0.6916	35975.8	36806.8	193.562	147.29	2097.44	0.61932	0.5570	175
520.000	4.57868	0.42938	0.853143	4.1335	43022.2	44878.7	209.182	141.17	577.94	0.64239	0.8480	229
530.000	3.52010	0.54796	0.605403	10.0143	46236.8	48651.5	216.379	118.86	275.40	0.67608	0.8357	269
540.000	3.06974	0.61672	0.490130	14.3235	48218.3	50987.2	220.751	106.21	202.32	0.70330	0.8082	291
560.000	2.58654	0.70579	0.366837	20.9797	51082.1	54368.4	226.906	91.64	145.33	0.74682	0.7411	322
580.000	2.30586	0.76440	0.298776	26.2664	53314.7	57001.0	231.530	83.62	120.69	0.77983	0.6688	343
600.000	2.11224	0.80666	0.254845	30.7587	55244.0	59268.2	235.372	78.82	107.22	0.80616	0.5977	361
620.000	1.96628	0.83858	0.223961	34.7178	57001.5	61324.4	238.738	75.86	99.03	0.82763	0.5311	376
640.000	1.85005	0.86342	0.201004	38.2898	58654.2	63248.7	241.795	74.05	93.78	0.84443	0.4703	389
660.000	1.75393	0.88313	0.183243	41.5667	60241.0	65087.2	244.625	72.99	90.32	0.85819	0.4159	400
680.000	1.67224	0.89903	0.169074	44.6108	61786.0	66869.0	247.285	72.44	88.02	0.86958	0.3676	411
700.000	1.60136	0.91200	0.157492	47.4666	63305.5	68613.5	249.814	72.26	86.53	0.87909	0.3250	421
720.000	1.53885	0.92268	0.147834	50.1675	64810.3	70333.9	252.238	72.35	85.59	0.88710	0.2876	430
740.000	1.48301	0.93155	0.139645	52.7386	66308.3	72039.9	254.576	72.63	85.07	0.89390	0.2546	439
760.000	1.43258	0.93896	0.132600	55.1999	67805.2	73738.6	256.841	73.04	84.84	0.89972	0.2258	447
780.000	1.38665	0.94519	0.126465	57.5673	69305.1	75435.0	259.044	73.57	84.84	0.90473	0.2004	455
800.000	1.34450	0.95045	0.121064	59.8538	70811.2	77133.2	261.194	74.17	85.01	0.90910	0.1781	462

THERMODYNAMIC PROPERTIES OF METHANE

Table 17. Properties of methanol along isobars - Continued

<i>T</i>	ρ	<i>Z</i>	$\partial P/\partial T$	$\partial P/\partial \rho$	<i>E</i>	<i>H</i>	<i>S</i>	<i>C_v</i>	<i>C_p</i>	<i>f/P</i>	μ	<i>W</i>
K	mol/l		bar/K	bar/(mol/l)	J/mol	J/mol	J/(mol·K)	J/(mol·K)	J/(mol·K)		K/bar	m/s
90.00000 bar												
175.590	28.39844	0.21708	17.333960	540.8644	-62.8	254.2	89.623	59.08	71.17	0.00000	-0.0397	1426
180.000	28.25780	0.21281	16.929654	533.4459	279.2	597.7	91.388	58.94	71.05	0.00000	-0.0397	1416
190.000	27.94381	0.20388	16.076556	517.3858	1035.1	1357.2	95.220	58.70	70.85	0.00000	-0.0398	1396
200.000	27.63614	0.19584	15.301408	502.1566	1769.8	2095.5	98.848	58.61	70.82	0.00000	-0.0398	1376
210.000	27.33417	0.18857	14.593348	487.5182	2490.2	2819.4	102.304	58.71	70.99	0.00000	-0.0397	1356
220.000	27.03724	0.18198	13.943405	473.2687	3202.6	3535.5	105.615	59.02	71.38	0.00001	-0.0394	1336
230.000	26.74470	0.17597	13.344092	459.2385	3912.9	4249.5	108.803	59.52	71.99	0.00002	-0.0390	1316
240.000	26.45587	0.17048	12.789099	445.2857	4626.5	4966.7	111.887	60.22	72.82	0.00005	-0.0384	1296
250.000	26.17005	0.16545	12.273056	431.2928	5347.8	5691.7	114.883	61.10	73.84	0.00010	-0.0377	1275
260.000	25.88650	0.16083	11.791352	417.1643	6080.6	6428.3	117.805	62.12	75.05	0.00021	-0.0369	1254
270.000	25.60448	0.15658	11.339981	402.8242	6828.1	7179.6	120.664	63.27	76.42	0.00041	-0.0359	1232
280.000	25.32321	0.15266	10.915467	388.2169	7592.6	7948.0	123.470	64.51	77.91	0.00075	-0.0349	1209
290.000	25.04186	0.14905	10.514722	373.3030	8375.9	8735.3	126.230	65.82	79.52	0.00132	-0.0338	1186
300.000	24.75958	0.14573	10.134999	358.0595	9178.9	9542.4	128.951	67.17	81.21	0.00223	-0.0327	1162
310.000	24.47544	0.14266	9.773823	342.4784	10002.1	10369.8	131.640	68.54	82.97	0.00361	-0.0314	1137
320.000	24.18847	0.13985	9.428943	326.5651	10845.4	11217.4	134.300	69.91	84.80	0.00566	-0.0301	1111
330.000	23.89761	0.13726	9.098279	310.3370	11708.2	12084.8	136.936	71.26	86.67	0.00860	-0.0287	1085
340.000	23.60172	0.13489	8.779890	293.8220	12589.7	12971.1	139.552	72.58	88.60	0.01268	-0.0272	1057
350.000	23.29954	0.13274	8.471934	277.0567	13489.1	13875.4	142.149	73.87	90.57	0.01822	-0.0256	1029
360.000	22.98966	0.13079	8.172633	260.0844	14405.3	14796.8	144.731	75.12	92.61	0.02551	-0.0239	1000
370.000	22.67052	0.12905	7.880239	242.9538	15337.6	15734.6	147.300	76.31	94.71	0.03488	-0.0219	970
380.000	22.34332	0.12751	7.593004	225.7168	16285.4	16688.3	149.857	77.45	96.90	0.04665	-0.0198	938
390.000	21.99698	0.12618	7.309124	208.4265	17248.9	17658.0	152.406	78.52	99.18	0.06112	-0.0173	906
400.000	21.63807	0.12506	7.026715	191.1364	18229.0	18644.9	154.949	79.50	101.57	0.07857	-0.0146	872
410.000	21.26065	0.12418	6.743727	173.8980	19227.5	19650.8	157.488	80.39	104.11	0.09926	-0.0114	838
420.000	20.86115	0.12354	6.457877	156.7599	20247.7	20679.2	160.028	81.16	106.84	0.12345	-0.0077	802
430.000	20.43505	0.12319	6.166526	139.7663	21294.6	21735.0	162.573	81.80	109.82	0.15142	-0.0032	765
440.000	19.97653	0.12315	5.866514	122.9563	22375.0	22825.5	165.133	82.31	113.17	0.18353	0.0023	726
450.000	19.47778	0.12350	5.553889	106.3628	23498.4	23960.5	167.716	82.72	117.12	0.22025	0.0090	685
460.000	18.92786	0.12432	5.223463	90.0119	24678.1	25153.6	170.342	83.12	122.04	0.26221	0.0178	642
470.000	18.31054	0.12578	4.868018	73.9222	25932.0	26423.5	173.035	83.74	128.68	0.31021	0.0293	595
480.000	17.59973	0.12813	4.476727	58.1040	27286.7	27798.1	175.843	85.06	138.51	0.36518	0.0452	543
490.000	16.74850	0.13190	4.031576	42.5601	28785.1	29322.5	178.852	88.18	154.89	0.42781	0.0683	483
500.000	15.65509	0.13829	3.497259	27.2864	30514.3	31089.2	182.260	95.84	187.29	0.49730	0.1055	407
510.000	13.99689	0.15164	2.778522	12.2974	32758.6	33401.6	186.771	118.22	281.65	0.56497	0.1835	302
515.000	12.46065	0.16868	2.235059	5.0139	34418.6	35140.9	190.244	133.76	464.23	0.59080	0.3012	233
520.000	6.93380	0.30021	1.229301	1.0159	39708.0	41006.0	201.557	151.28	1760.16	0.61983	0.7354	192
530.000	4.08829	0.49956	0.722024	7.6787	45198.9	47400.3	213.768	124.88	340.16	0.65805	0.8046	255
540.000	3.44446	0.58196	0.565183	12.4093	47521.3	50134.2	218.885	110.28	227.44	0.68743	0.7838	282
560.000	2.83383	0.68210	0.411932	19.4842	50643.0	53818.9	225.594	94.04	154.77	0.73390	0.7246	316
580.000	2.50098	0.74622	0.331326	25.0043	52993.4	56592.0	230.466	85.25	125.96	0.76902	0.6580	339
600.000	2.21779	0.79203	0.280415	29.6588	54993.2	58944.4	234.453	80.01	110.67	0.79699	0.5913	357
620.000	2.11238	0.82650	0.245075	33.7435	56798.4	61059.0	237.914	76.77	101.50	0.81977	0.5278	373
640.000	1.98215	0.85328	0.219029	37.4189	58485.6	63026.2	241.039	74.76	95.64	0.83763	0.4695	386
660.000	1.87537	0.87453	0.199003	40.7841	60098.6	64897.7	243.920	73.56	91.78	0.85228	0.4167	398
680.000	1.78522	0.89167	0.183105	43.9053	61664.3	66705.7	246.620	72.91	89.20	0.86441	0.3696	409
700.000	1.70742	0.90567	0.170161	46.8297	63200.3	68471.4	249.179	72.65	87.49	0.87453	0.3278	419
720.000	1.63910	0.91721	0.159405	49.5920	64718.7	70209.5	251.628	72.67	86.40	0.88306	0.2909	428
740.000	1.57829	0.92680	0.150310	52.2187	66228.0	71930.4	253.986	72.90	85.75	0.89030	0.2583	437
760.000	1.52355	0.93483	0.142508	54.7307	67734.4	73641.6	256.268	73.27	85.42	0.89649	0.2296	446
780.000	1.47383	0.94159	0.135730	57.1444	69242.4	75348.9	258.485	73.76	85.34	0.90182	0.2044	454
800.000	1.42831	0.94731	0.129777	59.4733	70755.3	77056.4	260.647	74.34	85.44	0.90645	0.1821	461

