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Thermophysical Properties of Propane from 85 to 700 K at Pressures to 70 MPa

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THERMOPHYSICAL PROPERTIES OF PROPANE FROM 85 TO 700 K AT PRESSURES TO 70 MPa

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Thermophysical properties of propane are tabulated at integral temperatures over the entire range of fluid states from 85 to 700 K along isobars to 70 MPa by using a modified form of the nonanalytic equation of state. These tables, along with a table for the saturated liquid, include values for density, compressibility factor, internal energy, enthalpy, entropy, heat capacities, fugacity, sound velocity, dielectric constant, and isochore and isotherm derivatives. In addition to the equation of state, equations are presented for vapor pressures, orthobaric vapor and liquid densities, ideal gas properties, virial coefficients, dielectric constants, heats of vaporization, melting pressures, and orthobaric liquid specific heats, enthalpies, and entropies. Coefficients were determined by a least squares fit of selected experimental data, including several new sets of data not included in previous propane correlations. Comparisons between experimental and calculated values are given, including those for sound velocities, heat capacities, P-ρ-T data, etc.

Key words: Densities; dielectric constants; enthalpies; entropies; equation of state; fugacities; internal energies; isobars; isochores; isotherms; Joule-Thomson inversion; latent heats of vaporization; melting line; orthobaric densities; propane; specific heats; vapor pressures; velocities of sound.

1. Introduction

The present work is a revision and extension of a previous provisional report [32] from this laboratory. Since that report many new data have become available. These include: P-ρ-T compressibility data [25,42,94,95,102]; some new vapor pressure data [57,66,94,95]; new specific heats [34] and sound velocities [107] for the saturated and compressed liquid; and new dielectric constant data [42,45] for the saturated and compressed liquid. Other correlations (and compilations) for propane [9,16,20,27,41,59, 83,84,86,90,106] should be noted. However, most of these correlations are now outdated with the availability of new and accurate data, often in regions in which data did not previously exist.

In the present work a new procedure is employed for selecting the critical density, and the nonanalytic equation of state has been modified from previous applications [30-33,35,36,38]. Derived heats of vaporization are used to obtain enthalpies and entropies of the saturated liquid, such that the free energy of vaporization is zero. Thermodynamic functions for the compressed liquid then are obtained by use of these derived properties from the triple point to the critical point temperature.

Computations in computer programs (Appendix E) for the present work have been conducted in units of the bar, the mol, and the liter. However, SI units are used throughout this report in tables and equations. Pressures are given in MPa, densities in kg/m^3, and temperatures in K. For thermal properties, the mol is used for amounts of substance. Symbols and units used in this report appear in Appendix A and conversion factors in Appendix B. Fixed-point values used here are in Appendix C. References for the principal physical properties of propane are collected in Appendix D. Computer programs for calculation of thermophysical properties of propane are in Appendix E. The density-temperature diagram for propane is presented in figure 1, where the upper, left-hand corner shows the freezing liquid line.

2. Physical Properties and Their Formulation

2.1 Fixed-Point Values

These values are listed in Appendix C.

(a) The Triple Point. The temperature (T_t = 85.47 K) is adopted from Das and Eubank [20]. The pressure is given by the present vapor-pressure eq (2). The liquid density is assigned for consistency with data in eq (3). The vapor density is from eq (4) for saturated vapor densities. (In recent work [70] on the triple point temperature of propane, including an investigation of two solid phases, a value of T_t = 85.52 K was reported.)

(b) The Boiling Point. The temperature is from vapor-pressure eq (2) at a pressure of 1 atm = 0.101325 MPa. Liquid and vapor densities are from eqs (3) and (4).

(c) The Critical Point. Our selected temperature was found to be the same as reported independently by Thomas and Harrison [95]. The pressure, at first found from the vapor-pressure equation by simultaneous fitting with P-ρ-T data, fell between values obtained from two propane samples of Thomas and Harrison, and

thereafter the vapor pressure equation was constrained to this value. The critical density was derived by the liquid volume fraction procedure of Van Poolen [101] using the orthobaric densities of Thomas and Harrison [95]. It is about one percent higher than that derived by Thomas and Harrison and is consistent with the value selected in the correlation of Das and Eubank [20].

2.2 Melting Line and Vapor Pressures

(a) The Melting Line. Experimental pressures from about two to ten kilobars were reported by Reeves, Scott, and Babb [74] as constants for the Simon eq (1). Their extrapolation to zero pressure gave T_t = 85.3 K. As their uncertainty in T was at least 1 K, the selected triple-point temperature from Das and Eubank [20] is used here. Melting pressures (P_m) in MPa are given by the relation,

$$P_m = P_t + P_o \cdot [(T/T_t)^c - 1] \quad , \qquad (1)$$

where $P_t = 1.6895 \times 10^{-10}$ MPa, T_t = 85.47 K, P_o = 718 MPa, and c = 1.283.

(b) The Vapor Pressures. Data used for adjusting eq (2) appear in the first part of table 1. Other data, weighted zero, appear in the continuation. The low pressure data with ID = 80 are newly derived via thermal loops [32] by use of new saturated liquid specific heats formulated up to 290 K by Goodwin [34]. (See section 2.7.) Define the argument, $x \equiv T/T_c$; then vapor pressures (P_σ) in MPa are given by the relation,

$$\ell n(P_\sigma \cdot 10) = a/x + b + c \cdot x + d \cdot x^2 + e \cdot x^3 + f \cdot (1 - x)^\varepsilon \quad , \qquad (2)$$

where ε = 1.35 and, from least squares analysis,

a =	- 8.7227 80250	d =	12.6857 90059
b =	19.2030 78280	e =	- 3.8065 42924
c =	-15.6106 38913	f =	1.8832 14505

The critical-point slope dP_σ/dT (0.08113 MPa/K) was constrained to equal the slope of the critical isochore from the equation of state at the critical point, $(\partial P/\partial T)_c$.

2.3 The Orthobaric Densities

(a) The Saturated Liquid Densities. Data used for adjusting eq (3) appear in the first part of table 2. Other data appear in the continuation. If the

dependent variable is defined by $y(\rho) \equiv (\rho_\ell - \rho_c)/(\rho_t - \rho_c)$ and x is defined by $x(T) \equiv (T_c - T)/(T_c - T_t)$, then the equation for saturated liquid densities is

$$y = x + (x^{\varepsilon} - x)\cdot[a + b\cdot x + c\cdot x^2] \quad , \tag{3}$$

where $\varepsilon = 0.35$ and, from least squares analysis,

$a = 0.7643\ 89673$ $\qquad$ $c = -0.1150\ 01817.$

$b = 0.0094\ 57047$

Equation (3) is constrained to a triple-point liquid density of 16.630 mol/L, such that the calculated densities at low temperatures are consistent with the most recent and most reliable data sets [45,64,68,75].

(b) The Saturated Vapor Densities. Data used for adjusting eq (4) appear in the first part of table 3. Data at ID = 1 are derived from the vapor-pressure and virial equations. Other data, weighted zero, appear in the continuation of table 3. The following, new formulation of the compressibility factor for saturated vapor utilizes the vapor-pressure equation, and yields $Z_\sigma \rightarrow 1$ as $\rho_g \rightarrow 0$, a behavior needed when integrating the thermodynamic equation of state. Let $A_o \equiv (Z_c - 1)$ where Z_c is value of the compressibility factor at the critical point, and define the arguments, $\Pi(T) \equiv P_\sigma(T)/P_c$, $x(T) \equiv T/T_c$, and $u(T) \equiv (1 - x)$. The saturated vapor densities, $\rho_g \equiv P_\sigma(T)/(Z_\sigma\cdot R\cdot T)$, then are given by

$$Z_\sigma(T) = 1 + A_o\cdot\Pi\cdot x^{-2}\cdot f(x) \quad , \tag{4}$$

where

$$f(x) \equiv 1 + u^{\varepsilon}\cdot[a + b\cdot x + c\cdot x^2 + d\cdot x^3] \quad , \tag{4a}$$

$\varepsilon = 0.35$, and, from least squares analysis,

$a = 5.439\ 73368$ $\qquad$ $c = 23.871\ 0761$

$b = -20.029\ 7592$ $\qquad$ $d = -10.105\ 1069$

Column, F(Z), in table 3 gives the experimental residual,

$$F(Z) \equiv (Z_{expt} - 1)\cdot x^2/(A_o\cdot\Pi)$$

2.4 The Virial Equation

This equation of state usually is accurate at densities up to $\rho_c/5$ when truncated as follows

$$Pv/RT = 1 + B_r(T)\cdot\rho_r + C_r(T)\cdot\rho_r^2 + \ldots \quad (5)$$

The second and third coefficients, $B_r(T)$, $C_r(T)$, here are dimensionless through use of reduced density and temperature, $\rho_r \equiv \rho/\rho_c$, $x \equiv T/T_c$. Data have been collected in two excellent monographs [24,71]. Table 4 compares selected data with the following fitting functions developed here for propane

$$B_r(T) = B_1 + B_2/x + B_3/x^3 \quad , \quad (5a)$$

$$C_r(T) = (1 - T_o/T)\cdot[C_1/x + C_2/x^5] \quad , \quad (5b)$$

where

T_o	= 342.250 K	B_3	= -0.468 0172
B_1	= 0.478 4915	C_1	= 0.215 0050
B_2	= -1.230 0138	C_2	= 4.798 6166

In present work, only the second coefficient has been used: in thermal loop computations; to synthesize P-ρ-T data for adjusting the equation of state; and to obtain saturated vapor densities via the vapor-pressure equation.

2.5 The Equation of State

Appendix D and table 7 summarize P-ρ-T data of propane. Inclusion of the recent data of Ely and Kobayashi [25], Thomas and Harrison [95], and of Haynes [42] provides a dense coverage of the $P(\rho,T)$ surface for propane at densities up to 740 kg/m^3 (16.8 mol/L), and at temperatures from 90 to 623 K.

The present equation of state is modified from earlier forms [30-33,35,36, 38]. It is nonanalytic, yielding a maximum in specific heats $C_v(\rho,T)$ at the critical point.

$$P = P_\sigma(\rho) + \rho_r\cdot R^*\cdot[T - T_\sigma(\rho)] + \rho_r^2\, R^* T_c\cdot F(\rho,T) \quad , \quad (6)$$

where $F(\rho,T) \equiv B(\rho)\cdot\Phi(\rho,T) + C(\rho)\cdot\Psi(\rho,T)$.

For any density, obtain the coexistence temperature $T_\sigma(\rho)$ by iteration from eqs (3) or (4) for the orthobaric densities. Place this in the vapor pressure eq (2) to obtain $P_\sigma(\rho) \equiv P_\sigma[T_\sigma(\rho)]$. Densities, $\rho_r \equiv \rho/\rho_c$, are reduced at the critical point. The gas constant for eq (6) therefore is redefined, $R^* \equiv (0.0083145)\cdot\rho_c$, MPa/K.

The temperature-dependent functions in eq (6) are defined as follows.

$$\Phi(\rho,T) \equiv x^{\beta}\cdot\exp\,[b\cdot(1 - T_{\sigma}/T)] - x_{\sigma}^{\beta} \quad , \tag{6a}$$

where $b \equiv (1 - \beta) + (1 - \beta)^{1/2}$, $x \equiv T/T_c$, and $x_{\sigma} \equiv T_{\sigma}(\rho)/T_c$.

$$\Psi(\rho,T) \equiv \psi(\rho,T)/\psi_{\sigma}(\rho) - 1 \quad , \tag{6b}$$

where $\psi_{\sigma}(\rho)$ is obtained from $\psi(\rho,T)$ merely by replacing T with $T_{\sigma}(\rho)$, and

$$\psi(\rho,T) \equiv 1 - (\omega - \omega^{\eta}/\eta)/(1 - 1/\eta) \quad , \tag{6c}$$

where $\omega(\rho,T) \equiv [1 - \Theta(\rho)/T]$. A value for β was found by trial. The locus of temperatures inside the coexistence envelope is

$$\Theta(\rho) \equiv T_{\sigma}(\rho)\cdot\exp[-\alpha\cdot f(\rho)] \quad , \tag{6d}$$

where

$$f(\rho) \equiv |\rho_r - 1|^3/((\rho_t)_r - 1)^3$$

$(\rho_t)_r \equiv \rho_t/\rho_c$ is a constant, and ρ_t refers to liquid density at the triple point. The parameter α is to be found by trial.

The density-dependent coefficients of eq (6) have been developed tediously by trial with data for propane;

$$B(\rho) \equiv B_1 + B_2\cdot\rho_r^2 \tag{6e}$$

and

$$C(\rho) \equiv C_1\cdot(\rho_r - 1)\cdot(\rho_r - C_0)\cdot\exp(-\gamma\cdot\rho_r^2) \quad , \tag{6f}$$

where parameters C_0 and γ are to be found by trial.

The parameters and coefficients of eq (6) for propane are

$\alpha = 1$, $\beta = 0.70$, $\gamma = 0.15$, $\eta = 1.1$,

$B_1 = 0.4565\ 0524\ 198$ $\qquad$ $C_0 = 2.2$

$B_2 = 0.1582\ 2653\ 715$ $\qquad$ $C_1 = -0.2490\ 4576\ 736$

Table 5 gives behavior of coefficients $B(\rho)$, $C(\rho)$.

Behavior of the calculated critical isotherm near the critical density is shown in table 6. In particular, the slope $(\partial P/\partial \rho_{r,t})_{T_c}$ is seen to have no

negative values. (Densities in table 6 are reduced at the liquid triple point, $\rho_{r,t} = \rho/\rho_t$.) Table 7 gives deviations of experimental densities and pressures from the equation-of-state surface for most available data. Data not used for adjusting the equation of state include those of Tomlinson [98], Deschner and Brown [22], Teichmann [94], and of Warowny, et al. [102].

Some of the preliminary data of Thomas and Harrison [95] (for $T > T_c$) that were used in the fit of the equation of state were subsequently adjusted as a result of a small air impurity (0.004 percent) in their sample gas. The maximum change in pressure was 0.017 percent while the average change was 0.004 percent. Such a small change has negligible effect on the equation of state. Comparisons with the corrected data of Thomas and Harrison are given at the end of table 7. The preliminary data, which were used in the fit but do not appear in the table, are represented by data points 720-931 missing from the table. For temperatures less than T_c, most of the data of Thomas and Harrison (designated in table 7 as points 1460-1988) were obtained with a different sample and they made no adjustments to this data.

On the first page of table 7, a summary of comparisons of P-ρ-T data with values calculated from the equation of state is given. For the isochores of Thomas and Harrison, deviations in the table are those for the corrected data. For the preliminary data the density and pressure deviations are 0.43 and 0.32 percent, respectively, or approximately the same as those for the corrected data.

An explanation for some of the large density deviations in table 7 (e.g., data points 1626, 1640, etc.) that are exhibited when the data of Thomas and Harrison [95] are compared with the equation of state should be noted. These data points were taken extremely close to the liquid-vapor coexistence boundary. Although the pressure deviations were relatively small (maximum of 0.15 percent) when compared to the equation of state, the pressure deviations were of sufficient magnitude in some regions of experimental data such that the calculated density fell on the wrong side of the "dome" and gave a liquid instead of a vapor density, or vice versa.

It should be noted that the functional form of the equation of state for propane given here also has been used in current work on isobutane [37] and normal butane [43]. Identical nonlinear parameters, except for small differences in γ, have been obtained for all three fluids in optimizing this equation to available P-ρ-T data.

2.6 The Ideal Gas Functions

Chao, et al. [13] calculated ideal gas thermodynamic properties using spectroscopic data and compared results for the specific heat with other sources. A plot of their $C_p^o(T)$ is linear at low temperatures, changing to the usual sigmoid shape at high temperatures, a behavior that we could not represent analytically. Their enthalpies are represented by use of the arguments $x \equiv T/100$ and $u \equiv x^{1/3}$;

$$(H^o - H_o^o)/RT = 4 + \exp(-\varepsilon/x) \cdot \sum_{i=0}^{5} A_i/u^i \quad , \tag{7}$$

where $R = 8.31434$ J/(mol·K), $\varepsilon = 3$, and

A_0	= 24.11012	A_3	= 980.124065
A_1	= 94.40550	A_4	= -678.64094
A_2	= -585.32814	A_5	= 170.42778

Specific heats are $C_p^o(T) = dH^o/dT$, but the entropies require numerical integration (SUBROUTINE IDEAL, Appendix E),

$$S^o(T) = S^o(300) + \int_{300}^{T} C_p^o \cdot dT/T \quad , \tag{7a}$$

where $S^o(300)/R = 32.552$. Table 8 presents the data used for adjusting eq (7), and table 9 gives interpolated results from eq (7).

2.7 Thermal Loop Computations

At temperatures from the triple- to the normal boiling-point, new data have been derived for vapor pressures, saturated vapor densities, and for heats of vaporization by thermal loop computations including ΔH and ΔS for saturated vapor and for saturated liquid. The procedure given by Goodwin [32], and more generally by Yarbrough and Tsai [103], used virial eq (5), ideal gas functions eq (7), the heat of vaporization of Kemp and Egan [53] at the normal boiling point, and the following formulation of the specific heats of Goodwin [34] for the saturated liquid from the triple point to 290 K. Define $x \equiv T/369.80$, then

$$C_\sigma(T) = A_1 \cdot x/(1 - x)^\varepsilon + \sum_{i=2}^{5} A_i \cdot x^{i-2} \quad , \tag{8}$$

in J/(mol·K), where

ε = 0.7 A_3 = 48.01034

A_1 = - 1.77942 A_4 = -100.24355

A_2 = 77.12878 A_5 = 135.42504

The rms relative deviation is 0.13 percent for the 76 data points. (The temperature, 369.80 K, was used as a reducing parameter for x in the original thermal loop computations. Since the fit of the specific heats is independent of the selected temperature over a wide range, it has not been changed to the critical temperature selected in the present work.)

Results for the vapor pressures appear in table 1 at ID = 80, and for the heats of vaporization in table 10 at ID = 40. Saturated vapor densities from the thermal loop computations are replaced in table 3 at ID = 1 by derived data from the fitted vapor-pressure eq (2) and the virial eq (5).

2.8 The Heats of Vaporization

Table 10 shows the "fit" of selected data. Those at ID = 40 are derived via thermal loops (section 2.7). Those at ID = 41 are from the Clapeyron equation. The formulation of these data in kJ/mol uses argument $x(T) \equiv (T_c - T)/(T_c - T_t)$;

$$Q_{vap} = A_1 \cdot x + (x^{\varepsilon} - x) \cdot [A_2 + A_3 \cdot x + A_4 \cdot x^2] \quad , \qquad (9)$$

where

ε = 0.38 A_3 = 6.252 384

A_1 = 24.840 848 A_4 = -12.156 857

A_2 = 24.166 535

The uncertainty of at least 0.5 percent in derived data for Q_{vap} at the higher temperatures will affect compressed liquid thermofunctions at these temperatures, because we use Q_{vap} to compute ΔH and ΔS across the "dome," from saturated vapor to liquid along isotherms.

2.9 Saturated Liquid Enthalpies and Entropies

Data for saturated liquid enthalpies and entropies have been derived at temperatures from the triple- to the critical-point by use of the ideal gas functions, the equation of state, and the formulated heats of vaporization. The enthalpies then have been formulated, as shown in table 11. Define the variables

$x \equiv (T_c - T)/(T_c - T_t)$, $y \equiv (H_\sigma - H_c)/(H_t - H_c)$,

when the enthalpies, $H_\sigma(T)$, are described in J/mol by

$$y = x + (x^\varepsilon - x) \cdot \sum_{i=1}^{7} A_i \cdot x^{i-1} \quad , \tag{10}$$

where $\varepsilon = 0.37$, $H_t = 0.001$ J/mol, $H_c = 33082.187$ J/mol and

A_1 =	0.2998 57304	A_5 =	-0.9494 39705
A_2 =	0.3868 58687	A_6 =	0.1462 98673
A_3 =	-0.6240 97828	A_7 =	0.1113 75514
A_4 =	1.0360 03301		

The formulation of saturated liquid entropies in J/(mol·K) is shown in table 12. Let $x \equiv (T_c - T)/(T_c - T_t)$ and $y \equiv (S_\sigma - S_c)/(S_t - S_c)$, then

$$y = x + (x^\varepsilon - x) \cdot \sum_{i=1}^{8} A_i \cdot x^{i-1} \quad , \tag{11}$$

where $\varepsilon = 0.32$, $S_t = 82.56147$ J/(mol·K), $S_c = 234.72617$ J/(mol·K), and

A_1 =	0.1263 07708	A_5 =	14.0277 6880
A_2 =	-0.7539 54622	A_6 =	-20.6289 4506
A_3 =	1.2532 70427	A_7 =	16.0117 8434
A_4 =	-5.9696 10330	A_8 =	- 5.4110 8275

Specific heats along the saturated liquid path follow from the relation, $C_\sigma(T) = T \cdot dS_\sigma/dT$, in J/(mol·K), as given in the last column of table 12. For the thermal computations, these derived $C_\sigma(T)$ values are replaced by our formulation of experimental data, given below in section 4.1.

All of the above saturated liquid formulations for $H_\sigma(T)$, $S_\sigma(T)$, and $C_\sigma(T)$ are used to compute thermodynamic properties for compressed liquid states at $T < T_c$.

2.10 Dielectric Constants

Table 13 presents experimental and calculated dielectric constants, ε, for the saturated vapor [89] and liquid [45,89] and for the compressed liquid [42] of propane. These data are formulated via the Clausius-Mossotti function,

$$CMF \equiv [(\varepsilon - 1)/(\varepsilon + 2)]/\rho, \quad cm^3/mol \tag{12a}$$

The following formulation has been used to tabulate ε along isobars in table 21 at temperatures extrapolated up to 450 K, and at pressures up to 70 MPa. Define the variables,

$$x \equiv T/T_c \quad , \qquad \rho_r \equiv \rho/\rho_c \quad ,$$

where P is in MPa, when

$$CMF = A_1 + A_2 \cdot \rho_r + A_3 \cdot \rho_r^2 + A_4 \cdot \ell n\,(1 + 1/x) + A_5 \cdot P/10 \qquad (12b)$$

A_1 = 15.562 6310 $\qquad$ A_4 = 0.5107 4051
A_2 = 0.385 8141 $\qquad$ A_5 = -0.0045 1412
A3 = -0.150 9977

Data at high pressures have a diminished weighting as seen in table 13. The rms relative deviation for 260 points is 0.048 percent in the CMF, and 0.018 percent for the dielectric constants.

Comparisons are not given in table 13 for data not used in the fit to eq (12). The dielectric constants of Pan, Mady, and Miller [69] at temperatures from 91 to 115 K differ from those calculated from eq (12) by approximately 0.8 to 1.0 percent while those from Thompson and Miller [96] and Luo and Miller [62] at temperatures between 220 and 288.7 K agree within 0.1 percent with values calculated from eq (12).

3. Computational Methods

The numerical values for E and H in this report are based on the assigned value, E = 0 at the liquid triple-point, obtained by use of the arbitrary value, E_o^o = 21,888.910 J/mol. Specific heats of Kemp and Egan [53] could be integrated to give the solid at T = 0 as reference state.

3.1 The Homogeneous Domain

The homogeneous domain of figure 1 includes all regions which can be attained along isotherms starting at zero density without crossing the vapor-liquid "dome," and without passing very close to the critical point at $T > T_c$.

Computations start with ideal gas thermodynamic functions at zero density, and then continue by integrating along isotherms by use of the equation of state in the following relations,

$$\Delta E = \int [P - T\cdot(\partial P/\partial T)]\cdot d\rho/\rho^2 \quad , \tag{13}$$

$$\Delta C_v = - T\cdot \int (\partial^2 P/\partial T^2)\cdot d\rho/\rho^2 \quad , \tag{14}$$

$$\Delta S = R\cdot \ell n[P^o/(\rho RT)] + \int_o^\rho [R - (\partial P/\partial T)/\rho]\cdot d\rho/\rho \quad . \tag{15}$$

Equation (15) is for use with initial entropies in hypothetical ideal gas states at P^o = 1 atm (0.101325 MPa). For all other initial states,

$$\Delta S = - \int (\partial P/\partial T)\cdot d\rho/\rho^2 \quad . \tag{15a}$$

In each (ρ,T) state, reached by above integrations, the following are computed,

$$H = E + P\cdot v \quad , \tag{16}$$

$$C_p = C_v + T\cdot(\partial P/\partial T)^2/(\partial P/\partial \rho)/\rho^2 \quad , \tag{17}$$

and

$$W^2 = C_p\cdot(\partial P/\partial \rho)/C_v \quad . \tag{18}$$

3.2 The Saturated Liquid

At temperatures from the triple point up to the critical point, thermofunctions for the saturated vapor are obtained via eqs (13) through (16). Then eq (9) is used for the heat of vaporization, Q_{vap}, to compute

$$\Delta H = - Q \quad , \quad \Delta S = \Delta H/T \quad , \tag{19}$$

such that the free energy of vaporization, $\Delta F \equiv \Delta H - T\cdot\Delta S$, is zero (see section 2.9). Having obtained H and S for the saturated liquid, E = H - P·v is computed.

The single-phase specific heat, $C_v(\rho,T)$, at the saturated liquid boundary, is obtained via eq (23) for $C_\sigma(T)$, given below, and the thermodynamic relation,

$$C_v(\rho,T) = C_\sigma(T) + T\cdot(\partial P/\partial T)\cdot(d\rho_\ell/dT)/\rho_\ell^2 \quad , \tag{20}$$

where ρ_ℓ is density of the saturated liquid. Values for $C_p(\rho,T)$ and $W(\rho,T)$ on this boundary follow from eqs (17) and (18). For liquid at the normal boiling point, the following values have been obtained,

T_b = 231.068 K, H_b = 13135.9 J/mol,
E_b = 13128.2 J/mol, S_b = 171.288 J/(mol·K).

3.3 The Compressed Liquid

Starting with above values for E, S, and C_v on the saturated liquid boundary, eqs (13), (14), and (15a) are used to integrate along isotherms, and then H, C_p, and W are obtained via eqs (16), (17), and (18).

3.4 Fugacity Coefficients

The fugacity coefficients in table 21 were computed along isotherms relative to properties in hypothetical ideal gas states at a pressure, P^o = 1 atm (0.101325 MPa),

$$(f/P) = (P^o/P)\cdot\exp[\Delta F/RT] \quad . \tag{21}$$

For any (P,T) point, the isothermal free energy change is

$$\Delta F = (H - E_o^o) - H^o - T\cdot(S - S^o) \quad , \tag{22}$$

in which the arbitrary value of E_o^o was added to tabulated values of H(P,T) such that E(P,T) = 0 for liquid at the triple point.

3.5 Simplified Computation

Given the subroutines of Appendix E, it is necessary first to call SUBROUTINE PVTDATA, to place constants in common statements. To obtain the density in mol/L at a given T,K and P,bar, it is necessary merely to write the instruction DEN = FINDENF(T,P) for single-phase domains. Coexisting densities are given by the functions DENGASF(T) and/or DENLIQF(T), and the vapor pressure in bar by PSATF(T).

For thermodynamic properties, the subroutine SIMPLE here is an example of how to use the general subroutine THERMO (see Appendix E).

4. Tests and Comparisons

In the provisional report, Goodwin [32] compared some enthalpy differences and residual specific heats with derived results of independent authors, i.e., Kuloor, et al. [59], Eubank, et al. [27], to ensure freedom from gross errors. These now are omitted, as present properties are comparable with the earlier work. Following are some comparisons of experimental specific heats and speeds of sound with calculated values.

4.1 Specific Heats

Table 14 gives a comparison of saturated liquid specific heats, taken from the report by Goodwin [34]. These are formulated with coefficients revised for the present critical temperature of 369.85 K; for the range from T_t to T_c with $x \equiv T/T_c$, the saturated liquid specific heats, in J/(mol•K), are given by

$$C_\sigma(T) = A_1 \cdot x/(1 - x)^\epsilon + \sum_{i=2}^{5} A_i \cdot x^{i-2} \quad , \tag{23}$$

where

ϵ = 0.7

A_1 = 6.636 737

A_2 = 80.767 32

A_3 = 8.275 839

A_4 = -19.926 887

A_5 = 51.208 621

Table 15 gives comparisons of C_v and C_p data of Ernst [26], Goodwin [34], and Yesavage [104,105] with calculated values.

4.2 Sound Velocities

Table 16 gives comparisons of velocity of sound data with calculated values for the saturated liquid results of Rao [72] and of Younglove [107], and for the single-phase measurements of Lacam [60] and of Younglove [107]. The differences approaching 6 percent at low temperatures have required a careful scrutiny of the calculated derivatives used in the computation of the sound velocity. The calculated values of $(\partial P/\partial \rho)$ in table 18 agree well with plots of Haynes [42] isotherms at low temperatures, and the calculated values of $(\partial P/\partial T)$ in table 17 agree with plots of the Ely and Kobayashi [25] isochores. The uncertainty of up to 3 percent in the $C_v(\rho,T)$ data in table 15 thus corresponds to an estimated maximum uncertainty of about 2 percent in the calculated speeds of sound at low temperatures. For saturated liquid, the present calculated values fall between those of Rao [72] and Younglove [107].

5. Tables of Physical and Thermodynamic Properties

5.1 Calculated P-ρ-T Isochores and Isotherms

Tables 17 and 18 give a selection of isochores and isotherms computed by equation of state (6). These are essential to examine behavior of the $P(\rho,T)$ surface. They are a useful supplement to the isobars of table 21 for interpolating P-ρ-T values and their derivatives.

The tables of isochores show that the isochore curvatures are qualitatively consistent with a maximum in the specific heat $C_v(\rho,T)$ at the critical point. The isotherm tables show that $\partial P/\partial \rho$ is nonnegative and that pressure increases monotonically with density along isotherms.

5.2 The Joule-Thomson Inversion Locus

Table 19 gives the P-ρ-T locus of the JT inversion, $(\partial T/\partial P)_H = 0$, obtained from equation of state (6) under the condition $T\cdot(\partial P/\partial T) = \rho\cdot(\partial P/\partial \rho)$. This table has been computed to temperatures well above those of P-ρ-T data, to show approach to a maximum in P-T coordinates.

5.3 Thermophysical Properties of the Saturated Liquid

Table 20 gives physical and thermodynamic properties of the saturated liquid computed by methods of section 3. (Properties of the saturated vapor can be obtained from Table 21 from values given at the coexistence boundary for each isobar.)

5.4 Thermophysical Properties Along Selected Isobars

Table 21 gives physical and thermodynamic properties on isobars, computed by methods of section 3. These tables are extrapolated above the maximum temperature and pressure of P-ρ-T data used for adjusting the equation of state. Small discontinuities may be detected at $T_c = 369.85$ K along isobars at $P > P_c = 4.24746$ MPa due to a change in the paths of computation (section 3).

The first line of each table refers to freezing liquid on the P(T) melting line. Each table at $P < P_c$ contains a blank line for the transition from saturated liquid to vapor, as seen by the abrupt decrease of density. Dielectric constants are extrapolated above maximum experimental temperatures and pressures (see section 2.10 and table 13).

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APPENDIX A. 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 (usually the liquid).
Subscript r refers to reduced parameter.
Subscript o refers to reference state property.
Subscript m refers to melting line.
Subscript b refers to normal boiling point.
Superscript o refers to ideal gas state property.
expt refers to experimental value.
calc refers to calculated value.

$(\partial P/\partial T)_\rho$	isochore derivative, MPa/K
$(\partial P/\partial \rho)_T$	isotherm derivative, MPa·m^3/kg
$(\partial^2 P/\partial T^2)_\rho$	isochore curvature, MPa/K^2
α,β,γ,η	nonlinear parameters in the equation of state
a,b,c,d,e,f	coefficients defined in various equations
A_0	Z_c - 1 in saturated vapor density equation
A_i	coefficients defined in various equations
b	$(1 - \beta) + (1 - \beta)^{1/2}$ in equation of state
$B(\rho),C(\rho)$	density-dependent coefficients in the equation of state
$B(T),C(T)$	second and third virial coefficients
$B_r(T),C_r(T)$	reduced second and third virial coefficients
c	exponent in Simon equation
$C_v(\rho,T)$	molal heat capacity at constant volume, J/(mol·K)
$C_p(\rho,T)$	molal heat capacity at constant pressure, J/(mol·K)
$C_\sigma(T)$	molal heat capacity for saturated liquid, J/(mol·K)
CMF	Clausius-Mossotti function, cm^3/mol
$E(\rho,T)$	the internal energy, J/mol
E_0^o	21,888.910 J/mol (arbitrary)
ε	exponent in various equations
ε	dielectric constant
f/P	fugacity/pressure ratio
$f(\rho)$	used in definition of $\theta(\rho)$
f(x)	defined in saturated vapor density equation
$F(\rho,T)$	defined in the equation of state
F(Z)	defined in the saturated vapor density equation
H_0^o	enthalpy for ideal gas state at T = 0

$H(\rho,T)$	the enthalpy, J/mol
J	the joule, 1 N•m
JT	Joule-Thomson
L	the liter, 10^{-3} m^3
mol	44.09721 grams of propane (C^{12} = 12 scale)
$\omega(\rho,T)$	defined in the equation of state
P	pressure, MPa
P_m	melting pressure, MPa
$P_\sigma(T)$	the vapor pressure, MPa
$P_\sigma(\rho)$	$P_\sigma[T_\sigma(\rho)]$, vapor pressure as a function of density
$\pi(T)$	$P_\sigma(T)/P_c$
$\Phi(\rho,T)$	function in the equation of state
$\Psi(\rho,T)$	function in the equation of state
Q_{vap}	ΔH_{vap}, the heat of vaporization, J/mol
R[1]	the gas constant, 8.3145 J/(mol•K), 0.0083145 MPa•L/(mol•K)
R^*	0.0083145•ρ_c, MPa/K
ρ	density, kg/m^3
ρ_r	ρ/ρ_c, density reduced at the critical point
$\rho_{r,t}$	ρ/ρ_t, density reduced at the triple point
$S(\rho,T)$	the entropy, J/(mol•K)
T	temperature, K
T_o	constant
$T_\sigma(\rho)$	liquid-vapor coexistence temperature, K
$\theta(\rho)$	defined locus of temperatures
u(T)	defined in various equations
v	$1/\rho$, molar volume, m^3/kg
$W(\rho,T)$	the velocity of sound, m/s
x(T)	T/T_c for the equation of state
x(T)	variously defined for other equations
$x_\sigma(\rho)$	$T_\sigma(\rho)/T_c$, reduced temperature at coexistence for the equation of state
y	defined in various equations
Z	compressibility factor

(1) The gas constant is increased slightly in value from earlier work in view of the recent report of Rowlinson and Tildesley [78].

APPENDIX B. Conversion of Units

In the following table the molecular weight of propane is given by mol. wt. ≡ 44.09721 g/mol. Also, 1 cal_{th} = 1 cal (thermochemical) = 4.184 J and 1 BTU_{IT} = 1 BTU (International Table) = 1055.056 J.

To convert from	To	Multiply by
Pressure, MPa	bar	10.
	atm	9.86923
	kg/cm^2	10.1972
	lb/in^2	145.038
Volume, m^3	liter (L)	1000.
	ft^3	35.3147
Density, kg/m^3	g/cm^3	0.001
	mol/L	1./(mol. wt.)
	lb/ft^3	0.062428
Molar energy, J/mol	$MPa \cdot m^3/kg$	0.001/(mol. wt.)
	bar•L/mol	0.01
	cal_{th}/mol	0.239006
	BTU_{IT}/lb	0.429923/(mol. wt.)
Molar entropy, J/(mol•K)	$BTU_{IT}/(lb \cdot °F)$	0.238846/(mol. wt.)

APPENDIX C. Fixed-Point Values for Propane

Critical Point

P_c = 4.24746 MPa

ρ_c = 220.5 kg/m^3 (5.00 mol/L)

T_c = 369.85 K

Normal Boiling Point

P = 0.101325 MPa

T = 231.068 K

ρ_v = 2.416 kg/m^3 (0.05478 mol/L)

ρ_ℓ = 581.04 kg/m^3 (13.176 mol/L)

Triple Point

P_t = 1.6895×10^{-10} MPa

T_t = 85.47 K

ρ_v = 1.0484×10^{-8} kg/m^3 (2.3775×10^{-10} mol/L)

ρ_ℓ = 733.34 kg/m^3 (16.630 mol/L)

APPENDIX D. Propane Properties Reference Index

Melting Line	Date	Pressure Range, MPa
Reeves [74]	1964	200 - 1000
Babb [1]	1970	75 - 1050

Vapor Pressures	Date	Temperature Range, K
Burrell [8]	1916	149 - 229
Maass [63]	1921	230 - 250
Dana [19]	1926	210 - 323
Sage [81]	1934	294 - 369
Beattie [3]	1935	323 - 348
Kemp [53]	1938	166 - 231
Deschner [22]	1940	302 - T_c
Gilliland [29]	1940	315 - 353
Cherney [14]	1949	303 - 323
Reamer [73]	1949	313 - T_c
Tickner [97]	1951	105 - 165
Clegg [15]	1955	323 - T_c
Helgeson [46]	1967	278 - 361
Carruth [11,12]	1973	95 - 179
Mousa [66]	1977	335 - T_c
Teichmann [94]	1978	325 - 363
Kratzke [57]	1980	312 - 368
Thomas [95]	1982	258 - T_c
Thermal loops (This report)	1982	T_t - 230

Saturated Liquid Densities	Date	Temperature Range, K
Maass [63]	1921	195 - 249
Dana [19]	1926	273 - 329
Sage [81]	1934	294 - 369
Van der Vet [100]	1937	283 - 323
Deschner [22]	1940	303 - T_c
Carney [10]	1942	228 - 333
NGAA [67]	1942	227 - 333
Reamer [73]	1949	313 - T_c
Clegg [15]	1955	323 - T_c

APPENDIX D. (Continued)

Saturated Liquid Densities	Date	Temperature Range, K
Francis [28]	1957	293
Seeman [85]	1963	278 - 299
Helgeson [46]	1967	278 - 361
Klosek [56]	1968	89 - 133
Shana'a [87]	1968	108
Jensen [48]	1969	93 - 133
Sliwinski [88]	1969	283 - 369
Tomlinson [98]	1971	278 - 313
Kahre [50]	1973	278 - 328
Rodosevich [75]	1973	91 - 115
McClune [64]	1976	93 - 173
Haynes [44]	1977	100 - 289
Ely [25]	1978	166 - 288
Orrit [68]	1978	87 - 244
Thomas [95]	1982	258 - 369

Saturated Vapor Densities	Date	Temperature Range, K
Dana [19]	1926	290 - 323
Sage [81]	1934	294 - 369
Deschner [22]	1940	303 - T_c
Reamer [73]	1949	313 - T_c
Clegg [15]	1955	323 - T_c
Helgeson [46]	1967	278 - 361
Sliwinski [88]	1969	283 - 369
Thomas [95]	1982	323 - 369
Virial/vapor pressure equations (This report)	1982	90 - 330

Virial Coefficients	Date	Temperature Range, K
Sage [81]	1934	294 - 377
Beattie [2]	1937	370 - 548
Jessen [49]	1938	273 - 323
Deschner [22]	1940	303 - 609
Cherney [14]	1949	323 - 398
Reamer [73]	1949	311 - 511

APPENDIX D. (Continued)

Virial Coefficients	Date	Temperature Range, K
Bottomley [5]	1950	295
Kretschmer [58]	1951	303
Gunn [39]	1958	311 - 510
Dawson [21]	1960	243 - 348
McGlashan [65]	1962	295 - 413
Kapallo [52]	1963	244 - 321
Brewer [6]	1967	248 - 298
Strein [93]	1970	296 - 493
Hahn [40]	1974	211 - 493
Warowny [102]	1978	373 - 423
Thomas [95]	1982	323 - 623

Compressibility Data	Date	Range of T, K	Range of P, MPa
Sage [81]	1934	294 - 378	0.17 - 20.7
Beattie [2]	1937	369 - 548	2.4 - 31.0
Burgoyne [7]	1940	243 - 293	0.5 - 6.0
Deschner [22]	1940	303 - 609	0.1 - 14.2
Cherney [14]	1949	323 - 398	1.1 - 5.0
Reamer [73]	1949	311 - 511	0.1 - 69.0
Dawson [21]	1960	243 - 348	0.05 - 0.18
Dittmar [23]	1962	273 - 413	1.0 - 103.5
Kahre [51]	1964	233 - 350	0.9 - 9.8
Huang [47]	1966	173 - 273	7.0 - 35.0
Tomlinson [98]	1971	278 - 328	1.06 - 13.8
Ely [25]	1978	166 - 324	0.26 - 42.8
Teichmann [94]	1978	323 - 573	2.77 - 60.9
Warowny [102]	1978	373 - 423	0.3 - 6.3
Haynes [42]	1982	90 - 300	0.6 - 37.5
Thomas [95]	1982	258 - 623	0.6 - 40.0
Virial equation (This report)	1982	270 - 600	0.4 - 1.0

APPENDIX D. (Continued)

Specific Heats	Date	Type	Range of T, K
Dana [19]	1926	$C_\sigma(T)$	242 - 292
Sage [80]	1935	$C_p^o(T)$	294 - 444
Beeck [4]	1936	$C_p^o(T)$	273 - 573
Sage [82]	1937	$C_p(T)$	294 - 444
Kemp [53]	1938	$C_\sigma(T)$	90 - 230
Kistiakowsky, Lacher [54]	1940	$C_p^o(T)$	148 - 258
Kistiakowsky, Rice [55]	1940	$C_p^o(T)$	272 - 369
Dailey [18]	1943	$C_p^o(T)$	335 - 693
Rossini [76]	1947	$C_p^o(T)$	339 - 422
API 44 [110]	1952	$C_p^o(T)$	100 - 1000
Cutler [17]	1965	$C_\sigma(T)$	91 - 105
Yesavage [104,105]	1969	$C_p(T,P)$	116 - 422
Ernst [26]	1970	$C_p(T,P)$	293 - 353
Chao [13]	1973	$C_p^o(T)$	Spectroscopic
Goodwin [34]	1978	$C_\sigma(T)$	86 - 360
Goodwin [34]	1978	$C_v(T,\rho)$	90 - 337

Heats of Vaporization	Date	Temperature Range, K
Dana [19]	1926	234 - 293
Kemp [53]	1938	231
Sage [79]	1939	313 - 348
Staveley [91]	1950	185 - 213
Helgeson [46]	1967	311 - 330
Yesavage [104,105]	1969	231 - 367
Carruth [11]	1970	111 - 237
Thermal loops (This report)	1982	T_t - 230
Clapeyron equation (This report)	1982	90 - 360

Sound Velocities	Date	Temperature Range, K
Lacam [60]	1956	293 - 498
Rao [72]	1971	140 - 230
Younglove [107]	1981	90 - 300

APPENDIX D. (Continued)

Dielectric Constants	Date	Temperature Range, K
Sliwinski [89]	1969	293 - 370
Pan [69]	1975	91 - 115
Thompson [96]	1980	228 - 230
Luo [62]	1981	220 - 289
Haynes [42,45]	1982	90 - 300

APPENDIX E. Computer Program

```
      PROGRAM PRTHRMB (INPUT,OUTPUT)
C     REVISION OF PROPANE THERMOFUNCTIONS, RDG/NBS, START JAN. 26, 1981.
      COMMON GK,GKK, B1,B2,B3,B4,B5, C1,C2,C3, E1,E2,E3, ER, IX
      COMMON/1/AL,BE,GA,DE,EP,ET, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR,DDSDT
      COMMON/4/XB1,XB2, XC1,XC2, XE1,XE2, DXBDR,DXCDR,DXEDR
      COMMON/6/ TSAT, THETA, PSAT
      COMMON/8/ IN,IK, P,T,DEN, E,H,S, CV,CP,CSAT, W,WK
      COMMON/9/ DNG,EG,HG,SG, CVG,CPG,WG, DPGDT,DPGDD
      COMMON/11/ DELS, DELCV
      COMMON/12/ZCRT,ZCALC,DZDT, ZSAT,DZSDT, ZFX, FRT,DFRTDT
      COMMON/21/ TPS(70)
      COMMON/95/ PIS, DIS, DPTIS, DPDIS
      COMMON/99/ TI,EZZ, EZ,SZ,CVZ, HZ,CPZ
      DIMENSION HZA(70), SZA(70), PP(99)
      DATA(WM=44.09721),(PA=1.01325),(GJ=8.3145)
C     NOTE MOL. WT. HERE IS FOR PROPANE.
    1 FORMAT(I5, 2F10.0)
    2 FORMAT(I5, 3F10.0)
    3 FORMAT(8I10)
    5 FORMAT(1X)
    9 FORMAT(8F10.0)
   14 FORMAT(1H1 13X *  PROPANE ISOBAR AT P =* F10.6, 4H MPA / )
   16 FORMAT( 9X1HT 8X3HDEN 9X3HDEN 8X1HZ 5X5HDP/DT 5X5HDP/DD
     2 8X1HE 8X1HH 8X1HS 6X2HCV 6X2HCP 9X3HF/P 5X1HW 4X5HDIEL. /
     3  9X1HK 6X5HMOL/L 7X5HKG/M3 9X 5X5HMPA/K 1X9HMPA-M3/KG
     4 4X5HJ/MOL 4X5HJ/MOL 2X7HJ/MOL/K 1X7HJ/MOL/K 1X7HJ/MOL/K
     5 12X 1X5HM/SEC 4X5HCONST )
   17 FORMAT(1X F9.3, E11.4, E12.5, F9.5, F10.6, F10.5,
     1 2F9.1, F9.3, 2F8.2, E12.5, I6, F9.5)
   20 FORMAT(1H116X*TEST IDEAL FNCTNS*/17X 3HT,K 7X3HHZA 7X3HSZA )
   21 FORMAT(10X F10.2, F10.1, F10.3)
   80 CALL PVTDATA
      CALL PEEK   $   CALL ISOTHRM
C     COMPUTE THERMOFUNCTIONS ON ISOBARS. START ON THE MELTING LINE.
C     NOTE, ISOBAR P=PCRT OK, BUT ISOTHERM T=TCRT IS EXCLUDED.
C     ISOBARS AT P UNDER PCRT TRAVERSE THE DOME.
C     NOTE USE OF QVAP ,DATA, TO CROSS THE ,DOME,.
C     NOTE USE OF CSAT ,DATA, FOR SPECIFIC HEATS IN COMPRESSED LIQUID.
C     NOTE TPS(IK) USED BY COMPRES.
C     GET FUGACITIES, F/P, VIA H,S, HZ(T),SZ(T).  (J.F.ELY).
C     SAVE HZA(70), SZA(70) FROM  90 THRU 700 K.
   85 DO 86 J=9,70  $  TI = 10*J  $  CALL IDEAL  $  HZA(J) = HZ
   86 SZA(J) = SZ
   87 PRINT 20  $  DO 88 J=9,70  $  T = 10*J
   88 PRINT 21, T, HZA(J), SZA(J)
   89 CALL JTLOCUS   $   CALL TABLIQ
   90 IN = 1  $  NI = 57 $  READ 9, (PP(I),I=1,NI)
   91 DO 300 I=IN,NI  $  IK = I  $  LS = 0
   92 P = PP(I)  $  IF(I.EQ.28)  P = PCRT
   93 PK = P/10  $  PRINT 14, PK  $  PRINT 16
  100 T = FINDTMF(P)  $  CALL COMPRLQ  $  V=1/DEN  $  IW=W
```

```
  101 Z = P/DEN/GKK/T  $  DIE = DIELF(DEN,T,P)
  102 TI = T  $  CALL IDEAL  $  GIB = H-EZZ-HZ - T*(S-SZ)
  103 XP = EXP(GIB/GJ/T)  $  FOP = XP*PA/P  $  CALL CON
  104 PRINT 17, T,DEN,DIS,Z, DPTIS,DPDIS, E,H,S,CV,CP, FOP,IW,DIE
  105 IT = T/10  $  IF(P.LT.PCRT) 110,180
C     CASES FOR P LESS THAN PCRT.
  110 TPS(IK) = TS = FINDTSF(P)   $   K = L = 0
  111 DO 150 J=1,99  $  T = JT = 10*(IT+J)
  112 IF(T.LT.TS) 113,117
  113 CALL COMPRES  $  V = 1/DEN  $  IW = W
  114 Z = P/DEN/GKK/T  $  DIE = DIELF(DEN,T,P)
      M =JT/10  $  GIB = H-EZZ-HZA(M) - T*(S-SZA(M))
      XP = EXP(GIB/GJ/T)  $  FOP = XP*PA/P  $  CALL CON
  115 PRINT 17, T,DEN,DIS,Z, DPTIS,DPDIS, E,H,S,CV,CP, FOP,IW,DIE
  116 GO TO 150
  117 LS = LS + 1  $  IF(LS.EQ.1) 120,130
C     CASE FOR SATURATED LIQUID AND VAPOR.
  120 T = TS  $  CALL COEXIST $ V=1/DEN $ VG=1/DNG $ IW=W $ IWG=WG
  121 Z = P/DEN/GKK/T  $  ZG = P/DNG/GKK/T
  122 DIEL = DIELF(DEN,T,P)  $  DIEG = DIELF(DNG,T,P)
  123 TI = T  $  CALL IDEAL  $  GIB = H-EZZ-HZ - T*(S-SZ)
  124 FOP = EXP(GIB/GJ/T)*PA/P  $  CALL CON
  125 PRINT 17, T,DEN,DIS,Z, DPTIS,DPDIS, E,H,S,CV,CP, FOP,IW,DIEL
  126 PRINT 5 $ DIS=DNG*WM $ DPTIS=DPGDT/10 $ DPDIS = DPGDD/10/WM
  127 PRINT 17, T,DNG,DIS,ZG,DPTIS,DPDIS,EG,HG,SG,CVG,CPG,FOP,IWG,DIEG
  128 T = JT
C     CASES FOR THE HOMOGENEOUS DOMAIN.
  130 IF(JT.GT.500) 131,132
  131 K = K+1  $  T = JT = JT + 10*K  $  IF(JT.GT.700) 300,132
  132 CALL GENIUS   $  V=1/DEN $ IW=W  $  Z = P/DEN/GKK/T
  133 IF(T.GT.450) 134,135
  134 DIE = 0  $  GO TO 136
  135 DIE = DIELF(DEN,T,P)
  136 M =JT/10  $  GIB = H-EZZ-HZA(M) - T*(S-SZA(M))
  137 XP = EXP(GIB/GJ/T)  $  FOP = XP*PA/P  $  CALL CON
  141 PRINT 17, T,DEN,DIS,Z, DPTIS,DPDIS, E,H,S,CV,CP, FOP,IW,DIE
  150 CONTINUE
C     FOR P.GE.PCRT, CASES FOR T.LT.OR.T.GT.TCRT.
  180 TPS(IK) = TCRT  $  K = L = 0
  181 DO 250 J=1,99  $  T = JT = 10*(IT+J)
  182 IF(T.LT.TCRT) 190,210
C     CASE A FOR T LESS THAN TCRT.
  190 CALL COMPRES  $  V = 1/DEN  $  IW = W
  191 Z = P/DEN/GKK/T  $  DIE = DIELF(DEN,T,P)
  192 M =JT/10  $  GIB = H-EZZ-HZA(M) - T*(S-SZA(M))
  193 XP = EXP(GIB/GJ/T)  $  FOP = XP*PA/P  $  CALL CON
  194 PRINT 17, T,DEN,DIS,Z, DPTIS,DPDIS, E,H,S,CV,CP, FOP,IW,DIE
  195 GO TO 250
C     CASE FOR T ABOVE TCRT, HOMOGENEOUS DOMAIN.
  210 IF(JT.GT.500) 211,220
  211 K = K+1  $  T = JT = JT + 10*K  $  IF(JT.GT.700) 300,220
  220 CALL GENIUS  $  V=1/DEN $ IW=W $ Z = P/DEN/GKK/T
  221 IF(T.GT.450) 222,223
  222 DIE = 0  $  GO TO 224
```

```
  223 DIE = DIELF(DEN,T,P)
  224 M =JT/10  $  GIB = H-EZZ-HZA(M) - T*(S-SZA(M))
  225 XP = EXP(GIB/GJ/T)  $  FOP = XP*PA/P  $  CALL CON
  226 PRINT 17, T,DEN,DIS,Z, DPTIS,DPDIS, E,H,S,CV,CP, FOP,IW,DIE
  250 CONTINUE
  300 CONTINUE
  999 STOP   $   END


      SUBROUTINE COEXIST
C    GIVEN T AT COEXISTENCE, GET BOTH VAPOR AND LIQUID FUNCTIONS.
C    FOR VAPOR, GET  DNG,EG,HG,SG, CVG,CPG,WG, DPGDT,DPGDD,  -
C    FOR LIQUID, GET  DEN,E,H,S, CV,CP,CSAT,W. DPDT,DPDD.
C    COEXIST CALLED BY COMPRLQ. P NOT USED, MUST NOT CHANGE.
      COMMON/1/AL,BE,GA,DE,EP,ET, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR,DDSDT
      COMMON/8/ IN,IK, P,T,DEN, E,H,S, CV,CP,CSAT, W,WK
      COMMON/9/DNG,EG,HG,SG, CVG,CPG,WG, DPGDT,DPGDD
      COMMON/11/ DELS, DELCV
      COMMON/99/ TI,EZZ, EZ,SZ,CVZ, HZ,CPZ
      DATA (Q=1.01325),(G=0.083145)
    1 FORMAT(1HO 9X *T EXCEEDS TCRT IN COEXIST. * / )
    2 IF(T.GT.TCRT) 3,4
    3 PRINT 1   $   STOP
    4 PS = PSATF(T)  $  DNG = DB = DENGASF(T)
    5 TI = T  $  CALL IDEAL  $  M = 15  $  DA = L = 0
    6 EG = EZZ + EZ + EDELF(L,M,T,DA,DB)  $  HG = EG + 100*PS/DB
    7 SG = SZ + DELS - 100*G*ALOG(G*T*DB/Q)
    8 IF(T.EQ.TCRT) 9,11
    9 PX = PVTF(T,DB,1)  $  DPGDT = DPDT  $  DPGDD = DPDD
   10 CPG = CVG = WG = 0  $  GO TO 15
   11 CVG = CVZ + DELCV  $  PX = PVTF(T,DB,1)
   12 CPG = CVG + 100*T/DPDD*(DPDT/DB)**2  $  WG = SQRT(WK*CPG*DPDD/CVG)
   13 DPGDT = DPDT  $  DPGDD = DPDD
C    NOW TRAVERSE THE ,DOME, USING QVAP ,DATA,.
   15 DEN = DL = DENLIQF(T)  $  DDLDT = DDSDT  $  QV = QVAPXF(T)
   16 H = HG - QV  $  S = SG - QV/T   $   E = H - 100*PS/DL
C    THIS RETURN AT 16+ USED ONLY  WHEN CALLING SSATFIT, HSATFIT.
   17 IF(T.EQ.TCRT) 18,19
   18 PX = PVTF(T,DL,1)  $  CP=CV=CSAT=W=0  $  RETURN
   19 CSAT = CSATXF(T)  $  PX = PVTF(T,DL,1)
   22 CV = CSAT + 100*T*DPDT*DDLDT/DL/DL
   23 CP = CV + 100*T/DPDD*(DPDT/DL)**2
   30 W = SQRT(WK*CP*DPDD/CV)   $   RETURN  $  END


      SUBROUTINE COMPRES
C    SAVES COMPUTER TIME INTEGRATING COMPRLIQ AT T.LT.TCRT.
C    FOR T = INTEGER MULTIPLES OF 10 K. FIRST ISOBAR USES COMPRLQ.
C    FOR SUCCEEDING ISOBARS, START ON PREVIOUS ISOBAR, EXCEPT -
C    AT TEMPS GE TPS(IK-1) ON PREVIOUS ISOBAR, MUST USE COMPRLQ.
      COMMON/1/AL,BE,GA,DE,EP,ET, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR,DDSDT
      COMMON/8/ IN,IK, P,T,DEN, E,H,S, CV,CP,CSAT, W,WK
```

```
      COMMON/11/ DELS, DELCV
      COMMON/21/ TPS(70)
      DIMENSION DK(50),EK(50),SK(50),CK(50)
    1 FORMAT(1HO 9X *T G.E. TCRT IN COMPRES. * / )
    2 IF(T.GE.TCRT) 3,4
    3 PRINT 1   $   STOP
    4 J = T/10  $  IF(T - 10*J) 5,6
    5 CALL COMPRLQ   $   RETURN
    6 IF(IK.EQ.IN) 7,9
    7 CALL COMPRLQ
    8 DK(J)=DEN $ EK(J)=E $ SK(J)=S $ CK(J)=CV  $  RETURN
C    INTEGRATE FROM OLD DEN TO NEW DEN ON GIVEN ISOTHERM -
C    EXCEPT IF T EXCEEDS OLD TMAX, USE COMPRLQ.
    9 IF(T.GE.TPS(IK-1))  GO TO 7
   10 DA=DK(J) $ DK(J) = DEN = DB = FINDENF(T,P)  $  N = 13
   11 EK(J) = E = EK(J) + EDELF(1,N,T,DA,DB)  $  H = E + 100*P/DB
   12 SK(J) = S = SK(J) + DELS  $  CK(J) = CV = CK(J) + DELCV
C    GET NEW DP/DT, DP/DD, CP, W.
   15 PX = PVTF(T,DB,1)  $  CP = CV + 100*T/DPDD*(DPDT/DB)**2
   30 W = SQRT(WK*CP*DPDD/CV)   $   RETURN  $  END


      SUBROUTINE COMPRLQ
C    GIVEN P,T FOR COMPR.LIQ. AT T.LT.TC, GET DEN AND FUNCTIONS.
C    REVISED TO USE HSATF, SSATF, CSATXF, BUT NOT COEXIST. TIMESAVER.
C    INTEGRATE ALONG ISOTHERM T FROM SATLIQ UP TO POINT (P,T).
      COMMON/1/AL,BE,GA,DE,EP,ET, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR,DDSDT
      COMMON/8/ IN,IK, P,T,DEN, E,H,S, CV,CP,CSAT, W,WK
      COMMON/11/ DELS, DELCV
    1 FORMAT(1HO 9X *T NOT UNDER TCRT IN COMPRLQ.*/)
    2 IF(T.GE.TCRT) 3,4
    3 PRINT 1   $   STOP
C    GET PSAT, DENLIQ, AND SATLIQ FUNCTIONS FOR START.
    4 PS = PSATF(T)  $  DL = DENLIQF(T)  $  DDLDT = DDSDT
    6 HS = HSATF(T)  $  ES = HS - 100*PS/DL  $  SS = SSATF(T)
C   7 IF(T.GT.340) 8,9
C   8 CVS = CVSATF(T)  $  GO TO 10
    9 PX=PVTF(T,DL,0)  $  CVS = CSATXF(T) + 100*T*DPDT*DDLDT/DL/DL
C    INTEGRATE UP TO POINT (P,T).
   10 DB = FINDENF(T,P)  $  DX = DB - DL  $  IF(DX.GT.0) 11,20
   11 M = 14  $  E = ES + EDELF(1,M,T,DL,DB)
   12 H = E + 100*P/DB  $  S = SS + DELS  $  CV = CVS + DELCV
   13 PX = PVTF(T,DB,1)  $  CP = CV + 100*T/DPDD*(DPDT/DB)**2
   14 W = SQRT(WK*CP*DPDD/CV)  $  DEN = DB   $   RETURN
   20 DEN=DL $ E=ES $ H=HS $ S=SS $ CV=CVS  $  PX = PVTF(T,DL,1)
   21 CP = CV + 100*T/DPDD*(DPDT/DL)**2  $  W = SQRT(WK*CP*DPDD/CV)
   30 RETURN   $   END


      SUBROUTINE CON
C    CONVERT TO SI UNITS FOR P, DEN, DP/DT, DP/DD,
      COMMON/3/DPDT,D2PDT2, DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR,DDSDT
      COMMON/8/IN,IK, P,T,DEN, E,H,S, CV,CP,CSAT, W,WK
```

```
      COMMON/95/ PIS, DIS, DPTIS, DPDIS
      DATA (WM = 44.09721)
    1 PIS = P/10  $  DIS = DEN*WM
    2 DPTIS = DPDT/10  $  DPDIS = DPDD/10/WM
    9 RETURN   $   END


      FUNCTION CSATXF(T)
C     PROPANE, J/MOL/K, RDG, NBS J. RES. 83(5) 449, (1978).
C     COEFFS, ADJUSTED FOR NEW TCRT = 369.85.
C     CS = A1*X/(1-X)**E + A2 + A3*X + A4*X2 + A5*X3.
      DIMENSION A(5)
      DATA (E=0.7),(TCRT=369.85)
      DATA(A = 6.636737, 80.76732, 8.275839, -19.926887, 51.208621)
    1 FORMAT(1HO 9X *CSATXF, T.GT.TCRT. * / )
    2 IF(TCRT-T) 3,4,5
    3 PRINT 1   $   STOP
    4 CSATXF = 0   $   RETURN
    5 X = T/TCRT  $  CS = A(1)*X/(1-X)**E  $  DO 6 K=2,5
    6 CS = CS + A(K)*X**(K-2)  $  CSATXF = CS  $  RETURN  $  END


      FUNCTION CUBERT(X)
C     CUBE ROOT MISSING FROM 6600 COMPUTER LIBRARY.
    1 E = 1.0/3.0   $   IF(X) 2,3,4
    2 CUBERT = -ABS(X)**E   $   RETURN
    3 CUBERT = 0.0   $   RETURN
    4 CUBERT = X**E   $   RETURN  $  END


      FUNCTION DELTAF(T,D)
C     GET (T*DP/DT - D*DP/DD) FOR THE J-T INVERSION CURVE.
      COMMON/1/AL,BE,GA,DE,EP,ET, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR,DDSDT
    1 IF(T-TCRT) 2,4,4
    2 DL = DENLIQF(T)  $  IF(D-DL) 3,3,4
    3 DELTAF = 1.0E+100  $  RETURN
    4 P = PVTF(T,D,1)
    5 DELTAF = ABS (T*DPDT-D*DPDD)   $   RETURN  $  END


      FUNCTION DENGASF(T)
C     PROPANE SAT.VAPOR  DEN, MOL/L, (DCRT=5.00), RDG, FEB. 19, 1981.
C     DESIGNED FOR ZSAT = 1 AT LOW DENSITIES, 5/29/77.
C     USE ZSAT # PS/DS/GK/TS WITH VAPOR PRESSURES, AND ZCRT.
C     Z = 1 + (ZCRT-1)*PI*F(X)/X/X,  X # T/TCRT,  AND -
C     F(X) = 1 + UE*(A1 + A2*X + A3*X2 + . . ),  U = (1-X).
      COMMON/1/AL,BE,GA,DE,EP,ET, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR,DDSDT
      COMMON/12/ZCRT,ZCALC,DZDT, ZSAT,DZSDT,ZFX, FRT,DFRTDT
      DIMENSION AV(4)
      DATA (GKK = 0.083145)
      DATA (EG=0.35),(NFG=4)
      DATA(AV = 5.43973368, -20.0297592, 23.8710761, -10.1051069)
```

```
     1 FORMAT(1HO 9X *T EXCEEDS TC IN DENGASF. * / )
     2 IF(TCRT-T) 3,4,5
     3 PRINT 1   $   STOP
     4 DENGASF = DCRT  $  ZFX = 1  $  DDSDT = 1.0E+100  $  RETURN
     5 ZN = ZCRT-1  $  PC = PCRT  $  P = PSATF(T)
     6 PI = P/PC  $  PIT = DPSDT/PC  $  TC = TCRT
     7 X = T/TC $ X2=X*X $ U = 1-X $ UE=U**EG $ UE1 = -EG*UE/U
     8 Y = Y1 = 0  $  DO 10 K=1,NFG  $  L = K-1  $  XL = X**L
     9 Y = Y + AV(K)*XL  $  Y1 = Y1 + AV(K)*L*XL/X
    10 CONTINUE  $  ZFX = F = 1 + UE*Y  $  F1 = UE*Y1 + UE1*Y
    15 ZCALC = ZSAT = Z = 1 + ZN*PI*F/X2
    16 DZSDT = DZDT = (PI*(F1-2*F/X)/TC + F*PIT)*ZN/X2
    17 DENGASF = P/T/Z/GKK
    18 DDSDT = (DPSDT - P/T - P*DZDT/Z)/T/Z/GKK  $  RETURN  $  END


      FUNCTION DENLIQF(T)
C    PROPANE SAT.LIQUID DEN, MOL/L, (DCRT=5.00), RDG, FEB. 19, 1981.
C    DEN = DCRT + YNL*(X + (XE-X)*Y),   YNL # DTRP - DCRT.
C    Y # A1 + A2*X + A3*X2 + A4*X3.
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR,DDSDT
      DIMENSION AW(3)
      DATA (EL=0.35),(NFL=3)
      DATA (TTRP=85.47),(TCRT=369.85),(DCRT=5.00),(DTRP=16.63)
      DATA(AW = 0.764389673, 0.009457047, -0.115001817)
     1 FORMAT(1HO 9X *DENLIQF = 0, T EXCEEDS TCRT. * / )
     2 IF(TCRT-T) 3,4,5
     3 PRINT 1   $   STOP
     4 DENLIQF = DCRT  $  DDSDT = -1.0E+10  $  RETURN
     5 XN=TCRT-TTRP $ X=(TCRT-T)/XN $ X2 = X*X  $  DXDT = -1.0/XN
     6 XE = X**EL  $  U = XE - X  $  U1 = EL*XE/X - 1
     7 Y1 = Y = 0  $  DO 9 K=1,NFL  $  L = K-1  $  XL = X**L
     8 Y = Y + AW(K)*XL  $  Y1 = Y1 + AW(K)*L*XL/X
     9 CONTINUE   $   YNL = DTRP - DCRT
    11 DENLIQF = DCRT + YNL*(X + U*Y)
    12 DDSDT = YNL*(1 + U*Y1 + U1*Y)*DXDT   $   RETURN  $  END


      FUNCTION DIELF(D,T,P)
C    PROPANE CONSTS., RDG, MARCH 23, 1981, VIA HAYNES DATA.
C    CM,RMSPCT = 0.048,  E,RMSPCT = 0.018.
C    CM = A1 + A2*R + A3*R2 + A4*LN(1+B/X) + A5*PI.
      DIMENSION A(5)
      DATA (B=1.0),(DCRT=5.00),(TCRT=369.85)
      DATA(A = 15.562631, 0.38581410, -0.15099771,
     1 0.51074051, -0.0045141181)
     1 R = D/DCRT  $  X = T/TCRT  $  G = ALOG(1+B/X)  $  PI = P/100
     2 CM = A(1) + A(2)*R + A(3)*R*R + A(4)*G + A(5)*PI
     3 Z = CM*D/1000  $  DIELF = (2*Z+1)/(1.0-Z)
     5 RETURN   $   END


      FUNCTION EDELF(L,M,T,DA,DB)
C    GET CHANGE OF E, S, CV WITH DENSITY ALONG ISOTHERMS.
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C     GET EDELF, DELS, DELCV FROM DA TO DB ON ISOTHERM T.
C     ROMBERG NUMERICAL INTEGRATION VIA  -
C     CARNAHAN/LUTHER/WILKES, APPLIED NUMERICAL METHODS, P. 90,
C     JOHN WILEY AND SONS, INC., N.Y., 1969.
C     NOTE, VALUE OF LD CONTROLS CONVERGENCE LIMITS.
C     NOTE, NMAX = M, NK = FINAL, TOTAL SUBDIVISIONS OF INTERVAL DX.
      COMMON/1/AL,BE,GA,DE,EP,ET, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR,DDSDT
      COMMON/11/ DELS, DELCV
      COMMON/12/ZCRT,ZCALC,DZDT, ZSAT,DZSDT, ZFX, FRT,DFRTDT
      DIMENSION E(20), S(20), C(20)
      DATA (LD=2),(DI=0.00001),(G=0.083145)
    1 FORMAT(1HO9X*EDELF L =*I2,5H, N =I3,5H, T = F8.3,6H, DA =E10.4,
     1 6H, DB =E10.4, 6H, LD =I2//
     2 10X 1HN 7X5HEDELF 8X4HDELS 7X5HDELCV )
    2 FORMAT(1HO 9X 6HEDIF =F10.3, 8H, SDIF =F10.5, 9H, CVDIF =F10.3)
    3 FORMAT(6X I5, F12.3, F12.5, F12.3)
    4 FORMAT(1HO 9X *EDELF NG AT TCRT FOR CV AT DEN NEAR OR GT C.P.*/)
C     FOR DA=0 AND DB.LE.DI, IDEAL GAS, EDELF=DELS=DELCV=0.
C     FOR DA=0 AND DB.GT.DI, START ROMBERG WITH DA = DI,  -
C     TO AVOID INFINITIES IN ORDINATE FUNCTIONS AT DA = 0.
    5 NK = 1  $  DM = DCRT/2  $  DZ = 0.98*DCRT
    9 ZK = 1.0 - 1/ZCRT  $  RK = 100*G*TCRT/DCRT
   10 IF(L.EQ.0) 11,14
   11 IF(DB.LE.DI) 12,13
   12 EDELF = DELS = DELCV = 0   $   RETURN
   13 DA = DI
C     GET FIRST TRAPEZOID AREA, E(1) ETC., FROM DA TO DB.
   14 DX = DB - DA  $  P = PVTF(T,DA,0)  $  IF(DA.LT.DM) 16,17
   16 EA = RK*(ZK*ZSAT*ZFX + FRT - T*DFRTDT)  $  GO TO 18
   17 EA = 100*(P-T*DPDT)/DA/DA
   18 IF(L.EQ.0) 19,20
   19 SA = -RK*DFRTDT  $  GO TO 21
   20 SA = -100*DPDT/DA/DA
   21 CA = -100*T*D2PDT2/DA/DA
   22 P = PVTF(T,DB,0)  $  IF(DB.LT.DM) 23,24
   23 EB = RK*(ZK*ZSAT*ZFX + FRT - T*DFRTDT)  $  GO TO 25
   24 EB = 100*(P-T*DPDT)/DB/DB
   25 IF(L.EQ.0) 26,27
   26 SB = -RK*DFRTDT  $  GO TO 28
   27 SB = -100*DPDT/DB/DB
   28 CB = -100*T*D2PDT2/DB/DB
   29 E(1)=(EA+EB)*DX/2  $  S(1)=(SA+SB)*DX/2  $  C(1)=(CA+CB)*DX/2
C     INTERVAL HALVING, GET E(N+1), ETC.
   30 DO 60 N=1,M   $   K = N + 1
   31 JM = 2**N - 1  $  DXN = DX/2**N  $  E(K) = S(K) = C(K) = 0
   33 DO 45 J=1,JM,2  $  NK = NK+1  $  DN = DA + J*DXN
   34 P = PVTF(T,DN,0)  $  IF(DN.LT.DM) 35,36
   35 EB = RK*(ZK*ZSAT*ZFX + FRT - T*DFRTDT)  $  GO TO 37
   36 EB = 100*(P-T*DPDT)/DN/DN
   37 IF(L.EQ.0) 38,39
   38 SB = -RK*DFRTDT  $  GO TO 40
   39 SB = -100*DPDT/DN/DN
   40 CB = -100*T*D2PDT2/DN/DN
```

```
   41 E(K) = E(K) + EB  $  S(K) = S(K) + SB  $  C(K) = C(K) + CB
   45 CONTINUE   $   E(K) = E(N)/2 + E(K)*DXN
   46 S(K) = S(N)/2 + S(K)*DXN   $   C(K) = C(N)/2 + C(K)*DXN
C
C    TEST FOR CONVERGENCE.
   50 ED=ABS(E(K)-E(N))  $  SD=ABS(S(K)-S(N))  $  CD=ABS(C(K)-C(N))
   53 IF(ED.LT.0.4/LD) 54,60
   54 IF(SD.LT.0.002/LD) 55,60
   55 IF(T.EQ.TCRT.AND.DB.GT.DZ)  GO TO 57
   56 IF(CD.LT.0.04/LD) 57,60
   57 EDELF = E(K)  $  DELS = S(K)  $  DELCV = C(K)  $  RETURN
   60 CONTINUE  $  N = M  $  NM = N-1  $  NP = N+1
   61 PRINT 1, L, N, T, DA, DB, LD
   62 PRINT 3, NM,E(NM),S(NM),C(NM)  $  PRINT 3, N,E(N),S(N),C(N)
   64 PRINT 3, NP,E(NP),S(NP),C(NP)   $   PRINT 2, ED, SD, CD
   99 STOP   $   END


      FUNCTION FINDENF(T,P)
C    ON ISOTHERM T, FIND DEN, MOL/L, TO MINIMIZE (P-PC) VIA EQNSTATE.
      COMMON/1/AL,BE,GA,DE,EP,ET, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR,DDSDT
      DATA (GKK = 0.083145)
   41 FORMAT(1HO 9X *FINDENF = 0,  FAILS TO CONVERGE. * / )
   42 FORMAT(1HO 9X *FINDENF = DCRT, DP/DR ZERO OR NEG. * / )
   43 FORMAT(1HO 9X *FINDENF = 0, DOUBLE-VALUED AT P = PSAT. * / )
      DM = 1.05*DTRP
      IF(P.GT.0) 1,35
    1 IF(T-TCRT) 2,5,8
    2 DG=DENGASF(T) $ DL=DENLIQF(T) $ PS=PSATF(T)  $  IF(P-PS) 3,32,4
    3 D = DG/2  $  GO TO 11
    4 D = (DL+DTRP)/2  $  GO TO 11
    5 DG=DL=DCRT  $  PS=PCRT  $  IF(P-PS) 6,33,7
    6 D = DCRT/2  $  GO TO 11
    7 D = 2*DCRT  $  GO TO 11
    8 IF(T.LT.450.0) 9,10
    9 PC = PVTF(T,DCRT,0)  $  IF(P-PC) 6,33,7
   10 D = DCRT
   11 DO 30 J=1,50 $ DP=P-PVTF(T,D,1) $ IF(ABS (DP/P)-1.0E-7) 31,31,12
   12 IF(DPDD.GT.0) 13,34
   13 DD = DP/DPDD  $  IF(ABS (DD/D)-1.0E-7) 31,31,14
   14 D = D + DD   $   IF(D.GT.0.0) 16,15
   15 D = P/GKK/T   $   GO TO 30
   16 IF(D.GT.DM) 17,18
   17 D = DM  $  GO TO 30
   18 IF(T-TCRT) 19,24,30
   19 IF(P.LT.PS) 20,22
   20 IF(D.GT.DG) 21,30
   21 D = DG  $  GO TO 30
   22 IF(D.LT.DL) 23,30
   23 D = DL  $  GO TO 30
   24 IF(P.LT.PCRT) 25,27
   25 IF(D.LT.DCRT) 30,26
   26 D = DCRT - 0.02  $  GO TO 30
```

```
   27 IF(D.GT.DCRT) 30,28
   28 D = DCRT + 0.02
   30 CONTINUE  $  PRINT 41  $  STOP
   31 FINDENF = D   $   RETURN
   32 PRINT 43  $  STOP
   33 FINDENF = DCRT  $  RETURN
   34 FINDENF = DCRT  $  PRINT 42  $  RETURN
   35 FINDENF=DPDT=D2PDT2=0  $  DPDD=GKK*T  $  DPDR=DPDD*DTRP
   36 RETURN   $   END


      FUNCTION FINDTMF(P)
C    GIVEN P ON THE MELTING LINE, FIND T FOR PROPANE.
      COMMON/1/AL,BE,GA,DE,EP,ET, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      DATA (A=7180.0),(E=1.283)
    1 X = (P-PTRP)/A + 1  $  FINDTMF = TTRP*X**(1.0/E)  $  RETURN $ END


      FUNCTION FINDTSF(P)
C    GIVEN VAPOR PRESSURE P, ITERATE T TO MINIMIZE (P-PC).
      COMMON/1/AL,BE,GA,DE,EP,ET, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR,DDSDT
    1 FORMAT(1HO 9X *FINDTSF = 0,  FAILS TO CONVERGE. * / )
    2 FORMAT(1HO 9X *FINDTSF = 0,  P EXCEEDS PCRT. * / )
    3 IF(P-PCRT) 4,11,12
    4 T = 300  $  DO 9 J=1,50  $  DP = P - PSATF(T)  $  ADP = ABS (DP)
    5 IF(ADP/P-1.0E-7) 10,6,6
    6 IF(ADP/DPSDT/T-1.0E-7) 10,7,7
    7 T = T + DP/DPSDT  $  IF(T-TCRT) 9,9,8
    8 T = TCRT
    9 CONTINUE  $  PRINT 1  $  STOP
   10 FINDTSF = T   $   RETURN
   11 FINDTSF = TCRT   $   RETURN
   12 PRINT 2  $  STOP  $  END


      SUBROUTINE GENEOUS
C    GIVEN P,T FOR THE HOMOGENEOUS DOMAIN -
C    GET DEN AND FUNCTIONS AT ANY TEMPERATURE.
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR,DDSDT
      COMMON/8/ IN,IK, P,T,DEN, E,H,S, CV,CP,CSAT, W,WK
      COMMON/11/ DELS, DELCV
      COMMON/99/ TI,EZZ, EZ,SZ,CVZ, HZ,CPZ
      DATA (Q=1.01325),(G=0.083145)
    3 TI = T  $  CALL IDEAL  $  IF(P.GT.0) 4,10
    4 DEN = DB = FINDENF(T,P)  $  M = 15  $  DA = L = 0
    5 E = EZZ + EZ + EDELF(L,M,T,DA,DB)  $  H = E + 100*P/DB
    6 S = SZ + DELS - 100*G*ALOG(G*T*DB/Q)
    7 CV = CVZ + DELCV   $   PX = PVTF(T,DB,1)
    8 CP = CV + 100*T/DPDD*(DPDT/DB)**2
    9 W = SQRT(WK*CP*DPDD/CV)   $   RETURN
   10 DEN=S=0  $  E = EZZ + EZ  $  H = E + 100*G*T  $  CV=CVZ $ CP=CPZ
   12 W = SQRT(WK*CP*G*T/CV)   $   RETURN  $  END
```

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      SUBROUTINE GENIUS
C     VALID ONLY FOR THE HOMOGENEOUS DOMAIN.
C     SAVES COMPUTER TIME WHEN TABULATING FUNCTIONS ALONG ISOBARS.
C     SAVES DEN,E,S,CV ALONG ISOBARS FOR USE IN INTEGRATING TO NEXT
C     HIGHER ISOBAR. VALID ONLY FOR MONOTONICALLY INCREASING ISOBAR
C     PRESSURES, AND AT TEMPS. T = INTEGER MULTIPLES OF 10 K.
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR,DDSDT
      COMMON/8/ IN,IK, P,T,DEN, E,H,S, CV,CP,CSAT, W,WK
      COMMON/11/ DELS, DELCV
      DIMENSION DK(70),EK(70),SK(70),CK(70)
    1 FORMAT(1HO 9X *GENIUS T NOT INTEGRAL. * / )
    2 J = T/10   $   IF(T - 10*J) 3,4
    3 CALL GENEOUS   $   RETURN
    4 IF(IK.EQ.IN) 5,9
    5 CALL GENEOUS
    6 DK(J) = DEN  $  EK(J) = E  $  SK(J) = S  $  CK(J)=CV  $  RETURN
C     INTEGRATE FROM OLD DEN UP TO NEW DEN ON GIVEN ISOTHERM.
    9 DA = DK(J)  $  DK(J) = DEN = DB = FINDENF(T,P)  $  N = 14
   11 EK(J) = E = EK(J) + EDELF(1,N,T,DA,DB)  $  H = E + 100*P/DB
   13 SK(J) = S = SK(J) + DELS  $  CK(J) = CV = CK(J) + DELCV
C     NOW GET NEW DP/DT, DP/DD, CP, W.
   15 PX = PVTF(T,DB,1)  $  CP = CV + 100*T/DPDD*(DPDT/DB)**2
   30 W = SQRT(WK*CP*DPDD/CV)   $   RETURN  $  END


      FUNCTION HSATF(T)
C     PROPANE SATLIQ ENTHALPY, J/MOL.
C     DEFINE YH # (H-HC)/(HT-HC),  X # (TC-T)/(TC-TT),  WHEN -
C     YH = X + (XE-X)*(A1 + A2*X + A3*X2 + . . .)
      DIMENSION AH(7)
      DATA (NFH=7),(EH=0.37),(TTRP=85.47),(TCRT=369.85)
      DATA (HTRP = 0.001),(HCRT = 33082.187)
      DATA(AH = 0.2998573044, 0.3868586865, -0.6240978276,
     1 1.036003301, -0.9494397054, 0.1462986734, 0.1113755135)
    1 FORMAT(1HO 9X 3HT =F10.5, * IN HSATF(T).*/)
    2 IF(T.GT.TCRT) 3,4
    3 PRINT 1, T  $  STOP
    4 X = (TCRT-T)/(TCRT-TTRP)  $  IF(X.LE.0) 5,6
    5 HSATF = HCRT   $   RETURN
    6 V = X**EH - X  $  FX = X  $  DO 7 K=1,NFH
    7 FX = FX + V*AH(K)*X**(K-1)
    8 HSATF = HCRT - (HCRT-HTRP)*FX   $   RETURN  $  END


      SUBROUTINE IDEAL
C     PROPANE IDEAL GAS (1 ATM) THERMOFUNCTIONS VIA CHAO (1973).
C     (HZ-HZZ)/RT = 4.0 + (A + B/Q + C/Q2 + D/X)*EXP(-E/X),  WHERE -
C     X # T/100,   Q # CUBERT(X).
      COMMON/99/ TI, EZZ, EZ,SZ,CVZ, HZ,CPZ
      DIMENSION A(6)
      DATA (E=3.0),(R=8.31434),(SI=32.552)
      DATA(A = 24.11012, 94.40550, -585.32814,
     1 980.124065, -678.64094, 170.42778)
    1 X=TI/100  $  Q=CUBERT(X)  $  DQDX=Q/3/X  $  XP=EXP(-E/X)
    2 H = 4.0  $  SUM = SM1 = 0  $  DO 7 K=1,6
```

```
    3 H = H + A(K)*XP*Q**(1-K)  $  L = 4-K  $  QL = Q**L
    4 SUM = SUM + A(K)*QL  $  SM1 = SM1 + A(K)*L*QL*DQDX/Q
    7 CONTINUE  $  CP = 4.0 + (E*SUM/X/X + SM1)*XP
C     S = S(300) + INTEGRAL(CP/X)*DX FROM T=300 UP TO TI.
   10 N = ABS(TI-300)/4 + 4  $  DX = (X-3)/N  $  S = SI
   12 DO 20 J=1,N  $  X = 3.0 + (J-0.5)*DX  $  Q = CUBERT(X)
   14 DQDX = Q/3/X  $  XP = EXP(-E/X)  $  SUM = SM1 = 0
   15 DO 19 K=1,6  $  L = 4 - K  $  QL = Q**L
   16 SUM = SUM + A(K)*QL  $  SM1 = SM1 + A(K)*L*QL*DQDX/Q
   19 CONTINUE  $  CPX = 4.0 + (E*SUM/X/X + SM1)*XP
   20 S = S + CPX*DX/X
C     CONVERT TO DIMENSIONED RESULTS, JOULES,MOLES,KELVINS.
   22 CPZ = R*CP  $  SZ = R*S  $  HZ = R*TI*H
   23 CVZ = CPZ - R  $  EZ = HZ - R*TI   $   RETURN  $  END


      SUBROUTINE ISOTHRM
C     PRINTOUT THE CRITICAL ISOTHERM.
      COMMON/1/AL,BE,GA,DE,EP,ET, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR,DDSDT
      COMMON/4/XB1,XB2, XC1,XC2, XE1,XE2, DXBDR,DXCDR,DXEDR
      COMMON/6/ TSAT, THETA, PSAT
      DATA (WM = 44.09721)
    1 FORMAT(1H1 14X *THE CRITICAL ISOTHERM, PROPANE* //
     1 6X6HTC,K = F7.2, 12H, DC,KG/M3 = F9.4, 10H, PC,MPA = F10.7/ 6X
     2 *AT THE C.P., DPS/DT =*F9.6, 9H, DP/DT =F9.6, * MPA/K.* //
     3 6X4HD/DC 9X5HTS/TC 9X5HPS/PC 10X4HP/PC 9X5HDP/DR 4X6HDTS/DR
     4 4X6HDTH/DR 4X6HDPS/DR 4X6HDXB/DR 4X6HDXC/DR )
    2 FORMAT(2X F8.3, 3F14.10, F14.9, 5F10.5)
    3 PC = PVTF(TCRT,DCRT,0)  $  PCS = PCRT/10  $  DCS = DCRT*WM
      DPST = DPSDT/10   $   DPT = DPDT/10
    4 PRINT 1, TCRT, DCS, PCS, DPST, DPT  $  DO 8 J=1,41
    5 DR = 0.895 + 0.005*J  $  DN = DR*DCRT
    6 PR = PVTF(TCRT,DN,1)/PCRT  $  DPSDR = DPSDT*DTSDR
    7 TSN = TSAT/TCRT  $  PSN = PSAT/PCRT
      DPDR = DPDR/10   $   DPSDR = DPSDR/10
    8 PRINT 2, DR, TSN,PSN, PR,DPDR, DTSDR,DTHDR,DPSDR, DXBDR,DXEDR
    9 RETURN   $   END


      SUBROUTINE JTLOCUS
C     THE JOULE-THOMSON P-V-T LOCUS FOR PROPANE.
C     DERIVE THE J-T INVERSION CURVE.  USE ROUTINE DELTAF(T,DI).
      COMMON/1/AL,BE,GA,DE,EP,ET,  DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      DIMENSION DK(60),DN(60),TT(60),PP(60)
      DATA (A=2.77755),(B=0.60625),(TZ=500.0),(WM=44.09721)
    1 FORMAT(1H1 16X *THE JOULE-THOMSON INVERSION LOCUS FOR PROPANE* //
     2 17X 3HT,K 8X2HDI 5X5HKG/M3 5X5HP,MPA
     3  7X 3HT,K 8X2HDI 5X5HKG/M3 5X5HP,MPA )
    2 FORMAT(10X I10, 2F10.1, F10.3,   I10, 2F10.1, F10.3)
C     SAVE INITIAL, TRIAL DENSITY, DK(I) = DI.
    5 TA = 290   $   NP = 52
    6 PRINT 1  $  DO 25 I=1,NP  $  DX = 0.8
    7 T = TA + 10*I  $  U = T/TZ  $  DK(I) = DI = EXP(A-B*U)
```

```
   10 IF(T-TCRT) 11,12,12
   11 DL = DENLIQF(T)  $  IF(DI.LT.DL) 23,12
   12 SS = DELTAF(T,DI)  $  DO 20 IT=1,14
   14 D=DI-DX $ SL=DELTAF(T,D)   $   D=DI+DX $ SP=DELTAF(T,D)
   15 IF(SS-SL) 18,16,16
   16 IF(SP-SL) 19,17,17
   17 SS = SL  $  DI = DI - DX  $  GO TO 20
   18 IF(SS-SP) 20,20,19
   19 SS = SP  $  DI = DI + DX
   20 DX = DX/2  $  TT(I) = T  $  DN(I) = DI  $  PP(I) = PVTF(T,DI,0)
   21 GO TO 25
   23 TT(I) = T  $  DK(I) = DN(I) = PP(I) = 0
   25 CONTINUE   $   N = NP/2
   26 DO 35 J=1,N   $   K = J + N
   27 IT = TT(J)  $  ITT = TT(K)
   28 DKJ = WM*DK(J)  $  DNJ = WM*DN(J)
   29 DKK = WM*DK(K)  $  DNK = WM*DN(K)
   30 PPJ = PP(J)/10  $  PPK = PP(K)/10
   35 PRINT 2, IT, DKJ,DNJ, PPJ,  ITT,DKK,DNK,PPK
   40 RETURN   $   END


      SUBROUTINE PEEK
C    EXAMINE BEHAVIOR OF THE PVT COEFFICIENTS.
C    B(S) # B1 + B2*S2,  E(S) # E1*(S-1)*(S-ER)*EXP(-GA*S**IX).
C    WHERE,   R # DEN/DTRP,  S # DEN/DCRT.
      COMMON GK,GKK, B1,B2,B3,B4,B5, C1,C2,C3, E1,E2,E3, ER,IX
      COMMON/1/AL,BE,GA,DE,EP,ET, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR,DDSDT
      COMMON/6/ TSAT, THETA, PSAT
      DATA (WM = 44.09721),(EX = 1.10)
    4 FORMAT(1H1 14X *EQUATION OF STATE COEFFS., PROPANE * //
     1 15X 6HTTRP =F7.3, 8H, TBLP =F9.4, 8H, TCRT =F8.3, * K* /
     2 15X 6HPTRP =E12.6, 8H, PBLP =F8.6, 8H, PCRT =F9.6, * MPA* /
     3 15X 6HDTRP =E11.5, 8H, DLBP =E11.5, 8H, DCRT =E11.5, * KG/M3* /
     3 15X 6HDGAT =E11.5, 8H, DGBP =E11.5, * KG/M3* /
     3 15X *DPS/DTB,MPA/K =* E11.5, *, QVAPB,KJ/MOL =* F7.3//
     4 15X 4HIX =I2, 6H, EX =F5.2, 6H, ER =F5.2, *, S # DEN/DCRT* /
     5 15X 4HAL =F10.7, 6H, BE =F10.7, 6H, GA =F10.7/
     6 15X 4HDE =F10.7, 6H, EP =F10.7, 6H, ET =F10.7//
     7 15X 4HB1 =F14.11, 6H, B2 =F14.11, 6H, B3 =F14.11/
     8 15X 4HC1 =F14.11, 6H, C2 =F14.11, 6H, C3 =F14.11/ )
    5 FORMAT(15X 4HD/DC 6X4HTSAT 5X5HTHETA 4X6HPS,MPA 9X1HB 9X1HC )
    6 FORMAT(9X F10.2, 2F10.3, F10.4, 2F10.5)
    8 TB=FINDTSF(1.01325) $ DGB=DENGASF(TB) $ DLB=DENLIQF(TB)
    9 QB = TB*DPSDT*(1/DGB - 1/DLB)/10.0
      PTR = PTRP/10  $  PBLP = 0.101325  $  PCR = PCRT/10
      DTR = DTRP*WM  $  DLBI = DLB*WM  $  DCR = DCRT*WM
      DGA = DGAT*WM  $  DGBI = DGB*WM  $  DPSB = DPSDT/10
   10 PRINT 4, TTRP,TB,TCRT,PTR,PBLP,PCR,DTR,DLBI,DCR,DGA,DGBI,DPSB,QB,
     1 IX,EX,ER, AL,BE,GA,DE,EP,ET, B1,B2,B3, E1,E2,E3
   11 PRINT 5  $  N = 10*DTRP/DCRT + 1
   12 DO 20 J=1,N   $   S = 0.1*J
   13 DN = S*DCRT  $  S2=S*S  $  SN=S-1  $  SX = S**IX
```

```
   14 SR = 1  $  IF(ER.GT.0)  SR = S-ER
   16 B = B1 + B2*S2
   17 E = (E1 + E2*S)*SN*SR*EXP(-GA*SX)
   19 TSAT=TS=TSATF(DN)  $  TH=THETAF(DN)  $  PS=PSATF(TS) $ PIS=PS/10
   20 PRINT 6, S, TS,TH,PIS, B,E  $  RETURN  $  END


      FUNCTION PMELTF(T)
C    PROPANE MELTING LINE, BAR, VIA REEVES, SCOTT, AND BABB(JR),
C    J. CHEM. PHYS. 40(12), 3662 (1964).
      COMMON/1/AL,BE,GA,DE,EP,ET, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR,DDSDT
      DATA (A = 7180.0),(E = 1.283)
    1 X = T/TTRP  $  XE = X**E  $  PMELTF = PTRP + A*(XE-1)
    2 DPMDT = A*E*XE/X/TTRP   $   RETURN  $  END


      FUNCTION PSATF(T)
C    PROPANE VAPOR PRESSURE, BAR, RDG, FEB. 19, 1981.  (DCRT=5.00).
C    LN(P) = P1/X + P2 + P3*X + P4*X2 + P5*X3 + P6*(1-X)**EPP.
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR,DDSDT
      DIMENSION PJ(6)
      DATA (EPP = 1.35)
      DATA (TTRP=85.47),(TCRT=369.85),(DCRT=5.00),(DTRP=16.63)
      DATA(PJ = -8.722780250, 19.203078280, -15.610638913,
    1 12.685790059, -3.806542924, 1.883214505)
    1 FORMAT(1HO 9X *T ABOVE TCRT IN PSATF(T). * / )
    4 X = T/TCRT  $  V = 1.0 - X  $  IF(V) 7,8,9
    7 PRINT 1   $   STOP
    8 Z = Z1 = 0  $  GO TO 10
    9 Z = V**EPP  $  Z1 = -EPP*Z/V
   10 PL = PJ(6)*Z   $   PL1 = PJ(6)*Z1
   11 DO 13 K=1,5  $  L = K-2  $  XL = X**L
   12 PL = PL + PJ(K)*XL  $  PL1 = PL1 + PJ(K)*L*XL/X
   13 CONTINUE   $   PSATF = EXP(PL)
   15 DPSDT = PL1*PSATF/TCRT   $   RETURN  $  END


      SUBROUTINE PVTDATA
C    PROPANE EOS CONSTANTS, RDG/NBS, FEB. 19, 1981.  (DCRT=5.00).
      COMMON GK,GKK, B1,B2,B3,B4,B5, C1,C2,C3, E1,E2,E3, ER, IX
      COMMON/1/AL,BE,GA,DE,EP,ET, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      COMMON/8/ IN,IK, P,T,DEN, E,H,S, CV,CP,CSAT, W,WK
      COMMON/12/ZCRT,ZCALC,DZDT, ZSAT,DZSDT, ZFX, FRT,DFRTDT
      COMMON/99/ TI,EZZ, EZ,SZ,CVZ, HZ,CPZ
   10 WM = 44.09721  $  TTRP = 85.47  $  TCRT = 369.85
   12 DCRT = 5.000   $   DTRP = 16.630
   13 PTRP = PSATF(TTRP)  $  PCRT = PSATF(TCRT)
   20 GKK = 0.083145  $  GK = GKK*DCRT  $  ZCRT = PCRT/DCRT/GKK/TCRT
   21 IX = 2  $  AL = 1.0  $  BE = 0.7  $  GA = 0.15  $  DE = 0
   22 EP = 0  $  ER = 2.20  $  ET = 1.1
   23 B1 = 0.45650524198   $   B2 = 0.15822653715
   24 E1 =-0.24904576736   $   B3=B4=E2=E3=0
   25 DGAT = DENGASF(TTRP)  $  WK = 100000/WM  $  EZZ = 21888.910
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   99 RETURN   $   END


      FUNCTION PVTF(T,D,M)
C     PROPANE EQNSTATE, PVTF = P,BAR. SIMPLIFIED, FEB. 12, 1981.
C     NOTE, M=0 RETURNS DP/DT, D2P/DT2.  M=1 RETURNS ALSO DP/DD.
C     P-PSAT = S*GK*(T-TSAT) + S*S*GK*TCRT*F(S,T),  WHERE -
C     F(S,T) # B(S)*XBF(S,T) + E(S)*XEF(S,T),  AND -
C     B(S) # B1 + B2*S2,  E(S) # E1*(S-1)*(S-ER)*EXP(-GA*S**IX).
C     WHERE,   R # DEN/DTRP,  S # DEN/DCRT.
      COMMON GK,GKK, B1,B2,B3,B4,B5, C1,C2,C3, E1,E2,E3, ER,IX
      COMMON/1/AL,BE,GA,DE,EP,ET, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR,DDSDT
      COMMON/4/XB1,XB2, XC1,XC2, XE1,XE2, DXBDR,DXCDR,DXEDR
      COMMON/6/ TSAT, THETA, PSAT
      COMMON/12/ZCRT,ZCALC,DZDT, ZSAT,DZSDT,ZFX, FRT,DFRTDT
    1 S = D/DCRT  $  S2=S*S  $  SN=S-1  $  SR=S-ER  $  SX=S**IX
    5 GK = DCRT*GKK  $  TC = TCRT  $  DSDR = DTRP/DCRT
    6 RG = S*GK   $   GKT = GK*TC
    7 TSAT=TS=TSATF(D)  $  PSAT=PS=PSATF(TS)  $  THETA=THETAF(D)
    8 XB = XBF(T,D)   $   XE = XEF(T,D)
    9 B = B1*S2 + B2*S2*S2
   10 XP = EXP(-GA*SX)  $  SM = S2*SN*SR  $  E = E1*SM*XP
   12 F = B*XB + E*XE  $  F1 = B*XB1 + E*XE1  $  F2 = B*XB2 + E*XE2
   13 PVTF = PS + RG*(T-TS) + GKT*F  $  FRT=F/S2  $  DFRTDT=F1/S2/TC
   14 DPDT = RG + GK*F1  $  D2PDT2 = GK*F2/TC   $   IF(M) 15,30
   15 BD = (2*B1 + 4*B2*S2)*S*DSDR
   16 XP1 = -IX*GA*SX/S  $  SM1 = (SN+SR)*S2 + 2*S*SN*SR
   18 ED = E1*(SM*XP1 + SM1)*XP*DSDR
   20 F1 = B*DXBDR + BD*XB   +   E*DXEDR + ED*XE
   26 DPDR = (DPSDT-RG)*DTSDR + (T-TS)*GK*DSDR + GKT*F1
   27 DPDD = DPDR/DTRP
   30 RETURN   $   END


      FUNCTION QVAPXF(T)
C     PROPANE QVAP, J/MOL, RDG/NBS, FEB. 20, 1981.
C     QVAP = A1*X + (XE-X)*(A2 + A3*X + A4*X2 + . . ).
C     X # (TC-T)/(TC-TT),   XE # X**E.
      DIMENSION AQ(4)
      DATA (NFQ=4),(EQ=0.38),(TTRP=85.47),(TCRT=369.85)
      DATA(AQ = 24.840848, 24.166535, 6.252384, -12.156857)
    1 FORMAT(1HO 9X *T EXCEEDS TCRT IN QVAPXF(T). * / )
    2 IF(TCRT-T) 3,4,5
    3 PRINT 1   $   STOP
    4 QVAPXF = 0  $  RETURN
    5 XN = TCRT - TTRP  $  X = (TCRT-T)/XN  $  XE = X**EQ
    6 F = 0  $  DO 7 K=2,NFQ
    7 F = F + AQ(K)*X**(K-2)  $  Q = AQ(1)*X + (XE-X)*F
   10 QVAPXF = Q*1000   $   RETURN  $  END


      SUBROUTINE SIMPLE
C     FOR ANY GIVEN T,K AND P,MPA, CONVERT TO P,BAR, AND USE SUBROUTINE
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```
C    THERMO (OR ENTRIES THEREIN) TO GET THERMOPHYSICAL PROPERTIES.
C    THEN CONVERT TO MPA, AND KG/M3 IN PRESENT ROUTINE.
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT, DPDD,DPDR,DTSDR,DTHDR,DDSDT
      COMMON/8/ IN,IK, P,T,DEN, E,H,S, CV,CP,CSAT, W,WK
      COMMON/99/ TI,EZZ, EZ,SZ,CVZ, HZ,CPZ
      DATA (R=0.083145),(GJ=8.3145),(PA=1.01325),(WM=44.09721)
   14 FORMAT(1H1 18X *TEST OF THERMO AT P,MPA =* F8.5/
     1 19X *DENSITIES KG/M3, HEATS J/MOL. * / )
   16 FORMAT(6X4HPMPA 9X1HT 6X3HDEN 8X1HZ 5X5HDP/DT 5X5HDP/DD
     1 8X1HE 8X1HH 8X1HS 6X2HCV 6X2HCP 5X1HW 9X3HF/P 5X4HDIEL )
   17 FORMAT(1X F9.4, F10.3, F9.2, F9.5, F10.5, F10.6, 2F9.1, F9.3,
     1 2F8.2, I6, E12.5, F9.5)
C    LET US EXAMINE A SUBCRITICAL ISOBAR.
   19 PMPA = 3.5
   20 P = 10*PMPA  $  PRINT 14, PMPA  $  PRINT 16
   21 DO 90 J=1,39  $  TIK = T = 110 + 10*J
   22 CALL THERMO   $   IW = W  $  Z = P/DEN/R/T
C    GET DIEL.CONST., AND FUGACITIES.
   25 GIB = H-EZZ-HZ -T*(S-SZ)  $  FOP = EXP(GIB/GJ/T)*PA/P
   26 IF(T.GT.450) 27,28
   27 DIE = 0  $  GO TO 30
   28 DIE = DIELF(DEN,T,P)
C    CONVERT PRESSURES, DENSITIES, AND DERIVATIVES.
   30 PMPA=P/10 $ DEN=DEN*WM $ DPDT=DPDT/10 $ DPDD=DPDD/10/WM
   31 DPMDT = DPMDT/10  $  DPSDT = DPSDT/10  $  DDSDT = DDSDT*WM
   40 PRINT 17, PMPA,T,DEN,Z, DPDT,DPDD, E,H,S, CV,CP,IW, FOP,DIE
   90 CONTINUE   $   RETURN   $   END


      FUNCTION SSATF(T)
C     PROPANE SATLIQ ENTROPY, J/MOL/K.
C    CONSTRAINED AT TRIPLE AND CRITICAL POINTS.
C    Y # (S-SCRT)/(STRP-SCRT),  X # (TC-T)/(TC-TT).
C    Y = X + (XE-X)*(A1 + A2*X + A3*X2 + . . . ).
      DIMENSION AS(8)
      DATA (NFS=8),(ES=0.32),(TTRP=85.47),(TCRT=369.85)
      DATA (STRP = 82.56147),(SCRT = 234.72617)
      DATA(AS = 0.1263077082, -0.7539546218, 1.253270427, -5.96961033,
     1 14.0277688, -20.62894506, 16.01178434, -5.411082748)
    1 FORMAT(1HO 9X 3HT =F10.5, * IN SSATF(T). * / )
    2 IF(TCRT-T) 3,4,5
    3 PRINT 1, T   $   STOP
    4 SSATF = SCRT   $   RETURN
    5 YN = STRP-SCRT  $  XN = TCRT-TTRP
    6 X = (TCRT-T)/XN  $  XE = X**ES  $  V = XE - X
    7 Y = X  $  DO 8 K=1,NFS
    8 Y = Y + V*AS(K)*X**(K-1)
    9 SSATF = SCRT + YN*Y   $   RETURN   $   END


      SUBROUTINE TABLIQ
      COMMON/1/AL,BE,GA,DE,EP,ET, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR,DDSDT
      COMMON/6/ TSAT, THETA, PSAT
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      COMMON/8/ IN,IK, P,T,DEN, E,H,S, CV,CP,CSAT, W,WK
      COMMON/9/DNG,EG,HG,SG, CVG,CPG,WG, DPGDT,DPGDD
      COMMON/12/ZCRT,ZCALC,DZDT, ZSAT,DZSDT,ZFX, FRT,DFRTDT
      COMMON/99/ TI,EZZ, EZ,SZ,CVZ, HZ,CPZ
      DIMENSION DSA(60),TSA(60),PSA(60),DLT(60),DPT(60),DPD(60)
      DATA (G=0.083145),(WM=44.09721)
    4 FORMAT(1H1 13X *PROPERTIES OF SATURATED LIQUID PROPANE* //
     1 14X 1HT 11X1HP 3X5HDEN,L 7X5HDEN,G 5X3HZ,L 5X3HZ,G
     2 5X6HDPS/DT 3X6HDDL/DT 3X5HDP/DT 6X5HDP/DD /
     3 14X 1HK 9X3HMPA 3X5HKG/M3 7X5HKG/M3  16X
     4 6X5HMPA/K 2X7HKG/M3/K 3X5HMPA/K 2X9HMPA-M3/KG )
    5 FORMAT(5XF10.3, E12.5, F8.2, E12.5, 2F8.5, E11.4,F9.4,F8.4,E11.4)
   11 FORMAT(1H1 13X *PROPERTIES OF SATURATED LIQUID PROPANE * //
     1 14X 1HT 4X5HQ,VAP 8X1HE 8X1HH 8X1HS
     2 6X2HCV 6X2HCS 6X2HCP 6X3HF/P 6X1HW 4X5HDIEL. /
     3 14X 1HK 4X5HJ/MOL 4X5HJ/MOL 4X5HJ/MOL 2X7HJ/MOL/K
     4 1X7HJ/MOL/K 1X7HJ/MOL/K 1X7HJ/MOL/K 11X 5HM/SEC 4X5HCONST )
   12 FORMAT(5X F10.3, 3F9.1, F9.3, 3F8.2, F9.5, I7, F9.5)
C    FOR PAGE ONE OF TABLIQ.
C    REPLACE T = 230 BY B.P. AT J = 30.
  120 NP = 58   $   PRINT 4
  121 DO 150 J=1,NP  $  IF(J.EQ.1) 122,123
  122 T = TTRP  $  GO TO 139
  123 IF(J.EQ.30) 124,125
  124 T = FINDTSF(1.01325)  $  GO TO 139
  125 IF(J.EQ.NP) 126,128
  126 T = TCRT  $  DSA(J)=DG=DL=DCRT  $  DLT(J) = DDLDT = 0
  127 VG = VL = 1.0/DCRT  $  ZG = ZCRT  $  GO TO 141
  128 T = 80 + 5*J
  139 DSA(J) = DL = DENLIQF(T)  $  DLT(J) = DDLDT = DDSDT
  140 DG = DENGASF(T)  $  ZG = ZSAT  $  VG = 1/DG  $  VL = 1/DL
  141 TSA(J) = T  $  PX = PVTF(T,DL,1)  $  DPT(J)=DPDT  $  DPD(J)=DPDD
  147 PSA(J) = PS = PSAT  $  Z = PS/DL/G/T
  148 PS=PS/10 $ DPSDT=DPSDT/10 $ DPDT=DPDT/10 $ DPDD=DPDD/10
  149 DL=DL*WM $ DG=DG*WM $ DDLDT=DDLDT*WM  $  DPDD = DPDD/WM
  150 PRINT 5, T,PS, DL,DG, Z,ZG, DPSDT,DDLDT, DPDT,DPDD
C    PAGE 2, TABLIQ.  AVOID COEXIST, TIMESAVER.
C    USE COEXIST AT ALL TEMPERATURES.
  160 PRINT 11  $  DO 180 J=1,NP  $  T = TSA(J)  $  P = PSA(J)
  161 CALL COEXIST  $  DL = DEN  $  IW = W
  162 DIEL = DIELF(DL,T,P)  $  QX = QVAPXF(T)
C    GET FUGACITY COEF., (F/P), VIA HZ, SZ, HG, SG.
C    NOTE, DI = 0.00001 MOL/L IN EDELF.
  170 GIBS = HG-EZZ-HZ - T*(SG-SZ)
  171 GJ = 100*G  $  XP = EXP(GIBS/GJ/T)  $  FOP = XP*1.01325/P
  172 IF(DNG.LE.0.00001)  FOP = 1.0
  180 PRINT 12, T,QX, E,H,S, CV,CSAT,CP, FOP, IW, DIEL
  999 RETURN    $    END


      SUBROUTINE THERMO
C    FOR COMPUTATION AT ANY (T,P) POINT.
C    ASSUMES AN ISOTHERM IN SINGLE-PHASE ONLY.
C    CASES FOR ISOTHERMS BELOW, EQ., ABOVE TCRT.
```

```
C     GIVEN (T,P), RETURNS DEN, E,H,S, CV,CP,W, DPDT, DPDD.
C     ENTRIES BELOW FOR PHASE BOUNDARIES ASSUME A GIVEN ISOBAR P, OR -
C     ENTRIES BELOW FOR PHASE BOUNDARIES ASSUME A GIVEN ISOTHERM, T.
      COMMON/1/AL,BE,GA,DE,EP,ET, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR,DDSDT
      COMMON/8/ IN,IK, P,T,DEN, E,H,S, CV,CP,CSAT, W,WK
      COMMON/9/ DNG,EG,HG,SG, CVG,CPG,WG, DPGDT,DPGDD
      COMMON/99/ TI,EZZ, EZ,SZ,CVZ, HZ,CPZ
    1 FORMAT(1HO 9X *THERMO, P.GE.PMELT. * / )
    2 FORMAT(1HO 9X *THERMO DOUBLE-VALUED AT P = PSAT. * / )
    3 FORMAT(1HO 9X *THERMO, DEN GE. DCRT AT T = TCRT. * / )
   10 IF(T-TCRT) 11,20,25
C     SUBCRITICAL ISOTHERMS.
   11 PM = PMELTF(T)  $  IF(P.GE.PM) 12,13
   12 PRINT 1  $  CALL COMPRLQ  $  TI=T  $  CALL IDEAL   $   RETURN
   13 PS = PSATF(T)  $  IF(P-PS) 14,15,16
   14 CALL GENEOUS   $   RETURN
   15 PRINT 2   $   RETURN
   16 CALL COMPRLQ  $  TI = T  $  CALL IDEAL  $  RETURN
C     THE CRITICAL ISOTHERM.
   20 CALL GENEOUS   $   IF(DEN.LT.DCRT)  RETURN
   21 CP = CV = W = 0  $  PRINT 3  $  RETURN
C     ISOTHERMS AT T ABOVE TCRT.
   25 CALL GENEOUS   $   RETURN
C     THERMOM FOR GIVEN ISOBAR AT THE MELTING LINE, GET T.
C     RETURNS T,DEN, E,H,S, CV,CP,W, DPMDT,DPDT,DPDD.
      ENTRY THERMOM
   40 T = FINDTMF(P)  $  PM = PMELTF(T)  $  CALL COMPRLQ
   41 TI = T  $  CALL IDEAL  $  RETURN
C     THERMOL FOR GIVEN ISOBAR AT SATURATED LIQUID LINE, GET T.
C     RETURNS T,DEN, E,H,S, CV,CP,CSAT,W, DPSDT,DDSDT, DPDT,DPDD.
      ENTRY THERMOL
   43 T = FINDTSF(P)  $  CALL COEXIST  $  RETURN
C     THERMOV FOR GIVEN ISOBAR AT THE SATURATED VAPOR LINE, GET T.
C     RETURNS T,DEN, E,H,S, CV,CP,W, DPSDT,DDSDT, DPDT,DPDD.
      ENTRY THERMOV
   45 T = FINDTSF(P)  $  CALL COEXIST  $  DEN=DNG $ E=EG $ H=HG $ S=SG
   47 CV=CVG $ CP=CPG $ W=WG $ DPDT=DPGDT $ DPDD=DPGDD  $  RETURN
C     THRMM FOR ISOTHERM AT THE MELTING LINE, GET P.
C     RETURNS P,DEN, E,H,S, CV,CP,W, DPMDT, DPDT, DPDD.
      ENTRY THRMM
   50 P = PMELTF(T)  $  CALL COMPRLQ $ TI=T $ CALL IDEAL $ RETURN
C     THRML FOR ISOTHERM AT SAT. LIQ. LINE, GET P.
C     RETURNS P,DEN, E,H,S, CV,CP,CSAT,W, DPSDT,DDSDT, DPDT,DPDD.
      ENTRY THRML
   55 P = PSATF(T)  $  CALL COEXIST   $   RETURN
C     THRMV FOR ISOTHERM AT SAT. VAPOR LINE, GET P.
C     RETURNS P,DEN, E,H,S, CV,CP,W, DPSDT,DDSDT, DPDT,DPDD
      ENTRY THRMV
   60 P = PSATF(T)  $  CALL COEXIST
   61 DEN=DNG $ E=EG $ H=HG $ S=SG $ CV=CVG
   62 CP=CPG $ W=WG $ DPDT=DPGDT $ DPDD=DPGDD
   99 RETURN   $   END
```

```
      FUNCTION THETAF(DEN)
C     THETA = TSAT*EXP(U(S)).
C     LET Q = (S-1)/(ST-1),  WHERE ST = DTRP/DCRT,  THEN -
C     IF S < 1, U = AL*Q**3,     IF S > 1,  U = -AL*Q**3,
      COMMON/1/AL,BE,GA,DE,EP,ET, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR,DDSDT
      COMMON/6/ TSAT, THETA, PSAT
    1 S = DEN/DCRT  $  DSDR = DTRP/DCRT  $  C = DSDR-1
    2 Q = (S-1)/C  $  Q2 = Q*Q  $  U = AL*Q*Q2
    3 U1 = AL*3*Q2*DSDR/C   $   IF(Q) 5,9,4
    4 U = -U   $   U1 = -U1
    5 XP = EXP(U)    $   THETAF = TSAT*XP
    6 DTHDR = (TSAT*U1 + DTSDR)*XP    $    RETURN
    9 THETAF = TCRT  $  DTHDR = 0    $    RETURN   $   END


      FUNCTION TSATF(DEN)
C     ITERATE T TO MINIMIZE (DEN-DCALC) VIA DENGASF(T), DENLIQF(T).
C     IF ITERATION FAILS, PRINTOUT ONCE ONLY AND STOP AT K = 2.
      COMMON/1/AL,BE,GA,DE,EP,ET, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR,DDSDT
      DATA (Q=2.0),(FN=6.3890561)
C     NOTE,   FN # EXP(Q) - 1.0.
    1 FORMAT(1H1 14X *TSATF(DEN) FAILS AT DEN =* E15.7//
     1 15X 5HDCALC 13X2HDD 10X5HDDSDT 13X2HDT 12X3HT,K )
    2 FORMAT(5X 5E15.7)
    3 K = 0   $   D = DEN
    4 S = D/DCRT  $  YN = TCRT/TTRP-1  $  IF(D-DCRT) 5,30,6
    5 ST=DGAT/DCRT $ F=ALOG(S)/ALOG(ST)*((1-S)/(1-ST))**2 $ GO TO 7
    6 ST=DTRP/DCRT $ U=((S-1)/(ST-1))**3 $ F=(EXP(Q*U)-1)/FN
    7 T = TCRT/(YN*F+1)
    8 DO 20 J=1,50  $  IF(D-DCRT) 9,30,10
    9 DC = DENGASF(T)  $  GO TO 11
   10 DC = DENLIQF(T)
   11 DD = D - DC  $  IF(ABS(DD/D).LT.1.0E-7) 25,12
   12 DT = DD/DDSDT  $  IF(ABS(DT/T).LT.1.0E-7) 25,13
   13 T = T + DT  $  IF(T) 14,14,15
   14 T = TTRP  $  GO TO 18
   15 IF(T.LT.TCRT) 18,16
   16 T = TCRT - 0.05
   18 IF(K.EQ.1)  PRINT 2, DC, DD, DDSDT, DT, T
   20 CONTINUE  $  K = K+1  $  IF(K.NE.1)  STOP
   21 PRINT 1, DEN   $   GO TO 4
   25 TSATF = T  $  DTSDR = DTRP/DDSDT  $  RETURN
   30 TSATF = TCRT  $  DTSDR = 0  $  RETURN  $  END


      FUNCTION XBF(T,D)
C     XBF(R,T) # (X**BE)*EXP(A*(1-TS/T)) - XS**BE,   WHERE -
C     X # T/TC,  XS # TS/TC,  A # (1-BE) + SQRT(1-BE),
C     XBF = U*EXP(A*V) - US,  U # X**B,  US # XS**B,  V # (1-TS/T).
      COMMON/1/AL,BE,GA,DE,EP,ET, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR,DDSDT
      COMMON/4/XB1,XB2, XC1,XC2, XE1,XE2, DXBDR,DXCDR,DXEDR
```

```
      COMMON/6/ TSAT, THETA, PSAT
    1 B = BE  $  BN = 1-B  $  A = BN + SQRT(BN)
    2 TC=TCRT $ TS=TSAT $ X=T/TC $ XS=TS/TC $ XS1=DTSDR/TC
    3 U = X**B  $  U1 = B*U/X  $  U2 = -BN*U1/X
    4 US = XS**B  $  US1 = B*US*XS1/XS
    5 V = 1-TS/T  $  V1R = -DTSDR/T  $  V1X = TS/T/X  $  V2X = -2*V1X/X
    6 P = EXP(A*V)  $  P1 = A*P  $  P2 = A*P1
    7 P1R = P1*V1R  $  P1X = P1*V1X  $  P2X = P1*V2X + P2*V1X*V1X
    8 XBF = U*P - US  $  XB1 = U*P1X + U1*P
    9 XB2 = U*P2X + 2*U1*P1X + U2*P  $  DXBDR = U*P1R - US1
   10 RETURN   $   END