Table 17. Properties of methanol along isobars - Continued

T	ρ	Z	$\partial P/\partial T$	$\partial P/\partial \rho$	E	H	S	C_v	C_p	f/P	μ	W
K	mol/l		bar/K	bar/(mol/l)	J/mol	J/mol	J/(mol-K)	J/(mol-K)	J/(mol-K)		K/bar	m/s
100.00000 bar												
175.590	28.41686	0.24104	17.429123	544.8225	-69.5	282.4	89.583	59.05	71.17	0.00000	-0.0397	1431
180.000	28.27648	0.23630	17.022775	537.3614	272.3	625.9	91.348	58.91	71.05	0.00000	-0.0397	1422
190.000	27.96306	0.22637	16.165438	521.2189	1027.8	1385.4	95.180	58.67	70.85	0.00000	-0.0398	1401
200.000	27.65598	0.21744	15.386548	505.9261	1762.1	2123.7	98.808	58.58	70.82	0.00000	-0.0398	1381
210.000	27.35460	0.20937	14.675166	491.2405	2482.0	2847.6	102.264	58.68	70.99	0.00000	-0.0397	1361
220.000	27.05829	0.20204	14.022267	476.9585	3194.0	3563.6	105.575	58.99	71.37	0.00001	-0.0394	1342
230.000	26.76639	0.19536	13.420320	462.9092	3903.9	4277.5	108.762	59.49	71.98	0.00002	-0.0390	1322
240.000	26.47824	0.18926	12.862979	448.9492	4617.0	4994.6	111.846	60.19	72.80	0.00004	-0.0384	1301
250.000	26.19313	0.18367	12.344846	434.9598	5337.7	5719.5	114.842	61.06	73.83	0.00010	-0.0377	1281
260.000	25.91037	0.17853	11.861291	420.8441	6070.0	6455.9	117.763	62.09	75.03	0.00019	-0.0369	1259
270.000	25.62919	0.17381	11.408291	406.5252	6816.9	7207.1	120.621	63.24	76.40	0.00038	-0.0360	1238
280.000	25.34884	0.16945	10.982357	391.9462	7580.8	7975.3	123.426	64.48	77.89	0.00069	-0.0350	1215
290.000	25.06852	0.16544	10.580394	377.0666	8363.3	8762.2	126.185	65.79	79.49	0.00121	-0.0339	1192
300.000	24.78736	0.16174	10.199650	361.8622	9165.5	9569.0	128.905	67.13	81.17	0.00204	-0.0327	1168
310.000	24.50448	0.15833	9.837652	346.3240	9987.8	10395.9	131.592	68.50	82.93	0.00330	-0.0315	1143
320.000	24.21891	0.15519	9.492151	330.4566	10830.1	11243.0	134.251	69.86	84.74	0.00517	-0.0302	1118
330.000	23.92963	0.15230	9.161078	314.2763	11691.8	12109.7	136.885	71.21	86.60	0.00785	-0.0289	1092
340.000	23.63553	0.14966	8.842502	297.8105	12572.2	12995.3	139.498	72.53	88.51	0.01159	-0.0274	1064
350.000	23.33537	0.14726	8.534600	281.0951	13470.1	13898.7	142.093	73.82	90.47	0.01664	-0.0258	1036
360.000	23.02781	0.14508	8.235617	264.1731	14384.7	14819.0	144.672	75.06	92.49	0.02339	-0.0241	1007
370.000	22.71133	0.14313	7.943841	247.0931	15315.1	15755.4	147.237	76.25	94.57	0.03184	-0.0222	977
380.000	22.38422	0.14140	7.657562	229.9072	16260.8	16707.5	149.790	77.38	96.72	0.04258	-0.0201	947
390.000	22.04448	0.13989	7.375040	212.6692	17221.8	17675.4	152.334	78.44	98.96	0.05578	-0.0177	915
400.000	21.68981	0.13863	7.094454	195.4330	18198.9	18659.9	154.871	79.42	101.31	0.07170	-0.0150	882
410.000	21.31745	0.13761	6.813865	178.2520	19193.9	19663.0	157.403	80.29	103.79	0.09057	-0.0120	848
420.000	20.92406	0.13686	6.531125	161.1763	20209.8	20687.7	159.934	81.05	106.43	0.11263	-0.0084	812
430.000	20.50547	0.13640	6.243792	144.2530	21251.3	21739.0	162.469	81.67	109.30	0.13815	-0.0041	776
440.000	20.05638	0.13629	5.948988	127.5247	22325.0	22823.6	165.015	82.15	112.51	0.16745	0.0010	738
450.000	19.56978	0.13657	5.643191	111.0293	23439.9	23950.9	167.581	82.52	116.22	0.20096	0.0074	698
460.000	19.03609	0.13735	5.321897	94.8000	24608.1	25133.4	170.183	82.87	120.79	0.23926	0.0155	656
470.000	18.44146	0.13876	4.979047	78.8661	25846.0	26388.2	172.844	83.40	126.85	0.28311	0.0260	611
480.000	17.76458	0.14105	4.605968	63.2551	27176.8	27739.7	175.603	84.59	135.61	0.33336	0.0402	562
490.000	16.96951	0.14464	4.189201	47.9989	28635.9	29225.2	178.532	87.47	149.69	0.39067	0.0598	506
500.000	15.98664	0.15047	3.705286	33.1516	30288.4	30913.9	181.784	94.61	175.63	0.45442	0.0889	438
510.000	14.64550	0.16102	3.104954	18.8588	32314.7	32997.5	185.842	115.27	236.82	0.51690	0.1365	347
515.000	13.68816	0.17061	2.725002	12.0716	33573.8	34304.3	188.472	127.39	296.47	0.54125	0.1846	296
520.000	12.24182	0.18894	2.240221	5.8697	35228.4	36045.3	191.830	139.26	425.93	0.57055	0.2917	245
530.000	6.09756	0.37216	1.094676	3.1115	42163.5	43803.5	206.594	136.36	685.35	0.62048	0.7078	220
540.000	4.40804	0.50527	0.759048	8.5846	45881.0	48149.6	214.731	118.45	304.97	0.65537	0.7314	262
560.000	3.38954	0.63363	0.516836	16.6041	49698.4	52648.6	222.926	98.76	177.17	0.70813	0.6898	304
580.000	2.92152	0.70978	0.404293	22.6227	52318.6	55741.5	228.360	88.43	137.53	0.74744	0.6341	331
600.000	2.62738	0.76294	0.336612	27.6076	54471.3	58277.4	232.659	82.32	117.99	0.77864	0.5756	351
620.000	2.41709	0.80256	0.290894	31.9401	56377.2	60514.4	236.322	78.52	106.63	0.80400	0.5184	367
640.000	2.25541	0.83322	0.257791	35.8154	58136.5	62570.3	239.587	76.13	99.47	0.82400	0.4646	382
660.000	2.12508	0.85752	0.232657	39.3490	59803.7	64509.5	242.572	74.66	94.76	0.84042	0.4153	394
680.000	2.01647	0.87713	0.212897	42.6163	61411.7	66370.9	245.352	73.81	91.59	0.85402	0.3707	406
700.000	1.92371	0.89316	0.196934	45.6699	62981.6	68179.9	247.974	73.39	89.45	0.86538	0.3307	416
720.000	1.84295	0.90640	0.183755	48.5478	64527.7	69953.8	250.474	73.29	88.04	0.87496	0.2951	426
740.000	1.77158	0.91743	0.172676	51.2792	66060.0	71704.7	252.873	73.42	87.13	0.88309	0.2634	435
760.000	1.70773	0.92668	0.163219	53.8863	67585.8	73441.5	255.189	73.72	86.60	0.89003	0.2353	444
780.000	1.65003	0.93450	0.155041	56.3870	69110.2	75170.7	257.435	74.15	86.36	0.89601	0.2104	452
800.000	1.59745	0.94113	0.147888	58.7958	70637.3	76897.3	259.620	74.67	86.33	0.90120	0.1883	460