      FUNCTION XEF(T,D)
C    ULTRA REVISION, MARCH 29, 1981.
C    XEF = H(R,T)/HS(R) - 1.0,
C    H(R,T) # 1 - (W-WE/E)/(1-1/E),   E = ET.
C    X#T/TC, F#TS/T, W#(1-TH/T), WE#W**E
C    A = DE,  B = 1-A,  C = EP,  E = ET.
      COMMON/1/AL,BE,GA,DE,EP,ET, DCRT,TCRT,PCRT, DGAT,DTRP,TTRP,PTRP
      COMMON/3/DPDT,D2PDT2,DPSDT,DPMDT,DPDD,DPDR,DTSDR,DTHDR,DDSDT
      COMMON/4/XB1,XB2, XC1,XC2, XE1,XE2, DXBDR,DXCDR,DXEDR
      COMMON/6/ TSAT, THETA, PSAT
    1 E = ET  $  EK = E/(E-1)  $  TC = TCRT
    2 TS = TSAT  $  TH = THETA  $  X = T/TC
    3 W = 1.0 - TH/T  $  IF(W) 30,30,4
    4 CONTINUE
    5 W1R = -DTHDR/T  $  W1X = TH/T/X  $  W2X = -2*W1X/X
    6 WE = W**E  $  WE1 = E*WE/W  $  WE1R = WE1*W1R
    7 WE1X = WE1*W1X  $  WE2X = WE1*W2X + (E-1)*WE1*W1X*W1X/W
    8 H = 1 - EK*(W-WE/E)  $  H1R = -EK*(W1R-WE1R/E)
    9 H1X = -EK*(W1X-WE1X/E)  $  H2X = -EK*(W2X-WE2X/E)
   10 WS = 1.0 - TH/TS  $  IF(WS) 11,11,12
   11 HS = 1  $  HS1 = 0  $  GO TO 16
   12 WS1 = (TH*DTSDR/TS - DTHDR)/TS
   13 WSE = WS**E  $  WSE1 = E*WSE*WS1/WS
   14 HS = 1 - EK*(WS-WSE/E)  $  HS1 = -EK*(WS1-WSE1/E)
   16 U = 1.0/HS  $  U1R = -U*HS1/HS
   17 P = H*U  $  DXEDR = H*U1R + H1R*U
   18 XE1 = H1X*U  $  XE2 = H2X*U  $  XEF = P - 1  $  RETURN
   30 XEF = XE1 = XE2 = DXEDR = 0   $   RETURN   $   END
```

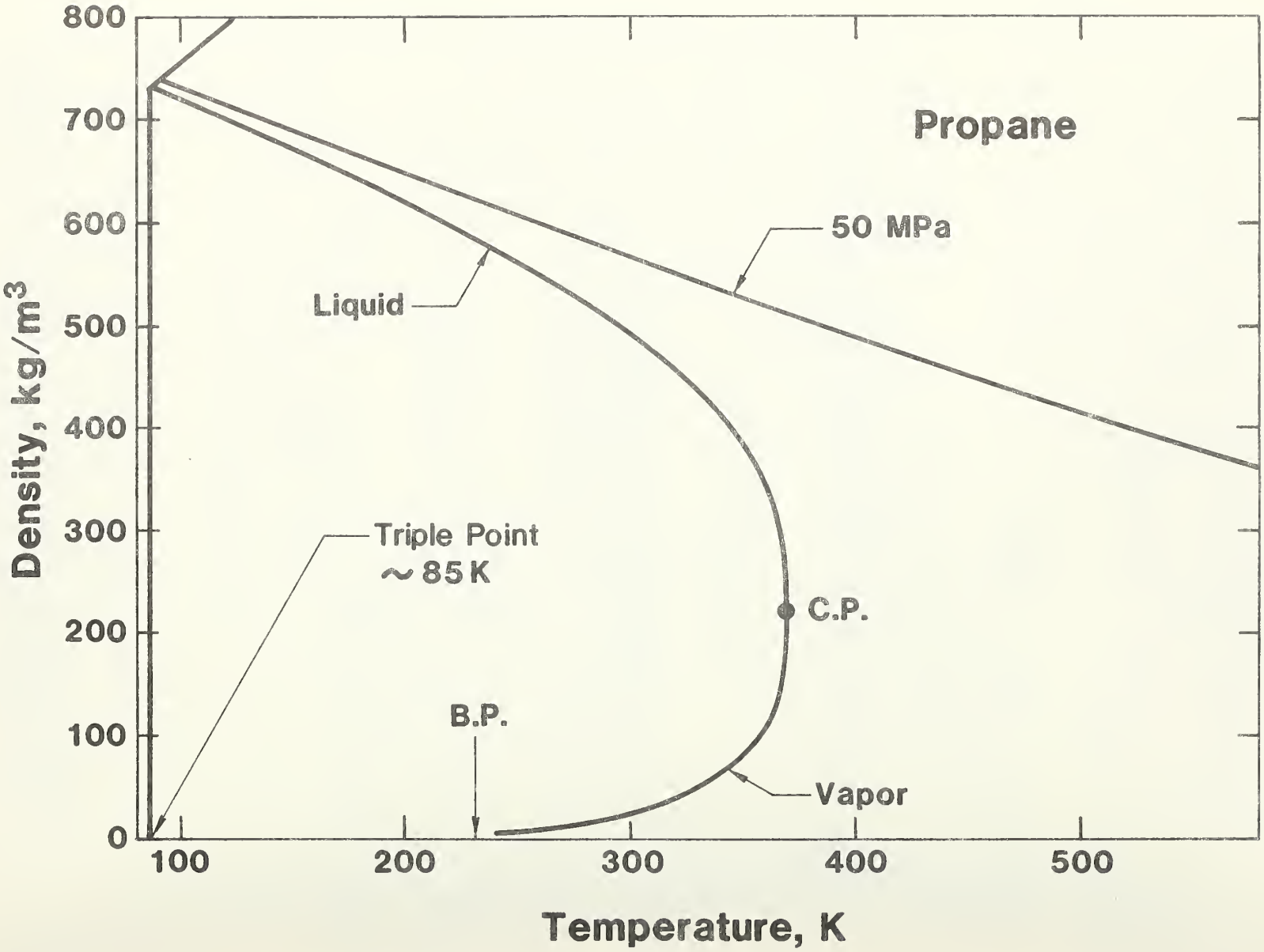

Figure 1. Density-temperature diagram of propane.

Table 1. Comparisons of vapor pressure data with eq (2).

Data sources and ID numbers: (1)Tickner, (2)Carruth, (3)Maass, (4)Dana, (6)Sage, (7)Beattie, (9)Kemp, (11)Deschner, (12)Reamer, (13)Cherney, (14)Clegg, (17)Helgeson, (19)Gilliland, (20)Burrell, (25)Thomas, (30)Mousa, (35)Kratzke, (78)Teichmann, (80)Thermal Loops.

ID	Weight	Temp. K	T/T_c	P_σ(expt) MPa	P_σ(calc) MPa	Diff. %	dP_σ/dT MPa/K
80	.053	85.470	.23109	.16808E-09	.16895E-09	-.52	.688E-10
80	.059	90.000	.24334	.96721E-09	.96855E-09	-.14	.353E-09
80	.066	95.000	.25686	.54172E-08	.54123E-08	.09	.176E-08
80	.073	100.000	.27038	.25185E-07	.25139E-07	.18	.730E-08
80	.081	105.000	.28390	.99897E-07	.99697E-07	.20	.260E-07
80	.088	110.000	.29742	.34570E-06	.34511E-06	.17	.814E-07
80	.097	115.000	.31094	.10632E-05	.10618E-05	.13	.227E-06
80	.105	120.000	.32446	.29504E-05	.29481E-05	.08	.574E-06
80	.114	125.000	.33797	.74833E-05	.74804E-05	.04	.133E-05
80	.124	130.000	.35149	.17535E-04	.17534E-04	.00	.286E-05
80	.133	135.000	.36501	.38308E-04	.38316E-04	-.02	.574E-05
80	.143	140.000	.37853	.78644E-04	.78671E-04	-.03	.109E-04
80	.154	145.000	.39205	.15274E-03	.15279E-03	-.04	.195E-04
80	.164	150.000	.40557	.28226E-03	.28235E-03	-.03	.334E-04
80	.176	155.000	.41909	.49886E-03	.49897E-03	-.02	.547E-04
80	.187	160.000	.43261	.84691E-03	.84700E-03	-.01	.865E-04
80	.199	165.000	.44613	.13865E-02	.13864E-02	.00	.132E-03
9	.202	166.190	.44934	.15480E-02	.15512E-02	-.21	.145E-03
80	.211	170.000	.45965	.21963E-02	.21959E-02	.02	.195E-03
9	.220	173.320	.46862	.29330E-02	.29308E-02	.08	.249E-03
80	.224	175.000	.47316	.33765E-02	.33756E-02	.02	.281E-03
9	.236	179.842	.48626	.49850E-02	.49878E-02	-.06	.390E-03
80	.237	180.000	.48668	.50514E-02	.50497E-02	.03	.394E-03
9	.257	187.347	.50655	.87250E-02	.87296E-02	-.05	.621E-03
80	.264	190.000	.51372	.10516E-01	.10512E-01	.04	.724E-03
80	.278	195.000	.52724	.14693E-01	.14687E-01	.04	.954E-03
9	.278	195.131	.52759	.14803E-01	.14812E-01	-.06	.960E-03
80	.292	200.000	.54076	.20140E-01	.20133E-01	.03	.123E-02
9	.301	202.910	.54863	.23987E-01	.23993E-01	-.02	.142E-02
80	.307	205.000	.55428	.27127E-01	.27119E-01	.03	.157E-02
9	.322	209.926	.56760	.35774E-01	.35798E-01	-.07	.196E-02
80	.322	210.000	.56780	.35952E-01	.35944E-01	.02	.197E-02
9	.338	214.982	.58127	.46884E-01	.46893E-01	-.02	.244E-02
80	.338	215.000	.58132	.46944E-01	.46937E-01	.02	.244E-02
80	.354	220.000	.59484	.60460E-01	.60455E-01	.01	.298E-02
9	.355	220.259	.59554	.61212E-01	.61231E-01	-.03	.301E-02
80	.370	225.000	.60835	.76882E-01	.76884E-01	-.00	.360E-02
9	.370	225.098	.60862	.77179E-01	.77238E-01	-.08	.362E-02
9	.383	228.806	.61865	.91484E-01	.91593E-01	-.12	.413E-02
80	.387	230.000	.62187	.96624E-01	.96633E-01	-.01	.431E-02
9	.392	231.462	.62583	.10302E+00	.10310E+00	-.08	.453E-02
25	.487	258.150	.69799	.29179E+00	.29153E+00	.09	.101E-01
25	1.000	263.150	.71150	.34549E+00	.34522E+00	.08	.114E-01
25	1.000	268.150	.72502	.40623E+00	.40601E+00	.05	.129E-01
25	1.000	273.150	.73854	.47462E+00	.47447E+00	.03	.145E-01
25	1.000	278.150	.75206	.55125E+00	.55118E+00	.01	.162E-01
25	1.000	283.150	.76558	.63672E+00	.63671E+00	.00	.180E-01
25	1.000	288.150	.77910	.73159E+00	.73167E+00	-.01	.200E-01
25	1.000	293.150	.79262	.83650E+00	.83665E+00	-.02	.220E-01
25	1.000	298.150	.80614	.95202E+00	.95229E+00	-.03	.242E-01
25	1.000	303.150	.81966	.10789E+01	.10792E+01	-.03	.266E-01
35	1.000	311.974	.84351	.13318E+01	.13327E+01	-.07	.310E-01
35	1.000	312.360	.84456	.13446E+01	.13447E+01	-.01	.312E-01
25	1.000	313.150	.84669	.13692E+01	.13695E+01	-.03	.316E-01
35	1.000	317.143	.85749	.14993E+01	.15000E+01	-.05	.338E-01
35	1.000	322.120	.87095	.16743E+01	.16751E+01	-.05	.366E-01
7	1.000	323.150	.87373	.17122E+01	.17131E+01	-.05	.372E-01
25	1.000	323.150	.87373	.17130E+01	.17131E+01	-.00	.372E-01
35	1.000	327.660	.88593	.18861E+01	.18870E+01	-.05	.399E-01
25	1.000	333.150	.90077	.21164E+01	.21158E+01	.03	.435E-01
35	1.000	333.545	.90184	.21331E+01	.21330E+01	.00	.437E-01
35	1.000	337.944	.91373	.23309E+01	.23318E+01	-.04	.467E-01
35	1.000	342.679	.92654	.25606E+01	.25609E+01	-.01	.501E-01
25	1.000	343.150	.92781	.25862E+01	.25846E+01	.06	.504E-01

Table 1. (Continued).

Data sources and ID numbers: (1)Tickner, (2)Carruth, (3)Maass, (4)Dana, (6)Sage, (7)Beattie, (9)Kemp, (11)Deschner, (12)Reamer, (13)Cherney, (14)Clegg, (17)Helgeson, (19)Gilliland, (20)Burrell, (25)Thomas, (30)Mousa, (35)Kratzke, (78)Teichmann, (80)Thermal Loops.

ID	Weight	Temp. K	T/T_c	P_σ(expt) MPa	P_σ(calc) MPa	Diff. %	dP_σ/dT MPa/K
35	1.000	347.773	.94031	.28265E+01	.28259E+01	.02	.540E-01
7	1.000	348.150	.94133	.28485E+01	.28463E+01	.08	.543E-01
25	1.000	348.150	.94133	.28486E+01	.28463E+01	.08	.543E-01
25	1.000	353.150	.95485	.31309E+01	.31281E+01	.09	.585E-01
35	1.000	353.423	.95558	.31451E+01	.31441E+01	.03	.587E-01
35	1.000	357.564	.96678	.33962E+01	.33948E+01	.04	.625E-01
25	1.000	358.150	.96837	.34352E+01	.34316E+01	.11	.630E-01
35	1.000	362.826	.98101	.37371E+01	.37373E+01	-.01	.679E-01
25	1.000	363.150	.98188	.37633E+01	.37594E+01	.10	.683E-01
25	1.000	365.150	.98729	.39018E+01	.38983E+01	.09	.707E-01
35	1.000	366.130	.98994	.39665E+01	.39681E+01	-.04	.720E-01
25	1.000	367.150	.99270	.40450E+01	.40423E+01	.07	.734E-01
35	1.000	367.583	.99387	.40727E+01	.40742E+01	-.04	.741E-01
25	1.000	368.150	.99540	.41185E+01	.41165E+01	.05	.751E-01
25	1.000	369.150	.99811	.41935E+01	.41926E+01	.02	.772E-01
25	1.000	369.650	.99946	.42316E+01	.42316E+01	.00	.788E-01
25	1.000	369.750	.99973	.42393E+01	.42395E+01	-.00	.794E-01
1	0.000	105.350	.28485	.13330E-06	.10921E-06	22.06	.283E-07
1	0.000	108.250	.29269	.26660E-06	.22667E-06	17.61	.554E-07
1	0.000	112.450	.30404	.66660E-06	.60685E-06	9.85	.136E-06
1	0.000	115.750	.31296	.13330E-05	.12453E-05	7.04	.263E-06
1	0.000	119.250	.32243	.26660E-05	.25447E-05	4.77	.503E-06
1	0.000	124.350	.33622	.66660E-05	.66588E-05	.11	.120E-05
1	0.000	128.350	.34703	.13330E-04	.13346E-04	-.12	.224E-05
1	0.000	132.850	.35920	.26660E-04	.27600E-04	-3.40	.429E-05
1	0.000	139.150	.37623	.66660E-04	.69900E-04	-4.64	.979E-05
1	0.000	144.350	.39029	.13330E-03	.14057E-03	-5.17	.181E-04
1	0.000	149.950	.40543	.26660E-03	.28069E-03	-5.02	.332E-04
1	0.000	158.150	.42761	.66660E-03	.69949E-03	-4.70	.733E-04
1	0.000	164.750	.44545	.13330E-02	.13538E-02	-1.54	.129E-03
2	0.000	94.540	.25562	.68500E-08	.46579E-08	47.06	.153E-08
2	0.000	99.780	.26979	.30650E-07	.23579E-07	29.99	.688E-08
2	0.000	105.150	.28430	.12190E-06	.10368E-06	17.58	.270E-07
2	0.000	110.650	.29918	.43650E-06	.40193E-06	8.60	.936E-07
2	0.000	117.420	.31748	.17800E-05	.17616E-05	1.05	.360E-06
2	0.000	127.720	.34533	.11360E-04	.12000E-04	-5.33	.204E-05
2	0.000	134.150	.36271	.31250E-04	.33703E-04	-7.28	.512E-05
2	0.000	143.740	.38864	.11960E-03	.12989E-03	-7.92	.169E-04
2	0.000	155.720	.42104	.50660E-03	.53976E-03	-6.14	.586E-04
2	0.000	162.450	.43923	.10390E-02	.10830E-02	-4.06	.107E-03
2	0.000	173.580	.46933	.29920E-02	.29962E-02	-.14	.254E-03
2	0.000	178.650	.48303	.45700E-02	.45409E-02	.64	.360E-03
3	0.000	229.750	.62120	.11426E+00	.95561E-01	19.57	.427E-02
3	0.000	230.250	.62255	.11599E+00	.97716E-01	18.70	.435E-02
3	0.000	230.850	.62417	.11919E+00	.10035E+00	18.77	.444E-02
3	0.000	234.750	.63472	.13999E+00	.11887E+00	17.77	.506E-02
3	0.000	242.300	.65513	.18238E+00	.16214E+00	12.48	.644E-02
3	0.000	250.050	.67608	.26944E+00	.21824E+00	23.46	.808E-02
4	0.000	210.330	.56869	.36837E-01	.36599E-01	.65	.200E-02
4	0.000	216.410	.58513	.50689E-01	.50477E-01	.42	.258E-02
4	0.000	216.470	.58529	.50822E-01	.50632E-01	.37	.259E-02
4	0.000	221.640	.59927	.65835E-01	.65504E-01	.51	.318E-02
4	0.000	227.250	.61444	.85753E-01	.85335E-01	.49	.391E-02
4	0.000	231.080	.62479	.10181E+00	.10138E+00	.42	.447E-02
4	0.000	235.040	.63550	.12050E+00	.12034E+00	.13	.511E-02
4	0.000	235.090	.63564	.12082E+00	.12060E+00	.18	.512E-02
4	0.000	242.730	.65629	.16520E+00	.16493E+00	.16	.652E-02
4	0.000	249.070	.67344	.21041E+00	.21043E+00	-.01	.786E-02
4	0.000	256.290	.69296	.27238E+00	.27326E+00	-.32	.958E-02
4	0.000	267.280	.72267	.39303E+00	.39490E+00	-.47	.126E-01
4	0.000	272.120	.73576	.45903E+00	.45972E+00	-.15	.142E-01
4	0.000	275.630	.74525	.50529E+00	.51145E+00	-1.21	.153E-01
4	0.000	282.670	.76428	.62542E+00	.62810E+00	-.43	.178E-01

Table 1. (Continued).

Data sources and ID numbers: (1)Tickner, (2)Carruth, (3)Maass, (4)Dana, (6)Sage, (7)Beattie, (9)Kemp, (11)Deschner, (12)Reamer, (13)Cherney, (14)Clegg, (17)Helgeson, (19)Gilliland, (20)Burrell, (25)Thomas, (30)Mousa, (35)Kratzke, (78)Teichmann, (80)Thermal Loops.

ID	Weight	Temp. K	T/T_c	P_σ(expt) MPa	P_σ(calc) MPa	Diff. %	dP_σ/dT MPa/K
4	0.000	283.300	.76599	.63648E+00	.63942E+00	-.46	.181E-01
4	0.000	291.080	.78702	.78607E+00	.79193E+00	-.74	.212E-01
4	0.000	298.080	.80595	.94352E+00	.95059E+00	-.74	.242E-01
4	0.000	307.090	.83031	.11644E+01	.11876E+01	-1.95	.285E-01
4	0.000	315.210	.85226	.14232E+01	.14358E+01	-.87	.327E-01
4	0.000	323.490	.87465	.17023E+01	.17258E+01	-1.36	.374E-01
4	0.000	323.490	.87465	.17065E+01	.17258E+01	-1.12	.374E-01
6	0.000	293.930	.79473	.86180E+00	.85398E+00	.92	.224E-01
6	0.000	301.090	.81409	.10352E+01	.10255E+01	.94	.256E-01
6	0.000	307.480	.83136	.12066E+01	.11987E+01	.66	.287E-01
6	0.000	313.320	.84715	.13790E+01	.13749E+01	.30	.317E-01
6	0.000	318.590	.86140	.15513E+01	.15494E+01	.12	.346E-01
6	0.000	323.370	.87433	.17237E+01	.17213E+01	.14	.373E-01
6	0.000	327.930	.88666	.18961E+01	.18978E+01	-.09	.401E-01
6	0.000	332.090	.89790	.20684E+01	.20701E+01	-.08	.428E-01
6	0.000	336.090	.90872	.22408E+01	.22464E+01	-.25	.454E-01
6	0.000	339.870	.91894	.24132E+01	.24231E+01	-.41	.481E-01
6	0.000	343.480	.92870	.25855E+01	.26013E+01	-.61	.507E-01
6	0.000	346.930	.93803	.27579E+01	.27807E+01	-.82	.533E-01
6	0.000	350.090	.94657	.29303E+01	.29532E+01	-.78	.559E-01
6	0.000	353.090	.95468	.31026E+01	.31246E+01	-.70	.584E-01
6	0.000	355.870	.96220	.32750E+01	.32903E+01	-.47	.609E-01
6	0.000	358.590	.96956	.34474E+01	.34594E+01	-.35	.635E-01
6	0.000	361.260	.97677	.36197E+01	.36324E+01	-.35	.662E-01
6	0.000	363.760	.98353	.37921E+01	.38012E+01	-.24	.690E-01
6	0.000	366.260	.99029	.39645E+01	.39775E+01	-.33	.721E-01
6	0.000	368.760	.99705	.41369E+01	.41627E+01	-.62	.763E-01
11	0.000	301.950	.81641	.10536E+01	.10477E+01	.56	.260E-01
11	0.000	302.950	.81912	.10807E+01	.10739E+01	.63	.265E-01
11	0.000	304.610	.82360	.11248E+01	.11185E+01	.56	.273E-01
11	0.000	306.680	.82920	.11829E+01	.11760E+01	.59	.283E-01
11	0.000	308.350	.83372	.12317E+01	.12239E+01	.64	.291E-01
11	0.000	311.490	.84221	.13246E+01	.13178E+01	.52	.307E-01
11	0.000	311.490	.84221	.13249E+01	.13178E+01	.54	.307E-01
11	0.000	315.480	.85299	.14500E+01	.14446E+01	.37	.329E-01
11	0.000	318.150	.86021	.15471E+01	.15343E+01	.84	.343E-01
11	0.000	318.280	.86057	.15474E+01	.15388E+01	.56	.344E-01
11	0.000	324.940	.87857	.17798E+01	.17806E+01	-.05	.383E-01
11	0.000	330.600	.89388	.20098E+01	.20071E+01	.13	.418E-01
11	0.000	330.600	.89388	.20107E+01	.20071E+01	.18	.418E-01
11	0.000	333.960	.90296	.21596E+01	.21512E+01	.39	.440E-01
11	0.000	336.650	.91023	.22749E+01	.22720E+01	.13	.458E-01
11	0.000	340.120	.91962	.24561E+01	.24351E+01	.86	.482E-01
11	0.000	340.120	.91962	.24539E+01	.24351E+01	.77	.482E-01
11	0.000	344.640	.93184	.26778E+01	.26606E+01	.65	.516E-01
11	0.000	348.240	.94157	.28709E+01	.28512E+01	.69	.544E-01
11	0.000	351.640	.95076	.30683E+01	.30408E+01	.90	.572E-01
11	0.000	358.010	.96799	.34289E+01	.34227E+01	.18	.629E-01
11	0.000	361.120	.97640	.36292E+01	.36231E+01	.17	.660E-01
11	0.000	361.120	.97640	.36320E+01	.36231E+01	.24	.660E-01
11	0.000	363.200	.98202	.37687E+01	.37628E+01	.16	.683E-01
11	0.000	363.450	.98270	.37828E+01	.37799E+01	.08	.686E-01
11	0.000	365.470	.98816	.39048E+01	.39209E+01	-.41	.711E-01
11	0.000	368.850	.99730	.41585E+01	.41696E+01	-.27	.765E-01
11	0.000	368.970	.99762	.41813E+01	.41787E+01	.06	.767E-01
12	0.000	313.483	.84759	.13790E+01	.13801E+01	-.08	.318E-01
12	0.000	332.039	.89777	.20684E+01	.20679E+01	.02	.427E-01
12	0.000	339.594	.91819	.24132E+01	.24098E+01	.14	.479E-01
12	0.000	346.428	.93667	.27579E+01	.27540E+01	.14	.529E-01
12	0.000	352.706	.95365	.31026E+01	.31022E+01	.01	.581E-01
12	0.000	358.261	.96867	.34474E+01	.34386E+01	.26	.631E-01
12	0.000	363.594	.98309	.37921E+01	.37898E+01	.06	.688E-01
12	0.000	368.372	.99600	.41369E+01	.41332E+01	.09	.755E-01
13	0.000	303.150	.81966	.10801E+01	.10792E+01	.08	.266E-01

Table 1. (Continued).

Data sources and ID numbers: (1)Tickner, (2)Carruth, (3)Maass, (4)Dana, (6)Sage, (7)Beattie, (9)Kemp, (11)Deschner, (12)Reamer, (13)Cherney, (14)Clegg, (17)Helgeson, (19)Gilliland, (20)Burrell, (25)Thomas, (30)Mousa, (35)Kratzke, (78)Teichmann, (80)Thermal Loops.

ID	Weight	Temp. K	T/T_c	P_σ(expt) MPa	P_σ(calc) MPa	Diff. %	dP_σ/dT MPa/K
13	0.000	323.150	.87373	.17154E+01	.17131E+01	.14	.372E-01
14	0.000	323.150	.87373	.17154E+01	.17131E+01	.14	.372E-01
14	0.000	333.150	.90077	.21197E+01	.21158E+01	.18	.435E-01
14	0.000	343.150	.92781	.25909E+01	.25846E+01	.24	.504E-01
14	0.000	348.150	.94133	.28533E+01	.28463E+01	.24	.543E-01
14	0.000	353.150	.95485	.31390E+01	.31281E+01	.35	.585E-01
14	0.000	358.150	.96837	.34400E+01	.34316E+01	.25	.630E-01
14	0.000	363.150	.98188	.37683E+01	.37594E+01	.24	.683E-01
14	0.000	368.150	.99540	.41239E+01	.41165E+01	.18	.751E-01
17	0.000	277.594	.75056	.54470E+00	.54223E+00	.46	.160E-01
17	0.000	283.150	.76558	.63980E+00	.63671E+00	.48	.180E-01
17	0.000	288.706	.78060	.74330E+00	.74284E+00	.06	.202E-01
17	0.000	294.261	.79562	.86180E+00	.86141E+00	.05	.225E-01
17	0.000	299.817	.81064	.99350E+00	.99332E+00	.02	.250E-01
17	0.000	305.372	.82566	.11397E+01	.11394E+01	.03	.276E-01
17	0.000	310.928	.84069	.13010E+01	.13006E+01	.03	.304E-01
17	0.000	316.483	.85571	.14789E+01	.14778E+01	.07	.334E-01
17	0.000	322.039	.87073	.16734E+01	.16721E+01	.08	.366E-01
17	0.000	327.594	.88575	.18857E+01	.18844E+01	.07	.399E-01
17	0.000	333.150	.90077	.21188E+01	.21158E+01	.14	.435E-01
17	0.000	338.706	.91579	.23718E+01	.23676E+01	.18	.472E-01
17	0.000	344.261	.93081	.26462E+01	.26411E+01	.19	.513E-01
17	0.000	349.817	.94583	.29434E+01	.29380E+01	.18	.556E-01
17	0.000	355.372	.96085	.32654E+01	.32601E+01	.16	.604E-01
17	0.000	360.928	.97588	.36184E+01	.36105E+01	.22	.658E-01
19	0.000	314.817	.85120	.14065E+01	.14229E+01	-1.16	.325E-01
19	0.000	330.372	.89326	.20271E+01	.19976E+01	1.48	.416E-01
19	0.000	345.372	.93382	.27441E+01	.26985E+01	1.69	.521E-01
19	0.000	357.594	.96686	.34060E+01	.33967E+01	.27	.625E-01
20	0.000	148.950	.40273	.40000E-03	.24915E-03	60.54	.299E-04
20	0.000	154.850	.41868	.80000E-03	.49082E-03	62.99	.540E-04
20	0.000	163.950	.44329	.20000E-02	.12537E-02	59.53	.121E-03
20	0.000	172.650	.46681	.40000E-02	.27678E-02	44.52	.237E-03
20	0.000	179.850	.48628	.66660E-02	.49909E-02	33.56	.390E-03
20	0.000	190.350	.51467	.13332E-01	.10768E-01	23.81	.739E-03
20	0.000	196.850	.53224	.19998E-01	.16540E-01	20.91	.105E-02
20	0.000	202.050	.54630	.26664E-01	.22794E-01	16.98	.136E-02
20	0.000	210.250	.56847	.39997E-01	.36439E-01	9.76	.199E-02
20	0.000	215.450	.58253	.53329E-01	.48044E-01	11.00	.248E-02
20	0.000	219.950	.59470	.66661E-01	.60306E-01	10.54	.298E-02
20	0.000	223.750	.60497	.79993E-01	.72482E-01	10.36	.344E-02
20	0.000	225.550	.60984	.86660E-01	.78886E-01	9.85	.368E-02
20	0.000	227.050	.61390	.93326E-01	.84556E-01	10.37	.388E-02
20	0.000	228.050	.61660	.97325E-01	.88509E-01	9.96	.402E-02
20	0.000	229.050	.61931	.10133E+00	.92606E-01	9.42	.417E-02
30	0.000	334.780	.90518	.22001E+01	.21875E+01	.58	.445E-01
30	0.000	337.360	.91215	.23186E+01	.23047E+01	.60	.463E-01
30	0.000	340.510	.92067	.24651E+01	.24540E+01	.45	.485E-01
30	0.000	346.730	.93749	.27883E+01	.27700E+01	.66	.532E-01
30	0.000	350.470	.94760	.29955E+01	.29745E+01	.71	.562E-01
30	0.000	353.620	.95612	.31652E+01	.31556E+01	.30	.589E-01
30	0.000	357.820	.96747	.34242E+01	.34108E+01	.39	.627E-01
30	0.000	362.280	.97953	.37296E+01	.37004E+01	.79	.673E-01
30	0.000	365.570	.98843	.39541E+01	.39281E+01	.66	.712E-01
30	0.000	367.850	.99459	.41159E+01	.40941E+01	.53	.746E-01
30	0.000	369.740	.99970	.42537E+01	.42387E+01	.36	.793E-01
78	0.000	324.754	.87807	.17728E+01	.17735E+01	-.04	.382E-01
78	0.000	328.078	.88706	.19041E+01	.19037E+01	.02	.402E-01
78	0.000	331.356	.89592	.20393E+01	.20389E+01	.02	.423E-01
78	0.000	333.900	.90280	.21496E+01	.21486E+01	.05	.439E-01
78	0.000	335.669	.90758	.22278E+01	.22274E+01	.02	.451E-01
78	0.000	337.878	.91355	.23285E+01	.23288E+01	-.01	.467E-01
78	0.000	340.292	.92008	.24433E+01	.24434E+01	-.01	.484E-01
78	0.000	342.939	.92724	.25742E+01	.25740E+01	.01	.503E-01

Table 1. (Continued).

Data sources and ID numbers: (1)Tickner, (2)Carruth, (3)Maass, (4)Dana, (6)Sage, (7)Beattie, (9)Kemp, (11)Deschner, (12)Reamer, (13)Cherney, (14)Clegg, (17)Helgeson, (19)Gilliland, (20)Burrell, (25)Thomas, (30)Mousa, (35)Kratzke, (78)Teichmann, (80)Thermal Loops.

ID	Weight	Temp. K	T/T_c	P_σ(expt) MPa	P_σ(calc) MPa	Diff. %	dP_σ/dT MPa/K
78	0.000	345.115	.93312	.26870E+01	.26852E+01	.07	.519E-01
78	0.000	348.087	.94116	.28434E+01	.28429E+01	.02	.542E-01
78	0.000	350.680	.94817	.29866E+01	.29863E+01	.01	.564E-01
78	0.000	352.559	.95325	.30930E+01	.30937E+01	-.02	.579E-01
78	0.000	354.824	.95937	.32279E+01	.32271E+01	.02	.599E-01
78	0.000	358.141	.96834	.34310E+01	.34310E+01	.00	.630E-01
78	0.000	363.426	.98263	.37776E+01	.37783E+01	-.02	.686E-01

Number of data points used in fit = 81; rms pressure deviation = 0.056%.

Table 2. Comparisons of saturated liquid density data with eq (3).

Data sources and ID numbers: (1)Maass, (2)Van der Vet, (3)NGAA, (4)Sage, (6)Reamer, (7)Clegg, (8)Francis, (11)Seeman, (12)Helgeson, (13)Klosek, (14)Shana'a, (15)Jensen, (16)Sliwinski, (17)Tomlinson, (18)Kahre, (19)Rodosevich, (20)Haynes, (21)Deschner, (22)Orrit, (23)McClune, (24)Ely, (25)Thomas, (34)Carney, (36)Dana.

ID	Weight	Temp.	$(T_c-T)/(T_c-T_t)$	Density (expt)		Density (calc)	Diff.	$d\rho_\ell/dT$
		K		mol/L	kg/m3	kg/m3	%	kg/(m3•K)
22	1.000	86.650	.99585	16.607	732.32	732.12	.03	-1.0301
22	1.000	90.100	.98372	16.522	728.57	728.57	-.00	-1.0273
19	1.000	91.010	.98052	16.485	726.96	727.64	-.09	-1.0266
23	1.000	93.150	.97299	16.442	725.05	725.44	-.05	-1.0250
22	1.000	96.040	.96283	16.385	722.52	722.48	.01	-1.0230
23	1.000	98.150	.95541	16.331	720.17	720.33	-.02	-1.0216
19	1.000	100.010	.94887	16.291	718.41	718.43	-.00	-1.0205
20	1.000	100.075	.94864	16.307	719.07	718.36	.10	-1.0205
22	1.000	100.980	.94546	16.272	717.54	717.44	.01	-1.0199
23	1.000	103.150	.93783	16.217	715.11	715.22	-.02	-1.0188
20	1.000	105.075	.93106	16.187	713.81	713.26	.08	-1.0178
22	1.000	106.170	.92721	16.152	712.25	712.15	.01	-1.0173
14	1.000	108.150	.92025	16.096	709.78	710.14	-.05	-1.0164
19	1.000	108.150	.92025	16.105	710.17	710.14	.00	-1.0164
23	1.000	108.150	.92025	16.101	709.99	710.14	-.02	-1.0164
20	1.000	110.075	.91348	16.072	708.72	708.18	.08	-1.0156
22	1.000	111.520	.90840	16.028	706.79	706.71	.01	-1.0151
23	1.000	113.150	.90267	15.985	704.89	705.06	-.02	-1.0145
19	1.000	115.000	.89616	15.946	703.19	703.18	.00	-1.0140
20	1.000	115.075	.89590	15.956	703.60	703.11	.07	-1.0139
22	1.000	116.860	.88962	15.906	701.43	701.30	.02	-1.0135
23	1.000	118.150	.88508	15.870	699.82	699.99	-.02	-1.0132
20	1.000	120.075	.87831	15.841	698.55	698.04	.07	-1.0128
22	1.000	122.270	.87060	15.782	695.96	695.82	.02	-1.0124
23	1.000	123.150	.86750	15.755	694.73	694.93	-.03	-1.0123
20	1.000	125.075	.86073	15.725	693.43	692.98	.06	-1.0122
22	1.000	127.660	.85164	15.660	690.55	690.36	.03	-1.0121
23	1.000	128.150	.84992	15.639	689.62	689.87	-.04	-1.0121
20	1.000	130.075	.84315	15.609	688.29	687.92	.05	-1.0121
22	1.000	133.130	.83241	15.531	684.89	684.83	.01	-1.0123
23	1.000	133.150	.83234	15.524	684.56	684.81	-.04	-1.0123
20	1.000	135.075	.82557	15.491	683.11	682.86	.04	-1.0126
23	1.000	138.150	.81475	15.411	679.60	679.74	-.02	-1.0131
22	1.000	138.430	.81377	15.408	679.45	679.46	-.00	-1.0132
20	1.000	140.075	.80799	15.375	678.00	677.79	.03	-1.0136
23	1.000	143.150	.79717	15.296	674.50	674.67	-.03	-1.0145
22	1.000	143.890	.79457	15.282	673.87	673.92	-.01	-1.0148
20	1.000	145.075	.79040	15.259	672.87	672.72	.02	-1.0152
23	1.000	148.150	.77959	15.182	669.46	669.60	-.02	-1.0165
22	1.000	149.610	.77446	15.148	668.00	668.11	-.02	-1.0172
20	1.000	150.075	.77282	15.140	667.63	667.64	-.00	-1.0175
23	1.000	153.150	.76201	15.067	664.42	664.51	-.01	-1.0191
22	1.000	155.080	.75522	15.025	662.55	662.54	.00	-1.0203
23	1.000	158.150	.74443	14.951	659.29	659.40	-.02	-1.0224
22	1.000	160.540	.73602	14.898	656.98	656.96	.00	-1.0241
23	1.000	163.150	.72684	14.834	654.15	654.28	-.02	-1.0262
24	1.000	165.809	.71749	14.776	651.60	651.55	.01	-1.0286
22	1.000	165.940	.71703	14.772	651.40	651.42	-.00	-1.0287
23	1.000	168.150	.70926	14.718	649.02	649.14	-.02	-1.0308
22	1.000	171.410	.69780	14.659	646.40	645.77	.10	-1.0341
23	1.000	173.150	.69168	14.595	643.59	643.97	-.06	-1.0360
24	1.000	176.472	.68000	14.525	640.50	640.53	-.00	-1.0399
22	1.000	182.340	.65936	14.385	634.33	634.40	-.01	-1.0475
24	1.000	184.294	.65249	14.340	632.34	632.35	-.00	-1.0503
22	1.000	187.800	.64016	14.254	628.55	628.66	-.02	-1.0556
24	1.000	191.936	.62562	14.155	624.21	624.28	-.01	-1.0623
22	1.000	193.300	.62082	14.120	622.67	622.83	-.03	-1.0647
24	1.000	198.748	.60167	13.991	616.96	617.00	-.01	-1.0747
22	1.000	198.890	.60117	13.986	616.72	616.85	-.02	-1.0750
20	1.000	200.000	.59726	13.956	615.42	615.66	-.04	-1.0771
24	1.000	204.329	.58204	13.857	611.06	610.97	.01	-1.0860
22	1.000	204.540	.58130	13.847	610.62	610.75	-.02	-1.0865

Table 2. (Continued).

Data sources and ID numbers: (1)Maass, (2)Van der Vet, (3)NGAA, (4)Sage, (6)Reamer, (7)Clegg, (8)Francis, (11)Seeman, (12)Helgeson, (13)Klosek, (14)Shana'a, (15)Jensen, (16)Sliwinski, (17)Tomlinson, (18)Kahre, (19)Rodosevich, (20)Haynes, (21)Deschner, (22)Orrit, (23)McClune, (24)Ely, (25)Thomas, (34)Carney, (36)Dana.

ID	Weight	Temp.	$(T_c-T)/(T_c-T_t)$	Density (expt)		Density (calc)	Diff.	$d\rho_\ell/dT$
		K		mol/L	kg/m^3	kg/m^3	%	kg/(m^3·K)
22	1.000	210.020	.56203	13.710	604.59	604.76	-.03	-1.0989
24	1.000	211.320	.55746	13.696	603.95	603.33	.10	-1.1020
22	1.000	216.020	.54093	13.559	597.92	598.12	-.03	-1.1138
24	1.000	218.200	.53327	13.517	596.04	595.69	.06	-1.1196
22	1.000	222.040	.51976	13.405	591.12	591.37	-.04	-1.1303
24	1.000	225.876	.50627	13.315	587.17	587.01	.03	-1.1418
22	1.000	227.360	.50105	13.268	585.06	585.31	-.04	-1.1464
24	1.000	231.875	.48518	13.169	580.71	580.10	.11	-1.1611
22	1.000	232.910	.48154	13.120	578.56	578.90	-.06	-1.1647
24	1.000	235.183	.47355	13.073	576.47	576.24	.04	-1.1726
22	1.000	235.610	.47204	13.051	575.49	575.74	-.04	-1.1742
22	1.000	238.400	.46223	12.975	572.14	572.45	-.05	-1.1844
20	1.000	240.000	.45661	12.927	570.05	570.55	-.09	-1.1905
22	1.000	241.180	.45246	12.903	568.98	569.14	-.03	-1.1951
22	1.000	243.980	.44261	12.829	565.70	565.78	-.01	-1.2063
24	1.000	246.260	.43459	12.773	563.27	563.02	.04	-1.2159
24	1.000	247.555	.43004	12.742	561.87	561.44	.08	-1.2215
24	1.000	249.523	.42312	12.689	559.53	559.03	.09	-1.2301
24	1.000	257.991	.39334	12.446	548.84	548.44	.07	-1.2709
25	1.000	258.150	.39278	12.415	547.47	548.24	-.14	-1.2717
25	1.000	263.150	.37520	12.270	541.07	541.82	-.14	-1.2987
24	1.000	267.737	.35907	12.155	536.01	535.80	.04	-1.3255
25	1.000	268.150	.35762	12.126	534.72	535.25	-.10	-1.3281
20	1.000	270.000	.35111	12.073	532.40	532.78	-.07	-1.3396
25	1.000	273.150	.34004	11.982	528.37	528.53	-.03	-1.3601
24	1.000	277.971	.32309	11.837	521.97	521.90	.01	-1.3939
25	1.000	278.150	.32246	11.828	521.58	521.65	-.01	-1.3952
20	1.000	280.000	.31595	11.762	518.68	519.05	-.07	-1.4090
25	1.000	283.150	.30487	11.670	514.61	514.57	.01	-1.4337
16	1.000	283.200	.30470	11.663	514.30	514.50	-.04	-1.4341
24	1.000	287.784	.28858	11.518	507.93	507.84	.02	-1.4729
25	1.000	288.150	.28729	11.507	507.43	507.30	.02	-1.4762
25	1.000	293.150	.26971	11.338	499.97	499.81	.03	-1.5232
16	1.000	293.190	.26957	11.336	499.90	499.74	.03	-1.5236
25	1.000	298.150	.25213	11.164	492.30	492.06	.05	-1.5757
16	1.000	303.150	.23455	10.983	484.30	484.04	.05	-1.6345
25	1.000	303.150	.23455	10.981	484.23	484.04	.04	-1.6345
16	1.000	313.120	.19949	10.600	467.44	467.07	.08	-1.7764
25	1.000	313.150	.19938	10.586	466.81	467.01	-.04	-1.7769
16	1.000	323.120	.16432	10.176	448.73	448.40	.07	-1.9663
25	1.000	323.150	.16422	10.172	448.56	448.34	.05	-1.9670
16	1.000	333.110	.12919	9.714	428.36	427.50	.20	-2.2360
25	1.000	333.150	.12905	9.696	427.57	427.41	.04	-2.2373
16	1.000	343.080	.09413	9.157	403.78	403.28	.12	-2.6587
25	1.000	343.150	.09389	9.144	403.22	403.09	.03	-2.6626
16	1.000	348.080	.07655	8.838	389.74	389.22	.13	-2.9840
25	1.000	348.150	.07631	8.825	389.16	389.01	.04	-2.9894
16	1.000	353.090	.05894	8.469	373.45	373.16	.08	-3.4619
25	1.000	353.150	.05872	8.458	372.97	372.95	.01	-3.4691
16	1.000	358.100	.04132	8.022	353.75	354.02	-.08	-4.2536
25	1.000	358.150	.04114	8.020	353.66	353.81	-.04	-4.2643
16	1.000	363.110	.02370	7.459	328.90	329.17	-.08	-5.9214
25	1.000	363.150	.02356	7.450	328.52	328.93	-.12	-5.9427
25	1.000	365.150	.01653	7.146	315.12	315.75	-.20	-7.3726
25	1.000	367.150	.00949	6.756	297.92	298.45	-.18	-10.3851
16	1.000	368.100	.00615	6.488	286.10	287.23	-.39	-13.6269
25	1.000	368.150	.00598	6.485	285.97	286.54	-.20	-13.8779
16	0.000	369.100	.00264	6.080	268.10	269.86	-.65	-23.3214
25	1.000	369.150	.00246	6.082	268.20	268.67	-.18	-24.3714
16	0.000	369.600	.00088	5.669	250.00	253.99	-1.57	-47.1839
1	0.000	194.950	.61502	14.146	623.80	621.07	.44	-1.0676

Table 2. (Continued).

Data sources and ID numbers: (1)Maass, (2)Van der Vet, (3)NGAA, (4)Sage, (6)Reamer, (7)Clegg, (8)Francis, (11)Seeman, (12)Helgeson, (13)Klosek, (14)Shana'a, (15)Jensen, (16)Sliwinski, (17)Tomlinson, (18)Kahre, (19)Rodosevich, (20)Haynes, (21)Deschner, (22)Orrit, (23)McClune, (24)Ely, (25)Thomas, (34)Carney, (36)Dana.

ID	Weight	Temp.	$(T_c-T)/(T_c-T_t)$	Density (expt)		Density (calc)	Diff.	$d\rho_\ell/dT$
		K		mol/L	kg/m^3	kg/m^3	%	kg/(m^3•K)
1	0.000	204.850	.58021	13.888	612.40	610.41	.33	-1.0872
1	0.000	209.950	.56228	13.749	606.30	604.84	.24	-1.0987
1	0.000	213.650	.54927	13.656	602.20	600.75	.24	-1.1077
1	0.000	214.450	.54645	13.636	601.30	599.87	.24	-1.1097
1	0.000	219.850	.52746	13.509	595.70	593.84	.31	-1.1241
1	0.000	225.200	.50865	13.361	589.20	587.78	.24	-1.1397
1	0.000	227.250	.50144	13.309	586.90	585.44	.25	-1.1461
1	0.000	230.750	.48913	13.223	583.10	581.41	.29	-1.1574
1	0.000	234.450	.47612	13.114	578.30	577.10	.21	-1.1700
1	0.000	238.800	.46083	13.005	573.50	571.98	.27	-1.1859
1	0.000	243.050	.44588	12.892	568.50	566.90	.28	-1.2026
1	0.000	248.650	.42619	12.733	561.50	560.10	.25	-1.2263
2	0.000	283.150	.30487	11.679	515.00	514.57	.08	-1.4337
2	0.000	293.150	.26971	11.348	500.40	499.81	.12	-1.5232
2	0.000	298.150	.25213	11.178	492.90	492.06	.17	-1.5757
2	0.000	303.150	.23455	10.994	484.80	484.04	.16	-1.6345
2	0.000	308.150	.21696	10.813	476.80	475.70	.23	-1.7010
2	0.000	313.150	.19938	10.608	467.80	467.01	.17	-1.7769
2	0.000	318.150	.18180	10.409	459.00	457.91	.24	-1.8645
2	0.000	323.150	.16422	10.182	449.00	448.34	.15	-1.9670
3	0.000	230.706	.48929	13.203	582.20	581.46	.13	-1.1572
3	0.000	233.928	.47796	13.117	578.40	577.71	.12	-1.1682
3	0.000	238.539	.46174	12.992	572.90	572.29	.11	-1.1849
3	0.000	241.817	.45022	12.903	569.00	568.38	.11	-1.1976
3	0.000	245.817	.43615	12.815	565.10	563.56	.27	-1.2140
3	0.000	248.594	.42639	12.713	560.60	560.17	.08	-1.2260
3	0.000	252.761	.41173	12.599	555.60	555.02	.10	-1.2451
3	0.000	255.372	.40255	12.522	552.20	551.76	.08	-1.2577
3	0.000	255.483	.40216	12.520	552.10	551.62	.09	-1.2582
3	0.000	266.483	.36348	12.209	538.40	537.46	.18	-1.3180
3	0.000	277.150	.32597	11.883	524.00	523.04	.18	-1.3879
3	0.000	288.706	.28534	11.504	507.30	506.48	.16	-1.4812
3	0.000	299.817	.24627	11.125	490.60	489.42	.24	-1.5945
3	0.000	310.928	.20719	10.708	472.20	470.92	.27	-1.7418
3	0.000	322.039	.16812	10.273	453.00	450.52	.55	-1.9427
3	0.000	333.150	.12905	9.783	431.40	427.41	.93	-2.2373
4	0.000	293.928	.26697	11.405	502.93	498.62	.87	-1.5310
4	0.000	301.094	.24178	11.143	491.36	487.37	.82	-1.6094
4	0.000	307.483	.21931	10.899	480.60	476.83	.79	-1.6916
4	0.000	313.317	.19879	10.675	470.72	466.72	.86	-1.7796
4	0.000	318.594	.18024	10.465	461.49	457.09	.96	-1.8729
4	0.000	323.371	.16344	10.276	453.14	447.91	1.17	-1.9719
4	0.000	327.928	.14742	10.088	444.84	438.68	1.40	-2.0831
4	0.000	332.094	.13277	9.903	436.71	429.75	1.62	-2.2033
4	0.000	336.094	.11870	9.705	427.96	420.67	1.73	-2.3410
4	0.000	339.872	.10542	9.504	419.11	411.54	1.84	-2.4978
4	0.000	343.483	.09272	9.298	409.99	402.20	1.94	-2.6811
4	0.000	346.928	.08060	9.088	400.76	392.61	2.08	-2.8988
4	0.000	350.094	.06947	8.884	391.75	383.04	2.27	-3.1522
4	0.000	353.094	.05892	8.668	382.21	373.14	2.43	-3.4624
4	0.000	355.872	.04915	8.456	372.87	363.02	2.71	-3.8440
4	0.000	358.594	.03958	8.228	362.82	351.89	3.10	-4.3622
4	0.000	361.261	.03020	7.973	351.59	339.33	3.61	-5.1198
4	0.000	363.761	.02141	7.708	339.88	325.19	4.52	-6.2966
4	0.000	366.261	.01262	7.406	326.58	306.88	6.42	-8.7034
4	0.000	368.761	.00383	7.009	309.06	276.85	11.63	-18.3934
6	0.000	313.480	.19822	10.609	467.82	466.43	.30	-1.7822
6	0.000	324.480	.15954	10.141	447.20	445.71	.33	-1.9973
6	0.000	332.040	.13296	9.778	431.19	429.87	.31	-2.2016
6	0.000	339.590	.10641	9.395	414.31	412.25	.50	-2.4850
6	0.000	346.430	.08235	8.975	395.75	394.04	.43	-2.8642
6	0.000	352.710	.06027	8.524	375.88	374.46	.38	-3.4178

Table 2. (Continued).

Data sources and ID numbers: (1)Maass, (2)Van der Vet, (3)NGAA, (4)Sage, (6)Reamer, (7)Clegg, (8)Francis, (11)Seeman, (12)Helgeson, (13)Klosek, (14)Shana'a, (15)Jensen, (16)Sliwinski, (17)Tomlinson, (18)Kahre, (19)Rodosevich, (20)Haynes, (21)Deschner, (22)Orrit, (23)McClune, (24)Ely, (25)Thomas, (34)Carney, (36)Dana.

ID	Weight	Temp.	$(T_c-T)/(T_c-T_+)$	Density (expt)		Density (calc)	Diff.	$d\rho_\ell/dT$
		K		mol/L	kg/m3	kg/m3	%	kg/(m3·K)
6	0.000	358.260	.04076	8.036	354.37	353.34	.29	-4.2880
6	0.000	363.590	.02201	7.471	329.46	326.26	.98	-6.1918
6	0.000	368.370	.00520	6.632	292.45	283.35	3.21	-15.1457
7	0.000	323.150	.16422	10.150	447.59	448.34	-.17	-1.9670
7	0.000	333.150	.12905	9.550	421.13	427.41	-1.47	-2.2373
7	0.000	343.150	.09389	8.980	395.99	403.09	-1.76	-2.6626
7	0.000	348.150	.07631	8.630	380.56	389.01	-2.17	-2.9894
7	0.000	353.150	.05872	8.300	366.01	372.95	-1.86	-3.4691
7	0.000	358.150	.04114	7.860	346.60	353.81	-2.04	-4.2643
7	0.000	363.150	.02356	7.320	322.79	328.93	-1.87	-5.9427
7	0.000	368.150	.00598	6.410	282.66	286.54	-1.35	-13.8779
8	0.000	293.150	.26971	11.350	500.50	499.81	.14	-1.5232
11	0.000	278.160	.32242	11.851	522.60	521.63	.19	-1.3953
11	0.000	283.140	.30491	11.686	515.30	514.59	.14	-1.4336
11	0.000	286.150	.29432	11.586	510.90	510.24	.13	-1.4587
11	0.000	289.160	.28374	11.482	506.30	505.81	.10	-1.4853
11	0.000	293.150	.26971	11.342	500.15	499.81	.07	-1.5232
11	0.000	295.150	.26268	11.271	497.00	496.74	.05	-1.5435
11	0.000	297.150	.25564	11.200	493.90	493.63	.05	-1.5647
11	0.000	299.180	.24851	11.125	490.60	490.43	.03	-1.5872
12	0.000	277.594	.32441	11.891	524.34	522.42	.37	-1.3911
12	0.000	283.150	.30487	11.718	516.73	514.57	.42	-1.4337
12	0.000	288.706	.28534	11.532	508.52	506.48	.40	-1.4812
12	0.000	294.261	.26580	11.345	500.27	498.11	.43	-1.5344
12	0.000	299.817	.24627	11.139	491.21	489.42	.37	-1.5945
12	0.000	305.372	.22673	10.935	482.19	480.37	.38	-1.6630
12	0.000	310.928	.20719	10.722	472.80	470.92	.40	-1.7418
12	0.000	316.483	.18766	10.484	462.29	461.00	.28	-1.8338
12	0.000	322.039	.16812	10.241	451.60	450.52	.24	-1.9427
12	0.000	327.594	.14859	9.985	440.31	439.37	.21	-2.0742
12	0.000	333.150	.12905	9.713	428.30	427.41	.21	-2.2373
12	0.000	338.706	.10952	9.423	415.52	414.43	.27	-2.4461
12	0.000	344.261	.08998	9.095	401.06	400.10	.24	-2.7261
12	0.000	349.817	.07044	8.697	383.49	383.91	-.11	-3.1274
12	0.000	355.372	.05091	8.235	363.15	364.92	-.49	-3.7665
12	0.000	360.928	.03137	7.757	342.06	341.01	.31	-5.0051
13	0.000	88.706	.98862	16.542	729.45	730.00	-.08	-1.0284
13	0.000	94.261	.96909	16.420	724.07	724.30	-.03	-1.0242
13	0.000	99.817	.94955	16.296	718.61	718.62	-.00	-1.0206
13	0.000	105.372	.93002	16.168	712.95	712.96	-.00	-1.0176
13	0.000	110.928	.91048	16.042	707.39	707.32	.01	-1.0153
13	0.000	116.483	.89095	15.914	701.76	701.68	.01	-1.0136
13	0.000	122.039	.87141	15.787	696.16	696.05	.02	-1.0125
13	0.000	127.594	.85187	15.656	690.37	690.43	-.01	-1.0121
13	0.000	133.150	.83234	15.525	684.62	684.81	-.03	-1.0123
15	0.000	93.150	.97299	16.446	725.20	725.44	-.03	-1.0250
15	0.000	103.150	.93783	16.212	714.90	715.22	-.05	-1.0188
15	0.000	113.150	.90267	15.967	704.10	705.06	-.14	-1.0145
15	0.000	123.150	.86750	15.743	694.20	694.93	-.10	-1.0123
15	0.000	133.150	.83234	15.516	684.20	684.81	-.09	-1.0123
17	0.000	278.150	.32246	11.835	521.90	521.65	.05	-1.3952
17	0.000	283.150	.30487	11.679	515.00	514.57	.08	-1.4337
17	0.000	288.150	.28729	11.513	507.70	507.30	.08	-1.4762
17	0.000	293.150	.26971	11.345	500.30	499.81	.10	-1.5232
17	0.000	298.150	.25213	11.171	492.60	492.06	.11	-1.5757
17	0.000	303.150	.23455	10.989	484.60	484.04	.12	-1.6345
17	0.000	308.150	.21696	10.803	476.40	475.70	.15	-1.7010
17	0.000	313.150	.19938	10.608	467.80	467.01	.17	-1.7769
18	0.000	277.550	.32457	11.850	522.55	522.48	.01	-1.3908
18	0.000	288.750	.28518	11.491	506.70	506.41	.06	-1.4816
18	0.000	299.850	.24615	11.110	489.90	489.37	.11	-1.5949
18	0.000	310.950	.20712	10.696	471.65	470.88	.16	-1.7422

Table 2. (Continued).

Data sources and ID numbers: (1)Maass, (2)Van der Vet, (3)NGAA, (4)Sage, (6)Reamer, (7)Clegg (8)Francis, (11)Seeman, (12)Helgeson, (13)Klosek, (14)Shana'a, (15)Jensen, (16)Sliwinski, (17)Tomlinson, (18)Kahre, (19)Rodosevich, (20)Haynes, (21)Deschner, (22)Orrit, (23)McClune, (24)Ely, (25)Thomas, (34)Carney, (36)Dana.

ID	Weight	Temp.	$(T_c-T)/(T_c-T_t)$	Density (expt)		Density (calc)	Diff.	$d\rho_\ell/dT$
		K		mol/L	kg/m^3	kg/m^3	%	kg/(m^3·K)
18	0.000	327.550	.14874	9.941	438.35	439.46	-.25	-2.0731
20	0.000	288.706	.28534	11.479	506.19	506.48	-.06	-1.4812
21	0.000	303.150	.23455	11.017	485.82	484.04	.37	-1.6345
21	0.000	308.150	.21696	10.851	478.50	475.70	.59	-1.7010
21	0.000	313.150	.19938	10.692	471.49	467.01	.96	-1.7769
21	0.000	318.150	.18180	10.500	463.02	457.91	1.12	-1.8645
21	0.000	323.150	.16422	10.302	454.29	448.34	1.33	-1.9670
21	0.000	328.150	.14663	10.075	444.28	438.21	1.38	-2.0890
21	0.000	333.150	.12905	9.842	434.00	427.41	1.54	-2.2373
21	0.000	338.150	.11147	9.570	422.00	415.78	1.50	-2.4226
21	0.000	343.150	.09389	9.252	408.00	403.09	1.22	-2.6626
21	0.000	348.150	.07631	8.896	392.30	389.01	.85	-2.9894
21	0.000	353.150	.05872	8.527	376.00	372.95	.82	-3.4691
21	0.000	358.150	.04114	8.078	356.20	353.81	.68	-4.2643
21	0.000	363.150	.02356	7.529	332.00	328.93	.93	-5.9427
21	0.000	368.150	.00598	6.644	293.00	286.54	2.25	-13.8779
34	0.000	227.594	.50023	13.284	585.80	585.04	.13	-1.1471
34	0.000	233.150	.48069	13.139	579.40	578.62	.14	-1.1655
34	0.000	238.706	.46116	12.990	572.80	572.09	.12	-1.1856
34	0.000	244.261	.44162	12.835	566.00	565.44	.10	-1.2075
34	0.000	249.817	.42209	12.681	559.20	558.67	.10	-1.2315
34	0.000	255.372	.40255	12.522	552.20	551.76	.08	-1.2577
34	0.000	266.483	.36348	12.209	538.40	537.46	.18	-1.3180
34	0.000	277.150	.32597	11.883	524.00	523.04	.18	-1.3879
34	0.000	288.706	.28534	11.504	507.30	506.48	.16	-1.4812
34	0.000	310.928	.20719	10.708	472.20	470.92	.27	-1.7418
34	0.000	322.039	.16812	10.273	453.00	450.52	.55	-1.9427
34	0.000	333.150	.12905	9.783	431.40	427.41	.93	-2.2373
36	0.000	273.150	.34004	12.033	530.60	528.53	.39	-1.3601
36	0.000	278.150	.32246	11.878	523.80	521.65	.41	-1.3952
36	0.000	283.150	.30487	11.720	516.80	514.57	.43	-1.4337
36	0.000	290.150	.28026	11.482	506.30	504.33	.39	-1.4944
36	0.000	293.150	.26971	11.389	502.20	499.81	.48	-1.5232
36	0.000	297.150	.25564	11.248	496.00	493.63	.48	-1.5647
36	0.000	300.150	.24509	11.153	491.80	488.89	.60	-1.5984
36	0.000	315.150	.19235	10.577	466.40	463.43	.64	-1.8103
36	0.000	321.150	.17125	10.091	445.00	452.23	-1.60	-1.9239
36	0.000	323.150	.16422	10.232	451.20	448.34	.64	-1.9670
36	0.000	327.150	.15015	10.046	443.00	440.29	.62	-2.0627
36	0.000	329.150	.14312	9.958	439.10	436.11	.69	-2.1163

Number of data points used in fit = 120; rms density deviation = 0.074%.

Table 3. Comparisons of saturated vapor density data with eq (4).

Data sources and ID numbers: (1)Virial/vapor pressure equations, (4)Sage, (6)Reamer, (7)Clegg, (12)Helgeson, (16)Sliwinski, (21)Deschner, (25)Thomas, (36)Dana.

ID	Weight	Temp. K	Density (expt) mol/L	Density (expt) kg/m^3	Density (calc) kg/m^3	Diff. %	Z(expt)	Z(calc)	F(Z) [1]	$d\rho_v/dT$ kg/(m^3·K)
1	.000	90.000	.000	.57076E-07	.57076E-07	.00	1.00000	1.00000	3.44173	.202E-07
1	.000	100.000	.000	.13333E-05	.13333E-05	.00	1.00000	1.00000	2.86363	.374E-06
1	.002	110.000	.000	.16639E-04	.16639E-04	.00	1.00000	1.00000	2.43461	.378E-05
1	.012	120.000	.000	.13030E-03	.13030E-03	.00	.99999	.99999	2.10712	.243E-04
1	.040	130.000	.000	.71538E-03	.71538E-03	.00	.99996	.99996	1.85117	.111E-03
1	.092	140.000	.000	.29808E-02	.29807E-02	.00	.99985	.99985	1.64705	.390E-03
1	.166	150.000	.000	.99877E-02	.99876E-02	.00	.99957	.99957	1.48207	.111E-02
1	.252	160.000	.001	.28105E-01	.28105E-01	-.00	.99896	.99896	1.34638	.270E-02
1	.343	170.000	.002	.68659E-01	.68659E-01	-.00	.99781	.99781	1.23375	.571E-02
1	.431	180.000	.003	.14941E+00	.14941E+00	-.00	.99586	.99585	1.13950	.109E-01
1	.513	190.000	.007	.29555E+00	.29556E+00	-.00	.99280	.99279	1.06017	.189E-01
1	.586	200.000	.012	.54018E+00	.54018E+00	.00	.98835	.98835	.99318	.307E-01
1	.650	210.000	.021	.92422E+00	.92419E+00	.00	.98221	.98223	.93654	.469E-01
1	.705	220.000	.034	.14961E+01	.14961E+01	.01	.97413	.97418	.88871	.684E-01
1	.753	230.000	.052	.23118E+01	.23117E+01	.01	.96387	.96393	.84848	.958E-01
1	.793	240.000	.078	.34348E+01	.34347E+01	.00	.95124	.95125	.81493	.130E+00
1	.827	250.000	.112	.49370E+01	.49376E+01	-.01	.93604	.93593	.78736	.172E+00
1	.857	260.000	.157	.69014E+01	.69037E+01	-.03	.91804	.91774	.76529	.223E+00
1	.882	270.000	.214	.94256E+01	.94307E+01	-.05	.89700	.89651	.74844	.284E+00
1	.903	280.000	.286	.12629E+02	.12636E+02	-.06	.87256	.87206	.73679	.359E+00
1	.921	290.000	.378	.16666E+02	.16665E+02	.00	.84421	.84424	.73066	.450E+00
1	.937	300.000	.493	.21750E+02	.21704E+02	.21	.81110	.81284	.73092	.562E+00
1	0.000	310.000	.640	.28211E+02	.27999E+02	.76	.77176	.77762	.73945	.703E+00
1	0.000	320.000	.831	.36640E+02	.35898E+02	2.07	.72319	.73814	.76065	.886E+00
1	0.000	330.000	1.099	.48463E+02	.45931E+02	5.51	.65735	.69358	.80766	.114E+01
16	.909	283.200	.314	.13850E+02	.13828E+02	.16	.86216	.86354	.74385	.386E+00
16	.926	293.190	.412	.18150E+02	.18153E+02	-.02	.83474	.83462	.72768	.483E+00
16	.941	303.150	.535	.23580E+02	.23537E+02	.18	.80072	.80217	.72807	.603E+00
16	.954	313.120	.686	.30230E+02	.30271E+02	-.14	.76683	.76579	.71667	.754E+00
16	.965	323.120	.880	.38800E+02	.38767E+02	.09	.72423	.72484	.72157	.955E+00
25	.965	323.150	.876	.38620E+02	.38795E+02	-.45	.72800	.72471	.71136	.955E+00
16	.974	333.110	1.125	.49620E+02	.49612E+02	.02	.67835	.67846	.72432	.123E+01
25	.974	333.150	1.122	.49473E+02	.49661E+02	-.38	.68084	.67826	.71828	.124E+01
16	.983	343.080	1.453	.64060E+02	.63883E+02	.28	.62286	.62459	.73787	.167E+01
25	.983	343.150	1.448	.63862E+02	.64000E+02	-.22	.62552	.62417	.73196	.167E+01
16	.986	348.080	1.656	.73040E+02	.72990E+02	.07	.59298	.59339	.74430	.200E+01
25	.986	348.150	1.657	.73047E+02	.73130E+02	-.11	.59360	.59293	.74249	.200E+01
16	.990	353.090	1.914	.84400E+02	.84119E+02	.33	.55608	.55794	.75993	.248E+01
25	.990	353.150	1.911	.84257E+02	.84268E+02	-.01	.55756	.55748	.75681	.249E+01
16	.100	358.100	2.245	.99000E+02	.98377E+02	.63	.51289	.51614	.78168	.329E+01
25	.993	358.150	2.236	.98610E+02	.98542E+02	.07	.51532	.51568	.77728	.330E+01
16	.996	363.110	2.695	.11883E+03	.11846E+03	.31	.46176	.46319	.81048	.498E+01

[1] See section 2.3(b) for definition of F(Z).

Table 3. (Continued).

Data sources and ID numbers: (1)Virial/vapor pressure equations, (4)Sage, (6)Reamer, (7)Clegg, (12)Helgeson, (16)Sliwinski, (21)Deschner, (25)Thomas, (36)Dana.

ID	Weight	Temp. K	Density (expt) mol/L	Density (expt) kg/m^3	Density (calc) kg/m^3	Diff. %	Z(expt)	Z(calc)	F(Z)	dp_γ/dT kg/(m^3·K)
25	.996	363.150	2.692	.11871E+03	.11866E+03	.04	.46251	.46270	.80894	.500E+01
25	.997	365.150	2.949	.13005E+03	.12997E+03	.06	.43537	.43565	.82856	.644E+01
16	.998	365.600	3.022	.13324E+03	.13297E+03	.20	.42790	.42878	.83475	.691E+01
25	.999	367.150	3.294	.14526E+03	.14538E+03	-.08	.40199	.40165	.85558	.941E+01
16	.999	368.100	3.537	.15596E+03	.15565E+03	.20	.37995	.38072	.87641	.126E+02
25	.999	368.150	3.527	.15554E+03	.15628E+03	-.47	.38127	.37947	.87400	.128E+02
16	0.000	369.100	3.927	.17315E+03	.17181E+03	.78	.34761	.35033	.91033	.219E+02
25	1.000	369.150	3.920	.17288E+03	.17292E+03	-.03	.34843	.34834	.90860	.229E+02
16	0.000	369.600	4.318	.19040E+03	.18681E+03	1.92	.31862	.32475	.94459	.450E+02
4	0.000	293.928	.433	.19097E+02	.18512E+02	3.16	.80686	.83234	.83834	.491E+00
4	0.000	301.094	.524	.23095E+02	.22326E+02	3.44	.78225	.80918	.82578	.576E+00
4	0.000	307.483	.613	.27049E+02	.26279E+02	2.93	.76446	.78686	.79695	.664E+00
4	0.000	313.317	.705	.31092E+02	.30420E+02	2.21	.74850	.76503	.77046	.758E+00
4	0.000	318.594	.801	.35322E+02	.34673E+02	1.87	.73031	.74398	.75789	.857E+00
4	0.000	323.371	.897	.39552E+02	.39007E+02	1.40	.71379	.72375	.74597	.960E+00
4	0.000	327.928	.996	.43910E+02	.43641E+02	.62	.69898	.70330	.73183	.108E+01
4	0.000	332.094	1.108	.48869E+02	.48375E+02	1.02	.67658	.68347	.73918	.120E+01
4	0.000	336.094	1.222	.53878E+02	.53450E+02	.80	.65801	.66327	.73772	.134E+01
4	0.000	339.872	1.343	.59240E+02	.58812E+02	.73	.63830	.64296	.73974	.150E+01
4	0.000	343.483	1.477	.65114E+02	.64559E+02	.86	.61689	.62220	.74543	.169E+01
4	0.000	346.928	1.620	.71446E+02	.70741E+02	1.00	.59497	.60090	.75218	.191E+01
4	0.000	350.094	1.782	.78559E+02	.77177E+02	1.79	.56953	.57973	.76643	.217E+01
4	0.000	353.094	1.957	.86307E+02	.84129E+02	2.59	.54383	.55791	.78087	.248E+01
4	0.000	355.872	2.147	.94672E+02	.91538E+02	3.42	.51798	.53572	.79595	.287E+01
4	0.000	358.594	2.351	.10368E+03	.10003E+03	3.65	.49352	.51154	.80766	.340E+01
4	0.000	361.261	2.591	.11426E+03	.11005E+03	3.82	.46674	.48459	.82200	.417E+01
4	0.000	363.761	2.836	.12505E+03	.12182E+03	2.64	.44322	.45494	.83152	.536E+01
4	0.000	366.261	3.089	.13621E+03	.13780E+03	-1.16	.42285	.41797	.83510	.776E+01
4	0.000	368.761	3.490	.15388E+03	.16527E+03	-6.89	.38908	.36225	.85621	.172E+02
6	0.000	313.480	.696	.30672E+02	.30544E+02	.42	.76119	.76440	.72960	.761E+00
6	0.000	324.480	.886	.39066E+02	.40087E+02	-2.55	.73767	.71888	.67210	.987E+00
6	0.000	332.040	1.100	.48494E+02	.48310E+02	.38	.68116	.68374	.72929	.120E+01
6	0.000	339.590	1.351	.59580E+02	.58390E+02	2.04	.63165	.64452	.75632	.149E+01
6	0.000	346.430	1.583	.69793E+02	.69799E+02	-.01	.60413	.60408	.74009	.187E+01
6	0.000	352.710	1.871	.82519E+02	.83184E+02	-.80	.56533	.56081	.74778	.244E+01
6	0.000	358.260	2.217	.97750E+02	.98906E+02	-1.17	.52075	.51466	.76750	.332E+01
6	0.000	363.590	2.664	.11749E+03	.12092E+03	-2.84	.47049	.45715	.79250	.526E+01
6	0.000	368.370	3.420	.15083E+03	.15923E+03	-5.28	.39454	.37372	.85284	.140E+02
7	0.000	323.150	.859	.37880E+02	.38795E+02	-2.36	.74224	.72471	.67413	.955E+00
7	0.000	333.150	1.125	.49609E+02	.49661E+02	-.10	.67897	.67826	.72251	.124E+01
7	0.000	343.150	1.460	.64382E+02	.64000E+02	.60	.62047	.62417	.74184	.167E+01
7	0.000	348.150	1.670	.73642E+02	.73130E+02	.70	.58880	.59293	.75125	.200E+01
7	0.000	353.150	1.920	.84667E+02	.84268E+02	.47	.55486	.55748	.76143	.249E+01
7	0.000	358.150	2.240	.98778E+02	.98542E+02	.24	.51445	.51568	.77869	.330E+01
7	0.000	363.150	2.700	.11906E+03	.11866E+03	.34	.46114	.46270	.81100	.500E+01

Table 3. (Continued).

Data sources and ID numbers: (1)Virial/vapor pressure equations, (4)Sage, (6)Reamer, (7)Clegg (12)Helgeson, (16)Sliwinski, (21)Deschner, (25)Thomas, (36)Dana.

ID	Weight	Temp. K	Density (expt) mol/L	Density (expt) kg/m^3	Density (calc) kg/m^3	Diff. %	Z(expt)	Z(calc)	F(Z)	$d\rho_v/dT$ $kg/(m^3 \cdot K)$
7	0.000	368.150	3.520	.15522E+03	.15628E+03	-.68	.38206	.37947	.87288	.128E+02
12	0.000	277.594	.267	.11755E+02	.11796E+02	-.35	.88130	.87825	.72375	.340E+00
12	0.000	283.150	.312	.13764E+02	.13809E+02	-.32	.86647	.86367	.72134	.386E+00
12	0.000	288.706	.364	.16046E+02	.16092E+02	-.29	.85046	.84803	.71988	.437E+00
12	0.000	294.261	.423	.18635E+02	.18676E+02	-.22	.83316	.83131	.71951	.495E+00
12	0.000	299.817	.489	.21565E+02	.21601E+02	-.17	.81482	.81345	.71896	.560E+00
12	0.000	305.372	.564	.24885E+02	.24910E+02	-.10	.79522	.79442	.71904	.633E+00
12	0.000	310.928	.650	.28645E+02	.28658E+02	-.04	.77449	.77415	.71916	.718E+00
12	0.000	316.483	.746	.32906E+02	.32909E+02	-.01	.75262	.75255	.71931	.815E+00
12	0.000	322.039	.856	.37744E+02	.37748E+02	-.01	.72960	.72951	.71954	.930E+00
12	0.000	327.594	.981	.43270E+02	.43283E+02	-.03	.70505	.70484	.72068	.107E+01
12	0.000	333.150	1.125	.49592E+02	.49661E+02	-.14	.67921	.67826	.72196	.124E+01
12	0.000	338.706	1.291	.56925E+02	.57092E+02	-.29	.65127	.64937	.72496	.145E+01
12	0.000	344.261	1.485	.65489E+02	.65890E+02	-.61	.62131	.61752	.72906	.173E+01
12	0.000	349.817	1.718	.75737E+02	.76580E+02	-1.10	.58813	.58166	.73601	.214E+01
12	0.000	355.372	2.006	.88450E+02	.90122E+02	-1.86	.55008	.53988	.74775	.279E+01
12	0.000	360.928	2.399	.10580E+03	.10868E+03	-2.65	.50144	.48817	.77176	.405E+01
21	0.000	303.150	.454	.20000E+02	.23537E+02	-15.03	.94405	.80217	.20439	.603E+00
21	0.000	308.150	.560	.24700E+02	.26725E+02	-7.58	.84876	.78444	.50584	.674E+00
21	0.000	313.150	.658	.29000E+02	.30294E+02	-4.27	.79982	.76567	.61494	.755E+00
21	0.000	318.150	.771	.34000E+02	.34295E+02	-.86	.75227	.74580	.70117	.848E+00
21	0.000	323.150	.896	.39500E+02	.38795E+02	1.82	.71178	.72471	.75377	.955E+00
21	0.000	328.150	1.039	.45799E+02	.43880E+02	4.37	.67284	.70227	.79273	.108E+01
21	0.000	333.150	1.179	.51999E+02	.49661E+02	4.71	.64776	.67826	.79274	.124E+01
21	0.000	338.150	1.315	.58001E+02	.56293E+02	3.03	.63317	.65238	.76858	.142E+01
21	0.000	343.150	1.485	.65498E+02	.64000E+02	2.34	.60990	.62417	.76250	.167E+01
21	0.000	348.150	1.644	.72500E+02	.73130E+02	-.86	.59808	.59293	.73431	.200E+01
21	0.000	353.150	1.887	.83198E+02	.84268E+02	-1.27	.56465	.55748	.74468	.249E+01
21	0.000	358.150	2.222	.98002E+02	.98542E+02	-.55	.51852	.51568	.77215	.330E+01
21	0.000	363.150	2.676	.11800E+03	.11866E+03	-.56	.46529	.46270	.80475	.500E+01
21	0.000	368.150	3.583	.15800E+03	.15628E+03	1.10	.37534	.37947	.88237	.128E+02
36	0.000	290.150	.381	.16800E+02	.16733E+02	.40	.84042	.84379	.74621	.451E+00
36	0.000	293.150	.413	.18200E+02	.18133E+02	.37	.83170	.83474	.74168	.483E+00
36	0.000	311.150	.646	.28500E+02	.28818E+02	-1.10	.78192	.77331	.69284	.721E+00
36	0.000	321.150	.825	.36400E+02	.36930E+02	-1.44	.74398	.73330	.69083	.910E+00
36	0.000	323.150	.859	.37900E+02	.38795E+02	-2.31	.74184	.72471	.67517	.955E+00

Number of data points used in fit = 46; rms density deviation = 0.19%.

Table 4. Comparisons of virial coefficients with eq (5).

Second virial coefficients of propane

Data sources and ID numbers. (1)McGlashan, (2)Kapallo, (3)Dymond/Smith, (4)Strein, (5)Hahn (7)Gunn, (8)Brewer, (9)Beattie, (10)Bottomley, (11)Cherney, (12)Deschner, (13)Jessen, (14)Kretschmer, (15)Reamer, (16)Sage.

ID	Weight	Temp. K	T/T_c	B cm^3/mol	B_r(expt)	B_r(calc)	Diff.	Diff. %
5	.146	211.300	.5713	-844.00	-4.2200	-4.1843	-.0357	-.85
5	.464	231.200	.6251	-680.00	-3.4000	-3.4051	.0051	.15
2	.095	244.000	.6597	-610.00	-3.0500	-3.0159	-.0341	-1.13
8	.418	248.150	.6709	-579.00	-2.8950	-2.9043	.0093	.32
5	.332	251.500	.6800	-567.00	-2.8350	-2.8188	-.0162	-.58
3	.470	260.000	.7030	-526.00	-2.6300	-2.6184	-.0116	-.44
3	.209	270.000	.7300	-478.00	-2.3900	-2.4093	.0193	.80
2	.082	273.000	.7381	-477.00	-2.3850	-2.3516	-.0334	-1.42
8	.574	273.150	.7385	-468.00	-2.3400	-2.3488	.0088	.37
13	.976	273.160	.7386	-470.00	-2.3500	-2.3486	-.0014	-.06
5	.224	273.800	.7403	-471.00	-2.3550	-2.3366	-.0184	-.79
3	.206	285.000	.7706	-424.00	-2.1200	-2.1406	.0206	.96
16	.012	294.270	.7956	-417.56	-2.0878	-1.9966	-.0912	-4.57
10	.029	295.210	.7982	-407.90	-2.0395	-1.9828	-.0567	-2.86
1	.274	295.400	.7987	399.00	-1.9950	-1.9801	-.0149	-.75
4	.434	296.100	.8006	-396.00	-1.9800	-1.9699	-.0101	-.51
2	.326	297.000	.8030	-394.00	-1.9700	-1.9570	-.0130	-.66
8	.995	298.150	.8061	-388.00	-1.9400	-1.9407	.0007	.04
3	.359	300.000	.8111	-380.00	-1.9000	-1.9149	.0149	.78
12	.059	303.160	.8197	-382.04	-1.9102	-1.8719	-.0383	-2.05
12	.039	303.160	.8197	-384.00	-1.9200	-1.8719	-.0481	-2.57
14	.009	303.160	.8197	-395.00	-1.9750	-1.8719	-.1031	-5.51
1	.225	306.500	.8287	-369.00	-1.8450	-1.8281	-.0169	-.93
4	.818	308.000	.8328	-360.50	-1.8025	-1.8089	.0064	.35
7	.012	310.900	.8406	-335.80	1.6790	-1.7727	.0937	5.28
15	.011	310.940	.8407	-335.49	-1.6775	-1.7722	.0947	5.34
15	.007	310.940	.8407	-330.00	-1.6500	-1.7722	.1222	6.89
16	.005	310.940	.8407	-381.80	-1.9090	-1.7722	-.1368	-7.72
3	.270	315.000	.8517	-341.00	-1.7050	-1.7232	.0182	1.06
1	.870	317.600	.8587	-339.00	-1.6950	-1.6930	-.0020	-.12
2	.043	321.000	.8679	-340.00	1.7000	-1.6546	-.0454	-2.75
11	.214	323.160	.8738	-329.62	-1.6481	-1.6308	-.0173	-1.06
13	.866	323.160	.8738	-325.00	-1.6250	-1.6308	.0058	.36
1	.064	327.600	.8858	-324.00	-1.6200	-1.5836	-.0364	-2.30
15	.033	327.600	.8858	-305.44	-1.5272	-1.5836	.0564	3.56
15	.036	327.600	.8858	-306.00	-1.5300	-1.5836	.0536	3.39
16	.003	327.600	.8858	-353.45	-1.7673	-1.5836	-.1836	-11.60
3	.671	330.000	.8923	-310.00	-1.5500	-1.5589	.0089	.57
4	.255	332.900	.9001	-309.00	-1.5450	-1.5298	-.0152	-.99
1	.325	337.800	.9133	-299.00	-1.4950	-1.4825	-.0125	-.84
15	.191	344.270	.9308	-280.15	-1.4008	-1.4232	.0224	1.58
15	.230	344.270	.9308	-280.60	-1.4030	-1.4232	.0202	1.42
16	.004	344.270	.9308	-316.71	-1.5836	-1.4232	-.1604	-11.27
7	.216	344.300	.9309	-280.40	-1.4020	-1.4229	.0209	1.47
1	.207	347.900	.9407	-274.00	-1.3700	-1.3914	.0214	1.54
12	.029	348.160	.9414	-289.13	-1.4457	-1.3892	-.0564	-4.06
12	.016	348.160	.9414	-293.00	-1.4650	-1.3892	-.0758	-5.46
3	.901	350.000	.9463	-275.00	-1.3750	-1.3735	-.0015	-.11
4	.285	353.800	.9566	-271.20	-1.3560	-1.3420	-.0140	-1.05
1	.242	357.900	.9677	-265.00	-1.3250	-1.3091	-.0159	-1.22
15	.897	360.940	.9759	-256.06	-1.2803	-1.2854	.0051	.40
15	.999	360.940	.9759	-256.80	-1.2840	-1.2854	.0014	.11
16	.005	360.940	.9759	-283.74	1.4187	-1.2854	-.1333	-10.37
1	.513	368.200	.9955	-244.00	-1.2200	-1.2314	.0114	.92
9	.461	369.970	1.0003	-245.58	-1.2279	-1.2187	-.0092	-.76
9	.014	369.970	1.0003	-260.00	-1.3000	-1.2187	-.0813	-6.67
9	.326	373.160	1.0089	-241.82	-1.2091	-1.1963	-.0128	-1.07
9	.058	373.160	1.0089	-247.00	-1.2350	-1.1963	-.0387	-3.24
11	.734	373.160	1.0089	-240.15	-1.2008	-1.1963	-.0045	-.37
12	.075	373.160	1.0089	-245.98	-1.2299	-1.1963	-.0336	-2.81
12	.014	373.160	1.0089	-256.00	-1.2800	-1.1963	-.0837	-7.00
4	.248	373.400	1.0096	-242.10	-1.2105	-1.1946	-.0159	-1.33

Table 4. (Continued).

Second virial coefficients of propane

Data sources and ID numbers: (1)McGlashan, (2)Kapallo, (3)Dymond/Smith, (4)Strein, (5)Hahn, (7)Gunn, (8)Brewer, (9)Beattie, (10)Bottomley, (11)Cherney, (12)Deschner, (13)Jessen, (14)Kretschmer, (15)Reamer, (16)Sage.

ID	Weight	Temp. K	T/T_c	B cm^3/mol	B_r(expt)	B_r(calc)	Diff.	Diff. %
3	.923	375.000	1.0139	-237.00	-1.1850	-1.1836	-.0014	-.12
7	.310	377.600	1.0210	-235.90	-1.1795	-1.1661	-.0134	-1.15
15	.492	377.600	1.0210	-234.95	-1.1748	-1.1661	-.0087	-.74
15	.586	377.600	1.0210	-234.60	-1.1730	-1.1661	-.0069	-.59
16	.008	377.600	1.0210	-254.72	-1.2736	-1.1661	-.1075	-9.22
1	.218	377.700	1.0212	-229.00	-1.1450	-1.1654	.0204	1.75
12	.266	380.960	1.0300	-225.18	-1.1259	-1.1439	.0180	1.57
1	.100	388.500	1.0504	-213.00	-1.0650	-1.0963	.0313	2.85
4	.709	394.000	1.0653	-213.70	-1.0685	-1.0633	-.0052	-.49
9	.908	398.160	1.0765	-208.26	-1.0413	-1.0392	-.0021	-.20
9	.260	398.160	1.0765	-211.00	-1.0550	-1.0392	-.0158	-1.52
11	.959	398.160	1.0765	-207.21	-1.0361	-1.0392	.0031	.30
12	.460	398.160	1.0765	-209.79	-1.0490	-1.0392	-.0098	-.94
12	.015	398.160	1.0765	-224.00	-1.1200	-1.0392	-.0808	-7.78
3	.952	400.000	1.0815	-206.00	-1.0300	-1.0288	-.0012	-.12
1	.169	400.100	1.0818	-201.00	-1.0050	-1.0282	.0232	2.26
15	.125	410.940	1.1111	-199.07	-.9954	-.9697	-.0256	-2.64
15	.106	410.940	1.1111	-199.60	-.9980	-.9697	-.0283	-2.92
4	.987	413.800	1.1188	-191.10	-.9555	-.9551	-.0004	-.05
9	.987	423.160	1.1441	-181.48	-.9074	-.9090	.0016	.18
9	.706	423.160	1.1441	-183.00	-.9150	-.9090	-.0060	-.65
12	.111	423.160	1.1441	-187.36	-.9368	-.9090	-.0278	-3.05
12	.017	423.160	1.1441	-197.00	-.9850	-.9090	-.0760	-8.36
3	.914	430.000	1.1626	-176.00	-.8800	-.8773	-.0027	-.31
4	1.000	433.100	1.1710	-172.60	-.8630	-.8633	.0003	.04
15	.147	444.270	1.2012	-167.93	-.8397	-.8155	-.0241	-2.96
15	.125	444.270	1.2012	-168.40	-.8420	-.8155	-.0265	-3.25
7	.207	444.300	1.2013	-167.00	-.8350	-.8154	-.0196	-2.41
9	.903	448.160	1.2117	-159.30	-.7965	-.7996	.0031	.39
9	.999	448.160	1.2117	-160.00	-.8000	-.7996	-.0004	-.04
4	.953	453.500	1.2262	-156.20	-.7810	-.7785	-.0025	-.32
3	.909	470.000	1.2708	-143.00	-.7150	-.7175	.0025	.35
9	.669	473.160	1.2793	-140.04	-.7002	-.7065	.0063	.89
9	.400	473.160	1.2793	-139.00	-.6950	-.7065	.0115	1.62
12	.100	473.160	1.2793	-147.44	-.7372	-.7065	-.0307	-4.35
12	.021	473.160	1.2793	-155.00	-.7750	-.7065	-.0685	-9.70
4	.983	474.900	1.2840	-140.00	-.7000	-.7005	.0005	.07
15	.315	477.600	1.2913	141.40	-.7070	-.6914	-.0156	-2.26
15	.241	477.600	1.2913	-142.00	-.7100	-.6914	-.0186	-2.70
4	.971	493.300	1.3338	-128.10	-.6405	-.6410	.0005	.07
9	.297	498.160	1.3469	-122.45	-.6123	-.6262	.0140	2.23
9	.163	498.160	1.3469	-121.00	-.6050	-.6262	.0212	3.39
3	.658	500.000	1.3519	-123.00	-.6150	-.6208	.0058	.93
7	.787	510.900	1.3814	-117.20	-.5860	-.5895	.0035	.59
15	1.000	510.940	1.3815	-118.19	-.5910	-.5894	-.0016	-.27
15	.868	510.940	1.3815	-119.00	-.5950	-.5894	-.0056	-.95
9	.471	523.160	1.4145	-109.57	-.5479	-.5564	.0086	1.54
9	.356	523.160	1.4145	-109.00	-.5450	-.5564	.0114	2.05
12	.902	526.380	1.4232	-110.70	-.5535	-.5481	-.0054	-.99
12	.490	526.380	1.4232	-108.00	-.5400	-.5481	.0081	1.48
9	.498	548.160	1.4821	-97.55	-.4878	-.4952	.0074	1.50
9	.240	548.160	1.4821	-96.00	-.4800	-.4952	.0152	3.06
3	.574	550.000	1.4871	-97.00	-.4850	-.4910	.0060	1.21
12	.511	570.460	1.5424	-91.89	-.4595	-.4465	-.0129	-2.90
12	.821	570.460	1.5424	-89.00	-.4450	-.4465	.0015	.34
12	.040	609.320	1.6475	-85.19	-.4260	-.3728	-.0532	-14.26

Number of data points = 118; rms deviation = 1.20%.

Table 4. (Continued).

Third virial coefficients of propane

Data sources and ID numbers: (1)McGlashan, (2)Kapallo, (3)Dymond/Smith, (4)Strein, (5)Hahn, (7)Gunn, (8)Brewer, (9)Beattie, (10)Bottomley, (11)Cherney, (12)Deschner, (13)Jessen, (14)Kretschmer, (15)Reamer, (16)Sage.

ID	Weight	Temp. K	T/T_c	C $(cm^3/mol)^2$	C_r(expt)	C_r(calc)	Diff.
16	.002	294.270	.7956	-10510.	-.2628	-2.4978	2.2350
12	.163	303.160	.8197	-62760.	-1.5690	-1.7060	.1370
15	.469	310.940	.8407	-54120.	-1.3530	-1.1762	-.1768
15	.065	310.940	.8407	-65000.	-1.6250	-1.1762	-.4488
16	.006	310.940	.8407	861.	.0215	-1.1762	1.1977
11	.755	323.160	.8738	-22470.	-.5618	-.5711	.0094
15	.329	327.600	.8858	-23530.	-.5883	-.4044	-.1838
15	.523	327.600	.8858	-14000.	-.3500	-.4044	.0544
16	.003	327.600	.8858	59710.	1.4928	-.4044	1.8972
15	.722	344.270	.9308	-1725.	-.0431	.0416	-.0848
15	.912	344.270	.9308	2000.	.0500	.0416	.0084
16	.009	344.270	.9308	42550.	1.0638	.0416	1.0221
12	.023	348.160	.9414	29980.	.7495	.1141	.6354
15	.523	360.940	.9759	7413.	.1853	.2921	-.1068
15	.837	360.940	.9759	13000.	.3250	.2921	.0329
16	.052	360.940	.9759	28280.	.7070	.2921	.4149
9	.417	369.970	1.0003	19450.	.4863	.3751	.1112
9	.997	373.160	1.0089	15890.	.3973	.3978	-.0006
11	.576	373.160	1.0089	19120.	.4780	.3978	.0802
12	.556	373.160	1.0089	19260.	.4815	.3978	.0837
15	.453	377.600	1.0210	12430.	.3108	.4247	-.1140
15	.207	377.600	1.0210	9000.	.2250	.4247	-.1997
16	.751	377.600	1.0210	14520.	.3630	.4247	-.0617
12	.967	380.960	1.0300	18290.	.4573	.4417	.0155
9	.469	398.160	1.0765	15550.	.3888	.4940	-.1053
11	.658	398.160	1.0765	16920.	.4230	.4940	-.0710
12	.696	398.160	1.0765	17160.	.4290	.4940	-.0650
15	.992	410.940	1.1111	20000.	.5000	.5060	-.0060
15	.426	410.940	1.1111	25000.	.6250	.5060	.1190
9	.357	423.160	1.1441	14960.	.3740	.5039	-.1299
12	.563	423.160	1.1441	16800.	.4200	.5039	-.0839
15	.995	444.270	1.2012	19190.	.4798	.4817	-.0020
15	.564	444.270	1.2012	23000.	.5750	.4817	.0933
9	.425	448.160	1.2117	14610.	.3653	.4760	-.1108
9	.607	473.160	1.2793	14370.	.3593	.4339	-.0747
12	.774	473.160	1.2793	15430.	.3858	.4339	-.0482
15	.957	477.600	1.2913	18120.	.4530	.4259	.0271
15	.535	477.600	1.2913	21000.	.5250	.4259	.0991
9	.689	498.160	1.3469	13090.	.3273	.3887	-.0615
15	.877	510.940	1.3815	16365.	.4091	.3662	.0429
15	.195	510.940	1.3815	23000.	.5750	.3662	.2088
9	.910	523.160	1.4145	12780.	.3195	.3456	-.0261
12	1.000	526.380	1.4232	13840.	.3460	.3403	.0057
9	.998	548.160	1.4821	12630.	.3158	.3065	.0092
12	.900	570.460	1.5424	12540.	.3135	.2757	.0378
12	1.000	609.320	1.6475	9373.	.2343	.2305	.0038

Number of data points = 46.

Table 5. Behavior of coefficients of equation of state for propane (eq (6)).

ρ/ρ_c	T_σ K	θ K	P_σ MPa	B(ρ)	C(ρ)
.10	300.609	283.690	1.0133	.45809	-.46999
.20	328.350	315.259	1.9147	.46283	-.39609
.30	344.408	335.148	2.6487	.47075	-.32679
.40	354.668	348.633	3.2178	.48182	-.26259
.50	361.308	357.737	3.6355	.49606	-.20390
.60	365.501	363.647	3.9231	.51347	-.15101
.70	367.994	367.205	4.1048	.53404	-.10413
.80	369.291	369.056	4.2033	.55777	-.06335
.90	369.780	369.750	4.2418	.58467	-.02867
1.00	369.850	369.850	4.247	.61473	0.00000
1.10	369.774	369.745	4.2414	.64796	.02285
1.20	369.305	369.071	4.2046	.68435	.04013
1.30	368.143	367.354	4.1160	.72391	.05219
1.40	366.050	364.193	3.9624	.76663	.05939
1.50	362.843	359.257	3.7385	.81251	.06220
1.60	358.390	352.291	3.4467	.86157	.06107
1.70	352.604	343.123	3.0963	.91378	.05650
1.80	345.429	331.657	2.7015	.96916	.04902
1.90	336.837	317.879	2.2806	1.02770	.03913
2.00	326.818	301.853	1.8536	1.08941	.02734
2.10	315.374	283.721	1.4411	1.15428	.01414
2.20	302.518	263.703	1.0625	1.22232	.00000
2.30	288.274	242.095	.7342	1.29352	-.01464
2.40	272.683	219.261	.4677	1.36789	-.02939
2.50	255.802	195.627	.2686	1.44542	-.04389
2.60	237.713	171.671	.1346	1.52612	-.05782
2.70	218.534	147.900	.0562	1.60998	-.07092
2.80	198.415	124.827	.0183	1.69700	-.08298
2.90	177.545	102.943	.0042	1.78719	-.09381
3.00	156.139	82.685	.0006	1.88054	-.10330
3.10	134.434	64.403	.0000	1.97706	-.11135
3.20	112.662	48.340	.0000	2.07674	-.11793
3.30	91.042	34.622	.0000	2.17959	-.12302
3.40	69.762	23.256	.0000	2.28560	-.12665

Table 6. Calculated P(ρ) critical isotherm of propane. (At the critical point $dP_\sigma/dT = (\partial P/\partial T)\rho_c$ = 0.081126 MPa/K.)

ρ/ρ_c	T_σ/T_c	P_σ/P_c	P/P_c	$(\partial P/\partial\rho_{r,t})T_c$ MPa	$(dT_\sigma/d\rho_{r,t})T_c$ K	$(d\Theta/d\rho_{r,t})T_c$ K	$(dP_\sigma/d\rho_{r,t})T_c$ MPa	$(\partial\Phi/\partial\rho_{r,t})T_c$	$(\partial\Psi/\partial\rho_{r,t})T_c$
.900	.9998102835	.9986782277	.9999017403	.058081401	6.99852	9.92968	.55707	-.02929	.11237
.905	.9998373258	.9988657609	.9999207195	.049329294	6.31352	8.95908	.50309	-.02642	.10267
.910	.9998616553	.9990346639	.9999367700	.041523062	5.66379	8.03833	.45180	-.02370	.09332
.915	.9998834160	.9991858928	.9999502169	.034606876	5.04951	7.16766	.40323	-.02113	.08433
.920	.9999027521	.9993204124	.9999613651	.028524581	4.47084	6.34720	.35739	-.01871	.07571
.925	.9999198087	.9994391955	.9999704999	.023219823	3.92787	5.57709	.31430	-.01644	.06747
.930	.9999347310	.9995432208	.9999778865	.018636195	3.42068	4.85739	.27399	-.01432	.05963
.935	.9999476645	.9996334720	.9999837701	.014717385	2.94927	4.18810	.23647	-.01234	.05220
.940	.9999587546	.9997109357	.9999883761	.011407355	2.51361	3.56921	.20174	-.01052	.04520
.945	.9999681463	.9997766004	.9999919101	.008650512	2.11358	3.00060	.16979	-.00884	.03864
.950	.9999759844	.9998314542	.9999945582	.006391907	1.74905	2.48214	.14064	-.00732	.03253
.955	.9999824125	.9998764835	.9999964871	.004577431	1.41981	2.01361	.11428	-.00594	.02690
.960	.9999875737	.9999126712	.9999978445	.003154024	1.12558	1.59477	.09068	-.00471	.02174
.965	.9999916097	.9999409955	.9999987597	.002069889	.86609	1.22532	.06984	-.00362	.01708
.970	.9999946609	.9999624284	.9999993438	.001274710	.64098	.90491	.05173	-.00268	.01292
.975	.9999968665	.9999779349	.9999996904	.000719880	.44992	.63320	.03634	-.00188	.00930
.980	.9999984236	.9999888921	.9999998805	.000349184	.28547	.40277	.02308	-.00119	.00607
.985	.9999993198	.9999952038	.9999999634	.000142298	.16395	.22993	.01327	-.00069	.00360
.990	.9999998593	.9999990072	.9999999952	.000030519	.05822	.08755	.00472	-.00024	.00134
0.995	.9999999825	.9999998761	.9999999997	.000003446	.01492	.02225	.00121	-.00006	.00036
1.000	1.0000000000	1.0000000000	1.0000000000	.000000000	.00000	.00000	.00000	-.00000	0.00000
1.005	.9999999897	.9999999269	1.0000000002	.000003668	-.01163	-.01896	-.00094	.00005	-.00028
1.010	.9999997884	.9999985071	1.0000000107	.000065777	-.08271	-.11204	-.00670	.00035	-.00189
1.015	.9999991069	.9999937039	1.0000000735	.000278344	-.21088	-.27686	-.01706	.00088	-.00460
1.020	.9999979638	.9999856552	1.0000002329	.000662210	-.36029	-.47759	-.02912	.00151	-.00762
1.025	.9999961418	.9999728379	1.0000005706	.001299613	-.54579	-.72907	-.04407	.00228	-.01122
1.030	.9999933857	.9999534682	1.0000012099	.002289119	-.77470	-1.03862	-.06250	.00324	-.01553
1.035	.9999897269	.9999277788	1.0000022487	.003652684	-1.03124	-1.39046	-.08312	.00432	-.02021
1.040	.9999849574	.9998943224	1.0000038503	.005480701	-1.32111	-1.79030	-.10638	.00553	-.02536
1.045	.9999789430	.9998521743	1.0000061917	.007845851	-1.64363	-2.23744	-.13222	.00688	-.03094
1.050	.9999715524	.9998004313	1.0000094762	.010822515	-1.99819	-2.73127	-.16059	.00836	-.03694
1.055	.9999626566	.9997382096	1.0000139336	.014486804	-2.38423	-3.27124	-.19143	.00998	-.04332
1.060	.9999521284	.9996646429	1.0000198211	.018916578	-2.80127	-3.85686	-.22469	.01172	-.05006
1.065	.9999398429	.9995788816	1.0000274236	.024191464	-3.24883	-4.48765	-.26033	.01360	-.05715
1.070	.9999256769	.9994800914	1.0000370546	.030392887	-3.72650	-5.16318	-.29830	.01560	-.06456
1.075	.9999095089	.9993674530	1.0000490567	.037604082	-4.23385	-5.88304	-.33857	.01772	-.07229
1.080	.9998912190	.9992401612	1.0000638023	.045910116	-4.77052	-6.64685	-.38110	.01996	-.08030
1.085	.9998706888	.9990974243	1.0000816942	.055397909	-5.33613	-7.45423	-.42585	.02233	-.08860
1.090	.9998478014	.9989384638	1.0001031663	.066156247	-5.93033	-8.30483	-.47277	.02482	-.09716
1.095	.9998224412	.9987625140	1.0001286842	.078275799	-6.55280	-9.19829	-.52184	.02742	-.10597
1.100	.9997944940	.9985688217	1.0001587462	.091849134	-7.20319	-10.13430	-.57303	.03015	-.11503

Table 7. Comparisons of experimental P-ρ-T data of propane with eq (6).

Summary of P-ρ-T data comparisons.

Authors	Range of Data T(K)	P(MPa)	ρ(kg/m^3)	No. of Points	Deviations Δρ/ρ,rms (%)	ΔP/P,mean (%)
Beattie [2]	369-548	2.4 - 31.0	44-441	106	0.46	0.36
Deschner [22]	303-609	0.1 - 14.2	1-418	236	1.28	0.92
Cherney [14]	323-398	1.1 - 5.0	17-114	25	0.27	0.17
Reamer [73]	311-511	0.1 - 69.0	1-576	306	0.32	0.82
Dawson [21]	243-348	0.05- 0.18	1-3	18	0.20	0.18
Dittmar [23]	273-413	1.0 -103.5	320-590	325	0.21	1.41
Tomlinson [98]	278-328	1.06- 13.8	452-530	40	0.11	4.01
Ely [25]	166-324	0.26- 42.8	508-651	222	0.06	4.62
Teichmann [94]	323-573	2.77- 60.9	108-461	148	0.69	0.83
Warowny [102]	373-423	0.3 - 6.4	5-170	51	0.83	0.24
Haynes [42]	90-300	0.6 - 37.5	493-741	196	0.07	8.27
Thomas [95]						
isochores	370-623	2.0 - 40.0	35-486	215	0.43	0.32
isotherms	258-370	0.6 - 35.7	35-549	511	1.41	2.24
Virial equation (this report)	270-600	0.4 - 1.0	8.8	34	0.20	0.18

Total number of points used in fit = 1946
Overall rms density deviation = 0.76%
Overall mean pressure deviation = 2.41%

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
1	1	.100	270.000	.200	8.82	8.82	-.05	.4057	.4055	.04
1	2	.100	280.000	.200	8.82	8.82	-.06	.4242	.4240	.05
1	3	.100	290.000	.200	8.82	8.83	-.08	.4425	.4422	.08
1	4	.100	300.000	.200	8.82	8.83	-.11	.4607	.4602	.10
1	5	.100	310.000	.200	8.82	8.83	-.14	.4787	.4781	.13
1	6	.100	320.000	.200	8.82	8.83	-.17	.4967	.4959	.16
1	7	.100	330.000	.200	8.82	8.84	-.19	.5145	.5136	.18
1	8	.100	340.000	.200	8.82	8.84	-.21	.5323	.5313	.20
1	9	.100	350.000	.200	8.82	8.84	-.22	.5500	.5489	.21
1	10	.100	360.000	.200	8.82	8.84	-.24	.5677	.5664	.22
1	11	.100	370.000	.200	8.82	8.84	-.24	.5853	.5839	.23
1	12	.100	380.000	.200	8.82	8.84	-.25	.6028	.6014	.24
1	13	.100	390.000	.200	8.82	8.84	-.25	.6203	.6188	.24
1	14	.100	400.000	.200	8.82	8.84	-.26	.6378	.6362	.25
1	15	.100	410.000	.200	8.82	8.84	-.26	.6552	.6536	.25
1	16	.100	420.000	.200	8.82	8.84	-.25	.6726	.6710	.24
1	17	.100	430.000	.200	8.82	8.84	-.25	.6900	.6883	.24
1	18	.100	440.000	.200	8.82	8.84	-.25	.7073	.7056	.24
1	19	.100	450.000	.200	8.82	8.84	-.24	.7246	.7229	.23
1	20	.100	460.000	.200	8.82	8.84	-.23	.7419	.7402	.23
1	21	.100	470.000	.200	8.82	8.84	-.23	.7591	.7574	.22
1	22	.100	480.000	.200	8.82	8.84	-.22	.7764	.7747	.22
1	23	.100	490.000	.200	8.82	8.84	-.21	.7936	.7919	.21
1	24	.100	500.000	.200	8.82	8.84	-.21	.8108	.8092	.20
1	25	.100	510.000	.200	8.82	8.84	-.20	.8280	.8264	.19
1	26	.100	520.000	.200	8.82	8.84	-.19	.8452	.8436	.19
1	27	.100	530.000	.200	8.82	8.84	-.18	.8623	.8608	.18
1	28	.100	540.000	.200	8.82	8.83	-.17	.8795	.8780	.17
1	29	.100	550.000	.200	8.82	8.83	-.17	.8966	.8952	.16
1	30	.100	560.000	.200	8.82	8.83	-.16	.9138	.9124	.15
1	31	.100	570.000	.200	8.82	8.83	-.15	.9309	.9295	.15
1	32	.100	580.000	.200	8.82	8.83	-.14	.9480	.9467	.14
1	33	.100	590.000	.200	8.82	8.83	-.13	.9651	.9638	.13
1	34	.100	600.000	.200	8.82	8.83	-.12	.9822	.9810	.12

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
2	35	1.000	243.150	.045	1.99	1.99	-.11	.0887	.0886	.10
2	36	1.000	243.150	.060	2.63	2.63	-.02	.1161	.1160	.02
2	37	1.000	258.150	.060	2.62	2.63	-.09	.1237	.1236	.09
2	38	1.000	258.150	.045	1.99	1.99	-.11	.0945	.0944	.11
2	39	1.000	273.150	.071	3.12	3.12	-.16	.1552	.1550	.15
2	40	1.000	273.150	.045	1.99	1.99	-.19	.1003	.1001	.19
2	41	1.000	273.150	.060	2.63	2.63	-.14	.1316	.1314	.14
2	42	1.000	288.150	.059	2.62	2.62	-.16	.1386	.1383	.16
2	43	1.000	288.150	.021	.91	.91	-.26	.0490	.0489	.26
2	44	1.000	288.150	.045	1.99	1.99	-.18	.1060	.1058	.18
2	45	1.000	288.150	.071	3.12	3.12	-.19	.1643	.1640	.19
2	46	1.000	288.150	.037	1.63	1.64	-.28	.0874	.0872	.27
2	47	1.000	323.150	.037	1.63	1.64	-.22	.0983	.0981	.22
2	48	1.000	323.150	.070	3.09	3.10	-.25	.1838	.1834	.24
2	49	1.000	323.150	.021	.91	.91	-.12	.0551	.0551	.12
2	50	1.000	323.150	.045	1.99	1.99	-.25	.1193	.1190	.25
2	51	1.000	348.150	.060	2.62	2.63	-.27	.1694	.1690	.27
2	52	1.000	348.150	.045	1.99	2.00	-.34	.1290	.1286	.34

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
13	53	1.000	323.150	.474	20.88	20.91	-.15	1.0801	1.0788	.13
13	54	1.000	323.150	.494	21.79	21.82	-.16	1.1186	1.1171	.13
13	55	1.000	323.150	.533	23.48	23.54	-.25	1.1896	1.1872	.20
13	56	1.000	323.150	.559	24.63	24.65	-.08	1.2341	1.2334	.06
13	57	1.000	323.150	.577	25.46	25.53	-.26	1.2686	1.2660	.20
13	58	1.000	323.150	.608	26.82	26.88	-.21	1.3203	1.3181	.16
13	59	1.000	323.150	.631	27.81	27.88	-.25	1.3578	1.3552	.19
13	60	1.000	323.150	.695	30.63	30.74	-.34	1.4601	1.4565	.25
13	61	1.000	323.150	.773	34.10	34.21	-.34	1.5756	1.5719	.23
13	62	1.000	323.150	.872	38.44	38.66	-.57	1.7094	1.7031	.37
13	63	1.000	373.150	.383	16.90	16.95	-.27	1.0832	1.0805	.24
13	64	1.000	373.150	.406	17.92	17.97	-.28	1.1419	1.1390	.26
13	65	1.000	373.150	.462	20.36	20.41	-.25	1.2797	1.2769	.22
13	66	1.000	373.150	.534	23.57	23.60	-.15	1.4540	1.4521	.13
13	67	1.000	373.150	.634	27.98	28.02	-.15	1.6840	1.6819	.13
13	68	1.000	373.150	.781	34.42	34.45	-.09	1.9971	1.9956	.08
13	69	1.000	373.150	1.014	44.71	44.67	.09	2.4429	2.4446	-.07
13	70	1.000	373.150	1.447	63.79	63.58	.34	3.1127	3.1192	-.21
13	71	1.000	373.150	2.520	111.11	110.91	.18	4.0733	4.0757	-.06
13	72	1.000	398.150	.535	23.61	23.67	-.24	1.5847	1.5813	.22
13	73	1.000	398.150	.636	28.06	28.10	-.15	1.8431	1.8407	.13
13	74	1.000	398.150	.784	34.58	34.60	-.06	2.2018	2.2007	.05
13	75	1.000	398.150	1.021	45.04	44.98	.13	2.7267	2.7295	-.11
13	76	1.000	398.150	1.464	64.57	64.25	.50	3.5565	3.5688	-.34
13	77	1.000	398.150	2.580	113.79	113.26	.47	4.9781	4.9893	-.22

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
3	78	1.000	369.960	.999	44.06	43.62	1.02	2.3659	2.3838	-.75
3	79	1.000	373.150	.999	44.06	43.83	.53	2.4085	2.4181	-.40
3	80	1.000	398.150	.999	44.06	43.95	.26	2.6770	2.6826	-.21
3	81	1.000	423.150	.999	44.06	43.97	.22	2.9354	2.9408	-.18
3	82	1.000	448.150	.999	44.06	43.97	.21	3.1887	3.1945	-.18
3	83	1.000	473.150	.999	44.06	43.99	.16	3.4400	3.4448	-.14
3	84	1.000	498.150	.999	44.06	44.02	.10	3.6892	3.6927	-.09
3	85	1.000	523.150	.999	44.06	43.94	.28	3.9284	3.9385	-.26
3	86	1.000	548.150	.999	44.06	44.01	.13	4.1776	4.1826	-.12
3	87	1.000	369.960	1.499	66.09	65.33	1.17	3.1087	3.1302	-.69
3	88	1.000	373.150	1.499	66.09	65.54	.85	3.1715	3.1877	-.51
3	89	1.000	398.150	1.499	66.09	65.68	.62	3.6112	3.6267	-.43
3	90	1.000	423.150	1.499	66.09	65.68	.62	4.0317	4.0505	-.46
3	91	1.000	448.150	1.499	66.09	65.72	.57	4.4441	4.4642	-.45
3	92	1.000	473.150	1.499	66.09	65.76	.50	4.8504	4.8706	-.41
3	93	1.000	498.150	1.499	66.09	65.80	.44	5.2517	5.2716	-.38
3	94	1.000	523.150	1.499	66.09	65.68	.63	5.6367	5.6582	-.55
3	95	1.000	548.150	1.499	66.09	65.87	.33	6.0430	6.0613	-.30
3	96	1.000	369.960	1.998	88.12	87.76	.41	3.6295	3.6361	-.18
3	97	1.000	373.150	1.998	88.12	87.33	.91	3.7044	3.7201	-.42
3	98	1.000	398.150	1.998	88.12	87.44	.78	4.3357	4.3554	-.45
3	99	1.000	423.150	1.998	88.12	87.45	.77	4.9386	4.9640	-.51
3	100	1.000	448.150	1.998	88.12	87.55	.66	5.5293	5.5559	-.48
3	101	1.000	473.150	1.998	88.12	87.61	.59	6.1079	6.1361	-.46
3	102	1.000	498.150	1.998	88.12	87.71	.48	6.6814	6.7074	-.39
3	103	1.000	523.150	1.998	88.12	87.78	.39	7.2478	7.2719	-.33
3	104	1.000	548.150	1.998	88.12	87.86	.30	7.8101	7.8308	-.26
3	105	1.000	373.150	2.498	110.16	109.65	.46	4.0581	4.0642	-.15
3	106	1.000	398.150	2.498	110.16	109.38	.71	4.8940	4.9111	-.35
3	107	1.000	423.150	2.498	110.16	109.46	.63	5.6975	5.7193	-.38
3	108	1.000	448.150	2.498	110.16	109.59	.52	6.4818	6.5048	-.35
3	109	1.000	473.150	2.498	110.16	109.70	.42	7.2518	7.2746	-.31
3	110	1.000	498.150	2.498	110.16	109.81	.31	8.0128	8.0328	-.25
3	111	1.000	523.150	2.498	110.16	109.94	.19	8.7677	8.7818	-.16
3	112	1.000	548.150	2.498	110.16	110.05	.10	9.5154	9.5235	-.08
3	113	1.000	369.960	2.998	132.19	132.47	-.22	4.1300	4.1284	.04
3	114	1.000	373.150	2.998	132.19	132.13	.05	4.2708	4.2713	-.01
3	115	1.000	398.150	2.998	132.19	131.61	.44	5.3287	5.3386	-.19
3	116	1.000	423.150	2.998	132.19	131.62	.43	6.3429	6.3583	-.24
3	117	1.000	448.150	2.998	132.19	131.82	.28	7.3380	7.3516	-.19
3	118	1.000	473.150	2.998	132.19	132.63	-.33	8.3472	8.3268	.24
3	119	1.000	498.150	2.998	132.19	132.17	.02	9.2874	9.2886	-.01
3	120	1.000	523.150	2.998	132.19	132.31	-.09	10.2480	10.2398	.08
3	121	1.000	548.150	2.998	132.19	132.43	-.18	11.2005	11.1822	.16
3	122	1.000	373.150	3.497	154.22	154.49	-.17	4.3884	4.3874	.02
3	123	1.000	398.150	3.497	154.22	153.87	.23	5.6752	5.6802	-.09
3	124	1.000	423.150	3.497	154.22	153.87	.23	6.9144	6.9230	-.12
3	125	1.000	448.150	3.497	154.22	154.14	.05	8.1364	8.1392	-.03
3	126	1.000	473.150	3.497	154.22	154.35	-.09	9.3432	9.3372	.06
3	127	1.000	498.150	3.497	154.22	154.55	-.21	10.5398	10.5214	.18
3	128	1.000	523.150	3.497	154.22	154.71	-.32	11.7274	11.6944	.28
3	129	1.000	548.150	3.497	154.22	154.85	-.41	12.9068	12.8582	.38
3	130	1.000	369.960	3.997	176.25	178.48	-1.25	4.2486	4.2470	.04
3	131	1.000	373.150	3.997	176.25	176.55	-.17	4.4502	4.4496	.01
3	132	1.000	398.150	3.997	176.25	175.63	.35	5.9650	5.9729	-.13
3	133	1.000	423.150	3.997	176.25	175.88	.21	7.4443	7.4531	-.12

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
3	134	1.000	448.150	3.997	176.25	176.27	-.01	8.9115	8.9107	.01
3	135	1.000	473.150	3.997	176.25	176.53	-.16	10.3655	10.3522	.13
3	136	1.000	498.150	3.997	176.25	176.78	-.30	11.8125	11.7812	.27
3	137	1.000	523.150	3.997	176.25	177.00	-.42	13.2523	13.1996	.40
3	138	1.000	548.150	3.997	176.25	177.29	-.59	14.6942	14.6087	.59
3	139	1.000	373.150	4.496	198.28	196.07	1.13	4.4826	4.4857	-.07
3	140	1.000	398.150	4.496	198.28	196.75	.78	6.2305	6.2498	-.31
3	141	1.000	423.150	4.496	198.28	197.39	.45	7.9652	7.9874	-.28
3	142	1.000	448.150	4.496	198.28	198.01	.14	9.6998	9.7101	-.11
3	143	1.000	473.150	4.496	198.28	198.43	-.07	11.4284	11.4211	.06
3	144	1.000	498.150	4.496	198.28	198.73	-.23	13.1510	13.1221	.22
3	145	1.000	523.150	4.496	198.28	199.00	-.36	14.8694	14.8140	.37
3	146	1.000	548.150	4.496	198.28	199.21	-.47	16.5808	16.4973	.51
3	147	0.000	373.150	4.996	220.31	212.79	3.54	4.5049	4.5149	-.22
3	148	0.000	398.150	4.996	220.31	217.08	1.49	6.4959	6.5403	-.68
3	149	1.000	423.150	4.996	220.31	218.50	.83	8.5133	8.5629	-.58
3	150	1.000	448.150	4.996	220.31	219.42	.41	10.5439	10.5812	-.35
3	151	1.000	473.150	4.996	220.31	220.00	.14	12.5765	12.5940	-.14
3	152	1.000	498.150	4.996	220.31	219.04	.58	14.5108	14.6004	-.61
3	153	1.000	523.150	4.996	220.31	219.56	.34	16.5352	16.5999	-.39
3	154	1.000	548.150	4.996	220.31	221.08	-.35	18.6691	18.5919	.42
3	155	1.000	369.960	5.995	264.37	264.89	-.19	4.2708	4.2702	.01
3	156	0.000	373.150	5.995	264.37	256.35	3.13	4.5758	4.5980	-.48
3	157	0.000	398.150	5.995	264.37	259.68	1.81	7.1657	7.2565	-1.25
3	158	1.000	423.150	5.995	264.37	261.66	1.04	9.8680	9.9698	-1.02
3	159	1.000	448.150	5.995	264.37	262.81	.60	12.6170	12.7048	-.69
3	160	1.000	473.150	5.995	264.37	263.54	.32	15.3862	15.4493	-.41
3	161	1.000	498.150	5.995	264.37	264.01	.14	18.1615	18.1961	-.19
3	162	1.000	523.150	5.995	264.37	264.37	.00	20.9408	20.9410	-.00
3	163	1.000	548.150	5.995	264.37	264.65	-.11	23.7182	23.6810	.16
3	164	1.000	369.960	6.994	308.44	307.03	.46	4.4725	4.4878	-.34
3	165	1.000	373.150	6.994	308.44	305.84	.85	4.8910	4.9268	-.73
3	166	1.000	398.150	6.994	308.44	305.85	.85	8.3826	8.4810	-1.16
3	167	1.000	423.150	6.994	308.44	306.68	.57	12.0192	12.1299	-.91
3	168	1.000	448.150	6.994	308.44	307.34	.36	15.7246	15.8219	-.61
3	169	1.000	473.150	6.994	308.44	307.98	.15	19.4828	19.5351	-.27
3	170	1.000	498.150	6.994	308.44	308.11	.11	23.2115	23.2569	-.19
3	171	1.000	523.150	6.994	308.44	308.31	.04	26.9585	26.9794	-.08
3	172	1.000	548.150	6.994	308.44	308.48	-.01	30.7045	30.6972	.02
3	173	1.000	369.960	7.994	352.50	351.48	.29	5.5587	5.6039	-.81
3	174	1.000	373.150	7.994	352.50	351.23	.36	6.1504	6.2121	-.99
3	175	1.000	398.150	7.994	352.50	351.03	.42	10.9472	11.0694	-1.10
3	176	1.000	423.150	7.994	352.50	351.51	.28	15.9019	16.0195	-.73
3	177	1.000	448.150	7.994	352.50	351.78	.20	20.9044	21.0144	-.52
3	178	1.000	473.150	7.994	352.50	352.07	.12	25.9493	26.0295	-.31
3	179	1.000	498.150	7.994	352.50	352.20	.09	30.9832	31.0500	-.22
3	180	1.000	369.960	8.993	396.56	395.92	.16	9.0068	9.0845	-.86
3	181	1.000	373.150	8.993	396.56	395.64	.23	9.8123	9.9297	-1.18
3	182	1.000	398.150	8.993	396.56	395.74	.21	16.4623	16.6064	-.87
3	183	1.000	423.150	8.993	396.56	395.85	.18	23.1801	23.3383	-.68
3	184	1.000	448.150	8.993	396.56	395.72	.21	29.8676	30.0913	-.74
3	185	1.000	369.960	9.992	440.62	440.44	.04	17.3357	17.3862	-.29
3	186	1.000	373.150	9.992	440.62	440.03	.14	18.3824	18.5461	-.88
3	187	1.000	398.150	9.992	440.62	439.81	.19	27.3699	27.6442	-.99

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
26	188	0.000	373.150	7.257	320.00	331.01	-3.33	5.3937	5.1269	5.20
26	189	0.000	383.150	7.257	320.00	326.39	-1.96	6.8647	6.6492	3.24
26	190	0.000	393.150	7.257	320.00	325.33	-1.64	8.4337	8.1975	2.88
26	191	0.000	403.150	7.257	320.00	324.36	-1.34	10.0028	9.7631	2.45
26	192	0.000	413.150	7.257	320.00	323.52	-1.09	11.5718	11.3411	2.03
26	193	0.000	363.150	7.710	340.00	349.40	-2.69	4.2169	3.9629	6.41
26	194	0.000	373.150	7.710	340.00	347.56	-2.18	5.9821	5.6812	5.30
26	195	0.000	383.150	7.710	340.00	345.91	-1.71	7.7473	7.4395	4.14
26	196	0.000	393.150	7.710	340.00	345.96	-1.72	9.6105	9.2223	4.21
26	197	0.000	403.150	7.710	340.00	343.35	-.97	11.2776	11.0223	2.32
26	198	0.000	413.150	7.710	340.00	343.43	-1.00	13.1409	12.8350	2.38
26	199	1.000	363.150	8.164	360.00	366.03	-1.65	4.9033	4.6147	6.25
26	200	1.000	373.150	8.164	360.00	363.96	-1.09	6.8647	6.6189	3.71
26	201	1.000	383.150	8.164	360.00	363.50	-.96	8.9241	8.6547	3.11
26	202	1.000	393.150	8.164	360.00	364.00	-1.10	11.0815	10.7121	3.45
26	203	1.000	403.150	8.164	360.00	363.34	-.92	13.1409	12.7852	2.78
26	204	1.000	413.150	8.164	360.00	362.74	-.75	15.2003	14.8699	2.22
26	205	1.000	353.150	8.617	380.00	380.82	-.22	3.5304	3.4836	1.34
26	206	1.000	363.150	8.617	380.00	381.36	-.36	5.8840	5.7809	1.78
26	207	1.000	373.150	8.617	380.00	381.32	-.35	8.2376	8.1146	1.52
26	208	1.000	383.150	8.617	380.00	381.94	-.51	10.6892	10.4727	2.07
26	209	1.000	393.150	8.617	380.00	382.27	-.59	13.1409	12.8483	2.28
26	210	1.000	403.150	8.617	380.00	381.77	-.46	15.4945	15.2369	1.69
26	211	1.000	413.150	8.617	380.00	381.91	-.50	17.9462	17.6352	1.76
26	212	1.000	353.150	9.071	400.00	400.11	-.03	5.0014	4.9903	.22
26	213	1.000	363.150	9.071	400.00	401.42	-.35	7.8453	7.6760	2.21
26	214	1.000	373.150	9.071	400.00	401.47	-.37	10.5912	10.3864	1.97
26	215	1.000	383.150	9.071	400.00	401.40	-.35	13.3370	13.1144	1.70
26	216	1.000	393.150	9.071	400.00	401.28	-.32	16.0829	15.8552	1.44
26	217	1.000	403.150	9.071	400.00	401.13	-.28	18.8288	18.6054	1.20
26	218	1.000	413.150	9.071	400.00	400.98	-.24	21.5746	21.3622	.99
26	219	1.000	343.150	9.298	410.00	409.26	.18	3.1381	3.2105	-2.25
26	220	1.000	353.150	9.298	410.00	410.01	-.00	6.0801	6.0794	.01
26	221	1.000	363.150	9.298	410.00	410.99	-.24	9.1202	8.9770	1.60
26	222	1.000	373.150	9.298	410.00	411.01	-.25	12.0622	11.8944	1.41
26	223	1.000	383.150	9.298	410.00	410.95	-.23	15.0042	14.8261	1.20
26	224	1.000	393.150	9.298	410.00	410.86	-.21	17.9462	17.7681	1.00
26	225	1.000	403.150	9.298	410.00	410.75	-.18	20.8882	20.7174	.82
26	226	1.000	413.150	9.298	410.00	411.03	-.25	23.9282	23.6714	1.08
26	227	1.000	343.150	9.524	420.00	419.02	.23	4.2169	4.3406	-2.85
26	228	1.000	353.150	9.524	420.00	420.08	-.02	7.4531	7.4407	.17
26	229	1.000	363.150	9.524	420.00	420.16	-.04	10.5912	10.5627	.27
26	230	1.000	373.150	9.524	420.00	420.15	-.04	13.7293	13.7002	.21
26	231	1.000	383.150	9.524	420.00	420.53	-.13	16.9655	16.8486	.69
26	232	1.000	393.150	9.524	420.00	420.41	-.10	20.1036	20.0047	.49
26	233	1.000	403.150	9.524	420.00	420.29	-.07	23.2418	23.1657	.33
26	234	1.000	413.150	9.524	420.00	420.52	-.12	26.4780	26.3296	.56
26	235	1.000	343.150	9.751	430.00	430.09	-.02	5.7859	5.7711	.26
26	236	1.000	353.150	9.751	430.00	430.03	-.01	9.1202	9.1145	.06
26	237	1.000	363.150	9.751	430.00	429.91	.02	12.4544	12.4742	-.16
26	238	1.000	373.150	9.751	430.00	430.18	-.04	15.8868	15.8451	.26
26	239	1.000	383.150	9.751	430.00	430.37	-.09	19.3191	19.2237	.50
26	240	1.000	393.150	9.751	430.00	430.17	-.04	22.6534	22.6071	.20
26	241	1.000	403.150	9.751	430.00	429.98	.00	25.9876	25.9931	-.02
26	242	1.000	413.150	9.751	430.00	430.42	-.10	29.5180	29.3797	.47
26	243	1.000	333.150	9.978	440.00	439.77	.05	3.9227	3.9617	-.99

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
26	244	1.000	343.150	9.978	440.00	440.03	-.01	7.5511	7.5453	.08
26	245	1.000	353.150	9.978	440.00	440.15	-.04	11.1796	11.1452	.31
26	246	1.000	363.150	9.978	440.00	439.81	.04	14.7100	14.7562	-.31
26	247	1.000	373.150	9.978	440.00	439.87	.03	18.3384	18.3744	-.20
26	248	1.000	383.150	9.978	440.00	439.90	.02	21.9669	21.9969	-.14
26	249	1.000	393.150	9.978	440.00	439.62	.09	25.4973	25.6213	-.48
26	250	1.000	403.150	9.978	440.00	439.37	.14	29.0277	29.2457	-.75
26	251	1.000	413.150	9.978	440.00	439.43	.13	32.6561	32.8686	-.65
26	252	1.000	333.150	10.205	450.00	449.22	.17	5.6879	5.8507	-2.78
26	253	1.000	343.150	10.205	450.00	449.58	.09	9.6105	9.7106	-1.03
26	254	1.000	353.150	10.205	450.00	449.45	.12	13.4351	13.5808	-1.07
26	255	1.000	363.150	10.205	450.00	449.32	.15	17.2597	17.4572	-1.13
26	256	1.000	373.150	10.205	450.00	449.20	.18	21.0843	21.3369	-1.18
26	257	1.000	383.150	10.205	450.00	449.39	.14	25.0070	25.2175	-.84
26	258	1.000	393.150	10.205	450.00	449.02	.22	28.7335	29.0970	-1.25
26	259	1.000	403.150	10.205	450.00	449.45	.12	32.7542	32.9739	-.67
26	260	1.000	413.150	10.205	450.00	449.13	.19	36.4807	36.8466	-.99
26	261	1.000	323.150	10.431	460.00	459.54	.10	3.9227	4.0265	-2.58
26	262	1.000	333.150	10.431	460.00	459.89	.02	8.1395	8.1683	-.35
26	263	1.000	343.150	10.431	460.00	459.44	.12	12.1602	12.3185	-1.29
26	264	1.000	353.150	10.431	460.00	459.38	.14	16.2790	16.4734	-1.18
26	265	1.000	363.150	10.431	460.00	459.61	.09	20.4959	20.6299	-.65
26	266	1.000	373.150	10.431	460.00	459.27	.16	24.5166	24.7857	-1.09
26	267	1.000	383.150	10.431	460.00	458.74	.28	28.4393	28.9390	-1.73
26	268	1.000	393.150	10.431	460.00	459.21	.17	32.7542	33.0881	-1.01
26	269	1.000	403.150	10.431	460.00	458.99	.22	36.7749	37.2316	-1.23
26	270	1.000	413.150	10.431	460.00	459.21	.17	40.9918	41.3686	-.91
26	271	1.000	313.150	10.658	470.00	469.55	.10	1.9613	2.0694	-5.22
26	272	1.000	323.150	10.658	470.00	469.48	.11	6.3743	6.5168	-2.19
26	273	1.000	333.150	10.658	470.00	469.08	.20	10.6892	10.9698	-2.56
26	274	1.000	343.150	10.658	470.00	469.33	.14	15.2003	15.4248	-1.46
26	275	1.000	353.150	10.658	470.00	469.00	.21	19.5152	19.8792	-1.83
26	276	1.000	363.150	10.658	470.00	468.98	.22	23.9282	24.3309	-1.65
26	277	1.000	373.150	10.658	470.00	468.97	.22	28.3412	28.7779	-1.52
26	278	1.000	383.150	10.658	470.00	468.98	.22	32.7542	33.2188	-1.40
26	279	1.000	393.150	10.658	470.00	468.79	.26	37.0691	37.6524	-1.55
26	280	1.000	403.150	10.658	470.00	468.84	.25	41.4821	42.0775	-1.41
26	281	1.000	413.150	10.658	470.00	469.08	.20	45.9932	46.4932	-1.08
26	282	1.000	313.150	10.885	480.00	478.83	.24	4.4130	4.7554	-7.20
26	283	1.000	323.150	10.885	480.00	479.03	.20	9.2183	9.5356	-3.33
26	284	1.000	333.150	10.885	480.00	478.92	.23	13.9254	14.3144	-2.72
26	285	1.000	343.150	10.885	480.00	478.84	.24	18.6326	19.0895	-2.39
26	286	1.000	353.150	10.885	480.00	479.01	.21	23.4379	23.8590	-1.77
26	287	1.000	363.150	10.885	480.00	478.96	.22	28.1451	28.6213	-1.66
26	288	1.000	373.150	10.885	480.00	478.93	.22	32.8523	33.3751	-1.57
26	289	1.000	383.150	10.885	480.00	478.92	.22	37.5595	38.1191	-1.47
26	290	1.000	393.150	10.885	480.00	479.29	.15	42.4628	42.8525	-.91
26	291	1.000	403.150	10.885	480.00	479.14	.18	47.0719	47.5743	-1.06
26	292	1.000	413.150	10.885	480.00	479.17	.17	51.7791	52.2839	-.97
26	293	1.000	303.150	11.112	490.00	488.63	.28	2.4517	2.8842	-15.00
26	294	1.000	313.150	11.112	490.00	488.96	.21	7.6492	8.0183	-4.60
26	295	1.000	323.150	11.112	490.00	489.23	.16	12.8467	13.1463	-2.28
26	296	1.000	333.150	11.112	490.00	489.25	.15	17.9462	18.2665	-1.75
26	297	1.000	343.150	11.112	490.00	489.28	.15	23.0456	23.3776	-1.42
26	298	1.000	353.150	11.112	490.00	489.33	.14	28.1451	28.4782	-1.17
26	299	1.000	363.150	11.112	490.00	489.20	.16	33.1465	33.5671	-1.25

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
26	300	1.000	373.150	11.112	490.00	489.29	.15	38.2459	38.6436	-1.03
26	301	1.000	383.150	11.112	490.00	489.22	.16	43.2473	43.7066	-1.05
26	302	1.000	393.150	11.112	490.00	489.03	.20	48.1507	48.7555	-1.24
26	303	1.000	403.150	11.112	490.00	489.18	.17	53.2501	53.7898	-1.00
26	304	1.000	413.150	11.112	490.00	489.19	.17	58.2515	58.8087	-.95
26	305	1.000	303.150	11.339	500.00	498.86	.23	5.9821	6.4211	-6.84
26	306	1.000	313.150	11.339	500.00	498.93	.21	11.4738	11.9256	-3.79
26	307	1.000	323.150	11.339	500.00	499.02	.20	16.9655	17.4172	-2.59
26	308	1.000	333.150	11.339	500.00	499.12	.18	22.4572	22.8951	-1.91
26	309	1.000	343.150	11.339	500.00	499.04	.19	27.8509	28.3586	-1.79
26	310	1.000	353.150	11.339	500.00	499.01	.20	33.2445	33.8068	-1.66
26	311	1.000	363.150	11.339	500.00	499.00	.20	38.6382	39.2389	-1.53
26	312	1.000	373.150	11.339	500.00	499.18	.16	44.1299	44.6545	-1.17
26	313	1.000	383.150	11.339	500.00	499.07	.19	49.4255	50.0528	-1.25
26	314	1.000	393.150	11.339	500.00	499.13	.17	54.8192	55.4335	-1.11
26	315	1.000	403.150	11.339	500.00	499.08	.18	60.1148	60.7962	-1.12
26	316	1.000	413.150	11.339	500.00	498.93	.22	65.3123	66.1405	-1.25
26	317	1.000	293.150	11.452	505.00	503.73	.25	2.2555	2.7362	-17.57
26	318	1.000	303.150	11.452	505.00	503.80	.24	7.9434	8.4476	-5.97
26	319	1.000	313.150	11.452	505.00	504.10	.18	13.7293	14.1433	-2.93
26	320	1.000	323.150	11.452	505.00	504.18	.16	19.4172	19.8230	-2.05
26	321	1.000	333.150	11.452	505.00	504.10	.18	25.0070	25.4861	-1.88
26	322	1.000	343.150	11.452	505.00	504.06	.19	30.5967	31.1321	-1.72
26	323	1.000	353.150	11.452	505.00	504.22	.16	36.2846	36.7604	-1.29
26	324	1.000	363.150	11.452	505.00	504.08	.18	41.7763	42.3705	-1.40
26	325	1.000	373.150	11.452	505.00	504.12	.17	47.3661	47.9619	-1.24
26	326	1.000	383.150	11.452	505.00	504.19	.16	52.9559	53.5342	-1.08
26	327	1.000	393.150	11.452	505.00	504.15	.17	58.4476	59.0870	-1.08
26	328	1.000	403.150	11.452	505.00	504.13	.17	63.9394	64.6201	-1.05
26	329	1.000	413.150	11.452	505.00	503.90	.22	69.2349	70.1331	-1.28
26	330	1.000	293.150	11.565	510.00	508.96	.20	4.3149	4.7483	-9.13
26	331	1.000	303.150	11.565	510.00	509.21	.16	10.2970	10.6587	-3.39
26	332	1.000	313.150	11.565	510.00	509.26	.15	16.1810	16.5498	-2.23
26	333	1.000	323.150	11.565	510.00	509.34	.13	22.0650	22.4218	-1.59
26	334	1.000	333.150	11.565	510.00	509.26	.14	27.8509	28.2744	-1.50
26	335	1.000	343.150	11.565	510.00	509.07	.18	33.5387	34.1073	-1.67
26	336	1.000	353.150	11.565	510.00	509.23	.15	39.4227	39.9200	-1.25
26	337	1.000	363.150	11.565	510.00	509.27	.14	45.2087	45.7124	-1.10
26	338	1.000	373.150	11.565	510.00	509.19	.16	50.8965	51.4839	-1.14
26	339	1.000	383.150	11.565	510.00	509.27	.14	56.6824	57.2344	-.96
26	340	1.000	393.150	11.565	510.00	509.25	.15	62.3703	62.9636	-.94
26	341	1.000	403.150	11.565	510.00	509.14	.17	67.9601	68.6712	-1.04
26	342	1.000	413.150	11.565	510.00	509.18	.16	73.6479	74.3572	-.95
26	343	1.000	293.150	11.679	515.00	513.95	.20	6.4724	6.9507	-6.88
26	344	1.000	303.150	11.679	515.00	514.17	.16	12.6506	13.0641	-3.17
26	345	1.000	313.150	11.679	515.00	514.21	.15	18.7307	19.1550	-2.21
26	346	1.000	323.150	11.679	515.00	514.29	.14	24.8108	25.2236	-1.64
26	347	1.000	333.150	11.679	515.00	514.39	.12	30.8909	31.2701	-1.21
26	348	1.000	343.150	11.679	515.00	514.21	.15	36.7749	37.2942	-1.39
26	349	1.000	353.150	11.679	515.00	514.37	.12	42.8551	43.2959	-1.02
26	350	1.000	363.150	11.679	515.00	514.27	.14	48.7391	49.2748	-1.09
26	351	1.000	373.150	11.679	515.00	514.34	.13	54.7211	55.2308	-.92
26	352	1.000	383.150	11.679	515.00	514.43	.11	60.7032	61.1638	-.75
26	353	1.000	393.150	11.679	515.00	514.42	.11	66.5872	67.0736	-.73
26	354	1.000	403.150	11.679	515.00	514.33	.13	72.3731	72.9601	-.80
26	355	1.000	413.150	11.679	515.00	514.27	.14	78.1590	78.8232	-.84

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
26	356	1.000	283.150	11.792	520.00	519.00	.19	2.5497	3.0055	-15.16
26	357	1.000	293.150	11.792	520.00	519.14	.17	8.9241	9.3532	-4.59
26	358	1.000	303.150	11.792	520.00	519.12	.17	15.2003	15.6740	-3.02
26	359	1.000	313.150	11.792	520.00	519.32	.13	21.5746	21.9690	-1.80
26	360	1.000	323.150	11.792	520.00	519.38	.12	27.8509	28.2388	-1.37
26	361	1.000	333.150	11.792	520.00	519.31	.13	34.0291	34.4836	-1.32
26	362	1.000	343.150	11.792	520.00	519.29	.14	40.2073	40.7035	-1.22
26	363	1.000	353.150	11.792	520.00	519.44	.11	46.4835	46.8984	-.88
26	364	1.000	363.150	11.792	520.00	519.48	.10	52.6617	53.0684	-.77
26	365	1.000	373.150	11.792	520.00	519.42	.11	58.7418	59.2133	-.80
26	366	1.000	383.150	11.792	520.00	519.52	.09	64.9200	65.3332	-.63
26	367	1.000	393.150	11.792	520.00	519.41	.11	70.9021	71.4279	-.74
26	368	1.000	403.150	11.792	520.00	519.45	.11	76.9822	77.4975	-.66
26	369	1.000	413.150	11.792	520.00	519.40	.12	82.9643	83.5420	-.69
26	370	1.000	283.150	11.906	525.00	524.59	.08	5.1975	5.4033	-3.81