Table 17. Properties of methanol along isobars - Continued

T K	ρ mol/l	Z	$\partial P/\partial T$ bar/K	$\partial P/\partial \rho$ bar/(mol/l)	E J/mol	H J/mol	S J/(mol-K)	C_v J/(mol-K)	C_p J/(mol-K)	f/P	μ K/bar	W m/s
120.00000 bar												
175.590	28.45331	0.28888	17.614181	552.5914	-82.9	338.9	89.504	59.00	71.17	0.00000	-0.0397	1442
180.000	28.31343	0.28319	17.203836	545.0448	258.6	682.4	91.269	58.85	71.05	0.00000	-0.0397	1432
190.000	28.00116	0.27128	16.338255	528.7389	1013.3	1441.9	95.101	58.61	70.85	0.00000	-0.0398	1412
200.000	27.69523	0.26056	15.552073	513.3194	1746.8	2180.1	98.729	58.53	70.81	0.00000	-0.0398	1392
210.000	27.39501	0.25087	14.834198	498.5389	2465.9	2903.9	102.184	58.63	70.98	0.00000	-0.0397	1372
220.000	27.09991	0.24208	14.175524	484.1917	3177.0	3619.8	105.495	58.93	71.36	0.00001	-0.0394	1352
230.000	26.80926	0.23406	13.568424	470.1035	3886.0	4333.6	108.682	59.43	71.96	0.00002	-0.0390	1332
240.000	26.52243	0.22674	13.006485	456.1282	4598.1	5050.6	111.765	60.13	72.78	0.00004	-0.0384	1312
250.000	26.23874	0.22002	12.484255	442.1446	5317.8	5775.2	114.760	61.00	73.80	0.00008	-0.0377	1292
260.000	25.95748	0.21385	11.997059	428.0536	6049.0	6511.3	117.680	62.03	75.00	0.00017	-0.0369	1270
270.000	25.67795	0.20817	11.540848	413.7760	6794.7	7262.1	120.536	63.17	76.35	0.00032	-0.0360	1249
280.000	25.39940	0.20294	11.112103	399.2523	7557.4	8029.8	123.339	64.41	77.83	0.00059	-0.0351	1227
290.000	25.12104	0.19811	10.707715	384.4399	8338.5	8816.2	126.096	65.72	79.42	0.00104	-0.0340	1204
300.000	24.84207	0.19366	10.324925	369.3125	9139.2	9622.2	128.814	67.06	81.09	0.00175	-0.0329	1180
310.000	24.56160	0.18955	9.961256	353.8589	9959.8	10448.3	131.498	68.42	82.83	0.00284	-0.0317	1156
320.000	24.27874	0.18577	9.614466	338.0817	10800.1	11294.4	134.154	69.78	84.63	0.00445	-0.0304	1131
330.000	23.99250	0.18229	9.282498	321.9957	11659.7	12159.9	136.784	71.13	86.47	0.00675	0.0291	1105
340.000	23.70181	0.17910	8.963443	305.6263	12537.6	13043.9	139.393	72.44	88.35	0.00995	-0.0277	1078
350.000	23.40553	0.17618	8.655509	289.0085	13432.9	13945.6	141.983	73.72	90.28	0.01428	-0.0261	1050
360.000	23.10239	0.17353	8.356982	272.1844	14344.4	14863.8	144.556	74.95	92.26	0.01998	-0.0245	1022
370.000	22.79097	0.17115	8.066206	255.2022	15271.3	15797.8	147.114	76.13	94.29	0.02731	-0.0227	993
380.000	22.46968	0.16903	7.781544	238.1139	16212.8	16746.9	149.659	77.25	96.39	0.03650	-0.0207	962
390.000	22.13673	0.16717	7.501350	220.9741	17169.0	17711.1	152.194	78.30	98.57	0.04780	-0.0184	931
400.000	21.79000	0.16559	7.223931	203.8381	18140.5	18691.2	154.719	79.26	100.83	0.06143	-0.0159	899
410.000	21.42704	0.16429	6.947510	186.7611	19128.8	19688.8	157.238	80.11	103.19	0.07758	-0.0130	866
420.000	21.04492	0.16329	6.670167	169.7963	20136.7	20706.9	159.753	80.84	105.69	0.09646	-0.0097	832
430.000	20.64005	0.16262	6.389770	152.9947	21168.5	21749.9	162.268	81.43	108.36	0.11830	-0.0058	797
440.000	20.20796	0.16232	6.103884	136.4042	22230.0	22823.8	164.789	81.87	111.30	0.14338	-0.0011	760
450.000	19.74291	0.16245	5.809630	120.0700	23329.4	23937.2	167.325	82.18	114.63	0.17208	0.0045	722
460.000	19.23734	0.16310	5.503491	104.0346	24477.3	25101.1	169.886	82.44	118.63	0.20491	0.0116	683
470.000	18.68082	0.16438	5.180991	88.3407	25687.7	26330.1	172.491	82.85	123.77	0.24252	0.0206	641
480.000	18.05835	0.16650	4.836182	73.0341	26979.3	27643.8	175.171	83.85	130.99	0.28568	0.0321	596
490.000	17.34693	0.16980	4.460740	58.1734	28378.3	29070.1	177.978	86.41	142.11	0.33501	0.0473	546
500.000	16.50821	0.17485	4.042263	43.8490	29927.5	30654.4	181.019	92.93	161.30	0.39006	0.0673	487
510.000	15.47047	0.18292	3.560832	30.2361	31736.9	32512.6	184.631	112.17	201.53	0.44444	0.0925	411
515.000	14.83394	0.18892	3.286580	23.8087	32765.9	33574.9	186.784	122.67	228.85	0.46601	0.1117	372
520.000	14.07427	0.19720	2.981895	17.7593	33920.0	34772.7	189.093	120.90	252.33	0.49229	0.1465	340
530.000	11.87753	0.22927	2.252007	7.7544	36747.7	37758.0	194.777	121.23	366.94	0.54324	0.2744	270
540.000	8.27636	0.32293	1.470372	4.1300	41044.4	42494.3	203.627	125.03	537.72	0.58921	0.4995	235
560.000	4.85028	0.53136	0.806397	11.2352	47469.6	49943.7	217.208	107.17	244.95	0.65657	0.6133	283
580.000	3.90430	0.63734	0.587884	18.3175	50833.0	53906.6	224.172	94.22	166.01	0.70457	0.5813	317
600.000	3.40495	0.70645	0.471870	24.0192	53350.1	56874.4	229.199	86.54	134.51	0.74252	0.5375	341
620.000	3.07666	0.75661	0.398249	28.8656	55481.3	59381.6	233.307	81.73	117.72	0.77287	0.4915	360
640.000	2.83674	0.79496	0.346941	33.1374	57396.2	61626.5	236.873	78.65	107.54	0.79701	0.4465	376
660.000	2.64995	0.82521	0.308995	36.9939	59178.4	63706.8	240.076	76.69	100.94	0.81688	0.4039	389
680.000	2.49825	0.84957	0.279735	40.5341	60875.0	65678.4	243.021	75.47	96.50	0.83339	0.3644	402
700.000	2.37125	0.86950	0.256455	43.8244	62515.4	67576.0	245.772	74.77	93.46	0.84722	0.3283	413
720.000	2.26246	0.88600	0.237471	46.9117	64118.9	69422.8	248.374	74.45	91.36	0.85890	0.2956	423
740.000	2.16759	0.89978	0.221680	49.8306	65698.7	71234.8	250.857	74.40	89.94	0.86882	0.2661	433
760.000	2.08368	0.91138	0.208325	52.6074	67264.4	73023.5	253.243	74.56	89.00	0.87730	0.2396	442
780.000	2.00859	0.92121	0.196871	55.2628	68822.8	74797.2	255.546	74.87	88.43	0.88460	0.2159	451
800.000	1.94073	0.92959	0.186928	57.8134	70379.1	76562.3	257.781	75.29	88.13	0.89093	0.1946	459

Table 17. Properties of methanol along isobars - Continued

T K	ρ mol/l	Z	$\partial P/\partial T$ bar/K	$\partial P/\partial \rho$ bar/(mol/l)	E J/mol	H J/mol	S J/(mol-K)	C_v J/(mol-K)	C_p J/(mol-K)	f/P	μ K/bar	W m/s
150.0000 bar												
175.590	28.50705	0.36042	17.879908	563.9155	-102.6	423.6	89.387	58.93	71.18	0.00000	-0.0397	1457
180.000	28.36791	0.35331	17.463822	556.2419	238.3	767.1	91.151	58.78	71.05	0.00000	-0.0397	1448
190.000	28.05732	0.33842	16.586344	539.6915	991.9	1526.5	94.983	58.54	70.84	0.00000	-0.0398	1427
200.000	27.75306	0.32502	15.789621	524.0810	1724.2	2264.7	98.611	58.46	70.81	0.00000	-0.0398	1407
210.000	27.45455	0.31291	15.062389	509.1584	2442.1	2988.5	102.066	58.55	70.97	0.00000	-0.0397	1387
220.000	27.16120	0.30191	14.395362	494.7119	3152.0	3704.2	105.376	58.85	71.35	0.00001	-0.0394	1368
230.000	26.87238	0.29189	13.780799	480.5633	3859.7	4417.8	108.562	59.36	71.94	0.00001	-0.0390	1348
240.000	26.58746	0.28273	13.212186	466.5627	4570.3	5134.5	111.644	60.05	72.75	0.00003	-0.0385	1328
250.000	26.30580	0.27432	12.683993	452.5852	5288.6	5858.8	114.637	60.92	73.76	0.00007	-0.0378	1307
260.000	26.02672	0.26660	12.191485	438.5283	6018.2	6594.5	117.556	61.94	74.95	0.00014	-0.0370	1286
270.000	25.74954	0.25949	11.730572	424.3097	6762.2	7344.7	120.410	63.09	76.29	0.00027	-0.0361	1265
280.000	25.47355	0.25293	11.297680	409.8658	7522.9	8111.8	123.211	64.32	77.76	0.00050	-0.0352	1243
290.000	25.19800	0.24688	10.889691	395.1512	8302.1	8897.3	125.965	65.62	79.33	0.00088	-0.0342	1220
300.000	24.92212	0.24130	10.503826	380.1363	9100.5	9702.4	128.679	66.97	80.98	0.00147	-0.0331	1197
310.000	24.64509	0.23614	10.137603	364.8066	9918.7	10527.3	131.360	68.32	82.70	0.00238	-0.0319	1173
320.000	24.36605	0.23138	9.788783	349.1617	10756.3	11371.9	134.011	69.68	84.47	0.00373	-0.0307	1149
330.000	24.08407	0.22699	9.455323	333.2135	11612.8	12235.7	136.636	71.01	86.28	0.00565	-0.0294	1124
340.000	23.79818	0.22296	9.135338	316.9851	12487.4	13117.7	139.238	72.32	88.13	0.00832	-0.0280	1097
350.000	23.50731	0.21927	8.827069	300.5093	13378.8	14016.9	141.821	73.59	90.01	0.01194	-0.0266	1071
360.000	23.21030	0.21591	8.528854	283.8266	14286.0	14932.2	144.386	74.82	91.94	0.01669	-0.0250	1043
370.000	22.90587	0.21287	8.239100	266.9840	15207.8	15862.7	146.934	75.98	93.91	0.02280	-0.0233	1014
380.000	22.59260	0.21014	7.956254	250.0333	16143.3	16807.6	149.469	77.09	95.94	0.03046	-0.0214	985
390.000	22.26889	0.20773	7.678780	233.0291	17093.3	17766.9	151.990	78.12	98.02	0.03987	-0.0194	955
400.000	21.93291	0.20564	7.405129	216.0281	18057.0	18740.9	154.500	79.06	100.16	0.05121	-0.0171	924
410.000	21.58256	0.20388	7.133705	199.0869	19036.3	19731.3	157.001	79.89	102.39	0.06465	-0.0144	892
420.000	21.21538	0.20247	6.862837	182.2619	20033.4	20740.4	159.495	80.58	104.70	0.08037	-0.0115	859
430.000	20.82842	0.20143	6.590722	165.6076	21052.1	21772.3	161.984	81.13	107.13	0.09855	-0.0080	826
440.000	20.41812	0.20081	6.315375	149.1772	22097.7	22832.3	164.473	81.52	109.74	0.11943	-0.0039	791
450.000	19.98009	0.20065	6.034550	133.0218	23177.3	23928.0	166.969	81.76	112.62	0.14334	0.0010	756
460.000	19.50872	0.20103	5.745641	117.1919	24300.0	25068.9	169.479	81.94	115.98	0.17070	0.0069	719
470.000	18.99676	0.20206	5.445538	101.7394	25477.4	26267.0	172.018	82.22	120.18	0.20208	0.0142	681
480.000	18.43445	0.20388	5.130422	86.7207	26724.4	27538.0	174.608	83.04	125.91	0.23815	0.0233	640
490.000	17.80819	0.20675	4.795478	72.2044	28059.9	28902.3	177.287	85.32	134.53	0.27947	0.0345	596
500.000	17.09817	0.21103	4.434473	58.2843	29513.0	30390.3	180.133	91.39	149.09	0.32573	0.0480	544
510.000	16.27398	0.21737	4.039225	45.1055	31162.2	32083.9	183.420	109.81	179.46	0.37174	0.0618	479
515.000	15.80477	0.22165	3.825554	38.8659	32065.0	33014.1	185.316	119.63	197.26	0.39022	0.0708	447
520.000	15.28632	0.22696	3.599210	32.9190	33035.7	34017.0	187.248	116.84	204.41	0.41283	0.0870	423
530.000	14.05182	0.24224	3.103003	22.1953	35104.6	36172.1	191.353	112.99	229.44	0.45774	0.1325	375
540.000	12.44034	0.26855	2.549385	13.8105	37471.4	38677.1	196.037	111.48	275.68	0.50187	0.2045	326
560.000	8.29275	0.38848	1.516732	8.2706	43369.0	45177.8	207.850	110.16	336.66	0.58166	0.4078	280
580.000	5.85181	0.53154	0.987548	13.1985	48226.4	50789.7	217.709	100.20	225.35	0.64249	0.4865	304
600.000	4.79149	0.62753	0.743385	19.5885	51481.9	54612.5	224.187	91.49	165.21	0.68977	0.4740	332
620.000	4.19102	0.69430	0.603843	25.2137	54022.4	57601.5	229.078	85.67	136.71	0.72795	0.4438	354
640.000	3.78832	0.74410	0.512474	30.1215	56202.2	60161.7	233.154	81.81	120.69	0.75730	0.4099	372
660.000	3.49162	0.78286	0.447614	34.4886	58172.5	62468.5	236.706	79.26	110.71	0.78213	0.3759	387
680.000	3.25977	0.81388	0.399041	38.4471	60010.7	64612.3	239.908	77.60	104.10	0.80285	0.3433	401
700.000	3.07117	0.83918	0.361238	42.0879	61762.1	66646.3	242.857	76.56	99.57	0.82028	0.3127	413
720.000	2.91321	0.86010	0.330948	45.4753	63455.2	68604.1	245.616	75.97	96.40	0.83505	0.2844	424
740.000	2.77795	0.87760	0.306113	48.6555	65108.8	70508.5	248.226	75.70	94.17	0.84763	0.2584	434
760.000	2.66010	0.89237	0.285365	51.6632	66736.5	72375.3	250.715	75.68	92.61	0.85842	0.2347	444
780.000	2.55598	0.90491	0.267759	54.5248	68347.5	74216.1	253.106	75.84	91.54	0.86772	0.2131	453
800.000	2.46292	0.91562	0.252622	57.2613	69949.0	76039.3	255.415	76.14	90.84	0.87578	0.1935	461

Table 17. Properties of methanol along isobars - Continued

T	ρ	Z	$\partial P/\partial T$	$\partial P/\partial \rho$	E	H	S	C_v	C_p	f/P	μ	W
K	mol/l		bar/K	bar/(mol/l)	J/mol	J/mol	J/(mol-K)	J/(mol-K)	J/(mol-K)		K/bar	m/s
200.00000 bar												
175.590	28.59431	0.47909	18.295887	582.0513	-134.8	564.7	89.193	58.83	71.18	0.00000	-0.0396	1482
180.000	28.45637	0.46961	17.870770	574.1675	205.4	908.2	90.958	58.68	71.05	0.00000	-0.0397	1472
190.000	28.14848	0.44976	16.974567	557.2099	957.1	1667.7	94.790	58.44	70.84	0.00000	-0.0398	1451
200.000	27.84692	0.43190	16.161243	541.2801	1687.6	2405.8	98.417	58.35	70.80	0.00000	-0.0398	1431
210.000	27.55114	0.41575	15.419235	526.1169	2403.5	3129.4	101.871	58.45	70.95	0.00000	-0.0397	1411
220.000	27.26058	0.40108	14.738996	511.4998	3111.3	3845.0	105.180	58.75	71.32	0.00000	-0.0395	1392
230.000	26.97464	0.38771	14.112606	497.2445	3816.9	4558.3	108.365	59.25	71.91	0.00001	-0.0391	1372
240.000	26.69274	0.37548	13.533392	483.1946	4525.3	5274.6	111.445	59.94	72.71	0.00003	-0.0385	1352
250.000	26.41427	0.36426	12.995698	469.2196	5241.2	5998.4	114.437	60.81	73.71	0.00006	-0.0379	1332
260.000	26.13860	0.35395	12.494689	455.2113	5968.3	6733.4	117.353	61.83	74.88	0.00012	-0.0371	1311
270.000	25.86509	0.34444	12.026197	441.0822	6709.6	7482.8	120.204	62.97	76.20	0.00022	-0.0363	1290
280.000	25.59308	0.33567	11.586599	426.7635	7467.4	8248.9	123.001	64.20	77.65	0.00041	-0.0354	1269
290.000	25.32186	0.32757	11.172715	412.2037	8243.4	9033.2	125.751	65.50	79.19	0.00071	-0.0344	1247
300.000	25.05073	0.32008	10.781748	397.3682	9038.3	9836.7	128.460	66.83	80.82	0.00120	-0.0333	1224
310.000	24.77895	0.31315	10.411200	382.2374	9852.7	10659.8	131.135	68.18	82.50	0.00193	-0.0322	1201
320.000	24.50571	0.30674	10.058826	366.8054	10686.1	11502.2	133.778	69.53	84.23	0.00302	-0.0311	1177
330.000	24.23021	0.30083	9.722596	351.0795	11538.0	12363.4	136.396	70.86	86.00	0.00457	-0.0299	1153
340.000	23.95154	0.29538	9.400648	335.0782	12407.3	13242.3	138.989	72.16	87.79	0.00672	-0.0286	1127
350.000	23.66878	0.29037	9.091262	318.8303	13292.9	14137.9	141.561	73.42	89.61	0.00963	-0.0273	1102
360.000	23.38090	0.28578	8.792832	302.3731	14193.4	15048.8	144.113	74.63	91.47	0.01345	-0.0258	1075
370.000	23.08681	0.28160	8.503839	285.7509	15107.8	15974.1	146.648	75.78	93.35	0.01835	-0.0243	1048
380.000	22.78529	0.27782	8.222826	269.0136	16035.2	16912.9	149.166	76.87	95.27	0.02449	-0.0226	1020
390.000	22.47501	0.27443	7.948383	252.2151	16975.0	17864.9	151.668	77.88	97.22	0.03203	-0.0207	991
400.000	22.15448	0.27144	7.679119	235.4121	17927.4	18830.2	154.156	78.79	99.21	0.04112	-0.0187	961
410.000	21.82201	0.26885	7.413644	218.6626	18893.5	19810.0	156.631	79.59	101.24	0.05188	-0.0164	931
420.000	21.47570	0.26668	7.150544	202.0247	19875.2	20806.5	159.094	80.26	103.30	0.06446	-0.0139	900
430.000	21.11333	0.26495	6.888355	185.5563	20875.6	21822.9	161.547	80.76	105.42	0.07901	-0.0110	869
440.000	20.73231	0.26369	6.625537	169.3144	21899.3	22864.0	163.993	81.09	107.63	0.09572	-0.0076	837
450.000	20.32959	0.26294	6.360439	153.3552	22952.3	23936.1	166.435	81.26	109.99	0.11487	-0.0037	804
460.000	19.90146	0.26276	6.091254	137.7344	24042.2	25047.2	168.881	81.34	112.63	0.13680	0.0010	771
470.000	19.44343	0.26322	5.815981	122.5088	25178.5	26207.2	171.338	81.51	115.83	0.16199	0.0066	737
480.000	18.94990	0.26445	5.532363	107.7384	26372.6	27428.0	173.822	82.16	120.13	0.19099	0.0133	701
490.000	18.41377	0.26660	5.237837	93.4907	27638.4	28724.5	176.361	84.21	126.61	0.22429	0.0211	662
500.000	17.82595	0.26988	4.929486	79.8464	28996.0	30118.0	179.017	89.94	137.83	0.26171	0.0298	617
510.000	17.17451	0.27462	4.604048	66.9102	30509.1	31673.6	182.030	107.85	162.62	0.29914	0.0374	561
515.000	16.82022	0.27769	4.433842	60.7502	31320.4	32509.5	183.742	117.31	176.22	0.31434	0.0417	533
520.000	16.44382	0.28131	4.258083	54.8253	32177.4	33393.7	185.445	114.07	177.67	0.33298	0.0498	516
530.000	15.61362	0.29068	3.888558	43.7965	33916.9	35197.9	188.881	108.87	183.93	0.37049	0.0701	480
540.000	14.65956	0.30386	3.494418	34.1148	35724.3	37088.6	192.419	105.15	195.09	0.40831	0.0970	444
560.000	12.31144	0.34890	2.659964	20.3187	39696.1	41320.6	200.110	101.10	229.76	0.48330	0.1752	379
580.000	9.66978	0.42889	1.908451	15.4554	44086.9	46155.2	208.592	98.60	244.78	0.55179	0.2707	346
600.000	7.62881	0.52552	1.392613	17.3210	48120.5	50742.1	216.362	94.19	209.62	0.61027	0.3329	346
620.000	6.35885	0.61013	1.077552	21.7876	51385.0	54530.2	222.559	89.23	170.95	0.65907	0.3516	360
640.000	5.55547	0.67654	0.879448	26.9523	54066.4	57666.4	227.552	85.19	144.70	0.69714	0.3432	377
660.000	5.00422	0.72831	0.745735	31.9464	56385.7	60382.4	231.734	82.25	128.13	0.72934	0.3242	394
680.000	4.59746	0.76943	0.649647	36.5696	58479.3	62829.5	235.393	80.20	117.33	0.75615	0.3017	408
700.000	4.28079	0.80273	0.577243	40.8230	60426.2	65098.2	238.682	78.82	110.00	0.77908	0.2787	421
720.000	4.02447	0.83014	0.520694	44.7523	62274.3	67243.9	241.706	77.93	104.87	0.79861	0.2563	433
740.000	3.81084	0.85298	0.475282	48.4068	64054.3	69302.5	244.527	77.42	101.20	0.81534	0.2351	444
760.000	3.62876	0.87221	0.437995	51.8292	65787.1	71298.6	247.189	77.19	98.55	0.82975	0.2153	454
780.000	3.47078	0.88853	0.406821	55.0550	67487.1	73249.5	249.723	77.18	96.64	0.84222	0.1970	463
800.000	3.33174	0.90247	0.380359	58.1127	69164.9	75167.8	252.152	77.33	95.27	0.85305	0.1801	472