26	371	1.000	293.150	11.906	525.00	524.45	.10	11.6699	11.9662	-2.48
26	372	1.000	303.150	11.906	525.00	524.73	.05	18.3384	18.4989	-.87
26	373	1.000	313.150	11.906	525.00	524.69	.06	24.8108	25.0026	-.77
26	374	1.000	323.150	11.906	525.00	524.71	.06	31.2832	31.4780	-.62
26	375	1.000	333.150	11.906	525.00	524.62	.07	37.6575	37.9257	-.71
26	376	1.000	343.150	11.906	525.00	524.71	.05	44.1299	44.3459	-.49
26	377	1.000	353.150	11.906	525.00	524.83	.03	50.6023	50.7386	-.27
26	378	1.000	363.150	11.906	525.00	524.85	.03	56.9766	57.1041	-.22
26	379	1.000	373.150	11.906	525.00	524.90	.02	63.3510	63.4424	-.14
26	380	1.000	383.150	11.906	525.00	524.86	.03	69.6272	69.7536	-.18
26	381	1.000	393.150	11.906	525.00	524.86	.03	75.9035	76.0377	-.18
26	382	1.000	403.150	11.906	525.00	524.78	.04	82.0817	82.2948	-.26
26	383	1.000	413.150	11.906	525.00	524.74	.05	88.2598	88.5250	-.30
26	384	1.000	273.150	12.019	530.00	529.56	.08	.9807	1.1990	-18.21
26	385	1.000	283.150	12.019	530.00	529.50	.09	7.7473	8.0179	-3.38
26	386	1.000	293.150	12.019	530.00	529.68	.06	14.6119	14.8006	-1.27
26	387	1.000	303.150	12.019	530.00	529.73	.05	21.3785	21.5497	-.79
26	388	1.000	313.150	12.019	530.00	529.67	.06	28.0470	28.2666	-.78
26	389	1.000	323.150	12.019	530.00	529.81	.04	34.8136	34.9523	-.40
26	390	1.000	333.150	12.019	530.00	529.84	.03	41.4821	41.6075	-.30
26	391	1.000	343.150	12.019	530.00	529.78	.04	48.0526	48.2325	-.37
26	392	1.000	353.150	12.019	530.00	529.76	.05	54.6230	54.8277	-.37
26	393	1.000	363.150	12.019	530.00	529.77	.04	61.1935	61.3933	-.33
26	394	1.000	373.150	12.019	530.00	529.82	.03	67.7640	67.9295	-.24
26	395	1.000	383.150	12.019	530.00	529.69	.06	74.1383	74.4364	-.40
26	396	1.000	393.150	12.019	530.00	529.79	.04	80.7087	80.9143	-.25
26	397	1.000	403.150	12.019	530.00	529.73	.05	87.0831	87.3633	-.32
26	398	1.000	413.150	12.019	530.00	529.70	.06	93.4574	93.7836	-.35
26	399	1.000	273.150	12.132	535.00	534.84	.03	3.7265	3.8135	-2.28
26	400	1.000	283.150	12.132	535.00	534.88	.02	10.7873	10.8602	-.67
26	401	1.000	293.150	12.132	535.00	534.82	.03	17.7500	17.8674	-.66
26	402	1.000	303.150	12.132	535.00	534.82	.03	24.7128	24.8375	-.50
26	403	1.000	313.150	12.132	535.00	534.73	.05	31.5774	31.7724	-.61
26	404	1.000	323.150	12.132	535.00	534.83	.03	38.5401	38.6731	-.34
26	405	1.000	333.150	12.132	535.00	534.95	.01	45.5029	45.5404	-.08
26	406	1.000	343.150	12.132	535.00	534.99	.00	52.3675	52.3750	-.01
26	407	1.000	353.150	12.132	535.00	535.06	-.01	59.2322	59.1773	.09
26	408	1.000	363.150	12.132	535.00	535.16	-.03	66.0968	65.9476	.23
26	409	1.000	373.150	12.132	535.00	535.08	-.02	72.7653	72.6862	.11
26	410	1.000	383.150	12.132	535.00	535.04	-.01	79.4339	79.3935	.05
26	411	1.000	393.150	12.132	535.00	535.03	-.01	86.1024	86.0697	.04

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
26	412	1.000	403.150	12.132	535.00	534.96	.01	92.6728	92.7151	-.05
26	413	1.000	413.150	12.132	535.00	535.01	-.00	99.3414	99.3299	.01
26	414	1.000	273.150	12.246	540.00	540.01	-.00	6.6685	6.6625	.09
26	415	1.000	283.150	12.246	540.00	539.97	.00	13.9254	13.9417	-.12
26	416	1.000	293.150	12.246	540.00	540.01	-.00	21.1824	21.1780	.02
26	417	1.000	303.150	12.246	540.00	539.96	.01	28.3412	28.3740	-.12
26	418	1.000	313.150	12.246	540.00	539.96	.01	35.5001	35.5316	-.09
26	419	1.000	323.150	12.246	540.00	540.01	-.00	42.6589	42.6520	.02
26	420	1.000	333.150	12.246	540.00	539.98	.00	49.7197	49.7363	-.03
26	421	1.000	343.150	12.246	540.00	540.10	-.02	56.8786	56.7852	.16
26	422	1.000	353.150	12.246	540.00	540.04	-.01	63.8413	63.7993	.07
26	423	1.000	363.150	12.246	540.00	540.12	-.02	70.9021	70.7789	.17
26	424	1.000	373.150	12.246	540.00	540.14	-.03	77.8648	77.7247	.18
26	425	1.000	383.150	12.246	540.00	540.27	-.05	84.9256	84.6369	.34
26	426	1.000	393.150	12.246	540.00	540.25	-.05	91.7902	91.5160	.30
26	427	1.000	403.150	12.246	540.00	540.17	-.03	98.5568	98.3623	.20
26	428	1.000	273.150	12.359	545.00	545.08	-.01	9.8067	9.7575	.50
26	429	1.000	283.150	12.359	545.00	545.12	-.02	17.3578	17.2741	.48
26	430	1.000	293.150	12.359	545.00	545.09	-.02	24.8108	24.7444	.27
26	431	1.000	303.150	12.359	545.00	545.12	-.02	32.2639	32.1711	.29
26	432	1.000	313.150	12.359	545.00	545.19	-.04	39.7169	39.5562	.41
26	433	1.000	323.150	12.359	545.00	545.19	-.04	47.0719	46.9013	.36
26	434	1.000	333.150	12.359	545.00	545.24	-.04	54.4269	54.2074	.41
26	435	1.000	343.150	12.359	545.00	545.32	-.06	61.7819	61.4753	.50
26	436	1.000	353.150	12.359	545.00	545.23	-.04	68.9407	68.7059	.34
26	437	1.000	363.150	12.359	545.00	545.19	-.03	76.0996	75.8998	.26
26	438	1.000	373.150	12.359	545.00	545.27	-.05	83.3565	83.0573	.36
26	439	1.000	383.150	12.359	545.00	545.30	-.05	90.5154	90.1792	.37
26	440	1.000	393.150	12.359	545.00	545.35	-.06	97.6742	97.2658	.42
26	441	1.000	273.150	12.472	550.00	550.32	-.06	13.3370	13.1105	1.73
26	442	1.000	283.150	12.472	550.00	550.42	-.08	21.1824	20.8694	1.50
26	443	1.000	293.150	12.472	550.00	550.44	-.08	28.9296	28.5786	1.23
26	444	1.000	303.150	12.472	550.00	550.52	-.09	36.6769	36.2409	1.20
26	445	1.000	313.150	12.472	550.00	550.52	-.10	44.3261	43.8586	1.07
26	446	1.000	323.150	12.472	550.00	550.58	-.10	51.9752	51.4332	1.05
26	447	1.000	333.150	12.472	550.00	550.47	-.09	59.4283	58.9660	.78
26	448	1.000	343.150	12.472	550.00	550.60	-.11	67.0775	66.4580	.93
26	449	1.000	353.150	12.472	550.00	550.58	-.10	74.5305	73.9100	.84
26	450	1.000	363.150	12.472	550.00	550.50	-.09	81.8855	81.3227	.69
26	451	1.000	373.150	12.472	550.00	550.47	-.08	89.2405	88.6969	.61
26	452	1.000	383.150	12.472	550.00	550.55	-.10	96.6936	96.0331	.69
26	453	1.000	273.150	12.586	555.00	555.57	-.10	17.1616	16.7339	2.56
26	454	1.000	283.150	12.586	555.00	555.57	-.10	25.2031	24.7401	1.87
26	455	1.000	293.150	12.586	555.00	555.53	-.10	33.1465	32.6933	1.39
26	456	1.000	303.150	12.586	555.00	555.55	-.10	41.0899	40.5964	1.22
26	457	1.000	313.150	12.586	555.00	555.61	-.11	49.0333	48.4516	1.20
26	458	1.000	323.150	12.586	555.00	555.62	-.11	56.8786	56.2607	1.10
26	459	1.000	333.150	12.586	555.00	555.67	-.12	64.7239	64.0252	1.09
26	460	1.000	343.150	12.586	555.00	555.57	-.10	72.3731	71.7461	.87
26	461	1.000	353.150	12.586	555.00	555.53	-.09	80.0223	79.4244	.75
26	462	1.000	363.150	12.586	555.00	555.60	-.11	87.7695	87.0609	.81
26	463	1.000	373.150	12.586	555.00	555.62	-.11	95.4187	94.6565	.81
26	464	1.000	383.150	12.586	555.00	555.60	-.11	102.9698	102.2118	.74
26	465	1.000	273.150	12.699	560.00	560.67	-.12	21.1824	20.6403	2.63
26	466	1.000	283.150	12.699	560.00	560.60	-.11	29.4200	28.8991	1.80
26	467	1.000	293.150	12.699	560.00	560.71	-.13	37.7556	37.1014	1.76

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
26	468	1.000	303.150	12.699	560.00	560.77	-.14	45.9932	45.2503	1.64
26	469	1.000	313.150	12.699	560.00	560.68	-.12	54.0346	53.3482	1.29
26	470	1.000	323.150	12.699	560.00	560.82	-.15	62.2722	61.3970	1.43
26	471	1.000	333.150	12.699	560.00	560.74	-.13	70.2156	69.3981	1.18
26	472	1.000	343.150	12.699	560.00	560.70	-.12	78.1590	77.3530	1.04
26	473	1.000	353.150	12.699	560.00	560.70	-.12	86.1024	85.2625	.99
26	474	1.000	363.150	12.699	560.00	560.66	-.12	93.9477	93.1278	.88
26	475	1.000	373.150	12.699	560.00	560.73	-.13	101.8911	100.9497	.93
26	476	1.000	273.150	12.813	565.00	565.75	-.13	25.4973	24.8429	2.63
26	477	1.000	283.150	12.813	565.00	565.62	-.11	33.9310	33.3595	1.71
26	478	1.000	293.150	12.813	565.00	565.66	-.12	42.4628	41.8162	1.55
26	479	1.000	303.150	12.813	565.00	565.66	-.12	50.8965	50.2161	1.35
26	480	1.000	313.150	12.813	565.00	565.71	-.13	59.3302	58.5619	1.31
26	481	1.000	323.150	12.813	565.00	565.63	-.11	67.5678	66.8554	1.07
26	482	1.000	333.150	12.813	565.00	565.60	-.11	75.8054	75.0984	.94
26	483	1.000	343.150	12.813	565.00	565.61	-.11	84.0430	83.2923	.90
26	484	1.000	353.150	12.813	565.00	565.58	-.10	92.1825	91.4381	.81
26	485	1.000	363.150	12.813	565.00	565.59	-.11	100.3220	99.5371	.79
26	486	1.000	273.150	12.926	570.00	570.80	-.14	30.1064	29.3552	2.56
26	487	1.000	283.150	12.926	570.00	570.70	-.12	38.8343	38.1349	1.83
26	488	1.000	293.150	12.926	570.00	570.68	-.12	47.5623	46.8513	1.52
26	489	1.000	303.150	12.926	570.00	570.62	-.11	56.1921	55.5076	1.23
26	490	1.000	313.150	12.926	570.00	570.62	-.11	64.8220	64.1065	1.12
26	491	1.000	323.150	12.926	570.00	570.59	-.10	73.3537	72.6501	.97
26	492	1.000	333.150	12.926	570.00	570.60	-.10	81.8855	81.1401	.92
26	493	1.000	343.150	12.926	570.00	570.50	-.09	90.2212	89.5780	.72
26	494	1.000	353.150	12.926	570.00	570.51	-.09	98.6549	97.9653	.70
26	495	1.000	273.150	13.039	575.00	575.81	-.14	35.0097	34.1910	2.39
26	496	1.000	283.150	13.039	575.00	575.75	-.13	44.0319	43.2393	1.83
26	497	1.000	293.150	13.039	575.00	575.66	-.11	52.9559	52.2208	1.41
26	498	1.000	303.150	13.039	575.00	575.55	-.10	61.7819	61.1389	1.05
26	499	1.000	313.150	13.039	575.00	575.50	-.09	70.6079	69.9962	.87
26	500	1.000	323.150	13.039	575.00	575.50	-.09	79.4339	78.7951	.81
26	501	1.000	333.150	13.039	575.00	575.47	-.08	88.1618	87.5373	.71
26	502	1.000	343.150	13.039	575.00	575.41	-.07	96.7916	96.2246	.59
26	503	1.000	273.150	13.153	580.00	580.69	-.12	40.1092	39.3645	1.89
26	504	1.000	283.150	13.153	580.00	580.57	-.10	49.3274	48.6870	1.32
26	505	1.000	293.150	13.153	580.00	580.51	-.09	58.5457	57.9391	1.05
26	506	1.000	303.150	13.153	580.00	580.36	-.06	67.5678	67.1244	.66
26	507	1.000	313.150	13.153	580.00	580.34	-.06	76.6880	76.2456	.58
26	508	1.000	323.150	13.153	580.00	580.30	-.05	85.7101	85.3051	.47
26	509	1.000	333.150	13.153	580.00	580.24	-.04	94.6342	94.3049	.35
26	510	1.000	343.150	13.153	580.00	580.15	-.03	103.4602	103.2468	.21
26	511	1.000	273.150	13.266	585.00	585.53	-.09	45.5029	44.8904	1.36
26	512	1.000	283.150	13.266	585.00	585.44	-.07	55.0153	54.4927	.96
26	513	1.000	293.150	13.266	585.00	585.33	-.06	64.4297	64.0210	.64
26	514	1.000	303.150	13.266	585.00	585.20	-.03	73.7460	73.4790	.36
26	515	1.000	313.150	13.266	585.00	585.21	-.04	83.1604	82.8696	.35
26	516	1.000	323.150	13.266	585.00	585.13	-.02	92.3786	92.1951	.20
26	517	1.000	333.150	13.266	585.00	585.03	-.00	101.4988	101.4579	.04
26	518	1.000	273.150	13.380	590.00	590.09	-.02	50.8965	50.7836	.22
26	519	1.000	283.150	13.380	590.00	590.02	-.00	60.7032	60.6714	.05
26	520	1.000	293.150	13.380	590.00	589.95	.01	70.4117	70.4816	-.10
26	521	1.000	303.150	13.380	590.00	589.93	.01	80.1203	80.2179	-.12
26	522	1.000	313.150	13.380	590.00	589.83	.03	89.6328	89.8833	-.28
26	523	1.000	323.150	13.380	590.00	589.71	.05	99.0472	99.4805	-.44

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
1201	524	1.000	90.000	16.799	740.78	739.91	.12	34.7214	37.6015	-7.66
1202	525	1.000	90.000	16.775	739.73	738.86	.12	31.2781	34.1200	-8.33
1203	526	1.000	90.000	16.751	738.67	737.79	.12	27.8346	30.6798	-9.27
1204	527	1.000	90.000	16.726	737.59	736.71	.12	24.3913	27.1815	-10.26
1205	528	1.000	90.000	16.701	736.48	735.62	.12	20.9479	23.6556	-11.45
1206	529	1.000	90.000	16.675	735.31	734.52	.11	17.5048	19.9806	-12.39
1207	530	1.000	90.000	16.648	734.15	733.40	.10	14.0615	16.3674	-14.09
1208	531	1.000	90.000	16.621	732.96	732.26	.09	10.6186	12.7208	-16.53
1209	532	1.000	90.000	16.594	731.76	731.12	.09	7.1754	9.1096	-21.23
1210	533	1.000	90.000	16.567	730.57	729.95	.08	3.7326	5.5597	-32.86
1001	534	1.000	100.000	16.594	731.74	730.90	.11	35.7539	38.3478	-6.76
1002	535	1.000	100.000	16.561	730.28	729.55	.10	31.6219	33.8520	-6.59
1003	536	1.000	100.000	16.530	728.94	728.29	.09	27.8341	29.8013	-6.60
1004	537	1.000	100.000	16.503	727.74	727.13	.08	24.3910	26.1906	-6.87
1005	538	1.000	100.000	16.476	726.53	725.95	.08	20.9477	22.6289	-7.43
1006	539	1.000	100.000	16.448	725.29	724.76	.07	17.5047	19.0268	-8.00
1007	540	1.000	100.000	16.420	724.05	723.55	.07	14.0615	15.4877	-9.21
1008	541	1.000	100.000	16.397	723.04	722.57	.07	11.3072	12.6299	-10.47
1009	542	1.000	100.000	16.374	722.03	721.58	.06	8.5527	9.8048	-12.77
1010	543	1.000	100.000	16.356	721.24	720.58	.09	5.7985	7.6069	-23.77
1011	544	1.000	100.000	16.338	720.46	719.82	.09	3.7328	5.4530	-31.55
1012	545	1.000	100.000	16.321	719.70	719.06	.09	1.6670	3.3899	-50.82
501	546	1.000	110.000	16.376	722.15	721.41	.10	34.9955	37.1324	-5.75
502	547	1.000	110.000	16.347	720.84	720.10	.10	31.2768	33.3625	-6.25
503	548	1.000	110.000	16.318	719.57	718.88	.10	27.8332	29.7598	-6.47
504	549	1.000	110.000	16.288	718.26	717.63	.09	24.3900	26.1237	-6.64
505	550	1.000	110.000	16.259	716.96	716.37	.08	20.9466	22.5535	-7.12
506	551	1.000	110.000	16.229	715.67	715.14	.07	17.6413	19.0598	-7.44
507	552	1.000	110.000	16.201	714.41	713.97	.06	14.5424	15.6992	-7.37
508	553	1.000	110.000	16.178	713.39	712.97	.06	11.9258	13.0318	-8.49
509	554	1.000	110.000	16.155	712.39	711.93	.07	9.2401	10.4411	-11.50
510	555	1.000	110.000	16.131	711.35	710.85	.07	6.4857	7.7448	-16.26
511	556	1.000	110.000	16.114	710.60	710.09	.07	4.5578	5.8500	-22.09
512	557	1.000	110.000	16.098	709.89	709.35	.08	2.6985	4.0601	-33.54
513	558	1.000	110.000	16.087	709.40	708.85	.08	1.4591	2.8237	-48.33
514	559	1.000	110.000	16.082	709.18	708.61	.08	.8761	2.2849	-61.66
601	560	1.000	120.000	16.180	713.50	712.77	.10	36.3748	38.3563	-5.17
602	561	1.000	120.000	16.141	711.78	711.12	.09	31.9673	33.7323	-5.23
603	562	1.000	120.000	16.104	710.16	709.54	.09	27.8350	29.4408	-5.45
604	563	1.000	120.000	16.073	708.76	708.21	.08	24.3919	25.8077	-5.49
605	564	1.000	120.000	16.041	707.36	706.86	.07	20.9485	22.2216	-5.73
606	565	1.000	120.000	16.008	705.91	705.48	.06	17.5053	18.5722	-5.74
607	566	1.000	120.000	15.977	704.54	704.14	.06	14.1999	15.1895	-6.52
608	567	1.000	120.000	15.952	703.45	703.06	.06	11.5833	12.5220	-7.50
609	568	1.000	120.000	15.923	702.18	701.79	.05	8.5533	9.4667	-9.65
610	569	1.000	120.000	15.897	701.02	700.63	.06	5.7991	6.7266	-13.79
611	570	1.000	120.000	15.878	700.17	699.74	.06	3.7334	4.7320	-21.10
612	571	1.000	120.000	15.862	699.45	699.00	.06	2.0118	3.0527	-34.10
613	572	1.000	120.000	15.853	699.08	698.62	.07	1.1512	2.2083	-47.87
614	573	1.000	120.000	15.848	698.84	698.39	.07	.6141	1.6608	-63.02
401	574	1.000	130.000	15.958	703.72	703.31	.06	35.3418	36.3798	-2.85
402	575	1.000	130.000	15.922	702.13	701.74	.06	31.4162	32.3954	-3.02

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
403	576	1.000	130.000	15.889	700.68	700.34	.05	27.9727	28.8070	-2.90
404	577	1.000	130.000	15.855	699.16	698.85	.04	24.3917	25.1302	-2.94
405	578	1.000	130.000	15.821	697.68	697.40	.04	20.9484	21.6014	-3.02
406	579	1.000	130.000	15.746	694.37	694.18	.03	13.5113	13.9329	-3.03
407	580	1.000	130.000	15.719	693.16	692.96	.03	10.7569	11.1992	-3.95
408	581	1.000	130.000	15.690	691.88	691.65	.03	7.8647	8.3687	-6.02
409	582	1.000	130.000	15.666	690.82	690.55	.04	5.4548	6.0411	-9.71
410	583	1.000	130.000	15.648	690.05	689.75	.04	3.7333	4.3790	-14.75
411	584	1.000	130.000	15.632	689.34	689.01	.05	2.1495	2.8547	-24.70
412	585	1.000	130.000	15.625	689.02	688.69	.05	1.4609	2.1678	-32.61
413	586	1.000	130.000	15.620	688.79	688.46	.05	.9789	1.6708	-41.41
414	587	1.000	130.000	15.616	688.64	688.29	.05	.6277	1.3527	-53.60
701	588	1.000	140.000	15.769	695.36	694.91	.06	36.7881	37.8574	-2.82
702	589	1.000	140.000	15.727	693.50	693.16	.05	32.6560	33.4459	-2.36
703	590	1.000	140.000	15.684	691.63	691.37	.04	28.5239	29.1191	-2.04
704	591	1.000	140.000	15.642	689.77	689.55	.03	24.3920	24.8962	-2.03
705	592	1.000	140.000	15.605	688.15	688.00	.02	20.9487	21.2887	-1.60
706	593	1.000	140.000	15.569	686.53	686.41	.02	17.5056	17.7504	-1.38
707	594	1.000	140.000	15.534	685.00	684.93	.01	14.3378	14.4764	-.96
708	595	1.000	140.000	15.504	683.70	683.65	.01	11.6523	11.7402	-.75
709	596	1.000	140.000	15.474	682.34	682.32	.00	8.8977	8.9381	-.45
710	597	1.000	140.000	15.449	681.27	681.21	.01	6.6255	6.7526	-1.88
711	598	1.000	140.000	15.426	680.23	680.11	.02	4.4221	4.6574	-5.05
712	599	1.000	140.000	15.407	679.42	679.25	.03	2.7005	3.0423	-11.24
713	600	1.000	140.000	15.397	678.95	678.72	.03	1.6676	2.1192	-21.31
714	601	1.000	140.000	15.389	678.61	678.37	.03	.9791	1.4433	-32.16
801	602	1.000	160.000	15.354	677.06	676.98	.01	36.4438	36.6299	-.51
802	603	1.000	160.000	15.304	674.88	674.82	.01	31.9674	32.0922	-.39
803	604	1.000	160.000	15.258	672.82	672.78	.01	27.8352	27.9097	-.27
804	605	1.000	160.000	15.218	671.06	671.04	.00	24.3921	24.4340	-.17
805	606	1.000	160.000	15.178	669.31	669.26	.01	20.9487	21.0403	-.44
806	607	1.000	160.000	15.137	667.48	667.45	.01	17.5056	17.5700	-.37
807	608	1.000	160.000	15.094	665.60	665.59	.00	14.0623	14.0805	-.13
808	609	1.000	160.000	15.059	664.06	664.07	-.00	11.3080	11.2808	.24
809	610	1.000	160.000	15.024	662.51	662.52	-.00	8.5534	8.5273	.31
810	611	1.000	160.000	14.988	660.92	660.94	-.00	5.7992	5.7511	.84
811	612	1.000	160.000	14.960	659.70	659.74	-.01	3.7335	3.6738	1.62
812	613	1.000	160.000	14.938	658.72	658.72	-.00	2.0119	2.0056	.32
813	614	1.000	160.000	14.924	658.08	658.10	-.00	.9791	.9517	2.88
901	615	1.000	180.000	14.963	659.84	659.89	-.01	37.4764	37.3754	.27
902	616	1.000	180.000	14.912	657.56	657.65	-.01	33.3443	33.1734	.52
903	617	1.000	180.000	14.858	655.21	655.36	-.02	29.2121	28.9623	.86
904	618	1.000	180.000	14.804	652.80	652.99	-.03	25.0803	24.7507	1.33
905	619	1.000	180.000	14.749	650.40	650.55	-.02	20.9483	20.6943	1.23
906	620	1.000	180.000	14.701	648.28	648.46	-.03	17.5052	17.2164	1.68
907	621	1.000	180.000	14.653	646.17	646.35	-.03	14.1308	13.8317	2.16
908	622	1.000	180.000	14.613	644.37	644.55	-.03	11.3076	11.0336	2.48
909	623	1.000	180.000	14.571	642.53	642.74	-.03	8.5530	8.2277	3.95
910	624	1.000	180.000	14.528	640.64	640.90	-.04	5.7988	5.4182	7.03
911	625	1.000	180.000	14.495	639.19	639.48	-.05	3.7330	3.3175	12.52
912	626	1.000	180.000	14.462	637.75	638.03	-.04	1.6671	1.2636	31.93
913	627	1.000	180.000	14.452	637.28	637.55	-.04	.9786	.6002	63.04

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
2901	628	1.000	200.000	14.535	640.95	640.72	.04	34.7203	35.0966	-1.07
2902	629	1.000	200.000	14.484	638.70	638.57	.02	31.2770	31.4860	-.66
2903	630	1.000	200.000	14.431	636.38	636.36	.00	27.8334	27.8681	-.12
2904	631	1.000	200.000	14.378	634.02	634.09	-.01	24.3903	24.2837	.44
2905	632	1.000	200.000	14.322	631.57	631.74	-.03	20.9469	20.6993	1.20
2906	633	1.000	200.000	14.265	629.04	629.33	-.05	17.5038	17.0986	2.37
2907	634	1.000	200.000	14.206	626.45	626.83	-.06	14.0606	13.5460	3.80
2908	635	1.000	200.000	14.158	624.33	624.77	-.07	11.3062	10.7260	5.41
2909	636	1.000	200.000	14.109	622.19	622.65	-.07	8.5516	7.9584	7.45
2910	637	1.000	200.000	14.060	619.99	620.47	-.08	5.7974	5.2118	11.24
2911	638	1.000	200.000	14.022	618.32	618.78	-.08	3.7317	3.1679	17.80
2912	639	1.000	200.000	13.984	616.64	617.06	-.07	1.6657	1.1720	42.13
3001	640	1.000	220.000	14.129	623.05	623.03	.00	34.7208	34.7474	-.08
3002	641	1.000	220.000	14.070	620.46	620.58	-.02	31.2774	31.1005	.57
3003	642	1.000	220.000	14.010	617.82	618.06	-.04	27.8339	27.5096	1.18
3004	643	1.000	220.000	13.950	615.17	615.44	-.04	24.3908	24.0357	1.48
3005	644	1.000	220.000	13.889	612.48	612.74	-.04	20.9474	20.6331	1.52
3006	645	1.000	220.000	13.826	609.70	609.93	-.04	17.5043	17.2305	1.59
3007	646	1.000	220.000	13.761	606.82	607.00	-.03	14.0610	13.8545	1.49
3008	647	1.000	220.000	13.704	604.30	604.57	-.04	11.3067	11.0074	2.72
3009	648	1.000	220.000	13.645	601.69	602.06	-.06	8.5521	8.1566	4.85
3010	649	1.000	220.000	13.584	599.00	599.45	-.07	5.7979	5.3387	8.60
3011	650	1.000	220.000	13.537	596.96	597.42	-.08	3.7321	3.2695	14.15
3012	651	1.000	220.000	13.490	594.88	595.34	-.08	1.6662	1.2194	36.64
3101	652	1.000	240.000	13.738	605.80	605.27	.09	34.7217	35.3947	-1.90
3102	653	1.000	240.000	13.669	602.75	602.48	.05	31.2784	31.6114	-1.05
3103	654	1.000	240.000	13.598	599.65	599.58	.01	27.8348	27.9215	-.31
3104	655	1.000	240.000	13.527	596.51	596.56	-.01	24.3916	24.3384	.22
3105	656	1.000	240.000	13.454	593.28	593.41	-.02	20.9482	20.8073	.68
3106	657	1.000	240.000	13.379	589.95	590.12	-.03	17.5052	17.3376	.97
3107	658	1.000	240.000	13.301	586.54	586.66	-.02	14.0619	13.9383	.89
3108	659	1.000	240.000	13.236	583.65	583.77	-.02	11.3076	11.1980	.98
3109	660	1.000	240.000	13.166	580.56	580.75	-.03	8.5530	8.3877	1.97
3110	661	1.000	240.000	13.093	577.36	577.58	-.04	5.7988	5.6083	3.40
3111	662	1.000	240.000	13.035	574.82	575.10	-.05	3.7331	3.5014	6.62
3112	663	1.000	240.000	12.976	572.21	572.52	-.05	1.6672	1.4215	17.28
3201	664	1.000	260.000	13.320	587.38	587.38	-.00	34.7213	34.7204	.00
3202	665	1.000	260.000	13.245	584.05	584.18	-.02	31.2780	31.1370	.45
3203	666	1.000	260.000	13.166	580.60	580.84	-.04	27.8346	27.5877	.89
3204	667	1.000	260.000	13.101	577.73	578.05	-.06	25.0801	24.7671	1.26
3205	668	1.000	260.000	13.034	574.75	575.15	-.07	22.3253	21.9556	1.68
3206	669	1.000	260.000	12.964	571.69	572.13	-.08	19.5709	19.1867	2.00
3207	670	1.000	260.000	12.893	568.52	568.96	-.08	16.8163	16.4449	2.26
3208	671	1.000	260.000	12.818	565.25	565.64	-.07	14.0619	13.7433	2.32
3209	672	1.000	260.000	12.739	561.75	562.15	-.07	11.3076	11.0035	2.76
3210	673	1.000	260.000	12.676	558.98	559.40	-.08	9.2417	8.9328	3.46
3211	674	1.000	260.000	12.611	556.09	556.52	-.08	7.1760	6.8732	4.41
3212	675	1.000	260.000	12.543	553.12	553.51	-.07	5.1103	4.8477	5.42
3213	676	1.000	260.000	12.472	549.98	550.35	-.07	3.0445	2.8122	8.26
3214	677	1.000	260.000	12.422	547.77	548.14	-.07	1.6673	1.4397	15.81
3301	678	1.000	275.000	13.017	574.00	573.85	.03	34.7209	34.8709	-.43
3302	679	1.000	275.000	12.934	570.35	570.31	.01	31.2776	31.3188	-.13

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
3303	680	1.000	275.000	12.846	566.49	566.58	-.02	27.8341	27.7497	.30
3304	681	1.000	275.000	12.774	563.28	563.46	-.03	25.0796	24.9305	.60
3305	682	1.000	275.000	12.697	559.89	560.19	-.05	22.3248	22.0817	1.10
3306	683	1.000	275.000	12.617	556.39	556.75	-.07	19.5704	19.2874	1.47
3307	684	1.000	275.000	12.536	552.80	553.13	-.06	16.8157	16.5724	1.47
3308	685	1.000	275.000	12.451	549.05	549.31	-.05	14.0612	13.8837	1.28
3309	686	1.000	275.000	12.361	545.09	545.24	-.03	11.3070	11.2077	.89
3310	687	1.000	275.000	12.288	541.88	542.01	-.02	9.2410	9.1659	.82
3311	688	1.000	275.000	12.210	538.43	538.59	-.03	7.1752	7.0791	1.36
3312	689	1.000	275.000	12.127	534.74	534.98	-.04	5.1095	4.9791	2.62
3313	690	1.000	275.000	12.051	531.43	531.79	-.07	3.3880	3.2015	5.82
3314	691	1.000	275.000	11.974	528.01	528.41	-.08	1.6665	1.4695	13.41
3401	692	1.000	290.000	12.702	560.13	560.22	-.02	34.7213	34.6376	.24
3402	693	1.000	290.000	12.608	555.97	556.29	-.06	31.2781	31.0094	.87
3403	694	1.000	290.000	12.511	551.69	552.12	-.08	27.8346	27.4860	1.27
3404	695	1.000	290.000	12.428	548.06	548.61	-.10	25.0802	24.6626	1.69
3405	696	1.000	290.000	12.342	544.25	544.90	-.12	22.3255	21.8570	2.14
3406	697	1.000	290.000	12.251	540.24	540.99	-.14	19.5710	19.0643	2.66
3407	698	1.000	290.000	12.156	536.06	536.82	-.14	16.8164	16.3323	2.96
3408	699	1.000	290.000	12.057	531.66	532.38	-.13	14.0622	13.6379	3.11
3409	700	1.000	290.000	11.949	526.92	527.59	-.13	11.3077	10.9363	3.40
3410	701	1.000	290.000	11.864	523.17	523.74	-.11	9.2418	8.9475	3.29
3411	702	1.000	290.000	11.773	519.15	519.63	-.09	7.1761	6.9438	3.34
3412	703	1.000	290.000	11.672	514.71	515.20	-.10	5.1104	4.8915	4.47
3413	704	1.000	290.000	11.581	510.69	511.23	-.10	3.3888	3.1678	6.98
3414	705	1.000	290.000	11.486	506.50	506.94	-.09	1.6674	1.4977	11.33
2801	706	1.000	300.000	12.493	550.92	551.07	-.03	34.7209	34.6014	.35
2802	707	1.000	300.000	12.395	546.57	546.84	-.05	31.2776	31.0625	.69
2803	708	1.000	300.000	12.288	541.86	542.36	-.09	27.8341	27.4645	1.35
2804	709	1.000	300.000	12.201	538.02	538.55	-.10	25.0795	24.7096	1.50
2805	710	1.000	300.000	12.109	533.99	534.52	-.10	22.3248	21.9737	1.60
2806	711	1.000	300.000	12.011	529.64	530.23	-.11	19.5703	19.2037	1.91
2807	712	1.000	300.000	11.904	524.93	525.64	-.14	16.8157	16.4035	2.51
2808	713	1.000	300.000	11.790	519.92	520.70	-.15	14.0613	13.6454	3.05
2809	714	1.000	300.000	11.670	514.61	515.34	-.14	11.3070	10.9489	3.27
2810	715	1.000	300.000	11.573	510.32	510.98	-.13	9.2410	8.9427	3.34
2811	716	1.000	300.000	11.462	505.42	506.26	-.17	7.1752	6.8236	5.15
2812	717	1.000	300.000	11.348	500.42	501.12	-.14	5.1095	4.8428	5.51
2813	718	1.000	300.000	11.265	496.73	497.40	-.13	3.7324	3.4948	6.80
2814	719	1.000	300.000	11.174	492.75	493.40	-.13	2.3551	2.1398	10.06

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
24	932	1.000	288.263	11.518	507.93	507.82	.02	.9950	1.0384	-4.18
24	933	1.000	288.981	11.518	507.92	507.80	.02	1.4087	1.4541	-3.12
24	934	1.000	291.393	11.518	507.91	507.76	.03	2.7986	2.8591	-2.12
24	935	1.000	293.489	11.518	507.89	507.72	.03	4.0067	4.0744	-1.66
24	936	1.000	296.555	11.517	507.87	507.68	.04	5.7744	5.8539	-1.36
24	937	1.000	300.104	11.516	507.84	507.64	.04	7.8212	7.9082	-1.10
24	938	1.000	303.696	11.516	507.82	507.61	.04	9.8936	9.9888	-.95
24	939	1.000	307.131	11.515	507.79	507.58	.04	11.8760	11.9708	-.79
24	940	1.000	310.771	11.515	507.77	507.57	.04	13.9780	14.0735	-.68
24	941	1.000	314.179	11.514	507.74	507.56	.04	15.9460	16.0341	-.55
24	942	1.000	317.799	11.514	507.72	507.56	.03	18.0380	18.1195	-.45
24	943	1.000	321.470	11.513	507.69	507.56	.03	20.1600	20.2263	-.33
24	944	1.000	277.973	11.837	521.97	521.90	.01	.5517	.5835	-5.45
24	945	1.000	278.268	11.837	521.97	521.90	.01	.7419	.7741	-4.16
24	946	1.000	280.501	11.836	521.95	521.89	.01	2.1805	2.2070	-1.20
24	947	1.000	283.701	11.836	521.93	521.88	.01	4.2392	4.2611	-.51
24	948	1.000	288.949	11.835	521.88	521.87	.00	7.6082	7.6135	-.07
24	949	1.000	294.597	11.834	521.84	521.85	-.00	11.2241	11.2173	.06
24	950	1.000	299.983	11.833	521.80	521.84	-.01	14.6620	14.6428	.13
24	951	1.000	308.342	11.832	521.74	521.80	-.01	19.9780	19.9412	.18
24	952	1.000	319.913	11.830	521.65	521.76	-.02	27.3000	27.2340	.24
24	953	1.000	267.752	12.155	536.01	535.79	.04	.4041	.5227	-22.69
24	954	1.000	268.361	12.155	536.00	535.78	.04	.8370	.9521	-12.09
24	955	1.000	269.318	12.155	536.00	535.78	.04	1.5169	1.6348	-7.21
24	956	1.000	270.036	12.155	535.99	535.78	.04	2.0268	2.1413	-5.35
24	957	1.000	271.190	12.155	535.98	535.77	.04	2.8457	2.9581	-3.80
24	958	1.000	273.224	12.154	535.96	535.77	.04	4.2877	4.3946	-2.43
24	959	1.000	275.321	12.154	535.95	535.76	.04	5.7722	5.8794	-1.82
24	960	1.000	277.531	12.153	535.93	535.75	.03	7.3345	7.4365	-1.37
24	961	1.000	280.521	12.153	535.90	535.74	.03	9.4447	9.5375	-.97
24	962	1.000	283.740	12.152	535.88	535.73	.03	11.7120	11.8018	-.76
24	963	1.000	287.984	12.151	535.84	535.71	.02	14.6930	14.7714	-.53
24	964	1.000	293.573	12.150	535.80	535.69	.02	18.6070	18.6775	-.38
24	965	1.000	299.091	12.149	535.75	535.67	.02	22.4570	22.5134	-.25
24	966	1.000	304.757	12.148	535.70	535.64	.01	26.3950	26.4392	-.17
24	967	1.000	312.701	12.147	535.64	535.59	.01	31.8910	31.9273	-.11
24	968	1.000	323.740	12.145	535.55	535.52	.01	39.4790	39.5054	-.07
24	969	1.000	258.574	12.446	548.83	548.46	.07	.7550	.9794	-22.91
24	970	1.000	260.283	12.446	548.82	548.47	.06	2.0907	2.3072	-9.38
24	971	1.000	264.687	12.445	548.78	548.49	.05	5.5231	5.7107	-3.29
24	972	1.000	269.204	12.444	548.74	548.50	.04	9.0289	9.1889	-1.74
24	973	1.000	273.221	12.443	548.70	548.50	.04	12.1340	12.2680	-1.09
24	974	1.000	278.846	12.442	548.65	548.50	.03	16.4630	16.5672	-.63
24	975	1.000	283.771	12.441	548.61	548.50	.02	20.2350	20.3188	-.41
24	976	1.000	288.215	12.440	548.57	548.48	.02	23.6230	23.6893	-.28
24	977	1.000	293.359	12.439	548.53	548.46	.01	27.5270	27.5819	-.20
24	978	1.000	297.819	12.438	548.49	548.43	.01	30.8960	30.9413	-.15
24	979	1.000	300.501	12.438	548.46	548.42	.01	32.9150	32.9515	-.11
24	980	1.000	305.386	12.437	548.42	548.38	.01	36.5800	36.6151	-.10
24	981	1.000	310.827	12.435	548.37	548.33	.01	40.6410	40.6767	-.09
24	982	1.000	250.200	12.689	559.53	559.02	.09	.7767	1.1235	-30.87
24	983	1.000	251.067	12.688	559.52	559.04	.09	1.5143	1.8463	-17.98
24	984	1.000	251.924	12.688	559.51	559.05	.08	2.2426	2.5600	-12.40
24	985	1.000	253.890	12.688	559.49	559.08	.07	3.9104	4.1969	-6.83
24	986	1.000	258.311	12.687	559.45	559.14	.06	7.6451	7.8699	-2.86
24	987	1.000	263.206	12.686	559.40	559.19	.04	11.7550	11.9142	-1.34

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
24	988	1.000	263.239	12.686	559.40	559.19	.04	11.7830	11.9417	-1.33
24	989	1.000	268.014	12.685	559.36	559.22	.03	15.7660	15.8760	-.69
24	990	1.000	276.292	12.683	559.28	559.23	.01	22.6120	22.6495	-.17
24	991	1.000	283.484	12.681	559.21	559.21	-.00	28.4990	28.4958	.01
24	992	1.000	294.455	12.679	559.11	559.13	-.00	37.3690	37.3553	.04
24	993	1.000	247.621	12.742	561.87	561.45	.08	.2571	.5525	-53.47
24	994	1.000	247.734	12.742	561.87	561.45	.08	.3546	.6493	-45.39
24	995	1.000	248.490	12.742	561.87	561.46	.07	1.0065	1.2965	-22.37
24	996	1.000	248.673	12.741	561.86	561.46	.07	1.1642	1.4460	-19.49
24	997	1.000	249.310	12.741	561.86	561.47	.07	1.7130	1.9909	-13.96
24	998	1.000	250.333	12.741	561.85	561.48	.07	2.5934	2.8580	-9.26
24	999	1.000	251.088	12.741	561.84	561.49	.06	3.2424	3.4955	-7.24
24	1000	1.000	252.974	12.740	561.82	561.51	.06	4.8612	5.0893	-4.48
24	1001	1.000	255.995	12.740	561.79	561.53	.05	7.4466	7.6374	-2.50
24	1002	1.000	258.548	12.739	561.77	561.55	.04	9.6241	9.7889	-1.68
24	1003	1.000	263.440	12.738	561.72	561.58	.02	13.7810	13.8879	-.77
24	1004	1.000	268.197	12.737	561.68	561.59	.02	17.7930	17.8629	-.39
24	1005	1.000	273.360	12.736	561.63	561.60	.01	22.1250	22.1530	-.13
24	1006	1.000	278.376	12.735	561.58	561.59	-.00	26.3070	26.3014	.02
24	1007	1.000	283.231	12.734	561.53	561.57	-.01	30.3300	30.2986	.10
24	1008	1.000	288.691	12.733	561.48	561.53	-.01	34.8260	34.7805	.13
24	1009	1.000	293.107	12.732	561.44	561.49	-.01	38.4390	38.3917	.12
24	1010	1.000	297.847	12.731	561.40	561.44	-.01	42.2950	42.2569	.09
24	1011	1.000	247.820	12.773	563.26	563.03	.04	1.5453	1.7064	-9.44
24	1012	1.000	248.646	12.773	563.26	563.04	.04	2.2614	2.4196	-6.54
24	1013	1.000	250.345	12.773	563.24	563.05	.03	3.7322	3.8702	-3.57
24	1014	1.000	252.131	12.772	563.22	563.06	.03	5.2754	5.3930	-2.18
24	1015	1.000	254.247	12.772	563.20	563.07	.02	7.0999	7.1962	-1.34
24	1016	1.000	256.785	12.771	563.18	563.08	.02	9.2827	9.3570	-.79
24	1017	1.000	259.619	12.771	563.15	563.09	.01	11.7130	11.7576	-.38
24	1018	1.000	262.510	12.770	563.12	563.10	.00	14.1840	14.2002	-.11
24	1019	1.000	265.495	12.769	563.09	563.10	-.00	16.7280	16.7160	.07
24	1020	1.000	268.171	12.769	563.07	563.11	-.01	19.0010	18.9711	.16
24	1021	1.000	271.181	12.768	563.04	563.11	-.01	21.5500	21.4952	.25
24	1022	1.000	276.240	12.767	562.99	563.10	-.02	25.8150	25.7229	.36
24	1023	1.000	281.440	12.766	562.94	563.08	-.02	30.1730	30.0506	.41
24	1024	1.000	286.945	12.765	562.89	563.05	-.03	34.7600	34.6146	.42
24	1025	1.000	286.968	12.765	562.89	563.05	-.03	34.7790	34.6338	.42
24	1026	1.000	291.062	12.764	562.85	563.02	-.03	38.1720	38.0122	.42
24	1027	1.000	296.653	12.763	562.80	562.97	-.03	42.7790	42.6127	.39
24	1028	1.000	235.542	13.073	576.47	576.24	.04	.4570	.6449	-29.13
24	1029	1.000	236.163	13.072	576.46	576.25	.04	1.0563	1.2257	-13.82
24	1030	1.000	237.116	13.072	576.45	576.27	.03	1.9745	2.1205	-6.89
24	1031	1.000	237.986	13.072	576.44	576.29	.03	2.8112	2.9358	-4.24
24	1032	1.000	239.626	13.072	576.43	576.32	.02	4.3844	4.4775	-2.08
24	1033	1.000	242.193	13.071	576.40	576.36	.01	6.8363	6.8728	-.53
24	1034	1.000	245.592	13.070	576.37	576.39	-.00	10.0630	10.0417	.21
24	1035	1.000	249.203	13.070	576.33	576.42	-.02	13.4660	13.3880	.58
24	1036	1.000	252.921	13.069	576.29	576.43	-.02	16.9440	16.8206	.73
24	1037	1.000	256.518	13.068	576.25	576.42	-.03	20.2830	20.1276	.77
24	1038	1.000	260.718	13.067	576.21	576.39	-.03	24.1490	23.9797	.71
24	1039	1.000	264.442	13.066	576.17	576.35	-.03	27.5490	27.3777	.63
24	1040	1.000	267.990	13.065	576.13	576.29	-.03	30.7630	30.6017	.53
24	1041	1.000	232.965	13.169	580.70	580.12	.10	1.1792	1.6707	-29.42
24	1042	1.000	234.603	13.168	580.69	580.14	.09	2.7885	3.2595	-14.45
24	1043	1.000	234.672	13.168	580.69	580.14	.09	2.8562	3.3267	-14.14

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
24	1044	1.000	236.343	13.168	580.67	580.16	.09	4.4938	4.9357	-8.95
24	1045	1.000	238.154	13.167	580.65	580.18	.08	6.2641	6.6770	-6.18
24	1046	1.000	239.793	13.167	580.63	580.19	.08	7.8622	8.2479	-4.68
24	1047	1.000	242.380	13.166	580.60	580.22	.07	10.3770	10.7225	-3.22
24	1048	1.000	245.001	13.166	580.58	580.23	.06	12.9150	13.2315	-2.39
24	1049	1.000	249.556	13.165	580.53	580.26	.05	17.3020	17.5603	-1.47
24	1050	1.000	254.065	13.164	580.48	580.26	.04	21.6150	21.8236	-.96
24	1051	1.000	258.913	13.163	580.43	580.26	.03	26.2210	26.3885	-.63
24	1052	1.000	263.566	13.161	580.38	580.25	.02	30.6100	30.7468	-.44
24	1053	1.000	268.618	13.160	580.33	580.21	.02	35.3390	35.4606	-.34
24	1054	1.000	273.058	13.159	580.28	580.18	.02	39.4660	39.5783	-.28
24	1055	1.000	226.866	13.315	587.16	587.03	.02	1.1092	1.2271	-9.60
24	1056	1.000	228.670	13.315	587.14	587.05	.01	2.9726	3.0503	-2.55
24	1057	1.000	230.980	13.314	587.12	587.09	.01	5.3514	5.3837	-.60
24	1058	1.000	234.058	13.313	587.08	587.12	-.01	8.5084	8.4694	.46
24	1059	1.000	237.362	13.313	587.06	587.15	-.02	11.8810	11.7900	.77
24	1060	1.000	242.108	13.311	587.00	587.19	-.03	16.6960	16.5067	1.15
24	1061	1.000	247.394	13.310	586.94	587.22	-.05	22.0190	21.7355	1.30
24	1062	1.000	250.151	13.309	586.91	587.23	-.05	24.7790	24.4515	1.34
24	1063	1.000	254.663	13.308	586.86	587.23	-.06	29.2690	28.8779	1.35
24	1064	1.000	258.294	13.307	586.82	587.22	-.07	32.8600	32.4248	1.34
24	1065	1.000	261.963	13.306	586.76	587.21	-.08	36.4690	35.9737	1.38
24	1066	1.000	265.574	13.306	586.74	587.19	-.08	40.0010	39.4965	1.28
24	1067	1.000	218.855	13.516	596.03	595.70	.06	.7779	1.1014	-29.37
24	1068	1.000	219.585	13.516	596.02	595.71	.05	1.5821	1.8853	-16.08
24	1069	1.000	221.230	13.516	596.00	595.74	.04	3.3908	3.6510	-7.13
24	1070	1.000	223.680	13.515	595.98	595.77	.03	6.0763	6.2828	-3.29
24	1071	1.000	226.125	13.514	595.95	595.81	.02	8.7463	8.8900	-1.62
24	1072	1.000	227.750	13.514	595.93	595.83	.02	10.5150	10.6179	-.97
24	1073	1.000	228.861	13.514	595.92	595.84	.01	11.7220	11.8008	-.67
24	1074	1.000	229.601	13.514	595.91	595.85	.01	12.5250	12.5842	-.47
24	1075	1.000	231.940	13.513	595.88	595.88	.00	15.0560	15.0571	-.01
24	1076	1.000	234.664	13.512	595.85	595.91	-.01	17.9930	17.9328	.34
24	1077	1.000	238.083	13.511	595.81	595.93	-.02	21.6610	21.5256	.63
24	1078	1.000	242.385	13.510	595.76	595.96	-.03	26.2480	26.0254	.86
24	1079	1.000	246.702	13.509	595.71	595.97	-.04	30.8200	30.5180	.99
24	1080	1.000	251.325	13.508	595.66	595.98	-.05	35.6820	35.3086	1.06
24	1081	1.000	256.596	13.507	595.60	595.97	-.06	41.1820	40.7376	1.09
24	1082	1.000	211.641	13.696	603.95	603.33	.10	.4075	1.0574	-61.47
24	1083	1.000	212.694	13.696	603.94	603.35	.10	1.6320	2.2571	-27.70
24	1084	1.000	214.101	13.695	603.92	603.37	.09	3.2652	3.8500	-15.19
24	1085	1.000	217.902	13.694	603.87	603.43	.07	7.6602	8.1396	-5.89
24	1086	1.000	222.089	13.693	603.82	603.49	.05	12.4730	12.8420	-2.87
24	1087	1.000	225.450	13.692	603.78	603.53	.04	16.3140	16.5964	-1.70
24	1088	1.000	230.231	13.691	603.72	603.61	.02	21.7740	21.9035	-.59
24	1089	1.000	235.520	13.689	603.66	603.63	.01	27.7060	27.7432	-.13
24	1090	1.000	241.297	13.688	603.59	603.66	-.01	34.1620	34.0721	.26
24	1091	1.000	244.776	13.687	603.55	603.67	-.02	38.0220	37.8649	.41
24	1092	1.000	247.542	13.686	603.51	603.68	-.03	41.0760	40.8589	.53
24	1093	1.000	205.755	13.857	611.05	610.99	.01	1.7649	1.8348	-3.81
24	1094	1.000	207.297	13.856	611.03	611.02	.00	3.6606	3.6728	-.33
24	1095	1.000	209.435	13.856	611.01	611.06	-.01	6.2801	6.2222	.93
24	1096	1.000	212.526	13.855	610.97	611.11	-.02	10.0490	9.8797	1.71
24	1097	1.000	216.578	13.854	610.91	611.18	-.04	14.9560	14.6384	2.17
24	1098	1.000	220.157	13.853	610.87	611.22	-.06	19.2590	18.8327	2.26
24	1099	1.000	225.334	13.851	610.80	611.27	-.08	25.4320	24.8468	2.36

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
24	1100	1.000	227.547	13.851	610.78	611.28	-.08	28.0520	27.4169	2.32
24	1101	1.000	230.819	13.850	610.73	611.29	-.09	31.9060	31.1770	2.34
24	1102	1.000	235.224	13.848	610.68	611.30	-.10	37.0550	36.2358	2.26
24	1103	1.000	237.320	13.848	610.65	611.30	-.11	39.4890	38.6247	2.24
24	1104	1.000	199.157	13.991	616.96	617.01	-.01	.5378	.4838	11.16
24	1105	1.000	200.472	13.990	616.94	617.04	-.02	2.2353	2.1178	5.55
24	1106	1.000	202.817	13.990	616.91	617.08	-.03	5.2383	5.0287	4.17
24	1107	1.000	206.391	13.989	616.86	617.16	-.05	9.7993	9.4371	3.84
24	1108	1.000	210.980	13.987	616.80	617.23	-.07	15.6020	15.0640	3.57
24	1109	1.000	216.347	13.986	616.73	617.29	-.09	22.3260	21.5934	3.39
24	1110	1.000	216.464	13.985	616.72	617.26	-.09	22.4300	21.7241	3.25
24	1111	1.000	221.205	13.984	616.66	617.10	-.07	28.0310	27.4494	2.12
24	1112	1.000	225.885	13.983	616.60	617.32	-.12	34.0430	33.0622	2.97
24	1113	1.000	231.094	13.981	616.53	617.32	-.13	40.3660	39.2628	2.81
24	1114	1.000	192.615	14.155	624.19	624.28	-.01	.9162	.8001	14.52
24	1115	1.000	193.111	14.155	624.19	624.29	-.02	1.5904	1.4585	9.05
24	1116	1.000	195.904	14.154	624.15	624.36	-.03	5.3735	5.1041	5.28
24	1117	1.000	197.140	14.154	624.13	624.39	-.04	7.0407	6.7082	4.96
24	1118	1.000	199.390	14.153	624.10	624.44	-.05	10.0650	9.6273	4.55
24	1119	1.000	202.609	14.152	624.05	624.50	-.07	14.3660	13.7738	4.30
24	1120	1.000	205.926	14.151	624.01	624.55	-.09	18.7680	18.0378	4.05
24	1121	1.000	209.500	14.150	623.96	624.60	-.10	23.4770	22.5969	3.89
24	1122	1.000	213.137	14.149	623.91	624.64	-.12	28.2320	27.2110	3.75
24	1123	1.000	215.014	14.148	623.88	624.65	-.12	30.6720	29.5762	3.71
24	1124	1.000	217.285	14.147	623.85	624.67	-.13	33.6100	32.4378	3.61
24	1125	1.000	220.119	14.146	623.81	624.68	-.14	37.2570	35.9917	3.52
24	1126	1.000	184.715	14.340	632.34	632.36	-.00	.6163	.5835	5.63
24	1127	1.000	185.973	14.339	632.32	632.40	-.01	2.4300	2.3255	4.49
24	1128	1.000	187.723	14.339	632.30	631.97	.05	4.2992	4.7519	-9.53
24	1129	1.000	189.954	14.338	632.26	632.49	-.04	8.1375	7.8130	4.15
24	1130	1.000	194.865	14.336	632.19	632.60	-.06	15.1110	14.5290	4.01
24	1131	1.000	198.151	14.335	632.14	632.66	-.08	19.7350	18.9841	3.96
24	1132	1.000	204.051	14.333	632.05	632.75	-.11	27.9550	26.9183	3.85
24	1133	1.000	208.548	14.332	631.99	632.79	-.13	34.1470	32.9261	3.71
24	1134	1.000	213.736	14.330	631.91	632.82	-.14	41.2140	39.7878	3.58
24	1135	1.000	177.351	14.524	640.48	640.55	-.01	1.3550	1.2502	8.38
24	1136	1.000	179.819	14.523	640.44	640.62	-.03	5.1280	4.8634	5.44
24	1137	1.000	181.543	14.523	640.41	640.67	-.04	7.7509	7.3727	5.13
24	1138	1.000	183.330	14.522	640.39	640.71	-.05	10.4590	9.9802	4.80
24	1139	1.000	187.888	14.521	640.32	640.81	-.08	17.3130	16.5602	4.55
24	1140	1.000	190.854	14.520	640.27	640.87	-.09	21.7350	20.8033	4.48
24	1141	1.000	194.795	14.518	640.21	640.94	-.11	27.5610	26.4145	4.34
24	1142	1.000	198.915	14.517	640.15	640.99	-.13	33.5930	32.2424	4.19
24	1143	1.000	201.433	14.516	640.11	641.01	-.14	37.2500	35.7785	4.11
24	1144	1.000	204.618	14.515	640.06	641.03	-.15	41.8440	40.2308	4.01
24	1145	1.000	166.227	14.776	651.60	651.57	.01	.7033	.7554	-6.91
24	1146	1.000	167.461	14.776	651.58	651.61	-.00	2.7642	2.7174	1.72
24	1147	1.000	168.747	14.776	651.56	651.65	-.01	4.9045	4.7569	3.10
24	1148	1.000	171.053	14.775	651.52	651.73	-.03	8.7235	8.3916	3.95
24	1149	1.000	174.434	14.773	651.46	651.82	-.06	14.2790	13.6830	4.36
24	1150	1.000	178.373	14.772	651.39	651.92	-.08	20.6850	19.7969	4.49
24	1151	1.000	182.557	14.770	651.32	652.00	-.10	27.4110	26.2425	4.45
24	1152	1.000	187.796	14.768	651.24	652.08	-.13	35.7200	34.2506	4.29
24	1153	1.000	189.817	14.768	651.21	652.10	-.14	38.8920	37.3200	4.21

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
5	1154	1.000	310.928	.040	1.75	1.76	-.29	.1013	.1010	.29
5	1155	1.000	310.928	.054	2.40	2.40	-.32	.1379	.1375	.32
5	1156	1.000	310.928	.082	3.63	3.64	-.36	.2068	.2061	.35
5	1157	1.000	310.928	.111	4.89	4.91	-.39	.2758	.2748	.37
5	1158	1.000	310.928	.140	6.18	6.20	-.40	.3447	.3434	.38
5	1159	1.000	310.928	.170	7.49	7.52	-.40	.4137	.4121	.37
5	1160	1.000	310.928	.232	10.23	10.26	-.37	.5516	.5497	.34
5	1161	1.000	310.928	.297	13.12	13.15	-.28	.6895	.6878	.25
5	1162	1.000	310.928	.386	17.00	17.01	-.05	.8618	.8615	.04
5	1163	1.000	310.928	.481	21.22	21.21	.04	1.0342	1.0346	-.04
5	1164	1.000	310.928	10.710	472.29	471.25	.22	1.3790	1.6340	-15.61
5	1165	1.000	310.928	10.782	475.48	474.03	.31	2.0684	2.4451	-15.41
5	1166	1.000	310.928	10.830	477.57	476.65	.19	2.7579	3.0082	-8.32
5	1167	1.000	310.928	10.885	480.01	479.14	.18	3.4474	3.6949	-6.70
5	1168	1.000	310.928	10.937	482.30	481.51	.16	4.1369	4.3733	-5.41
5	1169	1.000	310.928	11.032	486.46	485.95	.10	5.5158	5.6804	-2.90
5	1170	1.000	310.928	11.121	490.41	490.05	.07	6.8948	7.0233	-1.83
5	1171	1.000	310.928	11.224	494.96	494.77	.04	8.6184	8.6892	-.81
5	1172	1.000	310.928	11.326	499.44	499.13	.06	10.3421	10.4710	-1.23
5	1173	1.000	310.928	11.400	502.69	503.18	-.10	12.0658	11.8524	1.80
5	1174	1.000	310.928	11.493	506.79	506.98	-.04	13.7895	13.7046	.62
5	1175	1.000	310.928	11.557	509.64	510.55	-.18	15.5132	15.0639	2.98
5	1176	1.000	310.928	11.648	513.63	513.93	-.06	17.2369	17.0830	.90
5	1177	1.000	310.928	11.734	517.45	517.14	.06	18.9606	19.1315	-.89
5	1178	1.000	310.928	11.783	519.59	520.19	-.12	20.6843	20.3395	1.70
5	1179	1.000	310.928	11.942	526.62	525.92	.13	24.1316	24.5754	-1.81
5	1180	1.000	310.928	12.050	531.35	531.19	.03	27.5790	27.6873	-.39
5	1181	1.000	310.928	12.145	535.58	536.10	-.10	31.0264	30.6514	1.22
5	1182	1.000	310.928	12.257	540.50	540.69	-.03	34.4738	34.3276	.43
5	1183	1.000	310.928	12.475	550.10	549.08	.18	41.3685	42.2543	-2.10
5	1184	1.000	310.928	12.635	557.16	556.64	.09	48.2633	48.7683	-1.04
5	1185	1.000	310.928	12.778	563.50	563.53	-.01	55.1581	55.1251	.06
5	1186	1.000	310.928	12.906	569.10	569.87	-.13	62.0528	61.1880	1.41
5	1187	1.000	310.928	13.058	575.83	575.76	.01	68.9476	69.0336	-.12
5	1188	1.000	327.594	.038	1.66	1.66	-.27	.1013	.1011	.27
5	1189	1.000	327.594	.051	2.27	2.28	-.30	.1379	.1375	.30
5	1190	1.000	327.594	.078	3.43	3.44	-.34	.2068	.2062	.33
5	1191	1.000	327.594	.105	4.61	4.63	-.36	.2758	.2748	.35
5	1192	1.000	327.594	.132	5.82	5.84	-.38	.3447	.3435	.36
5	1193	1.000	327.594	.160	7.04	7.07	-.38	.4137	.4122	.36
5	1194	1.000	327.594	.217	9.57	9.61	-.37	.5516	.5497	.35
5	1195	1.000	327.594	.277	12.21	12.25	-.34	.6895	.6873	.31
5	1196	1.000	327.594	.356	15.68	15.72	-.29	.8618	.8597	.25
5	1197	1.000	327.594	.440	19.38	19.42	-.16	1.0342	1.0328	.14
5	1198	1.000	327.594	.629	27.72	27.67	.20	1.3790	1.3811	-.15
5	1199	1.000	327.594	10.018	441.76	440.57	.27	2.0684	2.2573	-8.37
5	1200	1.000	327.594	10.115	446.03	444.77	.28	2.7579	2.9769	-7.36
5	1201	1.000	327.594	10.198	449.71	448.61	.25	3.4474	3.6568	-5.73
5	1202	1.000	327.594	10.275	453.12	452.14	.22	4.1369	4.3365	-4.60
5	1203	1.000	327.594	10.416	459.33	458.51	.18	5.5158	5.7086	-3.38
5	1204	1.000	327.594	10.538	464.69	464.14	.12	6.8948	7.0363	-2.01
5	1205	1.000	327.594	10.675	470.73	470.42	.06	8.6184	8.7062	-1.01
5	1206	1.000	327.594	10.805	476.46	476.05	.09	10.3421	10.4741	-1.26
5	1207	1.000	327.594	10.905	480.88	481.16	-.06	12.0658	11.9649	.84
5	1208	1.000	327.594	11.015	485.72	485.86	-.03	13.7895	13.7346	.40
5	1209	1.000	327.594	11.106	489.75	490.22	-.10	15.5132	15.3191	1.27

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
5	1210	1.000	327.594	11.212	494.41	494.29	.02	17.2369	17.2911	-.31
5	1211	1.000	327.594	11.300	498.30	498.11	.04	18.9606	19.0484	-.46
5	1212	1.000	327.594	11.388	502.18	501.71	.09	20.6843	20.9163	-1.11
5	1213	1.000	327.594	11.532	508.54	508.38	.03	24.1316	24.2238	-.38
5	1214	1.000	327.594	11.662	514.25	514.44	-.04	27.5790	27.4680	.40
5	1215	1.000	327.594	11.768	518.94	520.01	-.21	31.0264	30.3412	2.26
5	1216	1.000	327.594	11.906	525.02	525.18	-.03	34.4738	34.3580	.34
5	1217	1.000	327.594	12.150	535.77	534.54	.23	41.3685	42.3382	-2.29
5	1218	1.000	327.594	12.315	543.04	542.87	.03	48.2633	48.4170	-.32
5	1219	1.000	327.594	12.475	550.12	550.39	-.05	55.1581	54.8964	.48
5	1220	1.000	327.594	12.623	556.64	557.27	-.11	62.0528	61.3997	1.06
5	1221	1.000	327.594	12.805	564.67	563.61	.19	68.9476	70.1477	-1.71
5	1222	1.000	344.261	.036	1.58	1.58	-.25	.1013	.1011	.25
5	1223	1.000	344.261	.049	2.15	2.16	-.27	.1379	.1375	.27
5	1224	1.000	344.261	.074	3.25	3.26	-.31	.2068	.2062	.30
5	1225	1.000	344.261	.099	4.37	4.38	-.32	.2758	.2749	.32
5	1226	1.000	344.261	.125	5.50	5.52	-.34	.3447	.3436	.33
5	1227	1.000	344.261	.151	6.65	6.68	-.33	.4137	.4124	.32
5	1228	1.000	344.261	.204	9.01	9.04	-.33	.5516	.5499	.31
5	1229	1.000	344.261	.260	11.45	11.49	-.30	.6895	.6875	.28
5	1230	1.000	344.261	.332	14.63	14.67	-.24	.8618	.8600	.22
5	1231	1.000	344.261	.408	17.98	18.01	-.16	1.0342	1.0327	.14
5	1232	1.000	344.261	.573	25.25	25.24	.06	1.3790	1.3797	-.05
5	1233	1.000	344.261	.986	43.47	43.09	.89	2.0684	2.0808	-.59
5	1234	1.000	344.261	9.141	403.09	401.57	.38	2.7579	2.8840	-4.37
5	1235	1.000	344.261	9.293	409.78	409.21	.14	3.4474	3.5050	-1.64
5	1236	1.000	344.261	9.433	415.98	415.57	.10	4.1369	4.1854	-1.16
5	1237	1.000	344.261	9.659	425.92	425.98	-.01	5.5158	5.5081	.14
5	1238	1.000	344.261	9.847	434.24	434.43	-.04	6.8948	6.8609	.49
5	1239	1.000	344.261	10.049	443.15	443.28	-.03	8.6184	8.5919	.31
5	1240	1.000	344.261	10.229	451.08	450.83	.06	10.3421	10.4033	-.59
5	1241	1.000	344.261	10.374	457.48	457.47	.00	12.0658	12.0709	-.04
5	1242	1.000	344.261	10.520	463.92	463.40	.11	13.7895	13.9481	-1.14
5	1243	1.000	344.261	10.643	469.33	468.80	.11	15.5132	15.6926	-1.14
5	1244	1.000	344.261	10.757	474.34	473.75	.13	17.2369	17.4537	-1.24
5	1245	1.000	344.261	10.871	479.39	478.33	.22	18.9606	19.3754	-2.14
5	1246	1.000	344.261	10.943	482.57	482.61	-.01	20.6843	20.6707	.07
5	1247	1.000	344.261	11.141	491.28	490.40	.18	24.1316	24.5468	-1.69
5	1248	1.000	344.261	11.282	497.49	497.38	.02	27.5790	27.6366	-.21
5	1249	1.000	344.261	11.407	503.02	503.72	-.14	31.0264	30.6261	1.31
5	1250	1.000	344.261	11.551	509.37	509.55	-.03	34.4738	34.3674	.31
5	1251	1.000	344.261	11.818	521.13	519.97	.22	41.3685	42.1990	-1.97
5	1252	1.000	344.261	12.009	529.56	529.12	.08	48.2633	48.6126	-.72
5	1253	1.000	344.261	12.182	537.18	537.32	-.03	55.1581	55.0349	.22
5	1254	1.000	344.261	12.344	544.32	544.77	-.08	62.0528	61.6206	.70
5	1255	1.000	344.261	12.518	551.99	551.59	.07	68.9476	69.3690	-.61
5	1256	1.000	360.928	.034	1.50	1.51	-.23	.1013	.1011	.23
5	1257	1.000	360.928	.047	2.05	2.06	-.26	.1379	.1375	.26
5	1258	1.000	360.928	.070	3.09	3.10	-.30	.2068	.2062	.29
5	1259	1.000	360.928	.094	4.15	4.17	-.30	.2758	.2750	.30
5	1260	1.000	360.928	.118	5.22	5.24	-.32	.3447	.3437	.31
5	1261	1.000	360.928	.143	6.31	6.33	-.31	.4137	.4124	.30
5	1262	1.000	360.928	.193	8.52	8.55	-.30	.5516	.5500	.29
5	1263	1.000	360.928	.245	10.80	10.83	-.29	.6895	.6876	.27
5	1264	1.000	360.928	.312	13.75	13.78	-.24	.8618	.8600	.22
5	1265	1.000	360.928	.381	16.82	16.84	-.16	1.0342	1.0327	.15

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
5	1266	1.000	360.928	.530	23.36	23.36	.01	1.3790	1.3790	-.01
5	1267	1.000	360.928	.877	38.69	38.49	.53	2.0684	2.0768	-.40
5	1268	1.000	360.928	1.342	59.16	58.38	1.33	2.7579	2.7802	-.80
5	1269	1.000	360.928	2.103	92.74	92.13	.67	3.4474	3.4552	-.23
5	1270	1.000	360.928	8.171	360.32	359.03	.36	4.1369	4.1884	-1.23
5	1271	1.000	360.928	8.731	385.03	383.38	.43	5.5158	5.6444	-2.28
5	1272	1.000	360.928	9.063	399.64	398.36	.32	6.8948	7.0368	-2.02
5	1273	1.000	360.928	9.363	412.90	412.03	.21	8.6184	8.7463	-1.46
5	1274	1.000	360.928	9.602	423.42	422.74	.16	10.3421	10.4644	-1.17
5	1275	1.000	360.928	9.792	431.79	431.64	.03	12.0658	12.0963	-.25
5	1276	1.000	360.928	9.971	439.71	439.32	.09	13.7895	13.8835	-.68
5	1277	1.000	360.928	10.114	445.99	446.10	-.02	15.5132	15.4835	.19
5	1278	1.000	360.928	10.262	452.52	452.20	.07	17.2369	17.3327	-.55
5	1279	1.000	360.928	10.398	458.53	457.74	.17	18.9606	19.2171	-1.33
5	1280	1.000	360.928	10.492	462.67	462.84	-.04	20.6843	20.6241	.29
5	1281	1.000	360.928	10.717	472.59	471.99	.13	24.1316	24.3768	-1.01
5	1282	1.000	360.928	10.886	480.03	480.03	-.00	27.5790	27.5764	.01
5	1283	1.000	360.928	11.062	487.80	487.25	.11	31.0264	31.3039	-.89
5	1284	1.000	360.928	11.191	493.47	493.80	-.07	34.4738	34.2948	.52
5	1285	1.000	360.928	11.501	507.14	505.38	.35	41.3685	42.5130	-2.69
5	1286	1.000	360.928	11.696	515.76	515.43	.06	48.2633	48.5028	-.49
5	1287	1.000	360.928	11.883	524.01	524.35	-.07	55.1581	54.8780	.51
5	1288	1.000	360.928	12.056	531.66	532.38	-.14	62.0528	61.3999	1.06
5	1289	1.000	360.928	12.248	540.09	539.71	.07	68.9476	69.3186	-.54
5	1290	1.000	377.594	.033	1.43	1.44	-.21	.1013	.1011	.21
5	1291	1.000	377.594	.044	1.96	1.96	-.25	.1379	.1376	.24
5	1292	1.000	377.594	.067	2.95	2.96	-.30	.2068	.2062	.30
5	1293	1.000	377.594	.090	3.96	3.97	-.29	.2758	.2750	.28
5	1294	1.000	377.594	.113	4.97	4.99	-.29	.3447	.3438	.28
5	1295	1.000	377.594	.136	6.00	6.02	-.29	.4137	.4125	.28
5	1296	1.000	377.594	.184	8.09	8.12	-.27	.5516	.5502	.26
5	1297	1.000	377.594	.232	10.23	10.26	-.26	.6895	.6878	.24
5	1298	1.000	377.594	.295	12.99	13.02	-.21	.8618	.8601	.20
5	1299	1.000	377.594	.359	15.83	15.86	-.16	1.0342	1.0327	.15
5	1300	1.000	377.594	.495	21.83	21.83	-.02	1.3790	1.3788	.01
5	1301	1.000	377.594	.801	35.34	35.21	.38	2.0684	2.0747	-.30
5	1302	1.000	377.594	1.173	51.74	51.31	.82	2.7579	2.7741	-.58
5	1303	1.000	377.594	1.658	73.13	72.24	1.23	3.4474	3.4720	-.71
5	1304	1.000	377.594	2.397	105.72	104.58	1.08	4.1369	4.1543	-.42
5	1305	1.000	377.594	7.050	310.88	306.76	1.34	5.5158	5.5936	-1.39
5	1306	1.000	377.594	7.951	350.61	349.34	.36	6.8948	6.9618	-.96
5	1307	1.000	377.594	8.509	375.23	374.26	.26	8.6184	8.7052	-1.00
5	1308	1.000	377.594	8.886	391.85	390.65	.31	10.3421	10.4912	-1.42
5	1309	1.000	377.594	9.152	403.59	403.12	.12	12.0658	12.1383	-.60
5	1310	1.000	377.594	9.385	413.84	413.31	.13	13.7895	13.8880	-.71
5	1311	1.000	377.594	9.568	421.93	421.97	-.01	15.5132	15.5044	.06
5	1312	1.000	377.594	9.746	429.78	429.55	.05	17.2369	17.2926	-.32
5	1313	1.000	377.594	9.908	436.92	436.30	.14	18.9606	19.1280	-.88
5	1314	1.000	377.594	10.021	441.91	442.41	-.11	20.6843	20.5376	.71
5	1315	1.000	377.594	10.281	453.36	453.15	.05	24.1316	24.2044	-.30
5	1316	1.000	377.594	10.475	461.90	462.43	-.11	27.5790	27.3723	.76
5	1317	1.000	377.594	10.649	469.58	470.62	-.22	31.0264	30.5683	1.50
5	1318	1.000	377.594	10.827	477.46	477.97	-.11	34.4738	34.2206	.74
5	1319	1.000	377.594	11.144	491.44	490.82	.13	41.3685	41.7344	-.88
5	1320	1.000	377.594	11.385	502.05	501.82	.05	48.2633	48.4178	-.32
5	1321	1.000	377.594	11.595	511.32	511.49	-.03	55.1581	55.0327	.23

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
5	1322	1.000	377.594	11.779	519.43	520.14	-.14	62.0528	61.4565	.97
5	1323	1.000	377.594	11.969	527.81	527.98	-.03	68.9476	68.7931	.22
5	1324	1.000	410.928	.030	1.32	1.32	-.20	.1013	.1011	.20
5	1325	1.000	410.928	.041	1.79	1.80	-.22	.1379	.1376	.21
5	1326	1.000	410.928	.061	2.70	2.71	-.25	.2068	.2063	.25
5	1327	1.000	410.928	.082	3.62	3.63	-.26	.2758	.2751	.26
5	1328	1.000	410.928	.103	4.54	4.55	-.26	.3447	.3438	.26
5	1329	1.000	410.928	.124	5.47	5.49	-.26	.4137	.4126	.26
5	1330	1.000	410.928	.167	7.36	7.38	-.25	.5516	.5503	.24
5	1331	1.000	410.928	.210	9.28	9.30	-.24	.6895	.6879	.23
5	1332	1.000	410.928	.266	11.73	11.75	-.20	.8618	.8602	.19
5	1333	1.000	410.928	.323	14.23	14.25	-.17	1.0342	1.0326	.16
5	1334	1.000	410.928	.440	19.42	19.43	-.07	1.3790	1.3781	.06
5	1335	1.000	410.928	.694	30.61	30.57	.15	2.0684	2.0710	-.13
5	1336	1.000	410.928	.978	43.12	42.96	.37	2.7579	2.7662	-.30
5	1337	1.000	410.928	1.301	57.36	57.01	.60	3.4474	3.4631	-.45
5	1338	1.000	410.928	1.675	73.87	73.34	.71	4.1369	4.1571	-.49
5	1339	1.000	410.928	2.680	118.19	117.42	.66	5.5158	5.5351	-.35
5	1340	1.000	410.928	4.228	186.43	185.07	.73	6.8948	6.9197	-.36
5	1341	1.000	410.928	6.063	267.38	263.65	1.41	8.6184	8.7279	-1.25
5	1342	1.000	410.928	7.060	311.35	308.51	.92	10.3421	10.4918	-1.43
5	1343	1.000	410.928	7.625	336.26	335.49	.23	12.0658	12.1259	-.50
5	1344	1.000	410.928	8.072	355.93	354.40	.43	13.7895	13.9524	-1.17
5	1345	1.000	410.928	8.381	369.60	368.97	.17	15.5132	15.5964	-.53
5	1346	1.000	410.928	8.657	381.77	380.86	.24	17.2369	17.3822	-.84
5	1347	1.000	410.928	8.889	391.96	390.93	.26	18.9606	19.1524	-1.00
5	1348	1.000	410.928	9.064	399.68	399.69	-.00	20.6843	20.6826	.01
5	1349	1.000	410.928	9.397	414.37	414.45	-.02	24.1316	24.1109	.09
5	1350	1.000	410.928	9.675	426.62	426.66	-.01	27.5790	27.5675	.04
5	1351	1.000	410.928	9.892	436.19	437.12	-.21	31.0264	30.7001	1.06
5	1352	1.000	410.928	10.114	445.98	446.30	-.07	34.4738	34.3496	.36
5	1353	1.000	410.928	10.488	462.49	461.91	.13	41.3685	41.6517	-.68
5	1354	1.000	410.928	10.778	475.26	474.96	.06	48.2633	48.4397	-.36
5	1355	1.000	410.928	11.032	486.48	486.21	.05	55.1581	55.3331	-.32
5	1356	1.000	410.928	11.249	496.06	496.14	-.02	62.0528	61.9966	.09
5	1357	1.000	410.928	11.470	505.81	505.05	.15	68.9476	69.5758	-.90
5	1358	1.000	444.261	.028	1.22	1.22	-.18	.1013	.1011	.18
5	1359	1.000	444.261	.038	1.66	1.66	-.20	.1379	.1376	.20
5	1360	1.000	444.261	.057	2.49	2.50	-.24	.2068	.2064	.23
5	1361	1.000	444.261	.076	3.33	3.34	-.25	.2758	.2751	.24
5	1362	1.000	444.261	.095	4.18	4.19	-.25	.3447	.3439	.25
5	1363	1.000	444.261	.114	5.03	5.05	-.26	.4137	.4126	.25
5	1364	1.000	444.261	.153	6.76	6.77	-.25	.5516	.5503	.24
5	1365	1.000	444.261	.193	8.50	8.52	-.24	.6895	.6879	.23
5	1366	1.000	444.261	.243	10.71	10.73	-.21	.8618	.8601	.20
5	1367	1.000	444.261	.294	12.96	12.99	-.18	1.0342	1.0325	.17
5	1368	1.000	444.261	.399	17.58	17.60	-.09	1.3790	1.3778	.08
5	1369	1.000	444.261	.620	27.32	27.30	.10	2.0684	2.0702	-.09
5	1370	1.000	444.261	.857	37.81	37.70	.29	2.7579	2.7649	-.25
5	1371	1.000	444.261	1.115	49.16	48.93	.48	3.4474	3.4611	-.40
5	1372	1.000	444.261	1.395	61.51	61.13	.61	4.1369	4.1571	-.49
5	1373	1.000	444.261	2.040	89.95	89.27	.76	5.5158	5.5460	-.54
5	1374	1.000	444.261	2.816	124.20	123.71	.39	6.8948	6.9124	-.25
5	1375	1.000	444.261	3.956	174.44	174.26	.10	8.6184	8.6244	-.07
5	1376	1.000	444.261	5.069	223.54	222.19	.61	10.3421	10.3962	-.52
5	1377	1.000	444.261	5.915	260.84	260.34	.19	12.0658	12.0919	-.22

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
5	1378	1.000	444.261	6.603	291.20	289.35	.64	13.7895	13.9169	-.92
5	1379	1.000	444.261	7.106	313.35	311.52	.59	15.5132	15.6761	-1.04
5	1380	1.000	444.261	7.471	329.44	329.04	.12	17.2369	17.2809	-.25
5	1381	1.000	444.261	7.803	344.09	343.37	.21	18.9606	19.0553	-.50
5	1382	1.000	444.261	8.061	355.48	355.47	.00	20.6843	20.6865	-.01
5	1383	1.000	444.261	8.514	375.44	375.12	.08	24.1316	24.1949	-.26
5	1384	1.000	444.261	8.856	390.54	390.77	-.06	27.5790	27.5233	.20
5	1385	1.000	444.261	9.141	403.11	403.81	-.17	31.0264	30.8279	.64
5	1386	1.000	444.261	9.407	414.81	415.00	-.05	34.4738	34.4100	.19
5	1387	1.000	444.261	9.854	434.53	433.61	.21	41.3685	41.7488	-.91
5	1388	1.000	444.261	10.195	449.55	448.81	.17	48.2633	48.6333	-.76
5	1389	1.000	444.261	10.481	462.20	461.70	.11	55.1581	55.4449	-.52
5	1390	1.000	444.261	10.724	472.90	472.94	-.01	62.0528	62.0301	.04
5	1391	1.000	444.261	10.975	483.96	482.92	.22	68.9476	69.7098	-1.09
5	1392	1.000	477.594	.026	1.13	1.13	-.17	.1013	.1012	.17
5	1393	1.000	477.594	.035	1.54	1.54	-.19	.1379	.1376	.19
5	1394	1.000	477.594	.052	2.31	2.32	-.22	.2068	.2064	.22
5	1395	1.000	477.594	.070	3.09	3.10	-.24	.2758	.2751	.24
5	1396	1.000	477.594	.088	3.88	3.89	-.25	.3447	.3439	.25
5	1397	1.000	477.594	.106	4.66	4.67	-.25	.4137	.4127	.25
5	1398	1.000	477.594	.142	6.25	6.26	-.25	.5516	.5502	.25
5	1399	1.000	477.594	.178	7.85	7.87	-.25	.6895	.6878	.24
5	1400	1.000	477.594	.224	9.87	9.90	-.22	.8618	.8600	.22
5	1401	1.000	477.594	.270	11.92	11.95	-.21	1.0342	1.0321	.21
5	1402	1.000	477.594	.365	16.10	16.13	-.15	1.3790	1.3770	.14
5	1403	1.000	477.594	.562	24.80	24.79	.03	2.0684	2.0690	-.03
5	1404	1.000	477.594	.770	33.96	33.89	.21	2.7579	2.7631	-.19
5	1405	1.000	477.594	.990	43.64	43.47	.40	3.4474	3.4595	-.35
5	1406	1.000	477.594	1.221	53.83	53.56	.49	4.1369	4.1544	-.42
5	1407	1.000	477.594	1.724	76.01	75.55	.62	5.5158	5.5433	-.50
5	1408	1.000	477.594	2.284	100.74	100.22	.51	6.8948	6.9220	-.39
5	1409	1.000	477.594	3.058	134.83	134.68	.11	8.6184	8.6258	-.08
5	1410	1.000	477.594	3.864	170.39	170.81	-.24	10.3421	10.3220	.20
5	1411	1.000	477.594	4.636	204.43	204.66	-.11	12.0658	12.0535	.10
5	1412	1.000	477.594	5.318	234.49	234.00	.21	13.7895	13.8211	-.23
5	1413	1.000	477.594	5.881	259.32	258.88	.17	15.5132	15.5464	-.21
5	1414	1.000	477.594	6.381	281.39	279.81	.57	17.2369	17.3807	-.83
5	1415	1.000	477.594	6.774	298.73	297.44	.43	18.9606	19.0983	-.72
5	1416	1.000	477.594	7.090	312.67	312.46	.07	20.6843	20.7106	-.13
5	1417	1.000	477.594	7.652	337.45	336.75	.21	24.1316	24.2444	-.46
5	1418	1.000	477.594	8.076	356.14	355.83	.09	27.5790	27.6426	-.23
5	1419	1.000	477.594	8.416	371.14	371.46	-.09	31.0264	30.9486	.25
5	1420	1.000	477.594	8.728	384.89	384.70	.05	34.4738	34.5272	-.15
5	1421	1.000	477.594	9.247	407.79	406.32	.36	41.3685	41.9010	-1.27
5	1422	1.000	477.594	9.635	424.87	423.66	.29	48.2633	48.7981	-1.10
5	1423	1.000	477.594	9.961	439.25	438.18	.25	55.1581	55.7155	-1.00
5	1424	1.000	477.594	10.234	451.31	450.69	.14	62.0528	62.4160	-.58
5	1425	1.000	477.594	10.505	463.25	461.72	.33	68.9476	69.9727	-1.47
5	1426	1.000	510.928	.024	1.05	1.06	-.16	.1013	.1012	.16
5	1427	1.000	510.928	.033	1.44	1.44	-.19	.1379	.1376	.19
5	1428	1.000	510.928	.049	2.16	2.16	-.21	.2068	.2064	.21
5	1429	1.000	510.928	.065	2.88	2.89	-.24	.2758	.2751	.23
5	1430	1.000	510.928	.082	3.61	3.62	-.25	.3447	.3439	.25
5	1431	1.000	510.928	.099	4.34	4.36	-.26	.4137	.4126	.26
5	1432	1.000	510.928	.132	5.81	5.83	-.27	.5516	.5501	.27
5	1433	1.000	510.928	.165	7.30	7.32	-.27	.6895	.6876	.27

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density $calc_3$ kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
5	1434	1.000	510.928	.208	9.16	9.19	-.26	.8618	.8597	.25
5	1435	1.000	510.928	.251	11.05	11.08	-.26	1.0342	1.0316	.25
5	1436	1.000	510.928	.337	14.83	14.91	-.22	1.3790	1.3761	.21
5	1437	1.000	510.928	.516	22.76	22.78	-.10	2.0684	2.0665	.09
5	1438	1.000	510.928	.702	30.95	30.94	.04	2.7579	2.7589	-.04
5	1439	1.000	510.928	.895	39.46	39.39	.19	3.4474	3.4534	-.17
5	1440	1.000	510.928	1.095	48.29	48.15	.30	4.1369	4.1480	-.27
5	1441	1.000	510.928	1.519	66.98	66.67	.47	5.5158	5.5383	-.41
5	1442	1.000	510.928	1.973	86.99	86.59	.46	6.8948	6.9212	-.38
5	1443	1.000	510.928	2.578	113.67	113.38	.25	8.6184	8.6364	-.21
5	1444	1.000	510.928	3.258	143.69	141.47	1.57	10.3421	10.4773	-1.29
5	1445	1.000	510.928	3.852	169.87	169.35	.31	12.0658	12.0988	-.27
5	1446	1.000	510.928	4.413	194.61	195.44	-.43	13.7895	13.7320	.42
5	1447	1.000	510.928	4.951	218.31	218.91	-.27	15.5132	15.4668	.30
5	1448	1.000	510.928	5.431	239.48	239.72	-.10	17.2369	17.2163	.12
5	1449	1.000	510.928	5.865	258.62	258.12	.19	18.9606	19.0108	-.26
5	1450	1.000	510.928	6.223	274.41	274.36	.02	20.6843	20.6903	-.03
5	1451	1.000	510.928	6.845	301.86	301.48	.13	24.1316	24.1857	-.22
5	1452	1.000	510.928	7.331	323.28	323.17	.04	27.5790	27.6000	-.08
5	1453	1.000	510.928	7.725	340.65	340.99	-.10	31.0264	30.9551	.23
5	1454	1.000	510.928	8.076	356.13	356.03	.03	34.4738	34.4973	-.07
5	1455	1.000	510.928	8.650	381.45	380.42	.27	41.3685	41.7036	-.80
5	1456	1.000	510.928	9.095	401.06	399.76	.33	48.2633	48.7816	-1.06
5	1457	1.000	510.928	9.462	417.27	415.80	.35	55.1581	55.8480	-1.24
5	1458	1.000	510.928	9.771	430.87	429.53	.31	62.0528	62.7765	-1.15
5	1459	1.000	510.928	10.054	443.36	441.55	.41	68.9476	70.0614	-1.59

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
51	1460	1.000	258.150	12.435	548.33	549.02	-.13	.7657	.3440	122.57
51	1461	1.000	258.150	12.440	548.57	549.23	-.12	.8954	.4888	83.19
51	1462	1.000	258.150	12.446	548.82	549.39	-.10	.9944	.6426	54.75
51	1463	1.000	258.150	12.451	549.06	549.66	-.11	1.1605	.7888	47.11
51	1464	1.000	263.150	12.289	541.91	542.52	-.11	.7452	.3962	88.10
51	1465	1.000	263.150	12.294	542.13	542.77	-.12	.8841	.5206	69.82
51	1466	1.000	263.150	12.299	542.35	543.00	-.12	1.0164	.6456	57.42
51	1467	1.000	263.150	12.310	542.82	543.47	-.12	1.2898	.9127	41.32
51	1468	1.000	268.150	12.139	535.30	535.75	-.08	.6689	.4297	55.66
51	1469	1.000	268.150	12.144	535.52	536.00	-.09	.8035	.5495	46.24
51	1470	1.000	268.150	12.150	535.78	536.21	-.08	.9160	.6837	33.99
51	1471	1.000	268.150	12.156	536.05	536.41	-.07	1.0203	.8290	23.08
51	1472	1.000	268.150	12.162	536.31	536.64	-.06	1.1464	.9681	18.41
51	1473	1.000	268.150	12.173	536.78	537.13	-.07	1.4105	1.2206	15.55
51	1474	1.000	273.150	11.989	528.69	528.79	-.02	.6027	.5528	9.03
51	1475	1.000	273.150	12.000	529.18	529.27	-.02	.8360	.7925	5.49
51	1476	1.000	273.150	12.012	529.70	529.72	-.00	1.0585	1.0475	1.05
51	1477	1.000	273.150	12.017	529.91	530.01	-.02	1.2015	1.1554	4.00
51	1478	1.000	273.150	12.017	529.93	529.99	-.01	1.1917	1.1649	2.30
51	1479	1.000	273.150	12.023	530.16	530.26	-.02	1.3303	1.2797	3.95
51	1480	1.000	273.150	12.028	530.42	530.49	-.01	1.4442	1.4080	2.57
51	1481	1.000	273.150	12.034	530.65	530.77	-.02	1.5876	1.5240	4.17
51	1482	1.000	273.150	12.039	530.87	531.00	-.02	1.7040	1.6374	4.07
51	1483	1.000	273.150	12.049	531.32	531.55	-.04	1.9843	1.8690	6.17
51	1484	1.000	273.150	12.050	531.37	531.50	-.02	1.9581	1.8920	3.49
51	1485	1.000	273.150	12.097	533.45	533.83	-.07	3.1820	2.9791	6.81
51	1486	1.000	273.150	12.196	537.81	538.32	-.09	5.6784	5.3852	5.44
51	1487	1.000	273.150	12.299	542.35	542.94	-.11	8.4537	8.0844	4.57
51	1488	1.000	278.150	11.831	521.73	521.77	-.01	.6083	.5897	3.16
51	1489	1.000	278.150	11.838	522.02	522.01	.00	.7163	.7210	-.66
51	1490	1.000	278.150	11.843	522.26	522.25	.00	.8239	.8306	-.81
51	1491	1.000	278.150	11.849	522.52	522.50	.00	.9378	.9494	-1.22
51	1492	1.000	278.150	11.855	522.76	522.76	.00	1.0579	1.0602	-.22
51	1493	1.000	278.150	11.860	523.01	523.02	-.00	1.1764	1.1717	.40
51	1494	1.000	278.150	11.865	523.22	523.29	-.01	1.3027	1.2722	2.40
51	1495	1.000	283.150	11.675	514.82	514.75	.01	.7093	.7402	-4.18
51	1496	1.000	283.150	11.681	515.08	514.99	.02	.8100	.8483	-4.52
51	1497	1.000	283.150	11.687	515.35	515.24	.02	.9146	.9596	-4.69
51	1498	1.000	283.150	11.692	515.59	515.48	.02	1.0168	1.0639	-4.42
51	1499	1.000	283.150	11.698	515.86	515.75	.02	1.1283	1.1764	-4.09
51	1500	1.000	288.150	11.511	507.59	507.46	.03	.7919	.8432	-6.08
51	1501	1.000	288.150	11.517	507.86	507.72	.03	.8901	.9464	-5.95
51	1502	1.000	288.150	11.517	507.87	507.70	.03	.8835	.9486	-6.87
51	1503	1.000	288.150	11.523	508.13	507.96	.03	.9827	1.0480	-6.23
51	1504	1.000	288.150	11.529	508.38	508.22	.03	1.0851	1.1457	-5.29
51	1505	1.000	288.150	11.529	508.38	508.23	.03	1.0873	1.1479	-5.28
51	1506	1.000	288.150	11.534	508.63	508.48	.03	1.1866	1.2439	-4.61
51	1507	1.000	293.150	11.343	500.20	500.04	.03	.9185	.9747	-5.77
51	1508	1.000	293.150	11.348	500.42	500.35	.01	1.0261	1.0504	-2.32
51	1509	1.000	293.150	11.354	500.68	500.62	.01	1.1206	1.1446	-2.10
51	1510	1.000	293.150	11.360	500.95	500.92	.01	1.2290	1.2394	-.84
51	1511	1.000	293.150	11.366	501.19	501.19	.00	1.3234	1.3246	-.09
51	1512	1.000	298.150	11.169	492.54	492.27	.06	1.0177	1.1047	-7.88
51	1513	1.000	298.150	11.170	492.55	492.20	.07	.9958	1.1082	-10.15
51	1514	1.000	298.150	11.175	492.81	492.52	.06	1.0975	1.1892	-7.71
51	1515	1.000	298.150	11.176	492.83	492.45	.08	1.0742	1.1980	-10.33

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
51	1516	1.000	298.150	11.177	492.85	492.44	.08	1.0729	1.2050	-10.97
51	1517	1.000	298.150	11.181	493.05	492.85	.04	1.2035	1.2670	-5.01
51	1518	1.000	298.150	11.182	493.08	492.79	.06	1.1851	1.2777	-7.24
51	1519	1.000	298.150	11.188	493.35	493.10	.05	1.2823	1.3632	-5.93
51	1520	1.000	298.150	11.194	493.64	493.30	.07	1.3494	1.4601	-7.58
51	1521	1.000	298.150	11.194	493.64	493.32	.07	1.3546	1.4601	-7.23
51	1522	1.000	298.150	11.249	496.03	495.77	.05	2.1679	2.2565	-3.92
51	1523	1.000	298.150	11.302	498.39	498.14	.05	2.9922	3.0789	-2.81
51	1524	1.000	298.150	11.423	503.71	503.50	.04	4.9970	5.0808	-1.65
51	1525	1.000	298.150	11.500	507.12	507.01	.02	6.4183	6.4669	-.75
51	1526	1.000	298.150	11.523	508.14	508.00	.03	6.8399	6.8973	-.83
51	1527	1.000	298.150	11.592	511.19	511.15	.01	8.2207	8.2388	-.22
51	1528	1.000	298.150	11.679	515.00	515.00	-.00	10.0107	10.0092	.01
51	1529	1.000	303.150	10.984	484.35	484.11	.05	1.1011	1.1670	-5.65
51	1530	1.000	303.150	10.989	484.59	484.40	.04	1.1832	1.2373	-4.38
51	1531	1.000	303.150	10.995	484.85	484.68	.04	1.2631	1.3127	-3.79
51	1532	1.000	303.150	11.001	485.11	484.97	.03	1.3466	1.3871	-2.92
51	1533	1.000	303.150	11.007	485.38	485.24	.03	1.4248	1.4666	-2.85
51	1534	1.000	303.150	11.008	485.42	485.12	.06	1.3908	1.4775	-5.87
51	1535	1.000	303.150	11.020	485.96	485.66	.06	1.5488	1.6367	-5.37
51	1536	1.000	303.150	11.110	489.91	489.82	.02	2.8254	2.8568	-1.10
51	1537	1.000	303.150	11.252	496.17	496.03	.03	4.9364	4.9861	-1.00
51	1538	1.000	303.150	11.353	500.65	500.58	.01	6.6466	6.6743	-.41
51	1539	1.000	303.150	11.441	504.50	504.51	-.00	8.2408	8.2386	.03
51	1540	1.000	303.150	11.527	508.31	508.41	-.02	9.9332	9.8890	.45
52	1541	1.000	303.150	10.983	484.33	484.24	.02	1.1376	1.1624	-2.13
52	1542	1.000	303.150	10.989	484.60	484.55	.01	1.2252	1.2404	-1.22
52	1543	1.000	303.150	10.996	484.87	484.84	.01	1.3081	1.3189	-.82
52	1544	1.000	303.150	11.007	485.40	485.36	.01	1.4614	1.4713	-.67
52	1545	1.000	303.150	11.015	485.73	485.65	.02	1.5460	1.5687	-1.45
52	1546	1.000	303.150	11.137	491.10	491.07	.01	3.2314	3.2407	-.29
52	1547	1.000	303.150	11.180	492.99	492.94	.01	3.8543	3.8736	-.50
52	1548	1.000	303.150	11.260	496.52	496.54	-.00	5.1231	5.1157	.15
52	1549	1.000	303.150	11.302	498.38	498.45	-.01	5.8301	5.8027	.47
52	1550	1.000	303.150	11.362	501.05	501.03	.00	6.8244	6.8309	-.10
52	1551	1.000	303.150	11.537	508.77	508.96	-.04	10.1807	10.0949	.85
51	1552	1.000	313.150	10.596	467.27	467.38	-.02	1.4533	1.4281	1.77
51	1553	1.000	313.150	10.602	467.54	467.65	-.02	1.5149	1.4892	1.72
51	1554	1.000	313.150	10.609	467.81	467.92	-.02	1.5776	1.5520	1.65
51	1555	1.000	313.150	10.615	468.08	468.17	-.02	1.6349	1.6152	1.22
51	1556	1.000	313.150	10.621	468.38	468.45	-.02	1.7015	1.6835	1.07
51	1557	1.000	313.150	10.628	468.69	468.60	.02	1.7347	1.7559	-1.20
51	1558	1.000	313.150	10.634	468.91	468.94	-.01	1.8158	1.8099	.32
51	1559	1.000	323.150	.800	35.28	35.39	-.33	1.6127	1.6091	.22
51	1560	1.000	323.150	.820	36.16	36.30	-.37	1.6402	1.6361	.25
51	1561	1.000	323.150	.840	37.04	37.19	-.40	1.6668	1.6625	.26
51	1562	1.000	323.150	.850	37.48	37.64	-.41	1.6799	1.6754	.27
51	1563	1.000	323.150	.860	37.92	38.08	-.42	1.6928	1.6882	.27
51	1564	1.000	323.150	.870	38.36	38.53	-.43	1.7056	1.7009	.28
51	1565	1.000	323.150	.875	38.59	38.75	-.42	1.7118	1.7071	.27
51	1566	1.000	323.150	.876	38.61	38.76	-.40	1.7122	1.7078	.26
51	1567	1.000	323.150	10.179	448.85	448.65	.04	1.7664	1.8014	-1.94
51	1568	1.000	323.150	10.179	448.85	448.73	.03	1.7807	1.8014	-1.15
51	1569	1.000	323.150	10.179	448.86	448.60	.06	1.7575	1.8038	-2.57
51	1570	1.000	323.150	10.185	449.11	449.01	.02	1.8288	1.8473	-1.00
51	1571	1.000	323.150	10.185	449.13	448.87	.06	1.8046	1.8513	-2.52

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
51	1572	1.000	323.150	10.186	449.17	448.82	.08	1.7970	1.8586	-3.32
51	1573	1.000	323.150	10.191	449.39	449.16	.05	1.8570	1.8976	-2.14
51	1574	1.000	323.150	10.191	449.40	449.15	.06	1.8544	1.8992	-2.36
51	1575	1.000	323.150	10.197	449.65	449.48	.04	1.9133	1.9434	-1.55
51	1576	1.000	323.150	10.197	449.66	449.45	.05	1.9083	1.9458	-1.93
51	1577	1.000	323.150	10.203	449.91	449.78	.03	1.9660	1.9895	-1.18
51	1578	1.000	323.150	10.203	449.93	449.70	.05	1.9525	1.9944	-2.11
51	1579	1.000	323.150	10.209	450.17	450.06	.03	2.0171	2.0376	-1.00
51	1580	1.000	323.150	10.209	450.21	449.94	.06	1.9952	2.0434	-2.36
51	1581	1.000	323.150	10.210	450.22	449.89	.07	1.9867	2.0459	-2.89
51	1582	1.000	323.150	10.250	452.00	451.73	.06	2.3253	2.3746	-2.08
51	1583	1.000	323.150	10.500	463.02	462.85	.04	4.6856	4.7256	-.85
51	1584	1.000	323.150	10.750	474.04	473.96	.02	7.6467	7.6697	-.30
52	1585	1.000	323.150	.800	35.28	35.40	-.35	1.6129	1.6091	.24
52	1586	1.000	323.150	.800	35.28	35.40	-.34	1.6128	1.6091	.23
52	1587	1.000	323.150	.820	36.16	36.29	-.37	1.6402	1.6361	.25
52	1588	1.000	323.150	.840	37.04	37.19	-.39	1.6668	1.6625	.26
52	1589	1.000	323.150	.850	37.48	37.63	-.40	1.6799	1.6754	.26
52	1590	1.000	323.150	.860	37.92	38.08	-.42	1.6928	1.6882	.27
52	1591	1.000	323.150	.870	38.36	38.53	-.43	1.7056	1.7009	.28
52	1592	1.000	323.150	10.182	448.99	448.55	.10	1.7482	1.8255	-4.24
52	1593	1.000	323.150	10.188	449.26	448.87	.09	1.8055	1.8740	-3.65
52	1594	1.000	323.150	10.194	449.53	449.18	.08	1.8597	1.9221	-3.25
52	1595	1.000	323.150	10.200	449.79	449.46	.07	1.9100	1.9689	-2.99
52	1596	1.000	323.150	10.206	450.07	449.74	.07	1.9587	2.0185	-2.96
52	1597	1.000	323.150	10.498	462.92	462.82	.02	4.6788	4.7035	-.53
52	1598	1.000	323.150	11.034	486.58	485.57	.21	11.4691	11.8424	-3.15
52	1599	1.000	323.150	11.504	507.29	507.86	-.11	21.2865	20.9888	1.42
52	1600	1.000	323.150	11.998	529.09	530.13	-.20	35.0469	34.2992	2.18
51	1601	1.000	333.150	.800	35.28	35.34	-.19	1.7004	1.6981	.13
51	1602	1.000	333.150	.900	39.69	39.77	-.22	1.8449	1.8422	.14
51	1603	1.000	333.150	1.000	44.10	44.22	-.28	1.9755	1.9720	.18
51	1604	1.000	333.150	1.050	46.30	46.46	-.33	2.0358	2.0317	.20
51	1605	1.000	333.150	1.060	46.74	46.91	-.35	2.0475	2.0432	.21
51	1606	1.000	333.150	1.075	47.40	47.58	-.36	2.0646	2.0602	.21
51	1607	1.000	333.150	1.100	48.51	48.70	-.39	2.0925	2.0878	.22
51	1608	1.000	333.150	1.120	49.39	49.59	-.41	2.1142	2.1093	.23
51	1609	1.000	333.150	1.122	49.48	49.66	-.37	2.1158	2.1114	.21
51	1610	1.000	333.150	9.699	427.69	427.51	.04	2.1278	2.1508	-1.07
51	1611	1.000	333.150	9.704	427.92	427.76	.04	2.1595	2.1807	-.97
51	1612	1.000	333.150	9.710	428.19	428.04	.03	2.1955	2.2146	-.86
51	1613	1.000	333.150	9.716	428.44	428.30	.03	2.2288	2.2471	-.81
51	1614	1.000	333.150	9.722	428.71	428.53	.04	2.2577	2.2810	-1.02
51	1615	1.000	333.150	9.728	428.97	428.82	.03	2.2961	2.3151	-.82
51	1616	1.000	333.150	9.734	429.23	429.08	.03	2.3301	2.3495	-.82
51	1617	1.000	333.150	9.740	429.50	429.33	.04	2.3625	2.3841	-.91
51	1618	1.000	333.150	9.746	429.76	429.59	.04	2.3966	2.4185	-.91
51	1619	1.000	343.150	.800	35.28	35.31	-.09	1.7859	1.7847	.07
51	1620	1.000	343.150	1.000	44.10	44.13	-.07	2.0890	2.0881	.04
51	1621	1.000	343.150	1.200	52.92	52.98	-.11	2.3408	2.3393	.06
51	1622	1.000	343.150	1.300	57.33	57.43	-.18	2.4484	2.4461	.09
51	1623	1.000	343.150	1.350	59.53	59.66	-.22	2.4977	2.4949	.11
51	1624	1.000	343.150	1.400	61.74	61.91	-.28	2.5442	2.5407	.14
51	1625	1.000	343.150	1.425	62.84	63.04	-.32	2.5663	2.5625	.15
51	1626	0.000	343.150	1.448	63.85	403.11	-84.16	2.5856	2.5818	.14
51	1627	1.000	343.150	9.149	403.44	403.35	.02	2.6054	2.6132	-.30

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
51	1628	1.000	343.150	9.155	403.69	403.58	.03	2.6247	2.6341	-.36
51	1629	1.000	343.150	9.160	403.94	403.82	.03	2.6445	2.6546	-.38
51	1630	1.000	343.150	9.165	404.17	404.06	.03	2.6651	2.6746	-.36
51	1631	1.000	343.150	9.171	404.42	404.32	.02	2.6868	2.6954	-.32
51	1632	1.000	343.150	9.177	404.67	404.56	.03	2.7077	2.7170	-.34
51	1633	1.000	343.150	9.182	404.92	404.81	.03	2.7290	2.7385	-.35
51	1634	1.000	343.150	9.188	405.15	405.03	.03	2.7479	2.7589	-.40
51	1635	1.000	343.150	9.193	405.40	405.26	.04	2.7680	2.7807	-.46
52	1636	1.000	343.150	1.300	57.33	57.42	-.17	2.4483	2.4461	.09
52	1637	1.000	343.150	1.350	59.53	59.66	-.21	2.4976	2.4949	.11
52	1638	1.000	343.150	1.400	61.74	61.90	-.26	2.5440	2.5407	.13
52	1639	1.000	343.150	1.425	62.84	63.05	-.33	2.5665	2.5625	.16
52	1640	0.000	343.150	1.448	63.85	403.11	-84.16	2.5856	2.5818	.15
52	1641	1.000	343.150	9.147	403.34	403.13	.05	2.5880	2.6049	-.65
52	1642	1.000	343.150	9.152	403.60	403.41	.05	2.6108	2.6261	-.58
52	1643	1.000	343.150	9.158	403.84	403.64	.05	2.6294	2.6462	-.63
52	1644	1.000	343.150	9.164	404.09	403.89	.05	2.6504	2.6677	-.65
52	1645	1.000	343.150	9.169	404.33	404.16	.04	2.6732	2.6882	-.56
52	1646	1.000	343.150	9.175	404.59	404.37	.05	2.6914	2.7100	-.69
51	1647	1.000	348.150	.800	35.28	35.30	-.06	1.8282	1.8273	.05
51	1648	1.000	348.150	1.000	44.10	44.09	.01	2.1447	2.1448	-.01
51	1649	1.000	348.150	1.400	61.74	61.76	-.03	2.6310	2.6305	.02
51	1650	1.000	348.150	1.500	66.15	66.21	-.10	2.7241	2.7227	.05
51	1651	1.000	348.150	1.550	68.35	68.45	-.15	2.7666	2.7647	.07
51	1652	1.000	348.150	1.600	70.56	70.71	-.21	2.8065	2.8039	.09
51	1653	1.000	348.150	1.625	71.66	71.84	-.25	2.8255	2.8225	.11
51	1654	1.000	348.150	1.650	72.76	72.97	-.28	2.8438	2.8405	.12
51	1655	1.000	348.150	8.829	389.33	389.23	.03	2.8604	2.8668	-.23
51	1656	1.000	348.150	8.834	389.57	389.46	.03	2.8745	2.8815	-.24
51	1657	1.000	348.150	8.840	389.81	389.71	.02	2.8907	2.8969	-.21
51	1658	1.000	348.150	8.844	390.01	389.93	.02	2.9048	2.9100	-.18
51	1659	1.000	348.150	8.850	390.25	390.16	.02	2.9200	2.9257	-.20
51	1660	1.000	348.150	8.855	390.47	390.39	.02	2.9348	2.9402	-.18
51	1661	1.000	348.150	8.860	390.71	390.61	.02	2.9496	2.9557	-.21
51	1662	1.000	348.150	8.865	390.94	390.84	.03	2.9642	2.9713	-.24
51	1663	1.000	348.150	9.000	396.88	396.55	.08	3.3770	3.4025	-.75
51	1664	1.000	348.150	9.500	418.92	418.51	.10	5.6828	5.7387	-.98
52	1665	1.000	348.150	.800	35.28	35.30	-.06	1.8281	1.8273	.04
52	1666	1.000	348.150	9.001	396.94	396.48	.12	3.3717	3.4076	-1.05
52	1667	1.000	348.150	9.501	418.96	418.53	.10	5.6861	5.7436	-1.00
52	1668	1.000	348.150	9.999	440.91	440.79	.03	9.5096	9.5358	-.28
52	1669	1.000	348.150	10.499	462.97	463.09	-.03	15.3466	15.3066	.26
52	1670	1.000	348.150	11.000	485.05	485.48	-.09	23.8349	23.6406	.82
52	1671	1.000	348.150	11.500	507.11	507.89	-.15	35.6945	35.2172	1.36
51	1672	1.000	353.150	.800	35.28	35.29	-.04	1.8701	1.8696	.03
51	1673	1.000	353.150	1.000	44.10	44.07	.06	2.2000	2.2009	-.04
51	1674	1.000	353.150	1.500	66.15	66.07	.12	2.8177	2.8194	-.06
51	1675	1.000	353.150	1.700	74.97	74.97	-.00	2.9904	2.9903	.00
51	1676	1.000	353.150	1.800	79.37	79.45	-.10	3.0621	3.0609	.04
51	1677	1.000	353.150	1.850	81.58	81.72	-.17	3.0945	3.0926	.06
51	1678	1.000	353.150	1.900	83.78	83.99	-.25	3.1246	3.1219	.09
51	1679	1.000	353.150	8.462	373.14	373.14	0.00	3.1365	3.1365	.00
51	1680	1.000	353.150	8.467	373.35	373.35	.00	3.1462	3.1463	-.01
51	1681	1.000	353.150	8.472	373.58	373.57	.00	3.1561	3.1564	-.01
51	1682	1.000	353.150	8.477	373.79	373.80	-.00	3.1667	3.1665	.01
51	1683	1.000	353.150	8.481	374.01	374.00	.00	3.1760	3.1763	-.01

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
51	1684	1.000	353.150	8.486	374.23	374.22	.00	3.1865	3.1865	-.00
51	1685	1.000	353.150	8.491	374.44	374.44	.00	3.1964	3.1967	-.01
51	1686	1.000	353.150	8.496	374.66	374.63	.01	3.2056	3.2072	-.05
51	1687	1.000	358.150	.800	35.28	35.28	-.02	1.9117	1.9115	.01
51	1688	1.000	358.150	1.000	44.10	44.05	.10	2.2547	2.2563	-.07
51	1689	1.000	358.150	1.500	66.15	65.98	.25	2.9101	2.9141	-.14
51	1690	1.000	358.150	1.900	83.78	83.68	.13	3.2525	3.2541	-.05
51	1691	1.000	358.150	2.000	88.19	88.16	.04	3.3162	3.3166	-.01
51	1692	1.000	358.150	2.100	92.60	92.68	-.08	3.3717	3.3708	.03
51	1693	1.000	358.150	2.200	97.01	97.26	-.25	3.4196	3.4172	.07
51	1694	1.000	358.150	2.225	98.12	98.42	-.31	3.4304	3.4277	.08
51	1695	1.000	358.150	8.025	353.88	354.13	-.07	3.4408	3.4336	.21
51	1696	1.000	358.150	8.030	354.08	354.31	-.06	3.4461	3.4394	.19
51	1697	1.000	358.150	8.034	354.28	354.52	-.07	3.4521	3.4452	.20
51	1698	1.000	358.150	8.039	354.48	354.70	-.06	3.4574	3.4509	.19
51	1699	1.000	358.150	8.043	354.68	354.88	-.05	3.4627	3.4569	.17
51	1700	1.000	358.150	8.048	354.88	355.06	-.05	3.4682	3.4628	.16
51	1701	1.000	358.150	8.052	355.08	355.25	-.05	3.4738	3.4688	.15
51	1702	1.000	363.150	.800	35.28	35.28	-.01	1.9532	1.9531	.00
51	1703	1.000	363.150	1.000	44.10	43.97	.29	2.3062	2.3111	-.21
51	1704	1.000	363.150	1.500	66.15	65.91	.36	3.0010	3.0071	-.20
51	1705	1.000	363.150	2.000	88.19	87.93	.30	3.4504	3.4545	-.12
51	1706	1.000	363.150	2.500	110.24	110.44	-.18	3.7063	3.7048	.04
51	1707	1.000	363.150	2.550	112.45	112.74	-.26	3.7231	3.7210	.05
51	1708	1.000	363.150	2.600	114.65	115.06	-.35	3.7385	3.7359	.07
51	1709	1.000	363.150	2.630	115.98	116.46	-.41	3.7470	3.7441	.08
51	1710	1.000	363.150	2.650	116.86	117.39	-.45	3.7524	3.7493	.08
51	1711	1.000	363.150	7.467	329.29	329.89	-.18	3.7735	3.7645	.24
51	1712	1.000	363.150	7.476	329.66	330.23	-.17	3.7787	3.7700	.23
51	1713	1.000	363.150	7.483	330.00	330.85	-.26	3.7882	3.7751	.35
51	1714	1.000	363.150	7.500	330.71	331.19	-.14	3.7935	3.7860	.20
51	1715	1.000	363.150	7.507	331.05	331.50	-.13	3.7985	3.7914	.19
52	1716	1.000	363.150	2.000	88.19	87.92	.31	3.4504	3.4545	-.12
52	1717	1.000	363.150	2.500	110.24	110.45	-.19	3.7064	3.7048	.04
52	1718	1.000	363.150	2.550	112.45	112.76	-.27	3.7232	3.7210	.06
52	1719	1.000	363.150	2.600	114.65	115.08	-.37	3.7386	3.7359	.07
52	1720	1.000	363.150	2.630	115.98	116.49	-.44	3.7472	3.7441	.08
52	1721	1.000	363.150	2.650	116.86	117.45	-.50	3.7527	3.7493	.09
52	1722	1.000	363.150	7.462	329.05	329.50	-.14	3.7676	3.7611	.17
52	1723	1.000	363.150	7.466	329.25	329.70	-.14	3.7707	3.7640	.18
52	1724	1.000	363.150	7.470	329.42	329.83	-.13	3.7726	3.7664	.16
51	1725	1.000	365.150	.800	35.28	35.28	-.00	1.9697	1.9697	.00
51	1726	1.000	365.150	1.000	44.10	44.04	.14	2.3306	2.3330	-.10
51	1727	1.000	365.150	1.500	66.15	65.58	.87	3.0289	3.0439	-.49
51	1728	1.000	365.150	2.000	88.19	87.87	.37	3.5035	3.5088	-.15
51	1729	1.000	365.150	2.000	88.19	87.85	.39	3.5032	3.5088	-.16
51	1730	1.000	365.150	2.500	110.24	110.17	.07	3.7780	3.7787	-.02
51	1731	1.000	365.150	2.500	110.24	110.10	.13	3.7774	3.7787	-.03
51	1732	1.000	365.150	2.700	119.06	119.32	-.21	3.8456	3.8440	.04
51	1733	1.000	365.150	2.700	119.06	119.22	-.13	3.8450	3.8440	.03
51	1734	1.000	365.150	2.750	121.27	121.63	-.30	3.8593	3.8572	.05
51	1735	1.000	365.150	2.750	121.27	121.52	-.21	3.8587	3.8572	.04
51	1736	1.000	365.150	2.800	123.47	123.95	-.39	3.8717	3.8693	.06
51	1737	1.000	365.150	2.800	123.47	123.82	-.28	3.8711	3.8693	.05
51	1738	1.000	365.150	2.850	125.68	126.31	-.50	3.8831	3.8801	.08
51	1739	1.000	365.150	2.850	125.68	126.16	-.38	3.8824	3.8801	.06

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
51	1740	1.000	365.150	2.900	127.88	128.63	-.58	3.8930	3.8899	.08
51	1741	1.000	365.150	2.900	127.88	128.49	-.47	3.8925	3.8899	.06
51	1742	1.000	365.150	7.163	315.86	316.61	-.24	3.9065	3.8993	.18
51	1743	1.000	365.150	7.167	316.03	316.82	-.25	3.9085	3.9009	.20
51	1744	1.000	365.150	7.170	316.18	316.88	-.22	3.9091	3.9023	.17
51	1745	1.000	365.150	7.170	316.18	316.87	-.22	3.9090	3.9023	.17
51	1746	1.000	365.150	7.184	316.80	317.42	-.20	3.9146	3.9083	.16
51	1747	1.000	365.150	7.184	316.80	317.40	-.19	3.9143	3.9083	.15
51	1748	1.000	365.150	7.192	317.15	317.76	-.19	3.9180	3.9118	.16
51	1749	1.000	365.150	7.192	317.16	317.77	-.19	3.9182	3.9119	.16
51	1750	1.000	365.150	7.200	317.48	318.01	-.17	3.9206	3.9151	.14
51	1751	1.000	365.150	7.200	317.48	318.06	-.18	3.9211	3.9151	.15
51	1752	1.000	365.150	7.207	317.80	318.31	-.16	3.9237	3.9184	.14
51	1753	1.000	365.150	7.207	317.80	318.36	-.17	3.9243	3.9185	.15
51	1754	1.000	365.150	7.214	318.13	318.66	-.17	3.9275	3.9218	.14
51	1755	1.000	367.150	2.500	110.24	110.06	.16	3.8498	3.8515	-.04
51	1756	1.000	367.150	3.000	132.29	132.76	-.36	4.0024	4.0004	.05
51	1757	1.000	367.150	3.100	136.70	137.39	-.50	4.0201	4.0177	.06
51	1758	1.000	367.150	3.200	141.11	142.08	-.69	4.0343	4.0317	.07
51	1759	1.000	367.150	3.250	143.32	144.47	-.80	4.0403	4.0375	.07
51	1760	0.000	367.150	3.270	144.20	298.47	-51.69	4.0424	4.0396	.07
51	1761	0.000	367.150	3.290	145.08	298.89	-51.46	4.0444	4.0416	.07
51	1762	1.000	367.150	6.769	298.47	299.47	-.33	4.0473	4.0424	.12
51	1763	1.000	367.150	6.772	298.62	299.59	-.33	4.0480	4.0431	.12
51	1764	1.000	367.150	6.775	298.76	299.73	-.32	4.0487	4.0438	.12
51	1765	1.000	367.150	6.798	299.78	300.51	-.24	4.0529	4.0489	.10
51	1766	1.000	368.150	.800	35.28	35.28	.00	1.9944	1.9944	-.00
51	1767	1.000	368.150	1.000	44.10	44.03	.15	2.3629	2.3656	-.11
51	1768	1.000	368.150	1.500	66.15	65.86	.43	3.0910	3.0987	-.25
51	1769	1.000	368.150	2.000	88.19	87.77	.48	3.5818	3.5892	-.21
51	1770	1.000	368.150	2.500	110.24	110.00	.22	3.8852	3.8876	-.06
51	1771	1.000	368.150	3.000	132.29	132.55	-.20	4.0478	4.0465	.03
51	1772	1.000	368.150	3.200	141.11	141.71	-.42	4.0840	4.0820	.05
51	1773	1.000	368.150	3.300	145.52	146.35	-.57	4.0973	4.0952	.05
51	1774	1.000	368.150	3.350	147.73	148.68	-.64	4.1029	4.1007	.05
51	1775	1.000	368.150	3.400	149.93	151.03	-.73	4.1079	4.1056	.05
51	1776	1.000	368.150	3.450	152.14	153.36	-.80	4.1121	4.1099	.05
51	1777	1.000	368.150	3.500	154.34	155.75	-.91	4.1158	4.1137	.05
51	1778	1.000	368.150	6.499	286.57	287.68	-.39	4.1199	4.1166	.08
51	1779	1.000	368.150	6.502	286.70	287.81	-.38	4.1203	4.1170	.08
51	1780	1.000	368.150	6.505	286.84	287.89	-.37	4.1205	4.1174	.08
51	1781	1.000	368.150	6.508	286.97	288.04	-.37	4.1210	4.1177	.08
51	1782	1.000	368.150	6.511	287.10	288.15	-.36	4.1213	4.1181	.08
51	1783	1.000	369.150	2.500	110.24	109.91	.31	3.9199	3.9234	-.09
51	1784	1.000	369.150	2.500	110.24	109.95	.27	3.9204	3.9234	-.08
51	1785	1.000	369.150	3.000	132.29	132.41	-.09	4.0928	4.0922	.02
51	1786	1.000	369.150	3.500	154.34	155.14	-.51	4.1713	4.1697	.04
51	1787	1.000	369.150	3.700	163.16	164.54	-.84	4.1857	4.1841	.04
51	1788	1.000	369.150	3.750	165.36	166.47	-.67	4.1877	4.1866	.03
51	1789	1.000	369.150	3.800	167.57	168.79	-.72	4.1898	4.1887	.02
51	1790	1.000	369.150	3.850	169.77	171.11	-.78	4.1915	4.1906	.02
51	1791	0.000	369.150	3.900	171.98	268.91	-36.05	4.1929	4.1921	.02
51	1792	0.000	369.150	3.920	172.86	269.38	-35.83	4.1934	4.1926	.02
51	1793	1.000	369.150	6.112	269.54	270.58	-.39	4.1947	4.1935	.03
51	1794	1.000	369.150	6.115	269.66	270.61	-.35	4.1948	4.1937	.03
51	1795	1.000	369.150	6.118	269.78	270.75	-.36	4.1949	4.1938	.03

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
51	1796	1.000	369.150	6.121	269.90	270.78	-.32	4.1950	4.1939	.02
51	1797	1.000	369.150	6.123	270.02	270.89	-.32	4.1951	4.1941	.02
51	1798	1.000	369.150	6.126	270.14	271.01	-.32	4.1953	4.1942	.03
51	1799	1.000	369.150	6.129	270.26	271.02	-.28	4.1953	4.1943	.02
51	1800	1.000	369.150	6.129	270.26	271.03	-.28	4.1953	4.1943	.02
51	1801	1.000	369.150	6.134	270.49	271.25	-.28	4.1956	4.1946	.02
51	1802	1.000	369.150	6.139	270.73	271.42	-.25	4.1958	4.1949	.02
51	1803	1.000	369.150	6.145	270.97	271.59	-.23	4.1960	4.1952	.02
51	1804	1.000	369.150	6.199	273.37	273.51	-.05	4.1988	4.1985	.01
51	1805	1.000	369.150	6.251	275.65	275.36	.10	4.2019	4.2024	-.01
51	1806	1.000	369.150	6.500	286.63	285.43	.42	4.2277	4.2320	-.10
51	1807	1.000	369.650	3.000	132.29	132.39	-.07	4.1155	4.1149	.01
51	1808	1.000	369.650	3.250	143.32	143.67	-.24	4.1662	4.1649	.03
51	1809	1.000	369.650	3.500	154.34	154.97	-.41	4.1988	4.1974	.03
51	1810	1.000	369.650	3.750	165.36	166.13	-.46	4.2178	4.2168	.02
51	1811	1.000	369.650	3.800	167.57	168.32	-.45	4.2203	4.2195	.02
51	1812	1.000	369.650	3.850	169.77	170.49	-.42	4.2225	4.2218	.02
51	1813	1.000	369.650	3.900	171.98	172.66	-.39	4.2244	4.2238	.01
51	1814	1.000	369.650	3.950	174.18	174.99	-.46	4.2261	4.2255	.01
51	1815	1.000	369.650	4.000	176.39	177.26	-.49	4.2275	4.2270	.01
51	1816	1.000	369.650	5.703	251.49	252.54	-.42	4.2319	4.2316	.01
51	1817	1.000	369.650	5.733	252.82	253.38	-.22	4.2321	4.2319	.00
51	1818	1.000	369.650	5.757	253.86	254.02	-.07	4.2323	4.2323	.00
51	1819	1.000	369.650	5.781	254.90	254.73	.07	4.2326	4.2327	-.00
51	1820	1.000	369.650	5.781	254.91	254.88	.01	4.2327	4.2327	-.00
51	1821	1.000	369.650	5.792	255.43	255.11	.13	4.2328	4.2329	-.00
51	1822	1.000	369.650	5.805	255.96	255.52	.17	4.2329	4.2331	-.00
51	1823	1.000	369.650	5.829	257.03	256.33	.27	4.2333	4.2336	-.01
51	1824	1.000	369.750	3.950	174.13	174.86	-.38	4.2324	4.2319	.01
51	1825	1.000	369.750	4.000	176.39	177.24	-.48	4.2340	4.2335	.01
51	1826	1.000	369.750	4.050	178.59	179.03	-.24	4.2351	4.2348	.01
51	1827	1.000	369.750	4.100	180.80	181.47	-.37	4.2363	4.2359	.01
51	1828	1.000	369.750	4.150	183.00	183.67	-.36	4.2371	4.2369	.01
51	1829	1.000	369.750	4.200	185.21	185.37	-.09	4.2377	4.2376	.00
51	1830	1.000	369.750	4.300	189.62	191.27	-.86	4.2390	4.2387	.01
51	1831	1.000	369.750	5.574	245.80	245.14	.27	4.2395	4.2396	-.00
51	1832	1.000	369.750	5.608	247.28	246.41	.35	4.2397	4.2398	-.00
51	1833	1.000	369.750	5.623	247.97	246.22	.71	4.2397	4.2400	-.01
51	1834	1.000	369.750	5.623	247.98	246.22	.72	4.2397	4.2400	-.01
51	1835	1.000	369.750	5.642	248.78	248.48	.12	4.2401	4.2401	-.00
51	1836	1.000	369.750	5.669	249.98	249.24	.30	4.2403	4.2404	-.00
51	1837	1.000	369.750	5.699	251.31	250.27	.41	4.2405	4.2408	-.01
51	1838	1.000	369.750	5.758	253.89	251.92	.78	4.2410	4.2417	-.02
52	1839	1.000	369.750	4.000	176.39	177.65	-.71	4.2343	4.2335	.02
52	1840	1.000	369.750	4.300	189.62	191.61	-1.04	4.2390	4.2387	.01
52	1841	1.000	369.750	5.554	244.92	248.98	-1.63	4.2402	4.2395	.02
52	1842	1.000	369.750	5.565	245.42	248.98	-1.43	4.2402	4.2396	.01
52	1843	1.000	369.750	5.577	245.91	249.11	-1.29	4.2402	4.2396	.01
52	1844	1.000	369.750	5.588	246.41	249.11	-1.09	4.2402	4.2397	.01
52	1845	1.000	369.750	5.633	248.42	250.53	-.84	4.2406	4.2401	.01
52	1846	1.000	369.750	5.680	250.46	251.54	-.43	4.2409	4.2406	.01
52	1847	1.000	369.770	4.000	176.39	177.70	-.74	4.2356	4.2348	.02
52	1848	1.000	369.770	4.150	183.00	184.61	-.87	4.2388	4.2382	.01
52	1849	1.000	369.770	4.200	185.21	186.88	-.89	4.2395	4.2390	.01
52	1850	1.000	369.770	4.250	187.41	189.21	-.95	4.2400	4.2396	.01
52	1851	1.000	369.770	4.300	189.62	191.74	-1.11	4.2405	4.2401	.01

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
52	1852	1.000	369.770	4.350	191.82	194.08	-1.16	4.2408	4.2405	.01
52	1853	0.000	369.770	4.440	195.79	244.56	-19.94	4.2412	4.2409	.01
52	1854	1.000	369.770	5.544	244.46	247.37	-1.17	4.2417	4.2412	.01
52	1855	1.000	369.770	5.566	245.43	248.11	-1.08	4.2418	4.2414	.01
52	1856	1.000	369.770	5.611	247.42	249.12	-.68	4.2421	4.2417	.01
52	1857	1.000	369.770	5.655	249.37	250.48	-.44	4.2424	4.2421	.01
52	1858	1.000	369.770	5.703	251.50	251.77	-.11	4.2428	4.2427	.00
52	1859	1.000	369.790	4.020	177.29	178.58	-.73	4.2375	4.2367	.02
52	1860	1.000	369.790	4.221	186.15	187.72	-.84	4.2411	4.2407	.01
52	1861	1.000	369.790	4.272	188.37	188.68	-.16	4.2413	4.2413	.00
52	1862	1.000	369.790	4.322	190.59	192.14	-.81	4.2420	4.2417	.01
52	1863	1.000	369.790	4.372	192.80	194.92	-1.09	4.2423	4.2421	.01
52	1864	1.000	369.790	4.423	195.02	196.99	-1.00	4.2425	4.2423	.00
52	1865	0.000	369.790	4.486	197.83	242.23	-18.33	4.2428	4.2426	.00
52	1866	1.000	369.790	5.519	243.38	246.00	-1.07	4.2433	4.2429	.01
52	1867	1.000	369.790	5.563	245.32	247.10	-.72	4.2435	4.2431	.01
52	1868	1.000	369.790	5.609	247.32	247.93	-.24	4.2436	4.2435	.00
52	1869	1.000	369.790	5.654	249.34	249.46	-.05	4.2440	4.2440	.00
52	1870	1.000	369.790	5.701	251.40	251.08	.13	4.2445	4.2446	-.00
52	1871	1.000	369.810	4.000	176.39	177.64	-.71	4.2382	4.2374	.02
52	1872	1.000	369.810	4.200	185.21	186.38	-.63	4.2421	4.2417	.01
52	1873	1.000	369.810	4.300	189.62	191.02	-.74	4.2432	4.2429	.01
52	1874	1.000	369.810	4.350	191.82	193.07	-.64	4.2436	4.2434	.00
52	1875	1.000	369.810	4.400	194.03	195.65	-.83	4.2439	4.2437	.00
52	1876	1.000	369.810	4.450	196.23	198.52	-1.15	4.2441	4.2439	.00
52	1877	0.000	369.810	4.530	199.76	241.11	-17.15	4.2444	4.2442	.01
52	1878	1.000	369.810	5.473	241.35	244.37	-1.24	4.2448	4.2445	.01
52	1879	1.000	369.810	5.517	243.27	244.78	-.61	4.2449	4.2447	.00
52	1880	1.000	369.810	5.561	245.24	246.17	-.38	4.2451	4.2449	.00
52	1881	1.000	369.810	5.629	248.23	248.18	.02	4.2455	4.2455	-.00
52	1882	1.000	369.810	5.699	251.30	250.54	.30	4.2462	4.2464	-.01
52	1883	1.000	369.830	4.000	176.39	177.79	-.79	4.2396	4.2387	.02
52	1884	1.000	369.830	4.200	185.21	186.45	-.66	4.2435	4.2431	.01
52	1885	1.000	369.830	4.300	189.62	191.08	-.76	4.2447	4.2444	.01
52	1886	1.000	369.830	4.400	194.03	195.67	-.84	4.2453	4.2451	.00
52	1887	1.000	369.830	4.450	196.23	198.10	-.94	4.2455	4.2454	.00
52	1888	1.000	369.830	4.500	198.44	200.51	-1.04	4.2457	4.2456	.00
52	1889	0.000	369.830	4.572	201.61	236.07	-14.60	4.2459	4.2457	.00
52	1890	1.000	369.830	5.351	235.99	241.27	-2.19	4.2462	4.2459	.01
52	1891	1.000	369.830	5.473	241.32	242.85	-.63	4.2464	4.2462	.00
52	1892	1.000	369.830	5.516	243.25	243.91	-.27	4.2465	4.2464	.00
52	1893	1.000	369.830	5.561	245.20	245.77	-.23	4.2468	4.2467	.00
52	1894	1.000	369.830	5.606	247.20	247.35	-.06	4.2472	4.2471	.00
52	1895	1.000	369.830	5.675	250.24	249.45	.32	4.2477	4.2479	-.01
52	1896	1.000	369.840	4.000	176.39	177.61	-.69	4.2402	4.2393	.02
52	1897	1.000	369.840	4.200	185.21	186.71	-.80	4.2443	4.2438	.01
52	1898	1.000	369.840	4.400	194.03	195.96	-.99	4.2461	4.2458	.01
52	1899	1.000	369.840	4.450	196.23	197.88	-.83	4.2463	4.2461	.00
52	1900	1.000	369.840	4.500	198.44	199.86	-.71	4.2464	4.2463	.00
52	1901	1.000	369.840	4.550	200.64	205.97	-2.59	4.2466	4.2464	.00
52	1902	0.000	369.840	4.600	202.85	234.49	-13.49	4.2467	4.2465	.00
52	1903	1.000	369.840	5.300	233.70	240.24	-2.72	4.2470	4.2467	.01
52	1904	1.000	369.840	5.340	235.49	241.12	-2.34	4.2471	4.2467	.01
52	1905	1.000	369.840	5.382	237.32	240.70	-1.40	4.2471	4.2468	.01
52	1906	1.000	369.840	5.450	240.35	241.81	-.60	4.2472	4.2470	.00
52	1907	1.000	369.840	5.499	242.51	243.66	-.47	4.2474	4.2472	.00

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
52	1908	1.000	369.840	5.600	246.96	246.74	.09	4.2479	4.2480	-.00
51	1909	1.000	369.850	4.000	176.39	177.04	-.37	4.2404	4.2400	.01
51	1910	1.000	369.850	4.200	185.21	185.29	-.04	4.2445	4.2445	.00
51	1911	1.000	369.850	4.400	194.03	193.06	.50	4.2464	4.2466	-.00
51	1912	1.000	369.850	4.600	202.85	197.69	2.61	4.2470	4.2473	-.01
51	1913	1.000	369.850	4.800	211.67	198.93	6.40	4.2471	4.2475	-.01
51	1914	0.000	369.850	5.000	220.49	199.95	10.27	4.2472	4.2475	-.01
51	1915	0.000	369.850	5.000	220.49	199.20	10.68	4.2471	4.2475	-.01
51	1916	0.000	369.850	5.200	229.31	199.49	14.94	4.2471	4.2475	-.01