Table 17. Properties of methanol along isobars - Continued

T K	ρ mol/l	Z	$\partial P/\partial T$ bar/K	$\partial P/\partial \rho$ bar/(mol/l)	E J/mol	H J/mol	S J/(mol·K)	C_v J/(mol·K)	C_p J/(mol·K)	f/P	μ K/bar	W m/s
300.00000 bar												
175.590	28.76121	0.71446	19.049619	616.2358	-196.2	846.8	88.814	58.68	71.18	0.00000	-0.0396	1527
180.000	28.62555	0.70026	18.608021	607.9302	142.4	1190.4	90.579	58.54	71.05	0.00000	-0.0397	1517
190.000	28.32278	0.67050	17.677600	590.1511	890.6	1949.8	94.411	58.30	70.84	0.00000	-0.0398	1496
200.000	28.02630	0.64371	16.833885	573.5693	1617.4	2687.9	98.038	58.21	70.79	0.00000	-0.0398	1475
210.000	27.73562	0.61948	16.064752	557.9052	2329.7	3411.3	101.491	58.30	70.93	0.00000	-0.0397	1455
220.000	27.45023	0.59747	15.360226	542.9242	3033.7	4126.6	104.799	58.60	71.28	0.00000	-0.0395	1435
230.000	27.16962	0.57740	14.712017	528.4284	3735.3	4839.5	107.982	59.09	71.86	0.00001	-0.0391	1416
240.000	26.89323	0.55902	14.113172	514.2503	4439.6	5555.1	111.059	59.78	72.64	0.00002	-0.0387	1396
250.000	26.62055	0.54216	13.557807	500.2486	5151.1	6278.1	114.047	60.65	73.61	0.00005	-0.0380	1376
260.000	26.35100	0.52664	13.040899	486.3050	5873.6	7012.1	116.959	61.66	74.76	0.00009	-0.0373	1356
270.000	26.08403	0.51233	12.558132	472.3219	6609.9	7760.1	119.805	62.80	76.05	0.00018	-0.0365	1336
280.000	25.81905	0.49910	12.105765	458.2204	7362.5	8524.4	122.596	64.03	77.46	0.00032	-0.0357	1315
290.000	25.55545	0.48686	11.680533	444.9393	8132.7	9306.6	125.338	65.32	78.96	0.00056	-0.0348	1294
300.000	25.29261	0.47552	11.279567	429.4332	8921.5	10107.6	128.039	66.64	80.54	0.00093	-0.0338	1272
310.000	25.02991	0.46501	10.900326	414.6724	9729.1	10927.6	130.703	67.99	82.17	0.00150	-0.0328	1250
320.000	24.76666	0.45527	10.540536	399.6405	10555.1	11766.4	133.336	69.33	83.83	0.00234	-0.0318	1228
330.000	24.50217	0.44624	10.198169	384.3354	11398.8	12623.2	135.939	70.65	85.52	0.00354	-0.0307	1204
340.000	24.23571	0.43788	9.871377	368.7660	12259.1	13496.9	138.517	71.93	87.23	0.00519	-0.0295	1181
350.000	23.96653	0.43014	9.558475	352.9520	13134.6	14386.4	141.071	73.18	88.95	0.00742	-0.0284	1157
360.000	23.69381	0.42301	9.257910	336.9229	14024.0	15290.1	143.604	74.37	90.69	0.01033	-0.0271	1132
370.000	23.41668	0.41645	8.968243	320.7159	14925.8	16206.9	146.115	75.51	92.43	0.01407	-0.0258	1106
380.000	23.13422	0.41044	8.688122	304.3754	15838.9	17135.7	148.606	76.58	94.18	0.01874	-0.0244	1080
390.000	22.84545	0.40497	8.416270	287.9506	16762.7	18075.9	151.078	77.56	95.94	0.02447	-0.0229	1054
400.000	22.54929	0.40003	8.151465	271.4952	17696.9	19027.3	153.531	78.45	97.70	0.03136	-0.0212	1027
410.000	22.24456	0.39562	7.892527	255.0654	18642.0	19990.7	155.965	79.21	99.45	0.03951	-0.0194	999
420.000	21.92997	0.39174	7.638305	238.7192	19599.6	20967.6	158.381	79.83	101.18	0.04903	-0.0175	971
430.000	21.60412	0.38840	7.387663	222.5153	20572.1	21960.8	160.779	80.28	102.88	0.06004	-0.0153	943
440.000	21.26540	0.38562	7.139467	206.5123	21563.2	22974.0	163.161	80.56	104.57	0.07268	-0.0128	914
450.000	20.91206	0.38342	6.892575	190.7686	22577.8	24012.4	165.528	80.66	106.28	0.08717	-0.0100	885
460.000	20.54208	0.38184	6.645827	175.3420	23622.1	25082.6	167.883	80.65	108.11	0.10378	-0.0068	856
470.000	20.15321	0.38093	6.398033	160.2900	24703.7	26192.3	170.232	80.70	110.26	0.12288	-0.0031	826
480.000	19.74286	0.38074	6.147968	145.6708	25831.2	27350.7	172.585	81.21	113.16	0.14492	0.0012	795
490.000	19.30807	0.38137	5.894376	131.5440	27015.0	28568.8	174.962	83.08	117.79	0.17028	0.0060	762
500.000	18.84548	0.38292	5.635979	117.9729	28270.2	29862.1	177.416	88.57	126.48	0.19889	0.0112	725
510.000	18.35124	0.38552	5.371507	105.0267	29653.0	31287.8	180.172	106.16	147.77	0.22768	0.0155	675
515.000	18.09094	0.38727	5.236615	98.8120	30385.6	32043.9	181.728	115.43	159.10	0.23949	0.0177	651
520.000	17.82109	0.38936	5.099769	92.7837	31152.6	32836.0	183.253	111.96	157.86	0.25397	0.0215	638
530.000	17.25038	0.39465	4.819774	81.3348	32669.8	34408.9	186.249	106.19	157.06	0.28341	0.0303	612
540.000	16.63439	0.40168	4.530946	70.7863	34180.4	35983.9	189.197	101.69	158.29	0.31359	0.0409	586
560.000	15.25203	0.42244	3.928707	52.8945	37247.4	39214.4	195.070	95.49	165.74	0.37580	0.0683	535
580.000	13.67581	0.45489	3.311975	40.1205	40443.3	42637.0	201.075	91.84	176.63	0.43801	0.1035	490
600.000	12.00388	0.50097	2.727233	32.9104	43754.6	46253.8	207.197	89.58	183.69	0.49826	0.1425	458
620.000	10.43203	0.55786	2.226185	30.5504	47035.5	49911.2	213.175	87.74	180.15	0.55445	0.1772	442
640.000	9.12213	0.61803	1.831545	31.6175	50108.0	53396.7	218.719	85.82	167.42	0.60270	0.2006	438
660.000	8.10470	0.67453	1.534085	34.5869	52891.4	56593.0	223.639	83.97	152.34	0.64535	0.2116	442
680.000	7.32415	0.72447	1.310901	38.2858	55408.2	59504.2	227.993	82.35	139.25	0.68173	0.2136	449
700.000	6.71636	0.76745	1.141140	42.3593	57713.5	62180.2	231.873	81.08	128.78	0.71354	0.2090	458
720.000	6.23299	0.80400	1.009515	46.5629	59858.4	64671.5	235.384	80.15	120.71	0.74105	0.1999	467
740.000	5.83969	0.83496	0.905295	50.7302	61884.3	67021.6	238.604	79.53	114.58	0.76489	0.1885	477
760.000	5.51267	0.86121	0.821093	54.7724	63822.6	69264.6	241.596	79.16	109.94	0.78560	0.1760	487
780.000	5.23552	0.88355	0.751818	58.6506	65696.5	71426.6	244.405	79.00	106.42	0.80366	0.1633	496
800.000	4.99673	0.90263	0.693905	62.3530	67523.2	73527.1	247.064	79.01	103.76	0.81944	0.1508	505

TABLE 12. Properties of methanol along isobars - Continued

T	ρ	Z	$\partial P/\partial T$	$\partial P/\partial \rho$	E	H	S	C_v	C_p	f/P	μ	W
K	mol/l		bar/K	bar/(mol/l)	J/mol	J/mol	J/(mol-K)	J/(mol-K)	J/(mol-K)		K/bar	m/s
350.00000 bar												
175.590	28.84128	0.83122	19.396102	632.5473	-225.7	987.8	88.629	58.63	71.19	0.00000	-0.0396	1548
180.000	28.70673	0.81466	18.946881	624.0286	112.2	1331.4	90.393	58.49	71.05	0.00000	-0.0397	1538
190.000	28.40639	0.77994	18.000619	605.8316	858.8	2090.9	94.225	58.24	70.84	0.00000	-0.0398	1516
200.000	28.11232	0.74870	17.142814	588.9144	1583.9	2828.9	97.852	58.15	70.78	0.00000	-0.0398	1495
210.000	27.82405	0.72043	16.361090	572.9887	2294.4	3552.3	101.306	58.25	70.92	0.00000	-0.0398	1475
220.000	27.54108	0.69475	15.645257	557.8122	2996.6	4267.5	104.612	58.54	71.27	0.00000	-0.0395	1455
230.000	27.26293	0.67132	14.986875	543.1816	3696.4	4980.2	107.795	59.04	71.84	0.00001	-0.0392	1436
240.000	26.98909	0.64988	14.378849	528.9234	4398.8	5695.6	110.871	59.73	72.61	0.00002	-0.0387	1416
250.000	26.71906	0.63019	13.815192	514.8918	5108.2	6418.2	113.858	60.59	73.57	0.00004	-0.0381	1396
260.000	26.45229	0.61206	13.290792	500.9635	5828.6	7151.7	116.768	61.60	74.71	0.00009	-0.0374	1376
270.000	26.18827	0.59533	12.801262	487.0364	6562.7	7899.1	119.612	62.74	75.98	0.00017	-0.0366	1356
280.000	25.92643	0.57987	12.342804	473.0268	7312.8	8662.8	122.400	63.96	77.38	0.00030	-0.0358	1336
290.000	25.66621	0.56555	11.912108	458.8687	8080.4	9444.1	125.139	65.25	78.87	0.00052	-0.0349	1315
300.000	25.40704	0.55228	11.506269	444.5122	8866.4	10244.0	127.836	66.58	80.42	0.00087	-0.0340	1294
310.000	25.14831	0.53996	11.122722	429.9224	9671.0	11062.7	130.496	67.92	82.02	0.00139	-0.0330	1272
320.000	24.88940	0.52853	10.759181	415.0785	10493.7	11899.9	133.124	69.25	83.66	0.00217	-0.0320	1250
330.000	24.62967	0.51792	10.413593	399.9725	11333.8	12754.9	135.722	70.57	85.32	0.00327	-0.0310	1228
340.000	24.36845	0.50807	10.084121	384.6093	12190.1	13626.4	138.293	71.85	86.99	0.00478	-0.0299	1205
350.000	24.10505	0.49895	9.769080	369.0040	13061.3	14513.3	140.840	73.09	88.67	0.00683	-0.0288	1181
360.000	23.83872	0.49051	9.466932	353.1815	13945.8	15414.0	143.363	74.28	90.36	0.00950	-0.0276	1157
370.000	23.56869	0.48272	9.176255	337.1753	14842.3	16327.3	145.865	75.41	92.05	0.01292	-0.0264	1133
380.000	23.29413	0.47556	8.895728	321.0261	15749.4	17251.9	148.345	76.47	93.74	0.01720	-0.0251	1108
390.000	23.01418	0.46900	8.624109	304.7803	16666.5	18187.3	150.805	77.45	95.42	0.02243	-0.0237	1082
400.000	22.72789	0.46303	8.360223	288.4890	17593.1	19133.1	153.243	78.33	97.09	0.02872	-0.0222	1056
410.000	22.43424	0.45765	8.102947	272.2066	18529.7	20089.9	155.661	79.08	98.73	0.03616	-0.0206	1029
420.000	22.13215	0.45285	7.851201	255.9897	19477.7	21059.1	158.058	79.69	100.34	0.04485	-0.0188	1002
430.000	21.82043	0.44864	7.603932	239.8962	20439.1	22043.1	160.435	80.13	101.90	0.05489	-0.0169	975
440.000	21.49776	0.44503	7.360111	223.9842	21417.6	23045.7	162.792	80.39	103.41	0.06641	-0.0147	948
450.000	21.16273	0.44203	7.118718	208.3118	22417.7	24071.5	165.131	80.47	104.91	0.07962	-0.0123	920
460.000	20.81374	0.43967	6.878737	192.9366	23445.1	25126.7	167.453	80.44	106.48	0.09476	-0.0096	892
470.000	20.44906	0.43799	6.639153	177.9155	24507.1	26218.6	169.764	80.46	108.31	0.11218	-0.0064	864
480.000	20.06674	0.43703	6.398947	163.3054	25611.6	27355.8	172.072	80.94	110.83	0.13228	-0.0028	835
490.000	19.66463	0.43687	6.157098	149.1635	26768.3	28548.1	174.397	82.77	114.97	0.15544	0.0013	804
500.000	19.24036	0.43757	5.912597	135.5484	27991.2	29810.3	176.787	88.21	123.05	0.18159	0.0056	768
510.000	18.79133	0.43924	5.664463	122.5216	29335.4	31197.9	179.468	105.74	143.56	0.20795	0.0094	720
515.000	18.55666	0.44048	5.538746	116.2492	30045.8	31931.9	180.981	114.97	154.44	0.21878	0.0112	698
520.000	18.31475	0.44201	5.411789	110.1489	30788.4	32699.5	182.458	111.46	152.68	0.23208	0.0141	686
530.000	17.80773	0.44601	5.153811	98.5027	32249.3	34214.8	185.345	105.60	150.67	0.25916	0.0208	662
540.000	17.26742	0.45145	4.890012	87.6631	33691.6	35718.5	188.159	100.98	150.38	0.28703	0.0287	638
560.000	16.07818	0.46753	4.345184	68.7647	36577.0	38753.8	193.678	94.48	153.96	0.34495	0.0485	591
580.000	14.74442	0.49224	3.785575	54.1954	39526.6	41900.4	199.199	90.49	161.04	0.40382	0.0736	548
600.000	13.30906	0.52715	3.235676	44.4578	42563.4	45193.1	204.771	88.03	167.80	0.46224	0.1021	514
620.000	11.87615	0.57170	2.731167	39.3520	45631.8	48578.9	210.304	86.37	169.70	0.51837	0.1302	491
640.000	10.56999	0.62227	2.300159	37.9787	48622.5	51933.8	215.639	84.97	164.77	0.56837	0.1531	479
660.000	9.46651	0.67375	1.950965	39.2126	51440.4	55137.7	220.570	83.65	155.14	0.61372	0.1681	476
680.000	8.57311	0.72208	1.675766	42.0168	54048.6	58131.1	225.046	82.44	144.27	0.65327	0.1749	479
700.000	7.85731	0.76535	1.459977	45.5428	56461.3	60915.8	229.084	81.42	134.49	0.68833	0.1756	484
720.000	7.27819	0.80330	1.289270	49.3454	58713.1	63522.0	232.758	80.64	126.43	0.71891	0.1722	491
740.000	6.80273	0.83621	1.152485	53.3001	60838.1	65983.1	236.130	80.09	119.94	0.74571	0.1657	499
760.000	6.40625	0.86460	1.041323	57.2901	62865.0	68328.5	239.259	79.76	114.81	0.76915	0.1572	507
780.000	6.07050	0.88902	0.949680	61.2318	64817.1	70582.7	242.186	79.60	110.78	0.78975	0.1476	515
800.000	5.78205	0.91004	0.873088	65.0741	66712.2	72765.5	244.950	79.60	107.63	0.80775	0.1376	524