51	1917	1.000	369.850	5.400	238.13	228.29	4.31	4.2475	4.2477	-.01
51	1918	1.000	369.850	5.600	246.94	241.74	2.15	4.2480	4.2489	-.02
52	1919	1.000	369.850	4.000	176.39	177.64	-.70	4.2408	4.2400	.02
52	1920	1.000	369.850	4.200	185.21	186.54	-.71	4.2449	4.2445	.01
52	1921	1.000	369.850	4.400	194.03	195.62	-.82	4.2468	4.2466	.00
52	1922	1.000	369.850	4.450	196.23	197.92	-.85	4.2470	4.2468	.00
52	1923	1.000	369.850	4.500	198.44	200.27	-.92	4.2472	4.2470	.00
52	1924	1.000	369.850	4.550	200.64	201.99	-.67	4.2473	4.2472	.00
52	1925	1.000	369.850	4.600	202.85	207.91	-2.43	4.2474	4.2473	.00
52	1926	0.000	369.850	4.750	209.46	233.13	-10.15	4.2475	4.2474	.00
52	1927	1.000	369.850	4.900	216.08	233.93	-7.63	4.2476	4.2475	.00
52	1928	1.000	369.850	5.000	220.49	236.22	-6.66	4.2476	4.2475	.00
52	1929	1.000	369.850	5.100	224.90	236.65	-4.97	4.2477	4.2475	.00
52	1930	1.000	369.850	5.150	227.10	237.78	-4.49	4.2477	4.2475	.01
52	1931	1.000	369.850	5.150	227.10	237.05	-4.20	4.2477	4.2475	.00
52	1932	1.000	369.850	5.300	233.72	239.00	-2.21	4.2478	4.2475	.01
52	1933	1.000	369.850	5.350	235.92	238.72	-1.17	4.2478	4.2476	.00
52	1934	1.000	369.850	5.400	238.13	239.27	-.48	4.2478	4.2477	.00
52	1935	1.000	369.850	5.500	242.53	242.97	-.18	4.2482	4.2481	.00
52	1936	1.000	369.850	5.600	246.94	246.01	.38	4.2487	4.2489	-.00
52	1937	1.000	369.860	4.000	176.39	177.46	-.61	4.2414	4.2406	.02
52	1938	1.000	369.860	4.147	182.87	183.83	-.52	4.2447	4.2443	.01
52	1939	1.000	369.860	4.400	194.03	194.48	-.23	4.2474	4.2473	.00
52	1940	1.000	369.860	4.600	202.85	202.38	.23	4.2480	4.2481	-.00
52	1941	1.000	369.860	4.700	207.26	216.54	-4.29	4.2483	4.2482	.00
52	1942	1.000	369.860	4.800	211.67	206.69	2.41	4.2482	4.2482	-.00
52	1943	1.000	369.860	4.900	216.08	228.90	-5.60	4.2483	4.2483	.00
52	1944	1.000	369.860	5.000	220.49	223.53	-1.36	4.2483	4.2483	.00
52	1945	1.000	369.860	5.100	224.90	232.66	-3.34	4.2484	4.2483	.00
52	1946	1.000	369.860	5.200	229.31	232.66	-1.44	4.2484	4.2483	.00
52	1947	1.000	369.860	5.300	233.72	234.40	-.29	4.2484	4.2484	.00
52	1948	1.000	369.860	5.400	238.13	238.52	-.16	4.2486	4.2486	.00
52	1949	1.000	369.860	5.500	242.53	241.76	.32	4.2489	4.2490	-.00
52	1950	1.000	369.860	5.600	246.94	245.46	.60	4.2495	4.2498	-.01
52	1951	1.000	369.870	4.000	176.39	177.46	-.60	4.2420	4.2413	.02
52	1952	1.000	369.870	4.200	185.21	186.08	-.47	4.2462	4.2459	.01
52	1953	1.000	369.870	4.400	194.03	194.97	-.48	4.2481	4.2480	.00
52	1954	1.000	369.870	4.600	202.85	203.41	-.28	4.2488	4.2488	.00
52	1955	1.000	369.870	4.700	207.26	207.20	.03	4.2490	4.2490	-.00
52	1956	1.000	369.870	4.800	211.67	218.31	-3.04	4.2491	4.2490	.00
52	1957	1.000	369.870	4.900	216.08	224.98	-3.96	4.2491	4.2491	.00
52	1958	1.000	369.870	5.000	220.49	230.36	-4.29	4.2492	4.2491	.00
52	1959	1.000	369.870	5.100	224.90	231.39	-2.81	4.2492	4.2491	.00
52	1960	1.000	369.870	5.200	229.31	232.24	-1.27	4.2492	4.2492	.00
52	1961	1.000	369.870	5.300	233.72	234.72	-.43	4.2493	4.2493	.00
52	1962	1.000	369.870	5.400	238.13	237.13	.42	4.2494	4.2495	-.00
52	1963	1.000	369.870	5.500	242.53	241.52	.42	4.2498	4.2499	-.00

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
52	1964	1.000	369.870	5.600	246.94	245.43	.62	4.2504	4.2507	-.01
51	1965	1.000	369.900	4.000	176.39	176.78	-.22	4.2435	4.2432	.01
51	1966	1.000	369.900	4.200	185.21	185.09	.06	4.2479	4.2479	-.00
51	1967	1.000	369.900	4.560	201.08	195.10	3.07	4.2503	4.2510	-.01
51	1968	1.000	369.900	4.600	202.85	197.04	2.95	4.2506	4.2511	-.01
51	1969	1.000	369.900	4.700	207.26	198.86	4.22	4.2508	4.2513	-.01
51	1970	1.000	369.900	4.800	211.67	198.34	6.72	4.2507	4.2514	-.02
51	1971	1.000	369.900	4.900	216.08	197.21	9.57	4.2506	4.2514	-.02
51	1972	1.000	369.900	5.000	220.49	201.63	9.35	4.2510	4.2515	-.01
51	1973	0.000	369.900	5.100	224.90	199.76	12.58	4.2509	4.2516	-.02
51	1974	0.000	369.900	5.200	229.31	202.26	13.37	4.2510	4.2517	-.02
51	1975	1.000	369.900	5.300	233.72	215.53	8.44	4.2514	4.2518	-.01
51	1976	0.000	369.900	5.400	238.13	207.64	14.68	4.2513	4.2521	-.02
51	1977	1.000	369.900	5.600	246.94	240.84	2.54	4.2524	4.2535	-.03
51	1978	1.000	369.900	5.800	255.76	251.63	1.64	4.2549	4.2569	-.05
51	1979	1.000	370.150	2.500	110.24	109.89	.32	3.9553	3.9591	-.10
51	1980	1.000	370.150	3.000	132.29	132.30	-.00	4.1376	4.1376	.00
51	1981	1.000	370.150	3.500	154.34	154.83	-.31	4.2262	4.2249	.03
51	1982	1.000	370.150	4.000	176.39	176.66	-.15	4.2596	4.2594	.01
51	1983	1.000	370.150	4.500	198.44	194.87	1.83	4.2683	4.2691	-.02
51	1984	1.000	370.150	4.750	209.46	201.37	4.02	4.2696	4.2706	-.02
51	1985	1.000	370.150	5.000	220.49	205.72	7.18	4.2702	4.2718	-.04
51	1986	1.000	370.150	5.250	231.51	212.74	8.82	4.2710	4.2730	-.05
51	1987	1.000	370.150	5.500	242.53	227.02	6.83	4.2725	4.2750	-.06
51	1988	1.000	370.150	6.000	264.58	259.93	1.79	4.2845	4.2898	-.12

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer (13)Cherney, (17)Tomlinson (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
17	1989	0.000	322.594	10.259	452.40	451.56	.19	2.0774	2.2342	-7.02
17	1990	0.000	324.817	10.257	452.29	451.41	.19	2.9110	3.0809	-5.52
17	1991	0.000	327.594	10.254	452.16	451.30	.19	3.9672	4.1402	-4.18
17	1992	0.000	318.706	10.439	460.31	459.51	.17	2.0864	2.2552	-7.49
17	1993	0.000	323.150	10.434	460.09	459.27	.18	3.8638	4.0467	-4.52
17	1994	0.000	327.594	10.429	459.87	459.09	.17	5.6523	5.8351	-3.13
17	1995	0.000	313.706	10.619	468.29	467.57	.15	1.7382	1.9070	-8.85
17	1996	0.000	320.928	10.611	467.90	467.21	.15	4.8022	4.9781	-3.53
17	1997	0.000	327.594	10.603	467.56	466.92	.14	7.6311	7.8069	-2.25
17	1998	0.000	309.261	10.816	476.97	476.40	.12	1.9140	2.0652	-7.32
17	1999	0.000	314.817	10.810	476.67	476.06	.13	4.4064	4.5778	-3.74
17	2000	0.000	320.372	10.802	476.36	475.79	.12	6.9085	7.0777	-2.39
17	2001	0.000	325.928	10.796	476.07	475.49	.12	9.3913	9.5736	-1.90
17	2002	0.000	304.261	10.997	484.95	484.34	.13	1.7127	1.8918	-9.47
17	2003	0.000	313.150	10.986	484.44	483.85	.12	5.9412	6.1290	-3.06
17	2004	0.000	322.039	10.975	483.95	483.42	.11	10.1567	10.3414	-1.79
17	2005	0.000	298.150	11.183	493.13	492.60	.11	1.1238	1.2935	-13.12
17	2006	0.000	305.372	11.173	492.69	492.19	.10	4.7615	4.9342	-3.50
17	2007	0.000	313.706	11.162	492.21	491.74	.10	8.9370	9.1134	-1.94
17	2008	0.000	322.039	11.151	491.73	491.30	.09	13.0890	13.2597	-1.29
17	2009	0.000	293.150	11.364	501.13	500.68	.09	1.1445	1.3031	-12.17
17	2010	0.000	298.150	11.357	500.81	500.39	.08	3.8100	3.9649	-3.90
17	2011	0.000	308.150	11.343	500.20	499.86	.07	9.1162	9.2563	-1.51
17	2012	0.000	316.483	11.332	499.70	499.43	.05	13.5096	13.6266	-.86
17	2013	0.000	298.150	11.532	508.54	508.21	.07	6.9272	7.0698	-2.02
17	2014	0.000	299.817	11.547	509.17	509.61	-.09	8.5157	8.3215	2.33
17	2015	0.000	303.150	11.525	508.23	507.93	.06	9.7195	9.8542	-1.37
17	2016	0.000	308.706	11.517	507.88	507.64	.05	12.8125	12.9268	-.88
17	2017	0.000	282.594	11.724	517.01	516.63	.07	1.1625	1.3245	-12.23
17	2018	0.000	284.261	11.722	516.89	516.52	.07	2.1484	2.3107	-7.02
17	2019	0.000	291.483	11.710	516.37	516.11	.05	6.4383	6.5580	-1.82
17	2020	0.000	298.150	11.700	515.95	515.73	.04	10.3635	10.4706	-1.02
17	2021	0.000	303.150	11.693	515.63	515.42	.04	13.2765	13.3815	-.78
17	2022	0.000	277.594	11.880	523.87	523.54	.06	1.0563	1.2104	-12.74
17	2023	0.000	285.928	11.866	523.27	523.06	.04	6.2501	6.3549	-1.65
17	2024	0.000	291.483	11.857	522.87	522.75	.02	9.6864	9.7503	-.65
17	2025	0.000	298.150	11.847	522.43	522.37	.01	13.7792	13.8113	-.23
17	2026	0.000	280.372	12.038	530.83	530.84	-.00	6.5769	6.5729	.06
17	2027	0.000	285.928	12.029	530.43	530.49	-.01	10.1780	10.1461	.31
17	2028	0.000	291.483	12.020	530.04	530.20	-.03	13.7881	13.6958	.67

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
4	2029	0.000	303.150	.041	1.79	1.80	-.80	.1013	.1005	.80
4	2030	0.000	348.150	.035	1.55	1.56	-.74	.1013	.1006	.74
4	2031	0.000	373.150	.033	1.44	1.45	-.78	.1013	.1005	.78
4	2032	0.000	380.950	.032	1.41	1.42	-.83	.1013	.1005	.83
4	2033	0.000	303.150	.083	3.64	3.67	-.79	.2027	.2011	.77
4	2034	0.000	348.150	.071	3.13	3.16	-.79	.2027	.2011	.78
4	2035	0.000	303.150	.126	5.55	5.59	-.81	.3040	.3016	.77
4	2036	0.000	380.950	.098	4.30	4.34	-.98	.3040	.3011	.96
4	2037	0.000	303.150	.171	7.53	7.59	-.80	.4053	.4023	.76
4	2038	0.000	348.150	.145	6.40	6.45	-.78	.4053	.4023	.76
4	2039	0.000	303.150	.217	9.59	9.66	-.82	.5066	.5028	.76
4	2040	0.000	373.150	.170	7.48	7.53	-.66	.5066	.5034	.64
4	2041	0.000	380.950	.165	7.28	7.35	-1.03	.5066	.5016	1.00
4	2042	0.000	398.150	.158	6.95	7.00	-.75	.5066	.5030	.73
4	2043	0.000	303.150	.266	11.73	11.83	-.79	.6080	.6036	.71
4	2044	0.000	348.150	.223	9.82	9.90	-.77	.6080	.6036	.73
4	2045	0.000	303.150	.317	13.99	14.09	-.71	.7093	.7049	.62
4	2046	0.000	303.150	.371	16.38	16.48	-.59	.8106	.8066	.50
4	2047	0.000	348.150	.304	13.40	13.51	-.81	.8106	.8046	.74
4	2048	0.000	303.150	.429	18.93	19.00	-.34	.9119	.9094	.27
4	2049	0.000	303.150	.493	21.73	21.68	.21	1.0133	1.0149	-.17
4	2050	0.000	348.150	.389	17.17	17.31	-.83	1.0133	1.0058	.74
4	2051	0.000	373.150	.355	15.66	15.75	-.54	1.0133	1.0083	.49
4	2052	0.000	380.950	.343	15.15	15.33	-1.20	1.0133	1.0020	1.12
4	2053	0.000	398.150	.327	14.41	14.50	-.62	1.0133	1.0074	.58
4	2054	0.000	348.150	.480	21.17	21.33	-.77	1.2159	1.2079	.66
4	2055	0.000	348.150	.577	25.42	25.62	-.76	1.4186	1.4096	.63
4	2056	0.000	373.150	.562	24.78	24.84	-.27	1.5199	1.5164	.23
4	2057	0.000	380.950	.539	23.78	24.07	-1.22	1.5199	1.5037	1.08
4	2058	0.000	398.150	.506	22.29	22.58	-1.28	1.5199	1.5025	1.16
4	2059	0.000	348.150	.680	29.99	30.22	-.75	1.6212	1.6115	.60
4	2060	0.000	348.150	.792	34.92	35.19	-.76	1.8239	1.8134	.58
4	2061	0.000	348.150	.915	40.33	40.64	-.75	2.0265	2.0156	.54
4	2062	0.000	373.150	.796	35.08	35.08	-.01	2.0265	2.0264	.01
4	2063	0.000	380.950	.758	33.44	33.79	-1.04	2.0265	2.0091	.87
4	2064	0.000	398.150	.709	31.25	31.37	-.38	2.0265	2.0199	.33
4	2065	0.000	348.150	1.052	46.39	46.71	-.69	2.2292	2.2190	.46
4	2066	0.000	348.150	1.208	53.28	53.65	-.70	2.4318	2.4217	.42
4	2067	0.000	373.150	1.065	46.97	46.93	.09	2.5331	2.5348	-.07
4	2068	0.000	380.950	1.006	44.35	44.80	-1.00	2.5331	2.5139	.77
4	2069	0.000	398.150	.928	40.92	41.02	-.24	2.5331	2.5283	.19
4	2070	0.000	348.150	1.398	61.66	61.91	-.42	2.6345	2.6287	.22
4	2071	0.000	348.150	1.617	71.29	72.55	-1.73	2.8371	2.8164	.73
4	2072	0.000	373.150	1.391	61.33	61.23	.17	3.0398	3.0430	-.11
4	2073	0.000	380.950	1.292	56.99	57.64	-1.13	3.0398	3.0161	.79
4	2074	0.000	398.150	1.172	51.69	51.77	-.15	3.0398	3.0363	.11
4	2075	0.000	373.150	1.807	79.68	79.91	-.29	3.5464	3.5411	.15
4	2076	0.000	380.950	1.641	72.35	73.36	-1.37	3.5464	3.5174	.83
4	2077	0.000	398.150	1.451	64.00	63.99	.02	3.5464	3.5468	-.01
4	2078	0.000	373.150	2.436	107.41	109.24	-1.67	4.0530	4.0299	.57
4	2079	0.000	380.950	2.099	92.57	94.24	-1.78	4.0530	4.0185	.86
4	2080	0.000	398.150	1.776	78.31	78.25	.07	4.0530	4.0547	-.04
4	2081	0.000	373.150	5.216	230.02	248.93	-7.59	4.5596	4.5284	.69
4	2082	0.000	380.950	2.738	120.74	127.28	-5.14	4.5596	4.4818	1.74
4	2083	0.000	398.150	2.161	95.28	95.54	-.27	4.5596	4.5528	.15
4	2084	0.000	373.150	6.656	293.50	294.08	-.20	4.7623	4.7571	.11

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
4	2085	0.000	373.150	6.881	303.45	303.69	-.08	4.8636	4.8606	.06
4	2086	0.000	373.150	7.065	311.56	310.98	.18	4.9649	4.9739	-.18
4	2087	0.000	373.150	7.213	318.06	316.91	.36	5.0663	5.0881	-.43
4	2088	0.000	380.950	4.076	179.74	203.65	-11.74	5.0663	4.9509	2.33
4	2089	0.000	398.150	2.641	116.44	117.53	-.93	5.0663	5.0442	.44
4	2090	0.000	373.150	7.675	338.43	336.86	.47	5.5729	5.6259	-.94
4	2091	0.000	380.950	6.078	268.01	280.62	-4.49	5.5729	5.4473	2.31
4	2092	0.000	398.150	3.287	144.94	146.83	-1.29	5.5729	5.5444	.51
4	2093	0.000	380.950	6.472	285.40	295.54	-3.43	5.7755	5.6303	2.58
4	2094	0.000	380.950	6.774	298.72	306.54	-2.55	5.9782	5.8286	2.57
4	2095	0.000	373.150	8.007	353.11	349.73	.97	6.0795	6.2424	-2.61
4	2096	0.000	380.950	6.906	304.55	311.11	-2.11	6.0795	5.9374	2.39
4	2097	0.000	398.150	4.134	182.30	184.72	-1.31	6.0795	6.0491	.50
4	2098	0.000	373.150	8.235	363.12	359.44	1.02	6.5861	6.8106	-3.30
4	2099	0.000	380.950	7.325	323.03	328.55	-1.68	6.5861	6.4027	2.86
4	2100	0.000	398.150	5.044	222.42	223.59	-.52	6.5861	6.5697	.25
4	2101	0.000	373.150	8.409	370.79	367.34	.94	7.0928	7.3438	-3.42
4	2102	0.000	380.950	7.637	336.78	340.91	-1.21	7.0928	6.9071	2.69
4	2103	0.000	398.150	5.774	254.60	255.72	-.44	7.0928	7.0726	.28
4	2104	0.000	373.150	8.565	377.71	374.05	.98	7.5994	7.9082	-3.91
4	2105	0.000	380.950	7.862	346.67	350.59	-1.12	7.5994	7.3814	2.95
4	2106	0.000	398.150	6.320	278.68	279.93	-.44	7.5994	7.5692	.40
4	2107	0.000	373.150	8.673	382.43	379.91	.67	8.1060	8.3447	-2.86
4	2108	0.000	380.950	8.051	355.04	358.59	-.99	8.1060	7.8705	2.99
4	2109	0.000	398.150	6.734	296.93	297.88	-.32	8.1060	8.0753	.38
4	2110	0.000	373.150	8.806	388.31	385.12	.83	8.6126	8.9499	-3.77
4	2111	0.000	380.950	8.229	362.87	365.44	-.70	8.6126	8.4143	2.36
4	2112	0.000	398.150	7.084	312.38	311.73	.21	8.6126	8.6394	-.31
4	2113	0.000	373.150	8.917	393.20	389.83	.86	9.1193	9.5117	-4.13
4	2114	0.000	380.950	8.369	369.04	371.45	-.65	9.1193	8.9092	2.36
4	2115	0.000	398.150	7.359	324.53	322.88	.51	9.1193	9.2028	-.91
4	2116	0.000	373.150	9.016	397.57	394.14	.87	9.6259	10.0607	-4.32
4	2117	0.000	380.950	8.491	374.43	376.82	-.63	9.6259	9.3943	2.47
4	2118	0.000	398.150	7.599	335.08	332.19	.87	9.6259	9.8010	-1.79
4	2119	0.000	373.150	9.109	401.70	398.12	.90	10.1325	10.6234	-4.62
4	2120	0.000	380.950	8.602	379.32	381.68	-.62	10.1325	9.8804	2.55
4	2121	0.000	398.150	7.774	342.80	340.18	.77	10.1325	10.3155	-1.77
4	2122	0.000	373.150	9.186	405.07	401.81	.81	10.6391	11.1166	-4.30
4	2123	0.000	380.950	8.698	383.55	386.13	-.67	10.6391	10.3399	2.89
4	2124	0.000	398.150	7.939	350.10	347.17	.84	10.6391	10.8709	-2.13
4	2125	0.000	373.150	9.257	408.19	405.27	.72	11.1458	11.6003	-3.92
4	2126	0.000	380.950	8.787	387.47	390.24	-.71	11.1458	10.8007	3.19
4	2127	0.000	398.150	8.082	356.41	353.39	.85	11.1458	11.4115	-2.33
4	2128	0.000	373.150	9.320	410.97	408.51	.60	11.6524	12.0564	-3.35
4	2129	0.000	380.950	8.876	391.42	394.06	-.67	11.6524	11.2983	3.13
4	2130	0.000	398.150	8.204	361.77	359.01	.77	11.6524	11.9203	-2.25
4	2131	0.000	373.150	9.376	413.46	411.58	.46	12.1590	12.4833	-2.60
4	2132	0.000	380.950	8.960	395.10	397.63	-.64	12.1590	11.7969	3.07
4	2133	0.000	398.150	8.315	366.67	364.13	.70	12.1590	12.4273	-2.16
4	2134	0.000	373.150	9.431	415.87	414.49	.33	12.6656	12.9157	-1.94
4	2135	0.000	380.950	9.038	398.55	400.99	-.61	12.6656	12.2950	3.01
4	2136	0.000	398.150	8.412	370.96	368.83	.58	12.6656	12.9080	-1.88
4	2137	0.000	373.150	9.486	418.31	417.25	.25	13.1723	13.3720	-1.49
4	2138	0.000	380.950	9.120	402.15	404.16	-.50	13.1723	12.8472	2.53
4	2139	0.000	398.150	8.501	374.85	373.19	.44	13.1723	13.3749	-1.52
4	2140	0.000	398.150	8.656	381.70	381.06	.17	14.1855	14.2734	-.62

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
4	2141	0.000	423.150	.029	1.27	1.28	-.77	.1013	.1005	.77
4	2142	0.000	473.150	.026	1.13	1.14	-.76	.1013	.1006	.76
4	2143	0.000	526.370	.023	1.02	1.03	-.77	.1013	.1005	.77
4	2144	0.000	423.150	.087	3.85	3.88	-.76	.3040	.3017	.75
4	2145	0.000	473.150	.078	3.43	3.45	-.78	.3040	.3016	.77
4	2146	0.000	526.370	.070	3.07	3.09	-.83	.3040	.3015	.83
4	2147	0.000	423.150	.147	6.50	6.54	-.70	.5066	.5032	.68
4	2148	0.000	473.150	.131	5.76	5.80	-.74	.5066	.5029	.74
4	2149	0.000	526.370	.117	5.14	5.18	-.87	.5066	.5023	.86
4	2150	0.000	423.150	.304	13.39	13.46	-.55	1.0133	1.0079	.53
4	2151	0.000	473.150	.266	11.75	11.82	-.59	1.0133	1.0074	.58
4	2152	0.000	526.370	.236	10.41	10.50	-.81	1.0133	1.0053	.79
4	2153	0.000	423.150	.469	20.69	20.79	-.49	1.5199	1.5130	.46
4	2154	0.000	473.150	.408	17.99	18.07	-.41	1.5199	1.5140	.39
4	2155	0.000	526.370	.359	15.82	15.94	-.73	1.5199	1.5092	.71
4	2156	0.000	570.450	.328	14.46	14.56	-.67	1.5199	1.5099	.66
4	2157	0.000	423.150	.646	28.47	28.59	-.41	2.0265	2.0191	.37
4	2158	0.000	473.150	.555	24.49	24.55	-.23	2.0265	2.0222	.21
4	2159	0.000	526.370	.485	21.39	21.51	-.55	2.0265	2.0159	.53
4	2160	0.000	570.450	.441	19.47	19.57	-.52	2.0265	2.0164	.50
4	2161	0.000	423.150	.835	36.81	36.91	-.28	2.5331	2.5270	.24
4	2162	0.000	473.150	.709	31.24	31.27	-.10	2.5331	2.5309	.09
4	2163	0.000	526.370	.614	27.09	27.20	-.40	2.5331	2.5236	.38
4	2164	0.000	570.450	.557	24.57	24.66	-.35	2.5331	2.5245	.34
4	2165	0.000	423.150	1.038	45.78	45.87	-.18	3.0398	3.0354	.14
4	2166	0.000	473.150	.868	38.26	38.27	-.01	3.0398	3.0395	.01
4	2167	0.000	526.370	.747	32.94	33.02	-.27	3.0398	3.0322	.25
4	2168	0.000	570.450	.675	29.77	29.83	-.20	3.0398	3.0341	.19
4	2169	0.000	423.150	1.258	55.46	55.56	-.18	3.5464	3.5415	.14
4	2170	0.000	473.150	1.034	45.60	45.55	.12	3.5464	3.5500	-.10
4	2171	0.000	526.370	.883	38.92	38.98	-.16	3.5464	3.5412	.15
4	2172	0.000	570.450	.795	35.06	35.07	-.01	3.5464	3.5460	.01
4	2173	0.000	423.150	1.498	66.06	66.15	-.13	4.0530	4.0491	.10
4	2174	0.000	473.150	1.207	53.24	53.13	.21	4.0530	4.0603	-.18
4	2175	0.000	526.370	1.021	45.04	45.07	-.05	4.0530	4.0510	.05
4	2176	0.000	570.450	.917	40.44	40.39	.14	4.0530	4.0583	-.13
4	2177	0.000	609.310	.846	37.31	37.13	.47	4.0530	4.0714	-.45
4	2178	0.000	423.150	1.766	77.89	77.84	.07	4.5596	4.5617	-.05
4	2179	0.000	473.150	1.389	61.27	61.05	.36	4.5596	4.5733	-.30
4	2180	0.000	526.370	1.164	51.31	51.30	.02	4.5596	4.5604	-.02
4	2181	0.000	570.450	1.041	45.88	45.78	.23	4.5596	4.5696	-.22
4	2182	0.000	423.150	2.064	91.02	90.88	.16	5.0663	5.0716	-.11
4	2183	0.000	473.150	1.580	69.66	69.34	.47	5.0663	5.0856	-.38
4	2184	0.000	526.370	1.309	57.72	57.67	.08	5.0663	5.0698	-.07
4	2185	0.000	570.450	1.165	51.38	51.24	.28	5.0663	5.0793	-.26
4	2186	0.000	609.310	1.070	47.18	46.89	.61	5.0663	5.0957	-.58
4	2187	0.000	423.150	2.392	105.50	105.56	-.06	5.5729	5.5707	.04
4	2188	0.000	473.150	1.777	78.36	78.01	.45	5.5729	5.5929	-.36
4	2189	0.000	526.370	1.456	64.20	64.19	.02	5.5729	5.5741	-.02
4	2190	0.000	570.450	1.291	56.95	56.78	.29	5.5729	5.5879	-.27
4	2191	0.000	423.150	2.751	121.30	122.17	-.71	6.0795	6.0544	.41
4	2192	0.000	473.150	1.981	87.35	87.08	.31	6.0795	6.0942	-.24
4	2193	0.000	526.370	1.606	70.83	70.85	-.03	6.0795	6.0779	.03
4	2194	0.000	570.450	1.418	62.54	62.40	.23	6.0795	6.0923	-.21
4	2195	0.000	609.310	1.297	57.18	56.82	.64	6.0795	6.1165	-.60
4	2196	0.000	423.150	3.150	138.88	140.82	-1.37	6.5861	6.5360	.77

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
4	2197	0.000	473.150	2.193	96.70	96.58	.13	6.5861	6.5924	-.10
4	2198	0.000	526.370	1.760	77.59	77.66	-.09	6.5861	6.5807	.08
4	2199	0.000	570.450	1.547	68.21	68.09	.18	6.5861	6.5970	-.16
4	2200	0.000	423.150	3.596	158.56	161.20	-1.64	7.0928	7.0289	.91
4	2201	0.000	473.150	2.414	106.46	106.50	-.04	7.0928	7.0907	.03
4	2202	0.000	526.370	1.916	84.47	84.62	-.17	7.0928	7.0821	.15
4	2203	0.000	570.450	1.676	73.90	73.84	.08	7.0928	7.0979	-.07
4	2204	0.000	609.310	1.525	67.26	66.91	.53	7.0928	7.1281	-.50
4	2205	0.000	423.150	4.076	179.76	182.37	-1.43	7.5994	7.5369	.83
4	2206	0.000	473.150	2.642	116.50	116.81	-.27	7.5994	7.5843	.20
4	2207	0.000	526.370	2.074	91.46	91.72	-.27	7.5994	7.5816	.23
4	2208	0.000	570.450	1.806	79.66	79.67	-.01	7.5994	7.5984	.01
4	2209	0.000	423.150	4.558	200.98	203.00	-.99	8.1060	8.0550	.63
4	2210	0.000	473.150	2.876	126.83	127.46	-.49	8.1060	8.0764	.37
4	2211	0.000	526.370	2.235	98.57	98.94	-.37	8.1060	8.0802	.32
4	2212	0.000	570.450	1.937	85.40	85.56	-.18	8.1060	8.0929	.16
4	2213	0.000	609.310	1.755	77.38	77.14	.31	8.1060	8.1293	-.29
4	2214	0.000	423.150	5.004	220.65	222.11	-.65	8.6126	8.5723	.47
4	2215	0.000	473.150	3.118	137.48	138.37	-.65	8.6126	8.5715	.48
4	2216	0.000	526.370	2.399	105.79	106.28	-.45	8.6126	8.5796	.39
4	2217	0.000	570.450	2.070	91.26	91.50	-.26	8.6126	8.5923	.24
4	2218	0.000	423.150	5.389	237.64	239.42	-.74	9.1193	9.0646	.60
4	2219	0.000	473.150	3.362	148.24	149.44	-.80	9.1193	9.0645	.60
4	2220	0.000	526.370	2.566	113.16	113.71	-.49	9.1193	9.0817	.41
4	2221	0.000	570.450	2.203	97.13	97.49	-.37	9.1193	9.0887	.34
4	2222	0.000	609.310	1.987	87.60	87.50	.12	9.1193	9.1294	-.11
4	2223	0.000	423.150	5.740	253.12	254.90	-.70	9.6259	9.5644	.64
4	2224	0.000	473.150	3.607	159.05	160.54	-.93	9.6259	9.5578	.71
4	2225	0.000	526.370	2.733	120.52	121.22	-.57	9.6259	9.5790	.49
4	2226	0.000	570.450	2.334	102.94	103.53	-.56	9.6259	9.5769	.51
4	2227	0.000	423.150	6.056	267.06	268.58	-.56	10.1325	10.0731	.59
4	2228	0.000	473.150	3.854	169.94	171.54	-.93	10.1325	10.0584	.74
4	2229	0.000	526.370	2.901	127.92	128.77	-.66	10.1325	10.0756	.56
4	2230	0.000	570.450	2.468	108.83	109.59	-.70	10.1325	10.0689	.63
4	2231	0.000	609.310	2.218	97.80	97.94	-.14	10.1325	10.1193	.13
4	2232	0.000	423.150	6.340	279.59	280.60	-.36	10.6391	10.5939	.43
4	2233	0.000	473.150	4.100	180.81	182.32	-.83	10.6391	10.5673	.68
4	2234	0.000	526.370	3.068	135.28	136.33	-.77	10.6391	10.5690	.66
4	2235	0.000	570.450	2.601	114.71	115.67	-.83	10.6391	10.5591	.76
4	2236	0.000	423.150	6.589	290.57	291.18	-.21	11.1458	11.1148	.28
4	2237	0.000	473.150	4.347	191.67	192.77	-.57	11.1458	11.0917	.49
4	2238	0.000	526.370	3.234	142.60	143.88	-.89	11.1458	11.0593	.78
4	2239	0.000	570.450	2.735	120.59	121.75	-.95	11.1458	11.0490	.88
4	2240	0.000	609.310	2.448	107.95	108.42	-.44	11.1458	11.0999	.41
4	2241	0.000	423.150	6.815	300.51	300.54	-.01	11.6524	11.6503	.02
4	2242	0.000	473.150	4.591	202.44	202.81	-.18	11.6524	11.6334	.16
4	2243	0.000	526.370	3.400	149.92	151.39	-.97	11.6524	11.5530	.86
4	2244	0.000	570.450	2.869	126.52	127.83	-1.03	11.6524	11.5428	.95
4	2245	0.000	423.150	7.017	309.41	308.89	.17	12.1590	12.1924	-.27
4	2246	0.000	473.150	4.834	213.18	212.42	.35	12.1590	12.1998	-.33
4	2247	0.000	526.370	3.563	157.10	158.81	-1.08	12.1590	12.0419	.97
4	2248	0.000	570.450	3.001	132.33	133.89	-1.16	12.1590	12.0286	1.08
4	2249	0.000	609.310	2.676	118.02	118.88	-.72	12.1590	12.0755	.69
4	2250	0.000	423.150	7.184	316.80	316.39	.13	12.6656	12.6947	-.23
4	2251	0.000	473.150	5.070	223.57	221.58	.90	12.6656	12.7791	-.89
4	2252	0.000	526.370	3.728	164.39	166.13	-1.05	12.6656	12.5444	.97

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
4	2253	0.000	570.450	3.134	138.22	139.90	-1.21	12.6656	12.5233	1.14
4	2254	0.000	423.150	7.336	323.50	323.19	.10	13.1723	13.1965	-.18
4	2255	0.000	473.150	5.299	233.66	230.30	1.46	13.1723	13.3747	-1.51
4	2256	0.000	526.370	3.890	171.52	173.32	-1.04	13.1723	13.0446	.98
4	2257	0.000	570.450	3.266	144.04	145.88	-1.26	13.1723	13.0157	1.20
4	2258	0.000	609.310	2.903	128.03	129.27	-.96	13.1723	13.0506	.93
4	2259	0.000	423.150	7.468	329.32	329.39	-.02	13.6789	13.6728	.04
4	2260	0.000	473.150	5.518	243.35	238.59	1.99	13.6789	13.9819	-2.17
4	2261	0.000	526.370	4.054	178.75	180.36	-.89	13.6789	13.5619	.86
4	2262	0.000	570.450	3.398	149.84	151.78	-1.28	13.6789	13.5117	1.24
4	2263	0.000	423.150	7.585	334.47	335.08	-.18	14.1855	14.1286	.40
4	2264	0.000	609.310	3.127	137.88	139.53	-1.18	14.1855	14.0217	1.17

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
79	2265	0.000	373.150	3.851	169.83	178.91	-5.07	4.4549	4.4352	.44
79	2266	0.000	373.150	2.457	108.34	108.45	-.10	4.0431	4.0417	.03
79	2267	0.000	373.150	1.566	69.07	68.85	.31	3.2664	3.2724	-.18
79	2268	0.000	373.150	1.000	44.09	44.05	.09	2.4176	2.4191	-.06
79	2269	0.000	373.150	.638	28.13	28.16	-.11	1.6911	1.6895	.10
79	2270	0.000	373.150	.407	17.93	17.97	-.23	1.1423	1.1400	.20
79	2271	0.000	373.150	.259	11.43	11.47	-.28	.7553	.7533	.26
79	2272	0.000	373.150	.165	7.28	7.31	-.30	.4923	.4909	.28
79	2273	0.000	373.150	.105	4.65	4.66	-.30	.3188	.3179	.29
79	2274	0.000	393.190	3.405	150.13	150.66	-.35	5.3854	5.3788	.12
79	2275	0.000	393.190	2.446	107.86	107.69	.16	4.6967	4.7002	-.07
79	2276	0.000	393.190	1.756	77.43	77.24	.25	3.9155	3.9214	-.15
79	2277	0.000	393.190	1.261	55.62	55.57	.08	3.1362	3.1381	-.06
79	2278	0.000	393.190	.906	39.96	40.00	-.11	2.4358	2.4337	.09
79	2279	0.000	393.190	.651	28.70	28.77	-.24	1.8496	1.8458	.21
79	2280	0.000	393.190	.467	20.60	20.67	-.32	1.3820	1.3780	.29
79	2281	0.000	393.190	.335	14.79	14.84	-.35	1.0207	1.0174	.32
79	2282	0.000	393.190	.241	10.62	10.66	-.36	.7477	.7451	.34
79	2283	0.000	407.500	3.749	165.34	169.19	-2.27	6.4103	6.3445	1.04
79	2284	0.000	407.500	2.651	116.89	116.78	.10	5.3802	5.3830	-.05
79	2285	0.000	407.500	1.903	83.92	83.73	.23	4.4409	4.4473	-.14
79	2286	0.000	407.500	1.367	60.29	60.24	.08	3.5410	3.5431	-.06
79	2287	0.000	407.500	.982	43.32	43.38	-.13	2.7448	2.7420	.10
79	2288	0.000	407.500	.706	31.12	31.21	-.28	2.0825	2.0775	.24
79	2289	0.000	407.500	.507	22.35	22.43	-.36	1.5552	1.5502	.32
79	2290	0.000	407.500	.364	16.04	16.10	-.39	1.1480	1.1438	.36
79	2291	0.000	407.500	.261	11.51	11.56	-.39	.8404	.8373	.37
79	2292	0.000	407.430	2.812	124.01	123.69	.26	5.5377	5.5449	-.13
79	2293	0.000	407.430	1.791	78.97	78.54	.55	4.2594	4.2747	-.36
79	2294	0.000	407.430	1.140	50.28	50.17	.22	3.0811	3.0863	-.17
79	2295	0.000	407.430	.726	32.02	32.05	-.10	2.1303	2.1285	.09
79	2296	0.000	407.430	.462	20.39	20.44	-.27	1.4294	1.4259	.24
79	2297	0.000	407.430	.294	12.98	13.02	-.33	.9409	.9380	.31
79	2298	0.000	407.430	.187	8.26	8.29	-.34	.6118	.6098	.33
79	2299	0.000	422.970	2.742	120.92	120.64	.24	6.0287	6.0369	-.14
79	2300	0.000	422.970	1.969	86.84	86.42	.49	4.8951	4.9113	-.33
79	2301	0.000	422.970	1.414	62.36	62.15	.33	3.8646	3.8744	-.25
79	2302	0.000	422.970	1.016	44.79	44.76	.07	2.9772	2.9789	-.06
79	2303	0.000	422.970	.729	32.17	32.21	-.14	2.2502	2.2474	.13
79	2304	0.000	422.970	.524	23.10	23.16	-.27	1.6766	1.6725	.25
79	2305	0.000	422.970	.376	16.59	16.65	-.34	1.2364	1.2325	.32
79	2306	0.000	422.970	.270	11.91	11.96	-.36	.9051	.9020	.35
79	2307	0.000	422.970	.194	8.55	8.58	-.36	.6588	.6565	.35
79	2308	0.000	423.020	1.613	71.14	70.69	.64	4.2539	4.2735	-.46
79	2309	0.000	423.020	1.158	51.07	50.90	.34	3.3068	3.3157	-.27
79	2310	0.000	423.020	.832	36.67	36.65	.05	2.5168	2.5179	-.04
79	2311	0.000	423.020	.597	26.33	26.37	-.14	1.8850	1.8825	.13
79	2312	0.000	423.020	.429	18.90	18.94	-.25	1.3945	1.3913	.23
79	2313	0.000	423.020	.308	13.57	13.61	-.31	1.0237	1.0207	.30
79	2314	0.000	423.020	.221	9.75	9.78	-.33	.7467	.7443	.32
79	2315	0.000	423.020	.159	7.00	7.02	-.33	.5422	.5404	.32

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
78	2316	0.000	322.972	10.456	461.10	460.52	.12	4.0710	4.2016	-3.11
78	2317	0.000	328.168	10.452	460.92	460.35	.13	6.1869	6.3270	-2.22
78	2318	0.000	332.609	10.449	460.78	460.21	.12	7.9977	8.1433	-1.79
78	2319	0.000	337.762	10.445	460.62	460.06	.12	10.0989	10.2485	-1.46
78	2320	0.000	342.618	10.442	460.47	459.94	.11	12.0814	12.2303	-1.22
78	2321	0.000	347.144	10.439	460.33	459.82	.11	13.9231	14.0747	-1.08
78	2322	0.000	352.944	10.435	460.15	459.66	.11	16.2821	16.4344	-.93
78	2323	0.000	363.122	10.428	459.84	459.40	.09	20.4150	20.5634	-.72
78	2324	0.000	372.349	10.422	459.56	459.15	.09	24.1420	24.2915	-.62
78	2325	0.000	382.692	10.415	459.25	458.86	.09	28.2987	28.4532	-.54
78	2326	0.000	393.048	10.408	458.94	458.55	.09	32.4341	32.5981	-.50
78	2327	0.000	403.168	10.401	458.64	458.24	.09	36.4506	36.6286	-.49
78	2328	0.000	414.877	10.393	458.30	457.87	.09	41.0620	41.2645	-.49
78	2329	0.000	428.006	10.384	457.91	457.73	.04	46.3353	46.4240	-.19
78	2330	0.000	446.159	10.372	457.38	456.82	.12	53.1897	53.4955	-.57
78	2331	0.000	465.974	10.359	456.79	456.36	.10	60.8626	61.1220	-.42
78	2332	0.000	327.800	10.298	454.11	453.27	.19	4.4479	4.6246	-3.82
78	2333	0.000	337.927	10.291	453.79	452.95	.18	8.3701	8.5693	-2.32
78	2334	0.000	345.864	10.285	453.54	452.74	.18	11.4481	11.6574	-1.80
78	2335	0.000	355.196	10.279	453.26	452.50	.17	15.0664	15.2826	-1.42
78	2336	0.000	367.383	10.270	452.90	452.20	.15	19.7797	20.0013	-1.11
78	2337	0.000	375.052	10.265	452.67	452.00	.15	22.7350	22.9607	-.98
78	2338	0.000	384.818	10.259	452.39	451.74	.14	26.4836	26.7158	-.87
78	2339	0.000	394.641	10.252	452.10	451.47	.14	30.2325	30.4770	-.80
78	2340	0.000	402.913	10.247	451.86	451.23	.14	33.3753	33.6306	-.76
78	2341	0.000	416.717	10.238	451.46	450.82	.14	38.5825	38.8657	-.73
78	2342	0.000	432.648	10.227	451.00	450.32	.15	44.5345	44.8589	-.72
78	2343	0.000	453.599	10.214	450.40	449.63	.17	52.2548	52.6584	-.77
78	2344	0.000	472.842	10.201	449.84	448.96	.20	59.2384	59.7383	-.84
78	2345	0.000	330.263	9.973	439.77	438.99	.18	2.7707	2.8935	-4.25
78	2346	0.000	341.713	9.965	439.41	438.55	.20	6.7553	6.9167	-2.33
78	2347	0.000	352.841	9.957	439.09	438.25	.19	10.6530	10.8328	-1.66
78	2348	0.000	363.696	9.950	438.77	438.01	.18	14.4640	14.6504	-1.27
78	2349	0.000	377.648	9.941	438.38	437.69	.16	19.3554	19.5471	-.98
78	2350	0.000	397.297	9.929	437.83	437.21	.14	26.2115	26.4104	-.75
78	2351	0.000	412.796	9.919	437.40	436.81	.13	31.5790	31.7896	-.66
78	2352	0.000	431.026	9.907	436.89	436.30	.14	37.8361	38.0707	-.62
78	2353	0.000	448.440	9.897	436.41	435.79	.14	43.7474	44.0194	-.62
78	2354	0.000	463.694	9.887	435.99	435.32	.16	48.8692	49.1862	-.64
78	2355	0.000	480.702	9.876	435.52	434.77	.17	54.5166	54.8963	-.69
78	2356	0.000	496.299	9.867	435.09	434.25	.19	59.6332	60.0842	-.75
78	2357	0.000	330.963	9.940	438.33	437.52	.18	2.7872	2.9129	-4.31
78	2358	0.000	331.814	9.939	438.30	437.49	.18	3.0816	3.2087	-3.96
78	2359	0.000	336.848	9.936	438.14	437.29	.19	4.8135	4.9583	-2.92
78	2360	0.000	341.988	9.932	437.99	437.12	.20	6.5880	6.7472	-2.36
78	2361	0.000	347.723	9.928	437.82	436.95	.20	8.5731	8.7450	-1.97
78	2362	0.000	355.121	9.924	437.60	436.77	.19	11.1422	11.3224	-1.59
78	2363	0.000	368.842	9.915	437.21	436.46	.17	15.9117	16.0991	-1.16
78	2364	0.000	383.023	9.906	436.81	436.14	.15	20.8327	21.0224	-.90
78	2365	0.000	402.762	9.893	436.27	435.66	.14	27.6429	27.8412	-.71
78	2366	0.000	422.783	9.881	435.71	435.14	.13	34.4894	34.7048	-.62
78	2367	0.000	443.127	9.868	435.15	434.56	.14	41.3682	41.6160	-.60
78	2368	0.000	342.839	9.231	407.08	406.41	.16	2.7845	2.8447	-2.12
78	2369	0.000	350.822	9.226	406.86	405.98	.22	4.9609	5.0550	-1.86
78	2370	0.000	361.070	9.220	406.59	405.67	.23	7.7955	7.9133	-1.49
78	2371	0.000	369.188	9.215	406.37	405.51	.21	10.0616	10.1875	-1.24

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
78	2372	0.000	376.679	9.211	406.18	405.37	.20	12.1606	12.2905	-1.06
78	2373	0.000	386.501	9.205	405.93	405.20	.18	14.9208	15.0510	-.87
78	2374	0.000	407.554	9.193	405.40	404.84	.14	20.8432	20.9655	-.58
78	2375	0.000	432.160	9.179	404.78	404.35	.11	27.7374	27.8505	-.41
78	2376	0.000	457.260	9.165	404.15	403.79	.09	34.7087	34.8212	-.32
78	2377	0.000	481.931	9.151	403.53	403.19	.09	41.4846	41.6072	-.29
78	2378	0.000	511.431	9.134	402.80	402.42	.09	49.4692	49.6225	-.31
78	2379	0.000	548.961	9.113	401.86	401.37	.12	59.4184	59.6505	-.39
78	2380	0.000	354.671	8.562	377.56	376.62	.25	3.6401	3.6908	-1.37
78	2381	0.000	363.831	8.557	377.34	376.05	.34	5.6536	5.7435	-1.57
78	2382	0.000	376.625	8.550	377.03	375.73	.35	8.5296	8.6489	-1.38
78	2383	0.000	392.838	8.542	376.66	375.53	.30	12.2320	12.3646	-1.07
78	2384	0.000	409.200	8.533	376.28	375.35	.25	15.9979	16.1315	-.83
78	2385	0.000	432.549	8.521	375.74	375.07	.18	21.3877	21.5103	-.57
78	2386	0.000	451.661	8.511	375.31	374.77	.14	25.7887	25.9010	-.43
78	2387	0.000	472.311	8.500	374.84	374.41	.11	30.5185	30.6226	-.34
78	2388	0.000	497.096	8.487	374.27	373.93	.09	36.1519	36.2486	-.27
78	2389	0.000	521.148	8.475	373.73	373.42	.08	41.5604	41.6583	-.23
78	2390	0.000	546.198	8.462	373.15	372.86	.08	47.1297	47.2305	-.21
78	2391	0.000	570.278	8.450	372.61	372.30	.08	52.4134	52.5324	-.23
78	2392	0.000	364.812	7.541	332.52	331.63	.27	4.0634	4.0800	-.41
78	2393	0.000	376.448	7.535	332.28	330.15	.65	5.9058	5.9747	-1.15
78	2394	0.000	392.791	7.528	331.95	329.97	.60	8.6004	8.7020	-1.17
78	2395	0.000	412.648	7.519	331.56	330.09	.45	11.9520	12.0619	-.91
78	2396	0.000	432.534	7.510	331.16	330.15	.31	15.3480	15.4477	-.65
78	2397	0.000	452.553	7.501	330.77	330.11	.20	18.7801	18.8608	-.43
78	2398	0.000	473.034	7.492	330.37	329.98	.12	22.2902	22.3467	-.25
78	2399	0.000	492.234	7.483	329.99	329.80	.06	25.5709	25.6024	-.12
78	2400	0.000	512.405	7.474	329.60	329.57	.01	29.0010	29.0057	-.02
78	2401	0.000	530.760	7.466	329.24	329.34	-.03	32.1055	32.0843	.07
78	2402	0.000	550.128	7.458	328.86	329.06	-.06	35.3592	35.3119	.13
78	2403	0.000	569.593	7.449	328.48	328.77	-.09	38.6055	38.5319	.19
78	2404	0.000	369.350	6.587	290.47	287.83	.91	4.2600	4.2717	-.27
78	2405	0.000	378.140	6.584	290.32	284.88	1.91	5.2858	5.3462	-1.13
78	2406	0.000	393.489	6.578	290.05	285.70	1.52	7.1701	7.2734	-1.42
78	2407	0.000	413.546	6.570	289.71	286.74	1.04	9.7096	9.8312	-1.24
78	2408	0.000	432.129	6.563	289.40	287.32	.72	12.0990	12.2175	-.97
78	2409	0.000	452.677	6.555	289.05	287.68	.48	14.7586	14.8615	-.69
78	2410	0.000	473.033	6.547	288.71	287.84	.30	17.3975	17.4781	-.46
78	2411	0.000	491.232	6.540	288.40	287.89	.18	19.7553	19.8108	-.28
78	2412	0.000	510.749	6.533	288.07	287.86	.07	22.2751	22.3024	-.12
78	2413	0.000	530.884	6.525	287.74	287.78	-.02	24.8659	24.8595	.03
78	2414	0.000	550.233	6.518	287.41	287.66	-.09	27.3423	27.3020	.15
78	2415	0.000	570.645	6.510	287.07	287.49	-.15	29.9378	29.8617	.25
78	2416	0.000	373.371	6.002	264.69	255.53	3.59	4.5957	4.6220	-.57
78	2417	0.000	384.040	5.997	264.45	257.17	2.83	5.6751	5.7453	-1.22
78	2418	0.000	393.158	5.992	264.25	258.51	2.22	6.6267	6.7173	-1.35
78	2419	0.000	412.539	5.984	263.88	260.23	1.40	8.6919	8.7996	-1.22
78	2420	0.000	432.549	5.976	263.53	261.18	.90	10.8549	10.9587	-.95
78	2421	0.000	451.584	5.969	263.22	261.69	.59	12.9243	13.0137	-.69
78	2422	0.000	472.918	5.961	262.88	261.99	.34	15.2462	15.3121	-.43
78	2423	0.000	492.382	5.953	262.49	262.14	.13	17.3626	17.3940	-.18
78	2424	0.000	511.062	5.948	262.30	262.18	.05	19.3868	19.3994	-.07
78	2425	0.000	530.956	5.941	261.97	262.18	-.08	21.5355	21.5119	.11
78	2426	0.000	550.999	5.934	261.66	262.11	-.17	23.6887	23.6292	.25
78	2427	0.000	573.416	5.926	261.31	262.00	-.26	26.0839	25.9808	.40

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
78	2428	0.000	378.257	5.014	221.09	214.26	3.19	4.9067	4.9317	-.51
78	2429	0.000	387.620	5.010	220.92	215.93	2.31	5.6512	5.6926	-.73
78	2430	0.000	397.884	5.006	220.73	216.97	1.74	6.4733	6.5245	-.79
78	2431	0.000	412.591	5.000	220.50	217.90	1.19	7.6571	7.7131	-.73
78	2432	0.000	432.441	4.994	220.20	218.63	.72	9.2588	9.3099	-.55
78	2433	0.000	451.915	4.987	219.93	219.04	.41	10.8290	10.8680	-.36
78	2434	0.000	472.446	4.981	219.66	219.29	.17	12.4804	12.5009	-.16
78	2435	0.000	492.229	4.975	219.40	219.43	-.01	14.0664	14.0642	.02
78	2436	0.000	511.521	4.970	219.15	219.48	-.15	15.6053	15.5790	.17
78	2437	0.000	530.931	4.964	218.90	219.49	-.27	17.1466	17.0930	.31
78	2438	0.000	550.497	4.958	218.64	219.46	-.37	18.6917	18.6090	.44
78	2439	0.000	572.459	4.952	218.36	219.38	-.47	20.4148	20.2977	.58
78	2440	0.000	372.414	3.733	164.60	164.21	.24	4.3777	4.3787	-.02
78	2441	0.000	383.158	3.729	164.46	163.52	.57	4.9839	4.9904	-.13
78	2442	0.000	393.257	3.727	164.33	163.39	.58	5.5395	5.5501	-.19
78	2443	0.000	412.606	3.721	164.08	163.37	.44	6.5841	6.5979	-.21
78	2444	0.000	432.037	3.716	163.86	163.43	.26	7.6162	7.6282	-.16
78	2445	0.000	452.165	3.711	163.64	163.48	.10	8.6722	8.6783	-.07
78	2446	0.000	472.712	3.706	163.43	163.50	-.04	9.7389	9.7355	.03
78	2447	0.000	492.367	3.702	163.23	163.50	-.17	10.7498	10.7350	.14
78	2448	0.000	511.981	3.697	163.04	163.48	-.27	11.7501	11.7223	.24
78	2449	0.000	531.510	3.693	162.85	163.44	-.36	12.7383	12.6961	.33
78	2450	0.000	551.623	3.689	162.66	163.38	-.45	13.7487	13.6902	.43
78	2451	0.000	569.383	3.685	162.49	163.33	-.52	14.6348	14.5606	.51
78	2452	0.000	383.172	2.474	109.11	108.37	.69	4.3809	4.3932	-.28
78	2453	0.000	393.351	2.472	109.03	108.10	.86	4.7103	4.7294	-.40
78	2454	0.000	403.287	2.471	108.95	107.85	1.02	5.0237	5.0504	-.53
78	2455	0.000	413.008	2.469	108.87	107.75	1.03	5.3277	5.3590	-.58
78	2456	0.000	432.821	2.465	108.71	107.67	.96	5.9379	5.9745	-.61
78	2457	0.000	452.480	2.462	108.55	107.62	.86	6.5319	6.5712	-.60
78	2458	0.000	472.835	2.458	108.39	107.59	.74	7.1382	7.1778	-.55
78	2459	0.000	492.354	2.455	108.25	107.57	.64	7.7119	7.7506	-.50
78	2460	0.000	512.363	2.452	108.11	107.54	.54	8.2936	8.3302	-.44
78	2461	0.000	532.459	2.449	107.98	107.50	.44	8.8719	8.9056	-.38
78	2462	0.000	551.517	2.446	107.85	107.46	.36	9.4157	9.4454	-.31
78	2463	0.000	570.948	2.443	107.72	107.42	.28	9.9653	9.9908	-.26

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
52	2464	1.000	369.850	.800	35.28	35.27	.03	2.0079	2.0084	-.03
52	2465	1.000	373.150	.800	35.28	35.27	.03	2.0350	2.0355	-.03
52	2466	1.000	398.150	.800	35.28	35.26	.05	2.2369	2.2379	-.04
52	2467	1.000	423.150	.800	35.28	35.26	.04	2.4355	2.4363	-.03
52	2468	1.000	448.150	.800	35.28	35.27	.03	2.6314	2.6320	-.02
52	2469	1.000	473.150	.800	35.28	35.28	-.00	2.8257	2.8256	.00
52	2470	0.000	369.850	.800	35.28	35.27	.03	2.0079	2.0084	-.03
52	2471	0.000	373.150	.800	35.28	35.27	.03	2.0350	2.0355	-.03
52	2472	0.000	398.150	.800	35.28	35.26	.05	2.2369	2.2379	-.04
52	2473	0.000	423.150	.800	35.28	35.26	.04	2.4354	2.4363	-.04
52	2474	0.000	448.150	.800	35.28	35.27	.02	2.6315	2.6320	-.02
52	2475	0.000	473.150	.800	35.28	35.28	-.01	2.8258	2.8256	.01
52	2476	1.000	498.150	.800	35.28	35.29	-.02	3.0182	3.0176	.02
52	2477	1.000	523.150	.800	35.28	35.29	-.04	3.2096	3.2083	.04
52	2478	1.000	548.150	.800	35.28	35.30	-.06	3.3998	3.3980	.05
52	2479	1.000	573.150	.800	35.28	35.30	-.08	3.5894	3.5868	.07
52	2480	1.000	598.150	.800	35.28	35.31	-.10	3.7783	3.7748	.09
52	2481	1.000	623.150	.800	35.28	35.32	-.12	3.9667	3.9621	.12
52	2482	0.000	498.150	.800	35.28	35.29	-.02	3.0183	3.0176	.02
52	2483	0.000	523.150	.800	35.28	35.29	-.04	3.2096	3.2083	.04
52	2484	0.000	548.150	.800	35.28	35.30	-.06	3.4001	3.3980	.06
52	2485	0.000	573.150	.800	35.28	35.31	-.08	3.5894	3.5868	.07
52	2486	0.000	598.150	.800	35.28	35.31	-.10	3.7784	3.7748	.10
52	2487	0.000	623.150	.800	35.28	35.33	-.15	3.9679	3.9621	.15
52	2488	1.000	369.850	1.000	44.10	44.02	.18	2.3808	2.3840	-.13
52	2489	1.000	373.150	1.000	44.10	44.01	.19	2.4161	2.4195	-.14
52	2490	1.000	398.150	1.000	44.10	43.99	.23	2.6793	2.6843	-.19
52	2491	1.000	423.150	1.000	44.10	44.00	.23	2.9371	2.9427	-.19
52	2492	1.000	448.150	1.000	44.10	44.00	.21	3.1908	3.1966	-.18
52	2493	1.000	473.150	1.000	44.10	44.02	.18	3.4419	3.4472	-.16
52	2494	1.000	498.150	1.000	44.10	44.03	.15	3.6903	3.6953	-.13
52	2495	1.000	523.150	1.000	44.10	44.05	.11	3.9372	3.9413	-.10
52	2496	1.000	548.150	1.000	44.10	44.07	.07	4.1829	4.1857	-.07
52	2497	1.000	573.150	1.000	44.10	44.07	.05	4.4265	4.4287	-.05
52	2498	1.000	598.150	1.000	44.10	44.09	.02	4.6695	4.6706	-.02
52	2499	1.000	623.150	1.000	44.10	44.10	-.00	4.9116	4.9114	.00
52	2500	1.000	369.850	1.500	66.15	65.84	.47	3.1210	3.1296	-.28
52	2501	1.000	373.150	1.500	66.15	65.81	.51	3.1795	3.1892	-.30
52	2502	1.000	398.150	1.500	66.15	65.73	.62	3.6132	3.6287	-.43
52	2503	1.000	423.150	1.500	66.15	65.74	.62	4.0344	4.0529	-.46
52	2504	1.000	448.150	1.500	66.15	65.77	.57	4.4470	4.4670	-.45
52	2505	1.000	473.150	1.500	66.15	65.82	.50	4.8537	4.8738	-.41
52	2506	1.000	498.150	1.500	66.15	65.86	.43	5.2557	5.2751	-.37
52	2507	1.000	523.150	1.500	66.15	65.90	.37	5.6538	5.6721	-.32
52	2508	1.000	548.150	1.500	66.15	65.95	.29	6.0496	6.0656	-.26
52	2509	1.000	573.150	1.500	66.15	65.98	.24	6.4416	6.4561	-.22
52	2510	1.000	598.150	1.500	66.15	66.02	.19	6.8318	6.8442	-.18
52	2511	1.000	623.150	1.500	66.15	66.07	.12	7.2222	7.2302	-.11
52	2512	1.000	369.850	2.000	88.19	87.72	.54	3.6258	3.6344	-.24
52	2513	1.000	373.150	2.000	88.19	87.66	.60	3.7111	3.7215	-.28
52	2514	1.000	398.150	2.000	88.19	87.50	.79	4.3375	4.3574	-.46
52	2515	1.000	423.150	2.000	88.19	87.54	.74	4.9421	4.9667	-.49
52	2516	1.000	448.150	2.000	88.19	87.60	.68	5.5318	5.5591	-.49
52	2517	1.000	473.150	2.000	88.19	87.68	.58	6.1120	6.1399	-.45
52	2518	1.000	498.150	2.000	88.19	87.78	.47	6.6860	6.7118	-.38
52	2519	1.000	523.150	2.000	88.19	87.87	.37	7.2538	7.2768	-.32

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
52	2520	1.000	548.150	2.000	88.19	87.94	.28	7.8167	7.8363	-.25
52	2521	1.000	573.150	2.000	88.19	88.02	.19	8.3764	8.3911	-.18
52	2522	1.000	598.150	2.000	88.19	88.08	.13	8.9310	8.9421	-.12
52	2523	1.000	623.150	2.000	88.19	88.15	.05	9.4853	9.4896	-.05
52	2524	1.000	369.850	2.500	110.24	109.87	.34	3.9444	3.9484	-.10
52	2525	1.000	373.150	2.500	110.24	109.73	.47	4.0591	4.0653	-.15
52	2526	1.000	398.150	2.500	110.24	109.44	.73	4.8954	4.9130	-.36
52	2527	1.000	423.150	2.500	110.24	109.52	.66	5.6994	5.7220	-.39
52	2528	1.000	448.150	2.500	110.24	109.65	.54	6.4842	6.5083	-.37
52	2529	1.000	473.150	2.500	110.24	109.79	.41	7.2567	7.2789	-.31
52	2530	1.000	498.150	2.500	110.24	109.93	.28	8.0199	8.0378	-.22
52	2531	1.000	523.150	2.500	110.24	110.05	.17	8.7750	8.7877	-.14
52	2532	1.000	548.150	2.500	110.24	110.17	.06	9.5247	9.5301	-.06
52	2533	1.000	573.150	2.500	110.24	110.27	-.03	10.2688	10.2663	.02
52	2534	1.000	598.150	2.500	110.24	110.36	-.11	11.0080	10.9972	.10
52	2535	1.000	623.150	2.500	110.24	110.46	-.19	11.7452	11.7235	.18
52	2536	1.000	369.850	3.000	132.29	132.30	-.01	4.1240	4.1240	.00
52	2537	1.000	373.150	3.000	132.29	132.03	.20	4.2701	4.2720	-.04
52	2538	1.000	398.150	3.000	132.29	131.60	.53	5.3284	5.3404	-.22
52	2539	1.000	423.150	3.000	132.29	131.73	.42	6.3461	6.3611	-.24
52	2540	1.000	448.150	3.000	132.29	131.92	.28	7.3417	7.3554	-.19
52	2541	1.000	473.150	3.000	132.29	132.10	.15	8.3227	8.3317	-.11
52	2542	1.000	498.150	3.000	132.29	132.29	-.00	9.2945	9.2945	.00
52	2543	1.000	523.150	3.000	132.29	132.45	-.12	10.2570	10.2466	.10
52	2544	1.000	548.150	3.000	132.29	132.60	-.23	11.2133	11.1901	.21
52	2545	1.000	573.150	3.000	132.29	132.72	-.32	12.1623	12.1262	.30
52	2546	1.000	598.150	3.000	132.29	132.80	-.38	13.1034	13.0558	.36
52	2547	1.000	623.150	3.000	132.29	132.94	-.49	14.0474	13.9798	.48
52	2548	1.000	369.850	3.500	154.34	154.88	-.35	4.2097	4.2084	.03
52	2549	1.000	373.150	3.500	154.34	154.34	.00	4.3878	4.3878	-.00
52	2550	1.000	398.150	3.500	154.34	153.78	.37	5.6739	5.6819	-.14
52	2551	1.000	423.150	3.500	154.34	153.99	.23	6.9174	6.9260	-.12
52	2552	1.000	448.150	3.500	154.34	154.25	.06	8.1404	8.1434	-.04
52	2553	1.000	473.150	3.500	154.34	154.49	-.10	9.3497	9.3427	.07
52	2554	1.000	498.150	3.500	154.34	154.69	-.23	10.5481	10.5282	.19
52	2555	1.000	523.150	3.500	154.34	154.89	-.35	11.7390	11.7026	.31
52	2556	1.000	548.150	3.500	154.34	155.07	-.47	12.9239	12.8676	.44
52	2557	1.000	573.150	3.500	154.34	155.20	-.55	14.1002	14.0245	.54
52	2558	1.000	598.150	3.500	154.34	155.33	-.63	15.2713	15.1742	.64
52	2559	1.000	623.150	3.500	154.34	155.47	-.73	16.4411	16.3175	.76
52	2560	1.000	369.850	4.000	176.39	177.04	-.37	4.2404	4.2400	.01
52	2561	1.000	373.150	4.000	176.39	175.89	.28	4.4488	4.4499	-.02
52	2562	1.000	398.150	4.000	176.39	175.57	.47	5.9642	5.9746	-.17
52	2563	1.000	423.150	4.000	176.39	176.00	.22	7.4470	7.4564	-.13
52	2564	1.000	448.150	4.000	176.39	176.39	-.00	8.9157	8.9156	.00
52	2565	1.000	473.150	4.000	176.39	176.78	-.22	10.3773	10.3588	.18
52	2566	1.000	498.150	4.000	176.39	176.99	-.34	11.8249	11.7893	.30
52	2567	1.000	523.150	4.000	176.39	177.23	-.48	13.2688	13.2093	.45
52	2568	1.000	548.150	4.000	176.39	177.43	-.59	14.7061	14.6201	.59
52	2569	1.000	573.150	4.000	176.39	177.59	-.68	16.1355	16.0225	.71
52	2570	1.000	598.150	4.000	176.39	177.74	-.76	17.5605	17.4173	.82
52	2571	1.000	623.150	4.000	176.39	177.89	-.84	18.9818	18.8050	.94
52	2572	1.000	369.850	4.500	198.44	195.20	1.66	4.2467	4.2470	-.01
52	2573	1.000	373.150	4.500	198.44	195.26	1.63	4.4815	4.4859	-.10
52	2574	1.000	398.150	4.500	198.44	196.62	.93	6.2288	6.2518	-.37
52	2575	1.000	423.150	4.500	198.44	197.57	.44	7.9697	7.9914	-.27

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
52	2576	1.000	448.150	4.500	198.44	198.17	.14	9.7057	9.7160	-.11
52	2577	1.000	473.150	4.500	198.44	198.67	-.12	11.4409	11.4290	.10
52	2578	1.000	498.150	4.500	198.44	199.03	-.30	13.1699	13.1321	.29
52	2579	1.000	523.150	4.500	198.44	199.31	-.44	14.8935	14.8260	.46
52	2580	1.000	548.150	4.500	198.44	199.58	-.57	16.6146	16.5114	.63
52	2581	1.000	573.150	4.500	198.44	199.77	-.67	18.3266	18.1886	.76
52	2582	1.000	598.150	4.500	198.44	199.95	-.76	20.0345	19.8581	.89
52	2583	1.000	623.150	4.500	198.44	200.11	-.84	21.7373	21.5199	1.01
52	2584	0.000	369.850	5.000	220.49	0.00	0.00	4.2471	4.2475	-.01
52	2585	0.000	373.150	5.000	220.49	212.08	3.96	4.5040	4.5152	-.25
52	2586	0.000	398.150	5.000	220.49	216.99	1.61	6.4948	6.5427	-.73
52	2587	1.000	423.150	5.000	220.49	218.71	.81	8.5190	8.5677	-.57
52	2588	1.000	448.150	5.000	220.49	219.69	.36	10.5551	10.5885	-.32
52	2589	1.000	473.150	5.000	220.49	220.34	.07	12.5957	12.6038	-.06
52	2590	1.000	498.150	5.000	220.49	220.82	-.15	14.6367	14.6128	.16
52	2591	1.000	523.150	5.000	220.49	221.20	-.32	16.6766	16.6148	.37
52	2592	1.000	548.150	5.000	220.49	221.51	-.46	18.7128	18.6095	.56
52	2593	1.000	573.150	5.000	220.49	221.76	-.58	20.7449	20.5964	.72
52	2594	1.000	598.150	5.000	220.49	221.96	-.66	22.7683	22.5754	.85
52	2595	1.000	623.150	5.000	220.49	222.17	-.76	24.7930	24.5465	1.00
52	2596	0.000	369.850	5.500	242.53	235.74	2.88	4.2476	4.2481	-.01
52	2597	0.000	373.150	5.500	242.53	230.75	5.11	4.5295	4.5479	-.40
52	2598	0.000	398.150	5.500	242.53	237.86	1.97	6.7960	6.8693	-1.07
52	2599	1.000	423.150	5.500	242.53	240.07	1.03	9.1393	9.2164	-.84
52	2600	1.000	448.150	5.500	242.53	241.26	.53	11.5115	11.5721	-.52
52	2601	1.000	473.150	5.500	242.53	242.05	.20	13.8985	13.9296	-.22
52	2602	1.000	498.150	5.500	242.53	242.61	-.03	16.2915	16.2850	.04
52	2603	1.000	523.150	5.500	242.53	243.04	-.21	18.6861	18.6361	.27
52	2604	1.000	548.150	5.500	242.53	243.40	-.35	21.0802	20.9811	.47
52	2605	1.000	573.150	5.500	242.53	243.67	-.47	23.4690	23.3188	.64
52	2606	1.000	598.150	5.500	242.53	243.89	-.56	25.8510	25.6486	.79
52	2607	1.000	623.150	5.500	242.53	244.11	-.65	28.2330	27.9699	.94
52	2608	0.000	369.850	6.000	264.58	261.67	1.11	4.2564	4.2593	-.07
52	2609	0.000	373.150	6.000	264.58	255.97	3.36	4.5749	4.5986	-.52
52	2610	0.000	398.150	6.000	264.58	259.96	1.78	7.1710	7.2607	-1.23
52	2611	1.000	423.150	6.000	264.58	262.06	.96	9.8831	9.9777	-.95
52	2612	1.000	448.150	6.000	264.58	263.26	.50	12.6421	12.7167	-.59
52	2613	1.000	473.150	6.000	264.58	264.04	.21	15.4241	15.4650	-.26
52	2614	1.000	498.150	6.000	264.58	264.58	.00	18.2157	18.2159	-.00
52	2615	1.000	523.150	6.000	264.58	265.02	-.17	21.0148	20.9648	.24
52	2616	1.000	548.150	6.000	264.58	265.37	-.30	23.8137	23.7088	.44
52	2617	1.000	573.150	6.000	264.58	265.64	-.40	26.6083	26.4460	.61
52	2618	1.000	598.150	6.000	264.58	265.88	-.49	29.3984	29.1748	.77
52	2619	1.000	623.150	6.000	264.58	266.08	-.56	32.1819	31.8943	.90
52	2620	1.000	369.850	6.500	286.63	284.42	.78	4.3046	4.3135	-.21
52	2621	1.000	373.150	6.500	286.63	282.13	1.60	4.6751	4.7038	-.61
52	2622	1.000	398.150	6.500	286.63	283.07	1.26	7.6783	7.7722	-1.21
52	2623	1.000	423.150	6.500	286.63	284.60	.71	10.8232	10.9201	-.89
52	2624	1.000	448.150	6.500	286.63	285.62	.35	14.0320	14.1022	-.50
52	2625	1.000	473.150	6.500	286.63	286.28	.12	17.2683	17.3007	-.19
52	2626	1.000	498.150	6.500	286.63	286.72	-.03	20.5151	20.5054	.05
52	2627	1.000	523.150	6.500	286.63	287.12	-.17	23.7767	23.7102	.28
52	2628	1.000	548.150	6.500	286.63	287.39	-.26	27.0311	26.9107	.45
52	2629	1.000	573.150	6.500	286.63	287.71	-.38	30.2999	30.1040	.65
52	2630	1.000	598.150	6.500	286.63	287.89	-.44	33.5433	33.2881	.77
52	2631	1.000	623.150	6.500	286.63	288.06	-.50	36.7846	36.4616	.89

Table 7. (Continued)

Data sources and ID numbers: (1)Virial Equation, (2)Dawson, (3)Beattie, (4)Deschner, (5)Reamer, (13)Cherney, (17)Tomlinson, (24)Ely, (26)Dittmar, (XXXX)Haynes, (51,52)Thomas, (78)Teichmann, (79)Warowny.

ID	Data Point No.	Weight	Temp. K	Density expt mol/L	Density expt kg/m^3	Density calc kg/m^3	Density Diff. %	P_{expt} MPa	P_{calc} MPa	Pressure Diff. %
52	2632	1.000	369.850	7.000	308.68	307.00	.55	4.4573	4.4755	-.41
52	2633	1.000	373.150	7.000	308.68	306.19	.81	4.8957	4.9303	-.70
52	2634	1.000	398.150	7.000	308.68	306.35	.76	8.4013	8.4904	-1.05
52	2635	1.000	423.150	7.000	308.68	307.33	.44	12.0598	12.1455	-.71
52	2636	1.000	448.150	7.000	308.68	308.09	.19	15.7907	15.8436	-.33
52	2637	1.000	473.150	7.000	308.68	308.61	.02	19.5549	19.5630	-.04
52	2638	1.000	498.150	7.000	308.68	308.97	-.09	23.3317	23.2910	.17
52	2639	1.000	523.150	7.000	308.68	309.23	-.18	27.1102	27.0197	.34
52	2640	1.000	548.150	7.000	308.68	309.47	-.26	30.8952	30.7437	.49
52	2641	1.000	573.150	7.000	308.68	309.74	-.34	34.6896	34.4593	.67
52	2642	1.000	598.150	7.000	308.68	309.90	-.39	38.4597	38.1639	.78
52	2643	1.000	369.850	7.500	330.73	329.49	.37	4.8221	4.8512	-.60
52	2644	1.000	373.150	7.500	330.73	329.22	.46	5.3442	5.3857	-.77
52	2645	1.000	398.150	7.500	330.73	329.36	.42	9.4625	9.5405	-.82
52	2646	1.000	423.150	7.500	330.73	330.03	.21	13.7340	13.7944	-.44
52	2647	1.000	448.150	7.500	330.73	330.42	.09	18.0595	18.0953	-.20
52	2648	1.000	473.150	7.500	330.73	330.87	-.04	22.4403	22.4191	.09
52	2649	1.000	498.150	7.500	330.73	331.13	-.12	26.8214	26.7514	.26
52	2650	1.000	523.150	7.500	330.73	331.34	-.18	31.2082	31.0832	.40
52	2651	1.000	548.150	7.500	330.73	331.50	-.23	35.5902	35.4082	.51
52	2652	1.000	573.150	7.500	330.73	331.72	-.30	39.9842	39.7222	.66
52	2653	1.000	369.850	8.000	352.78	351.87	.26	5.5551	5.5955	-.72
52	2654	1.000	373.150	8.000	352.78	351.84	.27	6.1798	6.2259	-.74
52	2655	1.000	398.150	8.000	352.78	352.00	.22	11.0271	11.0931	-.59
52	2656	1.000	423.150	8.000	352.78	352.42	.10	16.0100	16.0528	-.27
52	2657	1.000	448.150	8.000	352.78	352.79	-.00	21.0590	21.0572	.01
52	2658	1.000	473.150	8.000	352.78	353.03	-.07	26.1301	26.0818	.19
52	2659	1.000	498.150	8.000	352.78	353.20	-.12	31.2060	31.1118	.30
52	2660	1.000	523.150	8.000	352.78	353.34	-.16	36.2829	36.1374	.40
52	2661	1.000	369.850	8.500	374.83	374.05	.21	6.8600	6.9189	-.85
52	2662	1.000	373.150	8.500	374.83	374.16	.18	7.6085	7.6628	-.71
52	2663	1.000	398.150	8.500	374.83	374.51	.09	13.3324	13.3719	-.30
52	2664	1.000	423.150	8.500	374.83	374.65	.05	19.1292	19.1583	-.15
52	2665	1.000	448.150	8.500	374.83	374.73	.02	24.9617	24.9806	-.08
52	2666	1.000	473.150	8.500	374.83	375.10	-.07	30.8828	30.8156	.22
52	2667	1.000	498.150	8.500	374.83	375.19	-.10	36.7519	36.6491	.28
52	2668	1.000	369.850	9.000	396.87	396.40	.12	9.0356	9.0937	-.64
52	2669	1.000	373.150	9.000	396.87	396.43	.11	9.9131	9.9700	-.57
52	2670	1.000	398.150	9.000	396.87	396.94	-.02	16.6730	16.6617	.07
52	2671	1.000	423.150	9.000	396.87	396.82	.01	23.3965	23.4083	-.05
52	2672	1.000	448.150	9.000	396.87	396.98	-.03	30.2048	30.1757	.10
52	2673	1.000	473.150	9.000	396.87	397.10	-.06	37.0155	36.9435	.19
52	2674	1.000	369.850	9.500	418.92	418.79	.03	12.4364	12.4614	-.20
52	2675	1.000	373.150	9.500	418.92	418.99	-.02	13.5032	13.4902	.10
52	2676	1.000	398.150	9.500	418.92	418.85	.02	21.2979	21.3154	-.08
52	2677	1.000	423.150	9.500	418.92	418.98	-.01	29.1850	29.1674	.06
52	2678	1.000	448.150	9.500	418.92	418.99	-.02	37.0435	37.0195	.06
52	2679	1.000	369.850	10.000	440.97	440.96	.00	17.4363	17.4398	-.02
52	2680	1.000	373.150	10.000	440.97	440.91	.01	18.6257	18.6426	-.09
52	2681	1.000	398.150	10.000	440.97	441.11	-.03	27.8096	27.7624	.17
52	2682	1.000	423.150	10.000	440.97	441.25	-.06	36.9863	36.8764	.30
52	2683	1.000	369.850	10.500	463.02	463.22	-.04	24.6078	24.5320	.31
52	2684	1.000	373.150	10.500	463.02	463.28	-.06	26.0340	25.9316	.39
52	2685	1.000	398.150	10.500	463.02	463.33	-.07	36.6584	36.5180	.38
52	2686	1.000	369.850	11.000	485.07	485.50	-.09	34.5614	34.3368	.65
52	2687	1.000	373.150	11.000	485.07	485.54	-.10	36.2066	35.9576	.69

Table 8. Comparisons of data for ideal gas functions with eq (7).

Propane ideal gas functions from Chao, et al. [13]

Temp.	C_p^o/R		Diff.	$(H^o - H_o^o)/RT$		Diff.	S^o/R		Diff.
K	expt.	calc.	%	expt.	calc.	%	expt.	calc.	%
50.000	4.096	4.084	.296	4.014	4.013	.024	22.353	22.355	-.009
100.000	4.967	4.987	-.409	4.254	4.254	-.001	25.433	25.433	-.001
150.000	5.868	5.854	.230	4.645	4.647	-.045	27.622	27.625	-.010
200.000	6.743	6.730	.201	5.059	5.056	.066	29.429	29.426	.011
273.150	8.268	8.289	-.250	5.707	5.706	.017	31.749	31.746	.008
298.150	8.852	8.874	-.246	5.946	5.947	-.016	32.498	32.497	.004
300.000	8.892	8.917	-.285	5.964	5.965	-.017	32.549	32.552	-.010
400.000	11.308	11.297	.089	6.998	7.002	-.047	35.442	35.444	-.006
500.000	13.542	13.519	.170	8.088	8.087	.011	38.210	38.208	.004
600.000	15.479	15.477	.014	9.162	9.159	.033	40.852	40.850	.004
700.000	17.160	17.172	-.070	10.188	10.186	.019	43.368	43.367	.003
800.000	18.614	18.634	-.103	11.152	11.153	-.006	45.758	45.757	.002
900.000	19.888	19.898	-.050	12.054	12.056	-.017	48.023	48.027	-.008
1000.000	21.000	20.996	.016	12.894	12.896	-.015	50.182	50.182	.000
1100.000	21.971	21.957	.063	13.677	13.677	-.003	52.230	52.229	.002
1200.000	22.821	22.803	.081	14.404	14.403	.005	54.177	54.176	.002
1300.000	23.556	23.552	.018	15.080	15.079	.010	56.034	56.032	.005
1400.000	24.200	24.219	-.076	15.709	15.708	.007	57.801	57.802	-.002
1500.000	24.764	24.816	-.210	16.294	16.296	-.008	59.491	59.494	-.003

Number of points = 19; rms deviation for C_p^o = 0.19%; rms deviation for H^o = 0.03%; rms deviation for S^o = 0.006%.

Table 8. (Continued)

Propane ideal gas specific heats

Data sources and ID numbers: (2)A.P.I.44, (3)Beeck, (4)Sage, (5)Kistiakowsky/Lacher, (6)Kistiakowsky/Rice, (7)Dailey, (8)Ernst, (9)Rossini.

ID	Temp.	C_p^o/R		Diff.
	K	expt.	calc.	%
2	100.000	4.952	4.987	-.72
2	298.150	8.842	8.874	-.36
2	700.000	17.210	17.172	.22
2	1000.000	21.050	20.996	.26
3	273.150	7.770	8.289	-6.68
3	373.150	10.135	10.665	-5.23
3	473.150	12.420	12.947	-4.24
3	573.150	14.433	14.978	-3.78
4	294.300	8.817	8.783	.39
4	310.900	9.088	9.177	-.97
4	327.600	9.350	9.576	-2.42
4	344.300	9.617	9.976	-3.74
4	360.900	9.893	10.374	-4.85
4	377.600	10.165	10.771	-5.96
4	394.300	10.432	11.164	-7.02
4	410.900	10.704	11.551	-7.91
4	427.600	10.970	11.934	-8.78
4	444.300	11.242	12.311	-9.51
5	148.200	5.883	5.825	.99
5	157.800	6.059	5.983	1.26
5	213.100	7.045	6.986	.85
5	219.000	7.131	7.105	.37
5	258.000	7.926	7.944	-.22
6	272.380	8.037	8.271	-2.92
6	300.370	8.796	8.926	-1.47
6	334.050	9.642	9.731	-.92
6	368.550	10.487	10.556	-.65
7	334.700	9.878	9.746	1.34
7	360.100	10.236	10.354	-1.16
7	387.800	10.875	11.012	-1.26
7	452.600	12.616	12.496	.95
7	521.000	14.035	13.953	.59
7	562.000	14.644	14.765	-.83
7	603.300	15.479	15.537	-.37
7	693.200	16.918	17.065	-.86
8	293.150	8.740	8.755	-.17
8	313.150	9.154	9.230	-.83
8	333.150	9.658	9.709	-.53
8	353.150	10.151	10.188	-.37
9	338.706	9.840	9.842	-.03
9	352.594	10.186	10.175	.11
9	366.483	10.528	10.507	.20
9	380.372	10.869	10.836	.30
9	394.261	11.206	11.163	.38
9	408.150	11.537	11.487	.43
9	422.039	11.857	11.807	.42

Table 9. Interpolated ideal gas functions from eq (7).

Temp. K	E^o J/mol	H^o J/mol	S^o J/(mol·K)	C_v^o J/(mol·K)	C_p^o J/(mol·K)
80	2076.0	2741.1	202.599	29.75	38.07
90	2382.1	3130.4	207.182	31.48	39.79
100	2705.3	3536.8	211.461	33.15	41.47
110	3044.8	3959.4	215.488	34.73	43.04
120	3399.6	4397.3	219.297	36.21	44.53
130	3768.9	4849.7	222.918	37.63	45.94
140	4152.0	5316.0	226.373	39.00	47.31
150	4548.8	5796.0	229.683	40.36	48.67
160	4959.3	6289.6	232.868	41.73	50.05
170	5383.5	6797.0	235.944	43.13	51.45
180	5822.1	7318.7	238.925	44.58	52.90
190	6275.3	7855.1	241.825	46.08	54.40
200	6743.9	8406.8	244.654	47.64	55.95
210	7228.3	8974.3	247.423	49.25	57.57
220	7729.2	9558.3	250.139	50.93	59.24
230	8247.0	10159.3	252.811	52.65	60.97
240	8782.4	10777.8	255.443	54.43	62.74
250	9335.7	11414.3	258.041	56.25	64.56
260	9907.4	12069.1	260.609	58.11	66.42
270	10497.9	12742.8	263.151	60.00	68.31
280	11107.5	13435.5	265.670	61.92	70.23
290	11736.4	14147.5	268.168	63.86	72.18
300	12384.8	14879.1	270.648	65.83	74.14
310	13053.0	15630.4	273.112	67.80	76.12
320	13740.9	16401.5	275.560	69.79	78.11
330	14448.8	17192.5	277.994	71.78	80.10
340	15176.6	18003.5	280.414	73.78	82.09
350	15924.3	18834.4	282.823	75.77	84.08
360	16692.0	19685.1	285.219	77.76	86.07
370	17479.4	20555.7	287.605	79.74	88.05
380	18286.7	21446.1	289.979	81.71	90.02
390	19113.6	22356.2	292.343	83.67	91.98
400	19960.0	23285.8	294.696	85.62	93.93
410	20825.9	24234.7	297.039	87.55	95.86
420	21710.9	25203.0	299.372	89.46	97.78
430	22615.1	26190.3	301.695	91.36	99.68
440	23538.1	27196.4	304.008	93.24	101.56
450	24479.9	28221.3	306.312	95.10	103.42
460	25440.1	29264.7	308.605	96.94	105.26
470	26418.6	30326.4	310.888	98.76	107.07
480	27415.2	31406.1	313.161	100.56	108.87
490	28429.7	32503.7	315.424	102.33	110.65
500	29461.8	33619.0	317.677	104.09	112.40
510	30511.3	34751.6	319.920	105.82	114.13
520	31578.0	35901.5	322.153	107.52	115.84
530	32661.7	37068.3	324.375	109.21	117.52
540	33762.1	38251.9	326.588	110.87	119.19
550	34879.1	39451.9	328.790	112.51	120.82
560	36012.3	40668.3	330.981	114.13	122.44
570	37161.5	41900.7	333.163	115.72	124.04
580	38326.6	43148.9	335.334	117.29	125.61
590	39507.3	44412.8	337.494	118.84	127.16
600	40703.4	45692.0	339.644	120.37	128.68
610	41914.6	46986.3	341.783	121.87	130.19
620	43140.7	48295.6	343.912	123.36	131.67
630	44381.6	49619.7	346.031	124.82	133.13
640	45637.0	50958.2	348.139	126.26	134.57
650	46906.7	52311.0	350.236	127.67	135.99

Table 10. Comparisons of heat of vaporization data with eq (9).

Data sources and ID numbers: (1)Dana, (2)Kemp, (3)Sage, (4)Staveley, (5)Helgeson, (6)Yesavage, (7)Carruth, (40)Thermal Loops, (41)Clapeyron.

ID	Weight	Temp. K	Heat of Vaporization kJ/mol		Diff. %
			expt.	calc.	
40	1.000	85.470	24.824	24.841	-.07
40	.999	90.000	24.622	24.628	-.02
40	.997	95.000	24.401	24.398	.01
40	.995	100.000	24.183	24.172	.04
40	.993	105.000	23.967	23.952	.06
40	.992	110.000	23.754	23.735	.08
7	.991	110.946	23.719	23.695	.10
40	.990	115.000	23.544	23.522	.09
7	.988	118.342	23.391	23.382	.04
40	.988	120.000	23.335	23.313	.09
40	.986	125.000	23.129	23.107	.09
7	.985	125.739	23.068	23.077	-.04
40	.983	130.000	22.925	22.904	.09
7	.982	133.135	22.770	22.778	-.03
40	.981	135.000	22.722	22.703	.08
40	.979	140.000	22.520	22.504	.07
7	.979	140.532	22.460	22.483	-.10
40	.976	145.000	22.320	22.307	.06
7	.975	147.928	22.182	22.192	-.05
40	.974	150.000	22.121	22.111	.05
40	.971	155.000	21.923	21.916	.03
7	.971	155.324	21.887	21.903	-.07
40	.969	160.000	21.725	21.721	.02
7	.967	162.721	21.631	21.616	.07
40	.966	165.000	21.528	21.527	.01
40	.963	170.000	21.331	21.332	-.01
7	.963	170.117	21.326	21.328	-.01
40	.960	175.000	21.133	21.137	-.02
7	.958	177.514	20.989	21.038	-.23
40	.956	180.000	20.935	20.940	-.03
7	.953	184.910	20.745	20.746	-.00
40	.953	185.000	20.736	20.742	-.03
40	.949	190.000	20.536	20.543	-.03
7	.947	192.306	20.459	20.450	.05
40	.945	195.000	20.334	20.340	-.03
7	.942	199.703	20.144	20.148	-.02
40	.941	200.000	20.129	20.135	-.03
40	.937	205.000	19.922	19.927	-.03
7	0.000	207.099	20.014	19.839	.88
40	.933	210.000	19.712	19.716	-.02
7	.928	214.496	19.504	19.522	-.09
40	.928	215.000	19.498	19.500	-.01
40	.923	220.000	19.280	19.279	.01
7	.921	221.892	19.189	19.194	-.03
40	.917	225.000	19.057	19.053	.02
7	.912	229.288	18.857	18.855	.01
40	.912	230.000	18.830	18.822	.04
40	.910	231.000	18.783	18.775	.04
7	.903	236.685	18.500	18.503	-.02
41	.998	90.000	24.562	24.628	-.27
41	.995	100.000	24.157	24.172	-.06
41	.991	110.000	23.744	23.735	.04
41	.986	120.000	23.328	23.313	.06
41	.982	130.000	22.914	22.904	.04
41	.977	140.000	22.504	22.504	-.00
41	.971	150.000	22.100	22.111	-.05
41	.965	160.000	21.703	21.721	-.08
41	.959	170.000	21.310	21.332	-.10
41	.951	180.000	20.918	20.940	-.10
41	.944	190.000	20.525	20.543	-.09
41	.935	200.000	20.124	20.135	-.06
41	.925	210.000	19.713	19.716	-.01
41	.914	220.000	19.285	19.279	.03

Table 10. (Continued).

Data Sources and ID numbers: (1)Dana, (2)Kemp, (3)Sage, (4)Staveley, (5)Helgeson, (6)Yesavage, (7)Carruth, (40)Thermal Loops, (41)Clapeyron.

ID	Weight	Temp. K	Heat of Vaporization kJ/mol		Diff. %
			expt.	calc.	
41	.902	230.000	18.837	18.822	.08
41	.888	240.000	18.362	18.340	.12
41	.872	250.000	17.855	17.829	.14
41	.853	260.000	17.310	17.283	.15
41	.831	270.000	16.720	16.696	.14
41	.805	280.000	16.078	16.062	.10
41	.774	290.000	15.377	15.372	.04
41	.736	300.000	14.608	14.614	-.04
41	.687	310.000	13.757	13.775	-.13
41	.625	320.000	12.808	12.834	-.20
41	.541	330.000	11.733	11.760	-.23
41	.426	340.000	10.480	10.499	-.19
41	.264	350.000	8.941	8.946	-.05
41	.062	360.000	6.821	6.806	.22
1	0.000	234.070	18.441	18.629	-1.01
1	0.000	237.750	17.856	18.451	-3.22
1	0.000	241.830	18.242	18.249	-.04
1	0.000	247.100	17.873	17.981	-.60
1	0.000	253.740	17.819	17.629	1.08
1	0.000	261.210	17.397	17.214	1.06
1	0.000	269.100	16.865	16.751	.68
1	0.000	275.420	16.330	16.359	-.18
1	0.000	279.890	16.524	16.069	2.83
1	0.000	281.850	15.814	15.939	-.78
1	0.000	285.530	15.738	15.688	.32
1	0.000	287.150	15.795	15.575	1.41
1	0.000	292.200	15.356	15.211	.95
1	0.000	292.700	15.596	15.174	2.78
2	0.000	231.090	18.780	18.771	.05
3	0.000	312.817	13.627	13.521	.78
3	0.000	312.983	13.649	13.506	1.06
3	0.000	316.206	13.360	13.204	1.18
3	0.000	316.372	13.551	13.189	2.75
3	0.000	316.483	13.551	13.178	2.83
3	0.000	316.539	13.282	13.173	.83
3	0.000	318.928	13.171	12.940	1.78
3	0.000	320.983	13.127	12.735	3.08
3	0.000	321.150	13.143	12.718	3.34
3	0.000	327.983	12.284	11.989	2.46
3	0.000	328.094	12.224	11.977	2.07
3	0.000	335.594	11.297	11.082	1.94
3	0.000	335.650	11.344	11.075	2.43
3	0.000	345.706	10.205	9.660	5.64
3	0.000	346.039	10.188	9.607	6.04
3	0.000	348.150	9.648	9.264	4.15
4	0.000	185.000	20.690	20.742	-.25
4	0.000	213.200	19.660	19.578	.42
5	0.000	310.928	13.651	13.692	-.30
5	0.000	322.039	12.592	12.627	-.28
5	0.000	327.594	11.989	12.033	-.36
5	0.000	330.372	11.612	11.717	-.89
6	0.000	231.094	18.778	18.771	.04
6	0.000	263.206	17.148	17.100	.28
6	0.000	285.928	15.734	15.660	.47
6	0.000	301.317	14.617	14.508	.75
6	0.000	313.428	13.633	13.465	1.25
6	0.000	323.428	12.649	12.483	1.33
6	0.000	331.817	11.624	11.547	.67
6	0.000	339.483	10.578	10.570	.07
6	0.000	346.206	9.512	9.581	-.72
6	0.000	352.428	8.405	8.500	-1.12
6	0.000	358.039	7.216	7.304	-1.20
6	0.000	363.372	5.873	5.787	1.49
6	0.000	367.039	4.449	4.198	5.99

Number of data points used in fit = 76; rms deviation = 0.083%.

Table 11. Enthalpies of saturated liquid propane from eq (10).

Temp. K	H_σ[1] J/mol	H_σ (eq (10)) J/mol	Diff. %
90.00	391.6	391.5	.018
100.00	1253.4	1253.4	-.003
110.00	2113.2	2113.3	-.004
120.00	2973.0	2973.0	.000
130.00	3834.6	3834.5	.003
140.00	4700.4	4700.3	.002
150.00	5572.6	5572.6	.000
160.00	6453.6	6453.7	-.001
170.00	7345.6	7345.7	-.001
180.00	8250.5	8250.7	-.002
190.00	9170.5	9170.5	-.000
200.00	10106.9	10106.8	.001
210.00	11061.1	11060.9	.002
220.00	12034.5	12034.3	.002
230.00	13028.3	13028.2	.001
240.00	14043.7	14043.9	-.001
250.00	15082.5	15082.6	-.001
260.00	16145.6	16145.9	-.002
270.00	17235.5	17235.6	-.000
280.00	18354.0	18353.9	.000
290.00	19504.4	19504.1	.002
300.00	20690.5	20690.3	.001
310.00	21918.3	21918.2	.000
320.00	23196.1	23196.4	-.001
330.00	24537.1	24537.6	-.002
340.00	25963.5	25963.4	.000
350.00	27517.5	27516.8	.002
360.00	29314.7	29315.0	-.001
369.85	33082.2	33082.2	0.000

Number of points = 28; rms deviation = 0.004%.

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[1] Derived from ideal gas functions, the equation of state, and the formulated heats of vaporization.

Table 12. Entropies and specific heats of saturated liquid propane from eq (11).

Temp. K	S_σ^l J/(mol•K)	S_σ (eq (11)) J/(mol•K)	Diff. %	C_σ J/(mol•K)
85.47	82.561	82.561	0.000	87.54
90.00	87.074	87.070	.005	87.05
100.00	96.197	96.197	.000	86.25
110.00	104.394	104.396	-.003	85.87
120.00	111.864	111.866	-.001	85.88
130.00	118.753	118.751	.001	86.23
140.00	125.165	125.163	.002	86.86
150.00	131.185	131.184	.001	87.71
160.00	136.877	136.877	-.000	88.75
170.00	142.292	142.293	-.001	89.96
180.00	147.471	147.473	-.001	91.32
190.00	152.448	152.450	-.001	92.81
200.00	157.251	157.251	.000	94.45
210.00	161.902	161.901	.001	96.20
220.00	166.421	166.420	.001	98.08
230.00	170.824	170.823	.001	100.07
240.00	175.126	175.125	.000	102.16
250.00	179.339	179.340	-.000	104.35
260.00	183.476	183.477	-.001	106.67
270.00	187.548	187.549	-.001	109.15
280.00	191.566	191.567	-.000	111.86
290.00	195.544	195.543	.001	114.87
300.00	199.496	199.495	.001	118.33
310.00	203.440	203.439	.001	122.41
320.00	207.401	207.401	-.000	127.39
330.00	211.412	211.415	-.001	133.79
340.00	215.532	215.533	-.001	142.79
350.00	219.870	219.867	.002	157.85
360.00	224.725	224.727	-.001	194.14
369.85	234.726	234.726	0.000	--

Number of points = 28; rms deviation = 0.001%.

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[1] Derived from ideal gas functions, equation of state, and formulated heats of vaporization.

Table 13. Comparisons of dielectric constant data with eq (12)

Data sources and ID numbers: (16)Sliwinski; (20)Haynes, Saturated liquid; (XXXX)Haynes, Compressed liquid.

ID	Weight	Temp. K	Pressure MPa	Density kg/m³	Density mol/L	C-M Function cm³/mol expt	C-M Function cm³/mol calc	Diff. %	Dielectric Constant expt	Dielectric Constant calc	Diff. %
16	1.000	293.190	.8374	18.15	.412	16.050	16.010	.252	1.01995	1.01990	.005
16	1.000	313.120	1.3685	30.23	.686	15.990	16.010	-.125	1.03325	1.03329	-.004
16	1.000	323.120	1.7120	38.80	.880	15.986	16.015	-.177	1.04280	1.04288	-.007
16	1.000	343.080	2.5815	64.06	1.453	16.024	16.034	-.063	1.07150	1.07155	-.004
16	1.000	353.090	3.1253	84.40	1.914	16.053	16.053	.003	1.09510	1.09510	.000
16	1.000	358.100	3.4292	99.00	2.245	16.052	16.066	-.090	1.11215	1.11225	-.009
16	1.000	363.110	3.7573	118.83	2.695	16.105	16.084	.131	1.13610	1.13591	.016
16	1.000	365.600	3.9307	133.24	3.022	16.100	16.096	.025	1.15340	1.15336	.004
16	1.000	368.100	4.1129	155.96	3.537	16.130	16.113	.106	1.18150	1.18130	.017
16	1.000	369.100	4.1886	173.15	3.927	16.118	16.125	-.042	1.20270	1.20279	-.008
16	1.000	368.100	4.1129	286.10	6.488	16.202	16.162	.245	1.35240	1.35144	.071
16	1.000	365.600	3.9307	311.68	7.068	16.173	16.161	.073	1.38720	1.38688	.023
16	1.000	363.110	3.7573	328.92	7.459	16.140	16.159	-.118	1.41060	1.41115	-.039
16	1.000	358.100	3.4292	353.75	8.022	16.128	16.154	-.162	1.44580	1.44663	-.058
16	1.000	353.090	3.1253	373.46	8.469	16.131	16.148	-.100	1.47470	1.47525	-.037
16	1.000	343.080	2.5815	403.80	9.157	16.114	16.135	-.130	1.51930	1.52009	-.052
16	1.000	323.120	1.7120	448.73	10.176	16.109	16.111	-.014	1.58820	1.58830	-.006
16	1.000	313.120	1.3685	467.43	10.600	16.078	16.100	-.137	1.61630	1.61732	-.063
16	1.000	293.190	.8374	499.89	11.336	16.063	16.078	-.089	1.66790	1.66863	-.044
20	1.000	300.000	.9978	488.67	11.082	16.092	16.086	.040	1.65110	1.65078	.019
20	1.000	295.000	.8781	496.57	11.261	16.083	16.080	.016	1.66348	1.66335	.008
20	1.000	293.190	.8374	499.36	11.324	16.080	16.078	.010	1.66789	1.66781	.005
20	1.000	290.000	.7692	504.19	11.434	16.076	16.075	.005	1.67559	1.67555	.003
20	1.000	285.000	.6706	511.57	11.601	16.070	16.070	-.000	1.68741	1.68741	-.000
20	1.000	280.000	.5817	518.72	11.763	16.063	16.064	-.006	1.69893	1.69898	-.003
20	1.000	275.000	.5018	525.67	11.921	16.058	16.059	-.006	1.71023	1.71029	-.003
20	1.000	270.000	.4304	532.44	12.074	16.052	16.054	-.013	1.72124	1.72136	-.007
20	1.000	265.000	.3668	539.05	12.224	16.048	16.049	-.007	1.73216	1.73222	-.004
20	1.000	260.000	.3106	545.50	12.371	16.043	16.045	-.009	1.74281	1.74289	-.005
20	1.000	255.000	.2611	551.83	12.514	16.039	16.040	-.005	1.75335	1.75340	-.003
20	1.000	250.000	.2178	558.03	12.655	16.035	16.036	-.000	1.76375	1.76375	-.000
20	1.000	245.000	.1802	564.12	12.793	16.032	16.031	.004	1.77401	1.77397	.002
20	1.000	240.000	.1478	570.11	12.929	16.033	16.027	.036	1.78443	1.78408	.020
20	1.000	235.000	.1201	576.01	13.062	16.031	16.023	.048	1.79456	1.79407	.027
20	1.000	230.000	.0966	581.81	13.194	16.028	16.019	.056	1.80454	1.80397	.031
20	1.000	228.400	.0899	583.66	13.236	16.024	16.018	.038	1.80752	1.80713	.022
20	1.000	225.000	.0769	587.55	13.324	16.024	16.015	.054	1.81436	1.81380	.031
20	1.000	220.000	.0605	593.21	13.452	16.016	16.011	.028	1.82385	1.82355	.016
20	1.000	215.000	.0469	598.80	13.579	16.012	16.008	.027	1.83353	1.83324	.016
20	1.000	210.000	.0359	604.34	13.705	16.008	16.004	.021	1.84312	1.84289	.012
20	1.000	205.000	.0271	609.83	13.829	16.004	16.001	.017	1.85268	1.85250	.010
20	1.000	200.000	.0201	615.26	13.952	16.000	15.998	.014	1.86222	1.86207	.008
20	1.000	195.000	.0147	620.66	14.075	15.998	15.995	.015	1.87179	1.87162	.009
20	1.000	190.000	.0105	626.00	14.196	15.997	15.993	.024	1.88142	1.88115	.014
20	1.000	185.000	.0074	631.32	14.317	15.993	15.990	.015	1.89086	1.89068	.009

Table 13. (Continued)

Data sources and ID numbers: (16)Sliwinski; (20)Haynes, Saturated liquid; (XXXX)Haynes, Compressed liquid.

ID	Weight	Temp. K	Pressure MPa	Density kg/m^3	Density mol/L	C-M Function cm^3/mol expt	C-M Function cm^3/mol calc	Diff. %	Dielectric Constant expt	Dielectric Constant calc	Diff. %
20	1.000	180.000	.0050	636.60	14.436	15.990	15.988	.014	1.90038	1.90021	.009
20	1.000	175.000	.0034	641.86	14.556	15.988	15.986	.012	1.90990	1.90976	.008
20	1.000	170.000	.0022	647.09	14.674	15.986	15.985	.012	1.91946	1.91931	.008
20	1.000	165.000	.0014	652.30	14.792	15.984	15.983	.007	1.92898	1.92890	.004
20	1.000	160.000	.0008	657.48	14.910	15.983	15.982	.005	1.93857	1.93851	.003
20	1.000	155.000	.0005	662.66	15.027	15.981	15.981	-.002	1.94814	1.94816	-.001
20	1.000	150.000	.0003	667.81	15.144	15.980	15.981	-.005	1.95780	1.95786	-.003
20	1.000	145.000	.0002	672.96	15.261	15.980	15.981	-.008	1.96752	1.96762	-.005
20	1.000	140.000	.0001	678.09	15.377	15.980	15.981	-.008	1.97733	1.97743	-.005
20	1.000	135.000	.0000	683.22	15.494	15.981	15.982	-.009	1.98721	1.98733	-.006
20	1.000	130.000	.0000	688.34	15.610	15.981	15.983	-.012	1.99715	1.99730	-.008
20	1.000	125.000	.0000	693.46	15.726	15.983	15.985	-.014	2.00718	2.00737	-.009
20	1.000	120.000	.0000	698.58	15.842	15.985	15.988	-.016	2.01732	2.01754	-.011
20	1.000	115.000	.0000	703.70	15.958	15.988	15.991	-.016	2.02759	2.02782	-.011
20	1.000	110.000	.0000	708.82	16.074	15.993	15.995	-.013	2.03804	2.03822	-.009
20	1.000	105.000	.0000	713.94	16.190	15.999	15.999	-.006	2.04869	2.04877	-.004
20	1.000	100.000	.0000	719.07	16.307	16.006	16.005	.004	2.05952	2.05947	.002
20	1.000	95.000	.0000	724.21	16.423	16.014	16.012	.013	2.07053	2.07034	.009
20	1.000	90.000	.0000	729.35	16.540	16.023	16.020	.022	2.08173	2.08140	.016
1201	.314	90.000	34.7214	740.78	16.799	15.975	15.972	.021	2.10039	2.10008	.015
1202	.353	90.000	31.2781	739.73	16.775	15.979	15.976	.018	2.09864	2.09837	.013
1203	.395	90.000	27.8346	738.67	16.751	15.983	15.981	.013	2.09686	2.09666	.010
1204	.444	90.000	24.3913	737.59	16.726	15.987	15.986	.010	2.09504	2.09490	.007
1205	.497	90.000	20.9479	736.48	16.701	15.992	15.990	.011	2.09325	2.09309	.008
1206	.558	90.000	17.5048	735.31	16.675	15.997	15.995	.015	2.09140	2.09118	.011
1207	.626	90.000	14.0615	734.15	16.648	16.003	16.000	.019	2.08955	2.08927	.013
1208	.702	90.000	10.6186	732.96	16.621	16.009	16.005	.024	2.08767	2.08732	.017
1209	.787	90.000	7.1754	731.76	16.594	16.014	16.010	.028	2.08577	2.08536	.020
1210	.883	90.000	3.7326	730.57	16.567	16.019	16.015	.030	2.08384	2.08340	.021
1001	.304	100.000	35.7539	731.74	16.594	15.953	15.954	-.005	2.08010	2.08018	-.004
1002	.349	100.000	31.6219	730.28	16.561	15.961	15.960	.004	2.07785	2.07780	.003
1003	.395	100.000	27.8341	728.94	16.530	15.967	15.965	.010	2.07576	2.07561	.007
1004	.444	100.000	24.3910	727.74	16.503	15.972	15.970	.014	2.07384	2.07364	.010
1005	.497	100.000	20.9477	726.53	16.476	15.978	15.975	.016	2.07190	2.07167	.011
1006	.558	100.000	17.5047	725.29	16.448	15.983	15.980	.019	2.06992	2.06964	.014
1007	.626	100.000	14.0615	724.05	16.420	15.989	15.985	.021	2.06793	2.06762	.015
1008	.686	100.000	11.3072	723.04	16.397	15.993	15.989	.024	2.06631	2.06596	.017
1009	.752	100.000	8.5527	722.03	16.374	15.997	15.993	.026	2.06468	2.06431	.018
1010	.824	100.000	5.7985	721.24	16.356	15.997	15.997	.001	2.06304	2.06303	.000
1011	.883	100.000	3.7328	720.46	16.338	16.000	16.000	.003	2.06179	2.06174	.002
1012	.946	100.000	1.6670	719.70	16.321	16.003	16.003	.002	2.06053	2.06050	.002
501	.311	110.000	34.9955	722.15	16.376	15.939	15.943	-.027	2.05964	2.06003	-.019
502	.353	110.000	31.2768	720.84	16.347	15.944	15.948	-.028	2.05749	2.05789	-.019
503	.395	110.000	27.8332	719.57	16.318	15.949	15.953	-.025	2.05546	2.05581	-.017

Table 13. (Continued)

Data sources and ID numbers: (16)Sliwinski; (20)Haynes, Saturated liquid; (XXXX)Haynes, Compressed liquid.

ID	Weight	Temp. K	Pressure MPa	Density kg/m^3	Density mol/L	C-M Function cm^3/mol expt	C-M Function cm^3/mol calc	Diff. %	Dielectric Constant expt	Dielectric Constant calc	Diff. %
504	.444	110.000	24.3900	718.26	16.288	15.955	15.958	-.020	2.05340	2.05368	-.014
505	.497	110.000	20.9466	716.96	16.259	15.961	15.963	-.016	2.05133	2.05155	-.011
506	.555	110.000	17.6413	715.67	16.229	15.967	15.968	-.008	2.04932	2.04944	-.006
507	.616	110.000	14.5424	714.41	16.201	15.974	15.973	.002	2.04740	2.04737	.002
508	.672	110.000	11.9258	713.39	16.178	15.978	15.977	.003	2.04575	2.04571	.002
509	.735	110.000	9.2401	712.39	16.155	15.981	15.981	-.002	2.04405	2.04408	-.001
510	.806	110.000	6.4857	711.35	16.131	15.984	15.985	-.006	2.04228	2.04236	-.004
511	.859	110.000	4.5578	710.60	16.114	15.987	15.988	-.008	2.04103	2.04114	-.006
512	.914	110.000	2.6985	709.89	16.098	15.989	15.991	-.011	2.03982	2.03998	-.008
513	.953	110.000	1.4591	709.40	16.087	15.991	15.993	-.012	2.03900	2.03917	-.008
514	.971	110.000	.8761	709.18	16.082	15.991	15.993	-.015	2.03861	2.03882	-.010
601	.297	120.000	36.3748	713.50	16.180	15.925	15.932	-.041	2.04135	2.04193	-.028
602	.345	120.000	31.9673	711.78	16.141	15.933	15.938	-.036	2.03863	2.03913	-.025
603	.395	120.000	27.8350	710.16	16.104	15.940	15.945	-.032	2.03604	2.03649	-.022
604	.443	120.000	24.3919	708.76	16.073	15.946	15.950	-.026	2.03384	2.03420	-.018
605	.497	120.000	20.9485	707.36	16.041	15.952	15.955	-.021	2.03162	2.03191	-.014
606	.558	120.000	17.5053	705.91	16.008	15.959	15.961	-.013	2.02936	2.02954	-.009
607	.623	120.000	14.1999	704.54	15.977	15.964	15.966	-.009	2.02717	2.02730	-.006
608	.680	120.000	11.5833	703.45	15.952	15.969	15.970	-.007	2.02541	2.02551	-.005
609	.752	120.000	8.5533	702.18	15.923	15.973	15.974	-.007	2.02333	2.02343	-.005
610	.824	120.000	5.7991	701.02	15.897	15.977	15.979	-.008	2.02142	2.02154	-.006
611	.883	120.000	3.7334	700.17	15.878	15.980	15.982	-.013	2.01997	2.02014	-.009
612	.935	120.000	2.0118	699.45	15.862	15.982	15.984	-.015	2.01875	2.01896	-.010
613	.962	120.000	1.1512	699.08	15.853	15.983	15.986	-.016	2.01814	2.01836	-.011
614	.980	120.000	.6141	698.84	15.848	15.984	15.987	-.015	2.01776	2.01797	-.010
401	.308	130.000	35.3418	703.72	15.958	15.925	15.928	-.018	2.02218	2.02242	-.012
402	.351	130.000	31.4162	702.13	15.922	15.931	15.934	-.017	2.01961	2.01984	-.012
403	.394	130.000	27.9727	700.68	15.889	15.937	15.939	-.012	2.01731	2.01747	-.008
404	.444	130.000	24.3917	699.16	15.855	15.943	15.945	-.009	2.01488	2.01500	-.006
405	.497	130.000	20.9484	697.68	15.821	15.949	15.950	-.006	2.01249	2.01258	-.004
406	.637	130.000	13.5113	694.37	15.746	15.963	15.962	.005	2.00722	2.00716	.003
407	.699	130.000	10.7569	693.16	15.719	15.967	15.966	.002	2.00521	2.00518	.002
408	.769	130.000	7.8647	691.88	15.690	15.971	15.971	-.001	2.00308	2.00309	-.001
409	.834	130.000	5.4548	690.82	15.666	15.974	15.975	-.005	2.00129	2.00135	-.003
410	.883	130.000	3.7333	690.05	15.648	15.976	15.977	-.006	2.00002	2.00010	-.004
411	.931	130.000	2.1495	689.34	15.632	15.978	15.980	-.013	1.99877	1.99894	-.008
412	.952	130.000	1.4609	689.02	15.625	15.979	15.981	-.012	1.99825	1.99841	-.008
413	.968	130.000	.9789	688.79	15.620	15.980	15.982	-.012	1.99787	1.99803	-.008
414	.979	130.000	.6277	688.64	15.616	15.980	15.982	-.011	1.99763	1.99778	-.008
701	.293	140.000	36.7881	695.36	15.769	15.916	15.921	-.033	2.00519	2.00564	-.022
702	.337	140.000	32.6560	693.50	15.727	15.924	15.928	-.022	2.00231	2.00261	-.015
703	.386	140.000	28.5239	691.63	15.684	15.932	15.934	-.013	1.99939	1.99957	-.009
704	.443	140.000	24.3920	689.77	15.642	15.939	15.941	-.011	1.99639	1.99653	-.007
705	.497	140.000	20.9487	688.15	15.605	15.946	15.947	-.002	1.99385	1.99388	-.002

Table 13. (Continued)

Data sources and ID numbers: (16)Sliwinski; (20)Haynes, Saturated liquid; (XXXX)Haynes, Compressed liquid.

ID	Weight	Temp.	Pressure	Density		C-M Function cm^3/mol		Diff.	Dielectric Constant		Diff.
		K	MPa	kg/m^3	mol/L	expt	calc	%	expt	calc	%
706	.558	140.000	17.5056	686.53	15.569	15.953	15.952	.002	1.99126	1.99123	.001
707	.620	140.000	14.3378	685.00	15.534	15.959	15.957	.009	1.98884	1.98873	.006
708	.678	140.000	11.6523	683.70	15.504	15.964	15.962	.012	1.98675	1.98660	.008
709	.743	140.000	8.8977	682.34	15.474	15.969	15.967	.016	1.98459	1.98438	.010
710	.802	140.000	6.6255	681.27	15.449	15.972	15.970	.011	1.98277	1.98263	.007
711	.863	140.000	4.4221	680.23	15.426	15.975	15.974	.004	1.98099	1.98093	.003
712	.914	140.000	2.7005	679.42	15.407	15.976	15.977	-.002	1.97958	1.97961	-.001
713	.946	140.000	1.6676	678.95	15.397	15.977	15.978	-.010	1.97872	1.97884	-.006
714	.968	140.000	.9791	678.61	15.389	15.978	15.979	-.011	1.97814	1.97828	-.007
801	.297	160.000	36.4438	677.06	15.354	15.918	15.919	-.002	1.97040	1.97042	-.001
802	.345	160.000	31.9674	674.88	15.304	15.926	15.926	-.002	1.96685	1.96688	-.001
803	.395	160.000	27.8352	672.82	15.258	15.933	15.933	-.002	1.96350	1.96352	-.001
804	.443	160.000	24.3921	671.06	15.218	15.939	15.939	-.001	1.96066	1.96067	-.000
805	.497	160.000	20.9487	669.31	15.178	15.943	15.944	-.006	1.95774	1.95782	-.004
806	.558	160.000	17.5056	667.48	15.137	15.950	15.950	-.005	1.95478	1.95484	-.003
807	.626	160.000	14.0623	665.60	15.094	15.956	15.956	-.002	1.95174	1.95177	-.001
808	.686	160.000	11.3080	664.06	15.059	15.962	15.961	.001	1.94926	1.94925	.001
809	.752	160.000	8.5534	662.51	15.024	15.966	15.966	.000	1.94672	1.94672	.000
810	.824	160.000	5.7992	660.92	14.988	15.972	15.971	.003	1.94416	1.94412	.002
811	.883	160.000	3.7335	659.70	14.960	15.976	15.975	.005	1.94219	1.94213	.003
812	.935	160.000	2.0119	658.72	14.938	15.978	15.978	.001	1.94053	1.94052	.000
813	.968	160.000	.9791	658.08	14.924	15.981	15.980	.003	1.93952	1.93949	.002
901	.287	180.000	37.4764	659.84	14.963	15.919	15.918	.004	1.93803	1.93799	.002
902	.329	180.000	33.3443	657.56	14.912	15.926	15.926	.003	1.93434	1.93430	.002
903	.378	180.000	29.2121	655.21	14.858	15.934	15.933	.006	1.93057	1.93049	.004
904	.433	180.000	25.0803	652.80	14.804	15.942	15.940	.012	1.92671	1.92657	.007
905	.497	180.000	20.9483	650.40	14.749	15.948	15.948	.003	1.92271	1.92267	.002
906	.558	180.000	17.5052	648.28	14.701	15.955	15.954	.005	1.91929	1.91923	.003
907	.624	180.000	14.1308	646.17	14.653	15.961	15.960	.006	1.91586	1.91579	.004
908	.686	180.000	11.3076	644.37	14.613	15.966	15.966	.003	1.91291	1.91287	.002
909	.752	180.000	8.5530	642.53	14.571	15.972	15.971	.008	1.90996	1.90987	.005
910	.824	180.000	5.7988	640.64	14.528	15.979	15.977	.015	1.90696	1.90678	.009
911	.883	180.000	3.7330	639.19	14.495	15.984	15.981	.019	1.90465	1.90442	.012
912	.946	180.000	1.6671	637.75	14.462	15.988	15.985	.019	1.90230	1.90207	.012
913	.968	180.000	.9786	637.28	14.452	15.989	15.986	.017	1.90150	1.90131	.010
2901	.314	200.000	34.7203	640.95	14.535	15.913	15.927	-.090	1.90267	1.90372	-.055
2902	.353	200.000	31.2770	638.70	14.484	15.921	15.934	-.080	1.89915	1.90008	-.049
2903	.395	200.000	27.8334	636.38	14.431	15.930	15.941	-.067	1.89554	1.89633	-.041
2904	.444	200.000	24.3903	634.02	14.378	15.938	15.947	-.058	1.89182	1.89249	-.035
2905	.497	200.000	20.9469	631.57	14.322	15.947	15.954	-.046	1.88800	1.88853	-.028
2906	.558	200.000	17.5038	629.04	14.265	15.956	15.961	-.032	1.88405	1.88442	-.019
2907	.626	200.000	14.0606	626.45	14.206	15.965	15.968	-.021	1.87998	1.88022	-.013
2908	.686	200.000	11.3062	624.33	14.158	15.972	15.974	-.013	1.87663	1.87678	-.008
2909	.752	200.000	8.5516	622.19	14.109	15.978	15.980	-.012	1.87316	1.87330	-.007

Table 13. (Continued)

Data sources and ID numbers: (16)Sliwinski; (20)Haynes, Saturated liquid; (XXXX)Haynes, Compressed liquid.

ID	Weight	Temp. K	Pressure MPa	Density kg/m^3	Density mol/L	C-M Function cm^3/mol expt	C-M Function cm^3/mol calc	Diff. %	Dielectric Constant expt	Dielectric Constant calc	Diff. %
2910	.824	200.000	5.7974	619.99	14.060	15.984	15.986	-.010	1.86963	1.86974	-.006
2911	.883	200.000	3.7317	618.32	14.022	15.988	15.990	-.014	1.86687	1.86702	-.008
2912	.946	200.000	1.6657	616.64	13.984	15.991	15.995	-.020	1.86408	1.86431	-.012
3001	.314	220.000	34.7208	623.05	14.129	15.929	15.935	-.038	1.87128	1.87171	-.023
3002	.353	220.000	31.2774	620.46	14.070	15.939	15.942	-.023	1.86727	1.86752	-.014
3003	.395	220.000	27.8339	617.82	14.010	15.947	15.949	-.013	1.86312	1.86326	-.008
3004	.444	220.000	24.3908	615.17	13.950	15.954	15.956	-.012	1.85886	1.85900	-.007
3005	.497	220.000	20.9474	612.48	13.889	15.960	15.963	-.020	1.85445	1.85467	-.012
3006	.558	220.000	17.5043	609.70	13.826	15.966	15.971	-.027	1.84988	1.85017	-.016
3007	.626	220.000	14.0610	606.82	13.761	15.972	15.978	-.039	1.84511	1.84553	-.023
3008	.686	220.000	11.3067	604.30	13.704	15.980	15.984	-.028	1.84117	1.84147	-.016
3009	.752	220.000	8.5521	601.69	13.645	15.988	15.991	-.016	1.83707	1.83724	-.009
3010	.824	220.000	5.7979	599.00	13.584	15.996	15.997	-.006	1.83284	1.83291	-.004
3011	.883	220.000	3.7321	596.96	13.537	16.002	16.002	-.005	1.82956	1.82961	-.003
3012	.946	220.000	1.6662	594.88	13.490	16.006	16.007	-.006	1.82618	1.82624	-.003
3101	.314	240.000	34.7217	605.80	13.738	15.929	15.943	-.087	1.84043	1.84137	-.051
3102	.353	240.000	31.2784	602.75	13.669	15.942	15.951	-.056	1.83587	1.83647	-.032
3103	.395	240.000	27.8348	599.65	13.598	15.954	15.959	-.032	1.83115	1.83149	-.018
3104	.444	240.000	24.3916	596.51	13.527	15.964	15.967	-.017	1.82626	1.82644	-.010
3105	.497	240.000	20.9482	593.28	13.454	15.972	15.974	-.012	1.82113	1.82125	-.007
3106	.558	240.000	17.5052	589.95	13.379	15.980	15.982	-.012	1.81579	1.81592	-.007
3107	.626	240.000	14.0619	586.54	13.301	15.987	15.990	-.023	1.81020	1.81043	-.013
3108	.686	240.000	11.3076	583.65	13.236	15.992	15.997	-.029	1.80551	1.80581	-.016
3109	.752	240.000	8.5530	580.56	13.166	16.001	16.004	-.022	1.80062	1.80084	-.012
3110	.824	240.000	5.7988	577.36	13.093	16.009	16.011	-.016	1.79554	1.79570	-.009
3111	.883	240.000	3.7331	574.82	13.035	16.015	16.017	-.012	1.79150	1.79162	-.007
3112	.946	240.000	1.6672	572.21	12.976	16.021	16.022	-.011	1.78733	1.78744	-.006
3201	.314	260.000	34.7213	587.38	13.320	15.950	15.955	-.032	1.80931	1.80963	-.018
3202	.353	260.000	31.2780	584.05	13.245	15.960	15.963	-.019	1.80412	1.80432	-.011
3203	.395	260.000	27.8346	580.60	13.166	15.969	15.971	-.009	1.79871	1.79880	-.005
3204	.433	260.000	25.0801	577.73	13.101	15.977	15.977	-.002	1.79421	1.79423	-.001
3205	.475	260.000	22.3253	574.75	13.034	15.985	15.984	.005	1.78953	1.78948	.003
3206	.521	260.000	19.5709	571.69	12.964	15.992	15.991	.006	1.78465	1.78459	.003
3207	.571	260.000	16.8163	568.52	12.893	15.998	15.998	.003	1.77957	1.77954	.002
3208	.626	260.000	14.0619	565.25	12.818	16.003	16.005	-.009	1.77423	1.77431	-.005
3209	.686	260.000	11.3076	561.75	12.739	16.010	16.012	-.015	1.76860	1.76874	-.008
3210	.735	260.000	9.2417	558.98	12.676	16.016	16.018	-.013	1.76420	1.76432	-.007
3211	.787	260.000	7.1760	556.09	12.611	16.022	16.024	-.012	1.75962	1.75973	-.006
3212	.843	260.000	5.1103	553.12	12.543	16.026	16.030	-.023	1.75478	1.75500	-.013
3213	.903	260.000	3.0445	549.98	12.472	16.031	16.036	-.029	1.74973	1.75001	-.016
3214	.946	260.000	1.6673	547.77	12.422	16.036	16.040	-.030	1.74621	1.74649	-.016
3301	.314	275.000	34.7209	574.00	13.017	15.956	15.963	-.045	1.78643	1.78688	-.025
3302	.353	275.000	31.2776	570.35	12.934	15.966	15.971	-.037	1.78071	1.78107	-.020
3303	.395	275.000	27.8341	566.49	12.846	15.976	15.980	-.024	1.77470	1.77493	-.013

Table 13. (Continued)

Data sources and ID numbers: (16)Sliwinski; (20)Haynes, Saturated liquid; (XXXX)Haynes, Compressed liquid.

ID	Weight	Temp. K	Pressure MPa	Density kg/m^3	Density mol/L	C-M Function cm^3/mol expt	C-M Function cm^3/mol calc	Diff. %	Dielectric Constant expt	Dielectric Constant calc	Diff. %
3304	.433	275.000	25.0796	563.28	12.774	15.984	15.987	-.014	1.76970	1.76984	-.008
3305	.475	275.000	22.3248	559.89	12.697	15.993	15.994	-.002	1.76442	1.76444	-.001
3306	.521	275.000	19.5704	556.39	12.617	16.002	16.001	.004	1.75892	1.75889	.002
3307	.571	275.000	16.8157	552.80	12.536	16.008	16.008	-.004	1.75316	1.75320	-.002
3308	.626	275.000	14.0612	549.05	12.451	16.013	16.016	-.022	1.74705	1.74725	-.012
3309	.686	275.000	11.3070	545.09	12.361	16.016	16.024	-.046	1.74055	1.74097	-.024
3310	.735	275.000	9.2410	541.88	12.288	16.021	16.030	-.053	1.73542	1.73590	-.028
3311	.787	275.000	7.1752	538.43	12.210	16.028	16.036	-.050	1.72999	1.73044	-.026
3312	.843	275.000	5.1095	534.74	12.127	16.036	16.043	-.041	1.72424	1.72461	-.022
3313	.893	275.000	3.3880	531.43	12.051	16.045	16.049	-.022	1.71918	1.71938	-.012
3314	.946	275.000	1.6665	528.01	11.974	16.053	16.055	-.016	1.71384	1.71398	-.008
3401	.314	290.000	34.7213	560.13	12.702	15.985	15.972	.078	1.76432	1.76357	.043
3402	.353	290.000	31.2781	555.97	12.608	15.987	15.981	.035	1.75732	1.75699	.019
3403	.395	290.000	27.8346	551.69	12.511	15.997	15.990	.046	1.75065	1.75021	.025
3404	.433	290.000	25.0802	548.06	12.428	16.007	15.997	.060	1.74504	1.74448	.032
3405	.475	290.000	22.3255	544.25	12.342	16.016	16.005	.072	1.73913	1.73847	.038
3406	.521	290.000	19.5710	540.24	12.251	16.026	16.012	.086	1.73292	1.73214	.045
3407	.571	290.000	16.8164	536.06	12.156	16.034	16.020	.082	1.72629	1.72555	.043
3408	.626	290.000	14.0622	531.66	12.057	16.040	16.029	.069	1.71924	1.71862	.036
3409	.686	290.000	11.3077	526.92	11.949	16.046	16.037	.057	1.71166	1.71116	.029
3410	.735	290.000	9.2418	523.17	11.864	16.049	16.044	.036	1.70559	1.70528	.018
3411	.787	290.000	7.1761	519.15	11.773	16.053	16.051	.017	1.69910	1.69896	.008
3412	.843	290.000	5.1104	514.71	11.672	16.061	16.058	.016	1.69214	1.69200	.008
3413	.893	290.000	3.3888	510.69	11.581	16.068	16.065	.020	1.68588	1.68571	.010
3414	.946	290.000	1.6674	506.50	11.486	16.071	16.071	.001	1.679	1.6	.000
2801	.314	300.000	34.7209	550.92	12.493	15.982	15.979	.021	1.74844	1.74825	.011
2802	.353	300.000	31.2776	546.57	12.395	15.993	15.987	.033	1.74169	1.74138	.018
2803	.395	300.000	27.8341	541.86	12.288	16.007	15.997	.064	1.73454	1.73395	.034
2804	.433	300.000	25.0795	538.02	12.201	16.014	16.004	.061	1.72847	1.72792	.032
2805	.475	300.000	22.3248	533.99	12.109	16.021	16.012	.057	1.72208	1.72157	.030
2806	.521	300.000	19.5703	529.64	12.011	16.030	16.020	.064	1.71530	1.71474	.033
2807	.571	300.000	16.8157	524.93	11.904	16.041	16.028	.080	1.70804	1.70734	.041
2808	.626	300.000	14.0613	519.92	11.790	16.051	16.037	.088	1.70026	1.69950	.045
2809	.686	300.000	11.3070	514.61	11.670	16.058	16.046	.075	1.69181	1.69117	.038
2810	.735	300.000	9.2410	510.32	11.573	16.062	16.053	.059	1.68497	1.68447	.029
2811	.787	300.000	7.1752	505.42	11.462	16.075	16.061	.090	1.67757	1.67683	.044
2812	.843	300.000	5.1095	500.42	11.348	16.078	16.068	.061	1.66953	1.66903	.030
2813	.883	300.000	3.7324	496.73	11.265	16.082	16.074	.052	1.66372	1.66330	.025
2814	.924	300.000	2.3551	492.75	11.174	16.087	16.080	.045	1.65746	1.65710	.022

Number of data points = 260; rms deviation for CM function = 0.048%; rms deviation for dielectric constant = 0.018%.

Table 14. Comparisons with saturated liquid specific heats.

Data sources and ID numbers: (1)Dana, (2)Kemp, (8)Cutler, (30)Yesavage, (XXX)Goodwin.

ID	Weight	Temp. K	C_σ, J/(mol•K) expt	calc	Diff. %
106	1.000	85.598	83.95	84.10	-.17
239	1.000	85.723	83.83	84.10	-.32
240	1.000	86.395	83.93	84.13	-.24
107	1.000	86.622	84.29	84.14	.17
201	1.000	86.763	84.32	84.15	.20
108	1.000	86.836	83.81	84.15	-.41
241	1.000	87.064	84.04	84.16	-.15
109	1.000	87.856	84.15	84.20	-.06
242	1.000	87.870	84.33	84.20	.15
110	1.000	88.871	84.17	84.25	-.09
243	1.000	88.931	84.28	84.25	.03
2	1.000	89.720	84.55	84.29	.31
111	1.000	89.879	84.48	84.30	.22
30	1.000	90.000	84.04	84.30	-.31
202	1.000	90.366	84.53	84.32	.25
8	1.000	91.060	83.97	84.35	-.45
112	1.000	91.366	84.54	84.37	.20
113	1.000	93.321	84.73	84.46	.32
8	1.000	93.430	84.22	84.47	-.29
203	1.000	95.166	84.78	84.55	.27
2	1.000	95.530	84.76	84.57	.22
114	1.000	95.750	84.73	84.58	.18
8	1.000	95.760	84.48	84.58	-.13
8	1.000	98.060	84.14	84.70	-.66
115	1.000	99.797	84.94	84.79	.18
30	1.000	100.000	84.86	84.80	.07
8	1.000	100.330	84.06	84.81	-.89
204	1.000	101.406	85.10	84.87	.27
2	1.000	101.960	85.09	84.90	.22
8	1.000	102.570	84.73	84.93	-.24
116	1.000	104.646	85.25	85.04	.24
8	1.000	104.780	85.06	85.05	.01
205	1.000	108.461	85.43	85.25	.21
2	1.000	108.500	85.43	85.26	.20
30	1.000	110.000	85.85	85.34	.60
117	1.000	110.300	85.53	85.36	.20
2	1.000	115.160	85.80	85.64	.19
206	1.000	115.393	85.79	85.66	.16
118	1.000	116.889	85.81	85.75	.08
30	1.000	120.000	86.72	85.94	.91
2	1.000	121.970	86.18	86.06	.14
207	1.000	122.132	86.18	86.07	.12
119	1.000	124.009	86.20	86.19	.01
208	1.000	128.738	86.51	86.51	-.00
2	1.000	128.900	86.56	86.52	.04
30	1.000	130.000	87.42	86.60	.95
120	1.000	131.003	86.69	86.67	.03
209	1.000	135.238	86.92	86.97	-.06
2	1.000	135.950	87.23	87.02	.23
121	1.000	137.870	87.14	87.17	-.03

Table 14. (Continued).

Data sources and ID numbers: (1)Dana, (2)Kemp, (8)Cutler, (30)Yesavage, (XXX)Goodwin.

ID	Weight	Temp. K	C_σ, J/(mol•K) expt	calc	Diff. %
30	1.000	140.000	88.04	87.33	.82
210	1.000	141.629	87.35	87.45	-.12
2	1.000	142.790	87.44	87.54	-.13
122	1.000	145.757	87.68	87.78	-.12
211	1.000	147.902	87.87	87.96	-.10
2	1.000	149.740	88.15	88.11	.04
30	1.000	150.000	88.67	88.14	.61
123	1.000	152.350	88.16	88.34	-.20
212	1.000	154.093	88.32	88.49	-.19
2	1.000	156.850	88.69	88.74	-.06