Table 17. Properties of methanol along isobars - Continued

T K	ρ mol/l	Z	$\partial P/\partial T$ bar/K	$\partial P/\partial \rho$ bar/(mol/l)	E J/mol	H J/mol	S J/(mol·K)	C_v J/(mol·K)	C_p J/(mol·K)	f/P	μ K/bar	W m/s
400.00000 bar												
175.590	28.91935	0.94740	19.726358	648.4605	-254.3	1128.8	88.445	58.59	71.19	0.00000	-0.0396	1568
180.000	28.78585	0.92848	19.269848	639.7263	82.8	1472.4	90.210	58.45	71.06	0.00000	-0.0397	1557
190.000	28.48790	0.88881	18.308429	621.1054	827.8	2231.9	94.043	58.20	70.84	0.00000	-0.0398	1535
200.000	28.19616	0.85311	17.437132	603.8454	1551.3	2969.9	97.669	58.11	70.78	0.00000	-0.0398	1515
210.000	27.91021	0.82081	16.643334	587.6494	2260.1	3693.3	101.122	58.21	70.91	0.00000	-0.0398	1494
220.000	27.62957	0.79146	15.916663	572.2686	2960.6	4408.3	104.429	58.50	71.26	0.00000	-0.0395	1474
230.000	27.35378	0.76468	15.248507	557.4928	3658.6	5120.9	107.610	59.00	71.82	0.00001	-0.0392	1455
240.000	27.08237	0.74016	14.631659	543.1442	4359.1	5836.1	110.686	59.68	72.58	0.00002	-0.0387	1435
250.000	26.81484	0.71764	14.060009	529.0711	5066.7	6558.4	113.671	60.55	73.54	0.00004	-0.0381	1416
260.000	26.55071	0.69691	13.528376	515.1467	5785.0	7291.5	116.580	61.56	74.66	0.00008	-0.0375	1396
270.000	26.28945	0.67776	13.032299	501.2640	6516.9	8038.4	119.422	62.69	75.93	0.00016	-0.0367	1376
280.000	26.03055	0.66006	12.567924	487.3350	7264.8	8801.4	122.208	63.91	77.31	0.00028	-0.0359	1356
290.000	25.77349	0.64365	12.131898	473.2891	8030.0	9582.0	124.944	65.20	78.78	0.00049	-0.0350	1335
300.000	25.51771	0.62844	11.721279	459.0717	8813.4	10380.9	127.638	66.53	80.31	0.00082	-0.0341	1315
310.000	25.26265	0.61430	11.333473	444.6435	9615.1	11198.4	130.294	67.86	81.90	0.00132	-0.0332	1294
320.000	25.00773	0.60117	10.966179	429.9787	10434.7	12034.3	132.917	69.20	83.51	0.00204	-0.0323	1272
330.000	24.75237	0.58897	10.617335	415.0651	11271.5	12887.5	135.510	70.51	85.14	0.00308	-0.0313	1250
340.000	24.49592	0.57763	10.285084	399.9018	12124.2	13757.1	138.075	71.79	86.78	0.00450	-0.0302	1228
350.000	24.23776	0.56710	9.967752	384.5001	12991.4	14641.7	140.616	73.03	88.42	0.00641	-0.0292	1205
360.000	23.97721	0.55734	9.663806	368.8803	13871.5	15539.7	143.132	74.21	90.07	0.00892	-0.0281	1182
370.000	23.71357	0.54831	9.371836	353.0719	14763.0	16449.8	145.625	75.34	91.71	0.01211	-0.0269	1158
380.000	23.44609	0.53997	9.090538	337.1118	15664.8	17370.8	148.095	76.40	93.34	0.01610	-0.0257	1133
390.000	23.17398	0.53230	8.818697	321.0431	16575.8	18301.9	150.543	77.37	94.96	0.02098	-0.0244	1108
400.000	22.89642	0.52529	8.555170	304.9141	17495.7	19242.7	152.969	78.24	96.55	0.02685	-0.0231	1083
410.000	22.61252	0.51891	8.298876	288.7771	18424.7	20193.7	155.373	78.99	98.11	0.03377	-0.0216	1058
420.000	22.32134	0.51316	8.048782	272.6866	19364.1	21156.2	157.754	79.59	99.61	0.04185	-0.0200	1032
430.000	22.02184	0.50804	7.803897	256.6993	20316.0	22132.4	160.112	80.02	101.05	0.05119	-0.0183	1005
440.000	21.71294	0.50356	7.563259	240.8723	21283.5	23125.8	162.448	80.26	102.43	0.06191	-0.0164	979
450.000	21.39344	0.49972	7.325932	225.2630	22271.1	24140.9	164.763	80.33	103.76	0.07418	-0.0142	952
460.000	21.06206	0.49655	7.090998	209.9284	23284.4	25183.5	167.058	80.28	105.12	0.08826	-0.0118	926
470.000	20.71739	0.49407	6.857553	194.9248	24329.9	26260.7	169.337	80.29	106.71	0.10445	-0.0091	899
480.000	20.35792	0.49232	6.624706	180.3080	25415.5	27380.3	171.608	80.74	108.93	0.12315	-0.0060	871
490.000	19.98200	0.49135	6.391583	166.1332	26550.2	28552.0	173.890	82.54	112.72	0.14470	-0.0025	841
500.000	19.58785	0.49121	6.157328	152.4561	27747.6	29789.6	176.231	87.96	120.36	0.16904	0.0013	806
510.000	19.17360	0.49198	5.921129	139.3331	29061.7	31147.9	178.853	105.45	140.36	0.19361	0.0048	760
515.000	18.95832	0.49274	5.802061	132.9975	29755.2	31865.1	180.334	114.66	150.93	0.20372	0.0065	739
520.000	18.73726	0.49376	5.682232	126.8226	30479.5	32614.3	181.776	111.13	148.83	0.21615	0.0087	728
530.000	18.27685	0.49665	5.439990	114.9861	31898.7	34087.3	184.582	105.21	146.04	0.24148	0.0139	705
540.000	17.79046	0.50078	5.193927	103.8889	33291.9	35540.3	187.301	100.52	144.83	0.26762	0.0201	683
560.000	16.73389	0.51338	4.689828	84.1939	36052.0	38442.4	192.578	93.86	146.11	0.32224	0.0353	639
580.000	15.56426	0.53293	4.173503	68.3131	38836.6	41406.6	197.779	89.67	150.72	0.37835	0.0544	598
600.000	14.30316	0.56058	3.658474	56.7053	41680.6	44477.2	202.975	87.05	156.28	0.43489	0.0763	563
620.000	13.00947	0.59645	3.168002	49.4182	44568.5	47643.2	208.147	85.38	159.78	0.49033	0.0989	537
640.000	11.76830	0.63875	2.726458	45.9277	47439.1	50838.0	213.228	84.16	158.96	0.54097	0.1191	520
660.000	10.65407	0.68417	2.348456	45.3645	50217.6	53972.0	218.051	83.16	153.85	0.58793	0.1346	511
680.000	9.70211	0.72920	2.035902	46.8415	52851.7	56974.5	222.540	82.26	146.18	0.62976	0.1443	509
700.000	8.91018	0.77133	1.782026	49.6009	55326.1	59815.4	226.659	81.49	137.94	0.66736	0.1483	511
720.000	8.25608	0.80931	1.576596	53.0589	57651.6	62496.5	230.438	80.88	130.37	0.70056	0.1478	516
740.000	7.71261	0.84293	1.409425	56.7563	59851.7	65038.0	233.921	80.44	123.99	0.72992	0.1446	522
760.000	7.25578	0.87242	1.272046	60.5645	61950.5	67463.4	237.156	80.17	118.74	0.75578	0.1393	529
780.000	6.86715	0.89816	1.157958	64.4173	63969.4	69794.2	240.183	80.06	114.48	0.77862	0.1325	536
800.000	6.53266	0.92054	1.062190	68.2548	65925.2	72048.3	243.037	80.07	111.06	0.79868	0.1248	543

Table 17. Properties of methanol along isobars - Continued

T	ρ	Z	$\partial P/\partial T$	$\partial P/\partial \rho$	E	H	S	C_v	C_p	f/P	μ	W
K	mol/l		bar/K	bar/(mol/l)	J/mol	J/mol	J/(mol-K)	J/(mol-K)	J/(mol-K)		K/bar	m/s
500.00000 bar												
175.590	29.06998	1.17812	20.346375	679.3417	-309.3	1410.7	88.086	58.54	71.20	0.00000	-0.0396	1605
180.000	28.93854	1.15448	19.876121	670.1685	26.5	1754.3	89.852	58.39	71.07	0.00000	-0.0397	1595
190.000	28.64516	1.10492	18.886114	650.6793	768.4	2513.9	93.684	58.15	70.84	0.00000	-0.0398	1572
200.000	28.35791	1.06030	17.989348	632.7106	1488.7	3251.9	97.311	58.06	70.78	0.00000	-0.0398	1551
210.000	28.07638	1.01994	17.172742	615.9482	2194.3	3975.2	100.764	58.15	70.91	0.00000	-0.0398	1530
220.000	27.80016	0.98325	16.425558	600.1297	2891.6	4690.1	104.070	58.44	71.24	0.00000	-0.0396	1510
230.000	27.52884	0.94977	15.738893	585.0334	3586.2	5402.5	107.250	58.94	71.79	0.00001	-0.0392	1491
240.000	27.26197	0.91911	15.105284	570.4707	4283.2	6117.3	110.324	59.62	72.54	0.00002	-0.0388	1471
250.000	26.99912	0.89093	14.518447	556.2820	4987.2	6839.1	113.308	60.48	73.48	0.00004	-0.0382	1452
260.000	26.73983	0.86497	13.973024	542.3309	5701.7	7571.6	116.213	61.49	74.58	0.00008	-0.0376	1432
270.000	26.48367	0.84099	13.464426	528.5024	6429.7	8317.6	119.053	62.62	75.83	0.00015	-0.0369	1413
280.000	26.23015	0.81879	12.988691	514.7005	7173.3	9079.5	121.834	63.85	77.19	0.00027	-0.0361	1393
290.000	25.97880	0.79821	12.542376	500.8460	7934.1	9858.7	124.566	65.13	78.63	0.00046	-0.0353	1373
300.000	25.72913	0.77909	12.122471	486.8760	8712.7	10656.0	127.254	66.45	80.13	0.00077	-0.0344	1353
310.000	25.48066	0.76131	11.726326	472.7420	9509.2	11471.5	129.904	67.79	81.68	0.00123	-0.0335	1333
320.000	25.23286	0.74476	11.351595	458.4096	10323.4	12304.9	132.519	69.12	83.25	0.00190	-0.0327	1312
330.000	24.98522	0.72935	10.996187	443.8572	11154.2	13155.3	135.103	70.43	84.83	0.00285	-0.0317	1291
340.000	24.73720	0.71500	10.658231	429.0754	12000.3	14021.6	137.658	71.70	86.41	0.00416	-0.0308	1270
350.000	24.48824	0.70163	10.336035	414.0657	12860.4	14902.2	140.187	72.94	88.00	0.00591	-0.0298	1248
360.000	24.23776	0.68919	10.028071	398.8402	13732.7	15795.6	142.690	74.12	89.57	0.00819	-0.0289	1226
370.000	23.98517	0.67762	9.732935	383.4195	14615.7	16700.3	145.169	75.24	91.13	0.01110	-0.0278	1203
380.000	23.72986	0.66689	9.449349	367.8332	15508.0	17615.1	147.622	76.29	92.67	0.01473	-0.0268	1180
390.000	23.47117	0.65695	9.176126	352.1172	16408.6	18538.9	150.052	77.25	94.18	0.01916	-0.0256	1157
400.000	23.20843	0.64778	8.912162	336.3136	17316.9	19471.3	152.457	78.11	95.65	0.02447	-0.0245	1133
410.000	22.94093	0.63935	8.656425	320.4690	18233.1	20412.7	154.836	78.85	97.07	0.03073	-0.0232	1109
420.000	22.66794	0.63164	8.407944	304.6335	19158.2	21363.9	157.190	79.44	98.41	0.03803	-0.0219	1085
430.000	22.38866	0.62465	8.165802	288.8600	20094.0	22327.3	159.518	79.86	99.66	0.04645	-0.0205	1060
440.000	22.10228	0.61836	7.929122	273.2029	21043.5	23305.7	161.820	80.09	100.82	0.05611	-0.0189	1035
450.000	21.80791	0.61278	7.697069	257.7172	22010.8	24303.5	164.096	80.14	101.90	0.06716	-0.0173	1011
460.000	21.50463	0.60792	7.468838	242.4580	23001.1	25326.1	166.346	80.08	102.96	0.07983	-0.0154	986
470.000	21.19148	0.60377	7.243657	227.4801	24020.6	26380.0	168.575	80.06	104.20	0.09441	-0.0133	961
480.000	20.86742	0.60038	7.020779	212.8372	25076.6	27472.7	170.790	80.49	106.02	0.11125	-0.0109	935
490.000	20.53138	0.59775	6.799488	198.5823	26177.6	28612.9	173.007	82.26	109.33	0.13067	-0.0081	907
500.000	20.18224	0.59593	6.579099	184.7674	27336.4	29813.8	175.274	87.64	116.40	0.15262	-0.0050	875
510.000	19.81884	0.59496	6.358962	171.4432	28606.3	31129.2	177.811	105.09	135.72	0.17480	-0.0017	831
515.000	19.63144	0.59480	6.248800	164.9811	29275.3	31822.2	179.245	114.28	145.91	0.18394	-0.0002	810
520.000	19.44004	0.59489	6.138482	158.6607	29973.3	32545.3	180.636	110.72	143.40	0.19518	0.0013	800
530.000	19.04469	0.59578	5.917130	146.4701	31334.1	33959.5	183.330	104.75	139.68	0.21815	0.0047	780
540.000	18.63174	0.59770	5.694468	134.9221	32660.0	35343.6	185.921	100.00	137.39	0.24193	0.0087	760
560.000	17.74979	0.60500	5.244148	113.9572	35254.9	38071.9	190.881	93.18	136.07	0.29195	0.0187	720
580.000	16.79126	0.61748	4.787406	96.1677	37829.0	40806.7	195.681	88.80	137.82	0.34401	0.0311	682
600.000	15.76310	0.63583	4.328552	81.9053	40423.6	43595.5	200.399	85.99	141.23	0.39744	0.0454	647
620.000	14.68789	0.66036	3.877359	71.3596	43052.0	46456.1	205.070	84.22	144.77	0.45113	0.0608	618
640.000	13.60521	0.69063	3.447754	64.4235	45700.3	49375.4	209.713	83.07	146.87	0.50177	0.0759	596
660.000	12.56312	0.72526	3.053529	60.6584	48334.1	52314.0	214.234	82.30	146.58	0.55025	0.0893	580
680.000	11.60279	0.76219	2.703771	59.4273	50912.5	55221.8	218.581	81.74	143.87	0.59486	0.0998	571
700.000	10.74776	0.79931	2.401260	60.0799	53404.9	58057.0	222.693	81.31	139.47	0.63590	0.1069	567
720.000	10.00328	0.83495	2.143763	62.0551	55796.6	60795.0	226.552	81.00	134.28	0.67309	0.1107	566
740.000	9.36216	0.86801	1.926258	64.9050	58087.1	63427.8	230.160	80.78	129.05	0.70657	0.1114	568
760.000	8.81138	0.89800	1.742771	68.2898	60284.9	65959.4	233.537	80.67	124.21	0.73649	0.1098	572
780.000	8.33669	0.92480	1.587510	71.9638	62402.5	68400.0	236.706	80.66	119.96	0.76323	0.1064	577
800.000	7.92479	0.94854	1.455368	75.7051	64453.1	70762.4	239.697	80.75	116.39	0.78695	0.1020	583