124	1.000	158.858	88.77	88.93	-.18
30	1.000	160.000	89.38	89.03	.39
213	1.000	160.343	88.97	89.07	-.11
2	1.000	164.390	89.36	89.46	-.11
125	1.000	165.298	89.30	89.55	-.28
214	1.000	166.378	89.58	89.66	-.08
30	1.000	170.000	90.24	90.03	.24
126	1.000	171.647	90.11	90.20	-.10
2	1.000	172.020	89.86	90.24	-.42
215	1.000	172.363	90.21	90.28	-.08
216	1.000	178.276	90.82	90.93	-.12
2	1.000	179.090	90.74	91.02	-.31
127	1.000	179.354	90.90	91.06	-.17
30	1.000	180.000	91.26	91.13	.14
217	1.000	184.114	91.46	91.62	-.17
128	1.000	185.534	91.67	91.79	-.13
2	1.000	185.900	91.66	91.83	-.19
218	1.000	189.882	92.19	92.34	-.16
30	1.000	190.000	92.46	92.35	.12
129	1.000	191.643	92.48	92.56	-.09
2	1.000	194.280	92.79	92.91	-.13
219	1.000	195.603	93.01	93.09	-.09
130	1.000	197.686	93.21	93.38	-.18
30	1.000	200.000	93.83	93.70	.14
2	1.000	200.940	93.84	93.83	.00
220	1.000	202.405	93.74	94.05	-.33
131	1.000	204.154	94.13	94.30	-.18
2	1.000	207.090	94.26	94.74	-.51
221	1.000	209.358	95.04	95.09	-.06
30	1.000	210.000	95.35	95.20	.16
132	1.000	211.041	95.39	95.36	.03
2	1.000	213.100	95.43	95.69	-.27
222	1.000	216.234	96.25	96.21	.05
133	1.000	217.854	96.43	96.48	-.05
2	1.000	219.250	96.27	96.72	-.47
30	1.000	220.000	97.04	96.85	.20
223	1.000	222.998	97.34	97.38	-.04
134	1.000	224.592	97.55	97.66	-.12
2	1.000	224.960	97.48	97.73	-.26
224	1.000	229.651	98.54	98.61	-.07
2	1.000	229.810	98.28	98.64	-.37

Table 14. (Continued).

Data sources and ID numbers: (1)Dana, (2)Kemp, (8)Cutler, (30)Yesavage, (XXX)Goodwin.

ID	Weight	Temp. K	C_σ, J/(mol·K) expt	calc	Diff. %
30	1.000	230.000	98.92	98.68	.25
135	1.000	231.245	98.90	98.92	-.02
225	1.000	236.231	99.81	99.91	-.10
136	1.000	238.095	100.16	100.30	-.14
30	1.000	240.000	100.99	100.70	.29
1	0.000	241.760	99.82	101.08	-1.25
226	1.000	242.764	101.25	101.30	-.05
137	1.000	244.560	101.75	101.69	.05
1	0.000	246.880	96.49	102.22	-5.60
30	1.000	250.000	103.31	102.95	.35
138	1.000	250.946	103.20	103.17	.03
1	0.000	252.820	100.55	103.62	-2.96
1	0.000	255.330	100.74	104.24	-3.36
139	1.000	257.248	104.75	104.73	.02
30	1.000	260.000	105.89	105.44	.43
1	0.000	261.550	105.72	105.85	-.13
140	1.000	263.551	106.27	106.40	-.12
1	0.000	264.740	97.79	106.72	-8.37
1	0.000	266.440	106.27	107.20	-.87
1	0.000	269.060	107.20	107.95	-.70
141	1.000	269.931	108.15	108.21	-.05
30	1.000	270.000	108.77	108.23	.50
142	1.000	276.292	109.98	110.15	-.16
1	0.000	276.430	107.01	110.20	-2.89
1	0.000	276.780	111.44	110.31	1.02
30	1.000	280.000	111.98	111.36	.56
143	1.000	282.595	111.96	112.24	-.25
1	0.000	287.550	107.75	114.00	-5.48
144	1.000	288.813	114.09	114.46	-.33
30	1.000	290.000	115.57	114.91	.57
1	0.000	291.590	110.89	115.52	-4.01
30	1.000	300.000	119.60	118.99	.52
30	1.000	310.000	124.22	123.76	.37
30	1.000	320.000	129.70	129.53	.13
30	1.000	330.000	136.63	136.83	-.15
30	1.000	340.000	146.28	146.85	-.39
30	1.000	350.000	162.17	162.81	-.39
30	1.000	360.000	199.63	198.91	.36

Number of data points = 139; rms deviation = 0.29%.

Table 15. Comparisons with C_v and C_p data.

C_p data of Ernst [26]

T = 293.15 K

Pressure MPa	Density kg/m^3	C_p, J/(mol•K) expt	calc	Diff. %	$C_p - C_p^o$, J/(mol•K) expt	calc	Diff. %
0.0000	0.00	72.67	72.80	-.17	0.00	0.00	0.00
.0490	.90	73.06	73.13	-.09	.39	.33	.06
.0981	1.81	73.51	73.50	.01	.84	.71	.13
.1961	3.68	74.47	74.39	.11	1.80	1.59	.21
.3432	6.62	76.32	76.09	.30	3.65	3.29	.36
.4903	9.74	78.48	78.35	.16	5.81	5.56	.25
.6374	13.10	81.13	81.43	-.36	8.46	8.63	-.17
.7845	16.75	84.57	85.79	-1.42	11.90	13.00	-1.10

T = 313.15 K

0.0000	0.00	76.11	76.74	-.83	0.00	0.00	0.00
.0490	.84	76.53	77.01	-.63	.42	.27	.15
.0981	1.69	76.95	77.31	-.46	.84	.56	.28
.1961	3.42	77.79	77.97	-.23	1.68	1.23	.45
.3432	6.12	79.19	79.18	.02	3.08	2.43	.65
.4903	8.95	80.63	80.66	-.04	4.52	3.92	.60
.6374	11.93	82.44	82.49	-.06	6.33	5.74	.59
.7845	15.08	84.61	84.75	-.17	8.50	8.01	.49
.9807	19.62	88.01	88.74	-.82	11.90	12.00	-.10
1.1768	24.66	93.18	94.49	-1.39	17.07	17.75	-.68

T = 333.15 K

0.0000	0.00	80.30	80.72	-.53	0.00	0.00	0.00
.0490	.79	80.55	80.95	-.49	.25	.22	.03
.0981	1.58	80.93	81.19	-.32	.63	.46	.17
.1961	3.20	81.54	81.71	-.21	1.24	.98	.26
.3432	5.70	82.56	82.62	-.07	2.26	1.89	.37
.4903	8.30	83.56	83.68	-.15	3.26	2.96	.30
.6374	11.00	85.00	84.93	.08	4.70	4.21	.49
.7845	13.82	86.45	86.39	.07	6.15	5.67	.48
.9807	17.78	88.65	88.73	-.09	8.35	8.01	.34
1.1768	22.03	91.28	91.67	-.42	10.98	10.94	.04
1.3729	26.63	94.95	95.44	-.51	14.65	14.71	-.06

T = 353.15 K

0.0000	0.00	84.40	84.71	-.37	0.00	0.00	0.00
.0490	.74	84.59	84.90	-.37	.19	.19	-.00
.0981	1.49	84.79	85.10	-.36	.39	.39	.00
.1961	3.01	85.36	85.52	-.19	.96	.81	.15
.3432	5.34	86.19	86.23	-.05	1.79	1.52	.27
.4903	7.75	86.97	87.05	-.09	2.57	2.34	.23
.6374	10.23	88.01	87.96	.05	3.61	3.25	.36
.7845	12.79	89.02	89.00	.02	4.62	4.29	.33
.9807	16.36	90.65	90.59	.07	6.25	5.88	.37
1.1768	20.10	92.39	92.45	-.06	7.99	7.74	.25
1.3729	24.06	94.37	94.66	-.30	9.97	9.95	.02

Number of data points of Ernst [26] = 40, mean deviation = 0.30%.

Table 15. (Continued).

C_p data of Yesavage [104,105]

Temp. K	Density kg/m^3	C_p, J/(mol·K) expt	C_p, J/(mol·K) calc	Diff. %
		P = 1.7237 MPa		
116.483	702.41	85.79	85.67	.14
144.261	674.46	87.64	87.58	.07
172.039	646.27	89.85	90.11	-.29
199.817	617.30	93.17	93.48	-.33
227.594	586.89	97.79	97.98	-.20
255.372	554.04	104.06	104.09	-.03
283.150	517.13	112.73	112.76	-.03
310.928	472.66	128.41	126.80	1.27
338.706	34.65	101.85	103.02	-1.14
366.483	29.70	98.89	99.10	-.21
394.261	26.41	102.03	100.66	1.36
		P = 3.4474 MPa		
116.483	703.14	85.98	85.63	.41
144.261	675.36	87.64	87.50	.16
172.039	647.40	89.67	89.98	-.35
199.817	618.74	92.80	93.27	-.50
227.594	588.77	97.60	97.62	-.02
255.372	556.63	103.51	103.45	.05
283.150	520.96	112.18	111.49	.62
310.928	479.14	124.17	123.55	.51
338.706	423.88	150.37	147.55	1.91
366.483	82.76	157.57	165.81	-4.97
394.261	63.07	122.14	120.50	1.36
422.039	53.88	114.02	114.63	-.53
		P = 6.8948 MPa		
116.483	704.58	85.98	85.54	.51
144.261	677.14	87.64	87.35	.32
172.039	649.60	89.48	89.74	-.29
199.817	621.53	92.62	92.87	-.27
227.594	592.39	97.05	96.97	.08
255.372	561.50	102.77	102.35	.41
283.150	527.90	110.15	109.44	.64
310.928	490.05	118.82	119.12	-.25
338.706	444.87	133.21	133.40	-.14
366.483	384.03	159.23	156.08	1.97
394.261	267.62	267.53	262.28	1.96
422.039	155.32	176.38	177.78	-.79

Table 15. (Continued).

C_p data of Yesavage [104,105]

P = 10.3421 MPa

Temp. K	Density kg/m^3	C_p, J/(mol·K) expt	calc	Diff. %
116.483	705.99	86.16	85.46	.82
144.261	678.87	87.82	87.22	.69
172.039	651.75	89.85	89.52	.38
199.817	624.22	92.44	92.52	-.09
227.594	595.82	96.68	96.41	.28
255.372	566.02	102.03	101.42	.60
283.150	534.12	108.49	107.86	.58
310.928	499.13	116.42	116.18	.21
338.706	459.52	126.20	126.99	-.63
366.483	412.55	139.30	136.65	1.90
394.261	352.95	159.96	164.44	-2.80
422.039	276.85	177.68	180.32	-1.49

P = 13.7895 MPa

116.483	707.38	86.16	85.38	.91
144.261	680.57	88.01	87.09	1.05
172.039	653.84	90.22	89.31	1.01
199.817	626.81	92.44	92.19	.26
227.594	599.10	96.31	95.91	.42
255.372	570.25	101.29	100.63	.65
283.150	539.76	107.20	106.60	.56
310.928	506.97	113.84	114.05	-.18
339.706	471.06	122.51	123.17	-.54
366.483	430.88	131.55	128.97	1.96
394.261	385.05	146.13	147.46	-.92

Number of data points of Yesavage [104,105] = 58; mean deviation = 0.74%.

Table 15. (Continued).

C_v data of Goodwin [34]

ID	Weight	Temp. K	Density kg/m^3	C_v, J/(mol•K) expt	calc	Diff. %
145	1.000	296.740	497.86	74.25	73.32	1.25
146	1.000	301.507	497.55	74.20	74.23	-.04
147	1.000	307.514	497.15	75.28	75.41	-.18
148	1.000	313.479	496.76	76.27	76.62	-.46
149	1.000	319.395	496.40	77.31	77.87	-.72
150	1.000	325.273	496.01	78.14	79.13	-1.27
151	1.000	331.118	495.61	79.22	80.43	-1.52
152	1.000	336.944	495.26	80.26	81.72	-1.82
801	1.000	278.582	526.92	70.78	70.35	.60
802	1.000	284.558	526.43	71.75	71.39	.51
803	1.000	290.482	525.99	72.82	72.44	.52
804	1.000	296.874	525.51	73.98	73.62	.48
805	1.000	303.743	524.98	75.23	74.94	.39
806	1.000	310.524	524.49	76.47	76.30	.22
807	1.000	317.249	523.96	77.67	77.69	-.02
808	1.000	322.550	523.57	78.69	78.83	-.18
228	1.000	256.127	554.43	67.50	67.31	.28
229	1.000	258.883	554.21	68.04	67.72	.47
230	1.000	262.933	553.86	68.83	68.33	.72
231	1.000	268.252	553.38	69.77	69.16	.88
232	1.000	273.524	552.93	70.50	70.00	.71
233	1.000	278.769	552.45	71.33	70.86	.66
234	1.000	283.978	552.01	72.26	71.74	.72
235	1.000	289.142	551.52	73.34	72.65	.94
901	1.000	238.172	575.87	66.22	65.37	1.28
902	1.000	242.833	575.42	66.28	65.99	.43
903	1.000	248.402	574.85	67.18	66.75	.64
904	1.000	254.401	574.28	68.15	67.59	.83
905	1.000	260.329	573.70	69.08	68.44	.92
906	1.000	265.728	573.13	70.11	69.24	1.23
907	1.000	270.590	572.69	70.98	69.99	1.39
301	1.000	216.834	600.38	64.02	63.58	.69
302	1.000	220.658	599.99	64.05	64.02	.05
303	1.000	224.436	599.55	64.27	64.46	-.29
304	1.000	228.198	599.10	64.87	64.90	-.04
305	1.000	231.931	598.71	65.45	65.34	.16
306	1.000	235.624	598.27	66.07	65.79	.42
307	1.000	239.291	597.87	66.66	66.25	.61
401	1.000	188.878	630.46	61.48	61.92	-.72
402	1.000	192.681	629.93	61.84	62.28	-.71
403	1.000	196.572	629.40	62.23	62.65	-.68
404	1.000	200.428	628.91	62.78	63.02	-.39
405	1.000	204.255	628.39	63.27	63.39	-.20
406	1.000	207.852	627.90	63.83	63.75	.13
501	1.000	156.982	663.40	60.08	60.91	-1.38
502	1.000	160.668	662.83	60.36	61.19	-1.38
503	1.000	164.253	662.25	60.80	61.46	-1.09
504	1.000	167.802	661.68	61.15	61.73	-.95
505	1.000	171.318	661.11	61.60	62.00	-.64
601	1.000	126.412	693.69	59.78	60.71	-1.56
602	1.000	129.030	693.21	60.02	60.88	-1.44
603	1.000	131.699	692.68	60.22	61.05	-1.37
604	1.000	134.418	692.19	60.41	61.21	-1.33
605	1.000	137.115	691.66	60.60	61.37	-1.28
701	1.000	100.334	719.62	60.49	61.21	-1.20
702	1.000	102.729	719.09	60.76	61.35	-.97
703	1.000	105.095	718.56	60.85	61.48	-1.03
704	1.000	107.444	718.08	60.99	61.60	-.99

Number of C_v data points of Goodwin [34] = 58; mean deviation = 0.89%.

Table 16. Comparisons with velocity of sound data.

Velocities of sound from Younglove [107]

Temp. K	Pressure MPa	Density kg/m^3	Vel. of Sound, m/s expt	Vel. of Sound, m/s calc	Diff. %
90.00	34.832	739.94	2205.4	2096.3	5.20
90.00	31.431	738.90	2196.2	2086.5	5.26
90.00	29.537	738.32	2190.8	2081.0	5.28
90.00	28.713	738.06	2188.8	2078.6	5.30
90.00	25.132	736.95	2179.0	2068.2	5.36
90.00	23.317	736.37	2173.7	2062.9	5.37
90.00	17.218	734.42	2156.5	2045.1	5.45
90.00	14.584	733.57	2149.0	2037.4	5.48
90.00	11.418	732.53	2138.1	2028.1	5.42
90.00	8.863	731.68	2132.2	2020.6	5.52
90.00	6.049	730.74	2123.7	2012.3	5.54
90.00	2.803	729.64	2114.2	2002.8	5.56
100.00	34.567	730.51	2143.3	2034.0	5.37
100.00	29.991	729.01	2130.7	2019.9	5.48
100.00	26.613	727.88	2120.8	2009.5	5.54
100.00	23.338	726.77	2111.1	1999.3	5.59
100.00	20.305	725.73	2102.0	1989.9	5.63
100.00	17.123	724.63	2092.2	1979.9	5.67
100.00	14.272	723.63	2083.4	1970.9	5.71
100.00	11.703	722.71	2075.4	1962.9	5.74
100.00	8.572	721.59	2065.5	1952.9	5.76
100.00	5.731	720.56	2056.3	1943.9	5.78
100.00	2.911	719.52	2046.5	1935.0	5.77
110.00	34.556	721.26	2082.4	1975.8	5.39
110.00	31.729	720.26	2073.6	1966.6	5.44
110.00	28.901	719.26	2065.0	1957.4	5.50
110.00	26.116	718.26	2056.3	1948.2	5.55
110.00	25.122	717.90	2053.6	1945.0	5.58
110.00	23.877	717.44	2049.4	1940.8	5.59
110.00	20.485	716.20	2038.7	1929.6	5.65
110.00	17.505	715.09	2028.9	1919.6	5.69
110.00	14.464	713.94	2018.8	1909.4	5.73
110.00	11.682	712.87	2009.5	1900.0	5.76
110.00	8.647	711.70	1999.3	1889.7	5.80
110.00	5.821	710.59	1989.6	1880.1	5.83
110.00	3.031	709.48	1979.9	1870.5	5.85
120.00	34.725	712.15	2022.8	1920.8	5.31
120.00	31.000	710.75	2011.1	1908.0	5.40
120.00	28.663	709.86	2003.0	1899.9	5.43
120.00	24.899	708.41	1989.9	1886.8	5.46
120.00	20.438	706.65	1975.2	1871.1	5.56
120.00	17.354	705.42	1964.4	1860.1	5.61
120.00	14.194	704.13	1953.2	1848.8	5.65
120.00	11.756	703.13	1944.4	1840.0	5.68
120.00	8.661	701.84	1933.2	1828.7	5.71
120.00	5.368	700.44	1921.8	1816.6	5.79
120.00	3.069	699.45	1912.4	1808.1	5.77
140.00	34.903	694.12	1905.1	1815.8	4.92
140.00	32.285	693.00	1895.5	1805.8	4.96
140.00	28.943	691.56	1882.9	1793.0	5.02
140.00	26.339	690.41	1873.1	1782.9	5.06
140.00	22.925	688.89	1859.9	1769.4	5.11
140.00	20.345	687.72	1850.1	1759.2	5.17

Table 16. (Continued).

Velocities of sound from Younglove [107]

Temp. K	Pressure MPa	Density kg/m^3	Vel. of Sound, m/s expt	Vel. of Sound, m/s calc	Diff. %
140.00	17.664	686.49	1839.3	1748.4	5.20
140.00	14.149	684.84	1825.1	1734.1	5.24
140.00	11.218	683.45	1813.0	1722.1	5.28
140.00	8.444	682.10	1801.6	1710.5	5.32
140.00	5.864	680.83	1790.6	1699.7	5.35
140.00	3.332	679.57	1779.5	1688.9	5.36
160.00	34.565	676.08	1788.3	1713.9	4.34
160.00	31.986	674.83	1777.3	1703.0	4.39
160.00	28.855	673.29	1764.7	1689.6	4.44
160.00	26.279	672.00	1753.7	1678.5	4.48
160.00	23.072	670.36	1739.5	1664.4	4.52
160.00	20.151	668.85	1726.9	1651.4	4.57
160.00	17.530	667.46	1715.1	1639.5	4.61
160.00	14.481	665.82	1701.0	1625.5	4.64
160.00	8.699	662.61	1673.7	1598.4	4.71
160.00	2.970	659.29	1645.1	1570.6	4.75
180.00	34.078	658.06	1674.7	1614.5	3.73
180.00	31.939	656.88	1664.7	1604.5	3.75
180.00	29.069	655.27	1651.3	1590.9	3.80
180.00	26.357	653.73	1638.4	1577.9	3.84
180.00	23.460	652.04	1624.0	1563.7	3.85
180.00	20.351	650.19	1608.5	1548.2	3.89
180.00	17.298	648.33	1593.2	1532.7	3.95
180.00	14.624	646.67	1579.4	1518.9	3.99
180.00	11.422	644.62	1562.0	1502.0	4.00
180.00	8.599	642.77	1546.2	1486.7	4.00
180.00	5.902	640.96	1531.6	1471.9	4.05
180.00	2.978	638.95	1514.5	1455.4	4.06
200.00	34.672	640.69	1568.8	1522.8	3.02
200.00	34.484	640.58	1569.1	1521.9	3.10
200.00	31.631	638.80	1554.5	1507.2	3.14
200.00	29.363	637.35	1542.6	1495.3	3.16
200.00	25.937	635.12	1524.4	1477.0	3.20
200.00	24.001	633.83	1513.9	1466.5	3.23
200.00	20.329	631.32	1493.4	1446.1	3.27
200.00	17.287	629.17	1475.7	1428.7	3.28
200.00	14.327	627.03	1458.2	1411.4	3.31
200.00	11.454	624.88	1440.7	1394.2	3.33
200.00	8.259	622.42	1420.4	1374.5	3.34
200.00	5.175	619.96	1400.2	1354.9	3.34
200.00	2.291	617.59	1380.8	1336.1	3.35
220.00	35.007	623.23	1468.0	1432.6	2.47
220.00	32.297	621.32	1452.6	1417.4	2.49
220.00	29.240	619.10	1434.9	1399.8	2.51
220.00	26.325	616.92	1417.6	1382.5	2.54
220.00	23.450	614.71	1400.0	1365.1	2.56
220.00	20.294	612.21	1380.2	1345.5	2.58
220.00	17.341	609.79	1361.1	1326.5	2.60
220.00	14.416	607.31	1341.3	1307.2	2.60
220.00	11.278	604.55	1319.3	1285.8	2.60
220.00	8.261	601.79	1297.4	1264.5	2.60
220.00	5.215	598.88	1274.4	1242.3	2.59
220.00	2.502	596.19	1252.9	1221.7	2.56
240.00	34.746	605.29	1366.8	1341.5	1.89

Table 16. (Continued).

Velocities of sound from Younglove [107]

Temp. K	Pressure MPa	Density kg/m^3	Vel. of Sound, m/s expt	Vel. of Sound, m/s calc	Diff. %
240.00	32.790	603.72	1354.8	1329.4	1.91
240.00	29.186	600.73	1332.0	1306.6	1.94
240.00	26.744	598.63	1316.0	1290.6	1.96
240.00	23.703	595.94	1295.4	1270.2	1.98
240.00	20.621	593.10	1273.9	1248.9	2.00
240.00	18.127	590.72	1255.7	1231.0	2.01
240.00	14.415	587.03	1227.4	1203.4	1.99
240.00	11.607	584.09	1205.3	1181.6	2.01
240.00	8.064	580.20	1175.7	1152.9	1.98
240.00	5.102	576.75	1149.6	1127.6	1.95
240.00	2.345	573.38	1123.7	1103.0	1.88
260.00	35.001	587.63	1273.8	1256.0	1.42
260.00	32.123	584.98	1254.5	1236.5	1.45
260.00	29.341	582.32	1235.1	1217.1	1.48
260.00	26.676	579.68	1215.7	1197.9	1.48
260.00	26.220	579.22	1212.3	1194.6	1.48
260.00	23.713	576.63	1193.4	1175.9	1.49
260.00	20.287	572.93	1166.5	1149.3	1.50
260.00	17.384	569.63	1142.7	1125.7	1.51
260.00	14.786	566.53	1120.1	1103.8	1.48
260.00	11.579	562.50	1091.5	1075.4	1.50
260.00	5.843	554.60	1034.5	1020.3	1.40
260.00	2.867	550.07	1001.4	989.0	1.25
280.00	34.560	569.15	1181.5	1168.6	1.10
280.00	32.136	566.58	1163.4	1150.7	1.11
280.00	29.397	563.57	1142.6	1129.8	1.13
280.00	26.226	559.91	1117.3	1104.6	1.15
280.00	23.573	556.69	1095.3	1082.6	1.17
280.00	20.751	553.10	1070.5	1058.2	1.16
280.00	17.696	548.99	1042.4	1030.5	1.16
280.00	13.668	543.14	1002.4	991.5	1.10
280.00	11.297	539.43	977.5	967.0	1.08
280.00	8.576	534.88	946.8	937.2	1.03
280.00	5.555	529.40	910.0	901.6	.93
280.00	1.922	522.03	860.1	854.3	.67
300.00	34.752	551.10	1098.2	1089.2	.83
300.00	31.349	546.93	1071.2	1061.7	.89
300.00	29.489	544.55	1055.7	1046.1	.92
300.00	28.732	543.55	1049.0	1039.6	.90
300.00	25.120	538.61	1017.2	1007.7	.95
300.00	24.397	537.57	1010.4	1001.0	.94
300.00	22.137	534.23	989.1	979.7	.96
300.00	20.804	532.18	976.0	966.7	.97
300.00	19.782	530.57	965.7	956.5	.97
300.00	17.730	527.20	944.2	935.3	.95
300.00	17.569	526.93	942.3	933.6	.92
300.00	14.537	521.59	908.5	900.4	.90
300.00	14.149	520.87	904.0	896.0	.90
300.00	11.832	516.40	876.2	868.5	.88
300.00	11.200	515.12	868.4	860.7	.89
300.00	9.608	511.78	847.4	840.4	.82
300.00	8.167	508.57	827.6	821.1	.79
300.00	5.831	502.97	792.5	787.7	.62
300.00	5.504	502.14	787.5	782.7	.61
300.00	3.189	495.86	748.6	745.7	.38

Number of data points of Younglove [107] = 162; rms deviation = 3.91%.

Table 16. (Continued).

Saturated liquid velocities of sound from Younglove [107]

Temp. K	Pressure MPa	Density kg/m^3	Vel. of Sound, m/s expt	calc	Diff. %
90.000	.96855E-09	728.67	2106.2	1994.6	5.30
100.000	.25139E-07	718.44	2037.6	1925.7	5.49
110.000	.34511E-06	708.26	1969.2	1860.0	5.54
120.000	.29481E-05	698.12	1900.8	1796.7	5.48
130.000	.17534E-04	687.99	1832.6	1735.0	5.32
140.000	.78671E-04	677.87	1764.9	1674.6	5.12
150.000	.28235E-03	667.72	1697.4	1614.9	4.86
160.000	.84700E-03	657.51	1630.3	1555.8	4.57
170.000	.21959E-02	647.23	1563.3	1497.0	4.24
180.000	.50497E-02	636.85	1496.5	1438.3	3.89
190.000	.10512E-01	626.33	1430.0	1379.7	3.52
200.000	.20133E-01	615.66	1364.4	1320.9	3.19
210.000	.35944E-01	604.78	1298.5	1261.9	2.82
230.000	.96633E-01	582.27	1167.1	1142.8	2.09
250.000	.21783E+00	558.44	1036.5	1021.8	1.42
260.000	.31060E+00	545.88	971.6	960.4	1.16
270.000	.43042E+00	532.78	905.4	898.3	.79
290.000	.76931E+00	504.56	775.1	771.5	.47

Number of saturated liquid data points of Younglove [107] = 18; rms deviation = 4.02%.

Saturated liquid velocities of sound from Rao [72]

Temp. K	Density kg/m^3	Vel. of Sound, m/s expt	calc	Diff. %
140.000	677.87	1528	1674	-9.52
145.000	672.80	1499	1644	-9.71
150.000	667.72	1469	1614	-9.91
155.000	662.62	1439	1585	-10.13
160.000	657.51	1409	1555	-10.37
165.000	652.38	1379	1526	-10.62
170.000	647.23	1350	1496	-10.89
175.000	642.06	1320	1467	-11.17
180.000	636.85	1290	1438	-11.47
185.000	631.61	1260	1409	-11.78
190.000	626.33	1230	1379	-12.10
195.000	621.02	1200	1350	-12.44
200.000	615.66	1171	1320	-12.79
205.000	610.25	1141	1291	-13.16
210.000	604.78	1111	1261	-13.54
215.000	599.26	1081	1232	-13.93
220.000	593.67	1051	1202	-14.33
225.000	588.01	1021	1172	-14.75
230.000	582.27	992	1142	-15.18

Number of data points of Rao [72] = 19; mean deviation = 11.99%.

Table 16. (Continued).

Velocities of sound from Lacam [60]

Pressure MPa	Density kg/m^3	Vel. of Sound, m/s expt	calc	Diff. %
		T = 298.15 K		
1.0133	492.25	724	719	.59
2.0265	495.35	742	737	.55
3.0398	498.28	758	755	.38
4.0530	501.05	774	771	.32
4.3570	501.85	778	776	.22
5.0663	503.68	790	787	.35
6.0795	506.19	804	802	.22
7.0928	508.59	819	816	.28
8.1060	510.90	833	830	.28
9.1193	513.12	847	844	.34
10.1325	515.25	860	857	.33
12.6656	520.28	893	888	.56
15.1988	524.93	924	916	.77
17.7319	529.26	953	944	.94
20.2650	533.32	979	969	.94
25.3313	540.77	1017	1017	-.05
30.3975	547.49	1070	1061	.81
35.4638	553.63	1110	1102	.72
40.5300	559.30	1146	1140	.52
50.6625	569.51	1214	1209	.35
60.7950	578.54	1275	1272	.17
70.9275	586.68	1331	1330	.02
81.0600	594.10	1384	1384	-.03
91.1925	600.93	1432	1434	-.18
101.3250	607.28	1482	1481	.01
		T = 323.15 K		
2.0265	450.11	552	558	-1.23
3.0398	455.39	581	585	-.78
4.0530	460.12	608	609	-.28
4.3570	461.45	615	616	-.25
5.0663	464.42	632	631	.01
6.0795	468.38	652	652	-.08
7.0928	472.06	672	671	.02
8.1060	475.49	695	690	.70
9.1193	478.73	709	707	.23
10.1325	481.78	727	723	.43
12.6656	488.76	766	761	.52
15.1988	495.01	803	796	.78
17.7319	500.68	834	828	.63
20.2650	505.88	864	858	.63
25.3313	515.18	918	912	.56
30.3975	523.37	966	961	.43
35.4638	530.71	1011	1006	.43
40.5300	537.37	1052	1048	.37
50.6625	549.17	1126	1123	.24
60.7950	559.43	1192	1190	.12
70.9275	568.54	1252	1251	.02
81.0600	576.77	1308	1308	-.02
91.1925	584.29	1360	1360	-.06
101.3250	591.22	1408	1410	-.15

Table 16. (Continued).

Velocities of sound from Lacam [60]

T = 398.15 K

Pressure MPa	Density kg/m^3	Vel. of Sound, m/s expt	Vel. of Sound, m/s calc	Diff. %
1.0133	14.50	266	271	-1.99
2.0265	31.37	251	255	-1.66
3.0398	51.77	234	237	-1.36
4.0530	78.25	212	216	-1.97
4.3570	88.18	205	209	-2.08
5.0663	117.53	192	192	-.51
6.0795	184.72	182	183	-.70
7.0928	255.72	223	214	3.61
8.1060	297.88	273	262	3.78
9.1193	322.88	318	306	3.53
10.1325	340.18	356	344	3.17
12.6656	368.83	433	420	2.80
15.1988	388.02	493	480	2.45
17.7319	402.65	542	531	1.96
20.2650	414.55	589	575	2.31
25.3313	433.45	661	650	1.57
30.3975	448.32	723	714	1.18
35.4638	460.69	788	770	2.22
40.5300	471.31	827	820	.74
50.6625	489.04	914	909	.49
60.7950	503.61	990	986	.34
70.9275	516.04	1056	1055	.05
81.0600	526.93	1117	1118	-.09
91.1925	536.65	1174	1175	-.14
101.3250	545.44	1226	1229	-.27

T = 423.15 K

1.0133	13.46	277	282	-1.81
2.0265	28.59	265	269	-1.61
3.0398	45.87	252	255	-1.55
4.0530	66.15	238	241	-1.49
4.3570	73.02	233	237	-1.74
5.0663	90.88	223	226	-1.60
6.0795	122.17	213	213	-.31
7.0928	161.20	211	209	.80
8.1060	203.00	218	220	-1.14
9.1193	239.42	243	242	.40
10.1325	268.58	275	268	2.28
12.6656	316.39	352	341	3.07
15.1988	345.24	415	405	2.38
17.7319	365.56	468	459	1.80
20.2650	381.26	515	506	1.56
25.3313	404.99	597	587	1.63
30.3975	422.89	660	654	.81
35.4638	437.37	716	713	.36
40.5300	449.59	757	765	-1.18
50.6625	469.59	854	857	-.43
60.7950	485.72	931	937	-.65
70.9275	499.33	1000	1007	-.76
81.0600	511.14	1064	1071	-.72
91.1925	521.61	1124	1130	-.57
101.3250	531.02	1180	1185	-.43

Table 16. (Continued).

Velocities of sound from Lacam [60]

T = 448.15 K

Pressure MPa	Density kg/m^3	Vel. of Sound, m/s expt	calc	Diff. %
1.0133	12.58	287	292	-1.74
2.0265	26.37	275	281	-2.44
3.0398	41.59	262	271	-3.59
4.0530	58.59	250	260	-4.32
4.3570	64.10	247	257	-4.28
5.0663	77.84	241	250	-3.78
6.0795	99.93	236	240	-1.83
7.0928	125.23	234	233	.19
8.1060	153.27	235	232	1.04
9.1193	182.12	238	239	-.54
10.1325	209.26	247	252	-2.36
12.6656	263.68	304	298	1.70
15.1988	301.13	364	352	3.16
17.7319	327.55	417	404	3.01
20.2650	347.46	463	451	2.41
25.3313	376.53	540	533	1.13
30.3975	397.69	608	603	.79
35.4638	414.41	667	663	.51
40.5300	428.28	720	717	.35
50.6625	450.60	810	811	-.17
60.7950	468.32	888	892	-.49
70.9275	483.10	958	964	-.64
81.0600	495.82	1022	1029	-.70
91.1925	507.03	1082	1088	-.62
101.3250	517.06	1138	1144	-.54
		T = 473.15 K		
1.0133	11.82	299	301	-.81
2.0265	24.55	290	293	-1.04
3.0398	38.27	280	284	-1.74
4.0530	53.13	271	276	-2.13
4.3570	57.84	269	274	-1.99
5.0663	69.34	264	268	-1.81
6.0795	87.08	259	261	-.91
7.0928	106.50	256	255	.20
8.1060	127.46	255	252	1.01
9.1193	149.44	256	253	1.03
10.1325	171.54	261	258	.80
12.6656	221.58	291	288	.87
15.1988	261.01	337	327	2.96
17.7319	291.23	380	369	2.69
20.2650	314.61	424	412	2.67
25.3313	348.69	500	491	1.64
30.3975	373.09	564	560	.57
35.4638	392.05	621	621	-.10
40.5300	407.57	674	676	-.31
50.6625	432.19	767	771	-.53
60.7950	451.47	846	852	-.82
70.9275	467.39	916	925	-1.04
81.0600	481.01	980	991	-1.13
91.1925	492.93	1040	1051	-1.09
101.3250	503.56	1096	1107	-1.01

Table 16. (Continued).

Velocities of sound from Lacam [60]

T = 498.15 K

Pressure MPa	Density kg/m^3	Vel. of Sound, m/s expt	calc	Diff. %
1.0133	11.16	308	310	-.77
2.0265	23.00	301	303	-.82
3.0398	35.56	295	296	-.66
4.0530	48.90	288	290	-.92
4.3570	53.07	287	288	-.62
5.0663	63.10	282	284	-.89
6.0795	78.25	278	278	-.30
7.0928	94.37	274	274	-.05
8.1060	111.42	273	271	.71
9.1193	129.17	273	270	.98
10.1325	147.28	275	272	.92
12.6656	190.99	293	290	.86
15.1988	228.54	326	319	1.86
17.7319	259.38	360	353	1.86
20.2650	284.50	395	389	1.47
25.3313	322.27	465	461	.84
30.3975	349.50	529	527	.29
35.4638	370.53	586	587	-.22
40.5300	387.62	640	641	-.23
50.6625	414.44	734	736	-.34
60.7950	435.22	814	818	-.58
70.9275	452.25	885	891	-.74
81.0600	466.73	948	957	-1.00
91.1925	479.34	1009	1017	-.89
101.3250	490.54	1065	1074	-.85

Number of data points of Lacam [60] = 174; mean deviation = 1.06%.

Table 17. Calculated P(T) isochores of propane.

Propane Isochore at 25 kg/m^3

Temp. K	Pressure MPa	Z	Isotherm Derivative MPa•m^3/kg	Isochore Derivative MPa/K	Isochore Curvature MPa/K^2
305.514	1.1433	.79392	.03402	.00608	-.0000228
310.000	1.1704	.80096	.03544	.00599	-.0000183
318.000	1.2178	.81244	.03781	.00587	-.0000135
326.000	1.2644	.82279	.04016	.00577	-.0000106
334.000	1.3102	.83222	.04233	.00570	-.0000086
342.000	1.3555	.84086	.04455	.00563	-.0000072
350.000	1.4004	.84882	.04667	.00558	-.0000061
358.000	1.4449	.85620	.04876	.00554	-.0000052
366.000	1.4890	.86306	.05081	.00550	-.0000045
374.000	1.5328	.86946	.05283	.00546	-.0000040
382.000	1.5764	.87546	.05483	.00543	-.0000035
390.000	1.6197	.88108	.05680	.00541	-.0000032
398.000	1.6629	.88637	.05876	.00538	-.0000028
406.000	1.7059	.89136	.06071	.00536	-.0000025
414.000	1.7487	.89607	.06263	.00534	-.0000023
422.000	1.7913	.90052	.06455	.00532	-.0000021
430.000	1.8338	.90475	.06645	.00531	-.0000019
438.000	1.8762	.90876	.06834	.00529	-.0000018
446.000	1.9185	.91257	.07023	.00528	-.0000016
454.000	1.9607	.91621	.07210	.00527	-.0000015
462.000	2.0028	.91967	.07396	.00526	-.0000014
470.000	2.0448	.92297	.07582	.00524	-.0000013
478.000	2.0867	.92613	.07767	.00523	-.0000012
486.000	2.1286	.92915	.07952	.00523	-.0000011
494.000	2.1703	.93204	.08135	.00522	-.0000010
502.000	2.2120	.93481	.08319	.00521	-.0000010
510.000	2.2537	.93747	.08501	.00520	-.0000009
518.000	2.2953	.94002	.08684	.00519	-.0000009
526.000	2.3368	.94247	.08865	.00519	-.0000008
534.000	2.3783	.94483	.09047	.00518	-.0000008
542.000	2.4197	.94710	.09228	.00518	-.0000007
550.000	2.4611	.94929	.09408	.00517	-.0000007
558.000	2.5024	.95139	.09588	.00516	-.0000007
566.000	2.5437	.95342	.09768	.00516	-.0000006
574.000	2.5850	.95538	.09947	.00515	-.0000006
582.000	2.6262	.95727	.10127	.00515	-.0000006
590.000	2.6674	.95910	.10305	.00515	-.0000005
598.000	2.7085	.96087	.10484	.00514	-.0000005
606.000	2.7496	.96258	.10662	.00514	-.0000005
614.000	2.7907	.96423	.10840	.00513	-.0000005
622.000	2.8318	.96583	.11018	.00513	-.0000004
630.000	2.8728	.96738	.11196	.00513	-.0000004
638.000	2.9138	.96889	.11373	.00512	-.0000004
646.000	2.9548	.97034	.11550	.00512	-.0000004
654.000	2.9957	.97175	.11727	.00512	-.0000004
662.000	3.0366	.97312	.11904	.00511	-.0000004
670.000	3.0775	.97446	.12080	.00511	-.0000004
678.000	3.1184	.97575	.12257	.00511	-.0000003
686.000	3.1593	.97700	.12433	.00511	-.0000003
694.000	3.2001	.97822	.12609	.00510	-.0000003

Table 17. (Continued).

Propane Isochore at 50 kg/m^3

Temp. K	Pressure MPa	Z	Isotherm Derivative MPa•m^3/kg	Isochore Derivative MPa/K	Isochore Curvature MPa/K^2
333.423	2.1277	.67690	.02371	.01412	-.0000819
334.000	2.1358	.67831	.02395	.01408	-.0000787
342.000	2.2463	.69670	.02707	.01357	-.0000511
350.000	2.3534	.71324	.02996	.01322	-.0000377
358.000	2.4581	.72832	.03269	.01296	-.0000297
366.000	2.5609	.74218	.03533	.01274	-.0000243
374.000	2.6621	.75501	.03789	.01256	-.0000203
382.000	2.7620	.76694	.04039	.01241	-.0000174
390.000	2.8608	.77808	.04283	.01229	-.0000150
398.000	2.9586	.78851	.04524	.01217	-.0000132
406.000	3.0556	.79831	.04760	.01207	-.0000116
414.000	3.1518	.80754	.04994	.01199	-.0000104
422.000	3.2474	.81625	.05225	.01191	-.0000093
430.000	3.3423	.82449	.05453	.01184	-.0000084
438.000	3.4368	.83230	.05679	.01177	-.0000076
446.000	3.5307	.83971	.05904	.01171	-.0000069
454.000	3.6242	.84676	.06126	.01166	-.0000063
462.000	3.7173	.85348	.06347	.01161	-.0000058
470.000	3.8100	.85988	.06566	.01157	-.0000054
478.000	3.9024	.86599	.06784	.01153	-.0000050
486.000	3.9945	.87182	.07001	.01149	-.0000046
494.000	4.0863	.87741	.07217	.01145	-.0000043
502.000	4.1777	.88276	.07432	.01142	-.0000040
510.000	4.2690	.88789	.07645	.01139	-.0000037
518.000	4.3600	.89281	.07858	.01136	-.0000035
526.000	4.4508	.89754	.08070	.01133	-.0000033
534.000	4.5413	.90209	.08281	.01131	-.0000031
542.000	4.6317	.90646	.08491	.01128	-.0000029
550.000	4.7219	.91067	.08701	.01126	-.0000028
558.000	4.8119	.91472	.08910	.01124	-.0000026
566.000	4.9018	.91863	.09118	.01122	-.0000025
574.000	4.9914	.92240	.09326	.01120	-.0000023
582.000	5.0810	.92604	.09533	.01118	-.0000022
590.000	5.1704	.92955	.09740	.01117	-.0000021
598.000	5.2596	.93295	.09946	.01115	-.0000020
606.000	5.3487	.93623	.10152	.01113	-.0000019
614.000	5.4377	.93941	.10357	.01112	-.0000019
622.000	5.5266	.94249	.10562	.01110	-.0000018
630.000	5.6154	.94546	.10766	.01109	-.0000017
638.000	5.7041	.94835	.10970	.01108	-.0000016
646.000	5.7926	.95114	.11173	.01106	-.0000016
654.000	5.8811	.95386	.11377	.01105	-.0000015
662.000	5.9694	.95649	.11579	.01104	-.0000015
670.000	6.0577	.95904	.11782	.01103	-.0000014
678.000	6.1459	.96152	.11984	.01102	-.0000014
686.000	6.2339	.96393	.12185	.01101	-.0000013
694.000	6.3219	.96626	.12387	.01100	-.0000013

Table 17. (Continued).

Propane Isochore at 100 kg/m^3

Temp. K	Pressure MPa	Z	Isotherm Derivative MPa•m^3/kg	Isochore Derivative MPa/K	Isochore Curvature MPa/K^2
358.586	3.4591	.51162	.00877	.03366	-.0003702
366.000	3.7013	.53634	.01224	.03190	-.0001643
374.000	3.9519	.56042	.01558	.03085	-.0001056
382.000	4.1957	.58253	.01875	.03013	-.0000780
390.000	4.4344	.60304	.02182	.02957	-.0000617
398.000	4.6692	.62220	.02481	.02913	-.0000507
406.000	4.9007	.64018	.02776	.02876	-.0000428
414.000	5.1294	.65712	.03067	.02844	-.0000368
422.000	5.3558	.67311	.03355	.02816	-.0000321
430.000	5.5801	.68826	.03640	.02792	-.0000283
438.000	5.8026	.70263	.03922	.02771	-.0000253
446.000	6.0235	.71629	.04202	.02752	-.0000227
454.000	6.2429	.72930	.04481	.02734	-.0000205
462.000	6.4611	.74171	.04758	.02719	-.0000187
470.000	6.6780	.75357	.05033	.02704	-.0000171
478.000	6.8938	.76490	.05307	.02691	-.0000157
486.000	7.1086	.77575	.05580	.02679	-.0000145
494.000	7.3225	.78615	.05851	.02668	-.0000135
502.000	7.5355	.79613	.06122	.02658	-.0000125
510.000	7.7477	.80571	.06391	.02648	-.0000117
518.000	7.9592	.81492	.06660	.02639	-.0000109
526.000	8.1700	.82378	.06928	.02630	-.0000103
534.000	8.3801	.83231	.07195	.02622	-.0000097
542.000	8.5896	.84052	.07461	.02615	-.0000091
550.000	8.7985	.84844	.07726	.02608	-.0000086
558.000	9.0069	.85608	.07991	.02601	-.0000082
566.000	9.2147	.86345	.08254	.02595	-.0000078
574.000	9.4220	.87058	.08518	.02589	-.0000074
582.000	9.6289	.87746	.08780	.02583	-.0000071
590.000	9.8353	.88412	.09042	.02577	-.0000068
598.000	10.0413	.89056	.09304	.02572	-.0000065
606.000	10.2468	.89679	.09565	.02567	-.0000062
614.000	10.4520	.90283	.09825	.02562	-.0000060
622.000	10.6568	.90868	.10085	.02557	-.0000057
630.000	10.8612	.91435	.10344	.02553	-.0000055
638.000	11.0652	.91985	.10603	.02549	-.0000053
646.000	11.2690	.92518	.10861	.02544	-.0000051
654.000	11.4724	.93036	.11119	.02540	-.0000049
662.000	11.6754	.93538	.11376	.02537	-.0000048
670.000	11.8782	.94027	.11633	.02533	-.0000046
678.000	12.0807	.94501	.11889	.02529	-.0000045
686.000	12.2829	.94962	.12145	.02526	-.0000044
694.000	12.4848	.95411	.12401	.02522	-.0000042

Table 17. (Continued).

Propane Isochore at 150 kg/m^3

Temp. K	Pressure MPa	Z	Isotherm Derivative MPa•m^3/kg	Isochore Derivative MPa/K	Isochore Curvature MPa/K^2
367.611	4.0763	.39207	.00180	.05500	-.0014623
374.000	4.4144	.41733	.00465	.05172	-.0002530
382.000	4.8217	.44630	.00795	.05027	-.0001355
390.000	5.2201	.47326	.01124	.04937	-.0000942
398.000	5.6123	.49859	.01452	.04871	-.0000725
406.000	5.9999	.52252	.01781	.04819	-.0000588
414.000	6.3837	.54520	.02111	.04776	-.0000494
422.000	6.7643	.56675	.02441	.04740	-.0000425
430.000	7.1421	.58728	.02771	.04708	-.0000372
438.000	7.5176	.60686	.03103	.04680	-.0000331
446.000	7.8909	.62557	.03434	.04655	-.0000297
454.000	8.2624	.64348	.03766	.04632	-.0000269
462.000	8.6321	.66063	.04098	.04611	-.0000246
470.000	9.0003	.67708	.04430	.04593	-.0000226
478.000	9.3669	.69287	.04762	.04575	-.0000210
486.000	9.7323	.70805	.05094	.04559	-.0000195
494.000	10.0964	.72264	.05426	.04544	-.0000182
502.000	10.4593	.73669	.05759	.04530	-.0000171
510.000	10.8212	.75022	.06090	.04516	-.0000162
518.000	11.1820	.76326	.06422	.04504	-.0000153
526.000	11.5418	.77584	.06754	.04492	-.0000145
534.000	11.9007	.78798	.07086	.04481	-.0000138
542.000	12.2587	.79970	.07417	.04470	-.0000132
550.000	12.6159	.81103	.07748	.04459	-.0000126
558.000	12.9722	.82199	.08079	.04450	-.0000121
566.000	13.3278	.83258	.08409	.04440	-.0000117
574.000	13.6826	.84283	.08739	.04431	-.0000112
582.000	14.0368	.85276	.09069	.04422	-.0000108
590.000	14.3902	.86238	.09399	.04414	-.0000105
598.000	14.7429	.87170	.09728	.04405	-.0000101
606.000	15.0950	.88073	.10057	.04397	-.0000098
614.000	15.4465	.88950	.10385	.04390	-.0000095
622.000	15.7974	.89800	.10713	.04382	-.0000093
630.000	16.1476	.90626	.11041	.04375	-.0000090
638.000	16.4973	.91427	.11368	.04368	-.0000088
646.000	16.8465	.92206	.11695	.04361	-.0000086
654.000	17.1950	.92963	.12022	.04354	-.0000084
662.000	17.5431	.93698	.12348	.04347	-.0000082
670.000	17.8906	.94413	.12674	.04341	-.0000080
678.000	18.2376	.95109	.12999	.04335	-.0000078
686.000	18.5841	.95786	.13324	.04328	-.0000076
694.000	18.9302	.96445	.13648	.04322	-.0000075

Table 17. (Continued).

Propane Isochore at 200 kg/m^3

Temp. K	Pressure MPa	Z	Isotherm Derivative MPa•m^3/kg	Isochore Derivative MPa/K	Isochore Curvature MPa/K^2
369.794	4.2430	.30427	.00004	.07494	-.0161073
374.000	4.5495	.32258	.00170	.07229	-.0001647
382.000	5.1241	.35571	.00519	.07148	-.0000681
390.000	5.6941	.38717	.00887	.07104	-.0000454
398.000	6.2611	.41717	.01266	.07072	-.0000350
406.000	6.8258	.44583	.01655	.07047	-.0000290
414.000	7.3886	.47327	.02050	.07025	-.0000252
422.000	7.9499	.49957	.02450	.07006	-.0000225
430.000	8.5097	.52479	.02855	.06989	-.0000206
438.000	9.0681	.54902	.03263	.06973	-.0000191
446.000	9.6254	.57231	.03675	.06958	-.0000180
454.000	10.1815	.59470	.04089	.06944	-.0000171
462.000	10.7365	.61626	.04505	.06931	-.0000164
470.000	11.2904	.63703	.04923	.06918	-.0000158
478.000	11.8434	.65704	.05343	.06906	-.0000153
486.000	12.3953	.67634	.05764	.06894	-.0000149
494.000	12.9464	.69497	.06186	.06882	-.0000145
502.000	13.4964	.71295	.06610	.06870	-.0000142
510.000	14.0456	.73032	.07034	.06859	-.0000139
518.000	14.5939	.74711	.07458	.06848	-.0000137
526.000	15.1413	.76335	.07884	.06837	-.0000135
534.000	15.6879	.77905	.08309	.06826	-.0000133
542.000	16.2335	.79425	.08735	.06816	-.0000131
550.000	16.7784	.80897	.09161	.06805	-.0000129
558.000	17.3224	.82323	.09587	.06795	-.0000128
566.000	17.8656	.83704	.10014	.06785	-.0000126
574.000	18.4080	.85043	.10440	.06775	-.0000125
582.000	18.9496	.86342	.10866	.06765	-.0000124
590.000	19.4904	.87602	.11293	.06755	-.0000123
598.000	20.0305	.88825	.11719	.06745	-.0000121
606.000	20.5697	.90012	.12145	.06736	-.0000120
614.000	21.1082	.91165	.12570	.06726	-.0000119
622.000	21.6459	.92285	.12996	.06717	-.0000118
630.000	22.1829	.93373	.13421	.06707	-.0000117
638.000	22.7191	.94431	.13845	.06698	-.0000116
646.000	23.2545	.95460	.14270	.06689	-.0000115
654.000	23.7893	.96460	.14694	.06680	-.0000114
662.000	24.3233	.97434	.15117	.06671	-.0000113
670.000	24.8566	.98381	.15540	.06662	-.0000112
678.000	25.3892	.99303	.15963	.06653	-.0000111
686.000	25.9210	1.00201	.16385	.06644	-.0000110
694.000	26.4522	1.01076	.16807	.06635	-.0000109

Table 17. (Continued).

Propane Isochore at 220.486 kg/m^3

Temp. K	Pressure MPa	Z	Isotherm Derivative MPa•m^3/kg	Isochore Derivative MPa/K	Isochore Curvature MPa/K^2
369.850	4.2475	.27625	0.00000	.08113	-.0000000
374.000	4.5841	.29484	.00173	.08112	-.0000007
382.000	5.2331	.32953	.00554	.08111	-.0000020
390.000	5.8819	.36278	.00958	.08109	-.0000031
398.000	6.5306	.39469	.01378	.08106	-.0000041
406.000	7.1789	.42533	.01808	.08103	-.0000051
414.000	7.8270	.45477	.02247	.08098	-.0000059
422.000	8.4747	.48306	.02692	.08093	-.0000067
430.000	9.1219	.51028	.03143	.08088	-.0000074
438.000	9.7687	.53648	.03598	.08081	-.0000080
446.000	10.4149	.56171	.04057	.08075	-.0000086
454.000	11.0606	.58603	.04519	.08068	-.0000091
462.000	11.7057	.60947	.04984	.08060	-.0000096
470.000	12.3502	.63208	.05452	.08052	-.0000100
478.000	12.9941	.65390	.05921	.08044	-.0000104
486.000	13.6373	.67497	.06392	.08036	-.0000107
494.000	14.2798	.69533	.06864	.08027	-.0000110
502.000	14.9216	.71500	.07338	.08018	-.0000113
510.000	15.5627	.73402	.07813	.08009	-.0000115
518.000	16.2030	.75242	.08288	.08000	-.0000118
526.000	16.8426	.77022	.08764	.07990	-.0000119
534.000	17.4814	.78746	.09241	.07981	-.0000121
542.000	18.1195	.80416	.09718	.07971	-.0000122
550.000	18.7568	.82033	.10195	.07961	-.0000124
558.000	19.3932	.83601	.10673	.07951	-.0000125
566.000	20.0289	.85121	.11151	.07941	-.0000126
574.000	20.6638	.86595	.11629	.07931	-.0000126
582.000	21.2979	.88025	.12106	.07921	-.0000127
590.000	21.9311	.89413	.12584	.07911	-.0000127
598.000	22.5635	.90761	.13061	.07900	-.0000128
606.000	23.1952	.92070	.13539	.07890	-.0000128
614.000	23.8260	.93342	.14016	.07880	-.0000128
622.000	24.4560	.94578	.14492	.07870	-.0000128
630.000	25.0851	.95779	.14969	.07859	-.0000128
638.000	25.7135	.96947	.15445	.07849	-.0000128
646.000	26.3410	.98083	.15920	.07839	-.0000128
654.000	26.9677	.99188	.16396	.07829	-.0000127
662.000	27.5936	1.00264	.16870	.07819	-.0000127
670.000	28.2187	1.01311	.17344	.07808	-.0000127
678.000	28.8430	1.02330	.17818	.07798	-.0000126
686.000	29.4664	1.03323	.18291	.07788	-.0000126
694.000	30.0891	1.04290	.18764	.07778	-.0000125

Table 17. (Continued).

Propane Isochore at 250 kg/m^3

Temp. K	Pressure MPa	Z	Isotherm Derivative MPa·m^3/kg	Isochore Derivative MPa/K	Isochore Curvature MPa/K^2
369.676	4.2336	.24295	.00022	.09181	.0104534
374.000	4.6430	.26337	.00249	.09568	.0002745
382.000	5.4146	.30070	.00708	.09703	.0001114
390.000	6.1939	.33692	.01193	.09773	.0000696
398.000	6.9777	.37193	.01695	.09819	.0000490
406.000	7.7646	.40572	.02209	.09853	.0000362
414.000	8.5539	.43833	.02733	.09878	.0000272
422.000	9.3450	.46979	.03264	.09897	.0000205
430.000	10.1374	.50014	.03802	.09911	.0000152
438.000	10.9307	.52943	.04344	.09922	.0000110
446.000	11.7248	.55771	.04891	.09929	.0000075
454.000	12.5193	.58501	.05441	.09934	.0000045
462.000	13.3142	.61137	.05995	.09937	.0000020
470.000	14.1091	.63685	.06551	.09937	-.0000002
478.000	14.9041	.66147	.07110	.09936	-.0000021
486.000	15.6989	.68528	.07670	.09934	-.0000037
494.000	16.4935	.70831	.08232	.09930	-.0000051
502.000	17.2878	.73058	.08795	.09926	-.0000064
510.000	18.0816	.75215	.09359	.09920	-.0000075
518.000	18.8750	.77302	.09924	.09914	-.0000085
526.000	19.6678	.79324	.10490	.09907	-.0000094
534.000	20.4600	.81283	.11056	.09899	-.0000102
542.000	21.2516	.83182	.11622	.09890	-.0000109
550.000	22.0425	.85022	.12189	.09881	-.0000115
558.000	22.8326	.86807	.12756	.09872	-.0000120
566.000	23.6220	.88539	.13323	.09862	-.0000125
574.000	24.4106	.90220	.13890	.09852	-.0000130
582.000	25.1983	.91851	.14457	.09841	-.0000133
590.000	25.9852	.93435	.15024	.09831	-.0000137
598.000	26.7712	.94973	.15590	.09820	-.0000140
606.000	27.5563	.96468	.16156	.09808	-.0000143
614.000	28.3405	.97921	.16721	.09797	-.0000145
622.000	29.1238	.99333	.17287	.09785	-.0000147
630.000	29.9061	1.00706	.17851	.09773	-.0000149
638.000	30.6875	1.02041	.18415	.09761	-.0000150
646.000	31.4680	1.03341	.18979	.09749	-.0000151
654.000	32.2474	1.04605	.19542	.09737	-.0000152
662.000	33.0259	1.05836	.20104	.09725	-.0000153
670.000	33.8034	1.07034	.20665	.09713	-.0000154
678.000	34.5799	1.08200	.21226	.09700	-.0000155
686.000	35.3554	1.09337	.21786	.09688	-.0000155
694.000	36.1300	1.10444	.22346	.09675	-.0000155

Table 17. (Continued).

Propane Isochore at 300 kg/m^3

Temp. K	Pressure MPa	Z	Isotherm Derivative MPa•m^3/kg	Isochore Derivative MPa/K	Isochore Curvature MPa/K^2
366.998	4.0312	.19419	.00514	.12483	.0021808
374.000	4.9319	.23313	.01167	.13096	.0004589
382.000	5.9914	.27728	.01887	.13365	.0002542
390.000	7.0678	.32038	.02614	.13533	.0001743
398.000	8.1554	.36226	.03349	.13653	.0001296
406.000	9.2515	.40285	.04091	.13744	.0001004
414.000	10.3540	.44214	.04839	.13816	.0000794
422.000	11.4616	.48016	.05592	.13873	.0000635
430.000	12.5733	.51694	.06349	.13918	.0000509
438.000	13.6883	.55250	.07109	.13955	.0000407
446.000	14.8059	.58689	.07872	.13984	.0000323
454.000	15.9256	.62014	.08637	.14007	.0000253
462.000	17.0469	.65231	.09404	.14025	.0000192
470.000	18.1694	.68343	.10172	.14038	.0000141
478.000	19.2928	.71355	.10942	.14047	.0000096
486.000	20.4169	.74269	.11712	.14053	.0000057
494.000	21.5413	.77090	.12483	.14057	.0000023
502.000	22.6659	.79822	.13254	.14057	-.0000008
510.000	23.7904	.82468	.14025	.14055	-.0000034
518.000	24.9147	.85031	.14796	.14052	-.0000058
526.000	26.0386	.87516	.15567	.14046	-.0000079
534.000	27.1620	.89924	.16338	.14039	-.0000097
542.000	28.2848	.92259	.17108	.14031	-.0000114
550.000	29.4069	.94524	.17878	.14021	-.0000129
558.000	30.5282	.96721	.18647	.14010	-.0000142
566.000	31.6485	.98853	.19415	.13998	-.0000154
574.000	32.7679	1.00923	.20183	.13985	-.0000165
582.000	33.8862	1.02933	.20949	.13972	-.0000174
590.000	35.0033	1.04884	.21715	.13958	-.0000183
598.000	36.1194	1.06781	.22479	.13943	-.0000190
606.000	37.2342	1.08623	.23243	.13927	-.0000197
614.000	38.3477	1.10414	.24005	.13911	-.0000203
622.000	39.4599	1.12155	.24767	.13895	-.0000209
630.000	40.5708	1.13848	.25527	.13878	-.0000214
638.000	41.6804	1.15495	.26286	.13861	-.0000218
646.000	42.7885	1.17098	.27043	.13843	-.0000222
654.000	43.8952	1.18657	.27800	.13825	-.0000225
662.000	45.0005	1.20175	.28555	.13807	-.0000228
670.000	46.1043	1.21652	.29309	.13789	-.0000230
678.000	47.2067	1.23091	.30061	.13770	-.0000232
686.000	48.3075	1.24493	.30812	.13751	-.0000234
694.000	49.4069	1.25858	.31562	.13733	-.0000236

Table 17. (Continued).

Propane Isochore at 350 kg/m^3

Temp. K	Pressure MPa	Z	Isotherm Derivative MPa•m^3/kg	Isochore Derivative MPa/K	Isochore Curvature MPa/K^2
359.023	3.4870	.14717	.02596	.17976	.0010206
366.000	4.7602	.19709	.03639	.18469	.0005142
374.000	6.2518	.25330	.04771	.18796	.0003294
382.000	7.7650	.30802	.05881	.19020	.0002378
390.000	9.2935	.36109	.06980	.19186	.0001812
398.000	10.8337	.41248	.08074	.19314	.0001420
406.000	12.3830	.46218	.09164	.19416	.0001129
414.000	13.9396	.51022	.10251	.19497	.0000903
422.000	15.5021	.55665	.11335	.19561	.0000723
430.000	17.0691	.60152	.12418	.19613	.0000575
438.000	18.6399	.64488	.13498	.19654	.0000451
446.000	20.2135	.68677	.14576	.19686	.0000346
454.000	21.7894	.72727	.15653	.19710	.0000257
462.000	23.3669	.76642	.16727	.19727	.0000180
470.000	24.9456	.80427	.17800	.19739	.0000113
478.000	26.5250	.84088	.18870	.19745	.0000054
486.000	28.1047	.87629	.19938	.19748	.0000003
494.000	29.6845	.91056	.21004	.19746	-.0000042
502.000	31.2640	.94373	.22068	.19741	-.0000082
510.000	32.8430	.97584	.23129	.19733	-.0000117
518.000	34.4213	1.00694	.24188	.19722	-.0000149
526.000	35.9985	1.03707	.25245	.19709	-.0000177
534.000	37.5747	1.06626	.26299	.19694	-.0000202
542.000	39.1496	1.09455	.27351	.19677	-.0000224
550.000	40.7230	1.12198	.28401	.19658	-.0000244
558.000	42.2949	1.14858	.29448	.19638	-.0000262
566.000	43.8651	1.17438	.30492	.19617	-.0000278
574.000	45.4335	1.19942	.31534	.19594	-.0000292
582.000	47.0000	1.22372	.32574	.19570	-.0000304
590.000	48.5647	1.24731	.33611	.19545	-.0000316
598.000	50.1272	1.27022	.34645	.19519	-.0000326
606.000	51.6877	1.29247	.35677	.19493	-.0000335
614.000	53.2461	1.31409	.36706	.19466	-.0000342
622.000	54.8023	1.33510	.37733	.19438	-.0000349
630.000	56.3562	1.35553	.38758	.19410	-.0000356
638.000	57.9079	1.37538	.39779	.19381	-.0000361
646.000	59.4572	1.39469	.40799	.19352	-.0000366
654.000	61.0043	1.41348	.41816	.19323	-.0000370
662.000	62.5489	1.43175	.42830	.19293	-.0000373
670.000	64.0912	1.44954	.43842	.19263	-.0000376
678.000	65.6310	1.46685	.44851	.19233	-.0000379
686.000	67.1684	1.48371	.45858	.19203	-.0000381
694.000	68.7034	1.50012	.46862	.19172	-.0000382

Table 17. (Continued).

Propane Isochore at 400 kg/m^3

Temp. K	Pressure MPa	Z	Isotherm Derivative MPa•m^3/kg	Isochore Derivative MPa/K	Isochore Curvature MPa/K^2
344.298	2.6430	.10178	.07761	.26305	.0005614
350.000	4.1511	.15726	.08994	.26579	.0004125
358.000	6.2892	.23293	.10663	.26857	.0002939
366.000	8.4463	.30598	.12291	.27061	.0002207
374.000	10.6176	.37642	.13890	.27216	.0001698
382.000	12.7999	.44428	.15469	.27336	.0001320
390.000	14.9907	.50965	.17032	.27429	.0001025
398.000	17.1881	.57261	.18581	.27502	.0000788
406.000	19.3905	.63325	.20118	.27557	.0000593
414.000	21.5967	.69168	.21645	.27597	.0000431
422.000	23.8057	.74797	.23162	.27626	.0000293
430.000	26.0167	.80223	.24670	.27645	.0000175
438.000	28.2287	.85454	.26171	.27655	.0000074
446.000	30.4412	.90499	.27664	.27657	-.0000014
454.000	32.6536	.95365	.29149	.27653	-.0000091
462.000	34.8655	1.00062	.30628	.27643	-.0000158
470.000	37.0763	1.04596	.32100	.27628	-.0000217
478.000	39.2858	1.08974	.33565	.27608	-.0000270
486.000	41.4935	1.13203	.35024	.27585	-.0000316
494.000	43.6992	1.17290	.36477	.27558	-.0000356
502.000	45.9027	1.21241	.37924	.27528	-.0000392
510.000	48.1036	1.25061	.39366	.27495	-.0000424
518.000	50.3018	1.28756	.40802	.27460	-.0000453
526.000	52.4971	1.32332	.42232	.27423	-.0000478
534.000	54.6894	1.35793	.43657	.27384	-.0000500
542.000	56.8785	1.39144	.45076	.27343	-.0000519
550.000	59.0642	1.42389	.46490	.27301	-.0000537
558.000	61.2465	1.45533	.47899	.27257	-.0000552
566.000	63.4253	1.48580	.49303	.27212	-.0000565
574.000	65.6005	1.51534	.50703	.27167	-.0000577
582.000	67.7719	1.54398	.52097	.27120	-.0000587
590.000	69.9396	1.57176	.53486	.27073	-.0000596

Propane Isochore at 450 kg/m^3

322.304	1.6818	.06150	.17785	.38324	.0002389
326.000	3.0999	.11207	.18875	.38406	.0002047
334.000	6.1782	.21801	.21188	.38545	.0001480
342.000	9.2661	.31933	.23454	.38646	.0001059
350.000	12.3608	.41624	.25682	.38717	.0000732
358.000	15.4603	.50898	.27879	.38765	.0000467
366.000	18.5627	.59776	.30047	.38793	.0000249
374.000	21.6668	.68279	.32192	.38806	.0000065
382.000	24.7713	.76427	.34314	.38805	-.0000090
390.000	27.8752	.84240	.36418	.38792	-.0000224
398.000	30.9777	.91734	.38502	.38769	-.0000339
406.000	34.0781	.98926	.40571	.38738	-.0000439
414.000	37.1756	1.05833	.42623	.38699	-.0000526
422.000	40.2698	1.12468	.44660	.38654	-.0000602
430.000	43.3601	1.18846	.46684	.38603	-.0000669
438.000	46.4461	1.24979	.48694	.38547	-.0000727
446.000	49.5275	1.30880	.50691	.38487	-.0000778
454.000	52.6040	1.36560	.52676	.38423	-.0000823
462.000	55.6751	1.42031	.54650	.38355	-.0000862
470.000	58.7408	1.47300	.56612	.38285	-.0000896
478.000	61.8007	1.52380	.58563	.38212	-.0000926
486.000	64.8546	1.57278	.60504	.38137	-.0000952
494.000	67.9025	1.62002	.62434	.38060	-.0000975
502.000	70.9442	1.66562	.64355	.37981	-.0000994

Table 17. (Continued).

Propane Isochore at 500 kg/m^3

Temp. K	Pressure MPa	Z	Isotherm Derivative MPa•m^3/kg	Isochore Derivative MPa/K	Isochore Curvature MPa/K^2
293.022	.8338	.03018	.34842	.55227	-.0001175
294.000	1.3738	.04957	.35223	.55216	-.0001176
298.000	3.5815	.12748	.36772	.55168	-.0001187
302.000	5.7873	.20327	.38309	.55120	-.0001207
306.000	7.9911	.27701	.39834	.55072	-.0001231
310.000	10.1930	.34878	.41348	.55022	-.0001260
314.000	12.3929	.41865	.42851	.54971	-.0001291
318.000	14.5907	.48669	.44343	.54919	-.0001324
322.000	16.7863	.55297	.45826	.54865	-.0001358
326.000	18.9798	.61756	.47300	.54810	-.0001391
330.000	21.1711	.68051	.48764	.54754	-.0001424
334.000	23.3601	.74188	.50220	.54696	-.0001457
338.000	25.5468	.80172	.51668	.54637	-.0001489
342.000	27.7311	.86009	.53107	.54577	-.0001520
346.000	29.9129	.91704	.54539	.54515	-.0001550
350.000	32.0923	.97261	.55963	.54453	-.0001579
354.000	34.2691	1.02684	.57380	.54389	-.0001606
358.000	36.4434	1.07979	.58790	.54324	-.0001632
362.000	38.6151	1.13150	.60194	.54259	-.0001657
366.000	40.7841	1.18199	.61590	.54192	-.0001680
370.000	42.9504	1.23132	.62980	.54124	-.0001702
374.000	45.1140	1.27951	.64364	.54056	-.0001723
378.000	47.2749	1.32661	.65742	.53986	-.0001743
382.000	49.4329	1.37264	.67114	.53916	-.0001761
386.000	51.5881	1.41765	.68480	.53846	-.0001778
390.000	53.7405	1.46165	.69840	.53774	-.0001794
394.000	55.8901	1.50468	.71195	.53702	-.0001808
398.000	58.0367	1.54677	.72544	.53629	-.0001822
402.000	60.1804	1.58794	.73888	.53556	-.0001835
406.000	62.3212	1.62823	.75227	.53483	-.0001846
410.000	64.4590	1.66765	.76561	.53409	-.0001857
414.000	66.5939	1.70624	.77890	.53334	-.0001866
418.000	68.7258	1.74401	.79214	.53259	-.0001875
422.000	70.8546	1.78099	.80533	.53184	-.0001883

Propane Isochore at 550 kg/m^3

256.764	.2778	.01043	.61553	.78813	-.0006500
258.000	1.2512	.04676	.62175	.78733	-.0006386
262.000	4.3955	.16178	.64182	.78485	-.0006056
266.000	7.5301	.27298	.66179	.78248	-.0005776
270.000	10.6555	.38056	.68166	.78022	-.0005537
274.000	13.7720	.48469	.70141	.77805	-.0005333
278.000	16.8800	.58552	.72105	.77595	-.0005157
282.000	19.9797	.68321	.74059	.77392	-.0005005
286.000	23.0715	.77790	.76001	.77195	-.0004872
290.000	26.1554	.86971	.77933	.77002	-.0004756
294.000	29.2317	.95878	.79854	.76814	-.0004654
298.000	32.3005	1.04522	.81765	.76630	-.0004564
302.000	35.3621	1.12913	.83666	.76449	-.0004485
306.000	38.4165	1.21062	.85556	.76271	-.0004414
310.000	41.4638	1.28979	.87437	.76095	-.0004350
314.000	44.5041	1.36673	.89308	.75923	-.0004293
318.000	47.5376	1.44153	.91169	.75752	-.0004241
322.000	50.5643	1.51426	.93021	.75583	-.0004193
326.000	53.5843	1.58501	.94863	.75416	-.0004150
330.000	56.5976	1.65385	.96697	.75251	-.0004110
334.000	59.6044	1.72085	.98522	.75088	-.0004073
338.000	62.6047	1.78609	1.00338	.74925	-.0004038
342.000	65.5985	1.84961	1.02146	.74764	-.0004005
346.000	68.5858	1.91148	1.03945	.74605	-.0003975
350.000	71.5669	1.97177	1.05736	.74447	-.0003946

Table 17. (Continued).

Propane Isochore at 600 kg/m^3

Temp. K	Pressure MPa	Z	Isotherm Derivative MPa•m^3/kg	Isochore Derivative MPa/K	Isochore Curvature MPa/K^2
214.330	.0453	.00187	1.00752	1.12014	-.0016196
218.000	4.1460	.16811	1.03111	1.11437	-.0015252
222.000	8.5915	.34209	1.05677	1.10846	-.0014356
226.000	13.0141	.50901	1.08236	1.10287	-.0013576
230.000	17.4149	.66929	1.10786	1.09758	-.0012895
234.000	21.7951	.82332	1.13327	1.09255	-.0012297
238.000	26.1556	.97143	1.15857	1.08774	-.0011769
242.000	30.4972	1.11396	1.18376	1.08312	-.0011301
246.000	34.8208	1.25120	1.20883	1.07869	-.0010884
250.000	39.1270	1.38344	1.23378	1.07441	-.0010512
254.000	43.4163	1.51092	1.25861	1.07027	-.0010177
258.000	47.6893	1.63390	1.28332	1.06626	-.0009875
262.000	51.9466	1.75259	1.30790	1.06237	-.0009602
266.000	56.1884	1.86719	1.33236	1.05858	-.0009354
270.000	60.4153	1.97791	1.35669	1.05488	-.0009127
274.000	64.6276	2.08493	1.38089	1.05128	-.0008919
278.000	68.8256	2.18841	1.40497	1.04775	-.0008727

Propane Isochore at 650 kg/m^3

167.316	.0017	.00008	1.55418	1.60092	-.0037221
168.000	1.0962	.05324	1.55969	1.59840	-.0036695
170.000	4.2857	.20570	1.57585	1.59121	-.0035237
172.000	7.4612	.35395	1.59203	1.58429	-.0033889
174.000	10.6231	.49815	1.60825	1.57764	-.0032640
176.000	13.7719	.63847	1.62448	1.57123	-.0031482
178.000	16.9082	.77507	1.64073	1.56504	-.0030406
180.000	20.0322	.90807	1.65698	1.55906	-.0029405
182.000	23.1446	1.03762	1.67324	1.55328	-.0028473
184.000	26.2455	1.16385	1.68949	1.54767	-.0027603
186.000	29.3354	1.28689	1.70573	1.54223	-.0026791
188.000	32.4145	1.40684	1.72196	1.53695	-.0026031
190.000	35.4833	1.52381	1.73817	1.53182	-.0025319
192.000	38.5419	1.63792	1.75437	1.52682	-.0024652
194.000	41.5906	1.74926	1.77054	1.52195	-.0024025
196.000	44.6298	1.85793	1.78668	1.51721	-.0023436
198.000	47.6595	1.96402	1.80280	1.51258	-.0022882
200.000	50.6802	2.06761	1.81889	1.50805	-.0022359
202.000	53.6918	2.16879	1.83495	1.50363	-.0021866
204.000	56.6947	2.26764	1.85098	1.49931	-.0021400
206.000	59.6891	2.36423	1.86697	1.49507	-.0020959
208.000	62.6751	2.45863	1.88293	1.49092	-.0020541
210.000	65.6528	2.55091	1.89885	1.48685	-.0020145
212.000	68.6225	2.64115	1.91473	1.48286	-.0019769
214.000	71.5843	2.72939	1.93057	1.47894	-.0019412

Table 17. (Continued).

Propane Isochore at 700 kg/m^3

Temp. K	Pressure MPa	Z	Isotherm Derivative MPa•m^3/kg	Isochore Derivative MPa/K	Isochore Curvature MPa/K^2
118.141	.0000	.00000	2.30958	2.33998	-.0093942
120.000	4.3335	.27361	2.32730	2.32298	-.0089059
122.000	8.9619	.55657	2.34664	2.30565	-.0084286
124.000	13.5567	.82834	2.36621	2.28924	-.0079956
126.000	18.1194	1.08956	2.38599	2.27365	-.0076018
128.000	22.6518	1.34082	2.40593	2.25881	-.0072429
130.000	27.1551	1.58265	2.42602	2.24465	-.0069151
132.000	31.6308	1.81557	2.44622	2.23113	-.0066150
134.000	36.0800	2.04004	2.46652	2.21818	-.0063398
136.000	40.5039	2.25650	2.48690	2.20575	-.0060867
138.000	44.9034	2.46534	2.50734	2.19382	-.0058536
140.000	49.2794	2.66695	2.52782	2.18233	-.0056384
142.000	53.6329	2.86167	2.54834	2.17125	-.0054394
144.000	57.9647	3.04985	2.56887	2.16056	-.0052550
146.000	62.2754	3.23177	2.58942	2.15022	-.0050838
148.000	66.5658	3.40774	2.60996	2.14022	-.0049246
150.000	70.8365	3.57802	2.63050	2.13052	-.0047762

Propane Isochore at 733.337 kg/m^3

85.470	.0000	.00000	3.01259	3.10627	-.0201023
86.000	1.6435	.13821	3.01733	3.09573	-.0196740
87.000	4.7295	.39316	3.02646	3.07644	-.0189057
88.000	7.7967	.64076	3.03585	3.05790	-.0181860
89.000	10.8456	.88132	3.04546	3.04006	-.0175113
90.000	13.8770	1.11513	3.05529	3.02287	-.0168780
91.000	16.8915	1.34245	3.06531	3.00629	-.0162830
92.000	19.8898	1.56356	3.07551	2.99029	-.0157236
93.000	22.8723	1.77868	3.08588	2.97483	-.0151971
94.000	25.8396	1.98806	3.09640	2.95988	-.0147010
95.000	28.7922	2.19191	3.10706	2.94542	-.0142332
96.000	31.7306	2.39044	3.11785	2.93141	-.0137918
97.000	34.6552	2.58385	3.12876	2.91783	-.0133747
98.000	37.5664	2.77233	3.13977	2.90465	-.0129804
99.000	40.4646	2.95605	3.15089	2.89186	-.0126073
100.000	43.3502	3.13518	3.16210	2.87943	-.0122539
101.000	46.2236	3.30989	3.17339	2.86735	-.0119190
102.000	49.0850	3.48033	3.18476	2.85559	-.0116012
103.000	51.9349	3.64664	3.19620	2.84414	-.0112995
104.000	54.7734	3.80897	3.20770	2.83298	-.0110128
105.000	57.6009	3.96745	3.21925	2.82211	-.0107402
106.000	60.4177	4.12221	3.23086	2.81150	-.0104807
107.000	63.2240	4.27336	3.24251	2.80114	-.0102336
108.000	66.0201	4.42103	3.25421	2.79103	-.0099980
109.000	68.8061	4.56533	3.26594	2.78114	-.0097733
110.000	71.5824	4.70636	3.27770	2.77148	-.0095588

Table 18. Calculated P(ρ) isotherms of propane.

Propane Isotherm at 90 K

Density kg/m^3	Pressure MPa	Z	Isotherm Derivative MPa·m^3/kg	Isochore Derivative MPa/K	Isochore Curvature MPa/K^2
.00	.0000	1.00000	.01697	.00000	-.0000000
728.67	.0000	.00000	2.89905	2.97836	-.0178732
728.75	.2195	.01775	2.90152	2.97906	-.0178557
729.37	2.0393	.16477	2.92199	2.98482	-.0177125
730.00	3.8720	.31257	2.94261	2.99065	-.0175726
730.62	5.7176	.46116	2.96338	2.99654	-.0174358
731.25	7.5762	.61055	2.98431	3.00250	-.0173021
731.88	9.4480	.76074	3.00539	3.00853	-.0171716
732.50	11.3329	.91173	3.02662	3.01462	-.0170440
733.12	13.2313	1.06354	3.04801	3.02077	-.0169195
733.75	15.1430	1.21617	3.06956	3.02698	-.0167979
734.37	17.0682	1.36963	3.09126	3.03326	-.0166792
735.00	19.0071	1.52392	3.11312	3.03959	-.0165634
735.62	20.9597	1.67904	3.13514	3.04599	-.0164505
736.25	22.9261	1.83501	3.15733	3.05244	-.0163404
736.88	24.9065	1.99183	3.17967	3.05895	-.0162331
737.50	26.9009	2.14950	3.20218	3.06552	-.0161285
738.12	28.9091	2.30801	3.22485	3.07215	-.0160266
738.75	30.9318	2.46740	3.24769	3.07883	-.0159274
739.37	32.9688	2.62767	3.27069	3.08556	-.0158308
740.00	35.0202	2.78881	3.29386	3.09235	-.0157368
740.62	37.0861	2.95084	3.31721	3.09919	-.0156454
741.25	39.1667	3.11376	3.34072	3.10608	-.0155566
741.88	41.2621	3.27758	3.36440	3.11303	-.0154702
742.50	43.3723	3.44229	3.38826	3.12002	-.0153864
743.12	45.4974	3.60792	3.41229	3.12707	-.0153050
743.75	47.6377	3.77447	3.43649	3.13416	-.0152260

Propane Isotherm at 100 K

.00	.0000	1.00000	.01885	.00000	-.0000000
718.44	.0000	.00000	2.66954	2.72428	-.0140068
718.75	.8380	.06184	2.67912	2.72726	-.0139584
720.00	4.2110	.31019	2.71768	2.73928	-.0137706
721.25	7.6324	.56125	2.75675	2.75151	-.0135912
722.50	11.1031	.81504	2.79633	2.76393	-.0134201
723.75	14.6235	1.07161	2.83644	2.77656	-.0132570
725.00	18.1944	1.33099	2.87707	2.78937	-.0131018
726.25	21.8164	1.59321	2.91824	2.80238	-.0129542
727.50	25.4904	1.85831	2.95996	2.81556	-.0128141
728.75	29.2166	2.12631	3.00222	2.82893	-.0126814
730.00	32.9961	2.39725	3.04503	2.84247	-.0125557
731.25	36.8294	2.67118	3.08841	2.85618	-.0124370
732.50	40.7173	2.94812	3.13236	2.87005	-.0123251
733.75	44.6605	3.22812	3.17689	2.88409	-.0122198
735.00	48.6598	3.51122	3.22201	2.89828	-.0121211
736.25	52.7158	3.79744	3.26772	2.91263	-.0120287
737.50	56.8295	4.08683	3.31404	2.92713	-.0119424
738.75	61.0011	4.37940	3.36096	2.94176	-.0118623
740.00	65.2319	4.67524	3.40851	2.95654	-.0117880
741.25	69.5226	4.97435	3.45670	2.97145	-.0117196

Table 18. (Continued).

Propane Isotherm at 110 K

Density kg/m^3	Pressure MPa	Z	Isotherm Derivative MPa·m^3/kg	Isochore Derivative MPa/K	Isochore Curvature MPa/K^2
.00	.0000	1.00000	.02074	.00000	-.0000000
708.26	.0000	.00000	2.46350	2.50201	-.0111736
708.75	1.2165	.08276	2.47767	2.50672	-.0111217
710.00	4.3362	.29446	2.51395	2.51881	-.0109942
711.25	7.5015	.50852	2.55067	2.53106	-.0108726
712.50	10.7130	.72495	2.58783	2.54347	-.0107568
713.75	13.9713	.94378	2.62544	2.55604	-.0106465
715.00	17.2768	1.16504	2.66351	2.56877	-.0105417
716.25	20.6302	1.38874	2.70203	2.58165	-.0104422
717.50	24.0321	1.61492	2.74102	2.59468	-.0103479
718.75	27.4830	1.84361	2.78048	2.60786	-.0102587
720.00	30.9835	2.07482	2.82041	2.62118	-.0101745
721.25	34.5342	2.30859	2.86083	2.63464	-.0100951
722.50	38.1358	2.54494	2.90173	2.64824	-.0100205
723.75	41.7888	2.78390	2.94313	2.66198	-.0099506
725.00	45.4938	3.02550	2.98503	2.67584	-.0098852
726.25	49.2515	3.26976	3.02743	2.68984	-.0098243
727.50	53.0628	3.51673	3.07034	2.70396	-.0097677
728.75	56.9277	3.76641	3.11377	2.71821	-.0097154
730.00	60.8473	4.01884	3.15773	2.73257	-.0096673
731.25	64.8222	4.27406	3.20222	2.74705	-.0096233
732.50	68.8530	4.53208	3.24726	2.76165	-.0095833

Propane Isotherm at 120 K

.00	.0000	.99999	.02263	.00000	-.0000000
698.12	.0000	.00000	2.27593	2.30506	-.0090397
698.75	1.4457	.09144	2.29310	2.31105	-.0089937
700.00	4.3335	.27361	2.32730	2.32298	-.0089059
701.25	7.2640	.45782	2.36189	2.33505	-.0088224
702.50	10.2382	.64413	2.39687	2.34726	-.0087429
703.75	13.2564	.83253	2.43225	2.35960	-.0086675
705.00	16.3190	1.02305	2.46803	2.37207	-.0085959
706.25	19.4266	1.21572	2.50420	2.38467	-.0085282
707.50	22.5797	1.41054	2.54079	2.39739	-.0084642
708.75	25.7787	1.60754	2.57778	2.41024	-.0084038
710.00	29.0243	1.80675	2.61520	2.42321	-.0083470
711.25	32.3169	2.00817	2.65303	2.43629	-.0082937
712.50	35.6571	2.21184	2.69128	2.44950	-.0082438
713.75	39.0453	2.41778	2.72997	2.46282	-.0081972
715.00	42.4822	2.62600	2.76909	2.47626	-.0081540
716.25	45.9682	2.83652	2.80865	2.48980	-.0081139
717.50	49.5040	3.04938	2.84865	2.50346	-.0080770
718.75	53.0900	3.26459	2.88910	2.51722	-.0080432
720.00	56.7269	3.48217	2.93001	2.53109	-.0080125
721.25	60.4152	3.70215	2.97138	2.54506	-.0079847
722.50	64.1556	3.92455	3.01322	2.55913	-.0079598
723.75	67.9485	4.14940	3.05552	2.57330	-.0079378
725.00	71.7946	4.37670	3.09831	2.58757	-.0079186

Table 18. (Continued).

Propane Isotherm at 140 K

Density kg/m^3	Pressure MPa	Z	Isotherm Derivative MPa•m^3/kg	Isochore Derivative MPa/K	Isochore Curvature MPa/K^2
.00	.0001	.99985	.02639	.00000	-.0000000
677.87	.0001	.00000	1.94295	1.96937	-.0061040
678.75	1.7229	.09616	1.96429	1.97729	-.0060730
680.00	4.1973	.23383	1.99480	1.98860	-.0060311
681.25	6.7100	.37313	2.02563	2.00001	-.0059915
682.50	9.2615	.51408	2.05678	2.01152	-.0059541
683.75	11.8521	.65667	2.08825	2.02312	-.0059189
685.00	14.4823	.80093	2.12004	2.03482	-.0058858
686.25	17.1524	.94687	2.15216	2.04662	-.0058547
687.50	19.8628	1.09450	2.18460	2.05850	-.0058257
688.75	22.6140	1.24384	2.21738	2.07049	-.0057986
690.00	25.4064	1.39489	2.25049	2.08256	-.0057735
691.25	28.2404	1.54769	2.28395	2.09472	-.0057503
692.50	31.1164	1.70222	2.31774	2.10697	-.0057290
693.75	34.0349	1.85853	2.35187	2.11932	-.0057095
695.00	36.9963	2.01660	2.38635	2.13175	-.0056918
696.25	40.0010	2.17647	2.42119	2.14426	-.0056759
697.50	43.0494	2.33814	2.45637	2.15687	-.0056617
698.75	46.1421	2.50163	2.49192	2.16956	-.0056492
700.00	49.2794	2.66695	2.52782	2.18233	-.0056384
701.25	52.4617	2.83411	2.56409	2.19518	-.0056293
702.50	55.6897	3.00314	2.60072	2.20812	-.0056217
703.75	58.9636	3.17404	2.63773	2.22114	-.0056158
705.00	62.2841	3.34684	2.67511	2.23423	-.0056115
706.25	65.6516	3.52155	2.71287	2.24741	-.0056087
707.50	69.0664	3.69818	2.75101	2.26066	-.0056074

Propane Isotherm at 160 K

.03	.0008	.99896	.03011	.00001	-.0000000
657.51	.0008	.00004	1.65218	1.69146	-.0042366
658.75	2.0638	.10385	1.67891	1.70179	-.0042167
660.00	4.1795	.20991	1.70616	1.71229	-.0041980
661.25	6.3293	.31728	1.73368	1.72287	-.0041806
662.50	8.5138	.42598	1.76147	1.73352	-.0041645
663.75	10.7331	.53601	1.78953	1.74425	-.0041495
665.00	12.9877	.64739	1.81787	1.75505	-.0041358
666.25	15.2779	.76012	1.84650	1.76592	-.0041233
667.50	17.6041	.87421	1.87540	1.77687	-.0041119
668.75	19.9665	.98968	1.90458	1.78789	-.0041017
670.00	22.3656	1.10653	1.93405	1.79899	-.0040926
671.25	24.8018	1.22477	1.96381	1.81016	-.0040845
672.50	27.2753	1.34441	1.99385	1.82140	-.0040776
673.75	29.7865	1.46547	2.02419	1.83271	-.0040716
675.00	32.3359	1.58795	2.05482	1.84409	-.0040668
676.25	34.9237	1.71186	2.08574	1.85554	-.0040629
677.50	37.5502	1.83721	2.11697	1.86707	-.0040600
678.75	40.2162	1.96402	2.14849	1.87866	-.0040582
680.00	42.9217	2.09229	2.18032	1.89033	-.0040573
681.25	45.6671	2.22204	2.21245	1.90206	-.0040574
682.50	48.4529	2.35327	2.24489	1.91386	-.0040584
683.75	51.2795	2.48600	2.27764	1.92573	-.0040603
685.00	54.1472	2.62023	2.31070	1.93766	-.0040632
686.25	57.0564	2.75598	2.34407	1.94967	-.0040670
687.50	60.0075	2.89326	2.37777	1.96174	-.0040717
688.75	63.0009	3.03208	2.41178	1.97387	-.0040773
690.00	66.0371	3.17244	2.44612	1.98607	-.0040837
691.25	69.1164	3.31437	2.48079	1.99834	-.0040910

Table 18. (Continued).

Propane Isotherm at 180 K

Density kg/m^3	Pressure MPa	Z	Isotherm Derivative MPa•m^3/kg	Isochore Derivative MPa/K	Isochore Curvature MPa/K^2
.15	.0050	.99585	.03366	.00003	-.0000000
636.85	.0050	.00023	1.39334	1.45552	-.0029811
637.50	.9157	.04232	1.40575	1.46049	-.0029772
638.75	2.6879	.12399	1.42970	1.47007	-.0029703
640.00	4.4902	.20672	1.45405	1.47972	-.0029641
641.25	6.3231	.29054	1.47856	1.48942	-.0029587
642.50	8.1867	.37544	1.50331	1.49919	-.0029540
643.75	10.0815	.46143	1.52830	1.50902	-.0029500
645.00	12.0076	.54853	1.55354	1.51891	-.0029468
646.25	13.9654	.63673	1.57903	1.52886	-.0029442
647.50	15.9553	.72605	1.60476	1.53887	-.0029423
648.75	17.9774	.81649	1.63075	1.54894	-.0029411
650.00	20.0322	.90807	1.65698	1.55906	-.0029405
651.25	22.1200	1.00078	1.68347	1.56925	-.0029405
652.50	24.2410	1.09464	1.71022	1.57950	-.0029412
653.75	26.3957	1.18966	1.73722	1.58981	-.0029425
655.00	28.5842	1.28584	1.76447	1.60018	-.0029444
656.25	30.8069	1.38319	1.79199	1.61061	-.0029469
657.50	33.0643	1.48172	1.81977	1.62109	-.0029500
658.75	35.3565	1.58143	1.84781	1.63164	-.0029537
660.00	37.6839	1.68234	1.87612	1.64224	-.0029580
661.25	40.0469	1.78446	1.90470	1.65290	-.0029628
662.50	42.4458	1.88778	1.93354	1.66363	-.0029682
663.75	44.8809	1.99232	1.96265	1.67441	-.0029741
665.00	47.3525	2.09809	1.99204	1.68524	-.0029806
666.25	49.8611	2.20509	2.02170	1.69614	-.0029877
667.50	52.4069	2.31334	2.05163	1.70709	-.0029952
668.75	54.9903	2.42284	2.08185	1.71810	-.0030034
670.00	57.6116	2.53360	2.11234	1.72917	-.0030120
671.25	60.2712	2.64563	2.14312	1.74030	-.0030212
672.50	62.9695	2.75893	2.17418	1.75148	-.0030309
673.75	65.7068	2.87352	2.20553	1.76272	-.0030411
675.00	68.4835	2.98940	2.23716	1.77402	-.0030518
676.25	71.2999	3.10659	2.26909	1.78537	-.0030631

Propane Isotherm at 200 K

.54	.0201	.98835	.03685	.00010	-.0000000
615.66	.0201	.00087	1.16045	1.25119	-.0020992
617.50	2.1878	.09396	1.19146	1.26400	-.0020990
620.00	5.2198	.22326	1.23427	1.28156	-.0021004
622.50	8.3599	.35613	1.27794	1.29932	-.0021034
625.00	11.6102	.49261	1.32249	1.31728	-.0021082
627.50	14.9731	.63277	1.36794	1.33545	-.0021146
630.00	18.4507	.77663	1.41429	1.35381	-.0021224
632.50	22.0453	.92427	1.46155	1.37238	-.0021318
635.00	25.7592	1.07573	1.50973	1.39115	-.0021426
637.50	29.5947	1.23106	1.55885	1.41013	-.0021548
640.00	33.5542	1.39031	1.60892	1.42931	-.0021684
642.50	37.6401	1.55354	1.65994	1.44869	-.0021833
645.00	41.8547	1.72080	1.71194	1.46827	-.0021995
647.50	46.2006	1.89214	1.76492	1.48806	-.0022171
650.00	50.6802	2.06761	1.81889	1.50805	-.0022359
652.50	55.2959	2.24728	1.87388	1.52825	-.0022560
655.00	60.0504	2.43119	1.92988	1.54865	-.0022774
657.50	64.9462	2.61941	1.98692	1.56925	-.0023001
660.00	69.9859	2.81197	2.04500	1.59005	-.0023239

Table 18. (Continued).

Propane Isotherm at 220 K

Density kg/m^3	Pressure MPa	Z	Isotherm Derivative MPa·m^3/kg	Isochore Derivative MPa/K	Isochore Curvature MPa/K^2
1.50	.0605	.97418	.03937	.00029	-.0000002
593.67	.0605	.00245	.94999	1.07129	-.0014563
595.00	1.3397	.05428	.96935	1.07964	-.0014605
597.50	3.8091	.15369	1.00626	1.09542	-.0014691
600.00	6.3717	.25601	1.04395	1.11137	-.0014788
602.50	9.0295	.36129	1.08244	1.12749	-.0014894
605.00	11.7846	.46958	1.12172	1.14379	-.0015009
607.50	14.6388	.58091	1.16182	1.16026	-.0015133
610.00	17.5944	.69534	1.20274	1.17691	-.0015265
612.50	20.6532	.81289	1.24449	1.19373	-.0015405
615.00	23.8175	.93363	1.28709	1.21072	-.0015554
617.50	27.0894	1.05758	1.33054	1.22790	-.0015710
620.00	30.4710	1.18480	1.37485	1.24525	-.0015874
622.50	33.9644	1.31534	1.42004	1.26278	-.0016046
625.00	37.5719	1.44922	1.46611	1.28049	-.0016225
627.50	41.2957	1.58651	1.51308	1.29838	-.0016413
630.00	45.1380	1.72725	1.56095	1.31645	-.0016607
632.50	49.1012	1.87148	1.60974	1.33470	-.0016810
635.00	53.1875	2.01924	1.65946	1.35314	-.0017019
637.50	57.3993	2.17059	1.71011	1.37176	-.0017237
640.00	61.7389	2.32558	1.76172	1.39056	-.0017462
642.50	66.2087	2.48424	1.81428	1.40954	-.0017695
645.00	70.8111	2.64663	1.86782	1.42871	-.0017935

Propane Isotherm at 240 K

2.50	.1091	.96423	.04207	.00049	-.0000003
3.43	.1479	.95125	.04087	.00068	-.0000007
570.55	.1479	.00573	.75993	.91069	-.0009718
572.50	1.6519	.06377	.78402	.92161	-.0009819
575.00	3.6513	.14033	.81555	.93575	-.0009953
577.50	5.7303	.21928	.84779	.95003	-.0010092
580.00	7.8908	.30065	.88074	.96446	-.0010235
582.50	10.1346	.38448	.91441	.97904	-.0010382
585.00	12.4635	.47081	.94882	.99378	-.0010533
587.50	14.8793	.55968	.98397	1.00866	-.0010689
590.00	17.3839	.65112	1.01986	1.02370	-.0010849
592.50	19.9792	.74517	1.05653	1.03889	-.0011012
595.00	22.6672	.84187	1.09396	1.05424	-.0011180
597.50	25.4497	.94126	1.13217	1.06974	-.0011352
600.00	28.3287	1.04337	1.17118	1.08541	-.0011528
602.50	31.3063	1.14825	1.21098	1.10123	-.0011708
605.00	34.3843	1.25594	1.25160	1.11721	-.0011892
607.50	37.5649	1.36647	1.29304	1.13336	-.0012080
610.00	40.8502	1.47988	1.33530	1.14967	-.0012273
612.50	44.2422	1.59622	1.37841	1.16614	-.0012470
615.00	47.7430	1.71553	1.42237	1.18277	-.0012671
617.50	51.3547	1.83784	1.46719	1.19957	-.0012877
620.00	55.0796	1.96319	1.51288	1.21654	-.0013087
622.50	58.9199	2.09164	1.55945	1.23368	-.0013302
625.00	62.8776	2.22321	1.60691	1.25098	-.0013521
627.50	66.9552	2.35795	1.65527	1.26845	-.0013745
630.00	71.1547	2.49590	1.70454	1.28609	-.0013974

Table 18. (Continued).

Propane Isotherm at 260 K

Density kg/m^3	Pressure MPa	Z	Isotherm Derivative $MPa \cdot m^3/kg$	Isochore Derivative MPa/K	Isochore Curvature MPa/K^2
2.50	.1188	.96925	.04609	.00048	-.0000001
5.00	.2305	.94022	.04322	.00100	-.0000009
6.90	.3106	.91774	.04095	.00143	-.0000023
545.88	.3106	.01161	.58919	.76557	-.0005947
547.50	1.2778	.04761	.60574	.77359	-.0006052
550.00	2.8246	.10476	.63180	.78608	-.0006214
552.50	4.4373	.16383	.65848	.79869	-.0006377
555.00	6.1175	.22485	.68578	.81143	-.0006541
557.50	7.8668	.28784	.71373	.82429	-.0006705
560.00	9.6867	.35285	.74232	.83729	-.0006872
562.50	11.5789	.41990	.77157	.85043	-.0007039
565.00	13.5451	.48903	.80149	.86369	-.0007207
567.50	15.5869	.56027	.83208	.87710	-.0007376
570.00	17.7061	.63365	.86335	.89064	-.0007547
572.50	19.9043	.70921	.89533	.90432	-.0007719
575.00	22.1833	.78697	.92800	.91814	-.0007893
577.50	24.5449	.86698	.96139	.93210	-.0008068
580.00	26.9909	.94927	.99551	.94620	-.0008245
582.50	29.5230	1.03387	1.03036	.96045	-.0008424
585.00	32.1433	1.12082	1.06595	.97484	-.0008605
587.50	34.8534	1.21015	1.10229	.98938	-.0008787
590.00	37.6553	1.30189	1.13940	1.00406	-.0008972
592.50	40.5510	1.39609	1.17727	1.01890	-.0009160
595.00	43.5423	1.49278	1.21593	1.03388	-.0009349
597.50	46.6313	1.59199	1.25538	1.04902	-.0009541
600.00	49.8199	1.69376	1.29563	1.06430	-.0009736
602.50	53.1101	1.79813	1.33668	1.07974	-.0009933
605.00	56.5040	1.90513	1.37856	1.09534	-.0010133
607.50	60.0036	2.01480	1.42126	1.11109	-.0010335
610.00	63.6110	2.12718	1.46481	1.12699	-.0010541
612.50	67.3284	2.24230	1.50920	1.14305	-.0010749
615.00	71.1577	2.36020	1.55445	1.15927	-.0010961

Table 18. (Continued).

Propane Isotherm at 280 K

Density kg/m^3	Pressure MPa	Z	Isotherm Derivative MPa•m^3/kg	Isochore Derivative MPa/K	Isochore Curvature MPa/K^2
2.50	.1284	.97312	.05006	.00048	-.0000001
5.00	.2504	.94841	.04747	.00099	-.0000005
7.50	.3657	.92367	.04483	.00153	-.0000014
10.00	.4745	.89871	.04215	.00211	-.0000032
12.50	.5764	.87345	.03940	.00274	-.0000065
12.64	.5818	.87206	.03925	.00277	-.0000068
519.05	.5818	.02123	.43728	.63300	-.0002899
520.00	1.0001	.03643	.44501	.63709	-.0002971
522.50	2.1385	.07752	.46575	.64795	-.0003157
525.00	3.3293	.12012	.48703	.65891	-.0003340
527.50	4.5741	.16425	.50883	.66999	-.0003521
530.00	5.8740	.20993	.53119	.68118	-.0003699
532.50	7.2305	.25720	.55410	.69248	-.0003875
535.00	8.6449	.30607	.57758	.70390	-.0004050
537.50	10.1188	.35659	.60163	.71543	-.0004223
540.00	11.6536	.40877	.62626	.72709	-.0004395
542.50	13.2506	.46265	.65149	.73886	-.0004567
545.00	14.9115	.51825	.67732	.75076	-.0004738
547.50	16.6378	.57561	.70377	.76278	-.0004908
550.00	18.4309	.63475	.73083	.77493	-.0005078
552.50	20.2925	.69570	.75853	.78720	-.0005248
555.00	22.2241	.75849	.78686	.79960	-.0005418
557.50	24.2273	.82315	.81585	.81213	-.0005588
560.00	26.3039	.88971	.84549	.82479	-.0005759
562.50	28.4553	.95820	.87580	.83758	-.0005930
565.00	30.6834	1.02866	.90679	.85050	-.0006102
567.50	32.9899	1.10111	.93847	.86356	-.0006275
570.00	35.3763	1.17559	.97084	.87675	-.0006448
572.50	37.8446	1.25212	1.00391	.89008	-.0006623
575.00	40.3965	1.33074	1.03770	.90355	-.0006798
577.50	43.0338	1.41148	1.07222	.91715	-.0006975
580.00	45.7582	1.49437	1.10747	.93090	-.0007153
582.50	48.5717	1.57944	1.14346	.94478	-.0007333
585.00	51.4761	1.66674	1.18020	.95881	-.0007514
587.50	54.4733	1.75628	1.21771	.97298	-.0007696
590.00	57.5653	1.84810	1.25598	.98730	-.0007881
592.50	60.7539	1.94224	1.29503	1.00175	-.0008067
595.00	64.0411	2.03873	1.33488	1.01636	-.0008255
597.50	67.4289	2.13759	1.37552	1.03111	-.0008445
600.00	70.9194	2.23888	1.41697	1.04601	-.0008637

Table 18. (Continued).

Propane Isotherm at 298.15 K

Density kg/m^3	Pressure MPa	Z	Isotherm Derivative MPa•m^3/kg	Isochore Derivative MPa/K	Isochore Curvature MPa/K^2
5.00	.2682	.95428	.05123	.00098	-.0000003
10.00	.5123	.91132	.04640	.00207	-.0000018
15.00	.7321	.86823	.04152	.00328	-.0000056
20.00	.9274	.82489	.03659	.00466	-.0000143
20.69	.9523	.81893	.03591	.00487	-.0000162
492.06	.9523	.03443	.31561	.52153	-.0000534
495.00	1.9078	.06856	.33459	.53258	-.0000785
500.00	3.6643	.13036	.36830	.55167	-.0001188
505.00	5.5938	.19704	.40385	.57114	-.0001568
510.00	7.7059	.26878	.44131	.59103	-.0001930
515.00	10.0102	.34576	.48075	.61134	-.0002279
520.00	12.5169	.42819	.52225	.63208	-.0002618
525.00	15.2363	.51625	.56587	.65326	-.0002950
530.00	18.1792	.61015	.61169	.67490	-.0003277
535.00	21.3570	.71011	.65978	.69701	-.0003600
540.00	24.7809	.81633	.71020	.71959	-.0003921
545.00	28.4630	.92902	.76304	.74266	-.0004241
550.00	32.4155	1.04841	.81837	.76623	-.0004561
555.00	36.6509	1.17471	.87625	.79030	-.0004883
560.00	41.1823	1.30817	.93676	.81488	-.0005206
565.00	46.0231	1.44900	.99998	.83999	-.0005532
570.00	51.1868	1.59743	1.06598	.86562	-.0005862
575.00	56.6876	1.75372	1.13483	.89179	-.0006196
580.00	62.5399	1.91809	1.20660	.91851	-.0006535
585.00	68.7586	2.09080	1.28138	.94579	-.0006879

Propane Isotherm at 300 K

5.00	.2700	.95482	.05161	.00098	-.0000003
10.00	.5161	.91245	.04682	.00206	-.0000017
15.00	.7382	.87002	.04200	.00327	-.0000053
20.00	.9361	.82741	.03714	.00464	-.0000131
21.70	.9979	.81284	.03546	.00515	-.0000177
489.13	.9979	.03607	.30407	.51057	-.0000307
490.00	1.2660	.04567	.30950	.51379	-.0000384
495.00	2.8929	.10332	.34157	.53243	-.0000804
500.00	4.6846	.16564	.37542	.55144	-.0001196
505.00	6.6502	.23281	.41112	.57085	-.0001567
510.00	8.7990	.30501	.44873	.59067	-.0001922
515.00	11.1408	.38244	.48833	.61092	-.0002266
520.00	13.6858	.46529	.52999	.63159	-.0002600
525.00	16.4443	.55374	.57378	.65272	-.0002928
530.00	19.4272	.64802	.61977	.67430	-.0003251
535.00	22.6458	.74832	.66803	.69635	-.0003571
540.00	26.1115	.85485	.71864	.71887	-.0003888
545.00	29.8362	.96783	.77166	.74188	-.0004206
550.00	33.8322	1.08748	.82717	.76539	-.0004523
555.00	38.1121	1.21402	.88524	.78940	-.0004842
560.00	42.6890	1.34766	.94594	.81392	-.0005163
565.00	47.5761	1.48865	1.00936	.83897	-.0005487
570.00	52.7872	1.63722	1.07555	.86454	-.0005815
575.00	58.3364	1.79360	1.14460	.89065	-.0006147
580.00	64.2381	1.95802	1.21658	.91731	-.0006484
585.00	70.5072	2.13074	1.29156	.94452	-.0006826

Table 18. (Continued).

Propane Isotherm at 320 K

Density kg/m^3	Pressure MPa	Z	Isotherm Derivative MPa•m^3/kg	Isochore Derivative MPa/K	Isochore Curvature MPa/K^2
5.00	.2896	.96001	.05569	.00098	-.0000002
10.00	.5571	.92329	.05130	.00203	-.0000011
15.00	.8027	.88695	.04696	.00319	-.0000031
20.00	1.0268	.85089	.04267	.00445	-.0000067
25.00	1.2295	.81513	.03844	.00584	-.0000126
30.00	1.4112	.77966	.03425	.00737	-.0000224
35.00	1.5721	.74445	.03009	.00907	-.0000395
35.90	1.5988	.73814	.02934	.00939	-.0000439
454.43	1.5988	.05831	.18978	.39604	.0002105
455.00	1.7071	.06218	.19226	.39777	.0002042
460.00	2.7243	.09816	.21485	.41316	.0001530
465.00	3.8580	.13751	.23883	.42886	.0001077
470.00	5.1151	.18038	.26427	.44489	.0000666
475.00	6.5032	.22691	.29122	.46128	.0000288
480.00	8.0299	.27726	.31974	.47803	-.0000067
485.00	9.7033	.33159	.34990	.49516	-.0000404
490.00	11.5317	.39005	.38177	.51267	-.0000726
495.00	13.5239	.45282	.41540	.53059	-.0001038
500.00	15.6888	.52005	.45086	.54892	-.0001341
505.00	18.0357	.59192	.48822	.56767	-.0001637
510.00	20.5742	.66862	.52753	.58684	-.0001929
515.00	23.3144	.75031	.56888	.60646	-.0002217
520.00	26.2665	.83719	.61233	.62651	-.0002503
525.00	29.4413	.92944	.65794	.64703	-.0002787
530.00	32.8496	1.02726	.70579	.66800	-.0003071
535.00	36.5030	1.13084	.75594	.68945	-.0003355
540.00	40.4130	1.24037	.80847	.71137	-.0003641
545.00	44.5918	1.35608	.86346	.73377	-.0003927
550.00	49.0518	1.47815	.92096	.75667	-.0004216
555.00	53.8057	1.60680	.98106	.78007	-.0004508
560.00	58.8668	1.74224	1.04382	.80398	-.0004804
565.00	64.2485	1.88469	1.10932	.82840	-.0005102
570.00	69.9647	2.03437	1.17763	.85335	-.0005406

Table 18. (Continued).

Propane Isotherm at 340 K

Density kg/m^3	Pressure MPa	Z	Isotherm Derivative $MPa \cdot m^3/kg$	Isochore Derivative MPa/K	Isochore Curvature MPa/K^2
5.00	.3091	.96433	.05972	.00097	-.0000002
10.00	.5976	.93214	.05567	.00202	-.0000008
15.00	.8660	.90055	.05170	.00314	-.0000021
20.00	1.1147	.86943	.04781	.00435	-.0000042
25.00	1.3443	.83876	.04402	.00565	-.0000075
30.00	1.5550	.80856	.04031	.00704	-.0000121
35.00	1.7475	.77882	.03668	.00854	-.0000184
40.00	1.9220	.74953	.03315	.01014	-.0000270
45.00	2.0791	.72069	.02969	.01185	-.0000390
50.00	2.2190	.69230	.02632	.01368	-.0000559
55.00	2.3424	.66434	.02302	.01566	-.0000814
59.00	2.4293	.64224	.02042	.01736	-.0001134
411.22	2.4293	.09215	.09518	.28646	.0004850
415.00	2.8079	.10554	.10536	.29545	.0004259
420.00	3.3701	.12517	.11969	.30755	.0003612
425.00	4.0065	.14705	.13504	.31991	.0003072
430.00	4.7223	.17131	.15147	.33254	.0002606
435.00	5.5230	.19805	.16901	.34548	.0002193
440.00	6.4144	.22741	.18774	.35873	.0001819
445.00	7.4024	.25948	.20769	.37232	.0001475
450.00	8.4934	.29442	.22892	.38624	.0001154
455.00	9.6939	.33234	.25148	.40051	.0000851
460.00	11.0106	.37338	.27544	.41515	.0000562
465.00	12.4506	.41767	.30083	.43015	.0000284
470.00	14.0214	.46536	.32773	.44552	.0000014
475.00	15.7305	.51659	.35618	.46128	-.0000248
480.00	17.5859	.57150	.38625	.47743	-.0000506
485.00	19.5958	.63026	.41799	.49397	-.0000759
490.00	21.7687	.69300	.45147	.51093	-.0001010
495.00	24.1134	.75989	.48675	.52829	-.0001258
500.00	26.6392	.83109	.52388	.54607	-.0001505
505.00	29.3555	.90676	.56295	.56428	-.0001751
510.00	32.2721	.98708	.60401	.58292	-.0001997
515.00	35.3990	1.07221	.64713	.60200	-.0002244
520.00	38.7469	1.16233	.69238	.62153	-.0002492
525.00	42.3265	1.25762	.73982	.64151	-.0002741
530.00	46.1489	1.35826	.78953	.66195	-.0002992
535.00	50.2256	1.46443	.84157	.68286	-.0003245
540.00	54.5686	1.57632	.89602	.70424	-.0003500
545.00	59.1900	1.69413	.95295	.72610	-.0003759
550.00	64.1024	1.81806	1.01243	.74845	-.0004021
555.00	69.3186	1.94829	1.07453	.77129	-.0004287

Table 18. (Continued).

Propane Isotherm at 350 K

Density kg/m^3	Pressure MPa	Z	Isotherm Derivative MPa•m^3/kg	Isochore Derivative MPa/K	Isochore Curvature MPa/K^2
5.00	.3188	.96623	.06173	.00097	-.0000001
10.00	.6177	.93599	.05783	.00201	-.0000007
15.00	.8973	.90643	.05402	.00312	-.0000018
20.00	1.1580	.87738	.05030	.00431	-.0000035
25.00	1.4004	.84882	.04667	.00558	-.0000061
30.00	1.6249	.82075	.04314	.00694	-.0000096
35.00	1.8320	.79316	.03971	.00838	-.0000142
40.00	2.0221	.76605	.03636	.00990	-.0000202
45.00	2.1958	.73941	.03311	.01152	-.0000279
50.00	2.3534	.71324	.02996	.01322	-.0000377
55.00	2.4955	.68755	.02689	.01502	-.0000503
60.00	2.6225	.66233	.02393	.01692	-.0000669
65.00	2.7350	.63761	.02107	.01892	-.0000892
70.00	2.8334	.61337	.01831	.02104	-.0001210
75.00	2.9183	.58963	.01565	.02330	-.0001701
76.97	2.9482	.58039	.01462	.02425	-.0001981
383.34	2.9482	.11654	.05595	.23168	.0006864
385.00	3.0435	.11979	.05895	.23498	.0006467
390.00	3.3618	.13062	.06849	.24504	.0005488
395.00	3.7296	.14308	.07880	.25530	.0004735
400.00	4.1511	.15726	.08994	.26579	.0004125
405.00	4.6305	.17325	.10195	.27654	.0003614
410.00	5.1721	.19116	.11487	.28757	.0003171
415.00	5.7808	.21108	.12876	.29889	.0002780
420.00	6.4614	.23312	.14366	.31051	.0002426
425.00	7.2191	.25740	.15961	.32245	.0002101
430.00	8.0593	.28401	.17666	.33471	.0001799
435.00	8.9876	.31308	.19485	.34731	.0001514
440.00	10.0098	.34473	.21425	.36025	.0001243
445.00	11.1321	.37907	.23489	.37353	.0000983
450.00	12.3608	.41624	.25682	.38717	.0000732
455.00	13.7026	.45635	.28011	.40118	.0000487
460.00	15.1643	.49954	.30480	.41555	.0000248
465.00	16.7530	.54594	.33095	.43029	.0000014
470.00	18.4763	.59569	.35861	.44542	-.0000218
475.00	20.3417	.64893	.38784	.46093	-.0000447
480.00	22.3573	.70581	.41869	.47684	-.0000674
485.00	24.5315	.76646	.45124	.49314	-.0000901
490.00	26.8727	.83104	.48554	.50986	-.0001126
495.00	29.3899	.89970	.52165	.52698	-.0001352
500.00	32.0923	.97261	.55963	.54453	-.0001579
505.00	34.9894	1.04991	.59956	.56250	-.0001806
510.00	38.0912	1.13178	.64149	.58090	-.0002034
515.00	41.4078	1.21838	.68549	.59975	-.0002264
520.00	44.9497	1.30988	.73164	.61903	-.0002496
525.00	48.7279	1.40645	.77999	.63877	-.0002730
530.00	52.7534	1.50828	.83063	.65897	-.0002967
535.00	57.0380	1.61554	.88361	.67963	-.0003207
540.00	61.5936	1.72842	.93901	.70076	-.0003449
545.00	66.4323	1.84710	.99690	.72237	-.0003696
550.00	71.5669	1.97177	1.05736	.74447	-.0003946

Table 18. (Continued).

Propane Isotherm at 360 K

Density kg/m^3	Pressure MPa	Z	Isotherm Derivative $MPa \cdot m^3/kg$	Isochore Derivative MPa/K	Isochore Curvature MPa/K^2
10.00	.6377	.93953	.05997	.00200	-.0000006
20.00	1.2009	.88463	.05274	.00428	-.0000030
30.00	1.6938	.83179	.04590	.00685	-.0000078
40.00	2.1202	.78090	.03945	.00972	-.0000159
50.00	2.4840	.73189	.03336	.01290	-.0000281
60.00	2.7888	.68476	.02767	.01637	-.0000458
70.00	3.0388	.63956	.02241	.02012	-.0000714
80.00	3.2385	.59639	.01761	.02416	-.0001097
90.00	3.3928	.55537	.01331	.02849	-.0001722
100.00	3.5064	.51657	.00949	.03319	-.0002952
105.05	3.5498	.49781	.00773	.03579	-.0004225
345.52	3.5498	.15136	.02308	.17379	.0010800
350.00	3.6630	.15418	.02749	.18069	.0008926
360.00	3.9928	.16340	.03884	.19646	.0006480
370.00	4.4477	.17709	.05254	.21305	.0005062
380.00	5.0525	.19588	.06888	.23062	.0004087
390.00	5.8352	.22043	.08818	.24930	.0003341
400.00	6.8269	.25144	.11073	.26914	.0002727
410.00	8.0618	.28968	.13687	.29021	.0002192
420.00	9.5773	.33594	.16692	.31255	.0001708
430.00	11.4144	.39107	.20125	.33623	.0001257
440.00	13.6178	.45596	.24022	.36127	.0000826
450.00	16.2357	.53153	.28423	.38774	.0000409
460.00	19.3205	.61878	.33369	.41566	-.0000002
470.00	22.9290	.71872	.38902	.44510	-.0000409
480.00	27.1221	.83244	.45069	.47609	-.0000817
490.00	31.9654	.96107	.51916	.50868	-.0001228
500.00	37.5296	1.10580	.59493	.54292	-.0001645
510.00	43.8900	1.26785	.67851	.57885	-.0002069
520.00	51.1276	1.44852	.77043	.61653	-.0002502
530.00	59.3283	1.64914	.87125	.65601	-.0002947
540.00	68.5840	1.87112	.98151	.69734	-.0003405

Table 18. (Continued).

Propane Isotherm at 365 K

Density kg/m^3	Pressure MPa	Z	Isotherm Derivative MPa•m^3/kg	Isochore Derivative MPa/K	Isochore Curvature MPa/K^2
10.00	.6477	.94120	.06103	.00200	-.0000005
20.00	1.2223	.88802	.05394	.00426	-.0000027
30.00	1.7280	.83694	.04726	.00681	-.0000071
40.00	2.1687	.78780	.04095	.00965	-.0000143
50.00	2.5481	.74051	.03501	.01277	-.0000248
60.00	2.8701	.69506	.02945	.01615	-.0000394
70.00	3.1386	.65150	.02432	.01979	-.0000592
80.00	3.3581	.60993	.01965	.02367	-.0000861
90.00	3.5333	.57045	.01548	.02776	-.0001232
100.00	3.6693	.53317	.01180	.03207	-.0001769
110.00	3.7711	.49814	.00864	.03658	-.0002620
120.00	3.8436	.46541	.00595	.04134	-.0004220
129.01	3.8877	.43786	.00388	.04602	-.0007955
316.85	3.8877	.17829	.00970	.14060	.0016214
320.00	3.9208	.17804	.01135	.14449	.0013495
330.00	4.0638	.17894	.01751	.15699	.0009013
340.00	4.2763	.18276	.02528	.17013	.0006853
350.00	4.5758	.18997	.03494	.18416	.0005525
360.00	4.9823	.20110	.04674	.19918	.0004589
370.00	5.5187	.21673	.06095	.21525	.0003865
380.00	6.2103	.23747	.07785	.23245	.0003268
390.00	7.0856	.26399	.09773	.25081	.0002750
400.00	8.1758	.29700	.12089	.27038	.0002283
410.00	9.5154	.33723	.14766	.29121	.0001851
420.00	11.1421	.38548	.17837	.31334	.0001441
430.00	13.0971	.44258	.21337	.33680	.0001045
440.00	15.4251	.50940	.25304	.36164	.0000657
450.00	18.1748	.58687	.29777	.38791	.0000274
460.00	21.3988	.67595	.34797	.41564	-.0000108
470.00	25.1539	.77766	.40407	.44487	-.0000492
480.00	29.5015	.89307	.46653	.47566	-.0000880
490.00	34.5073	1.02328	.53581	.50805	-.0001273
500.00	40.2421	1.16948	.61242	.54209	-.0001674
510.00	46.7817	1.33287	.69686	.57781	-.0002084
520.00	54.2071	1.51473	.78967	.61528	-.0002505
530.00	62.6047	1.71638	.89139	.65454	-.0002938

Table 18. (Continued).

Propane Isotherm at 369.85 K

Density kg/m^3	Pressure MPa	Z	Isotherm Derivative $MPa \cdot m^3/kg$	Isochore Derivative MPa/K	Isochore Curvature MPa/K^2
10.00	.6574	.94275	.06206	.00200	-.0000005
20.00	1.2429	.89118	.05511	.00425	-.0000025
30.00	1.7609	.84172	.04856	.00678	-.0000066
40.00	2.2153	.79418	.04238	.00958	-.0000130
50.00	2.6098	.74848	.03657	.01265	-.0000222
60.00	2.9480	.70457	.03114	.01598	-.0000346
70.00	3.2339	.66249	.02612	.01953	-.0000507
80.00	3.4719	.62234	.02155	.02329	-.0000712
90.00	3.6666	.58421	.01747	.02724	-.0000970
100.00	3.8229	.54821	.01388	.03134	-.0001294
110.00	3.9458	.51439	.01078	.03556	-.0001703
120.00	4.0402	.48281	.00817	.03989	-.0002228
130.00	4.1107	.45345	.00601	.04428	-.0002913
140.00	4.1617	.42628	.00425	.04872	-.0003837
150.00	4.1971	.40124	.00287	.05317	-.0005132
160.00	4.2203	.37824	.00182	.05761	-.0007047
170.00	4.2344	.35719	.00106	.06200	-.0010085
180.00	4.2422	.33796	.00054	.06631	-.0015403
190.00	4.2458	.32045	.00022	.07048	-.0026162
200.00	4.2472	.30452	.00006	.07445	-.0053878
210.00	4.2474	.29004	.00001	.07809	-.0174253
220.00	4.2475	.27686	.00000	.08104	-4.0792227
230.00	4.2475	.26482	.00001	.08395	.0196702
240.00	4.2479	.25381	.00009	.08798	.0064395
250.00	4.2497	.24376	.00031	.09279	.0034335
260.00	4.2550	.23468	.00079	.09834	.0022257
270.00	4.2668	.22661	.00165	.10466	.0016038
280.00	4.2896	.21969	.00301	.11176	.0012345
290.00	4.3292	.21407	.00504	.11968	.0009934
300.00	4.3931	.20999	.00790	.12846	.0008247
310.00	4.4907	.20773	.01180	.13812	.0007000
320.00	4.6332	.20762	.01692	.14872	.0006035
330.00	4.8339	.21006	.02349	.16028	.0005259
340.00	5.1085	.21546	.03173	.17284	.0004612
350.00	5.4748	.22431	.04188	.18645	.0004057
360.00	5.9533	.23714	.05420	.20113	.0003565
370.00	6.5669	.25451	.06895	.21694	.0003119
380.00	7.3413	.27704	.08641	.23389	.0002706
390.00	8.3051	.30537	.10687	.25203	.0002316
400.00	9.4897	.34021	.13063	.27141	.0001942
410.00	10.9298	.38228	.15802	.29204	.0001578
420.00	12.6634	.43236	.18937	.31398	.0001220
430.00	14.7317	.49129	.22504	.33726	.0000866
440.00	17.1798	.55990	.26539	.36193	.0000512
450.00	20.0564	.63913	.31082	.38801	.0000157
460.00	23.4145	.72992	.36174	.41556	-.0000202
470.00	27.3110	.83328	.41858	.44462	-.0000566
480.00	31.8074	.95025	.48180	.47522	-.0000936
490.00	36.9698	1.08193	.55187	.50742	-.0001314
500.00	42.8692	1.22949	.62928	.54127	-.0001701
510.00	49.5816	1.39412	.71455	.57680	-.0002099
520.00	57.1883	1.57708	.80822	.61407	-.0002508
530.00	65.7758	1.77967	.91082	.65312	-.0002929

Table 18. (Continued).

Propane Isotherm at 375 K

Density kg/m^3	Pressure MPa	Z	Isotherm Derivative $MPa \cdot m^3/kg$	Isochore Derivative MPa/K	Isochore Curvature MPa/K^2
10.00	.6677	.94434	.06315	.00199	-.0000005
20.00	1.2648	.89439	.05633	.00424	-.0000023
30.00	1.7957	.84658	.04992	.00675	-.0000060
40.00	2.2645	.80067	.04389	.00952	-.0000118
50.00	2.6746	.75655	.03820	.01254	-.0000199
60.00	3.0298	.71418	.03289	.01581	-.0000306
70.00	3.3339	.67359	.02799	.01929	-.0000439
80.00	3.5910	.63484	.02351	.02295	-.0000601
90.00	3.8057	.59805	.01951	.02679	-.0000792
100.00	3.9827	.56328	.01598	.03075	-.0001012
110.00	4.1270	.53062	.01294	.03481	-.0001258
120.00	4.2431	.50008	.01036	.03895	-.0001523
130.00	4.3356	.47168	.00821	.04312	-.0001797
140.00	4.4086	.44537	.00646	.04731	-.0002057
150.00	4.4660	.42108	.00507	.05148	-.0002272
160.00	4.5110	.39874	.00399	.05563	-.0002400
170.00	4.5466	.37825	.00318	.05975	-.0002397
180.00	4.5755	.35951	.00263	.06385	-.0002227
190.00	4.5998	.34240	.00228	.06796	-.0001881
200.00	4.6217	.32683	.00212	.07214	-.0001377
210.00	4.6428	.31268	.00211	.07643	-.0000752
220.00	4.6642	.29985	.00218	.08090	-.0000045
230.00	4.6866	.28819	.00232	.08560	.0000722
240.00	4.7109	.27761	.00257	.09059	.0001521
250.00	4.7388	.26809	.00304	.09593	.0002302
260.00	4.7729	.25963	.00383	.10174	.0003000
270.00	4.8167	.25231	.00503	.10809	.0003554
280.00	4.8753	.24626	.00679	.11510	.0003931
290.00	4.9549	.24164	.00924	.12284	.0004126
300.00	5.0631	.23869	.01256	.13140	.0004163
310.00	5.2096	.23768	.01693	.14083	.0004080
320.00	5.4059	.23893	.02255	.15119	.0003911
330.00	5.6655	.24281	.02963	.16253	.0003686
340.00	6.0041	.24976	.03840	.17488	.0003427
350.00	6.4400	.26023	.04910	.18829	.0003148
360.00	6.9935	.27475	.06199	.20278	.0002857
370.00	7.6880	.29387	.07733	.21839	.0002559
380.00	8.5492	.31819	.09540	.23516	.0002258
390.00	9.6060	.34835	.11648	.25313	.0001953
400.00	10.8899	.38504	.14089	.27233	.0001645
410.00	12.4358	.42898	.16894	.29279	.0001334
420.00	14.2819	.48093	.20097	.31456	.0001019
430.00	16.4697	.54170	.23734	.33767	.0000700
440.00	19.0443	.61215	.27841	.36215	.0000375
450.00	22.0549	.69316	.32458	.38806	.0000045
460.00	25.5543	.78569	.37627	.41543	-.0000293
470.00	29.6000	.89071	.43389	.44431	-.0000638
480.00	34.2535	1.00927	.49792	.47473	-.0000992
490.00	39.5813	1.14245	.56882	.50674	-.0001355
500.00	45.6545	1.29139	.64709	.54038	-.0001728
510.00	52.5494	1.45727	.73324	.57572	-.0002113
520.00	60.3474	1.64134	.82781	.61278	-.0002510
530.00	69.1355	1.84488	.93134	.65161	-.0002920

Table 18. (Continued).

Propane Isotherm at 380 K

Density kg/m^3	Pressure MPa	Z	Isotherm Derivative MPa•m^3/kg	Isochore Derivative MPa/K	Isochore Curvature MPa/K^2
10.00	.6777	.94583	.06421	.00199	-.0000004
20.00	1.2859	.89739	.05752	.00423	-.0000022
30.00	1.8294	.85109	.05124	.00672	-.0000056
40.00	2.3119	.80669	.04533	.00946	-.0000108
50.00	2.7371	.76404	.03977	.01245	-.0000180
60.00	3.1085	.72308	.03457	.01566	-.0000273
70.00	3.4298	.68384	.02976	.01908	-.0000387
80.00	3.7050	.64639	.02537	.02268	-.0000520
90.00	3.9387	.61080	.02144	.02642	-.0000671
100.00	4.1353	.57716	.01797	.03029	-.0000835
110.00	4.2996	.54554	.01496	.03425	-.0001006
120.00	4.4361	.51595	.01241	.03828	-.0001175
130.00	4.5492	.48840	.01028	.04235	-.0001329
140.00	4.6429	.46286	.00853	.04645	-.0001452
150.00	4.7209	.43927	.00713	.05056	-.0001527
160.00	4.7866	.41754	.00605	.05468	-.0001536
170.00	4.8428	.39760	.00525	.05882	-.0001469
180.00	4.8924	.37935	.00471	.06300	-.0001318
190.00	4.9377	.36271	.00440	.06726	-.0001088
200.00	4.9810	.34760	.00429	.07163	-.0000788
210.00	5.0242	.33392	.00436	.07615	-.0000434
220.00	5.0686	.32156	.00455	.08088	-.0000037
230.00	5.1154	.31041	.00481	.08586	.0000393
240.00	5.1654	.30039	.00523	.09114	.0000846
250.00	5.2208	.29147	.00590	.09679	.0001303
260.00	5.2846	.28368	.00693	.10286	.0001742
270.00	5.3609	.27712	.00842	.10945	.0002136
280.00	5.4550	.27191	.01051	.11664	.0002462
290.00	5.5735	.26824	.01333	.12450	.0002706
300.00	5.7246	.26633	.01706	.13311	.0002860
310.00	5.9183	.26646	.02187	.14255	.0002929
320.00	6.1663	.26895	.02795	.15288	.0002920
330.00	6.4824	.27416	.03553	.16415	.0002848
340.00	6.8825	.28253	.04481	.17641	.0002725
350.00	7.3851	.29449	.05604	.18970	.0002563
360.00	8.0107	.31057	.06948	.20408	.0002369
370.00	8.7829	.33131	.08539	.21956	.0002152
380.00	9.7277	.35729	.10404	.23620	.0001917
390.00	10.8739	.38915	.12573	.25403	.0001667
400.00	12.2535	.42755	.15076	.27309	.0001405
410.00	13.9014	.47322	.17945	.29341	.0001132
420.00	15.8559	.52691	.21215	.31502	.0000849
430.00	18.1588	.58940	.24919	.33798	.0000557
440.00	20.8555	.66155	.29097	.36231	.0000256
450.00	23.9952	.74422	.33786	.38806	-.0000054
460.00	27.6311	.83836	.39028	.41527	-.0000373
470.00	31.8207	.94494	.44867	.44397	-.0000702
480.00	36.6259	1.06497	.51348	.47422	-.0001041
490.00	42.1133	1.19954	.58519	.50605	-.0001391
500.00	48.3542	1.34976	.66428	.53951	-.0001752
510.00	55.4253	1.51680	.75129	.57466	-.0002125
520.00	63.4081	1.70190	.84673	.61152	-.0002511

Table 18. (Continued).

Propane Isotherm at 390 K

Density kg/m3	Pressure MPa	Z	Isotherm Derivative MPa·m3/kg	Isochore Derivative MPa/K	Isochore Curvature MPa/K2
20.00	1.3281	.90305	.05987	.00421	-.0000019
40.00	2.4060	.81800	.04817	.00936	-.0000091
60.00	3.2638	.73975	.03784	.01542	-.0000224
80.00	3.9294	.66795	.02898	.02222	-.0000407
100.00	4.4344	.60304	.02182	.02957	-.0000617
120.00	4.8137	.54552	.01640	.03731	-.0000809
140.00	5.1012	.49551	.01260	.04530	-.0000928
160.00	5.3270	.45277	.01020	.05351	-.0000920
180.00	5.5171	.41682	.00900	.06202	-.0000759
200.00	5.6941	.38717	.00887	.07104	-.0000454
220.00	5.8773	.36330	.00956	.08084	-.0000042
240.00	6.0802	.34452	.01087	.09175	.0000441
260.00	6.3202	.33057	.01342	.10413	.0000950
280.00	6.6314	.32208	.01814	.11848	.0001409
300.00	7.0678	.32038	.02614	.13533	.0001743
320.00	7.7077	.32755	.03874	.15523	.0001902
340.00	8.6586	.34632	.05753	.17867	.0001882
360.00	10.0621	.38010	.08432	.20609	.0001707
380.00	12.0984	.43297	.12116	.23785	.0001412
400.00	14.9907	.50965	.17032	.27429	.0001025
420.00	19.0099	.61552	.23429	.31573	.0000568
440.00	24.4795	.75659	.31585	.36246	.0000053
460.00	31.7816	.93957	.41807	.41482	-.0000513
480.00	41.3627	1.17187	.54434	.47313	-.0001128
500.00	53.7405	1.46165	.69840	.53774	-.0001794
520.00	69.5108	1.81785	.88428	.60901	-.0002512

Propane Isotherm at 400 K

20.00	1.3701	.90830	.06220	.00419	-.0000017
40.00	2.4992	.82844	.05096	.00928	-.0000079
60.00	3.4169	.75509	.04103	.01521	-.0000187
80.00	4.1497	.68776	.03249	.02185	-.0000331
100.00	4.7273	.62680	.02556	.02903	-.0000485
120.00	5.1832	.57270	.02030	.03661	-.0000614
140.00	5.5500	.52563	.01663	.04451	-.0000683
160.00	5.8580	.48545	.01438	.05273	-.0000663
180.00	6.1339	.45183	.01341	.06138	-.0000543
200.00	6.4024	.42445	.01363	.07065	-.0000332
220.00	6.6855	.40293	.01481	.08080	-.0000051
240.00	6.9995	.38670	.01676	.09210	.0000278
260.00	7.3657	.37563	.02017	.10490	.0000628
280.00	7.8224	.37042	.02599	.11964	.0000956
300.00	8.4288	.37253	.03534	.13678	.0001213
320.00	9.2684	.38403	.04956	.15683	.0001360
340.00	10.4538	.40767	.07019	.18028	.0001378
360.00	12.1307	.44679	.09904	.20756	.0001270
380.00	14.4833	.50536	.13811	.23907	.0001050
400.00	17.7382	.58798	.18966	.27517	.0000736
420.00	22.1696	.69988	.25619	.31618	.0000344
440.00	28.1041	.84690	.34047	.36243	-.0000114
460.00	35.9271	1.03557	.44557	.41425	-.0000631
480.00	46.0882	1.27310	.57489	.47197	-.0001202
500.00	59.1089	1.56747	.73217	.53593	-.0001828

Table 18. (Continued).

Propane Isotherm at 420 K

Density kg/m^3	Pressure MPa	Z	Isotherm Derivative $MPa \cdot m^3/kg$	Isochore Derivative MPa/K	Isochore Curvature MPa/K^2
20.00	1.4535	.91774	.06680	.00416	-.0000013
40.00	2.6834	.84712	.05641	.00914	-.0000060
60.00	3.7178	.78245	.04723	.01489	-.0000138
80.00	4.5808	.72306	.03929	.02129	-.0000235
100.00	5.2994	.66919	.03283	.02823	-.0000332
120.00	5.9047	.62136	.02796	.03561	-.0000407
140.00	6.4284	.57983	.02467	.04341	-.0000442
160.00	6.9013	.54467	.02286	.05168	-.0000425
180.00	7.3522	.51579	.02248	.06052	-.0000353
200.00	7.8097	.49309	.02349	.07011	-.0000231
220.00	8.3002	.47642	.02573	.08067	-.0000070
240.00	8.8458	.46543	.02904	.09248	.0000120
260.00	9.4739	.46013	.03415	.10581	.0000321
280.00	10.2307	.46139	.04210	.12105	.0000514
300.00	11.1843	.47078	.05404	.13860	.0000671
320.00	12.4276	.49042	.07131	.15889	.0000768
340.00	14.0824	.52303	.09545	.18239	.0000787
360.00	16.3032	.57187	.12823	.20950	.0000719
380.00	19.2822	.64076	.17161	.24065	.0000564
400.00	23.2533	.73409	.22783	.27620	.0000326
420.00	28.4976	.85681	.29937	.31651	.0000012
440.00	35.3486	1.01448	.38899	.36193	-.0000370
460.00	44.1981	1.21331	.49976	.41279	-.0000814
480.00	55.5027	1.46015	.63510	.46944	-.0001317
500.00	69.7906	1.76259	.79874	.53222	-.0001879

Propane Isotherm at 450 K

20.00	1.5778	.92977	.07360	.00413	-.0000010
40.00	2.9552	.87074	.06435	.00899	-.0000042
60.00	4.1590	.81697	.05620	.01455	-.0000094
80.00	5.2103	.76761	.04913	.02072	-.0000156
100.00	6.1334	.72288	.04342	.02743	-.0000216
120.00	6.9573	.68332	.03924	.03464	-.0000261
140.00	7.7138	.64939	.03668	.04236	-.0000282
160.00	8.4352	.62135	.03573	.05066	-.0000275
180.00	9.1539	.59937	.03643	.05965	-.0000238
200.00	9.9036	.58361	.03881	.06951	-.0000175
220.00	10.7170	.57413	.04276	.08043	-.0000091
240.00	11.6234	.57080	.04817	.09265	.0000007
260.00	12.6589	.57383	.05585	.10642	.0000111
280.00	13.8798	.58424	.06690	.12208	.0000209
300.00	15.3655	.60365	.08254	.13996	.0000286
320.00	17.2212	.63427	.10414	.16046	.0000329
340.00	19.5812	.67877	.13325	.18397	.0000324
360.00	22.6127	.74031	.17159	.21090	.0000261
380.00	26.5196	.82252	.22114	.24164	.0000136
400.00	31.5475	.92954	.28407	.27656	-.0000054
420.00	37.9881	1.06601	.36286	.31603	-.0000307
440.00	46.1856	1.23713	.46024	.36041	-.0000622
460.00	56.5421	1.44869	.57930	.41005	-.0000996
480.00	69.5247	1.70710	.72344	.46531	-.0001427

Table 18. (Continued).

Propane Isotherm at 500 K

Density kg/m^3	Pressure MPa	Z	Isotherm Derivative MPa.m^3/kg	Isochore Derivative MPa/K	Isochore Curvature MPa/K^2
20.00	1.7830	.94565	.08473	.00409	-.0000006
40.00	3.4002	.90168	.07719	.00882	-.0000026
60.00	4.8766	.86212	.07059	.01418	-.0000057
80.00	6.2300	.82604	.06493	.02012	-.0000093
100.00	7.4823	.79367	.06054	.02660	-.0000127
120.00	8.6621	.76568	.05771	.03364	-.0000155
140.00	9.8023	.74268	.05661	.04127	-.0000171
160.00	10.9390	.72521	.05738	.04958	-.0000174
180.00	12.1108	.71368	.06015	.05868	-.0000164
200.00	13.3590	.70851	.06504	.06873	-.0000143
220.00	14.7262	.71002	.07200	.07992	-.0000113
240.00	16.2522	.71830	.08100	.09244	-.0000079
260.00	17.9859	.73378	.09296	.10653	-.0000044
280.00	19.9982	.75760	.10906	.12248	-.0000016
300.00	22.3847	.79147	.13061	.14057	-.0000000
320.00	25.2683	.83759	.15902	.16115	-.0000006
340.00	28.8019	.89856	.19588	.18455	-.0000042
360.00	33.1715	.97739	.24294	.21114	-.0000113
380.00	38.6002	1.07749	.30213	.24129	-.0000226
400.00	45.3520	1.20266	.37563	.27535	-.0000384
420.00	53.7371	1.35716	.46589	.31370	-.0000589
440.00	64.1173	1.54571	.57563	.35667	-.0000844

Propane Isotherm at 550 K

20.00	1.9867	.95788	.09569	.00406	-.0000004
40.00	3.8386	.92539	.08968	.00872	-.0000018
60.00	5.5794	.89671	.08453	.01395	-.0000039
80.00	7.2257	.87097	.08027	.01974	-.0000063
100.00	8.7985	.84844	.07726	.02608	-.0000086
120.00	10.3270	.82986	.07589	.03300	-.0000107
140.00	11.8468	.81599	.07643	.04055	-.0000121
160.00	13.3982	.80749	.07909	.04883	-.0000130
180.00	15.0258	.80497	.08408	.05795	-.0000132
200.00	16.7784	.80897	.09161	.06805	-.0000129
220.00	18.7073	.81997	.10168	.07932	-.0000124
240.00	20.8623	.83823	.11431	.09193	-.0000117
260.00	23.3036	.86429	.13052	.10612	-.0000113
280.00	26.1151	.89939	.15155	.12212	-.0000116
300.00	29.4069	.94524	.17878	.14021	-.0000129
320.00	33.3174	1.00400	.21368	.16069	-.0000158
340.00	38.0160	1.07820	.25788	.18387	-.0000209
360.00	43.7061	1.17072	.31314	.21009	-.0000286
380.00	50.6282	1.28476	.38142	.23969	-.0000394
400.00	59.0642	1.42389	.46490	.27301	-.0000537
420.00	69.3419	1.59206	.56602	.31039	-.0000717

Table 18. (Continued).

Propane Isotherm at 600 K

Density kg/m^3	Pressure MPa	Z	Isotherm Derivative MPa•m^3/kg	Isochore Derivative MPa/K	Isochore Curvature MPa/K^2
20.00	2.1893	.96760	.10653	.00404	-.0000003
40.00	4.2724	.94414	.10195	.00864	-.0000013
60.00	6.2725	.92409	.09818	.01378	-.0000028
80.00	8.2055	.90665	.09529	.01947	-.0000046
100.00	10.0927	.89214	.09369	.02571	-.0000064
120.00	11.9648	.88135	.09385	.03254	-.0000081
140.00	13.8605	.87514	.09610	.04002	-.0000095
160.00	15.8246	.87425	.10073	.04825	-.0000106
180.00	17.9076	.87940	.10803	.05734	-.0000114
200.00	20.1653	.89125	.11825	.06743	-.0000121
220.00	22.6576	.91036	.13145	.07869	-.0000128
240.00	25.4434	.93710	.14771	.09130	-.0000135
260.00	28.5936	.97212	.16811	.10546	-.0000147
280.00	32.2042	1.01666	.19397	.12140	-.0000165
300.00	36.3982	1.07246	.22670	.13939	-.0000192
320.00	41.3284	1.14162	.26786	.15969	-.0000233
340.00	47.1796	1.22659	.31908	.18260	-.0000291
360.00	54.1709	1.33011	.38219	.20843	-.0000370
380.00	62.5595	1.45524	.45915	.23749	-.0000474

Propane Isotherm at 650 K

20.00	2.3911	.97549	.11730	.00403	-.0000002
40.00	4.7029	.95934	.11406	.00858	-.0000010
60.00	6.9585	.94630	.11162	.01366	-.0000022
80.00	9.1737	.93566	.11008	.01927	-.0000036
100.00	11.3707	.92779	.10990	.02542	-.0000050
120.00	13.5823	.92353	.11161	.03218	-.0000065
140.00	15.8504	.92379	.11561	.03959	-.0000078
160.00	18.2244	.92938	.12226	.04776	-.0000091
180.00	20.7606	.94109	.13189	.05680	-.0000102
200.00	23.5220	.95963	.14482	.06684	-.0000114
220.00	26.5760	.98566	.16114	.07805	-.0000127
240.00	29.9908	1.01962	.18100	.09060	-.0000143
260.00	33.8473	1.06221	.20554	.10468	-.0000162
280.00	38.2525	1.11471	.23612	.12051	-.0000188
300.00	43.3420	1.17883	.27422	.13834	-.0000223
320.00	49.2819	1.25661	.32143	.15842	-.0000270
340.00	56.2712	1.35042	.37945	.18103	-.0000331
360.00	64.5440	1.46290	.45011	.20646	-.0000409

Table 18. (Continued).

Propane Isotherm at 700 K

Density kg/m^3	Pressure MPa	Z	Isotherm Derivative $MPa \cdot m^3/kg$	Isochore Derivative MPa/K	Isochore Curvature MPa/K^2
20.00	2.5922	.98202	.12800	.00402	-.0000002
40.00	5.1309	.97188	.12604	.00854	-.0000008
60.00	7.6391	.96465	.12490	.01356	-.0000017
80.00	10.1329	.95967	.12468	.01911	-.0000029
100.00	12.6360	.95739	.12592	.02520	-.0000041
120.00	15.1834	.95866	.12920	.03188	-.0000054
140.00	17.8206	.96443	.13497	.03923	-.0000067
160.00	20.6015	.97556	.14364	.04733	-.0000080
180.00	23.5881	.99288	.15561	.05631	-.0000094
200.00	26.8501	1.01717	.17123	.06629	-.0000108
220.00	30.4627	1.04912	.19066	.07742	-.0000125
240.00	34.5027	1.08923	.21408	.08988	-.0000144
260.00	39.0606	1.13826	.24268	.10385	-.0000168
280.00	44.2541	1.19749	.27789	.11954	-.0000198
300.00	50.2304	1.26859	.32123	.13718	-.0000237
320.00	57.1685	1.35358	.37434	.15703	-.0000286
340.00	65.2806	1.45473	.43894	.17933	-.0000347

Table 19. The Joule-Thomson inversion locus for propane.

Temp. K	Density kg/m^3	Pressure MPa
300	491.1	1.607
310	485.4	4.875
320	479.8	7.952
330	474.2	10.847
340	468.6	13.574
350	463.1	16.143
360	457.7	18.564
370	452.3	20.848
380	447.0	23.001
390	441.7	25.030
400	436.5	26.945
410	431.4	28.749
420	426.3	30.449
430	421.2	32.051
440	416.2	33.558
450	411.3	34.976
460	406.3	36.309
470	401.5	37.561
480	396.7	38.734
490	391.9	39.835
500	387.2	40.862
510	382.5	41.823
520	377.9	42.716
530	373.3	43.549
540	368.7	44.319
550	364.1	45.031
560	359.6	45.688
570	355.2	46.289
580	350.7	46.839
590	346.3	47.337
600	341.9	47.787
610	337.5	48.191
620	333.2	48.548
630	328.8	48.862
640	324.5	49.132
650	320.3	49.363
660	316.0	49.552
670	311.7	49.705
680	307.5	49.819
690	303.3	49.899
700	299.1	49.945
710	294.9	49.957
720	290.8	49.940
730	286.6	49.892
740	282.5	49.814
750	278.4	49.711
760	274.4	49.582
770	270.3	49.430
780	266.3	49.255
790	262.3	49.060
800	258.4	48.846
810	254.4	48.615

Table 20. Thermophysical properties of saturated liquid propane.

Temp.	P_σ	ρ_ℓ	ρ_g	Z_ℓ	Z_g	dP_σ/dT	$d\rho_\ell/dT$	Isochore Derivative	Isotherm Derivative
K	MPa	kg/m^3	kg/m^3			MPa/K	kg/(m^3•K)	MPa/K	MPa•m^3/kg
85.470	.16895E-09	733.34	.10484E-07	.00000	1.00000	.6882E-10	-1.0311	3.1063	.3013E+01
90.000	.96854E-09	728.67	.57076E-07	.00000	1.00000	.3532E-09	-1.0274	2.9784	.2899E+01
95.000	.54123E-08	723.55	.30216E-06	.00000	1.00000	.1757E-08	-1.0237	2.8469	.2781E+01
100.000	.25139E-07	718.44	.13333E-05	.00000	1.00000	.7304E-08	-1.0205	2.7243	.2670E+01
105.000	.99697E-07	713.34	.50358E-05	.00000	1.00000	.2605E-07	-1.0178	2.6096	.2564E+01
110.000	.34511E-06	708.26	.16639E-04	.00000	1.00000	.8145E-07	-1.0156	2.5020	.2464E+01
115.000	.10618E-05	703.18	.48970E-04	.00000	1.00000	.2273E-06	-1.0140	2.4007	.2368E+01
120.000	.29480E-05	698.12	.13030E-03	.00000	.99999	.5744E-06	-1.0128	2.3051	.2276E+01
125.000	.74804E-05	693.06	.31740E-03	.00000	.99998	.1331E-05	-1.0122	2.2145	.2188E+01
130.000	.17534E-04	687.99	.71538E-03	.00000	.99996	.2859E-05	-1.0121	2.1287	.2103E+01
135.000	.38316E-04	682.93	.15054E-02	.00000	.99992	.5742E-05	-1.0126	2.0471	.2022E+01
140.000	.78671E-04	677.87	.29807E-02	.00000	.99985	.1087E-04	-1.0136	1.9694	.1943E+01
145.000	.15279E-03	672.80	.55902E-02	.00001	.99974	.1950E-04	-1.0152	1.8952	.1867E+01
150.000	.28235E-03	667.72	.99876E-02	.00001	.99957	.3337E-04	-1.0174	1.8243	.1793E+01
155.000	.49897E-03	662.62	.17085E-01	.00003	.99932	.5475E-04	-1.0203	1.7565	.1722E+01
160.000	.84700E-03	657.51	.28105E-01	.00004	.99896	.8646E-04	-1.0237	1.6915	.1652E+01
165.000	.13864E-02	652.38	.44633E-01	.00007	.99847	.1319E-03	-1.0278	1.6290	.1585E+01
170.000	.21959E-02	647.23	.68659E-01	.00011	.99781	.1952E-03	-1.0326	1.5690	.1519E+01
175.000	.33756E-02	642.06	.10262E+00	.00016	.99695	.2808E-03	-1.0381	1.5112	.1455E+01
180.000	.50497E-02	636.85	.14941E+00	.00023	.99585	.3938E-03	-1.0443	1.4555	.1393E+01
185.000	.73689E-02	631.61	.21243E+00	.00033	.99447	.5398E-03	-1.0513	1.4018	.1333E+01
190.000	.10512E-01	626.33	.29556E+00	.00047	.99279	.7244E-03	-1.0591	1.3499	.1274E+01
195.000	.14687E-01	621.02	.40319E+00	.00064	.99076	.9536E-03	-1.0677	1.2997	.1216E+01
200.000	.20133E-01	615.66	.54018E+00	.00087	.98835	.1234E-02	-1.0771	1.2512	.1160E+01
205.000	.27119E-01	610.25	.71191E+00	.00115	.98552	.1571E-02	-1.0875	1.2042	.1106E+01
210.000	.35944E-01	604.78	.92419E+00	.00150	.98223	.1970E-02	-1.0988	1.1585	.1053E+01
215.000	.46937E-01	599.26	.11833E+01	.00193	.97847	.2439E-02	-1.1111	1.1143	.1001E+01
220.000	.60455E-01	593.67	.14961E+01	.00245	.97418	.2982E-02	-1.1246	1.0713	.9500E+00
225.000	.76884E-01	588.01	.18696E+01	.00308	.96935	.3604E-02	-1.1391	1.0295	.9006E+00
231.068	.10133E+00	581.04	.24158E+01	.00400	.96270	.4473E-02	-1.1584	.9803	.8424E+00
235.000	.12014E+00	576.46	.28305E+01	.00470	.95791	.5106E-02	-1.1720	.9493	.8056E+00
240.000	.14785E+00	570.55	.34347E+01	.00573	.95125	.5995E-02	-1.1905	.9107	.7599E+00
245.000	.18025E+00	564.55	.41338E+01	.00691	.94393	.6981E-02	-1.2106	.8731	.7155E+00
250.000	.21783E+00	558.44	.49376E+01	.00828	.93593	.8068E-02	-1.2323	.8364	.6722E+00
255.000	.26111E+00	552.22	.58570E+01	.00983	.92720	.9259E-02	-1.2559	.8006	.6301E+00
260.000	.31060E+00	545.88	.69037E+01	.01161	.91774	.1056E-01	-1.2815	.7656	.5892E+00
265.000	.36685E+00	539.41	.80903E+01	.01361	.90752	.1196E-01	-1.3093	.7314	.5495E+00
270.000	.43042E+00	532.78	.94307E+01	.01587	.89651	.1348E-01	-1.3396	.6979	.5109E+00
275.000	.50186E+00	526.00	.10940E+02	.01840	.88470	.1512E-01	-1.3727	.6651	.4735E+00
280.000	.58177E+00	519.05	.12636E+02	.02123	.87206	.1687E-01	-1.4090	.6330	.4373E+00
285.000	.67072E+00	511.91	.14537E+02	.02438	.85858	.1873E-01	-1.4489	.6015	.4022E+00
290.000	.76931E+00	504.56	.16665E+02	.02788	.84424	.2072E-01	-1.4930	.5707	.3683E+00
295.000	.87816E+00	496.97	.19045E+02	.03177	.82900	.2284E-01	-1.5420	.5403	.3356E+00
300.000	.99790E+00	489.13	.21704E+02	.03607	.81284	.2508E-01	-1.5966	.5106	.3041E+00
305.000	.11292E+01	480.99	.24676E+02	.04082	.79573	.2745E-01	-1.6581	.4813	.2737E+00
310.000	.12726E+01	472.53	.27999E+02	.04608	.77762	.2995E-01	-1.7278	.4525	.2445E+00
315.000	.14289E+01	463.70	.31720E+02	.05188	.75845	.3259E-01	-1.8078	.4241	.2166E+00
320.000	.15988E+01	454.43	.35898E+02	.05831	.73814	.3538E-01	-1.9004	.3960	.1898E+00
325.000	.17829E+01	444.67	.40603E+02	.06543	.71658	.3831E-01	-2.0095	.3683	.1642E+00
330.000	.19822E+01	434.30	.45931E+02	.07335	.69358	.4141E-01	-2.1403	.3409	.1399E+00
335.000	.21973E+01	423.21	.52006E+02	.08220	.66892	.4468E-01	-2.3008	.3136	.1169E+00
340.000	.24293E+01	411.22	.59004E+02	.09215	.64224	.4815E-01	-2.5037	.2865	.9518E-01
345.000	.26792E+01	398.07	.67188E+02	.10347	.61301	.5184E-01	-2.7709	.2592	.7484E-01
350.000	.29482E+01	383.34	.76974E+02	.11654	.58039	.5579E-01	-3.1437	.2317	.5595E-01
355.000	.32377E+01	366.31	.89094E+02	.13205	.54292	.6009E-01	-3.7116	.2035	.3863E-01
360.000	.35498E+01	345.52	.10505E+03	.15136	.49781	.6486E-01	-4.7195	.1738	.2308E-01
365.000	.38877E+01	316.85	.12901E+03	.17829	.43786	.7047E-01	-7.2322	.1406	.9697E-02
369.850	.42475E+01	220.49	.22049E+03	.27625	.27625	.8113E-01	--	.0811	0.

Table 20. (Continued).

Temp. K	Heat of Vap. J/mol	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol•K)	C_v J/(mol•K)	C_σ J/(mol•K)	C_p J/(mol•K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
85.470	24840.8	.0	.0	82.561	61.64	84.09	84.09	1.00000	2027	2.09041
90.000	24627.8	391.6	391.6	87.074	61.43	84.30	84.30	1.00000	1994	2.08021
95.000	24397.6	822.9	822.9	91.767	61.22	84.54	84.54	1.00000	1959	2.06918
100.000	24172.3	1253.4	1253.4	96.197	61.05	84.80	84.80	1.00000	1925	2.05836
105.000	23951.6	1683.4	1683.4	100.397	60.89	85.06	85.06	1.00000	1892	2.04772
110.000	23735.1	2113.2	2113.2	104.394	60.77	85.34	85.34	1.00000	1860	2.03725
115.000	23522.5	2543.0	2543.0	108.210	60.67	85.63	85.63	1.00000	1828	2.02692
120.000	23313.3	2973.0	2973.0	111.864	60.59	85.94	85.94	1.00000	1796	2.01673
125.000	23107.3	3403.4	3403.4	115.374	60.54	86.26	86.26	1.00000	1765	2.00666
130.000	22904.0	3834.6	3834.6	118.753	60.50	86.60	86.60	1.00000	1735	1.99670
135.000	22703.1	4266.9	4266.9	122.013	60.50	86.95	86.95	.99996	1704	1.98683
140.000	22504.2	4700.4	4700.4	125.165	60.51	87.33	87.33	.99988	1674	1.97705
145.000	22307.0	5135.5	5135.5	128.220	60.54	87.72	87.72	.99977	1644	1.96734
150.000	22111.0	5572.6	5572.6	131.185	60.60	88.14	88.14	.99958	1614	1.95769
155.000	21915.9	6011.8	6011.9	134.068	60.68	88.57	88.57	.99931	1585	1.94810
160.000	21721.4	6453.6	6453.6	136.877	60.77	89.03	89.03	.99891	1555	1.93855
165.000	21526.9	6898.0	6898.1	139.616	60.89	89.52	89.52	.99836	1526	1.92904
170.000	21332.2	7345.5	7345.6	142.292	61.03	90.03	90.03	.99760	1496	1.91955
175.000	21136.8	7796.2	7796.4	144.908	61.20	90.56	90.57	.99672	1467	1.91008
180.000	20940.4	8250.4	8250.7	147.471	61.38	91.13	91.14	.99550	1438	1.90062
185.000	20742.4	8708.3	8708.8	149.983	61.59	91.72	91.74	.99409	1409	1.89117
190.000	20542.6	9169.9	9170.7	152.448	61.82	92.35	92.37	.99227	1379	1.88170
195.000	20340.4	9635.7	9636.7	154.870	62.07	93.01	93.03	.99017	1350	1.87222
200.000	20135.5	10105.6	10107.0	157.251	62.34	93.70	93.73	.98761	1320	1.86272
205.000	19927.3	10579.9	10581.9	159.594	62.64	94.43	94.47	.98470	1291	1.85319
210.000	19715.5	11058.6	11061.3	161.902	62.96	95.20	95.25	.98128	1261	1.84361
215.000	19499.6	11542.1	11545.5	164.177	63.31	96.00	96.07	.97746	1232	1.83399
220.000	19279.0	12030.1	12034.6	166.421	63.69	96.85	96.94	.97311	1202	1.82430
225.000	19053.3	12523.1	12528.9	168.636	64.09	97.74	97.86	.96826	1172	1.81455
231.068	18771.8	13128.2	13135.9	171.288	64.61	98.88	99.04	.96176	1136	1.80261
235.000	18584.5	13524.2	13533.4	172.987	64.97	99.66	99.85	.95713	1112	1.79481
240.000	18340.2	14032.5	14043.9	175.126	65.45	100.70	100.93	.95077	1082	1.78479
245.000	18088.6	14546.1	14560.2	177.242	65.97	101.79	102.08	.94392	1052	1.77467
250.000	17828.9	15065.4	15082.6	179.339	66.51	102.95	103.30	.93661	1021	1.76442
255.000	17560.7	15590.1	15611.0	181.416	67.09	104.16	104.59	.92878	991	1.75403
260.000	17283.0	16120.7	16145.8	183.476	67.69	105.44	105.97	.92047	960	1.74349
265.000	16995.2	16657.3	16687.3	185.519	68.34	106.80	107.44	.91173	929	1.73279
270.000	16696.4	17200.0	17235.6	187.547	69.02	108.23	109.00	.90253	898	1.72191
275.000	16385.7	17749.1	17791.1	189.563	69.73	109.75	110.68	.89289	866	1.71082
280.000	16062.1	18304.7	18354.2	191.566	70.48	111.36	112.48	.88286	835	1.69951
285.000	15724.5	18867.3	18925.1	193.560	71.28	113.08	114.42	.87244	803	1.68795
290.000	15371.6	19437.3	19504.5	195.544	72.11	114.91	116.52	.86171	771	1.67611
295.000	15001.9	20014.9	20092.8	197.523	72.99	116.87	118.81	.85061	739	1.66397
300.000	14613.9	20600.7	20690.6	199.496	73.91	118.99	121.32	.83922	706	1.65149
305.000	14205.6	21195.3	21298.8	201.468	74.88	121.27	124.08	.82755	673	1.63862
310.000	13774.8	21799.6	21918.3	203.440	75.90	123.76	127.16	.81564	640	1.62531
315.000	13318.6	22414.5	22550.4	205.417	76.97	126.50	130.62	.80353	606	1.61150
320.000	12833.7	23041.1	23196.2	207.401	78.10	129.53	134.58	.79120	571	1.59711
325.000	12315.9	23680.9	23857.7	209.397	79.29	132.94	139.17	.77869	536	1.58204
330.000	11759.6	24336.0	24537.2	211.412	80.54	136.83	144.61	.76602	501	1.56616
335.000	11157.5	25008.8	25237.8	213.454	81.86	141.38	151.27	.75320	464	1.54930
340.000	10499.3	25703.0	25963.5	215.532	83.26	146.85	159.69	.74024	427	1.53122
345.000	9769.9	26423.6	26720.4	217.663	84.74	153.70	170.94	.72714	388	1.51156
350.000	8945.7	27178.4	27517.6	219.870	86.32	162.81	187.08	.71383	348	1.48975
355.000	7985.7	27981.5	28371.2	222.195	88.01	176.11	213.03	.70027	305	1.46483
360.000	6806.1	28861.6	29314.7	224.725	89.85	198.91	263.85	.68637	260	1.43480
365.000	5175.8	29903.9	30444.9	227.718	91.80	254.84	418.67	.67194	210	1.39412
369.850	0.0	32232.7	33082.2	234.726	--	--	--	.65668	0	1.26352

Table 21. Thermophysical properties of propane along isobars.

Propane Isobar at P = 0.01 MPa

Temp. K	Density mol/L	Density kg/m3	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa·m3/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol·K)	C_v J/(mol·K)	C_p J/(mol·K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
85.471	.1663E+02	.73334E+03	.00085	3.106272	3.01268	.0	.6	82.562	61.64	84.09	.16916E-07	2027	2.09041
90.000	.1652E+02	.72868E+03	.00081	2.978395	2.89916	391.4	392.0	87.069	61.43	84.30	.96975E-07	1994	2.08022
100.000	.1629E+02	.71844E+03	.00074	2.724319	2.66965	1253.3	1254.0	96.196	61.05	84.80	.25160E-05	1925	2.05837
110.000	.1606E+02	.70826E+03	.00068	2.502046	2.46362	2113.2	2113.8	104.395	60.77	85.34	.34527E-04	1860	2.03725
120.000	.1583E+02	.69812E+03	.00063	2.305097	2.27605	2972.9	2973.5	111.865	60.59	85.94	.29495E-03	1796	2.01674
130.000	.1560E+02	.68800E+03	.00059	2.128741	2.10340	3834.4	3835.1	118.751	60.50	86.60	.17545E-02	1735	1.99671
140.000	.1537E+02	.67787E+03	.00056	1.969421	1.94308	4700.2	4700.8	125.162	60.51	87.33	.78719E-02	1674	1.97706
150.000	.1514E+02	.66772E+03	.00053	1.824395	1.79319	5572.4	5573.1	131.183	60.60	88.14	.28242E-01	1614	1.95770
160.000	.1491E+02	.65752E+03	.00050	1.691508	1.65230	6453.5	6454.1	136.876	60.77	89.03	.84648E-01	1555	1.93856
170.000	.1468E+02	.64724E+03	.00048	1.569029	1.51932	7345.4	7346.1	142.292	61.03	90.03	.21913E+00	1497	1.91956
180.000	.1444E+02	.63685E+03	.00046	1.455550	1.39341	8250.3	8251.0	147.472	61.38	91.14	.50270E+00	1438	1.90063
189.279	.1422E+02	.62710E+03	.00045	1.357287	1.28232	9103.1	9103.8	152.095	61.78	92.27	.99255E+00	1383	1.88307
189.279	.6399E-02	.28216E+00	.99306	.000053	.03521	28112.5	29675.3	260.779	46.11	54.63	.99255E+00	204	1.00031
190.000	.6374E-02	.28107E+00	.99313	.000053	.03535	28145.8	29714.7	260.987	46.21	54.73	.99262E+00	204	1.00031
200.000	.6050E-02	.26678E+00	.99400	.000050	.03727	28616.4	30269.3	263.831	47.72	56.20	.99350E+00	209	1.00029
210.000	.5758E-02	.25390E+00	.99471	.000048	.03919	29102.3	30839.1	266.611	49.31	57.77	.99423E+00	214	1.00028
220.000	.5493E-02	.24222E+00	.99529	.000046	.04111	29604.3	31424.9	269.335	50.97	59.41	.99483E+00	218	1.00026
230.000	.5251E-02	.23157E+00	.99578	.000044	.04302	30123.2	32027.4	272.013	52.69	61.11	.99535E+00	223	1.00025
240.000	.5030E-02	.22183E+00	.99619	.000042	.04492	30659.3	32647.2	274.651	54.45	62.86	.99579E+00	227	1.00024
250.000	.4828E-02	.21288E+00	.99655	.000040	.04683	31213.4	33284.8	277.253	56.27	64.67	.99617E+00	231	1.00023
260.000	.4640E-02	.20463E+00	.99686	.000039	.04873	31785.7	33940.7	279.826	58.12	66.51	.99650E+00	236	1.00022
270.000	.4467E-02	.19700E+00	.99713	.000037	.05063	32376.8	34615.2	282.371	60.01	68.40	.99680E+00	240	1.00021
280.000	.4307E-02	.18992E+00	.99736	.000036	.05253	32986.8	35308.8	284.893	61.93	70.31	.99705E+00	244	1.00021
290.000	.4157E-02	.18333E+00	.99757	.000035	.05443	33616.2	36021.5	287.394	63.88	72.25	.99728E+00	248	1.00020
300.000	.4018E-02	.17719E+00	.99776	.000033	.05633	34265.0	36753.8	289.876	65.84	74.20	.99749E+00	251	1.00019
310.000	.3888E-02	.17144E+00	.99792	.000032	.05822	34933.5	37505.7	292.341	67.81	76.18	.99767E+00	255	1.00019
320.000	.3766E-02	.16606E+00	.99807	.000031	.06012	35621.8	38277.3	294.791	69.80	78.16	.99783E+00	259	1.00018
330.000	.3651E-02	.16101E+00	.99820	.000030	.06201	36330.0	39068.8	297.226	71.79	80.15	.99798E+00	263	1.00017
340.000	.3543E-02	.15625E+00	.99833	.000029	.06391	37058.0	39880.2	299.649	73.78	82.14	.99812E+00	266	1.00017
350.000	.3442E-02	.15177E+00	.99844	.000029	.06580	37806.0	40711.5	302.058	75.77	84.12	.99824E+00	270	1.00016
360.000	.3346E-02	.14754E+00	.99853	.000028	.06769	38573.9	41562.7	304.456	77.76	86.11	.99835E+00	273	1.00016
370.000	.3255E-02	.14354E+00	.99863	.000027	.06958	39361.6	42433.7	306.842	79.74	88.09	.99845E+00	277	1.00016
380.000	.3169E-02	.13975E+00	.99871	.000026	.07148	40169.0	43324.5	309.218	81.71	90.06	.99854E+00	280	1.00015
390.000	.3088E-02	.13616E+00	.99879	.000026	.07337	40996.1	44234.9	311.582	83.67	92.02	.99863E+00	284	1.00015
400.000	.3010E-02	.13274E+00	.99886	.000025	.07526	41842.8	45164.8	313.936	85.62	93.96	.99871E+00	287	1.00014
410.000	.2937E-02	.12950E+00	.99892	.000024	.07715	42708.8	46114.0	316.280	87.55	95.89	.99878E+00	290	1.00014
420.000	.2867E-02	.12641E+00	.99898	.000024	.07904	43594.0	47082.5	318.614	89.47	97.81	.99885E+00	293	1.00014
430.000	.2800E-02	.12346E+00	.99904	.000023	.08093	44498.3	48070.1	320.938	91.36	99.70	.99891E+00	297	1.00013
440.000	.2736E-02	.12065E+00	.99909	.000023	.08282	45421.5	49076.5	323.251	93.24	101.58	.99897E+00	300	1.00013
450.000	.2675E-02	.11796E+00	.99913	.000022	.08471	46363.4	50101.7	325.555	95.10	103.44	.99902E+00	303	1.00013
460.000	.2617E-02	.11539E+00	.99918	.000022	.08660	47323.7	51145.2	327.849	96.94	105.28	.99905E+00	306	0.00000
470.000	.2561E-02	.11293E+00	.99922	.000021	.08849	48302.3	52207.1	330.132	98.76	107.10	.99910E+00	309	0.00000
480.000	.2508E-02	.11057E+00	.99926	.000021	.09038	49299.0	53287.0	332.406	100.56	108.89	.99914E+00	312	0.00000
500.000	.2407E-02	.10614E+00	.99933	.000020	.09416	51345.8	55500.3	336.923	104.09	112.42	.99922E+00	318	0.00000
540.000	.2228E-02	.98271E-01	.99944	.000019	.10171	55646.6	60133.9	345.835	110.87	119.20	.99936E+00	330	0.00000
580.000	.2075E-02	.91485E-01	.99953	.000017	.10926	60211.4	65031.5	354.581	117.29	125.62	.99946E+00	342	0.00000
620.000	.1941E-02	.85577E-01	.99961	.000016	.11682	65025.8	70178.8	363.161	123.36	131.68	.99954E+00	353	0.00000
660.000	.1823E-02	.80385E-01	.99966	.000015	.12437	70075.7	75561.5	371.572	129.07	137.40	.99961E+00	363	0.00000
700.000	.1719E-02	.75788E-01	.99971	.000014	.13192	75347.6	81166.1	379.815	134.46	142.78	.99967E+00	374	0.00000

Table 21. (Continued)

Propane Isobar at P = 0.05 MPa

Temp. K	Density mol/L	Density kg/m³	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa·m³/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol·K)	C_v J/(mol·K)	C_p J/(mol·K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
85.475	.1663E+02	.73335E+03	.00423	3.106282	3.01303	.0	3.0	82.562	61.65	84.09	.33999E-08	2027	2.09042
90.000	.1652E+02	.72869E+03	.00404	2.978521	2.89961	391.1	394.2	87.065	61.43	84.30	.19458E-07	1994	2.08024
100.000	.1629E+02	.71846E+03	.00369	2.724461	2.67011	1253.0	1256.1	96.192	61.05	84.80	.50468E-06	1925	2.05839
110.000	.1606E+02	.70828E+03	.00340	2.502201	2.46408	2112.8	2115.9	104.392	60.77	85.34	.69242E-05	1860	2.03728
120.000	.1583E+02	.69814E+03	.00317	2.305263	2.27653	2972.4	2975.6	111.861	60.59	85.94	.59139E-04	1796	2.01677
130.000	.1560E+02	.68802E+03	.00296	2.128916	2.10388	3833.9	3837.1	118.747	60.51	86.60	.35174E-03	1735	1.99674
140.000	.1537E+02	.67789E+03	.00279	1.969606	1.94358	4699.6	4702.9	125.158	60.51	87.32	.15779E-02	1674	1.97709
150.000	.1514E+02	.66774E+03	.00265	1.824588	1.79370	5571.8	5575.1	131.179	60.60	88.13	.56604E-02	1615	1.95774
160.000	.1491E+02	.65754E+03	.00252	1.691709	1.65282	6452.8	6456.1	136.872	60.78	89.03	.16964E-01	1556	1.93860
170.000	.1468E+02	.64726E+03	.00241	1.569239	1.51985	7344.7	7348.1	142.288	61.04	90.03	.43910E-01	1497	1.91960
180.000	.1444E+02	.63688E+03	.00231	1.455769	1.39395	8249.5	8252.9	147.468	61.38	91.13	.10073E+00	1438	1.90068
190.000	.1420E+02	.62637E+03	.00223	1.350136	1.27447	9168.9	9172.4	152.445	61.82	92.36	.20892E+00	1379	1.88175
200.000	.1396E+02	.61568E+03	.00215	1.251366	1.16088	10104.6	10108.2	157.247	62.34	93.73	.39810E+00	1321	1.86276
210.000	.1372E+02	.60479E+03	.00209	1.158632	1.05278	11057.9	11061.5	161.899	62.96	95.25	.70577E+00	1261	1.84363
216.225	.1356E+02	.59789E+03	.00205	1.103638	.98811	11661.2	11664.8	164.729	63.40	96.28	.97644E+00	1224	1.83162
216.225	.2845E-01	.12547E+01	.97747	.000242	.03897	29353.5	31110.8	254.664	50.79	59.86	.97644E+00	214	1.00137
220.000	.2793E-01	.12318E+01	.97858	.000237	.03974	29547.7	31337.7	255.704	51.36	60.37	.97747E+00	216	1.00135
230.000	.2665E-01	.11752E+01	.98112	.000225	.04178	30072.4	31948.7	258.419	52.95	61.85	.97990E+00	220	1.00128
240.000	.2548E-01	.11238E+01	.98321	.000215	.04378	30613.1	32575.1	261.085	54.65	63.46	.98195E+00	225	1.00123
250.000	.2442E-01	.10769E+01	.98495	.000205	.04577	31170.8	33218.2	263.710	56.42	65.17	.98369E+00	229	1.00117
260.000	.2345E-01	.10340E+01	.98643	.000197	.04775	31746.2	33878.6	266.300	58.24	66.94	.98519E+00	234	1.00113
270.000	.2255E-01	.99439E+00	.98770	.000189	.04971	32339.8	34557.1	268.860	60.11	68.76	.98650E+00	238	1.00108
280.000	.2172E-01	.95781E+00	.98880	.000182	.05167	32952.1	35254.1	271.395	62.01	70.63	.98764E+00	242	1.00104
290.000	.2095E-01	.92388E+00	.98976	.000175	.05362	33583.3	35969.8	273.906	63.94	72.53	.98864E+00	246	1.00100
300.000	.2024E-01	.89233E+00	.99060	.000169	.05556	34233.9	36704.8	276.398	65.89	74.46	.98953E+00	250	1.00097
310.000	.1957E-01	.86289E+00	.99135	.000164	.05750	34903.9	37459.1	278.871	67.86	76.40	.99032E+00	254	1.00094
320.000	.1894E-01	.83537E+00	.99201	.000158	.05943	35593.5	38232.9	281.327	69.84	78.36	.99103E+00	258	1.00091
330.000	.1836E-01	.80957E+00	.99261	.000153	.06136	36302.9	39026.4	283.769	71.83	80.33	.99167E+00	261	1.00088
340.000	.1781E-01	.78534E+00	.99314	.000149	.06328	37032.1	39839.6	286.196	73.81	82.31	.99225E+00	265	1.00085
350.000	.1729E-01	.76253E+00	.99362	.000144	.06520	37781.1	40672.6	288.611	75.80	84.28	.99277E+00	269	1.00083
360.000	.1680E-01	.74103E+00	.99405	.000140	.06712	38549.9	41525.3	291.013	77.79	86.26	.99324E+00	272	1.00080
370.000	.1634E-01	.72071E+00	.99445	.000136	.06904	39338.4	42397.7	293.403	79.76	88.22	.99367E+00	276	1.00078
380.000	.1591E-01	.70149E+00	.99480	.000133	.07096	40146.6	43289.7	295.782	81.73	90.18	.99406E+00	279	1.00076
390.000	.1549E-01	.68328E+00	.99513	.000129	.07287	40974.5	44201.3	298.150	83.69	92.13	.99442E+00	283	1.00074
400.000	.1510E-01	.66600E+00	.99543	.000126	.07478	41821.8	45132.4	300.507	85.64	94.07	.99476E+00	286	1.00072
410.000	.1473E-01	.64958E+00	.99571	.000123	.07669	42688.4	46082.7	302.853	87.57	96.00	.99506E+00	289	1.00070
420.000	.1438E-01	.63395E+00	.99596	.000120	.07860	43574.3	47052.2	305.189	89.48	97.90	.99534E+00	293	1.00069
430.000	.1404E-01	.61906E+00	.99619	.000117	.08051	44479.1	48040.7	307.515	91.38	99.79	.99560E+00	296	1.00067
440.000	.1372E-01	.60486E+00	.99641	.000114	.08241	45402.8	49048.1	309.831	93.26	101.67	.99584E+00	299	1.00065
450.000	.1341E-01	.59130E+00	.99661	.000112	.08432	46345.2	50074.0	312.137	95.11	103.52	.99606E+00	302	1.00064
460.000	.1312E-01	.57834E+00	.99679	.000109	.08622	47306.0	51118.4	314.432	96.95	105.36	.99625E+00	306	0.00000
470.000	.1283E-01	.56594E+00	.99696	.000107	.08812	48285.0	52181.0	316.717	98.77	107.17	.99644E+00	309	0.00000
480.000	.1256E-01	.55406E+00	.99712	.000105	.09003	49282.2	53261.7	318.992	100.57	108.96	.99663E+00	312	0.00000
500.000	.1206E-01	.53174E+00	.99741	.000100	.09383	51329.8	55476.3	323.512	104.09	112.48	.99695E+00	318	0.00000
540.000	.1116E-01	.49212E+00	.99788	.000093	.10143	55631.9	60112.2	332.428	110.88	119.25	.99749E+00	330	0.00000
580.000	.1039E-01	.45801E+00	.99825	.000086	.10901	60197.9	65011.8	341.179	117.30	125.67	.99791E+00	341	0.00000
620.000	.9714E-02	.42834E+00	.99854	.000081	.11660	65013.3	70160.7	349.761	123.36	131.72	.99825E+00	352	0.00000
660.000	.9123E-02	.40228E+00	.99878	.000076	.12417	70064.0	75544.9	358.175	129.08	137.43	.99852E+00	363	0.00000
700.000	.8600E-02	.37922E+00	.99897	.000072	.13174	75336.7	81150.8	366.419	134.46	142.81	.99874E+00	374	0.00000

Table 21. (Continued)

Propane Isobar at P = 0.101325 MPa

Temp. K	Density mol/L	Density kg/m³	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa·m³/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol·K)	Cv J/(mol·K)	Cp J/(mol·K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
85.479	.1663E+02	.73336E+03	.00857	3.106294	3.01348	.1	6.2	82.563	61.65	84.09	.16883E-08	2027	2.09044
90.000	.1653E+02	.72871E+03	.00819	2.978683	2.90019	390.7	396.9	87.061	61.44	84.30	.96416E-08	1994	2.08027
100.000	.1629E+02	.71847E+03	.00748	2.724643	2.67070	1252.5	1258.8	96.188	61.05	84.80	.24999E-06	1925	2.05842
110.000	.1606E+02	.70830E+03	.00690	2.502400	2.46468	2112.3	2118.6	104.387	60.77	85.34	.34288E-05	1860	2.03731
120.000	.1583E+02	.69816E+03	.00641	2.305475	2.27714	2971.8	2978.2	111.856	60.59	85.93	.29278E-04	1797	2.01681
130.000	.1560E+02	.68804E+03	.00601	2.129141	2.10451	3833.3	3839.8	118.742	60.51	86.59	.17410E-03	1735	1.99678
140.000	.1537E+02	.67792E+03	.00566	1.969842	1.94421	4698.9	4705.5	125.153	60.51	87.32	.78087E-03	1674	1.97714
150.000	.1514E+02	.66777E+03	.00537	1.824835	1.79435	5571.0	5577.7	131.174	60.60	88.13	.28008E-02	1615	1.95779
160.000	.1491E+02	.65757E+03	.00511	1.691967	1.65349	6451.9	6458.7	136.866	60.78	89.03	.83926E-02	1556	1.93865
170.000	.1468E+02	.64730E+03	.00488	1.569508	1.52053	7343.7	7350.6	142.282	61.04	90.02	.21722E-01	1497	1.91966
180.000	.1444E+02	.63692E+03	.00469	1.456050	1.39465	8248.4	8255.4	147.462	61.38	91.13	.49823E-01	1438	1.90074
190.000	.1421E+02	.62641E+03	.00452	1.350429	1.27519	9167.7	9174.9	152.439	61.82	92.36	.10333E+00	1380	1.88182
200.000	.1396E+02	.61573E+03	.00436	1.251672	1.16162	10103.3	10110.5	157.241	62.35	93.72	.19688E+00	1321	1.86283
210.000	.1372E+02	.60484E+03	.00423	1.158952	1.05354	11056.5	11063.9	161.893	62.97	95.24	.34902E+00	1262	1.84371
220.000	.1346E+02	.59371E+03	.00411	1.071560	.95061	12028.6	12036.1	166.414	63.69	96.93	.58157E+00	1202	1.82437
230.000	.1320E+02	.58228E+03	.00401	.988876	.85256	13020.8	13028.4	170.822	64.51	98.82	.91858E+00	1142	1.80473
231.068	.1318E+02	.58104E+03	.00400	.980297	.84237	13128.2	13135.9	171.288	64.61	99.04	.96176E+00	1136	1.80261
231.068	.5478E-01	.24158E+01	.96270	.000473	.04036	30058.1	31907.6	252.527	53.73	63.40	.96176E+00	218	1.00264
240.000	.5252E-01	.23161E+01	.96677	.000450	.04230	30549.4	32478.6	254.951	55.06	64.51	.96545E+00	222	1.00253
250.000	.5023E-01	.22149E+01	.97051	.000428	.04443	31113.6	33130.9	257.614	56.71	65.99	.96894E+00	227	1.00242
260.000	.4814E-01	.21229E+01	.97363	.000409	.04652	31694.0	33798.8	260.233	58.47	67.61	.97192E+00	231	1.00232
270.000	.4623E-01	.20387E+01	.97626	.000391	.04858	32291.7	34483.4	262.816	60.29	69.32	.97448E+00	236	1.00222
280.000	.4448E-01	.19614E+01	.97851	.000376	.05062	32907.4	35185.5	265.370	62.15	71.11	.97672E+00	240	1.00214
290.000	.4286E-01	.18900E+01	.98046	.000361	.05264	33541.6	35905.7	267.897	64.06	72.94	.97867E+00	244	1.00206
300.000	.4136E-01	.18239E+01	.98216	.000348	.05464	34194.6	36644.5	270.401	65.99	74.82	.98040E+00	248	1.00198
310.000	.3997E-01	.17623E+01	.98364	.000336	.05663	34866.8	37402.2	272.885	67.94	76.72	.98192E+00	252	1.00192
320.000	.3866E-01	.17050E+01	.98496	.000325	.05862	35558.4	38179.0	275.352	69.91	78.65	.98329E+00	256	1.00185
330.000	.3745E-01	.16514E+01	.98613	.000314	.06059	36269.5	38975.2	277.801	71.88	80.59	.98451E+00	260	1.00179
340.000	.3631E-01	.16011E+01	.98718	.000305	.06256	37000.2	39790.8	280.236	73.87	82.54	.98561E+00	264	1.00174
350.000	.3524E-01	.15539E+01	.98811	.000295	.06452	37750.5	40626.0	282.657	75.85	84.49	.98660E+00	268	1.00169
360.000	.3423E-01	.15094E+01	.98895	.000287	.06647	38520.6	41480.8	285.065	77.83	86.45	.98750E+00	271	1.00164
370.000	.3328E-01	.14675E+01	.98972	.000279	.06842	39310.3	42355.0	287.460	79.80	88.40	.98832E+00	275	1.00159
380.000	.3238E-01	.14279E+01	.99041	.000271	.07037	40119.6	43248.8	289.843	81.76	90.35	.98906E+00	278	1.00155
390.000	.3153E-01	.13904E+01	.99104	.000264	.07231	40948.4	44162.0	292.215	83.72	92.29	.98974E+00	282	1.00151
400.000	.3072E-01	.13548E+01	.99161	.000257	.07424	41796.6	45094.5	294.576	85.66	94.21	.99037E+00	285	1.00147
410.000	.2996E-01	.13211E+01	.99214	.000251	.07618	42664.1	46046.2	296.926	87.59	96.13	.99094E+00	289	1.00143
420.000	.2923E-01	.12890E+01	.99262	.000244	.07811	43550.7	47017.0	299.265	89.50	98.03	.99147E+00	292	1.00139
430.000	.2854E-01	.12585E+01	.99306	.000239	.08004	44456.3	48006.7	301.594	91.40	99.91	.99196E+00	295	1.00136
440.000	.2788E-01	.12294E+01	.99347	.000233	.08196	45380.6	49015.1	303.912	93.27	101.78	.99241E+00	299	1.00133
450.000	.2725E-01	.12016E+01	.99385	.000228	.08389	46323.6	50042.2	306.220	95.13	103.62	.99283E+00	302	1.00130
460.000	.2665E-01	.11751E+01	.99420	.000223	.08581	47285.0	51087.5	308.518	96.97	105.45	.99319E+00	305	0.00000
470.000	.2607E-01	.11497E+01	.99452	.000218	.08773	48264.6	52151.1	310.805	98.79	107.26	.99355E+00	308	0.00000
480.000	.2552E-01	.11254E+01	.99482	.000213	.08965	49262.3	53232.6	313.082	100.58	109.05	.99389E+00	311	0.00000
500.000	.2449E-01	.10798E+01	.99536	.000204	.09348	51310.9	55448.9	317.605	104.11	112.56	.99450E+00	317	0.00000
540.000	.2265E-01	.99892E+00	.99624	.000189	.10113	55614.7	60087.7	326.527	110.89	119.32	.99550E+00	329	0.00000
580.000	.2108E-01	.92940E+00	.99693	.000176	.10876	60182.1	64989.6	335.281	117.31	125.72	.99627E+00	341	0.00000
620.000	.1971E-01	.86897E+00	.99746	.000164	.11637	64998.7	70140.6	343.867	123.37	131.77	.99689E+00	352	0.00000
660.000	.1850E-01	.81595E+00	.99789	.000154	.12398	70050.5	75526.5	352.284	129.08	137.47	.99739E+00	363	0.00000
700.000	.1744E-01	.76906E+00	.99824	.000145	.13158	75324.0	81133.9	360.531	134.47	142.85	.99779E+00	373	0.00000

Table 21. (Continued)

Propane Isobar at P = 0.15 MPa

Temp. K	Density mol/L	Density kg/m³	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa·m³/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol·K)	C_v J/(mol·K)	C_p J/(mol·K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
85.484	.1663E+02	.73337E+03	.01269	3.106305	3.01391	.1	9.1	82.563	61.65	84.09	.11472E-08	2027	2.09046
90.000	.1653E+02	.72873E+03	.01213	2.978837	2.90074	390.4	399.4	87.057	61.44	84.30	.65386E-08	1995	2.08030
100.000	.1629E+02	.71849E+03	.01107	2.724816	2.67125	1252.1	1261.3	96.184	61.05	84.79	.16947E-06	1926	2.05845
110.000	.1606E+02	.70832E+03	.01021	2.502589	2.46525	2111.8	2121.2	104.383	60.77	85.34	.23238E-05	1860	2.03735
120.000	.1583E+02	.69818E+03	.00950	2.305677	2.27771	2971.3	2980.8	111.852	60.60	85.93	.19838E-04	1797	2.01684
130.000	.1560E+02	.68807E+03	.00889	2.129355	2.10510	3832.7	3842.3	118.737	60.51	86.59	.11794E-03	1735	1.99682
140.000	.1537E+02	.67795E+03	.00838	1.970066	1.94482	4698.3	4708.0	125.149	60.51	87.32	.52892E-03	1675	1.97718
150.000	.1514E+02	.66780E+03	.00794	1.825070	1.79497	5570.3	5580.2	131.169	60.60	88.13	.18968E-02	1615	1.95783
160.000	.1491E+02	.65760E+03	.00756	1.692212	1.65412	6451.1	6461.2	136.861	60.78	89.03	.56832E-02	1556	1.93870
170.000	.1468E+02	.64733E+03	.00723	1.569763	1.52118	7342.8	7353.1	142.277	61.04	90.02	.14707E-01	1497	1.91971
180.000	.1444E+02	.63695E+03	.00694	1.456315	1.39532	8247.4	8257.8	147.456	61.39	91.12	.33731E-01	1439	1.90079
190.000	.1421E+02	.62644E+03	.00668	1.350706	1.27587	9166.6	9177.2	152.433	61.82	92.35	.69953E-01	1380	1.88188
200.000	.1396E+02	.61577E+03	.00646	1.251962	1.16232	10102.1	10112.8	157.235	62.35	93.71	.13327E+00	1321	1.86290
210.000	.1372E+02	.60489E+03	.00626	1.159256	1.05426	11055.1	11066.1	161.886	62.97	95.23	.23624E+00	1262	1.84379
220.000	.1346E+02	.59376E+03	.00609	1.071880	.95135	12027.1	12038.2	166.407	63.69	96.92	.39363E+00	1203	1.82446
230.000	.1321E+02	.58234E+03	.00594	.989213	.85333	13019.1	13030.4	170.815	64.52	98.81	.62170E+00	1143	1.80483
240.000	.1294E+02	.57055E+03	.00581	.910708	.75996	14032.4	14044.0	175.125	65.45	100.93	.93725E+00	1082	1.78480
240.356	.1293E+02	.57013E+03	.00581	.907980	.75672	14068.9	14080.5	175.277	65.49	101.01	.95030E+00	1080	1.78407
240.356	.7895E-01	.34813E+01	.95075	.000691	.04089	30503.0	32403.0	251.508	55.70	65.92	.95030E+00	219	1.00380
250.000	.7545E-01	.33270E+01	.95648	.000654	.04310	31055.3	33043.5	254.120	57.10	66.98	.95536E+00	224	1.00363
260.000	.7218E-01	.31828E+01	.96134	.000621	.04532	31641.9	33720.1	256.773	58.74	68.37	.95977E+00	229	1.00347
270.000	.6921E-01	.30521E+01	.96539	.000593	.04749	32244.3	34411.6	259.383	60.49	69.94	.96354E+00	234	1.00333
280.000	.6650E-01	.29327E+01	.96882	.000567	.04961	32863.8	35119.3	261.956	62.32	71.62	.96681E+00	238	1.00320
290.000	.6402E-01	.28230E+01	.97176	.000544	.05171	33501.2	35844.3	264.500	64.19	73.38	.96966E+00	243	1.00307
300.000	.6172E-01	.27218E+01	.97431	.000524	.05378	34156.9	36587.2	267.018	66.10	75.20	.97216E+00	247	1.00296
310.000	.5959E-01	.26280E+01	.97653	.000505	.05583	34831.4	37348.4	269.514	68.03	77.06	.97438E+00	251	1.00286
320.000	.5762E-01	.25408E+01	.97848	.000487	.05786	35525.0	38128.4	271.990	69.98	78.94	.97635E+00	255	1.00276
330.000	.5577E-01	.24594E+01	.98021	.000471	.05988	36237.9	38927.4	274.449	71.95	80.85	.97811E+00	259	1.00267
340.000	.5405E-01	.23834E+01	.98174	.000456	.06189	36970.2	39745.5	276.891	73.92	82.77	.97969E+00	263	1.00259
350.000	.5243E-01	.23120E+01	.98311	.000442	.06389	37721.9	40582.9	279.318	75.90	84.71	.98112E+00	267	1.00251
360.000	.5091E-01	.22450E+01	.98435	.000428	.06588	38493.3	41439.6	281.732	77.87	86.64	.98241E+00	270	1.00243
370.000	.4948E-01	.21819E+01	.98546	.000416	.06786	39284.1	42315.7	284.132	79.84	88.58	.98358E+00	274	1.00236
380.000	.4813E-01	.21223E+01	.98646	.000404	.06983	40094.4	43211.2	286.520	81.80	90.51	.98464E+00	277	1.00230
390.000	.4685E-01	.20659E+01	.98738	.000393	.07180	40924.2	44125.9	288.896	83.75	92.44	.98561E+00	281	1.00224
400.000	.4564E-01	.20126E+01	.98821	.000383	.07376	41773.3	45059.9	291.260	85.69	94.35	.98650E+00	284	1.00218
410.000	.4449E-01	.19620E+01	.98897	.000373	.07572	42641.6	46012.9	293.613	87.61	96.26	.98732E+00	288	1.00212
420.000	.4340E-01	.19139E+01	.98966	.000364	.07767	43528.9	46984.9	295.956	89.52	98.15	.98807E+00	291	1.00207
430.000	.4237E-01	.18682E+01	.99030	.000355	.07962	44435.2	47975.8	298.287	91.42	100.02	.98877E+00	295	1.00202
440.000	.4138E-01	.18247E+01	.99089	.000347	.08157	45360.3	48985.3	300.608	93.29	101.88	.98941E+00	298	1.00197
450.000	.4044E-01	.17832E+01	.99143	.000339	.08351	46303.9	50013.3	302.918	95.15	103.72	.99000E+00	301	1.00193
460.000	.3954E-01	.17435E+01	.99193	.000331	.08545	47265.8	51059.6	305.218	96.98	105.54	.99053E+00	304	0.00000
470.000	.3868E-01	.17056E+01	.99239	.000324	.08738	48246.0	52124.1	307.507	98.80	107.35	.99104E+00	308	0.00000
480.000	.3786E-01	.16694E+01	.99282	.000317	.08931	49244.2	53206.5	309.786	100.59	109.13	.99152E+00	311	0.00000
500.000	.3631E-01	.16014E+01	.99359	.000304	.09317	51293.7	55424.3	314.312	104.12	112.63	.99237E+00	317	0.00000
540.000	.3358E-01	.14809E+01	.99484	.000281	.10087	55599.1	60065.7	323.239	110.90	119.38	.99378E+00	329	0.00000
580.000	.3124E-01	.13774E+01	.99581	.000261	.10854	60167.8	64970.0	331.997	117.31	125.77	.99488E+00	341	0.00000
620.000	.2920E-01	.12876E+01	.99656	.000244	.11619	64985.5	70122.7	340.586	123.37	131.81	.99574E+00	352	0.00000
660.000	.2741E-01	.12088E+01	.99716	.000229	.12382	70038.2	75510.2	349.005	129.09	137.51	.99644E+00	363	0.00000
700.000	.2583E-01	.11392E+01	.99765	.000216	.13145	75312.6	81119.1	357.254	134.47	142.88	.99700E+00	373	0.00000

Table 21. (Continued)

Propane Isobar at P = 0.2 MPa

Temp. K	Density mol/L	Density kg/m³	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa·m³/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol·K)	C_v J/(mol·K)	C_p J/(mol·K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
85.489	.1663E+02	.73338E+03	.01692	3.106317	3.01435	.2	12.2	82.564	61.65	84.09	.86572E-09	2027	2.09047
90.000	.1653E+02	.72874E+03	.01617	2.978995	2.90130	390.0	402.1	87.053	61.44	84.30	.49238E-08	1995	2.08033
100.000	.1629E+02	.71851E+03	.01476	2.724994	2.67182	1251.7	1264.0	96.179	61.05	84.79	.12758E-06	1926	2.05848
110.000	.1606E+02	.70834E+03	.01361	2.502783	2.46583	2111.3	2123.8	104.379	60.78	85.34	.17488E-05	1860	2.03738
120.000	.1583E+02	.69821E+03	.01266	2.305884	2.27831	2970.8	2983.4	111.847	60.60	85.93	.14926E-04	1797	2.01688
130.000	.1560E+02	.68809E+03	.01186	2.129574	2.10570	3832.1	3844.9	118.733	60.51	86.59	.88720E-04	1735	1.99686
140.000	.1537E+02	.67797E+03	.01118	1.970296	1.94544	4697.6	4710.6	125.144	60.52	87.32	.39780E-03	1675	1.97722
150.000	.1514E+02	.66783E+03	.01059	1.825311	1.79560	5569.6	5582.8	131.164	60.61	88.13	.14264E-02	1615	1.95788
160.000	.1491E+02	.65763E+03	.01008	1.692463	1.65477	6450.3	6463.7	136.856	60.78	89.02	.42731E-02	1556	1.93875
170.000	.1468E+02	.64736E+03	.00964	1.570025	1.52185	7341.9	7355.5	142.272	61.04	90.02	.11057E-01	1498	1.91976
180.000	.1445E+02	.63699E+03	.00925	1.456588	1.39600	8246.4	8260.2	147.451	61.39	91.12	.25357E-01	1439	1.90085
190.000	.1421E+02	.62648E+03	.00891	1.350991	1.27657	9165.5	9179.6	152.427	61.82	92.35	.52581E-01	1380	1.88194
200.000	.1396E+02	.61581E+03	.00861	1.252260	1.16304	10100.8	10115.1	157.229	62.35	93.71	.10017E+00	1322	1.86297
210.000	.1372E+02	.60494E+03	.00835	1.159569	1.05499	11053.7	11068.3	161.879	62.97	95.22	.17755E+00	1263	1.84386
220.000	.1347E+02	.59381E+03	.00812	1.072208	.95211	12025.5	12040.4	166.400	63.69	96.91	.29582E+00	1203	1.82454
230.000	.1321E+02	.58239E+03	.00792	.989559	.85411	13017.3	13032.5	170.807	64.52	98.80	.46720E+00	1143	1.80492
240.000	.1294E+02	.57062E+03	.00775	.911075	.76077	14030.5	14045.9	175.117	65.45	100.92	.70430E+00	1083	1.78490
247.717	.1273E+02	.56124E+03	.00763	.853037	.69179	14827.7	14843.4	178.384	66.26	102.73	.94003E+00	1035	1.76911
247.717	.1033E+00	.45569E+01	.93967	.000917	.04109	30856.5	32791.9	250.840	57.35	68.11	.94003E+00	220	1.00498
250.000	.1022E+00	.45067E+01	.94147	.000904	.04165	30990.5	32947.5	251.465	57.63	68.28	.94157E+00	222	1.00492
260.000	.9755E-01	.43019E+01	.94836	.000853	.04404	31585.0	33635.1	254.162	59.10	69.33	.94750E+00	227	1.00470
270.000	.9338E-01	.41180E+01	.95401	.000810	.04633	32193.3	34335.0	256.803	60.75	70.69	.95254E+00	232	1.00449
280.000	.8960E-01	.39513E+01	.95875	.000772	.04856	32817.5	35049.5	259.401	62.51	72.23	.95688E+00	236	1.00431
290.000	.8615E-01	.37991E+01	.96278	.000739	.05074	33458.5	35780.0	261.964	64.34	73.89	.96065E+00	241	1.00414
300.000	.8298E-01	.36593E+01	.96624	.000710	.05288	34117.4	36527.5	264.498	66.22	75.63	.96396E+00	245	1.00398
310.000	.8006E-01	.35303E+01	.96925	.000683	.05500	34794.5	37292.7	267.007	68.13	77.43	.96687E+00	249	1.00384
320.000	.7735E-01	.34107E+01	.97188	.000658	.05709	35490.4	38076.2	269.494	70.07	79.27	.96946E+00	254	1.00371
330.000	.7482E-01	.32995E+01	.97419	.000635	.05916	36205.2	38878.2	271.962	72.02	81.14	.97177E+00	258	1.00359
340.000	.7247E-01	.31957E+01	.97625	.000614	.06121	36939.2	39699.0	274.412	73.98	83.03	.97384E+00	262	1.00347
350.000	.7027E-01	.30986E+01	.97808	.000595	.06325	37692.5	40538.8	276.846	75.95	84.94	.97570E+00	265	1.00336
360.000	.6820E-01	.30075E+01	.97972	.000576	.06528	38465.2	41397.7	279.266	77.92	86.85	.97739E+00	269	1.00326
370.000	.6626E-01	.29218E+01	.98119	.000559	.06729	39257.3	42275.8	281.672	79.88	88.77	.97891E+00	273	1.00317
380.000	.6443E-01	.28411E+01	.98252	.000543	.06929	40068.8	43173.1	284.064	81.83	90.68	.98030E+00	277	1.00308
390.000	.6270E-01	.27648E+01	.98373	.000528	.07129	40899.6	44089.5	286.445	83.78	92.59	.98156E+00	280	1.00300
400.000	.6106E-01	.26927E+01	.98482	.000514	.07328	41749.6	45024.9	288.813	85.72	94.50	.98272E+00	284	1.00292
410.000	.5951E-01	.26244E+01	.98582	.000501	.07526	42618.8	45979.4	291.170	87.64	96.39	.98378E+00	287	1.00284
420.000	.5804E-01	.25595E+01	.98673	.000488	.07724	43506.9	46952.7	293.515	89.55	98.27	.98476E+00	291	1.00277
430.000	.5664E-01	.24979E+01	.98757	.000476	.07920	44413.9	47944.7	295.849	91.44	100.14	.98566E+00	294	1.00270
440.000	.5531E-01	.24392E+01	.98834	.000465	.08117	45339.7	48955.4	298.173	93.31	101.99	.98649E+00	297	1.00264
450.000	.5405E-01	.23833E+01	.98905	.000454	.08313	46283.9	49984.5	300.485	95.17	103.82	.98725E+00	301	1.00258
460.000	.5284E-01	.23299E+01	.98970	.000444	.08509	47246.4	51031.7	302.787	97.00	105.64	.98794E+00	304	0.00000
470.000	.5168E-01	.22790E+01	.99030	.000434	.08704	48227.2	52097.1	305.078	98.82	107.44	.98860E+00	307	0.00000
480.000	.5058E-01	.22302E+01	.99086	.000424	.08899	49225.9	53180.4	307.359	100.61	109.22	.98922E+00	310	0.00000
500.000	.4850E-01	.21389E+01	.99186	.000407	.09287	51276.4	55399.8	311.888	104.13	112.71	.99033E+00	317	0.00000
540.000	.4484E-01	.19772E+01	.99349	.000375	.10062	55583.4	60044.0	320.820	110.91	119.44	.99214E+00	329	0.00000
580.000	.4169E-01	.18385E+01	.99473	.000349	.10833	60153.5	64950.5	329.583	117.32	125.82	.99354E+00	340	0.00000
620.000	.3896E-01	.17182E+01	.99571	.000326	.11601	64972.3	70105.2	338.175	123.38	131.85	.99466E+00	352	0.00000
660.000	.3657E-01	.16128E+01	.99648	.000306	.12368	70026.1	75494.3	346.596	129.09	137.55	.99555E+00	363	0.00000
700.000	.3446E-01	.15197E+01	.99710	.000288	.13133	75301.3	81104.6	354.848	134.48	142.91	.99627E+00	373	0.00000

Table 21. (Continued)

Propane Isobar at P = 0.3 MPa

Temp. K	Density mol/L	Density kg/m³	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa•m³/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol•K)	C_v J/(mol•K)	C_p J/(mol•K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
85.498	.1663E+02	.73341E+03	.02537	3.106340	3.01523	.2	18.3	82.565	61.66	84.09	.58425E-09	2027	2.09051
90.000	.1653E+02	.72878E+03	.02426	2.979311	2.90242	389.2	407.4	87.044	61.44	84.30	.33092E-08	1995	2.08038
100.000	.1629E+02	.71855E+03	.02214	2.725350	2.67297	1250.8	1269.2	96.171	61.06	84.79	.85680E-07	1926	2.05854
110.000	.1606E+02	.70838E+03	.02042	2.503170	2.46700	2110.4	2129.0	104.370	60.78	85.33	.11738E-05	1861	2.03745
120.000	.1583E+02	.69825E+03	.01899	2.306299	2.27950	2969.7	2988.6	111.838	60.60	85.93	.10014E-04	1797	2.01695
130.000	.1561E+02	.68814E+03	.01779	2.130012	2.10692	3830.9	3850.1	118.723	60.52	86.59	.59499E-04	1736	1.99694
140.000	.1538E+02	.67802E+03	.01676	1.970757	1.94668	4696.2	4715.7	125.134	60.52	87.31	.26668E-03	1675	1.97730
150.000	.1515E+02	.66788E+03	.01588	1.825792	1.79687	5568.1	5587.9	131.154	60.61	88.12	.95598E-03	1616	1.95797
160.000	.1491E+02	.65769E+03	.01512	1.692966	1.65607	6448.6	6468.7	136.846	60.79	89.02	.28631E-02	1557	1.93885
170.000	.1468E+02	.64743E+03	.01446	1.570549	1.52318	7340.1	7360.5	142.261	61.05	90.01	.74071E-02	1498	1.91987
180.000	.1445E+02	.63706E+03	.01388	1.457134	1.39736	8244.4	8265.1	147.439	61.39	91.11	.16983E-01	1440	1.90097
190.000	.1421E+02	.62656E+03	.01337	1.351561	1.27797	9163.2	9184.4	152.415	61.83	92.33	.35211E-01	1381	1.88207
200.000	.1397E+02	.61590E+03	.01292	1.252855	1.16447	10098.3	10119.8	157.216	62.35	93.69	.67068E-01	1322	1.86311
210.000	.1372E+02	.60503E+03	.01252	1.160192	1.05647	11051.0	11072.8	161.866	62.98	95.21	.11886E+00	1263	1.84402
220.000	.1347E+02	.59392E+03	.01218	1.072864	.95363	12022.4	12044.7	166.386	63.70	96.89	.19802E+00	1204	1.82471
230.000	.1321E+02	.58251E+03	.01188	.990251	.85567	13013.9	13036.6	170.792	64.52	98.78	.31270E+00	1144	1.80511
240.000	.1294E+02	.57075E+03	.01162	.911808	.76238	14026.6	14049.7	175.101	65.46	100.89	.47136E+00	1083	1.78511
250.000	.1267E+02	.55857E+03	.01139	.837039	.67355	15061.8	15085.5	179.325	66.51	103.27	.68215E+00	1022	1.76461
258.983	.1241E+02	.54718E+03	.01123	.772628	.59741	16012.3	16036.5	183.058	67.57	105.68	.92220E+00	966	1.74565
258.983	.1515E+00	.66799E+01	.91973	.001378	.04099	31396.3	33376.8	250.013	60.00	71.87	.92220E+00	221	1.00730
260.000	.1507E+00	.66459E+01	.92081	.001368	.04127	31459.3	33449.9	250.294	60.11	71.89	.92313E+00	222	1.00726
270.000	.1437E+00	.63348E+01	.93025	.001283	.04388	32083.3	34171.6	253.018	61.43	72.56	.93081E+00	227	1.00692
280.000	.1374E+00	.60584E+01	.93796	.001213	.04636	32718.9	34902.5	255.676	63.01	73.69	.93736E+00	232	1.00661
290.000	.1317E+00	.58096E+01	.94440	.001154	.04874	33369.0	35646.1	258.285	64.72	75.07	.94301E+00	237	1.00633
300.000	.1266E+00	.55836E+01	.94986	.001102	.05105	34035.1	36404.4	260.856	66.52	76.61	.94794E+00	242	1.00608
310.000	.1219E+00	.53769E+01	.95455	.001056	.05331	34718.4	37178.7	263.395	68.38	78.26	.95226E+00	247	1.00585
320.000	.1176E+00	.51868E+01	.95863	.001014	.05552	35419.3	37969.9	265.906	70.27	79.99	.95609E+00	251	1.00564
330.000	.1136E+00	.50110E+01	.96219	.000976	.05770	36138.6	38778.6	268.395	72.19	81.77	.95949E+00	255	1.00545
340.000	.1099E+00	.48478E+01	.96532	.000942	.05985	36876.4	39605.3	270.863	74.13	83.58	.96253E+00	259	1.00527
350.000	.1065E+00	.46958E+01	.96810	.000910	.06197	37633.1	40450.4	273.312	76.07	85.43	.96526E+00	263	1.00510
360.000	.1033E+00	.45537E+01	.97058	.000881	.06408	38408.8	41314.0	275.745	78.02	87.29	.96772E+00	267	1.00494
370.000	.1002E+00	.44205E+01	.97280	.000854	.06616	39203.6	42196.3	278.162	79.97	89.17	.96994E+00	271	1.00480
380.000	.9741E-01	.42954E+01	.97479	.000828	.06823	40017.5	43097.3	280.565	81.92	91.05	.97196E+00	275	1.00466
390.000	.9473E-01	.41775E+01	.97659	.000804	.07029	40850.4	44017.2	282.954	83.85	92.92	.97380E+00	279	1.00453
400.000	.9221E-01	.40663E+01	.97822	.000782	.07233	41702.4	44955.8	285.330	85.78	94.80	.97548E+00	282	1.00441
410.000	.8983E-01	.39611E+01	.97970	.000761	.07436	42573.4	45913.2	287.694	87.70	96.67	.97702E+00	286	1.00429
420.000	.8757E-01	.38615E+01	.98105	.000741	.07638	43463.3	46889.2	290.046	89.60	98.53	.97843E+00	289	1.00418
430.000	.8542E-01	.37669E+01	.98229	.000722	.07840	44371.8	47883.7	292.386	91.49	100.38	.97973E+00	293	1.00408
440.000	.8339E-01	.36771E+01	.98342	.000705	.08040	45299.0	48896.7	294.715	93.35	102.21	.98093E+00	296	1.00398
450.000	.8145E-01	.35916E+01	.98446	.000688	.08240	46244.6	49928.0	297.032	95.21	104.03	.98203E+00	300	1.00388
460.000	.7960E-01	.35101E+01	.98542	.000672	.08439	47208.3	50977.2	299.339	97.04	105.84	.98303E+00	303	0.00000
470.000	.7784E-01	.34323E+01	.98630	.000656	.08638	48190.3	52044.5	301.634	98.85	107.62	.98399E+00	306	0.00000
480.000	.7615E-01	.33580E+01	.98712	.000642	.08836	49190.1	53129.6	303.918	100.64	109.39	.98487E+00	309	0.00000
500.000	.7300E-01	.32190E+01	.98858	.000615	.09230	51242.5	55352.3	308.454	104.16	112.86	.98646E+00	316	0.00000
540.000	.6743E-01	.29734E+01	.99094	.000567	.10014	55552.9	60002.0	317.397	110.93	119.57	.98905E+00	328	0.00000
580.000	.6266E-01	.27633E+01	.99273	.000526	.10793	60125.7	64913.0	326.168	117.34	125.93	.99106E+00	340	0.00000
620.000	.5854E-01	.25814E+01	.99413	.000491	.11569	64946.8	70071.5	334.766	123.39	131.94	.99264E+00	351	0.00000
660.000	.5493E-01	.24223E+01	.99524	.000460	.12341	70002.5	75463.9	343.193	129.10	137.62	.99390E+00	362	0.00000
700.000	.5175E-01	.22818E+01	.99612	.000433	.13111	75279.3	81076.9	351.448	134.49	142.98	.99492E+00	373	0.00000

Table 21. (Continued)

Propane Isobar at P = 0.4 MPa

Temp. K	Density mol/L	Density kg/m3	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa·m3/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol·K)	C_v J/(mol·K)	C_p J/(mol·K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
85.507	.1663E+02	.73343E+03	.03383	3.106364	3.01611	.3	24.4	82.566	61.66	84.09	.44358E-09	2028	2.09054
90.000	.1653E+02	.72881E+03	.03234	2.979627	2.90355	388.5	412.7	87.036	61.45	84.30	.25020E-08	1995	2.08044
100.000	.1630E+02	.71859E+03	.02952	2.725705	2.67411	1250.0	1274.5	96.162	61.06	84.79	.64736E-07	1926	2.05860
110.000	.1606E+02	.70842E+03	.02722	2.503558	2.46816	2109.4	2134.3	104.361	60.79	85.33	.88639E-06	1861	2.03751
120.000	.1584E+02	.69829E+03	.02532	2.306713	2.28069	2968.6	2993.8	111.829	60.61	85.93	.75580E-05	1798	2.01702
130.000	.1561E+02	.68818E+03	.02371	2.130451	2.10813	3829.6	3855.3	118.714	60.52	86.58	.44889E-04	1736	1.99701
140.000	.1538E+02	.67807E+03	.02235	1.971217	1.94792	4694.9	4720.9	125.124	60.53	87.31	.20113E-03	1676	1.97739
150.000	.1515E+02	.66794E+03	.02117	1.826273	1.79814	5566.6	5593.0	131.143	60.61	88.12	.72079E-03	1616	1.95806
160.000	.1492E+02	.65775E+03	.02016	1.693468	1.65736	6447.0	6473.8	136.835	60.79	89.01	.21582E-02	1557	1.93895
170.000	.1468E+02	.64749E+03	.01927	1.571072	1.52451	7338.2	7365.5	142.250	61.05	90.00	.55821E-02	1499	1.91998
180.000	.1445E+02	.63713E+03	.01850	1.457680	1.39873	8242.3	8270.0	147.428	61.40	91.10	.12796E-01	1440	1.90108
190.000	.1421E+02	.62664E+03	.01782	1.352130	1.27937	9161.0	9189.1	152.403	61.83	92.32	.26526E-01	1382	1.88220
200.000	.1397E+02	.61598E+03	.01722	1.253450	1.16591	10095.8	10124.5	157.204	62.36	93.68	.50518E-01	1323	1.86325
210.000	.1372E+02	.60513E+03	.01669	1.160816	1.05795	11048.2	11077.3	161.853	62.98	95.19	.89519E-01	1264	1.84417
220.000	.1347E+02	.59402E+03	.01623	1.073519	.95515	12019.3	12049.0	166.372	63.70	96.87	.14912E+00	1205	1.82488
230.000	.1321E+02	.58263E+03	.01583	.990942	.85723	13010.4	13040.7	170.777	64.53	98.75	.23546E+00	1145	1.80530
240.000	.1295E+02	.57088E+03	.01548	.912540	.76399	14022.7	14053.6	175.085	65.46	100.86	.35489E+00	1084	1.78532
250.000	.1267E+02	.55871E+03	.01519	.837819	.67521	15057.4	15089.0	179.308	66.52	103.23	.51356E+00	1023	1.76485
260.000	.1238E+02	.54603E+03	.01494	.766321	.59073	16116.4	16148.7	183.460	67.70	105.93	.71703E+00	961	1.74374
267.682	.1215E+02	.53587E+03	.01479	.713308	.52863	16947.6	16980.5	186.609	68.70	108.26	.90685E+00	912	1.72698
267.682	.1993E+00	.87892E+01	.90171	.001856	.04053	31810.0	33816.9	249.506	62.18	75.17	.90685E+00	221	1.00961
270.000	.1969E+00	.86848E+01	.90471	.001823	.04121	31960.1	33991.1	250.153	62.40	75.14	.90920E+00	222	1.00949
280.000	.1876E+00	.82714E+01	.91600	.001703	.04401	32611.4	34743.9	252.891	63.66	75.55	.91806E+00	228	1.00903
290.000	.1793E+00	.79065E+01	.92523	.001606	.04663	33273.0	35503.9	255.557	65.20	76.52	.92565E+00	233	1.00863
300.000	.1719E+00	.75798E+01	.93295	.001525	.04914	33948.1	36275.2	258.172	66.89	77.78	.93223E+00	239	1.00827
310.000	.1652E+00	.72840E+01	.93951	.001454	.05156	34638.5	37060.1	260.746	68.67	79.23	.93799E+00	243	1.00794
320.000	.1591E+00	.70143E+01	.94515	.001392	.05392	35345.5	37860.2	263.286	70.50	80.81	.94306E+00	248	1.00764
330.000	.1534E+00	.67667E+01	.95005	.001336	.05622	36069.8	38676.5	265.798	72.38	82.47	.94755E+00	253	1.00736
340.000	.1483E+00	.65382E+01	.95433	.001285	.05847	36812.0	39509.9	268.285	74.29	84.20	.95156E+00	257	1.00711
350.000	.1435E+00	.63263E+01	.95811	.001239	.06069	37572.5	40360.7	270.751	76.21	85.97	.95515E+00	261	1.00688
360.000	.1390E+00	.61291E+01	.96147	.001197	.06287	38351.5	41229.4	273.198	78.14	87.77	.95838E+00	265	1.00666
370.000	.1348E+00	.59450E+01	.96446	.001158	.06503	39149.2	42116.2	275.628	80.07	89.60	.96130E+00	269	1.00646
380.000	.1309E+00	.57725E+01	.96714	.001122	.06717	39965.7	43021.4	278.042	82.01	91.43	.96394E+00	273	1.00626
390.000	.1272E+00	.56105E+01	.96955	.001089	.06929	40801.0	43944.9	280.441	83.93	93.28	.96635E+00	277	1.00609
400.000	.1238E+00	.54580E+01	.97173	.001057	.07139	41655.2	44886.9	282.826	85.85	95.12	.96854E+00	281	1.00592
410.000	.1205E+00	.53140E+01	.97370	.001028	.07347	42528.1	45847.4	285.197	87.76	96.97	.97055E+00	284	1.00576
420.000	.1174E+00	.51779E+01	.97550	.001000	.07554	43419.7	46826.2	287.556	89.66	98.80	.97239E+00	288	1.00561
430.000	.1145E+00	.50490E+01	.97714	.000974	.07760	44329.9	47823.4	289.902	91.54	100.63	.97408E+00	292	1.00547
440.000	.1117E+00	.49267E+01	.97864	.000949	.07965	45258.6	48838.8	292.236	93.40	102.45	.97563E+00	295	1.00533
450.000	.1091E+00	.48105E+01	.98001	.000926	.08168	46205.5	49872.3	294.559	95.25	104.25	.97707E+00	299	1.00521
460.000	.1066E+00	.46999E+01	.98128	.000904	.08371	47170.6	50923.6	296.870	97.08	106.04	.97838E+00	302	0.00000
470.000	.1042E+00	.45944E+01	.98244	.000883	.08573	48153.7	51992.9	299.169	98.88	107.81	.97961E+00	305	0.00000
480.000	.1019E+00	.44938E+01	.98352	.000863	.08774	49154.6	53079.8	301.457	100.67	109.57	.98076E+00	309	0.00000
500.000	.9764E-01	.43056E+01	.98543	.000826	.09175	51209.1	55305.8	306.000	104.18	113.02	.98281E+00	315	0.00000
540.000	.9013E-01	.39743E+01	.98851	.000760	.09969	55522.9	59961.2	314.954	110.95	119.69	.98616E+00	327	0.00000
580.000	.8371E-01	.36914E+01	.99085	.000705	.10756	60098.5	64876.8	323.733	117.35	126.03	.98875E+00	339	0.00000
620.000	.7817E-01	.34470E+01	.99267	.000658	.11538	64921.9	70039.1	332.338	123.41	132.03	.99078E+00	351	0.00000
660.000	.7332E-01	.32334E+01	.99410	.000616	.12316	69979.5	75434.7	340.769	129.12	137.70	.99240E+00	362	0.00000
700.000	.6906E-01	.30452E+01	.99524	.000580	.13091	75258.0	81050.5	349.029	134.50	143.04	.99371E+00	373	0.00000

Table 21. (Continued)

Propane Isobar at P = 0.5 MPa

Temp. K	Density mol/L	Density kg/m3	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa·m3/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol·K)	Cv J/(mol·K)	Cp J/(mol·K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
85.516	.1663E+02	.73345E+03	.04228	3.106387	3.01698	.4	30.5	82.567	61.67	84.09	.35923E-09	2028	2.09057
90.000	.1653E+02	.72885E+03	.04043	2.979943	2.90467	387.7	417.9	87.027	61.45	84.29	.20179E-08	1996	2.08050
100.000	.1630E+02	.71862E+03	.03690	2.726061	2.67526	1249.1	1279.8	96.153	61.07	84.79	.52173E-07	1927	2.05867
110.000	.1607E+02	.70846E+03	.03403	2.503945	2.46933	2108.4	2139.5	104.352	60.79	85.33	.71396E-06	1861	2.03758
120.000	.1584E+02	.69834E+03	.03164	2.307128	2.28187	2967.5	2999.0	111.820	60.61	85.92	.60848E-05	1798	2.01709
130.000	.1561E+02	.68823E+03	.02964	2.130889	2.10934	3828.4	3860.5	118.704	60.53	86.58	.36125E-04	1737	1.99709
140.000	.1538E+02	.67813E+03	.02793	1.971677	1.94916	4693.5	4726.0	125.115	60.53	87.31	.16181E-03	1676	1.97747
150.000	.1515E+02	.66799E+03	.02647	1.826755	1.79941	5565.0	5598.1	131.133	60.62	88.11	.57969E-03	1617	1.95815
160.000	.1492E+02	.65781E+03	.02520	1.693970	1.65866	6445.3	6478.8	136.825	60.79	89.00	.17353E-02	1558	1.93904
170.000	.1468E+02	.64756E+03	.02409	1.571595	1.52584	7336.4	7370.4	142.239	61.05	89.99	.44873E-02	1499	1.92008
180.000	.1445E+02	.63720E+03	.02312	1.458225	1.40009	8240.3	8274.9	147.417	61.40	91.09	.10284E-01	1441	1.90120
190.000	.1421E+02	.62672E+03	.02227	1.352699	1.28077	9158.7	9193.9	152.391	61.84	92.31	.21316E-01	1382	1.88233
200.000	.1397E+02	.61607E+03	.02152	1.254045	1.16735	10093.3	10129.1	157.191	62.36	93.67	.40589E-01	1324	1.86339
210.000	.1372E+02	.60522E+03	.02086	1.161438	1.05942	11045.4	11081.8	161.840	62.98	95.17	.71915E-01	1265	1.84432
220.000	.1347E+02	.59413E+03	.02029	1.074173	.95666	12016.2	12053.4	166.358	63.70	96.85	.11978E+00	1206	1.82505
230.000	.1322E+02	.58275E+03	.01979	.991632	.85879	13007.0	13044.8	170.762	64.53	98.73	.18911E+00	1146	1.80548
240.000	.1295E+02	.57101E+03	.01935	.913271	.76560	14018.8	14057.4	175.068	65.47	100.83	.28501E+00	1085	1.78553
250.000	.1267E+02	.55886E+03	.01898	.838598	.67687	15053.1	15092.5	179.290	66.52	103.19	.41241E+00	1024	1.76508
260.000	.1239E+02	.54620E+03	.01867	.767156	.59244	16111.4	16151.8	183.441	67.70	105.88	.57577E+00	962	1.74400
270.000	.1209E+02	.53292E+03	.01843	.698505	.51214	17196.0	17237.3	187.534	69.02	108.96	.77876E+00	899	1.72212
274.876	.1193E+02	.52617E+03	.01833	.665904	.47441	17735.4	17777.3	189.513	69.71	110.63	.89313E+00	867	1.71110
274.876	.2472E+00	.10901E+02	.88500	.002353	.03987	32148.2	34170.9	249.153	64.07	78.23	.89313E+00	220	1.01193
280.000	.2406E+00	.10611E+02	.89257	.002257	.04148	32492.9	34570.9	250.594	64.52	77.99	.89878E+00	223	1.01160
290.000	.2291E+00	.10103E+02	.90508	.002106	.04441	33169.4	35351.8	253.334	65.79	78.30	.90842E+00	229	1.01104
300.000	.2190E+00	.96567E+01	.91536	.001984	.04715	33855.5	36138.8	256.002	67.32	79.17	.91670E+00	235	1.01054
310.000	.2099E+00	.92580E+01	.92399	.001882	.04976	34554.6	36936.2	258.616	69.00	80.35	.92391E+00	240	1.01010
320.000	.2018E+00	.88979E+01	.93134	.001793	.05227	35268.5	37746.5	261.189	70.77	81.74	.93024E+00	245	1.00970
330.000	.1943E+00	.85699E+01	.93768	.001715	.05470	35998.6	38571.4	263.727	72.60	83.26	.93584E+00	250	1.00933
340.000	.1875E+00	.82692E+01	.94319	.001646	.05707	36745.7	39412.0	266.237	74.47	84.88	.94082E+00	255	1.00900
350.000	.1812E+00	.79920E+01	.94803	.001583	.05939	37510.4	40269.2	268.721	76.36	86.56	.94528E+00	259	1.00869
360.000	.1754E+00	.77351E+01	.95231	.001526	.06166	38293.0	41143.5	271.184	78.27	88.30	.94927E+00	263	1.00841
370.000	.1700E+00	.74962E+01	.95610	.001474	.06390	39093.9	42035.2	273.627	80.19	90.06	.95288E+00	267	1.00815
380.000	.1649E+00	.72731E+01	.95949	.001426	.06611	39913.2	42944.8	276.053	82.10	91.85	.95615E+00	271	1.00790
390.000	.1602E+00	.70642E+01	.96254	.001382	.06829	40751.1	43872.3	278.462	84.02	93.65	.95911E+00	275	1.00767
400.000	.1557E+00	.68680E+01	.96528	.001340	.07045	41607.5	44817.8	280.856	85.93	95.46	.96181E+00	279	1.00745
410.000	.1516E+00	.66833E+01	.96776	.001302	.07259	42482.5	45781.5	283.235	87.83	97.28	.96428E+00	283	1.00725
420.000	.1476E+00	.65091E+01	.97001	.001265	.07471	43376.0	46763.3	285.601	89.72	99.09	.96654E+00	287	1.00706
430.000	.1439E+00	.63443E+01	.97206	.001231	.07681	44287.9	47763.2	287.954	91.59	100.89	.96862E+00	290	1.00687
440.000	.1403E+00	.61882E+01	.97393	.001199	.07890	45218.1	48781.1	290.294	93.45	102.69	.97053E+00	294	1.00670
450.000	.1370E+00	.60401E+01	.97564	.001169	.08098	46166.6	49817.0	292.621	95.29	104.47	.97230E+00	297	1.00654
460.000	.1338E+00	.58992E+01	.97722	.001141	.08304	47133.0	50870.5	294.937	97.12	106.25	.97390E+00	301	0.00000
470.000	.1307E+00	.57652E+01	.97866	.001113	.08510	48117.3	51941.8	297.241	98.92	108.01	.97541E+00	304	0.00000
480.000	.1278E+00	.56374E+01	.98000	.001088	.08714	49119.4	53030.5	299.533	100.71	109.75	.97681E+00	308	0.00000
500.000	.1224E+00	.53988E+01	.98237	.001040	.09121	51176.0	55260.0	304.083	104.21	113.18	.97933E+00	314	0.00000
540.000	.1129E+00	.49796E+01	.98618	.000956	.09925	55493.3	59921.1	313.048	110.97	119.82	.98342E+00	327	0.00000
580.000	.1048E+00	.46227E+01	.98905	.000886	.10720	60071.7	64841.3	321.835	117.37	126.13	.98657E+00	339	0.00000
620.000	.9785E-01	.43148E+01	.99128	.000826	.11509	64897.4	70007.5	330.446	123.42	132.12	.98904E+00	350	0.00000
660.000	.9175E-01	.40461E+01	.99303	.000773	.12293	69957.0	75406.3	338.883	129.13	137.77	.99101E+00	362	0.00000
700.000	.8639E-01	.38096E+01	.99442	.000727	.13072	75237.2	81024.8	347.146	134.51	143.11	.99259E+00	372	0.00000

Table 21. (Continued)

Propane Isobar at P = 0.6 MPa

Temp. K	Density mol/L	Density kg/m³	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa·m³/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol·K)	C_v J/(mol·K)	C_p J/(mol·K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
85.526	.1663E+02	.73348E+03	.05073	3.106412	3.01786	.5	36.6	82.568	61.67	84.09	.30304E-09	2028	2.09061
90.000	.1653E+02	.72888E+03	.04851	2.980259	2.90580	386.9	423.2	87.019	61.46	84.29	.16952E-08	1996	2.08055
100.000	.1630E+02	.71866E+03	.04428	2.726417	2.67640	1248.2	1285.0	96.145	61.07	84.79	.43799E-07	1927	2.05873
110.000	.1607E+02	.70850E+03	.04083	2.504333	2.47049	2107.4	2144.8	104.343	60.79	85.33	.59903E-06	1862	2.03765
120.000	.1584E+02	.69838E+03	.03797	2.307542	2.28306	2966.4	3004.3	111.811	60.62	85.92	.51028E-05	1798	2.01717
130.000	.1561E+02	.68828E+03	.03556	2.131327	2.11056	3827.2	3865.6	118.695	60.53	86.58	.30283E-04	1737	1.99717
140.000	.1538E+02	.67818E+03	.03352	1.972137	1.95040	4692.1	4731.2	125.105	60.53	87.30	.13560E-03	1677	1.97756
150.000	.1515E+02	.66805E+03	.03176	1.827236	1.80067	5563.5	5603.2	131.123	60.62	88.10	.48564E-03	1617	1.95824
160.000	.1492E+02	.65787E+03	.03023	1.694471	1.65996	6443.6	6483.9	136.814	60.80	89.00	.14534E-02	1558	1.93914
170.000	.1469E+02	.64762E+03	.02890	1.572118	1.52717	7334.6	7375.4	142.228	61.06	89.99	.37574E-02	1500	1.92019
180.000	.1445E+02	.63728E+03	.02774	1.458770	1.40145	8238.3	8279.8	147.405	61.41	91.08	.86101E-02	1441	1.90132
190.000	.1421E+02	.62680E+03	.02672	1.353267	1.28216	9156.5	9198.7	152.379	61.84	92.30	.17842E-01	1383	1.88245
200.000	.1397E+02	.61615E+03	.02582	1.254639	1.16878	10090.8	10133.8	157.179	62.37	93.65	.33970E-01	1324	1.86353
210.000	.1373E+02	.60531E+03	.02503	1.162060	1.06090	11042.6	11086.4	161.827	62.99	95.16	.60180E-01	1265	1.84448
220.000	.1348E+02	.59423E+03	.02434	1.074826	.95818	12013.2	12057.7	166.344	63.71	96.83	.10022E+00	1206	1.82522
230.000	.1322E+02	.58286E+03	.02374	.992321	.86035	13003.6	13048.9	170.747	64.53	98.70	.15822E+00	1147	1.80567
240.000	.1295E+02	.57114E+03	.02322	.914001	.76720	14015.0	14061.3	175.052	65.47	100.80	.23843E+00	1086	1.78574
250.000	.1268E+02	.55901E+03	.02277	.839375	.67853	15048.7	15096.0	179.273	66.53	103.16	.34498E+00	1025	1.76532
260.000	.1239E+02	.54637E+03	.02240	.767990	.59416	16106.4	16154.9	183.422	67.71	105.83	.48160E+00	963	1.74427
270.000	.1209E+02	.53312E+03	.02211	.699406	.51392	17190.3	17239.9	187.513	69.02	108.90	.65137E+00	900	1.72243
280.000	.1177E+02	.51909E+03	.02189	.633178	.43762	18303.3	18354.3	191.562	70.48	112.46	.85648E+00	835	1.69957
281.069	.1174E+02	.51754E+03	.02188	.626219	.42969	18424.4	18475.5	191.993	70.65	112.88	.88066E+00	828	1.69706
281.069	.2954E+00	.13025E+02	.86925	.002870	.03910	32435.3	34466.7	248.887	65.76	81.15	.88066E+00	219	1.01426
290.000	.2816E+00	.12416E+02	.88375	.002665	.04205	33056.9	35187.8	251.412	66.53	80.54	.89119E+00	225	1.01358
300.000	.2682E+00	.11826E+02	.89698	.002487	.04506	33756.7	35994.1	254.145	67.84	80.83	.90123E+00	231	1.01292
310.000	.2564E+00	.11306E+02	.90792	.002343	.04789	34466.0	36806.2	256.808	69.39	81.66	.90993E+00	237	1.01234
320.000	.2459E+00	.10843E+02	.91714	.002222	.05057	35188.0	37628.2	259.418	71.08	82.80	.91754E+00	242	1.01183
330.000	.2364E+00	.10424E+02	.92503	.002117	.05315	35924.7	38462.8	261.986	72.85	84.14	.92426E+00	247	1.01136
340.000	.2278E+00	.10044E+02	.93186	.002025	.05564	36677.3	39311.6	264.519	74.67	85.63	.93022E+00	252	1.01094
350.000	.2199E+00	.96949E+01	.93781	.001943	.05806	37446.6	40175.7	267.024	76.53	87.21	.93554E+00	257	1.01056
360.000	.2126E+00	.93732E+01	.94305	.001869	.06043	38233.2	41056.0	269.504	78.41	88.86	.94031E+00	261	1.01020
370.000	.2058E+00	.90752E+01	.94769	.001802	.06276	39037.6	41953.0	271.961	80.31	90.56	.94460E+00	266	1.00987
380.000	.1995E+00	.87981E+01	.95182	.001740	.06504	39860.0	42867.2	274.399	82.21	92.29	.94848E+00	270	1.00956
390.000	.1936E+00	.85393E+01	.95551	.001684	.06729	40700.5	43798.9	276.819	84.11	94.05	.95201E+00	274	1.00928
400.000	.1882E+00	.82970E+01	.95884	.001631	.06951	41559.4	44748.3	279.223	86.01	95.82	.95522E+00	278	1.00901
410.000	.1830E+00	.80694E+01	.96183	.001583	.07171	42436.5	45715.4	281.611	87.90	97.60	.95815E+00	282	1.00876
420.000	.1781E+00	.78551E+01	.96455	.001537	.07388	43332.0	46700.3	283.984	89.78	99.38	.96083E+00	285	1.00852
430.000	.1735E+00	.76529E+01	.96702	.001495	.07603	44245.7	47703.0	286.343	91.65	101.16	.96329E+00	289	1.00830
440.000	.1692E+00	.74616E+01	.96927	.001455	.07816	45177.6	48723.5	288.690	93.50	102.94	.96555E+00	293	1.00809
450.000	.1651E+00	.72803E+01	.97132	.001417	.08028	46127.5	49761.7	291.023	95.34	104.71	.96763E+00	296	1.00789
460.000	.1612E+00	.71083E+01	.97321	.001382	.08238	47095.3	50817.5	293.343	97.16	106.46	.96954E+00	300	0.00000
470.000	.1575E+00	.69447E+01	.97494	.001348	.08447	48081.0	51890.9	295.651	98.96	108.21	.97132E+00	303	0.00000
480.000	.1540E+00	.67889E+01	.97653	.001316	.08655	49084.3	52981.6	297.948	100.74	109.93	.97298E+00	307	0.00000
500.000	.1474E+00	.64985E+01	.97937	.001257	.09067	51143.0	55214.5	302.505	104.24	113.35	.97594E+00	313	0.00000
540.000	.1358E+00	.59894E+01	.98389	.001155	.09882	55463.9	59881.4	311.481	110.99	119.95	.98076E+00	326	0.00000
580.000	.1260E+00	.55570E+01	.98731	.001069	.10685	60045.1	64806.4	320.276	117.39	126.24	.98446E+00	338	0.00000
620.000	.1176E+00	.51847E+01	.98994	.000995	.11481	64873.2	69976.4	328.894	123.44	132.20	.98737E+00	350	0.00000
660.000	.1102E+00	.48604E+01	.99200	.000931	.12270	69934.7	75378.4	337.336	129.14	137.84	.98967E+00	361	0.00000
700.000	.1037E+00	.45751E+01	.99364	.000875	.13055	75216.6	80999.7	345.603	134.52	143.17	.99153E+00	372	0.00000

Table 21. (Continued)

Propane Isobar at P = 0.7 MPa

Temp. K	Density mol/L	Density kg/m³	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa·m³/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol·K)	C_v J/(mol·K)	C_p J/(mol·K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
85.535	.1663E+02	.73350E+03	.05917	3.106436	3.01874	.6	42.7	82.569	61.67	84.08	.26294E-09	2028	2.09064
90.000	.1653E+02	.72892E+03	.05659	2.980575	2.90692	386.2	428.5	87.010	61.46	84.29	.14648E-08	1996	2.08061
100.000	.1630E+02	.71870E+03	.05166	2.726772	2.67754	1247.3	1290.3	96.136	61.08	84.78	.37820E-07	1927	2.05879
110.000	.1607E+02	.70854E+03	.04763	2.504720	2.47166	2106.4	2150.0	104.334	60.80	85.32	.51696E-06	1862	2.03771
120.000	.1584E+02	.69842E+03	.04430	2.307957	2.28425	2965.3	3009.5	111.802	60.62	85.92	.44016E-05	1799	2.01724
130.000	.1561E+02	.68833E+03	.04149	2.131765	2.11177	3826.0	3870.8	118.686	60.53	86.57	.26111E-04	1737	1.99725
140.000	.1538E+02	.67823E+03	.03910	1.972597	1.95163	4690.8	4736.3	125.095	60.54	87.30	.11688E-03	1677	1.97764
150.000	.1515E+02	.66810E+03	.03705	1.827716	1.80194	5562.0	5608.2	131.113	60.63	88.10	.41847E-03	1618	1.95833
160.000	.1492E+02	.65793E+03	.03527	1.694973	1.66126	6442.0	6488.9	136.804	60.80	88.99	.12520E-02	1559	1.93924
170.000	.1469E+02	.64769E+03	.03372	1.572640	1.52850	7332.7	7380.4	142.217	61.06	89.98	.32362E-02	1500	1.92030
180.000	.1445E+02	.63735E+03	.03236	1.459315	1.40282	8236.2	8284.7	147.394	61.41	91.07	.74143E-02	1442	1.90143
190.000	.1422E+02	.62687E+03	.03117	1.353835	1.28356	9154.2	9203.5	152.368	61.84	92.29	.15362E-01	1383	1.88258
200.000	.1397E+02	.61624E+03	.03012	1.255232	1.17022	10088.3	10138.4	157.166	62.37	93.64	.29243E-01	1325	1.86367
210.000	.1373E+02	.60541E+03	.02920	1.162682	1.06237	11039.9	11090.9	161.813	62.99	95.14	.51798E-01	1266	1.84463
220.000	.1348E+02	.59434E+03	.02839	1.075479	.95969	12010.1	12062.0	166.330	63.71	96.81	.86252E-01	1207	1.82539
230.000	.1322E+02	.58298E+03	.02769	.993009	.86191	13000.1	13053.1	170.732	64.54	98.68	.13615E+00	1147	1.80586
240.000	.1295E+02	.57127E+03	.02708	.914729	.76881	14011.1	14065.1	175.036	65.47	100.77	.20516E+00	1087	1.78595
250.000	.1268E+02	.55916E+03	.02656	.840151	.68019	15044.4	15099.6	179.255	66.53	103.12	.29682E+00	1026	1.76555
260.000	.1239E+02	.54654E+03	.02613	.768821	.59588	16101.5	16158.0	183.403	67.71	105.78	.41435E+00	964	1.74454
270.000	.1209E+02	.53331E+03	.02578	.700305	.51570	17184.6	17242.5	187.492	69.03	108.84	.56037E+00	901	1.72274
280.000	.1178E+02	.51932E+03	.02553	.634160	.43947	18296.7	18356.2	191.539	70.49	112.38	.73681E+00	837	1.69993
286.539	.1156E+02	.50967E+03	.02542	.591965	.39167	19041.9	19102.4	194.171	71.53	115.05	.86916E+00	793	1.68434
286.539	.3439E+00	.15167E+02	.85426	.003409	.03825	32684.8	34720.0	248.675	67.31	83.99	.86916E+00	218	1.01661
290.000	.3372E+00	.14869E+02	.86101	.003298	.03951	32933.6	35009.7	249.679	67.48	83.41	.87390E+00	220	1.01628
300.000	.3197E+00	.14100E+02	.87767	.003042	.04287	33650.6	35839.9	252.493	68.47	82.84	.88577E+00	227	1.01542
310.000	.3047E+00	.13438E+02	.89121	.002844	.04594	34372.3	36669.4	255.213	69.85	83.17	.89600E+00	233	1.01469
320.000	.2915E+00	.12855E+02	.90250	.002681	.04882	35103.7	37504.9	257.866	71.42	84.00	.90492E+00	239	1.01404
330.000	.2797E+00	.12335E+02	.91207	.002544	.05156	35847.8	38350.4	260.467	73.12	85.13	.91277E+00	244	1.01346
340.000	.2691E+00	.11865E+02	.92030	.002425	.05418	36606.5	39208.1	263.028	74.89	86.45	.91971E+00	250	1.01294
350.000	.2594E+00	.11437E+02	.92744	.002320	.05672	37380.9	40079.9	265.555	76.71	87.91	.92590E+00	254	1.01246
360.000	.2505E+00	.11045E+02	.93369	.002227	.05919	38171.9	40966.7	268.053	78.57	89.47	.93144E+00	259	1.01203
370.000	.2423E+00	.10683E+02	.93920	.002142	.06161	38980.1	41869.4	270.526	80.44	91.09	.93643E+00	264	1.01163
380.000	.2347E+00	.10348E+02	.94410	.002066	.06397	39805.7	42788.6	272.977	82.32	92.76	.94093E+00	268	1.01126
390.000	.2276E+00	.10037E+02	.94847	.001996	.06629	40649.2	43724.7	275.409	84.21	94.47	.94501E+00	272	1.01091
400.000	.2210E+00	.97454E+01	.95238	.001931	.06857	41510.6	44678.0	277.822	86.10	96.20	.94873E+00	276	1.01059
410.000	.2148E+00	.94727E+01	.95591	.001871	.07082	42390.1	45648.7	280.219	87.98	97.94	.95211E+00	280	1.01029
420.000	.2090E+00	.92164E+01	.95910	.001816	.07305	43287.6	46636.9	282.600	89.85	99.69	.95521E+00	284	1.01000
430.000	.2035E+00	.89750E+01	.96199	.001764	.07525	44203.2	47642.6	284.967	91.71	101.45	.95805E+00	288	1.00974
440.000	.1984E+00	.87470E+01	.96463	.001716	.07743	45136.8	48665.8	287.319	93.56	103.20	.96066E+00	292	1.00949
450.000	.1935E+00	.85314E+01	.96703	.001670	.07958	46088.3	49706.5	289.658	95.39	104.94	.96306E+00	295	1.00925
460.000	.1888E+00	.83270E+01	.96923	.001627	.08173	47057.6	50764.6	291.983	97.20	106.68	.96526E+00	299	0.00000
470.000	.1844E+00	.81329E+01	.97125	.001587	.08385	48044.6	51840.0	294.296	99.00	108.41	.96732E+00	303	0.00000
480.000	.1802E+00	.79482E+01	.97311	.001549	.08596	49049.1	52932.7	296.596	100.78	110.13	.96922E+00	306	0.00000
500.000	.1724E+00	.76045E+01	.97640	.001478	.09015	51110.1	55169.2	301.161	104.28	113.51	.97263E+00	313	0.00000
540.000	.1588E+00	.70036E+01	.98166	.001356	.09839	55434.7	59842.1	310.148	111.02	120.08	.97820E+00	326	0.00000
580.000	.1473E+00	.64944E+01	.98561	.001253	.10651	60018.8	64771.8	318.952	117.41	126.35	.98245E+00	338	0.00000
620.000	.1374E+00	.60568E+01	.98865	.001166	.11454	64849.2	69945.7	327.576	123.45	132.29	.98578E+00	350	0.00000
660.000	.1287E+00	.56761E+01	.99102	.001090	.12249	69912.7	75351.0	336.023	129.15	137.92	.98842E+00	361	0.00000
700.000	.1211E+00	.53416E+01	.99290	.001024	.13038	75196.3	80975.1	344.295	134.53	143.23	.99054E+00	372	0.00000

Table 21. (Continued)

Propane Isobar at P = 0.8 MPa

Temp. K	Density mol/L	Density kg/m³	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa·m³/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol·K)	C_v J/(mol·K)	C_p J/(mol·K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
85.544	.1663E+02	.73353E+03	.06762	3.106461	3.01961	.7	48.7	82.570	61.68	84.08	.23291E-09	2028	2.09067
90.000	.1653E+02	.72895E+03	.06467	2.980892	2.90805	385.4	433.8	87.002	61.47	84.29	.12921E-08	1996	2.08067
100.000	.1630E+02	.71874E+03	.05903	2.727128	2.67869	1246.5	1295.6	96.127	61.08	84.78	.33338E-07	1928	2.05885
110.000	.1607E+02	.70858E+03	.05444	2.505108	2.47282	2105.5	2155.3	104.325	60.80	85.32	.45543E-06	1862	2.03778
120.000	.1584E+02	.69847E+03	.05062	2.308371	2.28544	2964.2	3014.7	111.793	60.62	85.91	.38759E-05	1799	2.01731
130.000	.1561E+02	.68837E+03	.04741	2.132203	2.11298	3824.8	3876.0	118.676	60.54	86.57	.22983E-04	1738	1.99732
140.000	.1538E+02	.67828E+03	.04468	1.973057	1.95287	4689.4	4741.5	125.086	60.54	87.29	.10284E-03	1678	1.97772
150.000	.1515E+02	.66816E+03	.04233	1.828197	1.80321	5560.5	5613.3	131.103	60.63	88.09	.36811E-03	1618	1.95842
160.000	.1492E+02	.65799E+03	.04030	1.695474	1.66255	6440.3	6493.9	136.794	60.81	88.98	.11011E-02	1559	1.93934
170.000	.1469E+02	.64776E+03	.03853	1.573163	1.52982	7330.9	7385.3	142.207	61.07	89.97	.28454E-02	1501	1.92041
180.000	.1445E+02	.63742E+03	.03698	1.459859	1.40418	8234.2	8289.5	147.383	61.41	91.06	.65176E-02	1442	1.90155
190.000	.1422E+02	.62695E+03	.03562	1.354403	1.28496	9152.0	9208.3	152.356	61.85	92.28	.13501E-01	1384	1.88271
200.000	.1398E+02	.61633E+03	.03442	1.255825	1.17165	10085.9	10143.1	157.154	62.38	93.63	.25698E-01	1326	1.86381
210.000	.1373E+02	.60550E+03	.03337	1.163303	1.06384	11037.1	11095.4	161.800	63.00	95.13	.45513E-01	1267	1.84478
220.000	.1348E+02	.59444E+03	.03244	1.076131	.96120	12007.0	12066.4	166.316	63.72	96.79	.75778E-01	1208	1.82555
230.000	.1322E+02	.58309E+03	.03164	.993696	.86347	12996.7	13057.2	170.717	64.54	98.66	.11961E+00	1148	1.80604
240.000	.1296E+02	.57140E+03	.03094	.915457	.77041	14007.3	14069.0	175.020	65.48	100.74	.18021E+00	1088	1.78616
250.000	.1268E+02	.55930E+03	.03034	.840925	.68185	15040.0	15103.1	179.238	66.53	103.08	.26071E+00	1027	1.76579
260.000	.1240E+02	.54671E+03	.02985	.769651	.59759	16096.6	16161.1	183.384	67.71	105.74	.36391E+00	966	1.74481
270.000	.1210E+02	.53350E+03	.02946	.701201	.51747	17179.0	17245.1	187.471	69.03	108.78	.49214E+00	903	1.72304
280.000	.1178E+02	.51955E+03	.02917	.635139	.44132	18290.2	18358.1	191.515	70.49	112.30	.64706E+00	838	1.70029
290.000	.1144E+02	.50464E+03	.02899	.570987	.36893	19434.5	19504.4	195.535	72.11	116.49	.82954E+00	771	1.67624
291.460	.1139E+02	.50237E+03	.02898	.561750	.35866	19605.1	19675.3	196.122	72.36	117.17	.85850E+00	762	1.67260
291.460	.3931E+00	.17333E+02	.83988	.003970	.03735	32905.4	34940.7	248.498	68.75	86.80	.85850E+00	217	1.01900
300.000	.3741E+00	.16498E+02	.85728	.003662	.04055	33536.1	35674.5	250.978	69.23	85.30	.87028E+00	223	1.01807
310.000	.3552E+00	.15664E+02	.87379	.003390	.04391	34272.7	36524.9	253.767	70.37	84.96	.88212E+00	230	1.01714
320.000	.3388E+00	.14942E+02	.88736	.003176	.04701	35015.1	37376.1	256.469	71.81	85.37	.89237E+00	236	1.01633
330.000	.3244E+00	.14306E+02	.89876	.002998	.04992	35767.8	38233.8	259.108	73.42	86.23	.90136E+00	242	1.01562
340.000	.3115E+00	.13736E+02	.90849	.002847	.05270	36533.3	39101.6	261.699	75.14	87.36	.90931E+00	247	1.01499
350.000	.2998E+00	.13222E+02	.91688	.002716	.05536	37313.4	39981.6	264.250	76.91	88.67	.91637E+00	252	1.01442
360.000	.2892E+00	.12753E+02	.92420	.002600	.05794	38109.1	40875.5	266.768	78.73	90.12	.92269E+00	257	1.01390
370.000	.2794E+00	.12322E+02	.93063	.002496	.06044	38921.3	41784.3	269.258	80.58	91.66	.92837E+00	262	1.01342
380.000	.2704E+00	.11925E+02	.93631	.002403	.06289	39750.5	42708.8	271.723	82.44	93.26	.93349E+00	266	1.01298
390.000	.2621E+00	.11557E+02	.94138	.002318	.06528	40597.1	43649.6	274.167	84.31	94.91	.93813E+00	271	1.01257
400.000	.2543E+00	.11214E+02	.94591	.002240	.06763	41461.2	44607.1	276.591	86.19	96.59	.94234E+00	275	1.01219
410.000	.2470E+00	.10894E+02	.94998	.002168	.06994	42343.1	45581.5	278.997	88.06	98.30	.94618E+00	279	1.01184
420.000	.2402E+00	.10593E+02	.95365	.002102	.07222	43242.8	46573.1	281.386	89.92	100.01	.94969E+00	283	1.01150
430.000	.2338E+00	.10311E+02	.95698	.002040	.07447	44160.4	47581.8	283.760	91.77	101.74	.95291E+00	287	1.01119
440.000	.2278E+00	.10045E+02	.96000	.001982	.07669	45095.8	48607.8	286.118	93.61	103.47	.95587E+00	291	1.01090
450.000	.2221E+00	.97934E+01	.96276	.001928	.07889	46048.9	49651.1	288.463	95.44	105.19	.95859E+00	294	1.01062
460.000	.2167E+00	.95555E+01	.96528	.001878	.08107	47019.7	50711.6	290.794	97.25	106.91	.96108E+00	298	0.00000
470.000	.2116E+00	.93299E+01	.96759	.001830	.08323	48008.1	51789.2	293.111	99.04	108.62	.96341E+00	302	0.00000
480.000	.2067E+00	.91155E+01	.96971	.001785	.08538	49013.9	52884.0	295.416	100.82	110.32	.96556E+00	305	0.00000
500.000	.1977E+00	.87171E+01	.97347	.001702	.08963	51077.2	55124.1	299.988	104.31	113.68	.96942E+00	312	0.00000
540.000	.1819E+00	.80221E+01	.97946	.001559	.09798	55405.5	59803.1	308.987	111.04	120.22	.97569E+00	325	0.00000
580.000	.1686E+00	.74348E+01	.98394	.001439	.10618	59992.6	64737.5	317.800	117.43	126.46	.98049E+00	338	0.00000
620.000	.1572E+00	.69309E+01	.98738	.001338	.11427	64825.4	69915.4	326.430	123.47	132.38	.98423E+00	350	0.00000
660.000	.1472E+00	.64932E+01	.99007	.001251	.12228	69890.9	75324.0	334.882	129.16	137.99	.98720E+00	361	0.00000
700.000	.1385E+00	.61090E+01	.99219	.001174	.13022	75176.1	80950.8	343.158	134.54	143.30	.98958E+00	372	0.00000

Table 21. (Continued)

Propane Isobar at P = 1.0 MPa

Temp. K	Density mol/L	Density kg/m3	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa•m3/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol•K)	Cv J/(mol•K)	Cp J/(mol•K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
85.563	.1664E+02	.73357E+03	.08450	3.106511	3.02137	.8	60.9	82.572	61.69	84.08	.19093E-09	2029	2.09074
90.000	.1653E+02	.72902E+03	.08083	2.981524	2.91030	383.9	444.4	86.985	61.48	84.29	.10506E-08	1997	2.08078
100.000	.1630E+02	.71881E+03	.07378	2.727840	2.68097	1244.7	1306.1	96.110	61.09	84.78	.27067E-07	1928	2.05897
110.000	.1607E+02	.70866E+03	.06804	2.505883	2.47515	2103.5	2165.7	104.307	60.81	85.32	.36933E-06	1863	2.03791
120.000	.1584E+02	.69856E+03	.06327	2.309200	2.28781	2962.0	3025.1	111.774	60.63	85.91	.31402E-05	1800	2.01745
130.000	.1561E+02	.68847E+03	.05926	2.133079	2.11540	3822.3	3886.4	118.657	60.55	86.56	.18606E-04	1739	1.99748
140.000	.1538E+02	.67838E+03	.05584	1.973976	1.95535	4686.7	4751.7	125.066	60.55	87.28	.83195E-04	1678	1.97789
150.000	.1515E+02	.66827E+03	.05291	1.829158	1.80574	5557.6	5623.5	131.083	60.64	88.08	.29762E-03	1619	1.95860
160.000	.1492E+02	.65811E+03	.05037	1.696476	1.66515	6437.0	6504.0	136.773	60.81	88.97	.88978E-03	1560	1.93954
170.000	.1469E+02	.64789E+03	.04815	1.574206	1.53248	7327.2	7395.3	142.185	61.08	89.95	.22983E-02	1502	1.92062
180.000	.1446E+02	.63756E+03	.04621	1.460946	1.40690	8230.2	8299.3	147.360	61.42	91.05	.52625E-02	1444	1.90178
190.000	.1422E+02	.62711E+03	.04451	1.355537	1.28775	9147.5	9217.9	152.332	61.86	92.26	.10898E-01	1385	1.88296
200.000	.1398E+02	.61650E+03	.04301	1.257009	1.17451	10080.9	10152.4	157.129	62.38	93.60	.20736E-01	1327	1.86408
210.000	.1374E+02	.60569E+03	.04170	1.164543	1.06678	11031.6	11104.4	161.774	63.00	95.09	.36715E-01	1268	1.84508
220.000	.1348E+02	.59465E+03	.04054	1.077433	.96423	12000.9	12075.1	166.288	63.73	96.76	.61116E-01	1209	1.82589
230.000	.1323E+02	.58332E+03	.03953	.995067	.86658	12989.9	13065.5	170.687	64.55	98.61	.96445E-01	1150	1.80642
240.000	.1296E+02	.57166E+03	.03866	.916908	.77362	13999.6	14076.8	174.988	65.49	100.68	.14529E+00	1090	1.78657
250.000	.1269E+02	.55960E+03	.03791	.842470	.68515	15031.4	15110.2	179.203	66.54	103.01	.21015E+00	1029	1.76626
260.000	.1241E+02	.54704E+03	.03729	.771305	.60100	16086.8	16167.4	183.346	67.72	105.65	.29331E+00	968	1.74534
270.000	.1211E+02	.53389E+03	.03679	.702987	.52102	17167.7	17250.3	187.429	69.04	108.66	.39662E+00	905	1.72365
280.000	.1179E+02	.52000E+03	.03643	.637088	.44501	18277.1	18361.9	191.468	70.50	112.14	.52144E+00	841	1.70100
290.000	.1146E+02	.50518E+03	.03620	.573143	.37279	19419.1	19506.4	195.482	72.12	116.27	.66845E+00	775	1.67709
300.000	.1109E+02	.48913E+03	.03614	.510596	.30412	20600.1	20690.3	199.494	73.91	121.31	.83759E+00	706	1.65150
300.084	.1109E+02	.48899E+03	.03614	.510077	.30356	20610.5	20700.7	199.529	73.93	121.36	.83903E+00	705	1.65128
300.084	.4932E+00	.21751E+02	.81256	.005165	.03544	33280.6	35308.0	248.207	71.39	92.45	.83903E+00	214	1.02388
310.000	.4639E+00	.20456E+02	.83636	.004658	.03956	34052.5	36208.3	251.157	71.71	89.63	.85425E+00	222	1.02243
320.000	.4394E+00	.19376E+02	.85537	.004290	.04320	34823.4	37099.2	253.985	72.76	88.77	.86729E+00	229	1.02122
330.000	.4185E+00	.18453E+02	.87095	.004003	.04653	35597.0	37986.7	256.716	74.13	88.85	.87864E+00	236	1.02019
340.000	.4001E+00	.17645E+02	.88402	.003767	.04963	36378.8	38877.9	259.377	75.69	89.46	.88862E+00	242	1.01929
350.000	.3839E+00	.16928E+02	.89517	.003569	.05257	37172.0	39777.0	261.983	77.36	90.41	.89749E+00	247	1.01849
360.000	.3692E+00	.16283E+02	.90478	.003398	.05538	37978.6	40686.8	264.546	79.10	91.58	.90537E+00	253	1.01777
370.000	.3560E+00	.15697E+02	.91317	.003247	.05808	38799.9	41609.2	267.073	80.89	92.91	.91243E+00	258	1.01712
380.000	.3438E+00	.15162E+02	.92053	.003114	.06070	39636.9	42545.4	269.570	82.70	94.35	.91880E+00	263	1.01653
390.000	.3327E+00	.14669E+02	.92706	.002994	.06325	40490.3	43496.4	272.040	84.54	95.86	.92455E+00	267	1.01598
400.000	.3223E+00	.14213E+02	.93286	.002885	.06573	41360.3	44462.8	274.487	86.38	97.44	.92977E+00	272	1.01547
410.000	.3127E+00	.13790E+02	.93806	.002786	.06817	42247.5	45445.3	276.912	88.23	99.05	.93452E+00	276	1.01500