Table 17. Properties of methanol along isobars - Continued

T	ρ	Z	$\partial P/\partial T$	$\partial P/\partial \rho$	E	H	S	C_v	C_p	f/P	μ	W
K	mol/l		bar/K	bar/(mol/l)	J/mol	J/mol	J/(mol·K)	J/(mol·K)	J/(mol·K)		K/bar	m/s
600.00000 bar												
175.590	29.21402	1.40677	20.922116	709.2610	-361.5	1692.4	87.737	58.52	71.21	0.00000	0.0395	1641
180.000	29.08456	1.37842	20.439063	699.6379	-26.9	2036.0	89.502	58.37	71.08	0.00000	-0.0396	1630
190.000	28.79555	1.31897	19.422379	679.2511	712.0	2795.7	93.335	58.12	70.85	0.00000	-0.0398	1607
200.000	28.51256	1.26546	18.501826	660.5413	1429.4	3533.8	96.962	58.03	70.78	0.00000	-0.0398	1585
210.000	28.23522	1.21704	17.663897	643.1776	2132.1	4257.1	100.415	58.12	70.90	0.00000	-0.0397	1564
220.000	27.96316	1.17302	16.897513	626.8836	2826.2	4971.9	103.720	58.41	71.23	0.00000	-0.0396	1544
230.000	27.69600	1.13284	16.193492	611.4264	3517.7	5684.1	106.900	58.91	71.77	0.00001	-0.0392	1524
240.000	27.43334	1.09604	15.544153	596.6079	4211.6	6398.7	109.973	59.59	72.51	0.00002	-0.0388	1505
250.000	27.17478	1.06221	14.943019	582.2595	4912.2	7120.1	112.955	60.45	73.44	0.00004	-0.0383	1485
260.000	26.91992	1.03102	14.384584	568.2370	5623.2	7852.0	115.859	61.46	74.52	0.00008	-0.0377	1466
270.000	26.66835	1.00220	13.864134	554.4178	6347.6	8597.4	118.695	62.59	75.75	0.00015	-0.0370	1447
280.000	26.41965	0.97551	13.377600	540.6980	7087.4	9358.4	121.474	63.81	77.09	0.00026	-0.0362	1427
290.000	26.17338	0.95073	12.921457	526.9913	7844.1	10136.5	124.201	65.09	78.51	0.00045	-0.0354	1408
300.000	25.92912	0.92770	12.492623	513.2268	8618.5	10932.5	126.885	66.41	79.98	0.00075	-0.0346	1388
310.000	25.68641	0.90625	12.088392	499.3480	9410.5	11746.3	129.529	67.75	81.50	0.00119	-0.0338	1369
320.000	25.44480	0.88627	11.706373	485.3124	10219.7	12577.8	132.138	69.08	83.03	0.00184	-0.0330	1349
330.000	25.20382	0.86763	11.344441	471.0899	11045.3	13425.9	134.715	70.38	84.57	0.00275	-0.0321	1329
340.000	24.96301	0.85024	11.000698	456.6626	11885.8	14289.3	137.262	71.66	86.11	0.00399	-0.0313	1308
350.000	24.72187	0.83400	10.673439	442.0234	12739.7	15166.7	139.782	72.89	87.65	0.00566	-0.0304	1287
360.000	24.47991	0.81885	10.361121	427.1758	13605.3	16056.3	142.274	74.06	89.16	0.00783	-0.0295	1266
370.000	24.23660	0.80471	10.062346	412.1326	14481.1	16956.7	144.740	75.18	90.66	0.01059	-0.0285	1245
380.000	23.99142	0.79154	9.775836	396.9149	15365.4	17866.3	147.181	76.23	92.12	0.01402	-0.0276	1223
390.000	23.74382	0.77929	9.500418	381.5515	16257.3	18784.3	149.595	77.19	93.55	0.01819	-0.0266	1201
400.000	23.49324	0.76791	9.235006	366.0775	17156.1	19710.0	151.983	78.05	94.93	0.02319	-0.0256	1178
410.000	23.23909	0.75738	8.978594	350.5331	18061.7	20643.6	154.343	78.78	96.24	0.02908	-0.0245	1156
420.000	22.98075	0.74766	8.730248	334.9636	18975.1	21585.9	156.676	79.36	97.46	0.03593	-0.0234	1133
430.000	22.71761	0.73873	8.489087	319.4171	19897.9	22539.1	158.980	79.77	98.57	0.04382	-0.0222	1109
440.000	22.44899	0.73058	8.254283	303.9441	20833.1	23505.8	161.255	80.00	99.57	0.05286	-0.0209	1086
450.000	22.17423	0.72319	8.025055	288.5964	21784.4	24490.3	163.500	80.04	100.47	0.06320	-0.0196	1063
460.000	21.89261	0.71657	7.800659	273.4269	22756.9	25497.6	165.717	79.97	101.33	0.07505	-0.0181	1039
470.000	21.60340	0.71071	7.580391	258.4879	23756.6	26533.9	167.909	79.94	102.33	0.08867	-0.0164	1016
480.000	21.30584	0.70563	7.363581	243.8319	24790.4	27606.5	170.081	80.36	103.87	0.10440	-0.0144	991
490.000	20.99914	0.70132	7.149587	229.5093	25866.4	28723.7	172.250	82.11	106.86	0.12255	-0.0122	965
500.000	20.68254	0.69782	6.937807	215.5705	26997.2	29898.2	174.464	87.48	113.58	0.14307	-0.0094	934
510.000	20.35521	0.69514	6.727675	202.0638	28235.7	31183.3	176.942	104.91	132.48	0.16381	-0.0061	892
515.000	20.18728	0.69411	6.623061	195.4873	28887.5	31859.7	178.342	114.09	142.44	0.17235	-0.0047	872
520.000	20.01638	0.69331	6.518664	189.0363	29567.2	32564.8	179.699	110.52	139.69	0.18287	-0.0037	863
530.000	19.66529	0.69237	6.310299	176.5337	30888.2	33939.3	182.317	104.52	135.43	0.20440	-0.0014	844
540.000	19.30125	0.69237	6.102167	164.6003	32169.4	35278.0	184.823	99.74	132.53	0.22672	0.0015	826
560.000	18.53209	0.69535	5.685349	142.6125	34657.9	37895.5	189.583	92.86	129.81	0.27385	0.0085	788
580.000	17.70644	0.70268	5.266827	123.3993	37100.9	40489.5	194.135	88.40	129.98	0.32327	0.0173	752
600.000	16.82679	0.71476	4.847579	107.2455	39540.8	43106.5	198.562	85.51	131.95	0.37452	0.0276	718
620.000	15.90340	0.73187	4.431672	94.3493	41999.2	45772.0	202.913	83.68	134.70	0.42672	0.0388	688
640.000	14.95622	0.75390	4.026318	84.7520	44480.3	48492.0	207.239	82.51	137.23	0.47689	0.0503	663
660.000	14.01343	0.78024	3.640629	78.2777	46971.9	51253.5	211.488	81.79	138.70	0.52588	0.0612	643
680.000	13.10571	0.80974	3.283221	74.5424	49450.7	54028.9	215.637	81.35	138.60	0.57197	0.0708	629
700.000	12.25870	0.84095	2.959977	73.0418	51892.2	56786.6	219.637	81.09	136.97	0.61528	0.0783	620
720.000	11.48815	0.87243	2.673189	73.2629	54276.4	59499.2	223.460	80.95	134.17	0.65523	0.0835	615
740.000	10.79949	0.90298	2.422079	74.7545	56592.6	62148.5	227.090	80.91	130.70	0.69184	0.0864	613
760.000	10.19041	0.93177	2.203888	77.1493	58837.7	64725.6	230.528	80.94	127.02	0.72504	0.0873	614
780.000	9.65412	0.95831	2.014910	80.1602	61014.7	67229.7	233.780	81.04	123.43	0.75504	0.0865	617
800.000	9.18198	0.98240	1.851216	83.5682	63130.0	69664.5	236.862	81.21	120.12	0.78191	0.0843	621

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