420.000	.3038E+00	.13395E+02	.94273	.002695	.07056	43151.9	46444.0	279.319	90.07	100.70	.93885E+00	280	1.01457
430.000	.2954E+00	.13025E+02	.94695	.002611	.07291	44073.7	47459.2	281.708	91.91	102.36	.94282E+00	284	1.01416
440.000	.2875E+00	.12678E+02	.95078	.002533	.07523	45012.9	48491.2	284.080	93.73	104.03	.94647E+00	288	1.01377
450.000	.2801E+00	.12351E+02	.95425	.002461	.07752	45969.5	49539.8	286.437	95.55	105.71	.94982E+00	292	1.01341
460.000	.2731E+00	.12042E+02	.95743	.002393	.07978	46943.4	50605.2	288.778	97.35	107.38	.95289E+00	296	0.00000
470.000	.2665E+00	.11751E+02	.96033	.002329	.08201	47934.7	51687.4	291.106	99.13	109.06	.95575E+00	300	0.00000
480.000	.2602E+00	.11474E+02	.96299	.002269	.08423	48943.1	52786.4	293.419	100.90	110.73	.95839E+00	304	0.00000
500.000	.2486E+00	.10961E+02	.96769	.002160	.08860	51011.2	55034.1	298.007	104.38	114.04	.96312E+00	311	0.00000
540.000	.2284E+00	.10072E+02	.97514	.001972	.09716	55347.2	59725.4	307.030	111.09	120.49	.97081E+00	324	0.00000
580.000	.2114E+00	.93242E+01	.98069	.001817	.10552	59940.4	64669.7	315.860	117.47	126.68	.97667E+00	337	0.00000
620.000	.1970E+00	.86851E+01	.98494	.001687	.11375	64778.1	69855.5	324.504	123.50	132.56	.98123E+00	349	0.00000
660.000	.1844E+00	.81315E+01	.98824	.001575	.12188	69847.7	75270.7	332.966	129.19	138.15	.98485E+00	361	0.00000
700.000	.1734E+00	.76467E+01	.99084	.001477	.12992	75136.3	80903.2	341.250	134.56	143.43	.98774E+00	372	0.00000

Table 21. (Continued)

Propane Isobar at P = 1.2 MPa

Temp. K	Density mol/L	Density kg/m³	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa·m³/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol·K)	C_v J/(mol·K)	C_p J/(mol·K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
85.581	.1664E+02	.73362E+03	.10137	3.106562	3.02312	1.0	73.1	82.574	61.69	84.08	.16304E-09	2029	2.09081
90.000	.1653E+02	.72909E+03	.09699	2.982158	2.91255	382.3	454.9	86.968	61.49	84.28	.88973E-09	1998	2.08089
100.000	.1630E+02	.71889E+03	.08853	2.728552	2.68326	1243.0	1316.6	96.092	61.10	84.77	.22891E-07	1929	2.05910
110.000	.1607E+02	.70874E+03	.08163	2.506658	2.47748	2101.6	2176.2	104.289	60.82	85.31	.31199E-06	1864	2.03804
120.000	.1584E+02	.69864E+03	.07591	2.310028	2.29019	2959.8	3035.6	111.756	60.64	85.90	.26501E-05	1801	2.01760
130.000	.1561E+02	.68856E+03	.07110	2.133954	2.11783	3819.9	3896.8	118.639	60.56	86.55	.15690E-04	1739	1.99764
140.000	.1539E+02	.67848E+03	.06700	1.974895	1.95783	4684.0	4762.0	125.047	60.56	87.27	.70108E-04	1679	1.97806
150.000	.1516E+02	.66838E+03	.06348	1.830118	1.80827	5554.6	5633.7	131.063	60.65	88.07	.25065E-03	1620	1.95878
160.000	.1493E+02	.65823E+03	.06043	1.697477	1.66774	6433.7	6514.1	136.752	60.82	88.96	.74899E-03	1561	1.93973
170.000	.1470E+02	.64802E+03	.05777	1.575249	1.53513	7323.6	7405.2	142.163	61.08	89.94	.19338E-02	1503	1.92083
180.000	.1446E+02	.63770E+03	.05545	1.462033	1.40962	8226.1	8309.1	147.338	61.43	91.03	.44261E-02	1445	1.90201
190.000	.1422E+02	.62726E+03	.05340	1.356669	1.29054	9143.1	9227.4	152.309	61.87	92.24	.91626E-02	1387	1.88321
200.000	.1398E+02	.61667E+03	.05160	1.258192	1.17737	10076.0	10161.8	157.104	62.39	93.57	.17429E-01	1328	1.86436
210.000	.1374E+02	.60588E+03	.05002	1.165780	1.06972	11026.2	11113.5	161.748	63.01	95.06	.30852E-01	1270	1.84539
220.000	.1349E+02	.59486E+03	.04863	1.078732	.96725	11994.8	12083.8	166.260	63.73	96.72	.51344E-01	1211	1.82622
230.000	.1323E+02	.58356E+03	.04742	.996436	.86968	12983.1	13073.7	170.658	64.56	98.56	.81008E-01	1152	1.80679
240.000	.1297E+02	.57192E+03	.04637	.918355	.77682	13992.0	14084.5	174.956	65.50	100.62	.12201E+00	1092	1.78699
250.000	.1270E+02	.55989E+03	.04547	.844009	.68845	15022.8	15117.3	179.169	66.55	102.94	.17646E+00	1031	1.76672
260.000	.1241E+02	.54737E+03	.04472	.772952	.60441	16077.0	16173.7	183.308	67.73	105.55	.24625E+00	970	1.74586
270.000	.1212E+02	.53427E+03	.04412	.704764	.52455	17156.5	17255.6	187.387	69.04	108.54	.33295E+00	908	1.72426
280.000	.1180E+02	.52045E+03	.04367	.639024	.44868	18264.2	18365.8	191.422	70.50	111.99	.43771E+00	844	1.70170
290.000	.1147E+02	.50571E+03	.04340	.575281	.37664	19403.9	19508.5	195.429	72.12	116.06	.56109E+00	778	1.67792
300.000	.1111E+02	.48979E+03	.04331	.513002	.30817	20581.8	20689.8	199.432	73.91	121.01	.70305E+00	710	1.65251
307.524	.1081E+02	.47677E+03	.04341	.466687	.25884	21499.0	21610.0	202.463	75.39	125.59	.82157E+00	656	1.63196
307.524	.5966E+00	.26306E+02	.78672	.006463	.03345	33589.6	35601.2	247.959	73.80	98.27	.82157E+00	211	1.02893
310.000	.5861E+00	.25844E+02	.79439	.006258	.03468	33795.1	35842.6	248.739	73.66	96.78	.82617E+00	213	1.02841
320.000	.5496E+00	.24238E+02	.82056	.005621	.03908	34607.6	36790.8	251.750	73.99	93.41	.84219E+00	222	1.02661
330.000	.5199E+00	.22925E+02	.84127	.005164	.04293	35409.5	37717.7	254.603	75.00	92.20	.85601E+00	229	1.02514
340.000	.4946E+00	.21810E+02	.85827	.004808	.04643	36212.0	38638.3	257.351	76.35	92.04	.86809E+00	236	1.02389
350.000	.4726E+00	.20840E+02	.87254	.004517	.04968	37021.3	39560.5	260.024	77.88	92.47	.87877E+00	242	1.02281
360.000	.4531E+00	.19982E+02	.88472	.004273	.05275	37840.8	40489.0	262.639	79.52	93.28	.88824E+00	248	1.02185
370.000	.4357E+00	.19214E+02	.89524	.004063	.05567	38672.8	41426.9	265.209	81.23	94.34	.89671E+00	254	1.02099
380.000	.4199E+00	.18518E+02	.90443	.003879	.05848	39518.8	42376.3	267.741	82.99	95.57	.90432E+00	259	1.02022
390.000	.4056E+00	.17884E+02	.91250	.003717	.06120	40379.8	43338.7	270.241	84.78	96.92	.91118E+00	264	1.01951
400.000	.3923E+00	.17301E+02	.91966	.003571	.06383	41256.5	44315.1	272.713	86.59	98.37	.91740E+00	269	1.01886
410.000	.3801E+00	.16763E+02	.92604	.003439	.06639	42149.4	45306.2	275.160	88.41	99.88	.92306E+00	273	1.01826
420.000	.3688E+00	.16263E+02	.93176	.003320	.06890	43058.9	46312.7	277.585	90.23	101.43	.92822E+00	278	1.01771
430.000	.3582E+00	.15798E+02	.93691	.003210	.07136	43985.3	47335.0	279.991	92.05	103.02	.93294E+00	282	1.01719
440.000	.3484E+00	.15362E+02	.94156	.003109	.07378	44928.6	48373.2	282.377	93.86	104.63	.93727E+00	286	1.01671
450.000	.3391E+00	.14954E+02	.94577	.003015	.07615	45888.9	49427.6	284.747	95.66	106.25	.94124E+00	290	1.01626
460.000	.3304E+00	.14570E+02	.94961	.002928	.07850	46866.2	50498.2	287.100	97.45	107.88	.94489E+00	294	0.00000
470.000	.3222E+00	.14207E+02	.95312	.002846	.08081	47860.5	51585.2	289.438	99.22	109.52	.94827E+00	298	0.00000
480.000	.3144E+00	.13865E+02	.95633	.002770	.08309	48871.9	52688.5	291.760	100.98	111.15	.95140E+00	302	0.00000
500.000	.3001E+00	.13232E+02	.96198	.002631	.08759	50944.9	54944.1	296.364	104.45	114.40	.95700E+00	309	0.00000
540.000	.2753E+00	.12139E+02	.97090	.002396	.09636	55289.0	59648.2	305.411	111.14	120.77	.96607E+00	323	0.00000
580.000	.2546E+00	.11225E+02	.97753	.002203	.10489	59888.4	64602.5	314.259	117.51	126.90	.97298E+00	336	0.00000
620.000	.2369E+00	.10447E+02	.98258	.002041	.11326	64731.2	69796.3	322.917	123.53	132.75	.97835E+00	348	0.00000
660.000	.2217E+00	.97751E+01	.98649	.001903	.12149	69804.8	75218.2	331.389	129.22	138.30	.98260E+00	360	0.00000
700.000	.2084E+00	.91879E+01	.98956	.001784	.12963	75096.9	80856.3	339.682	134.58	143.56	.98600E+00	371	0.00000

Table 21. (Continued)

Propane Isobar at P = 1.4 MPa

Temp. K	Density mol/L	Density kg/m3	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa·m3/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol·K)	Cv J/(mol·K)	Cp J/(mol·K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
85.600	.1664E+02	.73367E+03	.11823	3.106614	3.02488	1.2	85.3	82.576	61.70	84.08	.14320E-09	2030	2.09087
90.000	.1654E+02	.72916E+03	.11315	2.982791	2.91480	380.8	465.5	86.951	61.50	84.28	.77506E-09	1998	2.08100
100.000	.1630E+02	.71896E+03	.10328	2.729264	2.68555	1241.3	1327.2	96.075	61.11	84.77	.19912E-07	1930	2.05922
110.000	.1607E+02	.70882E+03	.09523	2.507433	2.47981	2099.6	2186.7	104.272	60.83	85.31	.27109E-06	1864	2.03818
120.000	.1585E+02	.69873E+03	.08855	2.310856	2.29256	2957.7	3046.0	111.738	60.65	85.90	.23005E-05	1801	2.01774
130.000	.1562E+02	.68866E+03	.08294	2.134829	2.12025	3817.5	3907.1	118.620	60.56	86.55	.13609E-04	1740	1.99779
140.000	.1539E+02	.67859E+03	.07816	1.975813	1.96030	4681.4	4772.3	125.028	60.57	87.27	.60767E-04	1680	1.97823
150.000	.1516E+02	.66849E+03	.07405	1.831077	1.81080	5551.6	5643.9	131.043	60.66	88.06	.21713E-03	1621	1.95897
160.000	.1493E+02	.65835E+03	.07049	1.698477	1.67033	6430.4	6524.2	136.731	60.83	88.95	.64849E-03	1562	1.93993
170.000	.1470E+02	.64815E+03	.06739	1.576291	1.53779	7319.9	7415.2	142.142	61.09	89.92	.16736E-02	1504	1.92104
180.000	.1446E+02	.63784E+03	.06467	1.463117	1.41234	8222.1	8318.9	147.315	61.44	91.01	.38290E-02	1446	1.90224
190.000	.1423E+02	.62742E+03	.06229	1.357800	1.29332	9138.6	9237.0	152.285	61.87	92.21	.79239E-02	1388	1.88346
200.000	.1399E+02	.61684E+03	.06019	1.259372	1.18023	10071.0	10171.1	157.079	62.40	93.55	.15068E-01	1330	1.86463
210.000	.1374E+02	.60606E+03	.05834	1.167015	1.07265	11020.7	11122.6	161.722	63.02	95.03	.26666E-01	1271	1.84569
220.000	.1349E+02	.59506E+03	.05672	1.080028	.97026	11988.7	12092.5	166.232	63.74	96.68	.44368E-01	1213	1.82656
230.000	.1324E+02	.58378E+03	.05530	.997800	.87279	12976.3	13082.0	170.628	64.57	98.52	.69987E-01	1153	1.80716
240.000	.1298E+02	.57218E+03	.05407	.919798	.78001	13984.4	14092.3	174.924	65.50	100.57	.10539E+00	1094	1.78740
250.000	.1270E+02	.56018E+03	.05302	.845542	.69174	15014.3	15124.5	179.134	66.56	102.87	.15240E+00	1033	1.76718
260.000	.1242E+02	.54770E+03	.05214	.774592	.60781	16067.3	16180.0	183.270	67.74	105.47	.21265E+00	972	1.74639
270.000	.1212E+02	.53465E+03	.05144	.706531	.52807	17145.4	17260.9	187.346	69.05	108.42	.28750E+00	910	1.72486
280.000	.1181E+02	.52089E+03	.05091	.640947	.45235	18251.3	18369.8	191.376	70.51	111.84	.37792E+00	847	1.70240
290.000	.1148E+02	.50624E+03	.05058	.577402	.38046	19388.8	19510.7	195.376	72.12	115.85	.48442E+00	781	1.67875
300.000	.1112E+02	.49043E+03	.05047	.515383	.31220	20563.7	20689.6	199.372	73.91	120.71	.60698E+00	714	1.65351
310.000	.1073E+02	.47305E+03	.05063	.454213	.24726	21785.2	21915.7	203.393	75.90	126.87	.74492E+00	642	1.62611
314.107	.1055E+02	.46531E+03	.05080	.429112	.22146	22303.8	22436.5	205.063	76.78	129.97	.80571E+00	612	1.61401
314.107	.7035E+00	.31024E+02	.76196	.007872	.03141	33848.6	35838.6	247.730	76.06	104.46	.80571E+00	207	1.03418
320.000	.6729E+00	.29673E+02	.78197	.007264	.03452	34359.7	36440.2	249.626	75.67	100.16	.81690E+00	213	1.03266
330.000	.6305E+00	.27803E+02	.80926	.006530	.03907	35201.2	37421.6	252.647	76.09	96.64	.83336E+00	222	1.03056
340.000	.5960E+00	.26280E+02	.83098	.005996	.04306	36030.8	38379.9	255.508	77.13	95.26	.84762E+00	230	1.02885
350.000	.5667E+00	.24992E+02	.84887	.005578	.04668	36860.0	39330.3	258.262	78.47	94.95	.86017E+00	237	1.02740
360.000	.5414E+00	.23874E+02	.86392	.005238	.05004	37695.0	40281.0	260.940	79.99	95.26	.87126E+00	244	1.02615
370.000	.5190E+00	.22888E+02	.87680	.004951	.05321	38539.5	41236.8	263.559	81.62	95.97	.88114E+00	250	1.02505
380.000	.4990E+00	.22006E+02	.88795	.004705	.05623	39395.7	42201.2	266.131	83.31	96.94	.89000E+00	255	1.02406
390.000	.4809E+00	.21209E+02	.89769	.004491	.05912	40265.3	43176.2	268.664	85.05	98.10	.89799E+00	261	1.02317
400.000	.4645E+00	.20482E+02	.90628	.004301	.06191	41149.4	44163.5	271.163	86.82	99.38	.90522E+00	266	1.02236
410.000	.4494E+00	.19816E+02	.91391	.004131	.06461	42048.7	45164.2	273.634	88.61	100.77	.91178E+00	271	1.02162
420.000	.4354E+00	.19201E+02	.92071	.003977	.06724	42963.9	46179.1	276.080	90.40	102.22	.91776E+00	275	1.02094
430.000	.4225E+00	.18631E+02	.92682	.003837	.06981	43895.2	47208.8	278.502	92.20	103.72	.92322E+00	280	1.02030
440.000	.4105E+00	.18100E+02	.93232	.003710	.07233	44842.9	48253.7	280.905	93.99	105.26	.92823E+00	284	1.01971
450.000	.3992E+00	.17604E+02	.93730	.003592	.07480	45807.2	49314.1	283.288	95.78	106.83	.93283E+00	288	1.01916
460.000	.3887E+00	.17139E+02	.94183	.003483	.07722	46788.0	50390.2	285.653	97.56	108.41	.93704E+00	292	0.00000
470.000	.3787E+00	.16701E+02	.94595	.003382	.07961	47785.7	51482.2	288.001	99.32	110.00	.94095E+00	296	0.00000
480.000	.3694E+00	.16288E+02	.94971	.003288	.08197	48799.9	52590.2	290.334	101.07	111.59	.94456E+00	300	0.00000
500.000	.3521E+00	.15528E+02	.95633	.003117	.08659	50878.2	54853.9	294.954	104.52	114.78	.95101E+00	308	0.00000
540.000	.3225E+00	.14223E+02	.96674	.002829	.09557	55230.7	59571.2	304.027	111.20	121.06	.96146E+00	322	0.00000
580.000	.2979E+00	.13138E+02	.97444	.002596	.10427	59836.6	64535.7	312.893	117.55	127.13	.96940E+00	335	0.00000
620.000	.2770E+00	.12217E+02	.98029	.002402	.11278	64684.4	69737.8	321.564	123.56	132.93	.97560E+00	348	0.00000
660.000	.2591E+00	.11424E+02	.98480	.002236	.12113	69762.2	75166.4	330.047	129.24	138.45	.98047E+00	360	0.00000
700.000	.2434E+00	.10732E+02	.98835	.002094	.12936	75057.9	80810.2	338.348	134.61	143.69	.98436E+00	371	0.00000

Table 21. (Continued)

Propane Isobar at P = 1.6 MPa

Temp. K	Density mol/L	Density kg/m³	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa•m³/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol•K)	C_v J/(mol•K)	C_p J/(mol•K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
85.618	.1664E+02	.73371E+03	.13508	3.106667	3.02664	1.3	97.5	82.578	61.71	84.08	.12840E-09	2030	2.09094
90.000	.1654E+02	.72922E+03	.12930	2.983425	2.91705	379.3	476.1	86.934	61.50	84.28	.68922E-09	1999	2.08112
100.000	.1631E+02	.71903E+03	.11802	2.729976	2.68784	1239.6	1337.7	96.058	61.12	84.77	.17682E-07	1930	2.05934
110.000	.1608E+02	.70890E+03	.10882	2.508208	2.48214	2097.7	2197.2	104.254	60.84	85.30	.24045E-06	1865	2.03831
120.000	.1585E+02	.69882E+03	.10119	2.311684	2.29493	2955.5	3056.4	111.720	60.66	85.89	.20385E-05	1802	2.01788
130.000	.1562E+02	.68875E+03	.09477	2.135704	2.12267	3815.1	3917.5	118.601	60.57	86.54	.12049E-04	1741	1.99794
140.000	.1539E+02	.67869E+03	.08931	1.976731	1.96277	4678.7	4782.6	125.008	60.58	87.26	.53768E-04	1681	1.97839
150.000	.1516E+02	.66860E+03	.08461	1.832036	1.81333	5548.6	5654.1	131.023	60.66	88.05	.19201E-03	1622	1.95915
160.000	.1493E+02	.65847E+03	.08054	1.699477	1.67292	6427.1	6534.3	136.711	60.84	88.93	.57317E-03	1563	1.94012
170.000	.1470E+02	.64828E+03	.07700	1.577332	1.54044	7316.3	7425.1	142.120	61.10	89.91	.14785E-02	1505	1.92126
180.000	.1447E+02	.63799E+03	.07389	1.464201	1.41505	8218.1	8328.7	147.293	61.45	90.99	.33815E-02	1447	1.90248
190.000	.1423E+02	.62757E+03	.07117	1.358930	1.29611	9134.2	9246.6	152.262	61.88	92.19	.69954E-02	1389	1.88371
200.000	.1399E+02	.61700E+03	.06877	1.260551	1.18309	10066.1	10180.5	157.055	62.41	93.52	.13299E-01	1331	1.86491
210.000	.1375E+02	.60625E+03	.06665	1.168248	1.07558	11015.2	11131.6	161.696	63.03	95.00	.23528E-01	1273	1.84599
220.000	.1350E+02	.59527E+03	.06480	1.081321	.97327	11982.7	12101.2	166.204	63.75	96.64	.39137E-01	1214	1.82689
230.000	.1324E+02	.58401E+03	.06317	.999161	.87588	12969.5	13090.4	170.599	64.58	98.47	.61724E-01	1155	1.80752
240.000	.1298E+02	.57243E+03	.06177	.921236	.78319	13976.8	14100.1	174.893	65.51	100.51	.92935E-01	1096	1.78781
250.000	.1271E+02	.56047E+03	.06056	.847070	.69503	15005.7	15131.6	179.100	66.57	102.80	.13437E+00	1036	1.76764
260.000	.1243E+02	.54803E+03	.05955	.776224	.61121	16057.6	16186.4	183.233	67.74	105.38	.18746E+00	975	1.74691
270.000	.1213E+02	.53503E+03	.05874	.708289	.53158	17134.4	17266.3	187.305	69.06	108.31	.25341E+00	913	1.72546
280.000	.1182E+02	.52133E+03	.05813	.642859	.45599	18238.6	18373.9	191.330	70.51	111.69	.33309E+00	849	1.70309
290.000	.1149E+02	.50676E+03	.05774	.579506	.38427	19373.8	19513.1	195.324	72.13	115.65	.42694E+00	784	1.67956
300.000	.1114E+02	.49107E+03	.05760	.517740	.31621	20545.8	20689.5	199.311	73.91	120.42	.53495E+00	717	1.65450
310.000	.1075E+02	.47385E+03	.05777	.456919	.25152	21763.2	21912.1	203.321	75.89	126.43	.65654E+00	647	1.62734
320.000	.1031E+02	.45444E+03	.05835	.396059	.18981	23041.0	23196.3	207.401	78.10	134.57	.79060E+00	571	1.59712
320.035	.1030E+02	.45437E+03	.05836	.395845	.18960	23045.5	23200.8	207.415	78.11	134.61	.79111E+00	571	1.59701
320.035	.8148E+00	.35929E+02	.73800	.009403	.02933	34067.2	36031.0	247.505	78.21	111.17	.79111E+00	204	1.03966
330.000	.7532E+00	.33214E+02	.77421	.008176	.03487	34965.9	37090.2	250.762	77.50	102.79	.81058E+00	215	1.03660
340.000	.7059E+00	.31127E+02	.80181	.007371	.03948	35832.0	38098.7	253.773	78.08	99.37	.82716E+00	224	1.03425
350.000	.6673E+00	.29426E+02	.82395	.006776	.04355	36686.4	39084.2	256.630	79.17	97.96	.84164E+00	232	1.03233
360.000	.6346E+00	.27986E+02	.84228	.006307	.04725	37540.2	40061.3	259.383	80.53	97.59	.85438E+00	239	1.03072
370.000	.6063E+00	.26738E+02	.85776	.005922	.05069	38399.2	41038.0	262.058	82.04	97.84	.86573E+00	245	1.02932
380.000	.5814E+00	.25637E+02	.87105	.005599	.05393	39267.2	42019.3	264.675	83.66	98.48	.87586E+00	251	1.02808
390.000	.5591E+00	.24653E+02	.88259	.005321	.05701	40146.6	43008.5	267.245	85.34	99.39	.88497E+00	257	1.02698
400.000	.5389E+00	.23764E+02	.89270	.005077	.05997	41038.9	44007.9	269.775	87.07	100.50	.89320E+00	263	1.02599
410.000	.5206E+00	.22955E+02	.90164	.004862	.06282	41945.3	45018.9	272.271	88.82	101.73	.90067E+00	268	1.02508
420.000	.5037E+00	.22213E+02	.90958	.004670	.06558	42866.6	46042.9	274.739	90.59	103.07	.90746E+00	273	1.02426
430.000	.4882E+00	.21528E+02	.91668	.004496	.06826	43803.2	47080.6	277.181	92.36	104.48	.91367E+00	277	1.02349
440.000	.4738E+00	.20893E+02	.92307	.004338	.07088	44755.7	48132.6	279.599	94.14	105.94	.91935E+00	282	1.02278
450.000	.4604E+00	.20302E+02	.92883	.004193	.07345	45724.2	49199.4	281.997	95.91	107.43	.92457E+00	286	1.02213
460.000	.4479E+00	.19750E+02	.93405	.004060	.07596	46708.9	50281.3	284.374	97.67	108.96	.92935E+00	291	0.00000
470.000	.4361E+00	.19232E+02	.93880	.003937	.07843	47709.9	51378.6	286.734	99.42	110.50	.93377E+00	295	0.00000
480.000	.4251E+00	.18745E+02	.94314	.003823	.08086	48727.3	52491.3	289.077	101.16	112.05	.93786E+00	299	0.00000
500.000	.4048E+00	.17851E+02	.95074	.003617	.08561	50811.1	54763.6	293.714	104.60	115.17	.94517E+00	307	0.00000
540.000	.3702E+00	.16324E+02	.96264	.003273	.09480	55172.3	59494.4	302.813	111.25	121.35	.95697E+00	321	0.00000
580.000	.3415E+00	.15061E+02	.97142	.002997	.10367	59784.8	64469.3	311.698	117.59	127.36	.96593E+00	335	0.00000
620.000	.3173E+00	.13994E+02	.97805	.002768	.11231	64637.8	69679.7	320.383	123.59	133.12	.97292E+00	347	0.00000
660.000	.2966E+00	.13077E+02	.98317	.002574	.12077	69719.9	75115.1	328.877	129.27	138.61	.97840E+00	359	0.00000
700.000	.2785E+00	.12280E+02	.98718	.002408	.12910	75019.1	80764.6	337.186	134.63	143.82	.98278E+00	371	0.00000

Table 21. (Continued)

Propane Isobar at P = 1.8 MPa

Temp. K	Density mol/L	Density kg/m³	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa•m³/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol•K)	C_v J/(mol•K)	C_p J/(mol•K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
85.637	.1664E+02	.73376E+03	.15193	3.106721	3.02840	1.5	109.7	82.581	61.72	84.07	.11695E-09	2031	2.09101
90.000	.1654E+02	.72929E+03	.14545	2.984059	2.91930	377.8	486.6	86.917	61.51	84.27	.62263E-09	1999	2.08123
100.000	.1631E+02	.71911E+03	.13276	2.730688	2.69012	1237.8	1348.2	96.040	61.13	84.76	.15951E-07	1931	2.05946
110.000	.1608E+02	.70899E+03	.12241	2.508983	2.48446	2095.7	2207.7	104.236	60.85	85.30	.21666E-06	1866	2.03844
120.000	.1585E+02	.69890E+03	.11383	2.312512	2.29730	2953.3	3066.9	111.701	60.67	85.88	.18351E-05	1803	2.01803
130.000	.1562E+02	.68885E+03	.10661	2.136579	2.12509	3812.6	3927.9	118.583	60.58	86.53	.10838E-04	1742	1.99810
140.000	.1539E+02	.67879E+03	.10046	1.977648	1.96525	4676.0	4792.9	124.989	60.58	87.25	.48331E-04	1682	1.97856
150.000	.1516E+02	.66871E+03	.09517	1.832994	1.81586	5545.6	5664.3	131.004	60.67	88.04	.17249E-03	1623	1.95933
160.000	.1494E+02	.65859E+03	.09060	1.700475	1.67550	6423.8	6544.4	136.690	60.85	88.92	.51464E-03	1564	1.94032
170.000	.1470E+02	.64841E+03	.08661	1.578371	1.54308	7312.7	7435.1	142.099	61.11	89.90	.13270E-02	1506	1.92147
180.000	.1447E+02	.63813E+03	.08311	1.465283	1.41776	8214.1	8338.5	147.270	61.45	90.97	.30337E-02	1448	1.90271
190.000	.1424E+02	.62773E+03	.08004	1.360057	1.29889	9129.8	9256.2	152.238	61.89	92.17	.62736E-02	1390	1.88397
200.000	.1400E+02	.61717E+03	.07734	1.261728	1.18594	10061.2	10189.8	157.030	62.42	93.50	.11923E-01	1332	1.86518
210.000	.1375E+02	.60644E+03	.07496	1.169479	1.07851	11009.8	11140.7	161.670	63.04	94.97	.21089E-01	1274	1.84629
220.000	.1350E+02	.59547E+03	.07287	1.082611	.97628	11976.7	12110.0	166.177	63.76	96.60	.35072E-01	1216	1.82722
230.000	.1325E+02	.58424E+03	.07104	1.000518	.87897	12962.8	13098.7	170.569	64.58	98.42	.55301E-01	1157	1.80789
240.000	.1299E+02	.57269E+03	.06946	.922671	.78638	13969.3	14107.9	174.861	65.52	100.45	.83249E-01	1098	1.78822
250.000	.1272E+02	.56075E+03	.06810	.848592	.69830	14997.3	15138.8	179.066	66.57	102.73	.12034E+00	1038	1.76810
260.000	.1244E+02	.54836E+03	.06696	.777850	.61459	16048.1	16192.8	183.196	67.75	105.29	.16788E+00	977	1.74743
270.000	.1214E+02	.53540E+03	.06604	.710039	.53508	17123.4	17271.7	187.264	69.06	108.20	.22692E+00	915	1.72605
280.000	.1183E+02	.52177E+03	.06534	.644758	.45963	18225.9	18378.0	191.284	70.52	111.54	.29824E+00	852	1.70378
290.000	.1150E+02	.50728E+03	.06489	.581594	.38806	19359.0	19515.5	195.273	72.13	115.45	.38225E+00	788	1.68037
300.000	.1115E+02	.49170E+03	.06472	.520073	.32019	20528.1	20689.5	199.252	73.92	120.14	.47894E+00	721	1.65548
310.000	.1076E+02	.47464E+03	.06488	.459589	.25575	21741.5	21908.7	203.250	75.89	126.01	.58781E+00	651	1.62855
320.000	.1033E+02	.45548E+03	.06550	.399233	.19437	23013.2	23187.5	207.313	78.09	133.86	.70790E+00	577	1.59871
325.444	.1006E+02	.44377E+03	.06610	.365890	.16202	23738.4	23917.3	209.575	79.40	139.61	.77757E+00	533	1.58066
325.444	.9309E+00	.41050E+02	.71459	.011067	.02722	34251.8	36185.5	247.272	80.28	118.60	.77757E+00	200	1.04540
330.000	.8926E+00	.39362E+02	.73494	.010236	.03020	34693.0	36709.5	248.869	79.44	112.03	.78757E+00	206	1.04349
340.000	.8266E+00	.36453E+02	.77026	.008991	.03565	35611.1	37788.6	252.091	79.24	104.83	.80663E+00	217	1.04020
350.000	.7756E+00	.34200E+02	.79755	.008140	.04025	36498.2	38819.2	255.078	79.98	101.70	.82315E+00	226	1.03766
360.000	.7337E+00	.32353E+02	.81965	.007498	.04435	37375.0	39828.4	257.921	81.13	100.36	.83759E+00	234	1.03558
370.000	.6982E+00	.30787E+02	.83806	.006988	.04810	38251.4	40829.5	260.664	82.52	99.99	.85041E+00	241	1.03382
380.000	.6673E+00	.29428E+02	.85369	.006568	.05159	39133.0	41830.2	263.333	84.04	100.22	.86182E+00	248	1.03229
390.000	.6401E+00	.28228E+02	.86716	.006212	.05488	40023.4	42835.3	265.943	85.66	100.84	.87206E+00	254	1.03095
400.000	.6158E+00	.27155E+02	.87889	.005906	.05801	40924.8	43847.9	268.507	87.33	101.72	.88130E+00	259	1.02974
410.000	.5938E+00	.26186E+02	.88921	.005638	.06101	41839.0	44870.2	271.032	89.05	102.78	.88968E+00	265	1.02866
420.000	.5738E+00	.25302E+02	.89834	.005400	.06391	42766.9	45904.0	273.523	90.78	103.98	.89729E+00	270	1.02767
430.000	.5554E+00	.24492E+02	.90648	.005187	.06671	43709.3	46950.2	275.984	92.53	105.28	.90423E+00	275	1.02676
440.000	.5384E+00	.23744E+02	.91378	.004995	.06944	44666.9	48009.8	278.420	94.29	106.65	.91059E+00	280	1.02593
450.000	.5227E+00	.23051E+02	.92035	.004820	.07210	45639.9	49083.4	280.833	96.04	108.07	.91642E+00	284	1.02515
460.000	.5081E+00	.22405E+02	.92629	.004660	.07470	46628.6	50171.4	283.224	97.79	109.53	.92176E+00	289	0.00000
470.000	.4944E+00	.21801E+02	.93168	.004512	.07725	47633.3	51274.1	285.596	99.53	111.02	.92670E+00	293	0.00000
480.000	.4816E+00	.21235E+02	.93659	.004376	.07975	48654.0	52391.9	287.949	101.26	112.53	.93127E+00	297	0.00000
500.000	.4581E+00	.20201E+02	.94518	.004131	.08464	50743.5	54672.9	292.604	104.68	115.57	.93941E+00	305	0.00000
540.000	.4182E+00	.18443E+02	.95859	.003728	.09405	55113.7	59417.6	301.730	111.31	121.65	.95256E+00	320	0.00000
580.000	.3854E+00	.16996E+02	.96845	.003405	.10309	59732.9	64403.2	310.634	117.63	127.59	.96254E+00	334	0.00000
620.000	.3578E+00	.15778E+02	.97588	.003140	.11186	64591.4	69622.0	319.333	123.63	133.31	.97030E+00	347	0.00000
660.000	.3342E+00	.14736E+02	.98159	.002916	.12043	69677.7	75064.3	327.838	129.30	138.76	.97639E+00	359	0.00000
700.000	.3136E+00	.13831E+02	.98607	.002725	.12886	74980.5	80719.5	336.155	134.65	143.95	.98125E+00	371	0.00000

Table 21. (Continued)

Propane Isobar at P = 2.0 MPa

Temp. K	Density mol/L	Density kg/m3	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa•m3/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol•K)	C_v J/(mol•K)	C_p J/(mol•K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
85.656	.1664E+02	.73381E+03	.16876	3.106776	3.03015	1.7	121.9	82.583	61.73	84.07	.10785E-09	2031	2.09107
90.000	.1654E+02	.72936E+03	.16159	2.984694	2.92155	376.3	497.2	86.900	61.52	84.27	.56949E-09	2000	2.08134
100.000	.1631E+02	.71918E+03	.14749	2.731400	2.69241	1236.1	1358.8	96.023	61.13	84.76	.14569E-07	1932	2.05958
110.000	.1608E+02	.70907E+03	.13600	2.509758	2.48679	2093.8	2218.2	104.219	60.86	85.29	.19766E-06	1866	2.03857
120.000	.1585E+02	.69899E+03	.12646	2.313339	2.29968	2951.1	3077.3	111.683	60.68	85.88	.16726E-05	1804	2.01817
130.000	.1562E+02	.68894E+03	.11844	2.137453	2.12751	3810.2	3938.2	118.564	60.59	86.53	.98706E-05	1743	1.99825
140.000	.1540E+02	.67889E+03	.11160	1.978565	1.96772	4673.3	4803.2	124.970	60.59	87.24	.43986E-04	1683	1.97873
150.000	.1517E+02	.66882E+03	.10573	1.833952	1.81839	5542.7	5674.5	130.984	60.68	88.03	.15689E-03	1624	1.95951
160.000	.1494E+02	.65871E+03	.10064	1.701473	1.67809	6420.6	6554.4	136.669	60.86	88.91	.46786E-03	1565	1.94052
170.000	.1471E+02	.64854E+03	.09621	1.579410	1.54573	7309.0	7445.0	142.077	61.12	89.88	.12058E-02	1507	1.92168
180.000	.1447E+02	.63827E+03	.09233	1.466364	1.42047	8210.1	8348.2	147.248	61.46	90.96	.27556E-02	1449	1.90294
190.000	.1424E+02	.62788E+03	.08891	1.361183	1.30167	9125.3	9265.8	152.215	61.90	92.15	.56967E-02	1392	1.88422
200.000	.1400E+02	.61734E+03	.08591	1.262903	1.18879	10056.3	10199.2	157.005	62.42	93.47	.10823E-01	1334	1.86546
210.000	.1376E+02	.60662E+03	.08327	1.170707	1.08144	11004.4	11149.8	161.644	63.05	94.94	.19139E-01	1276	1.84659
220.000	.1351E+02	.59568E+03	.08094	1.083898	.97928	11970.7	12118.7	166.149	63.77	96.57	.31821E-01	1217	1.82755
230.000	.1325E+02	.58447E+03	.07891	1.001872	.88206	12956.1	13107.0	170.540	64.59	98.38	.50165E-01	1159	1.80826
240.000	.1299E+02	.57294E+03	.07714	.924100	.78955	13961.8	14115.7	174.829	65.53	100.40	.75504E-01	1099	1.78863
250.000	.1272E+02	.56104E+03	.07563	.850109	.70157	14988.8	15146.0	179.032	66.58	102.66	.10913E+00	1040	1.76856
260.000	.1244E+02	.54868E+03	.07436	.779469	.61797	16038.5	16199.3	183.159	67.76	105.20	.15222E+00	979	1.74794
270.000	.1215E+02	.53578E+03	.07333	.711779	.53858	17112.6	17277.2	187.223	69.07	108.09	.20573E+00	918	1.72664
280.000	.1184E+02	.52220E+03	.07255	.646646	.46325	18213.4	18382.3	191.239	70.53	111.40	.27037E+00	855	1.70446
290.000	.1152E+02	.50779E+03	.07203	.583666	.39184	19344.4	19518.0	195.222	72.14	115.26	.34652E+00	791	1.68118
300.000	.1116E+02	.49232E+03	.07182	.522382	.32415	20510.6	20689.8	199.193	73.92	119.87	.43416E+00	725	1.65644
310.000	.1078E+02	.47542E+03	.07197	.462222	.25994	21720.1	21905.6	203.180	75.89	125.60	.53286E+00	655	1.62975
320.000	.1035E+02	.45650E+03	.07261	.402346	.19888	22985.9	23179.1	207.226	78.07	133.19	.64176E+00	582	1.60026
330.000	.9852E+01	.43443E+03	.07399	.341241	.14037	24333.0	24536.0	211.405	80.54	144.50	.75956E+00	501	1.56635
330.429	.9828E+01	.43338E+03	.07407	.338550	.13790	24393.0	24596.5	211.586	80.65	145.13	.76493E+00	498	1.56476
330.429	.1053E+01	.46421E+02	.69154	.012880	.02509	34406.5	36306.4	247.025	82.31	127.02	.76493E+00	196	1.05146
340.000	.9618E+00	.42415E+02	.73555	.010948	.03147	35360.9	37440.2	250.406	80.74	112.48	.78598E+00	209	1.04691
350.000	.8934E+00	.39395E+02	.76931	.009714	.03676	36292.2	38530.9	253.568	80.94	106.46	.80464E+00	219	1.04349
360.000	.8396E+00	.37023E+02	.79586	.008836	.04133	37197.8	39580.0	256.523	81.82	103.70	.82084E+00	228	1.04080
370.000	.7952E+00	.35065E+02	.81758	.008163	.04543	38094.9	40610.1	259.345	83.04	102.51	.83516E+00	236	1.03859
380.000	.7574E+00	.33398E+02	.83580	.007622	.04919	38992.3	41633.1	262.074	84.46	102.20	.84787E+00	243	1.03672
390.000	.7245E+00	.31947E+02	.85137	.007172	.05271	39895.2	42655.9	264.731	86.00	102.45	.85926E+00	250	1.03508
400.000	.6953E+00	.30663E+02	.86483	.006791	.05603	40806.9	43683.2	267.331	87.62	103.06	.86951E+00	256	1.03364
410.000	.6693E+00	.29513E+02	.87660	.006460	.05919	41729.6	44717.9	269.886	89.29	103.92	.87879E+00	262	1.03235
420.000	.6457E+00	.28473E+02	.88699	.006170	.06223	42664.8	45762.2	272.403	90.99	104.96	.88722E+00	267	1.03118
430.000	.6242E+00	.27525E+02	.89621	.005913	.06516	43613.5	46817.6	274.886	92.71	106.14	.89491E+00	273	1.03012
440.000	.6044E+00	.26654E+02	.90444	.005682	.06800	44576.5	47885.3	277.341	94.44	107.41	.90193E+00	278	1.02914
450.000	.5862E+00	.25851E+02	.91184	.005473	.07076	45554.3	48966.0	279.769	96.18	108.75	.90838E+00	282	1.02825
460.000	.5693E+00	.25105E+02	.91852	.005283	.07345	46547.3	50060.3	282.175	97.91	110.14	.91428E+00	287	0.00000
470.000	.5536E+00	.24410E+02	.92456	.005108	.07608	47555.8	51168.8	284.559	99.64	111.57	.91973E+00	291	0.00000
480.000	.5388E+00	.23760E+02	.93006	.004948	.07866	48579.9	52291.8	286.923	101.36	113.03	.92477E+00	296	0.00000
500.000	.5120E+00	.22577E+02	.93966	.004661	.08369	50675.4	54581.8	291.597	104.76	115.99	.93375E+00	304	0.00000
540.000	.4666E+00	.20578E+02	.95459	.004192	.09331	55055.0	59340.9	300.750	111.37	121.96	.94823E+00	319	0.00000
580.000	.4295E+00	.18941E+02	.96552	.003821	.10251	59681.1	64337.3	309.673	117.68	127.83	.95921E+00	333	0.00000
620.000	.3984E+00	.17570E+02	.97375	.003517	.11142	64545.0	69564.6	318.386	123.66	133.50	.96774E+00	346	0.00000
660.000	.3719E+00	.16399E+02	.98006	.003263	.12011	69635.7	75013.9	326.902	129.33	138.92	.97443E+00	359	0.00000
700.000	.3489E+00	.15384E+02	.98499	.003046	.12862	74942.1	80674.9	335.228	134.67	144.08	.97977E+00	370	0.00000

Table 21. (Continued)

Propane Isobar at P = 2.2 MPa

Temp. K	Density mol/L	Density kg/m3	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa·m3/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol·K)	C_v J/(mol·K)	C_p J/(mol·K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
85.674	.1664E+02	.73385E+03	.18558	3.106831	3.03191	1.8	134.0	82.585	61.74	84.07	.10046E-09	2031	2.09114
90.000	.1654E+02	.72943E+03	.17773	2.985329	2.92380	374.8	507.8	86.883	61.53	84.27	.52615E-09	2001	2.08145
100.000	.1631E+02	.71926E+03	.16222	2.732112	2.69470	1234.4	1369.3	96.006	61.14	84.76	.13442E-07	1932	2.05971
110.000	.1608E+02	.70915E+03	.14958	2.510533	2.48912	2091.9	2228.7	104.201	60.86	85.29	.18216E-06	1867	2.03871
120.000	.1585E+02	.69908E+03	.13909	2.314167	2.30205	2949.0	3087.8	111.665	60.68	85.87	.15399E-05	1804	2.01831
130.000	.1563E+02	.68903E+03	.13026	2.138326	2.12993	3807.8	3948.6	118.545	60.60	86.52	.90802E-05	1743	1.99841
140.000	.1540E+02	.67899E+03	.12275	1.979481	1.97019	4670.6	4813.5	124.950	60.60	87.23	.40436E-04	1684	1.97889
150.000	.1517E+02	.66893E+03	.11629	1.834909	1.82091	5539.7	5684.7	130.964	60.69	88.02	.14414E-03	1625	1.95969
160.000	.1494E+02	.65883E+03	.11069	1.702470	1.68067	6417.3	6564.5	136.649	60.86	88.90	.42963E-03	1566	1.94071
170.000	.1471E+02	.64866E+03	.10581	1.580447	1.54837	7305.4	7455.0	142.056	61.12	89.87	.11068E-02	1508	1.92189
180.000	.1448E+02	.63841E+03	.10154	1.467444	1.42318	8206.1	8358.0	147.226	61.47	90.94	.25284E-02	1451	1.90316
190.000	.1424E+02	.62803E+03	.09778	1.362308	1.30444	9120.9	9275.4	152.191	61.91	92.13	.52251E-02	1393	1.88447
200.000	.1400E+02	.61751E+03	.09448	1.264075	1.19164	10051.5	10208.6	156.981	62.43	93.45	.99242E-02	1335	1.86573
210.000	.1376E+02	.60681E+03	.09156	1.171933	1.08436	10999.0	11158.9	161.618	63.05	94.91	.17544E-01	1277	1.84689
220.000	.1351E+02	.59588E+03	.08901	1.085183	.98228	11964.7	12127.5	166.122	63.77	96.53	.29163E-01	1219	1.82788
230.000	.1326E+02	.58469E+03	.08676	1.003223	.88514	12949.4	13115.4	170.510	64.60	98.33	.45966E-01	1160	1.80862
240.000	.1300E+02	.57320E+03	.08482	.925526	.79272	13954.4	14123.6	174.798	65.54	100.34	.69172E-01	1101	1.78903
250.000	.1273E+02	.56132E+03	.08315	.851621	.70484	14980.5	15153.3	178.998	66.59	102.59	.99964E-01	1042	1.76901
260.000	.1245E+02	.54900E+03	.08174	.781082	.62133	16029.0	16205.7	183.122	67.77	105.12	.13941E+00	981	1.74846
270.000	.1216E+02	.53615E+03	.08060	.713511	.54206	17101.7	17282.7	187.183	69.08	107.98	.18840E+00	920	1.72722
280.000	.1185E+02	.52263E+03	.07973	.648522	.46686	18200.9	18386.5	191.194	70.53	111.26	.24758E+00	858	1.70514
290.000	.1153E+02	.50830E+03	.07915	.585722	.39560	19329.8	19520.7	195.171	72.14	115.07	.31729E+00	794	1.68197
300.000	.1118E+02	.49293E+03	.07890	.524669	.32809	20493.4	20690.2	199.134	73.92	119.60	.39753E+00	728	1.65739
310.000	.1080E+02	.47618E+03	.07904	.464822	.26411	21699.1	21902.8	203.111	75.88	125.20	.48791E+00	660	1.63092
320.000	.1037E+02	.45749E+03	.07970	.405401	.20335	22959.2	23171.3	207.141	78.06	132.55	.58766E+00	587	1.60177
330.000	.9883E+01	.43583E+03	.08113	.345050	.14529	24296.8	24519.4	211.293	80.50	143.28	.69563E+00	508	1.56847
335.060	.9594E+01	.42308E+03	.08231	.313314	.11663	25017.0	25246.3	213.478	81.88	151.35	.75305E+00	464	1.54910
335.060	.1181E+01	.52083E+02	.66862	.014859	.02293	34533.6	36396.3	246.756	84.31	136.76	.75305E+00	192	1.05787
340.000	.1118E+01	.49283E+02	.69634	.013410	.02680	35068.8	37037.4	248.653	82.77	124.19	.76507E+00	200	1.05468
350.000	.1023E+01	.45127E+02	.73874	.011561	.03303	36063.6	38213.3	252.062	82.10	112.77	.78605E+00	212	1.04995
360.000	.9537E+00	.42056E+02	.77068	.010352	.03816	37006.4	39313.2	255.161	82.61	107.82	.80411E+00	223	1.04646
370.000	.8982E+00	.39607E+02	.79621	.009465	.04266	37928.7	40378.1	258.079	83.63	105.47	.81996E+00	231	1.04369
380.000	.8519E+00	.37568E+02	.81732	.008772	.04673	38844.6	41426.9	260.876	84.91	104.46	.83400E+00	239	1.04138
390.000	.8124E+00	.35823E+02	.83517	.008208	.05049	39761.8	42470.0	263.585	86.36	104.24	.84654E+00	246	1.03941
400.000	.7778E+00	.34298E+02	.85049	.007736	.05402	40684.9	43513.5	266.227	87.92	104.53	.85782E+00	253	1.03769
410.000	.7471E+00	.32945E+02	.86381	.007333	.05736	41617.0	44561.7	268.816	89.54	105.16	.86801E+00	259	1.03617
420.000	.7196E+00	.31732E+02	.87550	.006983	.06054	42560.1	45617.4	271.359	91.20	106.02	.87726E+00	265	1.03480
430.000	.6946E+00	.30632E+02	.88585	.006674	.06360	43515.5	46682.6	273.866	92.89	107.05	.88568E+00	270	1.03357
440.000	.6719E+00	.29627E+02	.89506	.006400	.06656	44484.3	47758.8	276.340	94.60	108.21	.89337E+00	275	1.03244
450.000	.6509E+00	.28704E+02	.90331	.006153	.06942	45467.3	48847.0	278.786	96.32	109.45	.90043E+00	280	1.03141
460.000	.6316E+00	.27851E+02	.91074	.005929	.07220	46464.8	49948.0	281.206	98.04	110.77	.90688E+00	285	0.00000
470.000	.6136E+00	.27059E+02	.91746	.005726	.07492	47477.3	51062.6	283.602	99.75	112.14	.91285E+00	290	0.00000
480.000	.5969E+00	.26321E+02	.92355	.005539	.07758	48505.1	52190.9	285.978	101.46	113.54	.91836E+00	294	0.00000
500.000	.5665E+00	.24980E+02	.93417	.005207	.08274	50606.8	54490.4	290.671	104.84	116.42	.92817E+00	303	0.00000
540.000	.5154E+00	.22729E+02	.95064	.004668	.09258	54995.9	59264.1	299.853	111.43	122.27	.94397E+00	318	0.00000
580.000	.4739E+00	.20898E+02	.96265	.004245	.10195	59629.2	64271.5	308.796	117.72	128.07	.95597E+00	333	0.00000
620.000	.4392E+00	.19368E+02	.97166	.003901	.11100	64498.6	69507.5	317.523	123.70	133.69	.96527E+00	346	0.00000
660.000	.4097E+00	.18066E+02	.97857	.003614	.11979	69593.8	74963.8	326.050	129.35	139.08	.97255E+00	358	0.00000
700.000	.3842E+00	.16940E+02	.98395	.003371	.12840	74903.8	80630.6	334.384	134.70	144.22	.97836E+00	370	0.00000

Table 21. (Continued)

Propane Isobar at P = 2.4 MPa

Temp. K	Density mol/L	Density kg/m³	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa•m³/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol•K)	C_v J/(mol•K)	C_p J/(mol•K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
85.693	.1664E+02	.73390E+03	.20240	3.106888	3.03367	2.0	146.2	82.587	61.74	84.07	.94362E-10	2032	2.09120
90.000	.1654E+02	.72950E+03	.19387	2.985964	2.92605	373.3	518.3	86.866	61.54	84.26	.49016E-09	2001	2.08157
100.000	.1631E+02	.71933E+03	.17695	2.732825	2.69698	1232.7	1379.8	95.989	61.15	84.75	.12505E-07	1933	2.05983
110.000	.1608E+02	.70923E+03	.16316	2.511307	2.49144	2090.0	2239.2	104.183	60.87	85.28	.16926E-06	1868	2.03884
120.000	.1586E+02	.69917E+03	.15171	2.314994	2.30442	2946.8	3098.2	111.647	60.69	85.87	.14295E-05	1805	2.01845
130.000	.1563E+02	.68913E+03	.14208	2.139200	2.13235	3805.4	3959.0	118.527	60.61	86.51	.84226E-05	1744	1.99856
140.000	.1540E+02	.67909E+03	.13388	1.980397	1.97266	4668.0	4823.8	124.931	60.61	87.22	.37482E-04	1684	1.97906
150.000	.1517E+02	.66904E+03	.12684	1.835865	1.82344	5536.8	5695.0	130.944	60.70	88.01	.13354E-03	1626	1.95987
160.000	.1494E+02	.65895E+03	.12073	1.703466	1.68325	6414.0	6574.6	136.628	60.87	88.88	.39781E-03	1567	1.94090
170.000	.1471E+02	.64879E+03	.11541	1.581484	1.55102	7301.8	7465.0	142.035	61.13	89.85	.10244E-02	1509	1.92210
180.000	.1448E+02	.63855E+03	.11074	1.468522	1.42589	8202.1	8367.8	147.203	61.48	90.92	.23391E-02	1452	1.90339
190.000	.1425E+02	.62819E+03	.10665	1.363431	1.30721	9116.5	9285.0	152.168	61.91	92.11	.48324E-02	1394	1.88472
200.000	.1401E+02	.61768E+03	.10304	1.265247	1.19448	10046.6	10218.0	156.956	62.44	93.42	.91757E-02	1336	1.86600
210.000	.1376E+02	.60699E+03	.09986	1.173156	1.08727	10993.6	11168.0	161.592	63.06	94.88	.16217E-01	1278	1.84719
220.000	.1352E+02	.59608E+03	.09706	1.086465	.98527	11958.7	12136.2	166.094	63.78	96.49	.26950E-01	1220	1.82821
230.000	.1326E+02	.58492E+03	.09462	1.004570	.88822	12942.8	13123.7	170.481	64.61	98.29	.42469E-01	1162	1.80898
240.000	.1300E+02	.57345E+03	.09249	.926947	.79588	13946.9	14131.5	174.767	65.54	100.29	.63898E-01	1103	1.78943
250.000	.1274E+02	.56161E+03	.09066	.853127	.70810	14972.1	15160.6	178.964	66.60	102.52	.92329E-01	1044	1.76947
260.000	.1246E+02	.54932E+03	.08912	.782688	.62469	16019.6	16212.3	183.085	67.77	105.03	.12875E+00	983	1.74897
270.000	.1217E+02	.53651E+03	.08787	.715234	.54553	17091.0	17288.3	187.142	69.09	107.87	.17397E+00	922	1.72781
280.000	.1186E+02	.52306E+03	.08691	.650388	.47046	18188.6	18390.9	191.149	70.54	111.12	.22860E+00	860	1.70581
290.000	.1154E+02	.50881E+03	.08627	.587762	.39934	19315.4	19523.4	195.121	72.15	114.88	.29295E+00	797	1.68276
300.000	.1119E+02	.49354E+03	.08597	.526935	.33200	20476.3	20690.7	199.077	73.92	119.34	.36702E+00	732	1.65833
310.000	.1082E+02	.47693E+03	.08609	.467389	.26824	21678.3	21900.2	203.043	75.88	124.83	.45048E+00	664	1.63208
320.000	.1040E+02	.45847E+03	.08676	.408401	.20777	22933.1	23163.9	207.058	78.05	131.94	.54260E+00	592	1.60326
330.000	.9914E+01	.43718E+03	.08823	.348751	.15014	24261.6	24503.7	211.184	80.47	142.15	.64237E+00	514	1.57051
339.388	.9360E+01	.41275E+03	.09087	.289788	.09777	25616.7	25873.1	215.275	83.08	158.54	.74183E+00	431	1.53351
339.388	.1317E+01	.58090E+02	.64563	.017029	.02074	34634.5	36456.4	246.459	86.32	148.32	.74183E+00	188	1.06471
340.000	.1306E+01	.57599E+02	.64997	.016750	.02133	34708.9	36546.3	246.720	85.96	145.40	.74370E+00	189	1.06415
350.000	.1170E+01	.51581E+02	.70507	.013782	.02898	35804.9	37856.7	250.520	83.56	121.59	.76731E+00	205	1.05726
360.000	.1078E+01	.47537E+02	.74379	.012089	.03482	36797.6	39023.9	253.809	83.53	113.01	.78734E+00	217	1.05265
370.000	.1008E+01	.44459E+02	.77380	.010917	.03979	37751.2	40131.6	256.844	84.28	109.00	.80480E+00	226	1.04915
380.000	.9517E+00	.41967E+02	.79816	.010031	.04421	38689.0	41210.8	259.722	85.41	107.07	.82019E+00	235	1.04632
390.000	.9042E+00	.39875E+02	.81851	.009327	.04824	39622.6	42276.7	262.491	86.76	106.27	.83391E+00	243	1.04395
400.000	.8634E+00	.38072E+02	.83584	.008749	.05198	40558.5	43338.4	265.179	88.24	106.16	.84621E+00	250	1.04191
410.000	.8275E+00	.36490E+02	.85080	.008261	.05550	41501.0	44401.3	267.804	89.80	106.50	.85732E+00	256	1.04012
420.000	.7956E+00	.35082E+02	.86387	.007841	.05884	42452.7	45469.4	270.378	91.43	107.15	.86738E+00	262	1.03854
430.000	.7668E+00	.33815E+02	.87539	.007475	.06204	43415.4	46545.1	272.909	93.09	108.02	.87657E+00	268	1.03711
440.000	.7408E+00	.32665E+02	.88562	.007151	.06511	44390.5	47630.4	275.404	94.77	109.05	.88493E+00	273	1.03582
450.000	.7169E+00	.31614E+02	.89475	.006862	.06808	45378.8	48726.6	277.867	96.47	110.20	.89259E+00	278	1.03464
460.000	.6950E+00	.30645E+02	.90295	.006601	.07096	46381.1	49834.6	280.303	98.17	111.43	.89960E+00	283	0.00000
470.000	.6746E+00	.29750E+02	.91035	.006365	.07376	47397.9	50955.4	282.713	99.87	112.73	.90607E+00	288	0.00000
480.000	.6558E+00	.28917E+02	.91705	.006149	.07650	48429.4	52089.3	285.100	101.56	114.08	.91204E+00	293	0.00000
500.000	.6216E+00	.27412E+02	.92871	.005768	.08180	50537.7	54398.5	289.813	104.93	116.86	.92268E+00	301	0.00000
540.000	.5646E+00	.24898E+02	.94672	.005154	.09186	54936.7	59187.3	299.024	111.49	122.60	.93979E+00	317	0.00000
580.000	.5185E+00	.22865E+02	.95982	.004676	.10140	59577.3	64206.0	307.987	117.77	128.32	.95278E+00	332	0.00000
620.000	.4802E+00	.21174E+02	.96962	.004291	.11058	64452.3	69450.7	316.729	123.73	133.89	.96283E+00	345	0.00000
660.000	.4476E+00	.19738E+02	.97712	.003970	.11949	69552.0	74914.0	325.267	129.38	139.24	.97071E+00	358	0.00000
700.000	.4195E+00	.18499E+02	.98295	.003699	.12819	74865.7	80586.6	333.610	134.72	144.35	.97698E+00	370	0.00000

Table 21. (Continued)

Propane Isobar at P = 2.6 MPa

Temp. K	Density mol/L	Density kg/m3	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa•m3/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol•K)	C_v J/(mol•K)	C_p J/(mol•K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
85.711	.1664E+02	.73395E+03	.21920	3.106946	3.03543	2.2	158.4	82.589	61.75	84.07	.89249E-10	2032	2.09127
90.000	.1654E+02	.72957E+03	.21001	2.986599	2.92830	371.7	528.9	86.849	61.55	84.26	.45983E-09	2002	2.08168
100.000	.1631E+02	.71941E+03	.19168	2.733538	2.69927	1231.0	1390.4	95.971	61.16	84.75	.11714E-07	1933	2.05995
110.000	.1609E+02	.70931E+03	.17673	2.512082	2.49377	2088.0	2249.7	104.166	60.88	85.28	.15838E-06	1868	2.03897
120.000	.1586E+02	.69925E+03	.16434	2.315821	2.30679	2944.7	3108.6	111.629	60.70	85.86	.13364E-05	1806	2.01860
130.000	.1563E+02	.68922E+03	.15390	2.140073	2.13477	3803.0	3969.4	118.508	60.61	86.50	.78673E-05	1745	1.99872
140.000	.1540E+02	.67920E+03	.14502	1.981312	1.97513	4665.3	4834.1	124.912	60.62	87.22	.34987E-04	1685	1.97923
150.000	.1517E+02	.66915E+03	.13738	1.836820	1.82596	5533.8	5705.2	130.924	60.71	88.00	.12457E-03	1626	1.96005
160.000	.1495E+02	.65907E+03	.13077	1.704461	1.68583	6410.8	6584.7	136.608	60.88	88.87	.37092E-03	1568	1.94110
170.000	.1472E+02	.64892E+03	.12500	1.582519	1.55366	7298.2	7474.9	142.013	61.14	89.84	.95471E-03	1510	1.92231
180.000	.1448E+02	.63869E+03	.11995	1.469600	1.42859	8198.1	8377.6	147.181	61.49	90.90	.21792E-02	1453	1.90362
190.000	.1425E+02	.62834E+03	.11550	1.364552	1.30999	9112.2	9294.6	152.145	61.92	92.09	.45005E-02	1395	1.88496
200.000	.1401E+02	.61785E+03	.11159	1.266416	1.19732	10041.8	10227.3	156.932	62.45	93.40	.85429E-02	1338	1.86627
210.000	.1377E+02	.60717E+03	.10815	1.174378	1.09019	10988.3	11177.1	161.566	63.07	94.85	.15094E-01	1280	1.84749
220.000	.1352E+02	.59629E+03	.10512	1.087744	.98826	11952.7	12145.0	166.067	63.79	96.46	.25079E-01	1222	1.82854
230.000	.1327E+02	.58515E+03	.10246	1.005914	.89129	12936.2	13132.1	170.452	64.62	98.25	.39512E-01	1164	1.80935
240.000	.1301E+02	.57370E+03	.10015	.928364	.79904	13939.5	14139.4	174.736	65.55	100.24	.59439E-01	1105	1.78984
250.000	.1274E+02	.56189E+03	.09817	.854629	.71135	14963.8	15167.8	178.930	66.60	102.46	.85873E-01	1046	1.76992
260.000	.1246E+02	.54964E+03	.09649	.784287	.62804	16010.2	16218.8	183.049	67.78	104.95	.11973E+00	986	1.74948
270.000	.1217E+02	.53688E+03	.09513	.716949	.54899	17080.3	17293.9	187.102	69.09	107.77	.16177E+00	925	1.72838
280.000	.1187E+02	.52348E+03	.09408	.652242	.47405	18176.3	18395.3	191.105	70.55	110.98	.21255E+00	863	1.70648
290.000	.1155E+02	.50930E+03	.09336	.589788	.40307	19301.2	19526.3	195.071	72.15	114.70	.27236E+00	800	1.68354
300.000	.1121E+02	.49414E+03	.09302	.529179	.33590	20459.4	20691.4	199.020	73.93	119.09	.34123E+00	735	1.65926
310.000	.1083E+02	.47767E+03	.09312	.469924	.27235	21657.9	21897.9	202.976	75.88	124.46	.41882E+00	668	1.63322
320.000	.1042E+02	.45942E+03	.09380	.411349	.21215	22907.4	23157.0	206.976	78.04	131.36	.50449E+00	597	1.60471
330.000	.9944E+01	.43849E+03	.09530	.352354	.15491	24227.5	24488.9	211.078	80.44	141.10	.59733E+00	521	1.57249
340.000	.9365E+01	.41297E+03	.09821	.290613	.09984	25659.5	25937.1	215.402	83.18	157.55	.69603E+00	434	1.53383
343.455	.9123E+01	.40228E+03	.09980	.267655	.08098	26197.7	26482.7	216.998	84.27	167.07	.73121E+00	400	1.51783
343.455	.1463E+01	.64511E+02	.62236	.019420	.01853	34709.5	36486.8	246.126	88.37	162.43	.73121E+00	184	1.07206
350.000	.1340E+01	.59069E+02	.66699	.016557	.02448	35503.3	37444.3	248.885	85.50	135.04	.74833E+00	196	1.06580
360.000	.1215E+01	.53591E+02	.71475	.014111	.03127	36567.0	38706.4	252.441	84.62	119.82	.77050E+00	210	1.05952
370.000	.1127E+01	.49683E+02	.75014	.012548	.03680	37560.3	39868.0	255.624	85.02	113.30	.78964E+00	221	1.05505
380.000	.1057E+01	.46630E+02	.77822	.011417	.04160	38524.4	40983.2	258.599	85.95	110.10	.80643E+00	230	1.05158
390.000	.1001E+01	.44123E+02	.80134	.010541	.04593	39476.9	42075.4	261.436	87.18	108.55	.82134E+00	239	1.04873
400.000	.9524E+00	.41998E+02	.82084	.009835	.04991	40427.4	43157.4	264.175	88.58	107.96	.83471E+00	246	1.04632
410.000	.9106E+00	.40156E+02	.83756	.009247	.05362	41381.4	44236.6	266.840	90.09	107.97	.84673E+00	253	1.04423
420.000	.8738E+00	.38532E+02	.85208	.008748	.05713	42342.5	45318.0	269.446	91.66	108.37	.85762E+00	259	1.04239
430.000	.8409E+00	.37081E+02	.86483	.008316	.06046	43313.0	46405.0	272.003	93.29	109.06	.86754E+00	265	1.04076
440.000	.8112E+00	.35772E+02	.87610	.007937	.06366	44294.8	47499.9	274.521	94.95	109.95	.87656E+00	271	1.03928
450.000	.7842E+00	.34581E+02	.88614	.007601	.06674	45288.9	48604.5	277.003	96.62	110.98	.88483E+00	276	1.03794
460.000	.7594E+00	.33489E+02	.89514	.007299	.06972	46296.2	49719.9	279.455	98.30	112.12	.89239E+00	281	0.00000
470.000	.7366E+00	.32482E+02	.90324	.007027	.07261	47317.5	50847.2	281.879	99.99	113.35	.89937E+00	286	0.00000
480.000	.7155E+00	.31550E+02	.91056	.006780	.07542	48353.0	51987.0	284.279	101.67	114.63	.90580E+00	291	0.00000
500.000	.6774E+00	.29871E+02	.92327	.006345	.08086	50468.0	54306.2	289.012	105.01	117.32	.91726E+00	300	0.00000
540.000	.6142E+00	.27084E+02	.94284	.005651	.09115	54877.3	59110.5	298.253	111.55	122.92	.93567E+00	316	0.00000
580.000	.5634E+00	.24843E+02	.95703	.005116	.10086	59525.3	64140.5	307.236	117.81	128.57	.94964E+00	331	0.00000
620.000	.5212E+00	.22986E+02	.96762	.004686	.11018	64406.0	69394.1	315.993	123.77	134.08	.96044E+00	345	0.00000
660.000	.4856E+00	.21414E+02	.97570	.004331	.11919	69510.3	74864.5	324.542	129.41	139.40	.96890E+00	358	0.00000
700.000	.4549E+00	.20061E+02	.98198	.004031	.12799	74827.7	80543.0	332.893	134.75	144.48	.97563E+00	370	0.00000

Table 21. (Continued)

Propane Isobar at P = 2.8 MPa

Temp. K	Density mol/L	Density kg/m³	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa·m³/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol·K)	C_v J/(mol·K)	C_p J/(mol·K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
85.730	.1664E+02	.73400E+03	.23600	3.107005	3.03719	2.4	170.6	82.591	61.76	84.06	.84915E-10	2033	2.09134
90.000	.1655E+02	.72963E+03	.22614	2.987235	2.93055	370.2	539.5	86.832	61.56	84.26	.43394E-09	2002	2.08179
100.000	.1632E+02	.71948E+03	.20640	2.734251	2.70156	1229.3	1400.9	95.954	61.17	84.74	.11039E-07	1934	2.06007
110.000	.1609E+02	.70939E+03	.19031	2.512857	2.49610	2086.1	2260.2	104.148	60.89	85.27	.14908E-06	1869	2.03910
120.000	.1586E+02	.69934E+03	.17696	2.316648	2.30916	2942.5	3119.1	111.611	60.71	85.86	.12567E-05	1807	2.01874
130.000	.1563E+02	.68932E+03	.16572	2.140946	2.13718	3800.6	3979.7	118.489	60.62	86.50	.73924E-05	1746	1.99887
140.000	.1540E+02	.67930E+03	.15615	1.982227	1.97759	4662.7	4844.4	124.893	60.62	87.21	.32852E-04	1686	1.97939
150.000	.1518E+02	.66926E+03	.14793	1.837775	1.82848	5530.9	5715.4	130.904	60.71	87.99	.11690E-03	1627	1.96023
160.000	.1495E+02	.65919E+03	.14080	1.705455	1.68841	6407.5	6594.8	136.587	60.89	88.86	.34791E-03	1569	1.94129
170.000	.1472E+02	.64905E+03	.13459	1.583553	1.55630	7294.7	7484.9	141.992	61.15	89.82	.89508E-03	1511	1.92252
180.000	.1449E+02	.63883E+03	.12914	1.470675	1.43130	8194.2	8387.5	147.159	61.50	90.89	.20423E-02	1454	1.90385
190.000	.1425E+02	.62849E+03	.12436	1.365672	1.31275	9107.8	9304.2	152.121	61.93	92.07	.42163E-02	1396	1.88521
200.000	.1401E+02	.61801E+03	.12015	1.267583	1.20016	10036.9	10236.7	156.907	62.46	93.37	.80011E-02	1339	1.86654
210.000	.1377E+02	.60736E+03	.11643	1.175597	1.09310	10982.9	11186.2	161.540	63.08	94.82	.14133E-01	1281	1.84778
220.000	.1353E+02	.59649E+03	.11316	1.089020	.99125	11946.8	12153.8	166.040	63.80	96.42	.23477E-01	1223	1.82886
230.000	.1327E+02	.58537E+03	.11030	1.007255	.89436	12929.6	13140.5	170.423	64.62	98.20	.36980E-01	1165	1.80971
240.000	.1302E+02	.57395E+03	.10781	.929777	.80220	13932.2	14147.3	174.705	65.56	100.18	.55620E-01	1107	1.79024
250.000	.1275E+02	.56217E+03	.10566	.856125	.71459	14955.5	15175.2	178.897	66.61	102.39	.80343E-01	1048	1.77036
260.000	.1247E+02	.54996E+03	.10386	.785880	.63139	16000.9	16225.4	183.012	67.79	104.87	.11200E+00	988	1.74998
270.000	.1218E+02	.53724E+03	.10238	.718656	.55244	17069.7	17299.5	187.063	69.10	107.66	.15132E+00	927	1.72896
280.000	.1188E+02	.52390E+03	.10123	.654085	.47762	18164.1	18399.8	191.060	70.55	110.85	.19880E+00	866	1.70714
290.000	.1156E+02	.50980E+03	.10045	.591799	.40678	19287.0	19529.2	195.021	72.16	114.52	.25473E+00	803	1.68431
300.000	.1122E+02	.49473E+03	.10006	.531403	.33978	20442.7	20692.3	198.963	73.93	118.85	.31913E+00	739	1.66018
310.000	.1085E+02	.47840E+03	.10013	.472428	.27642	21637.7	21895.8	202.910	75.88	124.11	.39169E+00	672	1.63435
320.000	.1044E+02	.46035E+03	.10081	.414249	.21649	22882.2	23150.5	206.896	78.03	130.81	.47185E+00	602	1.60614
330.000	.9973E+01	.43977E+03	.10233	.355866	.15962	24194.3	24475.0	210.975	80.41	140.11	.55874E+00	527	1.57441
340.000	.9409E+01	.41493E+03	.10527	.295271	.10516	25610.8	25908.4	215.255	83.11	155.31	.65121E+00	443	1.53673
347.291	.8879E+01	.39155E+03	.10921	.246651	.06600	26764.6	27079.9	218.663	85.45	177.53	.72106E+00	370	1.50188
347.291	.1620E+01	.71439E+02	.59855	.022076	.01629	34757.5	36485.8	245.747	90.48	180.24	.72106E+00	180	1.08004
350.000	.1547E+01	.68221E+02	.62194	.020268	.01928	35132.5	36942.4	247.053	88.39	159.04	.72895E+00	186	1.07631
360.000	.1370E+01	.60407E+02	.68288	.016514	.02745	36307.7	38351.7	251.025	85.95	129.17	.75353E+00	203	1.06730
370.000	.1255E+01	.55362E+02	.72497	.014400	.03366	37353.4	39583.7	254.401	85.86	118.65	.77446E+00	215	1.06151
380.000	.1170E+01	.51599E+02	.75737	.012949	.03891	38349.5	40742.4	257.492	86.55	113.67	.79269E+00	226	1.05720
390.000	.1102E+01	.48593E+02	.78359	.011861	.04356	39324.2	41865.1	260.408	87.63	111.15	.80884E+00	235	1.05377
400.000	.1045E+01	.46093E+02	.80545	.011001	.04780	40291.1	42969.9	263.205	88.94	109.96	.82327E+00	243	1.05093
410.000	.9967E+00	.43953E+02	.82405	.010298	.05172	41257.9	44067.0	265.914	90.38	109.57	.83621E+00	250	1.04850
420.000	.9544E+00	.42087E+02	.84012	.009707	.05540	42229.2	45163.0	268.555	91.91	109.69	.84792E+00	257	1.04638
430.000	.9169E+00	.40433E+02	.85415	.009200	.05888	43208.3	46262.1	271.141	93.50	110.17	.85858E+00	263	1.04451
440.000	.8833E+00	.38950E+02	.86651	.008759	.06221	44197.3	47367.3	273.682	95.13	110.90	.86827E+00	269	1.04283
450.000	.8528E+00	.37608E+02	.87749	.008371	.06540	45197.5	48480.7	276.184	96.78	111.81	.87714E+00	274	1.04132
460.000	.8251E+00	.36383E+02	.88730	.008024	.06848	46210.2	49603.8	278.653	98.44	112.85	.88525E+00	280	0.00000
470.000	.7996E+00	.35259E+02	.89612	.007713	.07146	47236.0	50737.9	281.092	100.11	113.99	.89273E+00	285	0.00000
480.000	.7760E+00	.34220E+02	.90408	.007431	.07436	48275.7	51883.8	283.504	101.78	115.20	.89963E+00	290	0.00000
500.000	.7338E+00	.32358E+02	.91786	.006939	.07994	50397.7	54213.5	288.259	105.10	117.79	.91189E+00	299	0.00000
540.000	.6641E+00	.29287E+02	.93900	.006160	.09044	54817.6	59033.5	297.530	111.61	123.26	.93161E+00	316	0.00000
580.000	.6084E+00	.26831E+02	.95427	.005563	.10033	59473.2	64075.1	306.534	117.86	128.82	.94654E+00	331	0.00000
620.000	.5625E+00	.24804E+02	.96565	.005087	.10978	64359.8	69337.7	315.306	123.81	134.28	.95809E+00	345	0.00000
660.000	.5237E+00	.23094E+02	.97431	.004696	.11891	69468.6	74815.2	323.866	129.44	139.56	.96712E+00	358	0.00000
700.000	.4904E+00	.21625E+02	.98104	.004366	.12780	74789.8	80499.6	332.226	134.77	144.62	.97431E+00	370	0.00000

Table 21. (Continued)

Propane Isobar at P = 3.0 MPa

Temp. K	Density mol/L	Density kg/m³	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa•m³/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol•K)	C_v J/(mol•K)	C_p J/(mol•K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
85.748	.1665E+02	.73404E+03	.25278	3.107065	3.03895	2.5	182.8	82.594	61.77	84.06	.81204E-10	2033	2.09140
90.000	.1655E+02	.72970E+03	.24227	2.987871	2.93280	368.7	550.0	86.815	61.57	84.26	.41160E-09	2003	2.08190
100.000	.1632E+02	.71955E+03	.22112	2.734964	2.70384	1227.6	1411.4	95.937	61.18	84.74	.10456E-07	1935	2.06019
110.000	.1609E+02	.70947E+03	.20388	2.513632	2.49842	2084.2	2270.7	104.130	60.90	85.27	.14105E-06	1870	2.03923
120.000	.1586E+02	.69943E+03	.18957	2.317475	2.31152	2940.4	3129.5	111.593	60.72	85.85	.11878E-05	1807	2.01888
130.000	.1563E+02	.68941E+03	.17753	2.141818	2.13960	3798.2	3990.1	118.471	60.63	86.49	.69817E-05	1747	1.99902
140.000	.1541E+02	.67940E+03	.16728	1.983141	1.98006	4660.0	4854.7	124.874	60.63	87.20	.31006E-04	1687	1.97956
150.000	.1518E+02	.66937E+03	.15847	1.838730	1.83100	5527.9	5725.6	130.885	60.72	87.98	.11027E-03	1628	1.96041
160.000	.1495E+02	.65931E+03	.15083	1.706449	1.69099	6404.3	6604.9	136.567	60.90	88.85	.32800E-03	1570	1.94149
170.000	.1472E+02	.64918E+03	.14417	1.584587	1.55893	7291.1	7494.9	141.971	61.16	89.81	.84348E-03	1513	1.92273
180.000	.1449E+02	.63897E+03	.13834	1.471750	1.43400	8190.2	8397.3	147.137	61.50	90.87	.19238E-02	1455	1.90408
190.000	.1426E+02	.62864E+03	.13321	1.366790	1.31552	9103.4	9313.9	152.098	61.94	92.05	.39704E-02	1398	1.88546
200.000	.1402E+02	.61818E+03	.12869	1.268748	1.20299	10032.1	10246.1	156.883	62.47	93.35	.75320E-02	1340	1.86681
210.000	.1378E+02	.60754E+03	.12471	1.176813	1.09600	10977.6	11195.3	161.515	63.09	94.79	.13301E-01	1283	1.84808
220.000	.1353E+02	.59669E+03	.12121	1.090294	.99423	11940.9	12162.6	166.013	63.81	96.39	.22089E-01	1225	1.82919
230.000	.1328E+02	.58559E+03	.11813	1.008592	.89742	12923.0	13148.9	170.394	64.63	98.16	.34788E-01	1167	1.81007
240.000	.1302E+02	.57420E+03	.11546	.931186	.80534	13924.8	14155.2	174.674	65.57	100.13	.52313E-01	1108	1.79064
250.000	.1275E+02	.56245E+03	.11316	.857616	.71783	14947.3	15182.5	178.864	66.62	102.33	.75555E-01	1050	1.77081
260.000	.1248E+02	.55028E+03	.11121	.787466	.63472	15991.6	16232.0	182.976	67.80	104.79	.10532E+00	990	1.75048
270.000	.1219E+02	.53760E+03	.10962	.720354	.55589	17059.2	17305.2	187.023	69.11	107.56	.14226E+00	930	1.72953
280.000	.1189E+02	.52432E+03	.10838	.655917	.48118	18152.0	18404.3	191.017	70.56	110.72	.18689E+00	868	1.70780
290.000	.1157E+02	.51029E+03	.10752	.593796	.41048	19273.0	19532.2	194.972	72.16	114.35	.23946E+00	806	1.68508
300.000	.1123E+02	.49531E+03	.10708	.533606	.34364	20426.2	20693.3	198.907	73.93	118.61	.29999E+00	742	1.66109
310.000	.1087E+02	.47912E+03	.10713	.474904	.28048	21617.8	21893.9	202.845	75.88	123.76	.36820E+00	676	1.63545
320.000	.1046E+02	.46127E+03	.10779	.417101	.22079	22857.5	23144.3	206.817	78.02	130.28	.44357E+00	607	1.60754
330.000	.1000E+02	.44100E+03	.10933	.359294	.16427	24162.0	24461.9	210.875	80.39	139.19	.52531E+00	533	1.57628
340.000	.9451E+01	.41678E+03	.11228	.299734	.11036	25564.3	25881.7	215.114	83.04	153.31	.61237E+00	451	1.53950
350.000	.8714E+01	.38425E+03	.11831	.233492	.05759	27156.3	27500.6	219.803	86.25	185.21	.70304E+00	351	1.49109
350.923	.8626E+01	.38040E+03	.11919	.226535	.05263	27322.4	27670.2	220.289	86.62	190.90	.71135E+00	340	1.48543
350.923	.1792E+01	.79005E+02	.57390	.025055	.01403	34776.2	36450.7	245.310	92.71	203.65	.71135E+00	175	1.08881
360.000	.1549E+01	.68300E+02	.64710	.019462	.02327	36008.2	37945.1	249.514	87.64	143.02	.73636E+00	194	1.07637
370.000	.1397E+01	.61613E+02	.69795	.016528	.03035	37126.6	39273.7	253.155	86.82	125.50	.75922E+00	209	1.06865
380.000	.1291E+01	.56931E+02	.73547	.014654	.03612	38162.7	40486.4	256.389	87.21	117.95	.77898E+00	221	1.06327
390.000	.1209E+01	.53317E+02	.76519	.013301	.04114	39163.5	41644.8	259.398	88.12	114.14	.79638E+00	230	1.05913
400.000	.1142E+01	.50374E+02	.78964	.012258	.04565	40149.2	42775.4	262.261	89.32	112.20	.81188E+00	239	1.05577
410.000	.1086E+01	.47894E+02	.81026	.011418	.04979	41130.2	43892.4	265.019	90.69	111.33	.82576E+00	247	1.05294
420.000	.1038E+01	.45755E+02	.82796	.010721	.05365	42112.9	45004.2	267.698	92.17	111.12	.83829E+00	254	1.05051
430.000	.9950E+00	.43876E+02	.84333	.010130	.05729	43101.2	46116.3	270.315	93.72	111.36	.84969E+00	260	1.04838
440.000	.9571E+00	.42203E+02	.85683	.009620	.06074	44097.8	47232.4	272.881	95.31	111.91	.86004E+00	267	1.04648
450.000	.9229E+00	.40698E+02	.86878	.009173	.06405	45104.6	48355.1	275.404	96.94	112.68	.86951E+00	272	1.04477
460.000	.8919E+00	.39331E+02	.87944	.008777	.06723	46122.8	49486.4	277.891	98.58	113.61	.87817E+00	278	0.00000
470.000	.8636E+00	.38081E+02	.88899	.008424	.07031	47153.6	50627.6	280.345	100.23	114.66	.88615E+00	283	0.00000
480.000	.8375E+00	.36930E+02	.89759	.008104	.07329	48197.6	51779.8	282.771	101.89	115.80	.89351E+00	288	0.00000
500.000	.7909E+00	.34875E+02	.91246	.007550	.07902	50326.9	54120.2	287.547	105.19	118.27	.90659E+00	298	0.00000
540.000	.7145E+00	.31507E+02	.93519	.006679	.08975	54757.6	58956.5	296.850	111.67	123.60	.92759E+00	315	0.00000
580.000	.6538E+00	.28829E+02	.95155	.006019	.09981	59421.1	64009.9	305.875	117.91	129.07	.94349E+00	330	0.00000
620.000	.6039E+00	.26629E+02	.96371	.005495	.10939	64313.5	69281.5	314.662	123.84	134.48	.95577E+00	344	0.00000
660.000	.5619E+00	.24777E+02	.97296	.005065	.11863	69427.1	74766.3	323.233	129.47	139.72	.96538E+00	357	0.00000
700.000	.5259E+00	.23191E+02	.98013	.004705	.12761	74752.0	80456.5	331.602	134.79	144.75	.97302E+00	370	0.00000

Table 21. (Continued)

Propane Isobar at P = 3.2 MPa

Temp. K	Density mol/L	Density kg/m³	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa·m³/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol·K)	C_v J/(mol·K)	C_p J/(mol·K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
85.767	.1665E+02	.73409E+03	.26956	3.107125	3.04071	2.7	195.0	82.596	61.78	84.06	.78002E-10	2034	2.09147
90.000	.1655E+02	.72977E+03	.25840	2.988507	2.93505	367.2	560.6	86.798	61.58	84.25	.39216E-09	2003	2.08201
100.000	.1632E+02	.71963E+03	.23584	2.735677	2.70613	1225.9	1422.0	95.920	61.19	84.74	.99482E-08	1935	2.06031
110.000	.1609E+02	.70955E+03	.21745	2.514406	2.50075	2082.3	2281.1	104.113	60.91	85.26	.13404E-06	1871	2.03936
120.000	.1586E+02	.69951E+03	.20218	2.318301	2.31389	2938.2	3140.0	111.575	60.73	85.84	.11278E-05	1808	2.01902
130.000	.1564E+02	.68950E+03	.18934	2.142690	2.14201	3795.8	4000.5	118.452	60.64	86.48	.66233E-05	1747	1.99918
140.000	.1541E+02	.67950E+03	.17841	1.984055	1.98253	4657.4	4865.0	124.855	60.64	87.19	.29394E-04	1688	1.97972
150.000	.1518E+02	.66948E+03	.16900	1.839683	1.83352	5525.0	5735.8	130.865	60.73	87.97	.10448E-03	1629	1.96058
160.000	.1495E+02	.65942E+03	.16086	1.707441	1.69357	6401.0	6615.0	136.546	60.90	88.84	.31060E-03	1571	1.94168
170.000	.1472E+02	.64931E+03	.15375	1.585619	1.56157	7287.5	7504.8	141.949	61.16	89.79	.79840E-03	1514	1.92294
180.000	.1449E+02	.63911E+03	.14753	1.472823	1.43669	8186.3	8407.1	147.115	61.51	90.85	.18203E-02	1456	1.90430
190.000	.1426E+02	.62880E+03	.14206	1.367907	1.31828	9099.1	9323.5	152.075	61.95	92.02	.37554E-02	1399	1.88571
200.000	.1402E+02	.61834E+03	.13723	1.269912	1.20582	10027.3	10255.5	156.859	62.47	93.32	.71221E-02	1342	1.86708
210.000	.1378E+02	.60772E+03	.13298	1.178028	1.09891	10972.3	11204.5	161.489	63.09	94.76	.12574E-01	1284	1.84837
220.000	.1354E+02	.59689E+03	.12924	1.091565	.99721	11935.0	12171.4	165.986	63.82	96.35	.20877E-01	1227	1.82951
230.000	.1328E+02	.58582E+03	.12596	1.009926	.90048	12916.4	13157.3	170.365	64.64	98.12	.32871E-01	1169	1.81042
240.000	.1303E+02	.57444E+03	.12310	.932591	.80848	13917.5	14163.2	174.643	65.58	100.08	.49423E-01	1110	1.79103
250.000	.1276E+02	.56272E+03	.12064	.859102	.72106	14939.1	15189.9	178.830	66.63	102.26	.71369E-01	1052	1.77125
260.000	.1249E+02	.55059E+03	.11856	.789046	.63805	15982.4	16238.7	182.940	67.80	104.71	.99468E-01	992	1.75098
270.000	.1220E+02	.53796E+03	.11684	.722044	.55932	17048.7	17311.0	186.983	69.11	107.46	.13435E+00	932	1.73010
280.000	.1190E+02	.52473E+03	.11551	.657740	.48474	18140.0	18408.9	190.973	70.56	110.59	.17648E+00	871	1.70845
290.000	.1158E+02	.51077E+03	.11458	.595779	.41417	19259.1	19535.4	194.923	72.17	114.18	.22611E+00	809	1.68583
300.000	.1125E+02	.49589E+03	.11408	.535791	.34747	20409.8	20694.4	198.851	73.93	118.38	.28325E+00	745	1.66199
310.000	.1088E+02	.47983E+03	.11410	.477351	.28450	21598.2	21892.3	202.780	75.88	123.43	.34766E+00	680	1.63655
320.000	.1048E+02	.46216E+03	.11476	.419910	.22505	22833.2	23138.6	206.739	78.01	129.77	.41884E+00	611	1.60891
330.000	.1003E+02	.44220E+03	.11630	.362643	.16885	24130.4	24449.6	210.777	80.37	138.33	.49608E+00	539	1.57809
340.000	.9492E+01	.41855E+03	.11926	.304023	.11544	25519.7	25856.9	214.979	82.98	151.50	.57840E+00	459	1.54215
350.000	.8789E+01	.38755E+03	.12512	.240093	.06372	27078.3	27442.5	219.572	86.04	179.00	.66429E+00	364	1.49592
354.369	.8359E+01	.36863E+03	.12992	.207073	.04072	27876.8	28259.6	221.893	87.79	208.89	.70200E+00	311	1.46820
354.369	.1982E+01	.87397E+02	.54799	.028442	.01174	34761.4	36376.0	244.797	95.12	236.04	.70200E+00	170	1.09860
360.000	.1766E+01	.77871E+02	.60541	.023272	.01860	35646.8	37458.9	247.826	89.96	166.21	.71886E+00	185	1.08745
370.000	.1556E+01	.68610E+02	.66855	.019015	.02685	36874.2	38931.0	251.862	87.96	134.64	.74388E+00	202	1.07669
380.000	.1422E+01	.62700E+02	.71232	.016567	.03323	37961.7	40212.3	255.279	87.94	123.15	.76527E+00	215	1.06986
390.000	.1323E+01	.58331E+02	.74604	.014880	.03865	38993.9	41413.0	258.398	88.65	117.61	.78395E+00	226	1.06484
400.000	.1244E+01	.54864E+02	.77336	.013614	.04346	40001.1	42573.1	261.336	89.73	114.72	.80054E+00	235	1.06086
410.000	.1179E+01	.51992E+02	.79616	.012614	.04783	40998.1	43712.2	264.148	91.01	113.26	.81536E+00	243	1.05758
420.000	.1124E+01	.49546E+02	.81559	.011796	.05188	41993.1	44841.2	266.869	92.43	112.67	.82873E+00	251	1.05479
430.000	.1075E+01	.47417E+02	.83238	.011109	.05568	42991.4	45967.4	269.519	93.94	112.63	.84086E+00	258	1.05236
440.000	.1033E+01	.45536E+02	.84706	.010521	.05928	43996.3	47095.1	272.112	95.50	112.98	.85188E+00	264	1.05023
450.000	.9945E+00	.43854E+02	.86002	.010010	.06270	45010.0	48227.8	274.657	97.10	113.59	.86195E+00	270	1.04832
460.000	.9600E+00	.42333E+02	.87153	.009560	.06599	46034.2	49367.5	277.162	98.72	114.40	.87116E+00	276	0.00000
470.000	.9286E+00	.40949E+02	.88184	.009159	.06916	47070.1	50516.2	279.633	100.36	115.35	.87964E+00	281	0.00000
480.000	.8998E+00	.39679E+02	.89110	.008800	.07223	48118.6	51675.0	282.072	102.00	116.42	.88745E+00	287	0.00000
500.000	.8486E+00	.37421E+02	.90707	.008178	.07810	50255.5	54026.4	286.872	105.28	118.77	.90134E+00	296	0.00000
540.000	.7652E+00	.33744E+02	.93140	.007210	.08906	54697.4	58879.3	296.206	111.74	123.95	.92362E+00	314	0.00000
580.000	.6993E+00	.30838E+02	.94887	.006482	.09929	59368.9	63944.7	305.253	117.95	129.33	.94047E+00	329	0.00000
620.000	.6454E+00	.28461E+02	.96181	.005908	.10902	64267.3	69225.4	314.055	123.88	134.69	.95349E+00	344	0.00000
660.000	.6002E+00	.26465E+02	.97164	.005439	.11837	69385.5	74717.5	322.637	129.50	139.89	.96367E+00	357	0.00000
700.000	.5615E+00	.24759E+02	.97925	.005048	.12743	74714.3	80413.7	331.015	134.82	144.89	.97176E+00	370	0.00000

Table 21. (Continued)

Propane Isobar at P = 3.4 MPa

Temp. K	Density mol/L	Density kg/m³	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa·m³/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol·K)	C_v J/(mol·K)	C_p J/(mol·K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
85.785	.1665E+02	.73414E+03	.28633	3.107187	3.04247	2.9	207.1	82.598	61.78	84.06	.75218E-10	2034	2.09153
90.000	.1655E+02	.72984E+03	.27453	2.989144	2.93730	365.7	571.2	86.781	61.59	84.25	.37510E-09	2004	2.08213
100.000	.1632E+02	.71970E+03	.25055	2.736390	2.70841	1224.2	1432.5	95.902	61.20	84.73	.95020E-08	1936	2.06043
110.000	.1609E+02	.70963E+03	.23101	2.515181	2.50307	2080.4	2291.6	104.095	60.91	85.26	.12788E-06	1871	2.03949
120.000	.1586E+02	.69960E+03	.21479	2.319128	2.31626	2936.1	3150.4	111.557	60.73	85.84	.10749E-05	1809	2.01916
130.000	.1564E+02	.68960E+03	.20115	2.143562	2.14443	3793.5	4010.9	118.434	60.65	86.48	.63079E-05	1748	1.99933
140.000	.1541E+02	.67960E+03	.18953	1.984968	1.98499	4654.7	4875.3	124.836	60.65	87.18	.27975E-04	1689	1.97989
150.000	.1518E+02	.66959E+03	.17954	1.840636	1.83604	5522.1	5746.0	130.845	60.74	87.96	.99374E-04	1630	1.96076
160.000	.1496E+02	.65954E+03	.17088	1.708433	1.69614	6397.8	6625.1	136.526	60.91	88.82	.29529E-03	1572	1.94187
170.000	.1473E+02	.64944E+03	.16333	1.586650	1.56420	7283.9	7514.8	141.928	61.17	89.78	.75869E-03	1515	1.92315
180.000	.1450E+02	.63925E+03	.15672	1.473896	1.43939	8182.4	8416.9	147.092	61.52	90.84	.17291E-02	1457	1.90453
190.000	.1426E+02	.62895E+03	.15090	1.369023	1.32104	9094.7	9333.1	152.052	61.95	92.00	.35660E-02	1400	1.88595
200.000	.1403E+02	.61851E+03	.14577	1.271074	1.20865	10022.5	10264.9	156.834	62.48	93.30	.67609E-02	1343	1.86735
210.000	.1379E+02	.60790E+03	.14125	1.179240	1.10181	10967.0	11213.6	161.463	63.10	94.73	.11933E-01	1286	1.84867
220.000	.1354E+02	.59709E+03	.13727	1.092833	1.00019	11929.1	12180.2	165.958	63.82	96.32	.19808E-01	1228	1.82983
230.000	.1329E+02	.58604E+03	.13378	1.011257	.90353	12909.9	13165.8	170.336	64.65	98.07	.31182E-01	1170	1.81078
240.000	.1303E+02	.57469E+03	.13074	.933992	.81162	13910.2	14171.1	174.612	65.58	100.03	.46875E-01	1112	1.79143
250.000	.1277E+02	.56300E+03	.12812	.860583	.72429	14931.0	15197.3	178.797	66.64	102.20	.67679E-01	1053	1.77170
260.000	.1249E+02	.55090E+03	.12589	.790620	.64137	15973.2	16245.3	182.904	67.81	104.63	.94313E-01	994	1.75148
270.000	.1221E+02	.53832E+03	.12407	.723727	.56274	17038.3	17316.8	186.944	69.12	107.36	.12737E+00	934	1.73066
280.000	.1191E+02	.52514E+03	.12264	.659551	.48827	18128.1	18413.6	190.930	70.57	110.46	.16730E+00	874	1.70910
290.000	.1159E+02	.51125E+03	.12162	.597748	.41784	19245.3	19538.6	194.875	72.17	114.01	.21434E+00	812	1.68659
300.000	.1126E+02	.49646E+03	.12107	.537956	.35129	20393.7	20695.7	198.796	73.94	118.15	.26850E+00	749	1.66288
310.000	.1090E+02	.48052E+03	.12105	.479770	.28850	21578.8	21890.8	202.716	75.87	123.11	.32955E+00	684	1.63762
320.000	.1050E+02	.46304E+03	.12170	.422676	.22928	22809.4	23133.2	206.663	78.00	129.29	.39704E+00	616	1.61026
330.000	.1005E+02	.44337E+03	.12325	.365919	.17338	24099.7	24437.9	210.681	80.35	137.51	.47030E+00	544	1.57986
340.000	.9530E+01	.42025E+03	.12620	.308158	.12043	25476.9	25833.7	214.849	82.93	149.87	.54844E+00	466	1.54468
350.000	.8857E+01	.39055E+03	.13192	.246166	.06959	27006.8	27390.7	219.359	85.87	173.98	.63011E+00	375	1.50033
357.647	.8071E+01	.35593E+03	.14166	.188006	.03016	28434.8	28856.0	223.500	88.96	234.88	.69297E+00	282	1.44977
357.647	.2198E+01	.96911E+02	.52027	.032368	.00945	34706.1	36253.2	244.183	97.83	284.05	.69297E+00	165	1.10979
360.000	.2053E+01	.90549E+02	.55318	.028736	.01309	35171.3	36827.1	245.778	93.74	215.91	.70085E+00	173	1.10227
370.000	.1738E+01	.76626E+02	.63603	.021991	.02310	36587.6	38544.3	250.487	89.33	147.51	.72840E+00	195	1.08596
380.000	.1565E+01	.69007E+02	.68766	.018732	.03022	37743.6	39916.3	254.147	88.77	129.63	.75151E+00	210	1.07711
390.000	.1444E+01	.63684E+02	.72604	.016618	.03609	38813.9	41168.2	257.399	89.23	121.67	.77154E+00	221	1.07096
400.000	.1351E+01	.59588E+02	.75654	.015081	.04122	39846.1	42362.3	260.423	90.16	117.57	.78923E+00	231	1.06625
410.000	.1276E+01	.56263E+02	.78171	.013893	.04585	40861.1	43525.9	263.296	91.36	115.40	.80502E+00	240	1.06243
420.000	.1213E+01	.53468E+02	.80299	.012935	.05010	41869.9	44674.0	266.063	92.71	114.35	.81922E+00	248	1.05923
430.000	.1158E+01	.51062E+02	.82127	.012139	.05406	42879.0	45815.2	268.748	94.17	113.99	.83210E+00	255	1.05648
440.000	.1110E+01	.48953E+02	.83719	.011465	.05780	43892.6	46955.4	271.369	95.70	114.11	.84379E+00	262	1.05408
450.000	.1068E+01	.47078E+02	.85118	.010882	.06135	44913.8	48098.5	273.938	97.27	114.55	.85446E+00	268	1.05195
460.000	.1029E+01	.45393E+02	.86359	.010372	.06475	45944.2	49247.1	276.463	98.87	115.23	.86421E+00	274	0.00000
470.000	.9947E+00	.43865E+02	.87466	.009921	.06801	46985.5	50403.6	278.950	100.49	116.08	.87319E+00	280	0.00000
480.000	.9631E+00	.42468E+02	.88460	.009518	.07117	48038.8	51569.2	281.404	102.12	117.06	.88145E+00	285	0.00000
500.000	.9070E+00	.39997E+02	.90169	.008824	.07719	50183.5	53932.1	286.227	105.38	119.28	.89614E+00	295	0.00000
540.000	.8163E+00	.35998E+02	.92765	.007753	.08838	54637.0	58801.9	295.594	111.80	124.30	.91969E+00	313	0.00000
580.000	.7451E+00	.32858E+02	.94621	.006954	.09879	59316.5	63879.5	304.663	118.00	129.60	.93750E+00	329	0.00000
620.000	.6871E+00	.30298E+02	.95994	.006327	.10864	64221.1	69169.5	313.480	123.92	134.89	.95124E+00	343	0.00000
660.000	.6385E+00	.28157E+02	.97035	.005818	.11810	69344.1	74668.9	322.074	129.53	140.05	.96198E+00	357	0.00000
700.000	.5971E+00	.26330E+02	.97839	.005394	.12727	74676.7	80371.1	330.461	134.84	145.02	.97052E+00	369	0.00000

Table 21. (Continued)

Propane Isobar at P = 3.6 MPa

Temp. K	Density mol/L	Density kg/m^3	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa•m^3/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol•K)	C_v J/(mol•K)	C_p J/(mol•K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
85.804	.1665E+02	.73418E+03	.30309	3.107249	3.04423	3.1	219.3	82.600	61.79	84.06	.72785E-10	2034	2.09160
90.000	.1655E+02	.72991E+03	.29065	2.989781	2.93955	364.2	581.7	86.765	61.59	84.25	.36003E-09	2005	2.08224
100.000	.1632E+02	.71977E+03	.26527	2.737103	2.71070	1222.5	1443.0	95.885	61.20	84.73	.91074E-08	1937	2.06056
110.000	.1609E+02	.70971E+03	.24457	2.515956	2.50540	2078.4	2302.1	104.077	60.92	85.26	.12243E-06	1872	2.03963
120.000	.1587E+02	.69968E+03	.22740	2.319954	2.31863	2934.0	3160.8	111.539	60.74	85.83	.10281E-05	1810	2.01931
130.000	.1564E+02	.68969E+03	.21295	2.144433	2.14684	3791.1	4021.3	118.415	60.66	86.47	.60283E-05	1749	1.99948
140.000	.1541E+02	.67970E+03	.20065	1.985881	1.98745	4652.1	4885.6	124.816	60.66	87.17	.26717E-04	1690	1.98005
150.000	.1519E+02	.66970E+03	.19007	1.841588	1.83855	5519.2	5756.2	130.825	60.75	87.95	.94849E-04	1631	1.96094
160.000	.1496E+02	.65966E+03	.18090	1.709424	1.69871	6394.6	6635.2	136.505	60.92	88.81	.28170E-03	1573	1.94206
170.000	.1473E+02	.64956E+03	.17290	1.587680	1.56684	7280.4	7524.8	141.907	61.18	89.76	.72345E-03	1516	1.92336
180.000	.1450E+02	.63939E+03	.16590	1.474966	1.44208	8178.4	8426.7	147.070	61.53	90.82	.16482E-02	1458	1.90476
190.000	.1427E+02	.62910E+03	.15974	1.370136	1.32380	9090.4	9342.8	152.029	61.96	91.98	.33979E-02	1401	1.88620
200.000	.1403E+02	.61868E+03	.15431	1.272234	1.21148	10017.8	10274.4	156.810	62.49	93.27	.64403E-02	1344	1.86762
210.000	.1379E+02	.60808E+03	.14952	1.180450	1.10471	10961.7	11222.8	161.438	63.11	94.70	.11364E-01	1287	1.84896
220.000	.1354E+02	.59729E+03	.14530	1.094098	1.00316	11923.3	12189.1	165.931	63.83	96.28	.18859E-01	1230	1.83016
230.000	.1329E+02	.58626E+03	.14160	1.012584	.90658	12903.4	13174.2	170.308	64.66	98.03	.29682E-01	1172	1.81114
240.000	.1304E+02	.57494E+03	.13837	.935389	.81475	13903.0	14179.1	174.581	65.59	99.97	.44612E-01	1114	1.79182
250.000	.1277E+02	.56328E+03	.13559	.862060	.72751	14922.8	15204.7	178.764	66.64	102.14	.64402E-01	1055	1.77214
260.000	.1250E+02	.55121E+03	.13322	.792188	.64469	15964.0	16252.0	182.868	67.82	104.55	.89735E-01	996	1.75198
270.000	.1222E+02	.53867E+03	.13128	.725402	.56616	17027.9	17322.6	186.905	69.13	107.26	.12118E+00	937	1.73122
280.000	.1192E+02	.52555E+03	.12975	.661353	.49180	18116.3	18418.3	190.887	70.58	110.33	.15915E+00	876	1.70974
290.000	.1160E+02	.51173E+03	.12866	.599703	.42149	19231.6	19541.9	194.827	72.18	113.85	.20388E+00	815	1.68733
300.000	.1127E+02	.49703E+03	.12805	.540103	.35510	20377.7	20697.1	198.742	73.94	117.93	.25539E+00	752	1.66376
310.000	.1091E+02	.48121E+03	.12799	.482163	.29248	21559.7	21889.6	202.653	75.87	122.80	.31347E+00	688	1.63869
320.000	.1052E+02	.46391E+03	.12862	.425401	.23347	22785.9	23128.1	206.588	78.00	128.82	.37767E+00	620	1.61158
330.000	.1008E+02	.44451E+03	.13016	.369126	.17786	24069.7	24426.8	210.587	80.33	136.74	.44740E+00	550	1.58159
340.000	.9567E+01	.42188E+03	.13311	.312155	.12533	25435.6	25811.9	214.723	82.88	148.37	.52182E+00	473	1.54711
350.000	.8919E+01	.39332E+03	.13870	.251819	.07524	26940.5	27344.1	219.162	85.72	169.81	.59972E+00	386	1.50439
360.000	.7883E+01	.34760E+03	.15258	.176991	.02508	28816.4	29273.1	224.593	89.56	253.64	.67822E+00	266	1.43778
360.769	.7751E+01	.34180E+03	.15484	.169002	.02087	29007.5	29472.0	225.144	90.14	276.53	.68420E+00	253	1.42948
360.769	.2450E+01	.10804E+03	.48986	.037047	.00715	34597.4	36066.8	243.424	101.03	362.65	.68420E+00	160	1.12299
370.000	.1953E+01	.86133E+02	.59911	.025678	.01905	36251.7	38094.8	248.979	91.07	167.19	.71268E+00	187	1.09705
380.000	.1723E+01	.75994E+02	.66118	.021215	.02708	37504.3	39593.3	252.976	89.70	137.93	.73770E+00	204	1.08519
390.000	.1575E+01	.69437E+02	.70505	.018542	.03346	38622.0	40908.2	256.392	89.85	126.50	.75912E+00	217	1.07758
400.000	.1464E+01	.64579E+02	.73914	.016675	.03894	39683.6	42141.8	259.516	90.62	120.81	.77796E+00	227	1.07196
410.000	.1377E+01	.60724E+02	.76689	.015263	.04383	40718.9	43333.2	262.458	91.71	117.77	.79472E+00	237	1.06752
420.000	.1305E+01	.57534E+02	.79014	.014143	.04830	41742.7	44502.0	265.275	93.00	116.17	.80976E+00	245	1.06385
430.000	.1243E+01	.54818E+02	.81000	.013225	.05244	42763.6	45659.6	267.998	94.41	115.46	.82339E+00	253	1.06074
440.000	.1190E+01	.52458E+02	.82720	.012453	.05632	43786.8	46813.0	270.650	95.90	115.32	.83575E+00	260	1.05804
450.000	.1142E+01	.50374E+02	.84228	.011792	.06000	44815.8	47967.2	273.244	97.44	115.57	.84702E+00	266	1.05567
460.000	.1100E+01	.48512E+02	.85560	.011217	.06350	45852.9	49125.3	275.790	99.02	116.10	.85731E+00	272	0.00000
470.000	.1062E+01	.46830E+02	.86747	.010710	.06687	46899.9	50289.8	278.294	100.62	116.83	.86679E+00	278	0.00000
480.000	.1027E+01	.45300E+02	.87809	.010259	.07011	47958.0	51462.5	280.763	102.24	117.72	.87551E+00	284	0.00000
500.000	.9661E+00	.42603E+02	.89632	.009488	.07628	50110.9	53837.2	285.610	105.47	119.81	.89099E+00	294	0.00000
540.000	.8678E+00	.38269E+02	.92391	.008308	.08771	54576.3	58724.5	295.011	111.87	124.66	.91581E+00	312	0.00000
580.000	.7911E+00	.34887E+02	.94358	.007434	.09829	59264.1	63814.5	304.101	118.05	129.86	.93456E+00	328	0.00000
620.000	.7289E+00	.32142E+02	.95810	.006752	.10828	64174.8	69113.8	312.935	123.95	135.10	.94902E+00	343	0.00000
660.000	.6770E+00	.29852E+02	.96908	.006201	.11785	69302.7	74620.6	321.540	129.56	140.22	.96033E+00	357	0.00000
700.000	.6327E+00	.27902E+02	.97756	.005744	.12710	74639.2	80328.7	329.935	134.87	145.16	.96931E+00	369	0.00000

Table 21. (Continued)

Propane Isobar at P = 3.8 MPa

Temp. K	Density mol/L	Density kg/m3	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa•m3/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol•K)	C_v J/(mol•K)	C_p J/(mol•K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
85.822	.1665E+02	.73423E+03	.31984	3.107313	3.04600	3.3	231.5	82.602	61.80	84.05	.70648E-10	2035	2.09167
90.000	.1655E+02	.72998E+03	.30677	2.990418	2.94180	362.7	592.3	86.748	61.60	84.24	.34663E-09	2005	2.08235
100.000	.1632E+02	.71985E+03	.27997	2.737817	2.71298	1220.8	1453.6	95.868	61.21	84.73	.87561E-08	1937	2.06068
110.000	.1610E+02	.70979E+03	.25813	2.516730	2.50772	2076.5	2312.6	104.060	60.93	85.25	.11757E-06	1873	2.03976
120.000	.1587E+02	.69977E+03	.24001	2.320780	2.32099	2931.8	3171.3	111.521	60.75	85.83	.98637E-06	1810	2.01945
130.000	.1564E+02	.68978E+03	.22475	2.145304	2.14925	3788.7	4031.6	118.397	60.66	86.46	.57790E-05	1750	1.99963
140.000	.1542E+02	.67980E+03	.21176	1.986793	1.98992	4649.4	4895.9	124.797	60.67	87.17	.25595E-04	1690	1.98022
150.000	.1519E+02	.66981E+03	.20059	1.842540	1.84107	5516.3	5766.4	130.806	60.75	87.94	.90811E-04	1632	1.96112
160.000	.1496E+02	.65978E+03	.19092	1.710415	1.70128	6391.4	6645.3	136.485	60.93	88.80	.26957E-03	1574	1.94226
170.000	.1473E+02	.64969E+03	.18247	1.588710	1.56947	7276.8	7534.8	141.886	61.19	89.75	.69199E-03	1517	1.92357
180.000	.1450E+02	.63952E+03	.17508	1.476036	1.44478	8174.5	8436.5	147.048	61.54	90.80	.15759E-02	1460	1.90498
190.000	.1427E+02	.62925E+03	.16857	1.371249	1.32656	9086.1	9352.4	152.006	61.97	91.96	.32478E-02	1403	1.88644
200.000	.1403E+02	.61884E+03	.16284	1.273392	1.21430	10013.0	10283.8	156.786	62.50	93.25	.61538E-02	1346	1.86789
210.000	.1379E+02	.60827E+03	.15778	1.181658	1.10760	10956.4	11231.9	161.412	63.12	94.67	.10856E-01	1288	1.84926
220.000	.1355E+02	.59749E+03	.15332	1.095361	1.00613	11917.4	12197.9	165.905	63.84	96.25	.18011E-01	1231	1.83048
230.000	.1330E+02	.58648E+03	.14941	1.013908	.90962	12896.9	13182.7	170.279	64.66	97.99	.28342E-01	1174	1.81149
240.000	.1304E+02	.57518E+03	.14600	.936782	.81788	13895.8	14187.1	174.551	65.60	99.92	.42590E-01	1116	1.79222
250.000	.1278E+02	.56355E+03	.14305	.863531	.73072	14914.8	15212.1	178.731	66.65	102.07	.61474E-01	1057	1.77258
260.000	.1251E+02	.55152E+03	.14055	.793749	.64799	15955.0	16258.8	182.833	67.83	104.47	.85644E-01	999	1.75247
270.000	.1222E+02	.53902E+03	.13848	.727069	.56957	17017.6	17328.5	186.866	69.13	107.17	.11564E+00	939	1.73178
280.000	.1193E+02	.52596E+03	.13685	.663145	.49532	18104.5	18423.1	190.844	70.58	110.21	.15186E+00	879	1.71038
290.000	.1162E+02	.51220E+03	.13568	.601646	.42513	19218.1	19545.2	194.779	72.18	113.68	.19454E+00	818	1.68807
300.000	.1128E+02	.49759E+03	.13501	.542232	.35888	20361.8	20698.6	198.688	73.94	117.71	.24368E+00	755	1.66464
310.000	.1093E+02	.48189E+03	.13491	.484531	.29643	21540.8	21888.6	202.590	75.87	122.50	.29909E+00	691	1.63974
320.000	.1054E+02	.46476E+03	.13551	.428087	.23763	22762.9	23123.4	206.514	77.99	128.37	.36036E+00	625	1.61288
330.000	.1011E+02	.44562E+03	.13705	.372269	.18230	24040.4	24416.4	210.496	80.31	136.02	.42692E+00	555	1.58327
340.000	.9602E+01	.42344E+03	.13999	.316027	.13015	25395.8	25791.5	214.602	82.84	147.00	.49802E+00	480	1.54946
350.000	.8977E+01	.39588E+03	.14545	.257131	.08070	26878.5	27301.7	218.977	85.60	166.28	.57254E+00	395	1.50817
360.000	.8041E+01	.35458E+03	.15789	.187831	.03242	28661.7	29134.3	224.137	88.78	226.19	.64793E+00	287	1.44778
363.742	.7377E+01	.32531E+03	.17032	.149532	.01282	29615.6	30130.7	226.888	91.31	355.60	.67565E+00	223	1.40604
363.742	.2760E+01	.12172E+03	.45519	.042888	.00487	34410.9	35787.6	242.440	105.15	514.00	.67565E+00	154	1.13940
370.000	.2224E+01	.98063E+02	.55546	.030513	.01460	35837.5	37546.3	247.236	93.42	201.65	.69663E+00	177	1.11109
380.000	.1902E+01	.83864E+02	.63241	.024106	.02380	37238.0	39236.1	251.745	90.77	148.96	.72378E+00	197	1.09435
390.000	.1716E+01	.75668E+02	.68294	.020689	.03076	38416.1	40630.6	255.368	90.53	132.32	.74669E+00	212	1.08478
400.000	.1585E+01	.69873E+02	.72109	.018410	.03663	39512.4	41910.6	258.609	91.11	124.54	.76671E+00	223	1.07805
410.000	.1483E+01	.65396E+02	.75167	.016734	.04180	40570.9	43133.3	261.629	92.09	120.41	.78446E+00	233	1.07287
420.000	.1400E+01	.61755E+02	.77703	.015427	.04648	41611.6	44325.0	264.501	93.30	118.17	.80036E+00	242	1.06867
430.000	.1331E+01	.58693E+02	.79855	.014370	.05080	42645.3	45500.3	267.266	94.66	117.03	.81474E+00	250	1.06515
440.000	.1271E+01	.56057E+02	.81710	.013489	.05483	43678.7	46668.0	269.951	96.11	116.60	.82776E+00	257	1.06213
450.000	.1219E+01	.53746E+02	.83330	.012741	.05864	44716.0	47833.8	272.571	97.62	116.64	.83963E+00	264	1.05949
460.000	.1172E+01	.51692E+02	.84757	.012094	.06226	45760.1	49001.8	275.138	99.18	117.01	.85047E+00	271	0.00000
470.000	.1130E+01	.49847E+02	.86024	.011527	.06572	46813.1	50174.7	277.661	100.76	117.62	.86044E+00	276	0.00000
480.000	.1092E+01	.48174E+02	.87157	.011025	.06905	47876.4	51354.8	280.145	102.35	118.41	.86961E+00	282	0.00000
500.000	.1026E+01	.45241E+02	.89096	.010170	.07538	50037.8	53741.7	285.017	105.57	120.35	.88589E+00	293	0.00000
540.000	.9198E+00	.40559E+02	.92020	.008874	.08704	54515.3	58646.8	294.452	111.93	125.03	.91196E+00	311	0.00000
580.000	.8374E+00	.36928E+02	.94098	.007922	.09779	59211.6	63749.4	303.565	118.10	130.13	.93165E+00	328	0.00000
620.000	.7709E+00	.33992E+02	.95628	.007184	.10792	64128.6	69058.2	312.415	123.99	135.30	.94683E+00	343	0.00000
660.000	.7155E+00	.31551E+02	.96784	.006589	.11760	69261.3	74572.4	321.032	129.59	140.38	.95870E+00	356	0.00000
700.000	.6684E+00	.29477E+02	.97675	.006097	.12695	74601.8	80286.6	329.436	134.89	145.30	.96812E+00	369	0.00000

Table 21. (Continued)

Propane Isobar at P = 4.0 MPa

Temp. K	Density mol/L	Density kg/m^3	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa•m^3/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol•K)	C_v J/(mol•K)	C_p J/(mol•K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
85.841	.1665E+02	.73428E+03	.33657	3.107377	3.04776	3.5	243.7	82.604	61.81	84.05	.68764E-10	2035	2.09173
90.000	.1656E+02	.73004E+03	.32288	2.991056	2.94405	361.3	602.9	86.731	61.61	84.24	.33466E-09	2006	2.08246
100.000	.1633E+02	.71992E+03	.29468	2.738530	2.71527	1219.1	1464.1	95.851	61.22	84.72	.84418E-08	1938	2.06080
110.000	.1610E+02	.70987E+03	.27169	2.517505	2.51004	2074.6	2323.1	104.042	60.94	85.25	.11322E-06	1873	2.03989
120.000	.1587E+02	.69986E+03	.25261	2.321605	2.32336	2929.7	3181.7	111.503	60.76	85.82	.94897E-06	1811	2.01959
130.000	.1564E+02	.68987E+03	.23655	2.146175	2.15167	3786.3	4042.0	118.378	60.67	86.46	.55554E-05	1751	1.99979
140.000	.1542E+02	.67990E+03	.22287	1.987705	1.99238	4646.8	4906.2	124.778	60.67	87.16	.24588E-04	1691	1.98038
150.000	.1519E+02	.66991E+03	.21112	1.843491	1.84358	5513.4	5776.7	130.786	60.76	87.93	.87186E-04	1633	1.96130
160.000	.1496E+02	.65989E+03	.20093	1.711404	1.70385	6388.2	6655.5	136.465	60.94	88.79	.25868E-03	1575	1.94245
170.000	.1474E+02	.64982E+03	.19204	1.589738	1.57209	7273.3	7544.7	141.865	61.20	89.74	.66374E-03	1518	1.92378
180.000	.1451E+02	.63966E+03	.18425	1.477104	1.44747	8170.6	8446.4	147.026	61.54	90.78	.15109E-02	1461	1.90521
190.000	.1427E+02	.62940E+03	.17740	1.372359	1.32931	9081.8	9362.0	151.983	61.98	91.94	.31129E-02	1404	1.88669
200.000	.1404E+02	.61900E+03	.17136	1.274548	1.21712	10008.2	10293.2	156.762	62.51	93.23	.58964E-02	1347	1.86816
210.000	.1380E+02	.60845E+03	.16603	1.182864	1.11049	10951.2	11241.1	161.387	63.13	94.64	.10399E-01	1290	1.84955
220.000	.1355E+02	.59769E+03	.16134	1.096621	1.00909	11911.6	12206.7	165.878	63.85	96.21	.17250E-01	1233	1.83080
230.000	.1330E+02	.58670E+03	.15721	1.015229	.91266	12890.5	13191.1	170.251	64.67	97.95	.27138E-01	1175	1.81184
240.000	.1305E+02	.57543E+03	.15362	.938171	.82100	13888.6	14195.1	174.520	65.61	99.87	.40773E-01	1117	1.79261
250.000	.1279E+02	.56382E+03	.15050	.864998	.73393	14906.7	15219.6	178.699	66.66	102.01	.58842E-01	1059	1.77301
260.000	.1251E+02	.55183E+03	.14786	.795305	.65129	15945.9	16265.6	182.797	67.83	104.40	.81965E-01	1001	1.75296
270.000	.1223E+02	.53937E+03	.14567	.728728	.57296	17007.4	17334.4	186.828	69.14	107.07	.11066E+00	941	1.73234
280.000	.1194E+02	.52636E+03	.14394	.664927	.49883	18092.9	18428.0	190.801	70.59	110.09	.14531E+00	882	1.71101
290.000	.1163E+02	.51267E+03	.14269	.603575	.42876	19204.6	19548.7	194.731	72.19	113.53	.18613E+00	821	1.68881
300.000	.1130E+02	.49814E+03	.14196	.544343	.36265	20346.1	20700.2	198.634	73.94	117.50	.23314E+00	759	1.66550
310.000	.1094E+02	.48256E+03	.14181	.486873	.30036	21522.2	21887.7	202.529	75.87	122.20	.28615E+00	695	1.64077
320.000	.1056E+02	.46559E+03	.14239	.430737	.24176	22740.1	23119.0	206.441	77.99	127.94	.34479E+00	629	1.61416
330.000	.1013E+02	.44670E+03	.14391	.375352	.18668	24011.7	24406.5	210.406	80.29	135.33	.40851E+00	560	1.58492
340.000	.9637E+01	.42495E+03	.14683	.319785	.13489	25357.2	25772.3	214.484	82.80	145.74	.47661E+00	487	1.55172
350.000	.9032E+01	.39828E+03	.15219	.262156	.08601	26820.1	27263.0	218.803	85.49	163.24	.54808E+00	405	1.51171
360.000	.8168E+01	.36018E+03	.16361	.196760	.03907	28535.3	29025.1	223.765	88.30	209.54	.62063E+00	304	1.45584
366.571	.6896E+01	.30411E+03	.19031	.128436	.00607	30310.3	30890.3	228.891	92.39	567.51	.66721E+00	193	1.37631
366.571	.3181E+01	.14028E+03	.41254	.050854	.00263	34086.1	35343.5	241.039	111.43	918.43	.66721E+00	147	1.16196
370.000	.2603E+01	.11480E+03	.49947	.037598	.00954	35272.5	36809.1	245.018	97.12	280.63	.68004E+00	166	1.13102
380.000	.2107E+01	.92934E+02	.60072	.027545	.02037	36935.7	38833.7	250.423	92.03	164.30	.70971E+00	190	1.10499
390.000	.1870E+01	.82478E+02	.65952	.023101	.02800	38193.6	40332.2	254.316	91.28	139.46	.73424E+00	206	1.09269
400.000	.1712E+01	.75516E+02	.70232	.020308	.03427	39331.6	41667.4	257.698	91.63	128.85	.75548E+00	219	1.08457
410.000	.1594E+01	.70302E+02	.73601	.018316	.03974	40416.6	42925.7	260.805	92.48	123.36	.77423E+00	230	1.07851
420.000	.1500E+01	.66145E+02	.76364	.016793	.04465	41476.0	44142.7	263.738	93.61	120.35	.79100E+00	239	1.07370
430.000	.1422E+01	.62696E+02	.78692	.015578	.04915	42523.8	45337.2	266.549	94.91	118.73	.80613E+00	247	1.06972
440.000	.1355E+01	.59755E+02	.80688	.014576	.05334	43568.2	46520.1	269.268	96.32	117.96	.81983E+00	255	1.06634
450.000	.1297E+01	.57197E+02	.82423	.013731	.05728	44614.4	47698.3	271.916	97.80	117.77	.83230E+00	262	1.06340
460.000	.1246E+01	.54937E+02	.83948	.013005	.06101	45665.9	48876.6	274.506	99.33	117.96	.84368E+00	269	0.00000
470.000	.1200E+01	.52917E+02	.85298	.012373	.06458	46725.1	50058.4	277.048	100.89	118.44	.85414E+00	275	0.00000
480.000	.1159E+01	.51093E+02	.86503	.011815	.06800	47793.8	51246.1	279.548	102.47	119.12	.86377E+00	281	0.00000
500.000	.1086E+01	.47910E+02	.88560	.010872	.07448	49964.0	53645.6	284.446	105.66	120.91	.88084E+00	291	0.00000
540.000	.9721E+00	.42865E+02	.91651	.009452	.08638	54454.1	58569.0	293.916	112.00	125.40	.90816E+00	310	0.00000
580.000	.8839E+00	.38978E+02	.93840	.008418	.09730	59159.0	63684.4	303.052	118.14	130.40	.92878E+00	327	0.00000
620.000	.8129E+00	.35849E+02	.95449	.007621	.10757	64082.4	69002.7	311.918	124.03	135.51	.94468E+00	342	0.00000
660.000	.7541E+00	.33253E+02	.96662	.006981	.11736	69220.0	74524.4	320.546	129.62	140.55	.95710E+00	356	0.00000
700.000	.7042E+00	.31053E+02	.97596	.006454	.12680	74564.4	80244.6	328.960	134.92	145.43	.96695E+00	369	0.00000

Table 21. (Continued)

Propane Isobar at P = 4.24746 MPa

Temp. K	Density mol/L	Density kg/m³	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa·m³/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol·K)	C_v J/(mol·K)	C_p J/(mol·K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
85.864	.1665E+02	.73433E+03	.35727	3.107458	3.04994	3.7	258.8	82.607	61.82	84.05	.66729E-10	2036	2.09181
90.000	.1656E+02	.73013E+03	.34282	2.991845	2.94684	359.4	615.9	86.710	61.62	84.24	.32152E-09	2007	2.08260
100.000	.1633E+02	.72001E+03	.31287	2.739413	2.71810	1217.0	1477.1	95.830	61.23	84.72	.80962E-08	1939	2.06095
110.000	.1610E+02	.70996E+03	.28845	2.518463	2.51292	2072.3	2336.1	104.021	60.95	85.24	.10843E-06	1874	2.04005
120.000	.1587E+02	.69996E+03	.26819	2.322627	2.32629	2927.1	3194.6	111.480	60.77	85.82	.90775E-06	1812	2.01976
130.000	.1565E+02	.68999E+03	.25114	2.147252	2.15465	3783.4	4054.9	118.355	60.68	86.45	.53088E-05	1752	1.99998
140.000	.1542E+02	.68003E+03	.23662	1.988833	1.99542	4643.6	4919.0	124.755	60.68	87.15	.23477E-04	1692	1.98059
150.000	.1519E+02	.67005E+03	.22413	1.844667	1.84669	5509.8	5789.3	130.762	60.77	87.92	.83186E-04	1634	1.96152
160.000	.1497E+02	.66004E+03	.21331	1.712627	1.70703	6384.2	6668.0	136.440	60.95	88.77	.24665E-03	1576	1.94269
170.000	.1474E+02	.64998E+03	.20387	1.591009	1.57534	7268.9	7557.1	141.839	61.21	89.72	.63254E-03	1519	1.92403
180.000	.1451E+02	.63983E+03	.19560	1.478425	1.45079	8165.8	8458.5	146.999	61.55	90.76	.14392E-02	1462	1.90549
190.000	.1428E+02	.62959E+03	.18832	1.373732	1.33272	9076.5	9374.0	151.954	61.99	91.92	.29639E-02	1405	1.88699
200.000	.1404E+02	.61921E+03	.18190	1.275976	1.22061	10002.4	10304.9	156.732	62.51	93.20	.56121E-02	1348	1.86849
210.000	.1380E+02	.60867E+03	.17624	1.184353	1.11406	10944.7	11252.4	161.356	63.14	94.61	.98942E-02	1292	1.84991
220.000	.1356E+02	.59793E+03	.17125	1.098177	1.01275	11904.5	12217.7	165.845	63.86	96.17	.16407E-01	1234	1.83119
230.000	.1331E+02	.58697E+03	.16686	1.016859	.91642	12882.5	13201.6	170.215	64.68	97.90	.25806E-01	1177	1.81228
240.000	.1306E+02	.57573E+03	.16303	.939884	.82485	13879.7	14205.0	174.483	65.62	99.81	.38764E-01	1120	1.79309
250.000	.1279E+02	.56416E+03	.15972	.866806	.73788	14896.8	15228.8	178.658	66.67	101.94	.55932E-01	1062	1.77355
260.000	.1252E+02	.55221E+03	.15690	.797222	.65536	15934.8	16274.0	182.754	67.84	104.31	.77899E-01	1003	1.75356
270.000	.1224E+02	.53981E+03	.15456	.730771	.57716	16994.8	17341.8	186.780	69.15	106.96	.10516E+00	944	1.73302
280.000	.1195E+02	.52685E+03	.15271	.667118	.50315	18078.5	18434.0	190.749	70.60	109.94	.13807E+00	885	1.71179
290.000	.1164E+02	.51324E+03	.15135	.605945	.43323	19188.2	19553.1	194.673	72.19	113.34	.17684E+00	824	1.68971
300.000	.1131E+02	.49882E+03	.15053	.546932	.36729	20326.9	20702.4	198.568	73.95	117.25	.22149E+00	763	1.66655
310.000	.1096E+02	.48338E+03	.15033	.489739	.30520	21499.4	21886.9	202.453	75.87	121.85	.27186E+00	700	1.64203
320.000	.1058E+02	.46660E+03	.15087	.433966	.24683	22712.6	23114.0	206.352	77.98	127.43	.32757E+00	635	1.61571
330.000	.1016E+02	.44801E+03	.15237	.379087	.19205	23977.0	24395.1	210.297	80.27	134.52	.38814E+00	567	1.58690
340.000	.9677E+01	.42675E+03	.15526	.324290	.14066	25311.2	25750.1	214.344	82.75	144.31	.45293E+00	495	1.55441
350.000	.9095E+01	.40106E+03	.16048	.268038	.09240	26752.2	27219.2	218.600	85.38	159.99	.52101E+00	416	1.51581
360.000	.8299E+01	.36596E+03	.17099	.206239	.04671	28403.1	28914.9	223.376	87.88	195.82	.59037E+00	322	1.46419
370.000	.3939E+01	.17371E+03	.35050	.063444	.00090	33462.6	34540.9	238.665	117.78	2533.66	.65776E+00	139	1.20348
380.000	.2418E+01	.10663E+03	.55598	.032906	.01593	36490.3	38247.0	248.589	93.94	194.15	.69203E+00	181	1.12120
390.000	.2084E+01	.91917E+02	.62841	.026545	.02450	37889.9	39927.6	252.957	92.30	150.85	.71874E+00	200	1.10375
400.000	.1884E+01	.83066E+02	.67799	.022918	.03132	39092.6	41347.4	256.553	92.32	135.19	.74160E+00	214	1.09334
410.000	.1740E+01	.76740E+02	.71598	.020446	.03717	40216.2	42656.9	259.787	92.99	127.52	.76163E+00	225	1.08595
420.000	.1629E+01	.71834E+02	.74667	.018607	.04237	41301.7	43909.2	262.805	94.01	123.34	.77948E+00	235	1.08025
430.000	.1538E+01	.67838E+02	.77226	.017166	.04711	42368.7	45129.7	265.677	95.23	121.01	.79556E+00	244	1.07562
440.000	.1462E+01	.64476E+02	.79406	.015994	.05149	43428.0	46332.9	268.443	96.59	119.77	.81009E+00	252	1.07174
450.000	.1397E+01	.61582E+02	.81290	.015015	.05560	44486.1	47527.6	271.128	98.03	119.25	.82330E+00	260	1.06840
460.000	.1339E+01	.59045E+02	.82939	.014182	.05947	45547.3	48719.4	273.748	99.53	119.21	.83536E+00	266	0.00000
470.000	.1288E+01	.56792E+02	.84396	.013461	.06316	46614.7	49912.7	276.314	101.06	119.50	.84643E+00	273	0.00000
480.000	.1242E+01	.54768E+02	.85692	.012829	.06669	47690.3	51110.2	278.836	102.63	120.04	.85660E+00	279	0.00000
490.000	.1200E+01	.52933E+02	.86852	.012269	.07009	48775.7	52314.1	281.318	104.20	120.76	.86598E+00	285	0.00000
500.000	.1162E+01	.51258E+02	.87897	.011767	.07337	49871.8	53525.9	283.766	105.78	121.62	.87465E+00	290	0.00000
520.000	.1095E+01	.48296E+02	.89700	.010904	.07963	52099.6	55977.8	288.574	108.94	123.62	.89012E+00	300	0.00000
540.000	.1037E+01	.45744E+02	.91197	.010185	.08556	54377.9	58472.5	293.281	112.08	125.88	.90351E+00	309	0.00000
560.000	.9867E+00	.43509E+02	.92456	.009573	.09124	56709.0	61013.8	297.902	115.17	128.27	.91511E+00	318	0.00000
580.000	.9418E+00	.41529E+02	.93525	.009044	.09671	59093.8	63603.9	302.446	118.20	130.75	.92528E+00	327	0.00000
620.000	.8652E+00	.38154E+02	.95231	.008170	.10714	64025.1	68934.3	311.331	124.07	135.77	.94205E+00	342	0.00000
660.000	.8020E+00	.35364E+02	.96515	.007473	.11707	69168.9	74465.2	319.975	129.66	140.76	.95515E+00	356	0.00000
700.000	.7485E+00	.33006E+02	.97502	.006900	.12662	74518.2	80193.0	328.399	134.95	145.60	.96554E+00	369	0.00000

Table 21. (Continued)

Propane Isobar at P = 4.4 MPa

Temp. K	Density mol/L	Density kg/m3	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa•m3/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol•K)	C_v J/(mol•K)	C_p J/(mol•K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
85.878	.1665E+02	.73437E+03	.37003	3.107509	3.05129	3.8	268.0	82.609	61.83	84.05	.65617E-10	2036	2.09186
90.000	.1656E+02	.73018E+03	.35510	2.992332	2.94855	358.3	624.0	86.697	61.63	84.23	.31422E-09	2007	2.08268
100.000	.1633E+02	.72007E+03	.32408	2.739958	2.71984	1215.7	1485.2	95.817	61.24	84.71	.79038E-08	1939	2.06104
110.000	.1610E+02	.71003E+03	.29879	2.519054	2.51469	2070.8	2344.1	104.007	60.96	85.24	.10576E-06	1875	2.04015
120.000	.1587E+02	.70003E+03	.27780	2.323256	2.32809	2925.4	3202.6	111.467	60.78	85.81	.88476E-06	1813	2.01987
130.000	.1565E+02	.69006E+03	.26013	2.147915	2.15649	3781.6	4062.8	118.341	60.69	86.44	.51712E-05	1752	2.00009
140.000	.1542E+02	.68010E+03	.24509	1.989527	1.99730	4641.6	4926.9	124.740	60.69	87.14	.22856E-04	1693	1.98071
150.000	.1520E+02	.67013E+03	.23215	1.845391	1.84861	5507.6	5797.1	130.747	60.78	87.91	.80951E-04	1635	1.96165
160.000	.1497E+02	.66013E+03	.22094	1.713380	1.70899	6381.8	6675.7	136.424	60.95	88.77	.23993E-03	1577	1.94283
170.000	.1474E+02	.65007E+03	.21116	1.591791	1.57735	7266.2	7564.7	141.822	61.21	89.71	.61509E-03	1520	1.92419
180.000	.1451E+02	.63994E+03	.20259	1.479237	1.45284	8162.8	8466.0	146.982	61.56	90.75	.13991E-02	1463	1.90566
190.000	.1428E+02	.62970E+03	.19505	1.374577	1.33481	9073.2	9381.3	151.937	61.99	91.90	.28805E-02	1406	1.88718
200.000	.1404E+02	.61933E+03	.18840	1.276855	1.22276	9998.8	10312.1	156.714	62.52	93.18	.54530E-02	1349	1.86869
210.000	.1381E+02	.60881E+03	.18253	1.185269	1.11626	10940.7	11259.4	161.336	63.14	94.59	.96118E-02	1293	1.85013
220.000	.1356E+02	.59808E+03	.17735	1.099134	1.01501	11900.1	12224.5	165.824	63.86	96.14	.15936E-01	1236	1.83144
230.000	.1331E+02	.58713E+03	.17281	1.017861	.91873	12877.6	13208.1	170.194	64.69	97.87	.25061E-01	1178	1.81255
240.000	.1306E+02	.57591E+03	.16883	.940938	.82723	13874.3	14211.2	174.459	65.62	99.77	.37640E-01	1121	1.79339
250.000	.1280E+02	.56437E+03	.16540	.867917	.74032	14890.7	15234.5	178.633	66.67	101.89	.54303E-01	1063	1.77388
260.000	.1253E+02	.55244E+03	.16247	.798399	.65787	15928.0	16279.2	182.727	67.85	104.25	.75623E-01	1005	1.75393
270.000	.1225E+02	.54007E+03	.16003	.732024	.57973	16987.1	17346.4	186.751	69.15	106.89	.10208E+00	946	1.73344
280.000	.1195E+02	.52716E+03	.15810	.668462	.50581	18069.8	18437.8	190.717	70.60	109.85	.13402E+00	887	1.71226
290.000	.1165E+02	.51360E+03	.15668	.607397	.43598	19178.1	19555.9	194.638	72.20	113.22	.17164E+00	826	1.69026
300.000	.1132E+02	.49924E+03	.15581	.548515	.37013	20315.2	20703.8	198.528	73.95	117.10	.21497E+00	765	1.66720
310.000	.1097E+02	.48388E+03	.15557	.491487	.30816	21485.6	21886.6	202.407	75.87	121.64	.26385E+00	702	1.64280
320.000	.1060E+02	.46722E+03	.15608	.435930	.24993	22695.8	23111.1	206.298	77.98	127.13	.31793E+00	638	1.61665
330.000	.1018E+02	.44880E+03	.15757	.381348	.19532	23956.1	24388.4	210.232	80.26	134.05	.37674E+00	571	1.58809
340.000	.9702E+01	.42782E+03	.16043	.326995	.14417	25283.7	25737.2	214.260	82.73	143.48	.43967E+00	500	1.55602
350.000	.9132E+01	.40267E+03	.16558	.271504	.09625	26712.4	27194.2	218.481	85.32	158.22	.50585E+00	422	1.51820
360.000	.8370E+01	.36908E+03	.17563	.211482	.05117	28331.0	28856.7	223.163	87.68	189.53	.57340E+00	332	1.46870
370.000	.6767E+01	.29841E+03	.21136	.127123	.00752	30586.8	31237.0	229.669	117.60	511.37	.64011E+00	180	1.36835
380.000	.2657E+01	.11717E+03	.52411	.037135	.01309	36157.0	37812.9	247.288	95.40	224.01	.68092E+00	175	1.13381
390.000	.2232E+01	.98439E+02	.60785	.028984	.02231	37683.5	39654.5	252.076	93.00	159.83	.70913E+00	195	1.11143
400.000	.1998E+01	.88084E+02	.66232	.024695	.02949	38935.5	41138.3	255.833	92.77	139.78	.73302E+00	210	1.09921
410.000	.1835E+01	.80935E+02	.70325	.021865	.03558	40086.8	42484.1	259.157	93.32	130.41	.75388E+00	222	1.09082
420.000	.1712E+01	.75495E+02	.73597	.019800	.04096	41190.5	43760.5	262.234	94.26	125.36	.77241E+00	233	1.08448
430.000	.1613E+01	.71120E+02	.76307	.018200	.04585	42270.4	44998.6	265.147	95.44	122.52	.78907E+00	242	1.07940
440.000	.1530E+01	.67472E+02	.78605	.016911	.05035	43339.5	46215.2	267.944	96.76	120.96	.80411E+00	250	1.07517
450.000	.1459E+01	.64351E+02	.80585	.015842	.05456	44405.4	47420.5	270.653	98.17	120.21	.81779E+00	258	1.07157
460.000	.1398E+01	.61631E+02	.82314	.014936	.05853	45473.0	48621.2	273.292	99.65	120.01	.83026E+00	265	0.00000
470.000	.1343E+01	.59224E+02	.83837	.014156	.06230	46545.7	49821.9	275.874	101.17	120.18	.84170E+00	272	0.00000
480.000	.1294E+01	.57069E+02	.85190	.013474	.06590	47625.8	51025.7	278.409	102.72	120.63	.85222E+00	278	0.00000
490.000	.1250E+01	.55121E+02	.86400	.012872	.06935	48715.0	52235.0	280.902	104.28	121.27	.86191E+00	283	0.00000
500.000	.1210E+01	.53347E+02	.87488	.012334	.07269	49814.6	53451.7	283.360	105.86	122.07	.87086E+00	289	0.00000
520.000	.1139E+01	.50219E+02	.89363	.011412	.07905	52048.0	55911.6	288.184	109.00	123.98	.88684E+00	299	0.00000
540.000	.1078E+01	.47532E+02	.90918	.010646	.08507	54330.8	58412.9	292.904	112.13	126.17	.90066E+00	309	0.00000
560.000	.1025E+01	.45185E+02	.92224	.009997	.09082	56665.6	60959.6	297.534	115.21	128.52	.91265E+00	318	0.00000
580.000	.9776E+00	.43109E+02	.93332	.009436	.09635	59053.5	63554.3	302.087	118.24	130.96	.92314E+00	326	0.00000
620.000	.8975E+00	.39579E+02	.95098	.008514	.10689	63989.8	68892.1	310.984	124.10	135.94	.94044E+00	342	0.00000
660.000	.8315E+00	.36668E+02	.96426	.007780	.11690	69137.5	74428.9	319.636	129.68	140.89	.95396E+00	356	0.00000
700.000	.7758E+00	.34211E+02	.97445	.007178	.12651	74489.8	80161.3	328.068	134.97	145.71	.96468E+00	369	0.00000

Table 21. (Continued)

Propane Isobar at P = 4.6 MPa

Temp. K	Density mol/L	Density kg/m³	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa·m³/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol·K)	C_v J/(mol·K)	C_p J/(mol·K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
85.896	.1665E+02	.73442E+03	.38674	3.107576	3.05305	4.0	280.2	82.611	61.83	84.05	.64303E-10	2037	2.09193
90.000	.1656E+02	.73025E+03	.37121	2.992970	2.95080	356.8	634.6	86.681	61.64	84.23	.30545E-09	2008	2.08279
100.000	.1633E+02	.72014E+03	.33878	2.740671	2.72212	1214.0	1495.7	95.799	61.25	84.71	.76724E-08	1940	2.06116
110.000	.1610E+02	.71010E+03	.31233	2.519828	2.51701	2068.9	2354.6	103.990	60.97	85.23	.10255E-06	1875	2.04028
120.000	.1588E+02	.70011E+03	.29039	2.324081	2.33045	2923.3	3213.1	111.449	60.78	85.81	.85705E-06	1813	2.02001
130.000	.1565E+02	.69015E+03	.27192	2.148785	2.15890	3779.3	4073.2	118.323	60.70	86.44	.50052E-05	1753	2.00024
140.000	.1543E+02	.68020E+03	.25619	1.990438	1.99976	4638.9	4937.2	124.721	60.70	87.13	.22107E-04	1694	1.98088
150.000	.1520E+02	.67024E+03	.24267	1.846340	1.85112	5504.7	5807.3	130.727	60.79	87.90	.78253E-04	1636	1.96183
160.000	.1497E+02	.66025E+03	.23094	1.714367	1.71155	6378.6	6685.8	136.404	60.96	88.75	.23182E-03	1578	1.94302
170.000	.1474E+02	.65020E+03	.22072	1.592816	1.57997	7262.7	7574.7	141.801	61.22	89.69	.59402E-03	1521	1.92440
180.000	.1452E+02	.64008E+03	.21175	1.480302	1.45552	8159.0	8475.9	146.960	61.57	90.74	.13507E-02	1464	1.90588
190.000	.1428E+02	.62985E+03	.20386	1.375683	1.33756	9068.9	9391.0	151.914	62.00	91.88	.27798E-02	1407	1.88742
200.000	.1405E+02	.61950E+03	.19691	1.278006	1.22557	9994.1	10321.5	156.690	62.53	93.15	.52608E-02	1351	1.86895
210.000	.1381E+02	.60898E+03	.19077	1.186468	1.11914	10935.5	11268.6	161.311	63.15	94.56	.92705E-02	1294	1.85042
220.000	.1357E+02	.59828E+03	.18536	1.100386	1.01796	11894.3	12233.4	165.797	63.87	96.11	.15367E-01	1237	1.83175
230.000	.1332E+02	.58735E+03	.18060	1.019172	.92176	12871.3	13216.6	170.165	64.70	97.83	.24161E-01	1180	1.81290
240.000	.1307E+02	.57615E+03	.17643	.942315	.83033	13867.2	14219.2	174.429	65.63	99.72	.36281E-01	1123	1.79377
250.000	.1280E+02	.56464E+03	.17283	.869369	.74351	14882.8	15242.1	178.601	66.68	101.83	.52334E-01	1065	1.77431
260.000	.1253E+02	.55275E+03	.16976	.799937	.66114	15919.1	16286.1	182.692	67.86	104.18	.72871E-01	1007	1.75441
270.000	.1226E+02	.54041E+03	.16720	.733662	.58311	16977.1	17352.4	186.713	69.16	106.79	.98352E-01	948	1.73398
280.000	.1196E+02	.52755E+03	.16516	.670216	.50928	18058.3	18442.8	190.675	70.61	109.74	.12911E+00	889	1.71289
290.000	.1166E+02	.51405E+03	.16365	.609289	.43957	19165.0	19559.6	194.591	72.20	113.07	.16535E+00	829	1.69097
300.000	.1133E+02	.49977E+03	.16272	.550577	.37385	20300.0	20705.8	198.476	73.95	116.90	.20709E+00	768	1.66804
310.000	.1099E+02	.48452E+03	.16243	.493760	.31203	21467.6	21886.2	202.347	75.87	121.37	.25417E+00	706	1.64380
320.000	.1061E+02	.46801E+03	.16290	.438477	.25398	22674.1	23107.5	206.228	77.97	126.74	.30627E+00	642	1.61787
330.000	.1020E+02	.44981E+03	.16436	.384268	.19958	23929.1	24380.1	210.147	80.25	133.46	.36295E+00	576	1.58963
340.000	.9733E+01	.42918E+03	.16719	.330463	.14871	25248.5	25721.1	214.152	82.70	142.47	.42363E+00	506	1.55807
350.000	.9177E+01	.40470E+03	.17224	.275886	.10120	26662.3	27163.6	218.331	85.25	156.13	.48750E+00	430	1.52120
360.000	.8454E+01	.37279E+03	.18179	.217840	.05682	28244.5	28788.7	222.908	87.47	182.88	.55284E+00	344	1.47408
370.000	.7179E+01	.31656E+03	.20830	.145053	.01517	30199.5	30840.3	228.519	115.35	341.26	.61800E+00	211	1.39361
380.000	.3066E+01	.13519E+03	.47490	.044477	.00932	35608.4	37108.8	245.250	97.81	292.34	.66599E+00	166	1.15564
390.000	.2450E+01	.10804E+03	.57902	.032647	.01943	37385.3	39262.8	250.852	94.01	174.82	.69646E+00	190	1.12283
400.000	.2158E+01	.95160E+02	.64094	.027250	.02708	38716.9	40848.5	254.868	93.39	146.81	.72178E+00	206	1.10752
410.000	.1967E+01	.86728E+02	.68610	.023863	.03349	39909.7	42248.6	258.326	93.76	134.63	.74373E+00	219	1.09758
420.000	.1825E+01	.80491E+02	.72167	.021457	.03912	41039.8	43559.9	261.486	94.60	128.25	.76316E+00	230	1.09027
430.000	.1714E+01	.75563E+02	.75085	.019624	.04420	42138.2	44822.7	264.458	95.71	124.65	.78060E+00	239	1.08453
440.000	.1622E+01	.71504E+02	.77544	.018166	.04886	43221.2	46058.0	267.298	96.98	122.61	.79632E+00	248	1.07981
450.000	.1543E+01	.68063E+02	.79654	.016967	.05321	44297.9	47278.1	270.040	98.36	121.54	.81060E+00	256	1.07583
460.000	.1476E+01	.65085E+02	.81489	.015959	.05729	45374.1	48490.8	272.706	99.81	121.10	.82361E+00	263	0.00000
470.000	.1416E+01	.62464E+02	.83101	.015095	.06116	46454.1	49701.5	275.310	101.31	121.10	.83554E+00	270	0.00000
480.000	.1364E+01	.60128E+02	.84531	.014344	.06485	47540.3	50913.9	277.862	102.84	121.42	.84651E+00	276	0.00000
490.000	.1316E+01	.58025E+02	.85807	.013683	.06839	48634.8	52130.7	280.371	104.39	121.96	.85661E+00	282	0.00000
500.000	.1273E+01	.56115E+02	.86952	.013095	.07180	49738.9	53353.7	282.842	105.95	122.68	.86594E+00	288	0.00000
520.000	.1196E+01	.52761E+02	.88923	.012092	.07829	51979.9	55824.5	287.687	109.08	124.47	.88258E+00	298	0.00000
540.000	.1131E+01	.49892E+02	.90555	.011262	.08442	54268.7	58334.5	292.423	112.20	126.57	.89697E+00	308	0.00000
560.000	.1075E+01	.47394E+02	.91922	.010561	.09026	56608.5	60888.5	297.067	115.27	128.85	.90944E+00	317	0.00000
580.000	.1025E+01	.45190E+02	.93081	.009958	.09588	59000.6	63489.3	301.630	118.29	131.24	.92036E+00	326	0.00000
620.000	.9400E+00	.41453E+02	.94926	.008969	.10655	63943.6	68837.0	310.544	124.14	136.15	.93836E+00	341	0.00000
660.000	.8704E+00	.38381E+02	.96310	.008186	.11667	69096.3	74381.4	319.208	129.71	141.06	.95243E+00	356	0.00000
700.000	.8117E+00	.35793E+02	.97372	.007545	.12638	74452.7	80119.9	327.648	134.99	145.85	.96357E+00	369	0.00000

Table 21. (Continued)

Propane Isobar at P = 4.8 MPa

Temp. K	Density mol/L	Density kg/m3	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa•m3/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol•K)	C_v J/(mol•K)	C_p J/(mol•K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
85.915	.1666E+02	.73446E+03	.40344	3.107644	3.05481	4.2	292.4	82.613	61.84	84.04	.63133E-10	2037	2.09200
90.000	.1656E+02	.73031E+03	.38731	2.993609	2.95305	355.3	645.1	86.664	61.65	84.23	.29748E-09	2008	2.08290
100.000	.1633E+02	.72022E+03	.35347	2.741385	2.72441	1212.3	1506.2	95.782	61.26	84.71	.74618E-08	1940	2.06128
110.000	.1610E+02	.71018E+03	.32588	2.520602	2.51933	2067.0	2365.1	103.972	60.97	85.23	.99618E-07	1876	2.04041
120.000	.1588E+02	.70020E+03	.30298	2.324906	2.33282	2921.2	3223.5	111.431	60.79	85.80	.83177E-06	1814	2.02015
130.000	.1565E+02	.69025E+03	.28371	2.149654	2.16131	3776.9	4083.6	118.304	60.70	86.43	.48537E-05	1754	2.00039
140.000	.1543E+02	.68030E+03	.26729	1.991348	2.00221	4636.3	4947.5	124.702	60.71	87.12	.21423E-04	1695	1.98104
150.000	.1520E+02	.67035E+03	.25318	1.847288	1.85363	5501.8	5817.5	130.708	60.79	87.89	.75788E-04	1637	1.96200
160.000	.1498E+02	.66036E+03	.24094	1.715353	1.71412	6375.4	6695.9	136.384	60.97	88.74	.22440E-03	1579	1.94321
170.000	.1475E+02	.65033E+03	.23027	1.593840	1.58259	7259.2	7584.7	141.780	61.23	89.68	.57476E-03	1522	1.92460
180.000	.1452E+02	.64021E+03	.22091	1.481366	1.45820	8155.1	8485.7	146.939	61.58	90.72	.13064E-02	1465	1.90611
190.000	.1429E+02	.63000E+03	.21268	1.376788	1.34030	9064.7	9400.7	151.891	62.01	91.87	.26877E-02	1409	1.88766
200.000	.1405E+02	.61966E+03	.20542	1.279155	1.22838	9989.4	10330.9	156.666	62.54	93.13	.50849E-02	1352	1.86922
210.000	.1381E+02	.60916E+03	.19900	1.187666	1.12202	10930.3	11277.8	161.286	63.16	94.53	.89582E-02	1295	1.85071
220.000	.1357E+02	.59848E+03	.19335	1.101636	1.02091	11888.6	12242.2	165.771	63.88	96.08	.14846E-01	1239	1.83207
230.000	.1332E+02	.58757E+03	.18838	1.020481	.92478	12864.9	13225.1	170.137	64.70	97.79	.23337E-01	1182	1.81325
240.000	.1307E+02	.57639E+03	.18403	.943689	.83343	13860.1	14227.3	174.399	65.64	99.68	.35037E-01	1125	1.79416
250.000	.1281E+02	.56491E+03	.18026	.870817	.74669	14874.9	15249.6	178.569	66.69	101.77	.50532E-01	1067	1.77474
260.000	.1254E+02	.55305E+03	.17704	.801469	.66441	15910.2	16292.9	182.657	67.86	104.10	.70352E-01	1009	1.75489
270.000	.1226E+02	.54075E+03	.17436	.735292	.58647	16967.1	17358.5	186.675	69.17	106.70	.94941E-01	951	1.73452
280.000	.1197E+02	.52794E+03	.17222	.671960	.51275	18047.0	18447.9	190.633	70.61	109.62	.12463E+00	892	1.71350
290.000	.1167E+02	.51451E+03	.17062	.611170	.44315	19152.0	19563.4	194.545	72.21	112.93	.15959E+00	832	1.69168
300.000	.1135E+02	.50031E+03	.16961	.552623	.37755	20284.9	20707.9	198.424	73.96	116.71	.19987E+00	771	1.66886
310.000	.1100E+02	.48516E+03	.16927	.496011	.31587	21449.8	21886.1	202.288	75.88	121.11	.24530E+00	710	1.64478
320.000	.1063E+02	.46879E+03	.16970	.440992	.25799	22652.8	23104.3	206.159	77.97	126.37	.29560E+00	646	1.61906
330.000	.1022E+02	.45080E+03	.17113	.387139	.20381	23902.7	24372.2	210.064	80.24	132.89	.35032E+00	581	1.59114
340.000	.9763E+01	.43051E+03	.17392	.333848	.15320	25214.3	25706.0	214.047	82.67	141.52	.40893E+00	512	1.56006
350.000	.9221E+01	.40663E+03	.17887	.280103	.10606	26614.4	27135.0	218.187	85.19	154.24	.47069E+00	438	1.52406
360.000	.8530E+01	.37615E+03	.18800	.223727	.06225	28165.5	28728.2	222.675	87.30	177.51	.53399E+00	355	1.47897
370.000	.7426E+01	.32745E+03	.21012	.157317	.02184	29962.3	30608.7	227.819	114.36	286.79	.59754E+00	234	1.40892
380.000	.3680E+01	.16226E+03	.41288	.055613	.00584	34836.6	36141.1	242.546	100.91	437.74	.65047E+00	159	1.18904
390.000	.2702E+01	.11917E+03	.54776	.036984	.01659	37047.9	38824.1	249.527	95.12	194.96	.68368E+00	184	1.13616
400.000	.2333E+01	.10289E+03	.61855	.030103	.02469	38481.6	40538.8	253.870	94.06	155.20	.71051E+00	201	1.11666
410.000	.2107E+01	.92893E+02	.66842	.026034	.03142	39723.5	42002.1	257.485	94.23	139.43	.73359E+00	215	1.10481
420.000	.1944E+01	.85728E+02	.70704	.023229	.03728	40883.3	43352.3	260.739	94.95	131.43	.75395E+00	227	1.09637
430.000	.1818E+01	.80175E+02	.73843	.021132	.04255	42002.1	44642.1	263.774	95.99	126.94	.77217E+00	237	1.08987
440.000	.1716E+01	.75661E+02	.76470	.019484	.04738	43099.9	45897.5	266.661	97.21	124.37	.78857E+00	246	1.08461
450.000	.1630E+01	.71871E+02	.78714	.018142	.05186	44188.2	47133.3	269.438	98.55	122.94	.80346E+00	254	1.08021
460.000	.1556E+01	.68614E+02	.80658	.017022	.05606	45273.7	48358.6	272.131	99.98	122.25	.81701E+00	261	0.00000
470.000	.1491E+01	.65764E+02	.82362	.016068	.06003	46361.3	49579.8	274.758	101.45	122.06	.82943E+00	268	0.00000
480.000	.1434E+01	.63237E+02	.83870	.015243	.06382	47453.9	50801.1	277.329	102.97	122.24	.84084E+00	275	0.00000
490.000	.1383E+01	.60970E+02	.85213	.014519	.06744	48553.8	52025.4	279.854	104.50	122.67	.85135E+00	281	0.00000
500.000	.1336E+01	.58918E+02	.86417	.013878	.07092	49662.6	53255.2	282.338	106.05	123.30	.86105E+00	287	0.00000
520.000	.1255E+01	.55328E+02	.88485	.012787	.07754	51911.4	55737.0	287.205	109.16	124.96	.87835E+00	297	0.00000
540.000	.1185E+01	.52270E+02	.90193	.011890	.08378	54206.4	58255.9	291.958	112.26	126.97	.89330E+00	307	0.00000
560.000	.1125E+01	.49617E+02	.91622	.011136	.08972	56551.2	60817.3	296.615	115.33	129.19	.90626E+00	317	0.00000
580.000	.1072E+01	.47281E+02	.92833	.010489	.09541	58947.6	63424.3	301.189	118.34	131.53	.91761E+00	325	0.00000
620.000	.9827E+00	.43333E+02	.94756	.009431	.10622	63897.3	68781.9	310.119	124.18	136.37	.93631E+00	341	0.00000
660.000	.9093E+00	.40097E+02	.96197	.008597	.11645	69055.1	74334.0	318.796	129.74	141.23	.95091E+00	356	0.00000
700.000	.8476E+00	.37376E+02	.97302	.007917	.12625	74415.6	80078.7	327.245	135.02	145.98	.96248E+00	369	0.00000

Table 21. (Continued)

Propane Isobar at P = 5.0 MPa

Temp. K	Density mol/L	Density kg/m³	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa•m³/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol•K)	C_v J/(mol•K)	C_p J/(mol•K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
85.934	.1666E+02	.73451E+03	.42013	3.107713	3.05658	4.4	304.6	82.616	61.85	84.04	.62092E-10	2037	2.09206
90.000	.1656E+02	.73038E+03	.40342	2.994248	2.95531	353.8	655.7	86.647	61.66	84.23	.29023E-09	2009	2.08302
100.000	.1633E+02	.72029E+03	.36816	2.742100	2.72669	1210.7	1516.8	95.765	61.26	84.70	.72696E-08	1941	2.06140
110.000	.1611E+02	.71026E+03	.33942	2.521377	2.52166	2065.2	2375.6	103.955	60.98	85.22	.96941E-07	1877	2.04054
120.000	.1588E+02	.70029E+03	.31556	2.325731	2.33518	2919.1	3233.9	111.413	60.80	85.79	.80865E-06	1815	2.02029
130.000	.1565E+02	.69034E+03	.29549	2.150523	2.16371	3774.5	4093.9	118.286	60.71	86.42	.47150E-05	1755	2.00055
140.000	.1543E+02	.68040E+03	.27839	1.992257	2.00467	4633.7	4957.8	124.683	60.71	87.12	.20797E-04	1696	1.98120
150.000	.1520E+02	.67046E+03	.26368	1.848236	1.85614	5498.9	5827.8	130.688	60.80	87.88	.73528E-04	1637	1.96218
160.000	.1498E+02	.66048E+03	.25094	1.716339	1.71668	6372.2	6706.0	136.363	60.98	88.73	.21760E-03	1580	1.94341
170.000	.1475E+02	.65045E+03	.23982	1.594864	1.58521	7255.7	7594.7	141.759	61.24	89.67	.55709E-03	1523	1.92481
180.000	.1452E+02	.64035E+03	.23007	1.482428	1.46088	8151.2	8495.5	146.917	61.58	90.70	.12657E-02	1466	1.90633
190.000	.1429E+02	.63015E+03	.22149	1.377891	1.34305	9060.4	9410.3	151.868	62.02	91.85	.26032E-02	1410	1.88791
200.000	.1406E+02	.61982E+03	.21392	1.280302	1.23118	9984.7	10340.4	156.642	62.54	93.11	.49235E-02	1353	1.86948
210.000	.1382E+02	.60934E+03	.20724	1.188861	1.12489	10925.2	11287.0	161.261	63.17	94.50	.86715E-02	1297	1.85100
220.000	.1358E+02	.59867E+03	.20134	1.102884	1.02385	11882.8	12251.1	165.744	63.89	96.04	.14367E-01	1240	1.83239
230.000	.1333E+02	.58778E+03	.19615	1.021786	.92780	12858.6	13233.7	170.109	64.71	97.75	.22580E-01	1183	1.81359
240.000	.1308E+02	.57663E+03	.19162	.945059	.83653	13853.1	14235.4	174.369	65.65	99.63	.33894E-01	1126	1.79454
250.000	.1282E+02	.56517E+03	.18768	.872260	.74987	14867.1	15257.2	178.537	66.70	101.71	.48876E-01	1069	1.77517
260.000	.1255E+02	.55335E+03	.18432	.802996	.66768	15901.4	16299.9	182.622	67.87	104.03	.68038E-01	1011	1.75537
270.000	.1227E+02	.54110E+03	.18151	.736915	.58983	16957.1	17364.6	186.637	69.18	106.62	.91808E-01	953	1.73506
280.000	.1198E+02	.52833E+03	.17926	.673696	.51620	18035.7	18453.0	190.592	70.62	109.51	.12050E+00	894	1.71411
290.000	.1168E+02	.51495E+03	.17757	.613039	.44671	19139.0	19567.2	194.499	72.21	112.78	.15430E+00	835	1.69239
300.000	.1136E+02	.50083E+03	.17649	.554653	.38124	20269.9	20710.2	198.373	73.96	116.52	.19323E+00	774	1.66968
310.000	.1102E+02	.48579E+03	.17609	.498241	.31970	21432.2	21886.1	202.230	75.88	120.86	.23716E+00	713	1.64576
320.000	.1065E+02	.46956E+03	.17648	.443477	.26198	22631.7	23101.3	206.090	77.96	126.01	.28578E+00	650	1.62024
330.000	.1024E+02	.45177E+03	.17787	.389964	.20800	23876.8	24364.8	209.982	80.23	132.35	.33871E+00	585	1.59261
340.000	.9792E+01	.43180E+03	.18063	.337156	.15764	25181.0	25691.6	213.944	82.64	140.63	.39543E+00	517	1.56199
350.000	.9263E+01	.40847E+03	.18549	.284172	.11083	26568.5	27108.3	218.049	85.13	152.53	.45524E+00	445	1.52679
360.000	.8600E+01	.37923E+03	.19424	.229233	.06753	28092.5	28673.9	222.459	87.15	173.05	.51665E+00	366	1.48346
370.000	.7608E+01	.33551E+03	.21362	.167143	.02799	29784.1	30441.3	227.295	113.75	258.41	.57862E+00	252	1.42032
380.000	.4636E+01	.20442E+03	.34139	.073601	.00431	33752.5	34831.1	238.970	103.52	608.04	.63413E+00	159	1.24253
390.000	.3001E+01	.13235E+03	.51377	.042217	.01388	36660.9	38326.9	248.071	96.35	222.45	.67072E+00	178	1.15210
400.000	.2526E+01	.11140E+03	.59510	.033308	.02236	38227.4	40206.6	252.834	94.76	165.28	.69922E+00	197	1.12679
410.000	.2256E+01	.99476E+02	.65019	.028400	.02938	39527.3	41743.7	256.631	94.71	144.87	.72348E+00	211	1.11257
420.000	.2069E+01	.91227E+02	.69211	.025127	.03547	40720.6	43137.5	259.990	95.31	134.92	.74477E+00	224	1.10281
430.000	.1927E+01	.84967E+02	.72582	.022728	.04093	41861.7	44456.7	263.095	96.27	129.42	.76378E+00	234	1.09545
440.000	.1813E+01	.79949E+02	.75384	.020868	.04591	42975.7	45733.6	266.030	97.44	126.24	.78087E+00	243	1.08958
450.000	.1718E+01	.75778E+02	.77766	.019369	.05052	44076.3	46985.9	268.845	98.75	124.41	.79636E+00	252	1.08472
460.000	.1638E+01	.72221E+02	.79822	.018127	.05484	45171.6	48224.6	271.568	100.14	123.45	.81045E+00	260	0.00000
470.000	.1568E+01	.69127E+02	.81620	.017075	.05892	46267.1	49456.7	274.218	101.60	123.06	.82336E+00	267	0.00000
480.000	.1506E+01	.66396E+02	.83207	.016170	.06279	47366.4	50687.2	276.808	103.09	123.09	.83521E+00	273	0.00000
490.000	.1450E+01	.63957E+02	.84618	.015379	.06649	48472.0	51919.4	279.349	104.61	123.40	.84612E+00	280	0.00000
500.000	.1400E+01	.61756E+02	.85881	.014681	.07005	49585.7	53156.0	281.847	106.15	123.94	.85620E+00	285	0.00000
520.000	.1313E+01	.57920E+02	.88047	.013499	.07679	51842.4	55649.2	286.736	109.24	125.46	.87416E+00	296	0.00000
540.000	.1240E+01	.54666E+02	.89832	.012532	.08314	54143.8	58177.1	291.506	112.33	127.38	.88967E+00	307	0.00000
560.000	.1176E+01	.51853E+02	.91324	.011721	.08917	56493.8	60746.0	296.177	115.38	129.53	.90312E+00	316	0.00000
580.000	.1120E+01	.49382E+02	.92586	.011028	.09495	58894.4	63359.3	300.762	118.39	131.82	.91488E+00	325	0.00000
620.000	.1025E+01	.45219E+02	.94588	.009899	.10590	63850.9	68726.9	309.709	124.21	136.59	.93428E+00	341	0.00000
660.000	.9483E+00	.41816E+02	.96086	.009012	.11624	69013.9	74286.7	318.398	129.77	141.40	.94942E+00	355	0.00000
700.000	.8835E+00	.38961E+02	.97233	.008291	.12612	74378.5	80037.6	326.856	135.04	146.12	.96141E+00	369	0.00000

Table 21. (Continued)

Propane Isobar at P = 5.2 MPa

Temp. K	Density mol/L	Density kg/m^3	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa•m^3/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol•K)	C_v J/(mol•K)	C_p J/(mol•K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
85.952	.1666E+02	.73456E+03	.43681	3.107782	3.05834	4.6	316.8	82.618	61.86	84.04	.61166E-10	2038	2.09213
90.000	.1656E+02	.73045E+03	.41951	2.994887	2.95756	352.4	666.3	86.630	61.67	84.22	.28361E-09	2009	2.08313
100.000	.1634E+02	.72036E+03	.38285	2.742814	2.72898	1209.0	1527.3	95.748	61.27	84.70	.70937E-08	1942	2.06152
110.000	.1611E+02	.71034E+03	.35295	2.522151	2.52398	2063.3	2386.1	103.937	60.99	85.22	.94486E-07	1877	2.04067
120.000	.1588E+02	.70037E+03	.32815	2.326556	2.33754	2917.0	3244.4	111.395	60.81	85.79	.78742E-06	1815	2.02043
130.000	.1566E+02	.69043E+03	.30727	2.151392	2.16612	3772.2	4104.3	118.268	60.72	86.42	.45875E-05	1755	2.00070
140.000	.1543E+02	.68050E+03	.28948	1.993166	2.00713	4631.1	4968.1	124.664	60.72	87.11	.20221E-04	1696	1.98137
150.000	.1521E+02	.67056E+03	.27419	1.849183	1.85864	5496.0	5838.0	130.668	60.81	87.87	.71449E-04	1638	1.96236
160.000	.1498E+02	.66060E+03	.26093	1.717323	1.71924	6369.0	6716.1	136.343	60.98	88.72	.21134E-03	1581	1.94360
170.000	.1475E+02	.65058E+03	.24936	1.595886	1.58783	7252.2	7604.7	141.738	61.24	89.65	.54083E-03	1524	1.92502
180.000	.1452E+02	.64049E+03	.23922	1.483489	1.46356	8147.4	8505.4	146.895	61.59	90.69	.12283E-02	1467	1.90655
190.000	.1429E+02	.63030E+03	.23029	1.378993	1.34578	9056.2	9420.0	151.846	62.03	91.83	.25253E-02	1411	1.88815
200.000	.1406E+02	.61998E+03	.22242	1.281448	1.23399	9980.0	10349.9	156.618	62.55	93.09	.47748E-02	1355	1.86975
210.000	.1382E+02	.60952E+03	.21546	1.190053	1.12777	10920.0	11296.2	161.236	63.17	94.48	.84073E-02	1298	1.85128
220.000	.1358E+02	.59887E+03	.20933	1.104128	1.02679	11877.1	12260.0	165.718	63.89	96.01	.13926E-01	1242	1.83270
230.000	.1333E+02	.58800E+03	.20393	1.023088	.93081	12852.2	13242.2	170.081	64.72	97.71	.21882E-01	1185	1.81394
240.000	.1308E+02	.57687E+03	.19920	.946425	.83962	13846.0	14243.5	174.339	65.65	99.58	.32841E-01	1128	1.79493
250.000	.1282E+02	.56544E+03	.19510	.873699	.75304	14859.2	15264.8	178.505	66.70	101.66	.47350E-01	1071	1.77559
260.000	.1256E+02	.55365E+03	.19159	.804517	.67093	15892.6	16306.8	182.588	67.88	103.96	.65905E-01	1013	1.75585
270.000	.1228E+02	.54143E+03	.18866	.738531	.59317	16947.3	17370.8	186.600	69.18	106.53	.88920E-01	955	1.73560
280.000	.1199E+02	.52872E+03	.18629	.675422	.51965	18024.5	18458.2	190.551	70.63	109.40	.11670E+00	897	1.71472
290.000	.1169E+02	.51540E+03	.18452	.614896	.45026	19126.2	19571.1	194.454	72.22	112.64	.14942E+00	838	1.69309
300.000	.1137E+02	.50136E+03	.18336	.556668	.38491	20255.1	20712.5	198.322	73.96	116.34	.18712E+00	778	1.67050
310.000	.1103E+02	.48641E+03	.18290	.500450	.32351	21414.9	21886.3	202.172	75.88	120.61	.22965E+00	717	1.64672
320.000	.1067E+02	.47032E+03	.18325	.445932	.26595	22611.0	23098.5	206.023	77.96	125.66	.27674E+00	654	1.62141
330.000	.1027E+02	.45273E+03	.18460	.392744	.21215	23851.3	24357.8	209.902	80.22	131.84	.32800E+00	590	1.59406
340.000	.9820E+01	.43305E+03	.18731	.340393	.16203	25148.5	25678.0	213.844	82.62	139.79	.38297E+00	523	1.56388
350.000	.9303E+01	.41024E+03	.19207	.288108	.11552	26524.3	27083.2	217.915	85.08	150.97	.44098E+00	452	1.52942
360.000	.8665E+01	.38208E+03	.20050	.234423	.07265	28024.4	28624.5	222.258	87.02	169.27	.50064E+00	375	1.48762
370.000	.7756E+01	.34200E+03	.21795	.175540	.03379	29638.8	30309.3	226.868	113.32	240.53	.56109E+00	267	1.42954
380.000	.5587E+01	.24639E+03	.29456	.094701	.00562	32779.3	33709.9	235.917	103.30	543.49	.61734E+00	172	1.29756
390.000	.3361E+01	.14823E+03	.47707	.048647	.01145	36212.2	37759.2	246.454	97.63	259.36	.65760E+00	174	1.17155
400.000	.2740E+01	.12083E+03	.57060	.036931	.02012	37951.7	39849.4	251.750	95.49	177.38	.68789E+00	193	1.13810
410.000	.2416E+01	.10653E+03	.63145	.030985	.02739	39320.1	41472.6	255.760	95.20	151.05	.71337E+00	208	1.12093
420.000	.2200E+01	.97011E+02	.67687	.027162	.03370	40551.4	42915.0	259.237	95.68	138.77	.73562E+00	221	1.10962
430.000	.2040E+01	.89952E+02	.71302	.024420	.03933	41717.1	44266.3	262.417	96.56	132.10	.75543E+00	231	1.10128
440.000	.1913E+01	.84376E+02	.74286	.022324	.04446	42848.5	45566.2	265.406	97.68	128.23	.77321E+00	241	1.09473
450.000	.1809E+01	.79790E+02	.76810	.020651	.04920	43962.2	46836.1	268.260	98.94	125.96	.78930E+00	250	1.08936
460.000	.1721E+01	.75909E+02	.78982	.019276	.05363	45067.8	48088.6	271.013	100.31	124.70	.80393E+00	258	0.00000
470.000	.1645E+01	.72554E+02	.80876	.018118	.05781	46171.7	49332.2	273.688	101.74	124.10	.81733E+00	265	0.00000
480.000	.1579E+01	.69608E+02	.82543	.017127	.06177	47277.9	50572.2	276.298	103.22	123.96	.82962E+00	272	0.00000
490.000	.1519E+01	.66986E+02	.84023	.016265	.06556	48389.3	51812.5	278.856	104.73	124.16	.84094E+00	278	0.00000
500.000	.1466E+01	.64628E+02	.85346	.015506	.06918	49508.1	53056.1	281.368	106.25	124.60	.85138E+00	284	0.00000
520.000	.1373E+01	.60537E+02	.87610	.014228	.07606	51773.1	55560.9	286.280	109.32	125.98	.87000E+00	296	0.00000
540.000	.1294E+01	.57081E+02	.89473	.013186	.08251	54081.0	58098.2	291.068	112.40	127.80	.88607E+00	306	0.00000
560.000	.1227E+01	.54102E+02	.91028	.012316	.08864	56436.2	60674.6	295.752	115.44	129.88	.90000E+00	315	0.00000
580.000	.1168E+01	.51494E+02	.92341	.011575	.09450	58841.2	63294.3	300.348	118.44	132.11	.91219E+00	324	0.00000
620.000	.1068E+01	.47110E+02	.94422	.010373	.10558	63804.6	68672.0	309.313	124.25	136.81	.93227E+00	340	0.00000
660.000	.9873E+00	.43538E+02	.95977	.009432	.11603	68972.8	74239.6	318.013	129.80	141.57	.94794E+00	355	0.00000
700.000	.9195E+00	.40548E+02	.97165	.008669	.12600	74341.5	79996.7	326.481	135.07	146.26	.96036E+00	369	0.00000

Table 21. (Continued)

Propane Isobar at P = 5.5 MPa

Temp. K	Density mol/L	Density kg/m³	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa•m³/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol•K)	C_v J/(mol•K)	C_p J/(mol•K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
85.980	.1666E+02	.73463E+03	.46182	3.107889	3.06099	4.9	335.0	82.621	61.87	84.04	.59964E-10	2039	2.09222
90.000	.1657E+02	.73055E+03	.44365	2.995847	2.96093	350.1	682.1	86.605	61.68	84.22	.27471E-09	2010	2.08329
100.000	.1634E+02	.72047E+03	.40487	2.743885	2.73240	1206.5	1543.1	95.722	61.29	84.69	.68565E-08	1943	2.06170
110.000	.1611E+02	.71046E+03	.37325	2.523312	2.52746	2060.4	2401.8	103.911	61.00	85.21	.91170E-07	1878	2.04086
120.000	.1589E+02	.70050E+03	.34702	2.327792	2.34109	2913.8	3260.1	111.368	60.82	85.78	.75870E-06	1817	2.02064
130.000	.1566E+02	.69057E+03	.32493	2.152694	2.16973	3768.7	4119.9	118.240	60.73	86.41	.44149E-05	1756	2.00092
140.000	.1544E+02	.68065E+03	.30612	1.994528	2.01081	4627.2	4983.6	124.636	60.73	87.10	.19440E-04	1698	1.98161
150.000	.1521E+02	.67072E+03	.28994	1.850603	1.86240	5491.7	5853.3	130.639	60.82	87.86	.68629E-04	1640	1.96262
160.000	.1498E+02	.66077E+03	.27591	1.718798	1.72308	6364.3	6731.3	136.313	61.00	88.70	.20284E-03	1582	1.94388
170.000	.1476E+02	.65077E+03	.26367	1.597417	1.59175	7247.0	7619.7	141.707	61.26	89.63	.51874E-03	1526	1.92532
180.000	.1453E+02	.64069E+03	.25294	1.485078	1.46757	8141.6	8520.2	146.862	61.60	90.66	.11774E-02	1469	1.90689
190.000	.1430E+02	.63052E+03	.24349	1.380643	1.34989	9049.8	9434.5	151.812	62.04	91.80	.24195E-02	1413	1.88851
200.000	.1406E+02	.62023E+03	.23516	1.283163	1.23819	9973.0	10364.1	156.582	62.56	93.05	.45726E-02	1357	1.87014
210.000	.1383E+02	.60978E+03	.22779	1.191839	1.13207	10912.3	11310.0	161.198	63.19	94.43	.80482E-02	1300	1.85171
220.000	.1359E+02	.59916E+03	.22130	1.105991	1.03120	11868.6	12273.4	165.678	63.91	95.96	.13327E-01	1244	1.83317
230.000	.1334E+02	.58832E+03	.21557	1.025036	.93533	12842.8	13255.1	170.039	64.73	97.65	.20933E-01	1187	1.81446
240.000	.1309E+02	.57723E+03	.21056	.948468	.84425	13835.6	14255.7	174.295	65.66	99.51	.31408E-01	1131	1.79550
250.000	.1283E+02	.56584E+03	.20621	.875848	.75779	14847.5	15276.2	178.457	66.71	101.57	.45274E-01	1074	1.77623
260.000	.1257E+02	.55409E+03	.20248	.806788	.67580	15879.6	16317.3	182.536	67.89	103.86	.63003E-01	1016	1.75656
270.000	.1229E+02	.54194E+03	.19935	.740942	.59818	16932.6	17380.1	186.544	69.19	106.40	.84989E-01	959	1.73639
280.000	.1200E+02	.52929E+03	.19683	.677996	.52480	18007.8	18466.1	190.490	70.63	109.24	.11153E+00	900	1.71563
290.000	.1170E+02	.51606E+03	.19491	.617661	.45557	19107.2	19577.2	194.386	72.22	112.44	.14279E+00	842	1.69412
300.000	.1139E+02	.50213E+03	.19364	.559662	.39039	20233.1	20716.1	198.246	73.97	116.07	.17879E+00	782	1.67170
310.000	.1105E+02	.48733E+03	.19309	.503726	.32918	21389.2	21886.9	202.086	75.88	120.25	.21942E+00	722	1.64814
320.000	.1069E+02	.47144E+03	.19336	.449562	.27185	22580.3	23094.8	205.924	77.96	125.16	.26442E+00	660	1.62312
330.000	.1030E+02	.45412E+03	.19465	.396837	.21832	23814.0	24348.0	209.784	80.20	131.10	.31343E+00	597	1.59618
340.000	.9861E+01	.43486E+03	.19729	.345123	.16852	25101.2	25658.9	213.699	82.59	138.63	.36601E+00	531	1.56661
350.000	.9360E+01	.41276E+03	.20191	.293787	.12243	26460.9	27048.5	217.724	85.01	148.87	.42156E+00	463	1.53316
360.000	.8754E+01	.38601E+03	.20991	.241717	.08012	27930.0	28558.3	221.978	86.86	164.56	.47881E+00	389	1.49337
370.000	.7936E+01	.34993E+03	.22529	.186415	.04202	29458.7	30151.8	226.339	112.86	223.06	.53712E+00	288	1.44087
380.000	.6442E+01	.28408E+03	.27021	.119761	.01156	31949.2	32802.9	233.400	101.60	359.14	.59289E+00	202	1.34846
390.000	.4039E+01	.17811E+03	.41994	.061198	.00906	35418.6	36780.3	243.735	99.37	323.37	.63758E+00	171	1.20885
400.000	.3108E+01	.13703E+03	.53218	.043315	.01709	37492.6	39262.5	250.026	96.61	199.76	.67083E+00	187	1.15775
410.000	.2678E+01	.11810E+03	.60245	.035331	.02457	38987.0	41040.8	254.419	95.96	161.84	.69822E+00	203	1.13476
420.000	.2410E+01	.10628E+03	.65352	.030500	.03113	40284.4	42566.6	258.097	96.25	145.25	.72197E+00	216	1.12058
430.000	.2218E+01	.97817E+02	.69352	.027151	.03700	41491.5	43971.0	261.402	97.00	136.49	.74298E+00	228	1.11052
440.000	.2070E+01	.91291E+02	.72620	.024647	.04234	42651.7	45308.5	264.477	98.03	131.44	.76180E+00	238	1.10281
450.000	.1950E+01	.86011E+02	.75365	.022681	.04726	43786.8	46606.6	267.395	99.24	128.44	.77880E+00	247	1.09660
460.000	.1850E+01	.81597E+02	.77715	.021084	.05186	44908.9	47881.2	270.197	100.56	126.68	.79424E+00	255	0.00000
470.000	.1765E+01	.77819E+02	.79755	.019752	.05618	46026.1	49142.7	272.910	101.96	125.73	.80837E+00	263	0.00000
480.000	.1690E+01	.74525E+02	.81545	.018620	.06027	47143.2	50397.6	275.552	103.41	125.33	.82132E+00	270	0.00000
490.000	.1624E+01	.71611E+02	.83130	.017642	.06417	48263.9	51650.7	278.136	104.89	125.33	.83324E+00	276	0.00000
500.000	.1565E+01	.69005E+02	.84544	.016786	.06791	49390.5	52905.2	280.670	106.40	125.61	.84424E+00	283	0.00000
520.000	.1463E+01	.64510E+02	.86958	.015353	.07497	51668.3	55427.9	285.617	109.45	126.77	.86382E+00	294	0.00000
540.000	.1377E+01	.60737E+02	.88938	.014193	.08158	53986.1	57979.3	290.431	112.50	128.43	.88073E+00	305	0.00000
560.000	.1304E+01	.57502E+02	.90587	.013230	.08785	56349.5	60567.3	295.137	115.52	130.40	.89538E+00	314	0.00000
580.000	.1240E+01	.54680E+02	.91978	.012413	.09383	58761.2	63196.7	299.750	118.51	132.56	.90819E+00	323	0.00000
620.000	.1133E+01	.49958E+02	.94176	.011096	.10511	63735.1	68589.8	308.740	124.31	137.14	.92930E+00	340	0.00000
660.000	.1046E+01	.46127E+02	.95816	.010070	.11572	68911.2	74169.2	317.459	129.84	141.83	.94577E+00	355	0.00000
700.000	.9735E+00	.42931E+02	.97067	.009243	.12583	74286.1	79935.6	325.940	135.10	146.47	.95882E+00	369	0.00000

Table 21. (Continued)

Propane Isobar at P = 6.0 MPa

Temp. K	Density mol/L	Density kg/m³	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa·m³/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol·K)	C_v J/(mol·K)	C_p J/(mol·K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
86.026	.1666E+02	.73474E+03	.50345	3.108071	3.06541	5.4	365.5	82.627	61.89	84.03	.58387E-10	2040	2.09239
90.000	.1657E+02	.73072E+03	.48387	2.997447	2.96656	346.5	708.5	86.563	61.70	84.21	.26218E-09	2012	2.08357
100.000	.1634E+02	.72066E+03	.44157	2.745672	2.73811	1202.3	1569.4	95.680	61.31	84.68	.65208E-08	1944	2.06200
110.000	.1612E+02	.71066E+03	.40707	2.525247	2.53326	2055.8	2428.1	103.867	61.02	85.20	.86457E-07	1880	2.04119
120.000	.1589E+02	.70071E+03	.37845	2.329852	2.34699	2908.6	3286.2	111.323	60.84	85.77	.71776E-06	1818	2.02099
130.000	.1567E+02	.69080E+03	.35435	2.154863	2.17574	3762.9	4145.9	118.194	60.75	86.39	.41683E-05	1758	2.00130
140.000	.1544E+02	.68090E+03	.33382	1.996797	2.01694	4620.8	5009.4	124.589	60.75	87.08	.18323E-04	1700	1.98202
150.000	.1522E+02	.67099E+03	.31617	1.852965	1.86866	5484.6	5878.9	130.591	60.84	87.84	.64590E-04	1642	1.96306
160.000	.1499E+02	.66106E+03	.30086	1.721253	1.72947	6356.4	6756.6	136.263	61.02	88.67	.19066E-03	1585	1.94435
170.000	.1476E+02	.65108E+03	.28750	1.599964	1.59828	7238.3	7644.7	141.655	61.28	89.60	.48704E-03	1528	1.92583
180.000	.1454E+02	.64103E+03	.27579	1.487721	1.47425	8132.1	8544.8	146.808	61.62	90.62	.11044E-02	1472	1.90744
190.000	.1431E+02	.63089E+03	.26547	1.383386	1.35672	9039.3	9458.7	151.755	62.06	91.75	.22675E-02	1416	1.88911
200.000	.1407E+02	.62063E+03	.25637	1.286013	1.24518	9961.4	10387.7	156.523	62.58	92.99	.42821E-02	1360	1.87079
210.000	.1384E+02	.61022E+03	.24832	1.194804	1.13922	10899.5	11333.1	161.136	63.20	94.37	.75318E-02	1304	1.85243
220.000	.1360E+02	.59964E+03	.24122	1.109082	1.03852	11854.5	12295.7	165.613	63.92	95.88	.12464E-01	1248	1.83395
230.000	.1335E+02	.58885E+03	.23496	1.028267	.94283	12827.2	13276.5	169.969	64.75	97.55	.19568E-01	1191	1.81531
240.000	.1310E+02	.57782E+03	.22947	.951854	.85193	13818.2	14276.1	174.220	65.68	99.39	.29347E-01	1135	1.79644
250.000	.1285E+02	.56649E+03	.22469	.879409	.76567	14828.3	15295.3	178.377	66.73	101.43	.42286E-01	1078	1.77727
260.000	.1258E+02	.55483E+03	.22059	.810547	.68389	15858.0	16334.9	182.451	67.91	103.69	.58825E-01	1021	1.75773
270.000	.1231E+02	.54277E+03	.21714	.744927	.60648	16908.3	17395.8	186.451	69.21	106.19	.79331E-01	964	1.73771
280.000	.1202E+02	.53024E+03	.21434	.682243	.53334	17980.4	18479.4	190.389	70.65	108.98	.10408E+00	907	1.71712
290.000	.1173E+02	.51715E+03	.21218	.622215	.46436	19075.9	19587.5	194.275	72.24	112.10	.13322E+00	848	1.69583
300.000	.1142E+02	.50340E+03	.21072	.564583	.39946	20197.1	20722.7	198.122	73.98	115.64	.16680E+00	790	1.67368
310.000	.1109E+02	.48883E+03	.21000	.509090	.33855	21347.2	21888.5	201.946	75.88	119.68	.20469E+00	730	1.65046
320.000	.1073E+02	.47324E+03	.21013	.455479	.28157	22530.7	23089.8	205.762	77.95	124.37	.24668E+00	670	1.62590
330.000	.1035E+02	.45636E+03	.21130	.403465	.22844	23753.8	24333.6	209.593	80.18	129.97	.29243E+00	608	1.59959
340.000	.9927E+01	.43774E+03	.21381	.352705	.17913	25026.0	25630.4	213.466	82.54	136.88	.34156E+00	545	1.57095
350.000	.9449E+01	.41667E+03	.21821	.302737	.13362	26362.1	26997.1	217.426	84.91	145.88	.39355E+00	479	1.53898
360.000	.8886E+01	.39183E+03	.22559	.252835	.09205	27788.9	28464.1	221.559	86.65	158.46	.44730E+00	410	1.50190
370.000	.8171E+01	.36030E+03	.23870	.201649	.05484	29219.3	29953.7	225.636	112.35	205.55	.50240E+00	316	1.45576
380.000	.7111E+01	.31357E+03	.26706	.146136	.02389	31300.8	32144.5	231.474	100.04	252.41	.55626E+00	245	1.38923
390.000	.5270E+01	.23240E+03	.35109	.087454	.01027	34110.9	35249.4	239.533	100.21	337.34	.60420E+00	185	1.27890
400.000	.3858E+01	.17012E+03	.46764	.057044	.01374	36610.2	38165.5	246.921	98.29	242.65	.64229E+00	184	1.19870
410.000	.3184E+01	.14039E+03	.55285	.044058	.02060	38369.6	40254.2	252.082	97.22	183.65	.67306E+00	197	1.16179
420.000	.2800E+01	.12345E+03	.61374	.036928	.02728	39803.0	41946.2	256.161	97.19	157.92	.69936E+00	210	1.14115
430.000	.2541E+01	.11205E+03	.66047	.032275	.03340	41092.1	43453.5	259.708	97.74	144.84	.72243E+00	222	1.12741
440.000	.2349E+01	.10360E+03	.69810	.028929	.03901	42307.6	44861.5	262.946	98.63	137.42	.74298E+00	233	1.11732
450.000	.2199E+01	.96955E+02	.72937	.026374	.04419	43482.6	46211.6	265.980	99.74	132.96	.76151E+00	242	1.10943
460.000	.2075E+01	.91516E+02	.75591	.024339	.04902	44635.3	47526.4	268.871	100.98	130.25	.77830E+00	251	0.00000
470.000	.1971E+01	.86935E+02	.77881	.022670	.05356	45776.7	48820.1	271.653	102.32	128.64	.79363E+00	259	0.00000
480.000	.1882E+01	.82993E+02	.79881	.021270	.05786	46913.6	50101.6	274.351	103.73	127.75	.80767E+00	266	0.00000
490.000	.1804E+01	.79543E+02	.81645	.020072	.06194	48050.6	51376.9	276.981	105.17	127.39	.82059E+00	273	0.00000
500.000	.1734E+01	.76483E+02	.83213	.019034	.06585	49191.2	52650.5	279.554	106.65	127.39	.83249E+00	280	0.00000
520.000	.1616E+01	.71259E+02	.85878	.017314	.07321	51491.4	55204.4	284.562	109.65	128.14	.85369E+00	292	0.00000
540.000	.1518E+01	.66924E+02	.88055	.015938	.08008	53826.8	57780.3	289.422	112.66	129.53	.87200E+00	303	0.00000
560.000	.1434E+01	.63236E+02	.89862	.014807	.08657	56204.0	60388.1	294.164	115.67	131.30	.88783E+00	313	0.00000
580.000	.1362E+01	.60040E+02	.91381	.013855	.09274	58627.2	63034.0	298.806	118.63	133.31	.90167E+00	322	0.00000
620.000	.1241E+01	.54732E+02	.93776	.012332	.10436	63619.1	68453.2	307.840	124.40	137.70	.92447E+00	339	0.00000
660.000	.1144E+01	.50457E+02	.95557	.011158	.11524	68808.6	74052.4	316.590	129.92	142.27	.94226E+00	355	0.00000
700.000	.1064E+01	.46908E+02	.96912	.010217	.12556	74194.0	79834.5	325.094	135.16	146.83	.95633E+00	369	0.00000

Table 21. (Continued)

Propane Isobar at P = 6.5 MPa

Temp. K	Density mol/L	Density kg/m³	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa•m³/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol•K)	C_v J/(mol•K)	C_p J/(mol•K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
86.072	.1666E+02	.73486E+03	.54503	3.108258	3.06983	5.9	395.9	82.632	61.91	84.03	.57245E-10	2041	2.09255
90.000	.1657E+02	.73089E+03	.52408	2.999050	2.97219	342.8	735.0	86.522	61.72	84.20	.25197E-09	2013	2.08384
100.000	.1635E+02	.72084E+03	.47825	2.747459	2.74382	1198.1	1595.8	95.637	61.33	84.68	.62448E-08	1946	2.06230
110.000	.1612E+02	.71086E+03	.44087	2.527182	2.53906	2051.1	2454.3	103.824	61.04	85.19	.82560E-07	1882	2.04151
120.000	.1590E+02	.70093E+03	.40986	2.331911	2.35289	2903.4	3312.3	111.279	60.86	85.75	.68377E-06	1820	2.02134
130.000	.1567E+02	.69103E+03	.38375	2.157030	2.18175	3757.0	4171.8	118.148	60.77	86.37	.39629E-05	1760	2.00168
140.000	.1545E+02	.68115E+03	.36151	1.999062	2.02306	4614.3	5035.1	124.542	60.77	87.06	.17390E-04	1702	1.98242
150.000	.1522E+02	.67126E+03	.34238	1.855324	1.87491	5477.5	5904.5	130.542	60.86	87.81	.61213E-04	1644	1.96350
160.000	.1500E+02	.66135E+03	.32579	1.723703	1.73585	6348.6	6782.0	136.212	61.04	88.65	.18046E-03	1587	1.94483
170.000	.1477E+02	.65139E+03	.31131	1.602506	1.60480	7229.7	7669.7	141.603	61.29	89.57	.46047E-03	1531	1.92634
180.000	.1454E+02	.64137E+03	.29861	1.490356	1.48091	8122.6	8569.5	146.754	61.64	90.58	.10431E-02	1475	1.90799
190.000	.1432E+02	.63126E+03	.28743	1.386120	1.36354	9028.9	9482.9	151.699	62.08	91.70	.21399E-02	1419	1.88971
200.000	.1408E+02	.62103E+03	.27755	1.288852	1.25215	9949.9	10411.5	156.464	62.60	92.94	.40381E-02	1363	1.87144
210.000	.1385E+02	.61066E+03	.26882	1.197757	1.14635	10886.8	11356.2	161.074	63.22	94.30	.70977E-02	1307	1.85313
220.000	.1361E+02	.60012E+03	.26111	1.112159	1.04582	11840.5	12318.1	165.547	63.94	95.80	.11739E-01	1251	1.83473
230.000	.1337E+02	.58938E+03	.25431	1.031479	.95031	12811.7	13298.0	169.900	64.77	97.46	.18420E-01	1195	1.81616
240.000	.1312E+02	.57840E+03	.24834	.955218	.85959	13801.1	14296.6	174.147	65.70	99.28	.27613E-01	1139	1.79738
250.000	.1286E+02	.56714E+03	.24314	.882943	.77352	14809.2	15314.6	178.299	66.75	101.29	.39771E-01	1083	1.77831
260.000	.1260E+02	.55556E+03	.23866	.814272	.69194	15836.7	16352.6	182.366	67.92	103.52	.55306E-01	1026	1.75888
270.000	.1233E+02	.54359E+03	.23489	.748871	.61474	16884.4	17411.7	186.360	69.23	105.98	.74564E-01	970	1.73901
280.000	.1205E+02	.53117E+03	.23179	.686438	.54181	17953.4	18493.0	190.289	70.67	108.72	.97801E-01	913	1.71859
290.000	.1175E+02	.51822E+03	.22939	.626704	.47307	19045.2	19598.3	194.165	72.25	111.79	.12517E+00	855	1.69750
300.000	.1144E+02	.50463E+03	.22771	.569418	.40844	20161.9	20729.9	198.000	73.99	115.23	.15669E+00	797	1.67561
310.000	.1112E+02	.49028E+03	.22682	.514342	.34782	21306.4	21891.0	201.808	75.89	119.14	.19228E+00	738	1.65272
320.000	.1077E+02	.47499E+03	.22681	.461242	.29116	22482.6	23086.0	205.605	77.95	123.65	.23172E+00	679	1.62858
330.000	.1040E+02	.45850E+03	.22784	.409871	.23839	23696.0	24321.2	209.410	80.16	128.94	.27472E+00	619	1.60286
340.000	.9988E+01	.44045E+03	.23020	.359954	.18949	24954.7	25605.4	213.245	82.50	135.34	.32094E+00	557	1.57504
350.000	.9530E+01	.42027E+03	.23437	.311143	.14448	26270.5	26952.5	217.148	84.83	143.38	.36992E+00	494	1.54435
360.000	.9002E+01	.39695E+03	.24124	.262952	.10348	27663.2	28385.3	221.185	86.49	153.81	.42067E+00	428	1.50942
370.000	.8357E+01	.36854E+03	.25282	.214603	.06687	29025.9	29803.7	225.067	112.02	194.75	.47296E+00	340	1.46765
380.000	.7495E+01	.33049E+03	.27450	.164729	.03594	30921.4	31788.6	230.357	99.25	215.08	.52471E+00	279	1.41300
390.000	.6175E+01	.27229E+03	.32464	.112681	.01600	33212.6	34265.3	236.786	99.42	283.51	.57290E+00	213	1.33222
400.000	.4696E+01	.20708E+03	.41619	.074130	.01395	35698.9	37083.0	243.922	99.15	261.15	.61417E+00	191	1.24575
410.000	.3773E+01	.16640E+03	.50531	.054882	.01824	37687.7	39410.3	249.672	98.28	206.12	.64816E+00	195	1.19396
420.000	.3241E+01	.14292E+03	.57430	.044590	.02431	39278.2	41283.8	254.188	98.07	172.22	.67703E+00	206	1.16483
430.000	.2897E+01	.12777E+03	.62747	.038200	.03037	40663.9	42907.2	258.009	98.45	154.27	.70216E+00	218	1.14631
440.000	.2652E+01	.11694E+03	.67001	.033774	.03608	41943.4	44394.5	261.429	99.22	144.08	.72445E+00	228	1.13322
450.000	.2464E+01	.10865E+03	.70511	.030485	.04142	43164.0	45802.2	264.593	100.23	137.95	.74448E+00	238	1.12327
460.000	.2313E+01	.10200E+03	.73473	.027919	.04642	44351.0	47161.0	267.580	101.40	134.14	.76261E+00	247	0.00000
470.000	.2188E+01	.96492E+02	.76015	.025848	.05113	45519.1	48489.6	270.438	102.68	131.77	.77914E+00	256	0.00000
480.000	.2082E+01	.91810E+02	.78227	.024131	.05560	46677.5	49799.5	273.195	104.04	130.34	.79426E+00	263	0.00000
490.000	.1990E+01	.87757E+02	.80170	.022680	.05984	47832.4	51098.6	275.874	105.45	129.57	.80818E+00	271	0.00000
500.000	.1909E+01	.84193E+02	.81893	.021432	.06390	48987.9	52392.3	278.488	106.89	129.25	.82098E+00	277	0.00000
520.000	.1773E+01	.78170E+02	.84810	.019387	.07153	51312.0	54978.8	283.560	109.85	129.56	.84376E+00	290	0.00000
540.000	.1661E+01	.73224E+02	.87184	.017770	.07865	53665.7	57580.1	288.468	112.83	130.66	.86343E+00	301	0.00000
560.000	.1566E+01	.69053E+02	.89149	.016453	.08535	56057.5	60208.4	293.247	115.81	132.23	.88044E+00	312	0.00000
580.000	.1484E+01	.65462E+02	.90797	.015352	.09171	58492.7	62871.3	297.919	118.75	134.09	.89529E+00	321	0.00000
620.000	.1350E+01	.59540E+02	.93388	.013607	.10365	63502.9	68317.0	306.997	124.49	138.27	.91976E+00	339	0.00000
660.000	.1243E+01	.54804E+02	.95308	.012274	.11478	68706.2	73936.3	315.779	129.99	142.71	.93884E+00	354	0.00000
700.000	.1154E+01	.50894E+02	.96766	.011213	.12533	74102.3	79734.2	324.306	135.22	147.18	.95394E+00	369	0.00000

Table 21. (Continued)

Propane Isobar at P = 7.0 MPa

Temp. K	Density mol/L	Density kg/m3	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa•m3/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol•K)	C_v J/(mol•K)	C_p J/(mol•K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
86.119	.1667E+02	.73497E+03	.58655	3.108451	3.07425	6.4	426.4	82.638	61.93	84.02	.56456E-10	2042	2.09271
90.000	.1658E+02	.73106E+03	.56426	3.000654	2.97782	339.1	761.4	86.480	61.74	84.20	.24359E-09	2015	2.08412
100.000	.1635E+02	.72102E+03	.51490	2.749246	2.74953	1194.0	1622.1	95.595	61.35	84.67	.60160E-08	1947	2.06260
110.000	.1612E+02	.71105E+03	.47466	2.529117	2.54485	2046.4	2480.5	103.781	61.07	85.18	.79307E-07	1884	2.04183
120.000	.1590E+02	.70114E+03	.44125	2.333969	2.35878	2898.2	3338.4	111.234	60.88	85.74	.65526E-06	1822	2.02169
130.000	.1568E+02	.69126E+03	.41313	2.159195	2.18775	3751.3	4197.8	118.103	60.79	86.36	.37901E-05	1762	2.00205
140.000	.1545E+02	.68139E+03	.38918	2.001325	2.02918	4607.9	5060.9	124.495	60.79	87.04	.16603E-04	1704	1.98283
150.000	.1523E+02	.67153E+03	.36857	1.857678	1.88115	5470.4	5930.1	130.494	60.88	87.79	.58357E-04	1646	1.96393
160.000	.1500E+02	.66164E+03	.35070	1.726147	1.74223	6340.8	6807.3	136.162	61.05	88.62	.17182E-03	1590	1.94530
170.000	.1478E+02	.65170E+03	.33510	1.605041	1.61131	7221.1	7694.7	141.551	61.31	89.53	.43794E-03	1533	1.92685
180.000	.1455E+02	.64171E+03	.32141	1.492984	1.48757	8113.1	8594.1	146.700	61.66	90.54	.99112E-03	1477	1.90854
190.000	.1432E+02	.63162E+03	.30936	1.388845	1.37034	9018.5	9507.2	151.642	62.10	91.66	.20314E-02	1422	1.89030
200.000	.1409E+02	.62143E+03	.29871	1.291680	1.25910	9938.5	10435.2	156.406	62.62	92.88	.38305E-02	1366	1.87209
210.000	.1386E+02	.61110E+03	.28930	1.200697	1.15347	10874.2	11379.4	161.012	63.24	94.24	.67284E-02	1311	1.85384
220.000	.1362E+02	.60060E+03	.28097	1.115220	1.05310	11826.6	12340.6	165.482	63.96	95.73	.11121E-01	1255	1.83550
230.000	.1338E+02	.58991E+03	.27363	1.034674	.95776	12796.4	13319.6	169.832	64.79	97.37	.17442E-01	1199	1.81701
240.000	.1313E+02	.57898E+03	.26718	.958560	.86722	13784.1	14317.2	174.074	65.72	99.17	.26134E-01	1143	1.79831
250.000	.1288E+02	.56779E+03	.26155	.886450	.78133	14790.3	15333.9	178.221	66.77	101.16	.37627E-01	1088	1.77934
260.000	.1261E+02	.55627E+03	.25669	.817965	.69994	15815.6	16370.5	182.283	67.94	103.36	.52307E-01	1031	1.76003
270.000	.1235E+02	.54439E+03	.25258	.752775	.62294	16860.8	17427.8	186.269	69.24	105.79	.70500E-01	975	1.74029
280.000	.1207E+02	.53208E+03	.24919	.690585	.55024	17926.8	18507.0	190.191	70.68	108.48	.92448E-01	918	1.72003
290.000	.1178E+02	.51926E+03	.24654	.631131	.48173	19015.1	19609.5	194.057	72.26	111.48	.11829E+00	862	1.69914
300.000	.1147E+02	.50584E+03	.24464	.574173	.41733	20127.5	20737.7	197.881	74.00	114.84	.14807E+00	804	1.67750
310.000	.1115E+02	.49170E+03	.24356	.519488	.35698	21266.6	21894.3	201.674	75.89	118.64	.18168E+00	747	1.65491
320.000	.1081E+02	.47668E+03	.24339	.466861	.30062	22435.9	23083.5	205.452	77.94	122.97	.21894E+00	688	1.63118
330.000	.1044E+02	.46056E+03	.24427	.416078	.24818	23640.4	24310.7	209.232	80.15	128.01	.25959E+00	629	1.60599
340.000	.1005E+02	.44302E+03	.24647	.366910	.19965	24886.8	25583.6	213.034	82.47	133.98	.30332E+00	569	1.57892
350.000	.9606E+01	.42361E+03	.25040	.319093	.15506	26184.8	26913.5	216.887	84.76	141.24	.34972E+00	508	1.54934
360.000	.9106E+01	.40154E+03	.25683	.272294	.11451	27549.5	28318.2	220.845	86.37	150.12	.39790E+00	446	1.51619
370.000	.8514E+01	.37544E+03	.26726	.226049	.07834	28861.6	29683.8	224.583	111.77	187.27	.44772E+00	362	1.47765
380.000	.7768E+01	.34255E+03	.28521	.179694	.04748	30646.1	31547.2	229.550	98.75	195.89	.49743E+00	306	1.43009
390.000	.6743E+01	.29734E+03	.32015	.132925	.02484	32654.2	33692.3	235.119	98.63	236.98	.54481E+00	244	1.36651
400.000	.5443E+01	.24003E+03	.38668	.092115	.01677	34932.1	36218.1	241.513	99.15	254.09	.58746E+00	207	1.28884
410.000	.4403E+01	.19415E+03	.46640	.067504	.01821	36999.3	38589.2	247.370	98.94	218.96	.62390E+00	200	1.22903
420.000	.3727E+01	.16434E+03	.53787	.053540	.02265	38725.0	40603.3	252.225	98.81	185.58	.65513E+00	206	1.19131
430.000	.3286E+01	.14491E+03	.59580	.044990	.02816	40212.0	42342.1	256.318	99.10	164.02	.68225E+00	215	1.16720
440.000	.2977E+01	.13129E+03	.64265	.039227	.03371	41561.5	43912.5	259.929	99.77	151.14	.70625E+00	225	1.15053
450.000	.2746E+01	.12109E+03	.68132	.035045	.03906	42832.2	45381.4	263.231	100.70	143.25	.72776E+00	235	1.13815
460.000	.2564E+01	.11305E+03	.71389	.031844	.04414	44056.6	46787.0	266.321	101.80	138.26	.74720E+00	244	0.00000
470.000	.2415E+01	.10649E+03	.74178	.029299	.04897	45253.8	48152.5	269.257	103.03	135.07	.76490E+00	253	0.00000
480.000	.2290E+01	.10098E+03	.76597	.027216	.05355	46435.4	49492.4	272.078	104.35	133.06	.78111E+00	261	0.00000
490.000	.2183E+01	.96252E+02	.78717	.025472	.05792	47609.3	50816.4	274.808	105.72	131.85	.79599E+00	268	0.00000
500.000	.2089E+01	.92132E+02	.80592	.023986	.06210	48780.8	52131.2	277.465	107.14	131.20	.80968E+00	275	0.00000
520.000	.1933E+01	.85238E+02	.83760	.021575	.06997	51130.2	54751.6	282.604	110.04	131.04	.83402E+00	288	0.00000
540.000	.1806E+01	.79638E+02	.86330	.019691	.07730	53503.0	57379.1	287.561	112.99	131.83	.85502E+00	300	0.00000
560.000	.1700E+01	.74952E+02	.88451	.018169	.08420	55910.0	60028.4	292.379	115.94	133.18	.87318E+00	310	0.00000
580.000	.1609E+01	.70943E+02	.90227	.016907	.09074	58357.5	62708.6	297.081	118.87	134.88	.88904E+00	320	0.00000
620.000	.1460E+01	.64380E+02	.93011	.014923	.10298	63386.6	68181.3	306.204	124.58	138.85	.91516E+00	338	0.00000
660.000	.1342E+01	.59169E+02	.95069	.013419	.11436	68603.9	73820.8	315.017	130.07	143.15	.93552E+00	354	0.00000
700.000	.1245E+01	.54887E+02	.96628	.012231	.12512	74010.8	79634.7	323.568	135.29	147.54	.95162E+00	369	0.00000

Table 21. (Continued)

Propane Isobar at P = 7.5 MPa

Temp. K	Density mol/L	Density kg/m^3	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa•m^3/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol•K)	C_V J/(mol•K)	C_p J/(mol•K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
86.165	.1667E+02	.73509E+03	.62801	3.108649	3.07867	6.9	456.8	82.644	61.95	84.02	.55958E-10	2043	2.09288
90.000	.1658E+02	.73122E+03	.60443	3.002259	2.98345	335.5	787.8	86.439	61.77	84.19	.23670E-09	2016	2.08439
100.000	.1635E+02	.72120E+03	.55154	2.751034	2.75524	1189.9	1648.5	95.553	61.37	84.66	.58252E-08	1949	2.06290
110.000	.1613E+02	.71125E+03	.50842	2.531051	2.55065	2041.8	2506.8	103.737	61.09	85.17	.76572E-07	1885	2.04216
120.000	.1590E+02	.70135E+03	.47263	2.336025	2.36467	2893.0	3364.5	111.190	60.90	85.73	.63116E-06	1824	2.02204
130.000	.1568E+02	.69149E+03	.44250	2.161357	2.19375	3745.5	4223.8	118.057	60.81	86.34	.36433E-05	1764	2.00243
140.000	.1546E+02	.68164E+03	.41682	2.003584	2.03529	4601.6	5086.8	124.448	60.81	87.02	.15933E-04	1706	1.98323
150.000	.1523E+02	.67179E+03	.39474	1.860029	1.88739	5463.3	5955.7	130.446	60.90	87.77	.55919E-04	1649	1.96437
160.000	.1501E+02	.66192E+03	.37559	1.728587	1.74859	6333.0	6832.7	136.113	61.07	88.59	.16443E-03	1592	1.94576
170.000	.1479E+02	.65201E+03	.35886	1.607570	1.61781	7212.5	7719.8	141.500	61.33	89.50	.41865E-03	1536	1.92736
180.000	.1456E+02	.64204E+03	.34419	1.495604	1.49421	8103.7	8618.8	146.647	61.68	90.51	.94652E-03	1480	1.90909
190.000	.1433E+02	.63199E+03	.33126	1.391561	1.37712	9008.1	9531.5	151.587	62.11	91.61	.19384E-02	1425	1.89090
200.000	.1410E+02	.62182E+03	.31984	1.294498	1.26604	9927.1	10459.0	156.347	62.64	92.83	.36522E-02	1369	1.87273
210.000	.1387E+02	.61153E+03	.30974	1.203624	1.16056	10861.7	11402.6	160.951	63.26	94.17	.64109E-02	1314	1.85454
220.000	.1363E+02	.60107E+03	.30081	1.118266	1.06036	11812.8	12363.1	165.418	63.98	95.65	.10590E-01	1259	1.83626
230.000	.1339E+02	.59043E+03	.29292	1.037850	.96518	12781.2	13341.3	169.763	64.81	97.27	.16601E-01	1203	1.81785
240.000	.1314E+02	.57955E+03	.28598	.961881	.87482	13767.2	14337.9	174.002	65.74	99.06	.24862E-01	1148	1.79923
250.000	.1289E+02	.56842E+03	.27991	.889932	.78911	14771.6	15353.4	178.144	66.79	101.03	.35780E-01	1092	1.78036
260.000	.1263E+02	.55698E+03	.27468	.821627	.70791	15794.8	16388.6	182.200	67.96	103.20	.49722E-01	1036	1.76116
270.000	.1236E+02	.54519E+03	.27022	.756641	.63111	16837.5	17444.1	186.180	69.26	105.60	.66997E-01	980	1.74155
280.000	.1209E+02	.53298E+03	.26654	.694683	.55861	17900.7	18521.2	190.094	70.70	108.25	.87833E-01	924	1.72145
290.000	.1180E+02	.52029E+03	.26363	.635497	.49031	18985.5	19621.1	193.951	72.28	111.19	.11237E+00	868	1.70076
300.000	.1150E+02	.50703E+03	.26151	.578852	.42615	20093.7	20746.0	197.763	74.01	114.47	.14063E+00	811	1.67935
310.000	.1118E+02	.49309E+03	.26023	.524534	.36605	21227.7	21898.4	201.543	75.90	118.16	.17254E+00	754	1.65706
320.000	.1085E+02	.47832E+03	.25988	.472348	.30996	22390.6	23082.1	205.304	77.94	122.34	.20793E+00	697	1.63370
330.000	.1049E+02	.46253E+03	.26060	.422102	.25782	23586.8	24301.9	209.061	80.14	127.14	.24654E+00	639	1.60901
340.000	.1010E+02	.44547E+03	.26263	.373605	.20962	24822.1	25564.5	212.832	82.44	132.75	.28811E+00	580	1.58262
350.000	.9677E+01	.42673E+03	.26633	.326654	.16537	26104.3	26879.3	216.641	84.71	139.39	.33227E+00	521	1.55401
360.000	.9200E+01	.40571E+03	.27234	.281015	.12520	27445.1	28260.3	220.533	86.26	147.10	.37821E+00	462	1.52237
370.000	.8649E+01	.38140E+03	.28187	.236405	.08936	28717.7	29584.8	224.158	111.58	181.73	.42586E+00	381	1.48635
380.000	.7983E+01	.35201E+03	.29737	.192500	.05856	30426.7	31366.2	228.906	98.41	183.99	.47369E+00	330	1.44360
390.000	.7128E+01	.31433E+03	.32448	.149248	.03462	32272.1	33324.2	233.991	98.07	210.08	.51991E+00	272	1.39010
400.000	.6042E+01	.26642E+03	.37326	.109401	.02172	34334.2	35575.6	239.689	98.79	235.70	.56283E+00	227	1.32413
410.000	.4997E+01	.22034E+03	.44031	.080925	.02025	36377.8	37878.8	245.378	99.17	219.60	.60079E+00	211	1.26285
420.000	.4230E+01	.18655E+03	.50768	.063563	.02266	38174.5	39947.3	250.363	99.31	194.20	.63390E+00	210	1.21927
430.000	.3699E+01	.16310E+03	.56716	.052622	.02703	39748.3	41776.0	254.668	99.64	172.67	.66284E+00	216	1.18969
440.000	.3323E+01	.14652E+03	.61698	.045300	.03210	41167.2	43424.4	258.458	100.26	158.05	.68845E+00	224	1.16912
450.000	.3044E+01	.13421E+03	.65861	.040070	.03725	42490.0	44954.2	261.897	101.13	148.61	.71139E+00	233	1.15402
460.000	.2826E+01	.12464E+03	.69381	.036128	.04229	43753.9	46407.5	265.092	102.18	142.49	.73210E+00	242	0.00000
470.000	.2651E+01	.11690E+03	.72396	.033035	.04713	44981.8	47810.9	268.110	103.37	138.48	.75096E+00	251	0.00000
480.000	.2505E+01	.11048E+03	.75011	.030531	.05177	46188.1	49181.7	270.996	104.64	135.87	.76820E+00	259	0.00000
490.000	.2381E+01	.10502E+03	.77301	.028456	.05622	47382.1	50531.4	273.779	105.98	134.20	.78403E+00	266	0.00000
500.000	.2274E+01	.10029E+03	.79323	.026701	.06049	48570.3	51868.0	276.479	107.37	133.21	.79858E+00	273	0.00000
520.000	.2097E+01	.92459E+02	.82734	.023882	.06855	50946.2	54523.2	281.686	110.24	132.55	.82446E+00	287	0.00000
540.000	.1954E+01	.86159E+02	.85495	.021703	.07606	53338.9	57177.5	286.695	113.15	133.02	.84677E+00	299	0.00000
560.000	.1835E+01	.80928E+02	.87770	.019957	.08313	55761.6	59848.3	291.551	116.08	134.14	.86606E+00	309	0.00000
580.000	.1734E+01	.76482E+02	.89671	.018520	.08984	58221.7	62546.0	296.284	118.99	135.68	.88291E+00	320	0.00000
620.000	.1570E+01	.69250E+02	.92646	.016278	.10236	63270.3	68046.1	305.453	124.68	139.43	.91065E+00	338	0.00000
660.000	.1441E+01	.63548E+02	.94840	.014593	.11399	68501.7	73706.1	314.298	130.14	143.60	.93228E+00	354	0.00000
700.000	.1335E+01	.58886E+02	.96499	.013271	.12494	73919.6	79536.0	322.873	135.35	147.89	.94938E+00	369	0.00000

Table 21. (Continued)

Propane Isobar at P = 8.0 MPa

Temp. K	Density mol/L	Density kg/m³	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa·m³/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol·K)	C_v J/(mol·K)	C_p J/(mol·K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
86.211	.1667E+02	.73521E+03	.66941	3.108853	3.08310	7.4	487.3	82.650	61.97	84.02	.55709E-10	2044	2.09304
90.000	.1659E+02	.73139E+03	.64457	3.003866	2.98908	331.9	814.2	86.397	61.79	84.18	.23103E-09	2018	2.08467
100.000	.1636E+02	.72138E+03	.58816	2.752823	2.76094	1185.8	1674.8	95.510	61.39	84.65	.56657E-08	1951	2.06319
110.000	.1613E+02	.71145E+03	.54216	2.532984	2.55644	2037.2	2533.0	103.694	61.11	85.16	.74260E-07	1887	2.04248
120.000	.1591E+02	.70156E+03	.50399	2.338079	2.37056	2887.8	3390.7	111.146	60.92	85.71	.61065E-06	1826	2.02238
130.000	.1569E+02	.69171E+03	.47184	2.163518	2.19974	3739.8	4249.8	118.012	60.83	86.33	.35179E-05	1766	2.00280
140.000	.1546E+02	.68188E+03	.44445	2.005840	2.04140	4595.2	5112.6	124.402	60.83	87.00	.15358E-04	1708	1.98363
150.000	.1524E+02	.67206E+03	.42089	1.862376	1.89361	5456.3	5981.3	130.397	60.92	87.74	.53822E-04	1651	1.96480
160.000	.1502E+02	.66221E+03	.40045	1.731022	1.75495	6325.3	6858.0	136.063	61.09	88.56	.15806E-03	1595	1.94623
170.000	.1479E+02	.65232E+03	.38261	1.610092	1.62430	7204.0	7744.8	141.448	61.35	89.47	.40198E-03	1539	1.92786
180.000	.1457E+02	.64238E+03	.36695	1.498218	1.50084	8094.4	8643.6	146.593	61.70	90.47	.90795E-03	1483	1.90963
190.000	.1434E+02	.63235E+03	.35315	1.394269	1.38390	8997.9	9555.8	151.531	62.13	91.57	.18578E-02	1428	1.89149
200.000	.1411E+02	.62222E+03	.34095	1.297306	1.27297	9915.8	10482.8	156.289	62.66	92.78	.34977E-02	1372	1.87337
210.000	.1388E+02	.61196E+03	.33016	1.206539	1.16764	10849.3	11425.8	160.890	63.28	94.11	.61356E-02	1317	1.85523
220.000	.1364E+02	.60154E+03	.32061	1.121298	1.06760	11799.2	12385.6	165.354	64.00	95.57	.10130E-01	1262	1.83702
230.000	.1340E+02	.59094E+03	.31217	1.041009	.97259	12766.1	13363.0	169.696	64.82	97.19	.15870E-01	1207	1.81868
240.000	.1316E+02	.58012E+03	.30474	.965182	.88239	13750.5	14358.7	173.930	65.76	98.96	.23756E-01	1152	1.80015
250.000	.1290E+02	.56905E+03	.29824	.893388	.79686	14753.1	15373.0	178.067	66.81	100.91	.34175E-01	1097	1.78137
260.000	.1265E+02	.55769E+03	.29262	.825259	.71584	15774.2	16406.8	182.118	67.98	103.05	.47476E-01	1041	1.76228
270.000	.1238E+02	.54598E+03	.28782	.760470	.63923	16814.5	17460.7	186.092	69.28	105.41	.63951E-01	986	1.74280
280.000	.1211E+02	.53387E+03	.28384	.698736	.56692	17874.9	18535.7	189.998	70.71	108.02	.83819E-01	930	1.72286
290.000	.1182E+02	.52130E+03	.28066	.639807	.49884	18956.3	19633.1	193.846	72.29	110.91	.10721E+00	874	1.70235
300.000	.1152E+02	.50819E+03	.27830	.583457	.43490	20060.6	20754.8	197.648	74.02	114.12	.13416E+00	818	1.68116
310.000	.1121E+02	.49443E+03	.27682	.529486	.37504	21189.7	21903.2	201.414	75.90	117.71	.16458E+00	762	1.65915
320.000	.1088E+02	.47991E+03	.27629	.477711	.31919	22346.6	23081.7	205.159	77.94	121.75	.19833E+00	706	1.63615
330.000	.1053E+02	.46444E+03	.27684	.427959	.26732	23535.0	24294.6	208.895	80.13	126.35	.23518E+00	649	1.61192
340.000	.1015E+02	.44780E+03	.27868	.380069	.21941	24760.0	25547.8	212.638	82.41	131.64	.27486E+00	591	1.58615
350.000	.9744E+01	.42966E+03	.28214	.333878	.17547	26028.2	26849.2	216.408	84.66	137.77	.31707E+00	534	1.55841
360.000	.9287E+01	.40955E+03	.28778	.289223	.13560	27348.6	28209.9	220.242	86.18	144.57	.36104E+00	476	1.52805
370.000	.8769E+01	.38669E+03	.29655	.245929	.10002	28589.0	29501.3	223.777	111.43	177.42	.40676E+00	399	1.49407
380.000	.8160E+01	.35985E+03	.31029	.203845	.06926	30242.4	31222.8	228.366	98.16	175.80	.45287E+00	352	1.45485
390.000	.7416E+01	.32703E+03	.33267	.163040	.04455	31982.9	33061.6	233.141	97.67	193.61	.49785E+00	297	1.40791
400.000	.6497E+01	.28652E+03	.37022	.124936	.02859	33881.6	35112.8	238.333	98.37	215.69	.54044E+00	250	1.35146
410.000	.5519E+01	.24339E+03	.42519	.094427	.02342	35846.0	37295.5	243.723	99.11	215.33	.57917E+00	225	1.29316
420.000	.4716E+01	.20797E+03	.48574	.074190	.02426	37661.3	39357.6	248.693	99.56	196.71	.61363E+00	218	1.24670
430.000	.4119E+01	.18163E+03	.54325	.060948	.02715	39290.6	41232.9	253.107	100.03	178.66	.64408E+00	220	1.21295
440.000	.3681E+01	.16232E+03	.59407	.051953	.03138	40769.2	42942.6	257.038	100.67	164.02	.67115E+00	226	1.18865
450.000	.3353E+01	.14787E+03	.63765	.045549	.03611	42142.0	44527.7	260.601	101.52	153.66	.69542E+00	233	1.17071
460.000	.3099E+01	.13666E+03	.67492	.040770	.04094	43445.5	46026.8	263.897	102.53	146.63	.71736E+00	241	0.00000
470.000	.2896E+01	.12768E+03	.70702	.037057	.04570	44704.9	47467.8	266.996	103.68	141.88	.73732E+00	250	0.00000
480.000	.2728E+01	.12028E+03	.73492	.034080	.05033	45936.5	48869.6	269.947	104.92	138.69	.75556E+00	257	0.00000
490.000	.2586E+01	.11403E+03	.75937	.031632	.05480	47151.4	50245.2	272.783	106.24	136.58	.77231E+00	265	0.00000
500.000	.2464E+01	.10866E+03	.78098	.029578	.05911	48357.0	51603.7	275.528	107.60	135.24	.78770E+00	272	0.00000
520.000	.2264E+01	.99822E+02	.81740	.026308	.06730	50760.2	54294.3	280.805	110.42	134.09	.81508E+00	285	0.00000
540.000	.2104E+01	.92782E+02	.84685	.023806	.07496	53173.6	56975.8	285.865	113.31	134.22	.83868E+00	297	0.00000
560.000	.1972E+01	.86978E+02	.87110	.021817	.08218	55612.4	59668.3	290.761	116.21	135.12	.85909E+00	309	0.00000
580.000	.1861E+01	.82073E+02	.89132	.020191	.08902	58085.5	62383.8	295.525	119.10	136.49	.87691E+00	319	0.00000
620.000	.1681E+01	.74148E+02	.92294	.017673	.10180	63153.8	67911.5	304.740	124.76	140.02	.90625E+00	338	0.00000
660.000	.1541E+01	.67941E+02	.94621	.015797	.11365	68399.7	73592.1	313.617	130.21	144.05	.92913E+00	354	0.00000
700.000	.1426E+01	.62891E+02	.96378	.014333	.12480	73828.6	79438.0	322.215	135.40	148.25	.94722E+00	369	0.00000

Table 21. (Continued)

Propane Isobar at P = 8.5 MPa

Temp. K	Density mol/L	Density kg/m³	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa·m³/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol·K)	C_v J/(mol·K)	C_p J/(mol·K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
86.258	.1668E+02	.73532E+03	.71075	3.109062	3.08753	8.0	517.7	82.655	61.99	84.01	.55674E-10	2045	2.09320
90.000	.1659E+02	.73156E+03	.68470	3.005475	2.99471	328.3	840.6	86.356	61.81	84.18	.22638E-09	2019	2.08494
100.000	.1636E+02	.72156E+03	.62477	2.754613	2.76665	1181.7	1701.1	95.468	61.41	84.64	.55320E-08	1952	2.06349
110.000	.1614E+02	.71164E+03	.57589	2.534918	2.56223	2032.6	2559.3	103.651	61.13	85.15	.72301E-07	1889	2.04280
120.000	.1591E+02	.70177E+03	.53532	2.340133	2.37644	2882.7	3416.8	111.102	60.94	85.70	.59312E-06	1828	2.02273
130.000	.1569E+02	.69194E+03	.50117	2.165676	2.20573	3734.1	4275.8	117.967	60.85	86.31	.34100E-05	1768	2.00317
140.000	.1547E+02	.68213E+03	.47206	2.008093	2.04750	4588.9	5138.4	124.355	60.85	86.98	.14862E-04	1710	1.98403
150.000	.1525E+02	.67232E+03	.44702	1.864719	1.89983	5449.3	6006.9	130.350	60.94	87.72	.52006E-04	1653	1.96523
160.000	.1502E+02	.66249E+03	.42530	1.733452	1.76129	6317.6	6883.4	136.013	61.11	88.54	.15254E-03	1597	1.94669
170.000	.1480E+02	.65263E+03	.40633	1.612609	1.63078	7195.6	7769.9	141.397	61.37	89.44	.38749E-03	1541	1.92836
180.000	.1457E+02	.64271E+03	.38968	1.500824	1.50745	8085.1	8668.3	146.540	61.72	90.43	.87436E-03	1486	1.91017
190.000	.1435E+02	.63271E+03	.37500	1.396968	1.39066	8987.7	9580.1	151.475	62.15	91.52	.17875E-02	1431	1.89207
200.000	.1412E+02	.62261E+03	.36203	1.300103	1.27987	9904.6	10506.6	156.231	62.68	92.73	.33629E-02	1376	1.87401
210.000	.1389E+02	.61238E+03	.35055	1.209442	1.17470	10837.0	11449.1	160.829	63.30	94.05	.58950E-02	1321	1.85592
220.000	.1365E+02	.60201E+03	.34038	1.124315	1.07482	11785.6	12408.2	165.290	64.02	95.50	.97265E-02	1266	1.83777
230.000	.1341E+02	.59145E+03	.33139	1.044152	.97996	12751.1	13384.8	169.628	64.84	97.10	.15230E-01	1211	1.81950
240.000	.1317E+02	.58069E+03	.32347	.968461	.88994	13734.0	14379.5	173.858	65.78	98.85	.22789E-01	1156	1.80105
250.000	.1292E+02	.56968E+03	.31654	.896820	.80457	14734.8	15392.8	177.991	66.82	100.78	.32770E-01	1101	1.78237
260.000	.1266E+02	.55838E+03	.31052	.828860	.72373	15753.9	16425.2	182.036	67.99	102.90	.45507E-01	1046	1.76338
270.000	.1240E+02	.54676E+03	.30538	.764262	.64730	16791.8	17477.4	186.004	69.29	105.23	.61280E-01	991	1.74403
280.000	.1213E+02	.53475E+03	.30108	.702744	.57519	17849.4	18550.4	189.903	70.73	107.80	.80299E-01	936	1.72424
290.000	.1184E+02	.52230E+03	.29763	.644061	.50731	18927.7	19645.4	193.743	72.30	110.63	.10269E+00	881	1.70391
300.000	.1155E+02	.50933E+03	.29504	.587993	.44357	20028.1	20764.0	197.534	74.03	113.78	.12848E+00	825	1.68294
310.000	.1124E+02	.49575E+03	.29334	.534350	.38393	21152.6	21908.6	201.288	75.91	117.28	.15760E+00	770	1.66120
320.000	.1092E+02	.48145E+03	.29261	.482958	.32832	22303.7	23082.2	205.017	77.94	121.19	.18991E+00	714	1.63853
330.000	.1057E+02	.46628E+03	.29298	.433663	.27670	23484.9	24288.8	208.733	80.12	125.61	.22520E+00	658	1.61473
340.000	.1021E+02	.45003E+03	.29463	.386322	.22904	24700.5	25533.4	212.451	82.39	130.63	.26323E+00	602	1.58953
350.000	.9806E+01	.43244E+03	.29786	.340807	.18537	25955.9	26822.7	216.186	84.62	136.33	.30371E+00	546	1.56257
360.000	.9368E+01	.41310E+03	.30313	.296998	.14575	27258.4	28165.8	219.971	86.11	142.41	.34594E+00	490	1.53333
370.000	.8877E+01	.39144E+03	.31126	.254790	.11037	28472.1	29429.6	223.430	111.32	173.94	.38995E+00	415	1.50103
380.000	.8313E+01	.36657E+03	.32363	.214123	.07964	30082.5	31105.0	227.896	97.96	169.75	.43450E+00	371	1.46454
390.000	.7646E+01	.33717E+03	.34284	.175115	.05442	31749.2	32860.9	232.456	97.37	182.61	.47826E+00	319	1.42223
400.000	.6848E+01	.30198E+03	.37321	.138632	.03651	33531.8	34773.0	237.296	98.01	199.83	.52024E+00	272	1.37275
410.000	.5964E+01	.26300E+03	.41808	.107553	.02793	35399.6	36824.8	242.363	98.91	207.15	.55920E+00	241	1.31937
420.000	.5161E+01	.22760E+03	.47159	.085000	.02684	37202.7	38849.5	247.242	99.63	195.88	.59452E+00	229	1.27223
430.000	.4528E+01	.19966E+03	.52509	.069717	.02851	38857.3	40734.6	251.679	100.27	181.36	.62613E+00	227	1.23591
440.000	.4042E+01	.17823E+03	.57486	.059081	.03165	40378.4	42481.4	255.696	100.98	168.35	.65445E+00	229	1.20857
450.000	.3669E+01	.16181E+03	.61910	.051443	.03572	41794.2	44110.6	259.357	101.84	157.98	.67994E+00	235	1.18795
460.000	.3379E+01	.14901E+03	.65770	.045753	.04018	43135.0	45650.5	262.742	102.84	150.44	.70301E+00	242	0.00000
470.000	.3146E+01	.13875E+03	.69129	.041359	.04474	44425.3	47126.7	265.917	103.96	145.13	.72401E+00	249	0.00000
480.000	.2955E+01	.13033E+03	.72064	.037860	.04926	45682.4	48558.4	268.932	105.18	141.44	.74321E+00	257	0.00000
490.000	.2795E+01	.12325E+03	.74646	.035002	.05369	46918.3	49959.5	271.821	106.47	138.93	.76084E+00	264	0.00000
500.000	.2658E+01	.11720E+03	.76931	.032619	.05800	48141.6	51339.8	274.610	107.82	137.26	.77705E+00	271	0.00000
520.000	.2434E+01	.10731E+03	.80787	.028855	.06625	50572.8	54065.6	279.955	110.60	135.63	.80588E+00	285	0.00000
540.000	.2256E+01	.99496E+02	.83906	.026001	.07401	53007.2	56774.5	285.067	113.46	135.44	.83074E+00	297	0.00000
560.000	.2111E+01	.93095E+02	.86473	.023750	.08134	55462.5	59488.8	290.002	116.34	136.10	.85225E+00	308	0.00000
580.000	.1989E+01	.87713E+02	.88614	.021920	.08830	57948.9	62222.2	294.798	119.22	137.31	.87102E+00	318	0.00000
620.000	.1793E+01	.79072E+02	.91956	.019108	.10131	63037.3	67777.6	304.059	124.85	140.61	.90195E+00	337	0.00000
660.000	.1641E+01	.72346E+02	.94414	.017029	.11337	68297.8	73478.8	312.969	130.28	144.51	.92605E+00	354	0.00000
700.000	.1517E+01	.66899E+02	.96267	.015417	.12469	73737.9	79340.8	321.591	135.46	148.61	.94512E+00	369	0.00000

Table 21. (Continued)

Propane Isobar at P = 9.0 MPa

Temp. K	Density mol/L	Density kg/m³	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa·m³/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol·K)	C_v J/(mol·K)	C_p J/(mol·K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
86.304	.1668E+02	.73544E+03	.75204	3.109276	3.09196	8.5	548.1	82.661	62.01	84.01	.55828E-10	2046	2.09336
90.000	.1659E+02	.73173E+03	.72481	3.007085	3.00034	324.7	867.1	86.315	61.83	84.17	.22259E-09	2020	2.08522
100.000	.1637E+02	.72174E+03	.66135	2.756402	2.77235	1177.6	1727.5	95.426	61.43	84.63	.54203E-08	1954	2.06378
110.000	.1614E+02	.71184E+03	.60960	2.536850	2.56802	2028.0	2585.5	103.608	61.15	85.14	.70636E-07	1890	2.04312
120.000	.1592E+02	.70198E+03	.56664	2.342185	2.38233	2877.6	3442.9	111.058	60.96	85.69	.57809E-06	1829	2.02307
130.000	.1570E+02	.69217E+03	.53047	2.167832	2.21171	3728.4	4301.7	117.922	60.87	86.30	.33169E-05	1770	2.00354
140.000	.1547E+02	.68237E+03	.49965	2.010344	2.05359	4582.6	5164.2	124.309	60.87	86.96	.14431E-04	1712	1.98443
150.000	.1525E+02	.67258E+03	.47313	1.867058	1.90605	5442.4	6032.5	130.302	60.96	87.70	.50425E-04	1655	1.96566
160.000	.1503E+02	.66278E+03	.45012	1.735877	1.76763	6309.9	6908.7	135.964	61.13	88.51	.14771E-03	1599	1.94716
170.000	.1481E+02	.65293E+03	.43003	1.615120	1.63725	7187.2	7795.0	141.346	61.39	89.41	.37481E-03	1544	1.92886
180.000	.1458E+02	.64304E+03	.41239	1.503423	1.51406	8075.8	8693.0	146.487	61.74	90.39	.84493E-03	1488	1.91071
190.000	.1436E+02	.63307E+03	.39684	1.399658	1.39740	8977.5	9604.4	151.420	62.17	91.48	.17259E-02	1433	1.89265
200.000	.1413E+02	.62300E+03	.38309	1.302891	1.28677	9893.5	10530.5	156.173	62.70	92.67	.32444E-02	1379	1.87464
210.000	.1390E+02	.61281E+03	.37091	1.212333	1.18174	10824.7	11472.4	160.769	63.32	93.99	.56835E-02	1324	1.85661
220.000	.1366E+02	.60247E+03	.36013	1.127318	1.08201	11772.1	12430.9	165.226	64.04	95.43	.93719E-02	1269	1.83852
230.000	.1342E+02	.59196E+03	.35059	1.047277	.98732	12736.3	13406.7	169.561	64.86	97.01	.14667E-01	1215	1.82032
240.000	.1318E+02	.58125E+03	.34217	.971720	.89745	13717.6	14400.4	173.787	65.79	98.75	.21936E-01	1160	1.80195
250.000	.1293E+02	.57030E+03	.33479	.900228	.81226	14716.7	15412.6	177.915	66.84	100.66	.31531E-01	1105	1.78335
260.000	.1268E+02	.55907E+03	.32838	.832433	.73159	15733.8	16443.7	181.956	68.01	102.75	.43771E-01	1051	1.76448
270.000	.1242E+02	.54752E+03	.32289	.768020	.65534	16769.4	17494.3	185.917	69.31	105.06	.58924E-01	996	1.74525
280.000	.1215E+02	.53561E+03	.31828	.706710	.58341	17824.4	18565.4	189.809	70.74	107.59	.77192E-01	941	1.72560
290.000	.1187E+02	.52328E+03	.31455	.648261	.51571	18899.5	19658.0	193.641	72.32	110.37	.98694E-01	887	1.70544
300.000	.1158E+02	.51045E+03	.31171	.592463	.45218	19996.2	20773.7	197.422	74.04	113.45	.12346E+00	832	1.68468
310.000	.1127E+02	.49704E+03	.30979	.539130	.39275	21116.2	21914.7	201.164	75.92	116.87	.15143E+00	777	1.66319
320.000	.1095E+02	.48295E+03	.30886	.488097	.33735	22261.9	23083.7	204.879	77.95	120.67	.18247E+00	722	1.64085
330.000	.1061E+02	.46805E+03	.30904	.439224	.28596	23436.3	24284.2	208.577	80.11	124.93	.21638E+00	667	1.61745
340.000	.1025E+02	.45217E+03	.31048	.392385	.23853	24643.2	25520.9	212.270	82.38	129.71	.25294E+00	612	1.59278
350.000	.9866E+01	.43506E+03	.31347	.347474	.19509	25887.1	26799.3	215.974	84.58	135.05	.29189E+00	558	1.56653
360.000	.9443E+01	.41642E+03	.31841	.304402	.15569	27173.8	28126.9	219.715	86.05	140.54	.33258E+00	504	1.53826
370.000	.8975E+01	.39578E+03	.32596	.263108	.12047	28364.7	29367.5	223.110	111.22	171.07	.37506E+00	430	1.50740
380.000	.8447E+01	.37248E+03	.33723	.223580	.08975	29940.5	31006.0	227.479	97.80	165.08	.41819E+00	389	1.47310
390.000	.7838E+01	.34562E+03	.35413	.185951	.06416	31552.2	32700.5	231.879	97.13	174.72	.46077E+00	339	1.43424
400.000	.7128E+01	.31431E+03	.37966	.150808	.04493	33250.6	34513.3	236.468	97.72	188.09	.50202E+00	294	1.38988
410.000	.6334E+01	.27932E+03	.41681	.119905	.03370	35029.3	36450.1	241.251	98.68	197.55	.54088E+00	259	1.34147
420.000	.5561E+01	.24521E+03	.46347	.095789	.03016	36797.3	38415.8	245.987	99.59	193.30	.57670E+00	241	1.29547
430.000	.4911E+01	.21657E+03	.51257	.078680	.03079	38459.2	40291.8	250.403	100.39	181.69	.60915E+00	236	1.25773
440.000	.4394E+01	.19376E+03	.55989	.066538	.03289	40004.9	42053.1	254.453	101.20	170.76	.63847E+00	235	1.22827
450.000	.3986E+01	.17576E+03	.60352	.057679	.03614	41453.6	43711.6	258.180	102.10	161.23	.66501E+00	238	1.20539
460.000	.3662E+01	.16149E+03	.64257	.051043	.04007	42826.8	45284.4	261.638	103.10	153.68	.68910E+00	244	0.00000
470.000	.3401E+01	.14999E+03	.67709	.045923	.04430	44145.8	46791.8	264.880	104.22	148.07	.71107E+00	250	0.00000
480.000	.3187E+01	.14055E+03	.70753	.041861	.04863	45427.4	48251.2	267.952	105.42	144.03	.73118E+00	257	0.00000
490.000	.3008E+01	.13263E+03	.73446	.038559	.05295	46684.2	49676.4	270.891	106.69	141.18	.74965E+00	264	0.00000
500.000	.2855E+01	.12588E+03	.75837	.035819	.05720	47925.1	51077.8	273.722	108.02	139.23	.76664E+00	271	0.00000
520.000	.2606E+01	.11491E+03	.79884	.031520	.06542	50384.4	53838.2	279.136	110.77	137.15	.79689E+00	284	0.00000
540.000	.2410E+01	.10629E+03	.83164	.028287	.07323	52840.2	56574.1	284.299	113.61	136.64	.82297E+00	296	0.00000
560.000	.2251E+01	.99270E+02	.85864	.025754	.08064	55312.2	59310.1	289.274	116.47	137.08	.84554E+00	308	0.00000
580.000	.2118E+01	.93396E+02	.88117	.023708	.08769	57812.0	62061.4	294.101	119.33	138.12	.86526E+00	318	0.00000
620.000	.1905E+01	.84018E+02	.91634	.020583	.10090	62920.8	67644.5	303.408	124.94	141.20	.89773E+00	337	0.00000
660.000	.1741E+01	.76761E+02	.94217	.018291	.11314	68196.1	73366.3	312.350	130.35	144.96	.92306E+00	354	0.00000
700.000	.1608E+01	.70910E+02	.96164	.016523	.12463	73647.5	79244.4	320.996	135.52	148.97	.94308E+00	370	0.00000

Table 21. (Continued)

Propane Isobar at P = 10 MPa

Temp. K	Density mol/L	Density kg/m³	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa·m³/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol·K)	C_v J/(mol·K)	C_p J/(mol·K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
86.396	.1668E+02	.73567E+03	.83445	3.109720	3.10083	9.6	609.0	82.673	62.04	84.00	.56631E-10	2048	2.09369
90.000	.1660E+02	.73206E+03	.80498	3.010310	3.01161	317.5	919.9	86.232	61.87	84.16	.21713E-09	2023	2.08576
100.000	.1638E+02	.72210E+03	.73447	2.759983	2.78376	1169.5	1780.2	95.342	61.47	84.62	.52501E-08	1957	2.06437
110.000	.1615E+02	.71222E+03	.67696	2.540715	2.57958	2018.9	2638.0	103.522	61.19	85.12	.68027E-07	1894	2.04375
120.000	.1593E+02	.70240E+03	.62923	2.346285	2.39408	2867.4	3495.2	110.970	61.00	85.66	.55408E-06	1833	2.02376
130.000	.1571E+02	.69262E+03	.58903	2.172138	2.22367	3717.1	4353.7	117.832	60.91	86.27	.31664E-05	1774	2.00428
140.000	.1549E+02	.68286E+03	.55477	2.014835	2.06577	4570.1	5215.8	124.216	60.91	86.93	.13729E-04	1717	1.98523
150.000	.1526E+02	.67310E+03	.52529	1.871724	1.91845	5428.6	6083.7	130.206	61.00	87.66	.47831E-04	1660	1.96651
160.000	.1504E+02	.66334E+03	.49971	1.740712	1.78028	6294.8	6959.5	135.866	61.17	88.46	.13975E-03	1604	1.94808
170.000	.1482E+02	.65354E+03	.47737	1.620125	1.65016	7170.5	7845.2	141.244	61.43	89.35	.35383E-03	1549	1.92985
180.000	.1460E+02	.64370E+03	.45774	1.508599	1.52723	8057.5	8742.6	146.381	61.77	90.32	.79607E-03	1494	1.91178
190.000	.1437E+02	.63378E+03	.44044	1.405014	1.41085	8957.4	9653.2	151.310	62.21	91.39	.16232E-02	1439	1.89381
200.000	.1415E+02	.62377E+03	.42513	1.308435	1.30050	9871.4	10578.4	156.059	62.73	92.57	.30468E-02	1385	1.87589
210.000	.1392E+02	.61365E+03	.41156	1.218079	1.19577	10800.5	11519.1	160.649	63.35	93.87	.53302E-02	1331	1.85797
220.000	.1368E+02	.60339E+03	.39953	1.133282	1.09634	11745.5	12476.3	165.100	64.07	95.29	.87788E-02	1276	1.84000
230.000	.1345E+02	.59297E+03	.38888	1.053478	1.00196	12707.0	13450.6	169.429	64.90	96.85	.13725E-01	1222	1.82194
240.000	.1321E+02	.58235E+03	.37947	.978180	.91241	13685.3	14442.5	173.647	65.83	98.56	.20507E-01	1168	1.80372
250.000	.1296E+02	.57152E+03	.37120	.906973	.82753	14681.0	15452.5	177.766	66.88	100.43	.29452E-01	1114	1.78531
260.000	.1271E+02	.56042E+03	.36399	.839495	.74720	15694.2	16481.1	181.797	68.04	102.48	.40856E-01	1060	1.76663
270.000	.1245E+02	.54903E+03	.35778	.775433	.67129	16725.5	17528.6	185.747	69.34	104.72	.54966E-01	1006	1.74764
280.000	.1218E+02	.53730E+03	.35253	.714517	.59970	17775.3	18596.0	189.625	70.77	107.18	.71969E-01	953	1.72827
290.000	.1191E+02	.52518E+03	.34823	.656512	.53237	18844.5	19684.2	193.441	72.34	109.88	.91978E-01	899	1.70844
300.000	.1162E+02	.51262E+03	.34487	.601215	.46921	19934.2	20794.4	197.204	74.06	112.85	.11502E+00	845	1.68807
310.000	.1133E+02	.49953E+03	.34249	.548453	.41015	21045.8	21928.6	200.924	75.93	116.11	.14105E+00	791	1.66707
320.000	.1102E+02	.48584E+03	.34114	.498077	.35515	22181.4	23089.1	204.611	77.95	119.71	.16994E+00	738	1.64530
330.000	.1069E+02	.47144E+03	.34090	.449961	.30415	23343.4	24278.7	208.275	80.11	123.69	.20152E+00	685	1.62264
340.000	.1035E+02	.45620E+03	.34193	.404004	.25712	24534.6	25501.2	211.927	82.35	128.08	.23560E+00	632	1.59892
350.000	.9977E+01	.43995E+03	.34443	.360129	.21406	25758.3	26760.6	215.576	84.53	132.84	.27196E+00	580	1.57389
360.000	.9580E+01	.42247E+03	.34872	.318282	.17500	27018.2	28062.0	219.243	85.95	137.44	.31002E+00	528	1.54729
370.000	.9149E+01	.40347E+03	.35528	.278443	.14001	28172.2	29265.1	222.536	111.06	166.57	.34988E+00	458	1.51873
380.000	.8675E+01	.38255E+03	.36484	.240641	.10928	29695.3	30848.0	226.755	97.57	158.24	.39054E+00	420	1.48775
390.000	.8147E+01	.35926E+03	.37853	.204996	.08316	31229.2	32456.7	230.934	96.79	164.13	.43100E+00	375	1.45376
400.000	.7555E+01	.33314E+03	.39800	.171830	.06228	32815.4	34139.1	235.192	97.28	172.63	.47069E+00	332	1.41632
410.000	.6901E+01	.30430E+03	.42510	.141904	.04755	34459.8	35908.9	239.563	98.25	180.93	.50882E+00	295	1.37578
420.000	.6221E+01	.27434E+03	.46029	.116523	.03950	36132.3	37739.7	243.974	99.34	183.93	.54485E+00	270	1.33456
430.000	.5586E+01	.24634E+03	.50070	.096669	.03697	37771.2	39561.3	248.261	100.39	179.37	.57823E+00	257	1.29684
440.000	.5042E+01	.22235E+03	.54210	.081874	.03750	39333.3	41316.5	252.297	101.39	171.54	.60890E+00	251	1.26516
450.000	.4591E+01	.20247E+03	.58210	.070799	.03922	40816.8	42994.7	256.068	102.41	164.27	.63703E+00	250	1.23933
460.000	.4219E+01	.18605E+03	.61972	.062322	.04182	42234.5	44604.8	259.607	103.48	157.91	.66281E+00	252	0.00000
470.000	.3911E+01	.17246E+03	.65430	.055711	.04509	43599.4	46156.3	262.945	104.62	152.58	.68644E+00	256	0.00000
480.000	.3655E+01	.16115E+03	.68564	.050453	.04876	44923.8	47660.2	266.111	105.81	148.36	.70817E+00	261	0.00000
490.000	.3438E+01	.15162E+03	.71385	.046190	.05264	46218.7	49127.0	269.135	107.07	145.16	.72817E+00	267	0.00000
500.000	.3254E+01	.14349E+03	.73922	.042668	.05661	47493.2	50566.3	272.043	108.38	142.82	.74662E+00	273	0.00000
520.000	.2955E+01	.13032E+03	.78263	.037194	.06454	50007.4	53391.2	277.584	111.09	140.03	.77952E+00	285	0.00000
540.000	.2722E+01	.12005E+03	.81813	.033126	.07227	52505.7	56179.0	282.844	113.88	138.97	.80794E+00	296	0.00000
560.000	.2534E+01	.11175E+03	.84749	.029976	.07972	55011.2	58957.3	287.896	116.71	139.00	.83257E+00	308	0.00000
580.000	.2378E+01	.10486E+03	.87204	.027455	.08687	57538.2	61743.6	292.785	119.54	139.72	.85410E+00	318	0.00000
620.000	.2131E+01	.93959E+02	.91042	.023652	.10034	62688.2	67381.4	302.184	125.11	142.37	.88959E+00	337	0.00000
660.000	.1941E+01	.85612E+02	.93863	.020899	.11288	67993.4	73144.2	311.190	130.49	145.85	.91729E+00	355	0.00000
700.000	.1790E+01	.78934E+02	.95987	.018799	.12466	73467.5	79054.2	319.882	135.64	149.68	.93920E+00	370	0.00000

Table 21. (Continued)

Propane Isobar at P = 11 MPa

Temp. K	Density mol/L	Density kg/m^3	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa•m^3/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol•K)	C_v J/(mol•K)	C_p J/(mol•K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
86.489	.1669E+02	.73590E+03	.91662	3.110184	3.10971	10.7	669.9	82.685	62.08	83.99	.58008E-10	2051	2.09401
90.000	.1661E+02	.73239E+03	.88508	3.013541	3.02287	310.4	972.7	86.150	61.91	84.14	.21393E-09	2026	2.08630
100.000	.1638E+02	.72246E+03	.80752	2.763565	2.79516	1161.4	1832.8	95.258	61.51	84.60	.51365E-08	1960	2.06496
110.000	.1616E+02	.71261E+03	.74426	2.544577	2.59114	2009.8	2690.5	103.437	61.23	85.10	.66173E-07	1897	2.04439
120.000	.1594E+02	.70282E+03	.69174	2.350380	2.40581	2857.3	3547.5	110.883	61.04	85.64	.53641E-06	1837	2.02444
130.000	.1572E+02	.69307E+03	.64751	2.176435	2.23560	3705.8	4405.7	117.742	60.95	86.24	.30531E-05	1778	2.00501
140.000	.1550E+02	.68334E+03	.60982	2.019315	2.07791	4557.7	5267.5	124.124	60.95	86.89	.13193E-04	1721	1.98601
150.000	.1528E+02	.67362E+03	.57738	1.876375	1.93083	5414.9	6135.0	130.112	61.03	87.61	.45827E-04	1664	1.96736
160.000	.1506E+02	.66390E+03	.54922	1.745529	1.79290	6279.7	7010.3	135.768	61.21	88.41	.13356E-03	1609	1.94899
170.000	.1483E+02	.65415E+03	.52462	1.625106	1.66302	7154.0	7895.5	141.143	61.46	89.29	.33739E-03	1554	1.93084
180.000	.1461E+02	.64435E+03	.50301	1.513748	1.54036	8039.4	8792.2	146.277	61.81	90.25	.75758E-03	1499	1.91284
190.000	.1439E+02	.63449E+03	.48394	1.410337	1.42425	8937.5	9702.0	151.202	62.24	91.31	.15421E-02	1445	1.89496
200.000	.1416E+02	.62454E+03	.46707	1.313941	1.31418	9849.6	10626.3	155.945	62.77	92.47	.28901E-02	1391	1.87713
210.000	.1393E+02	.61448E+03	.45210	1.223780	1.20973	10776.6	11566.0	160.530	63.39	93.75	.50491E-02	1337	1.85932
220.000	.1370E+02	.60430E+03	.43883	1.139192	1.11059	11719.3	12522.0	164.976	64.11	95.15	.83058E-02	1283	1.84147
230.000	.1347E+02	.59396E+03	.42705	1.059614	1.01651	12678.1	13494.8	169.298	64.93	96.69	.12971E-01	1230	1.82353
240.000	.1323E+02	.58344E+03	.41664	.984564	.92726	13653.6	14485.0	173.508	65.86	98.37	.19363E-01	1176	1.80547
250.000	.1299E+02	.57271E+03	.40747	.913628	.84269	14645.9	15492.9	177.620	66.91	100.20	.27786E-01	1123	1.78722
260.000	.1274E+02	.56175E+03	.39944	.846449	.76267	15655.5	16519.0	181.640	68.08	102.21	.38517E-01	1070	1.76874
270.000	.1248E+02	.55050E+03	.39250	.782717	.68708	16682.5	17563.7	185.579	69.37	104.40	.51787E-01	1016	1.74998
280.000	.1222E+02	.53895E+03	.38660	.722168	.61582	17727.5	18627.6	189.445	70.80	106.80	.67771E-01	963	1.73087
290.000	.1195E+02	.52703E+03	.38171	.664572	.54882	18791.2	19711.5	193.246	72.37	109.42	.86574E-01	910	1.71135
300.000	.1167E+02	.51471E+03	.37782	.609734	.48599	19874.3	20816.7	196.992	74.09	112.29	.10823E+00	858	1.69135
310.000	.1138E+02	.50192E+03	.37495	.557488	.42727	20978.2	21944.7	200.692	75.95	115.42	.13268E+00	805	1.67078
320.000	.1108E+02	.48859E+03	.37314	.507694	.37261	22104.6	23097.4	204.354	77.96	118.85	.15983E+00	753	1.64955
330.000	.1076E+02	.47464E+03	.37247	.460238	.32195	23255.4	24277.4	207.989	80.10	122.60	.18953E+00	701	1.62755
340.000	.1043E+02	.45996E+03	.37305	.415033	.27525	24432.9	25487.5	211.603	82.33	126.68	.22160E+00	650	1.60464
350.000	.1008E+02	.44443E+03	.37505	.372014	.23249	25639.5	26730.9	215.206	84.49	131.00	.25585E+00	600	1.58066
360.000	.9704E+01	.42790E+03	.37872	.331145	.19367	26877.3	28010.9	218.813	85.88	134.97	.29177E+00	551	1.55541
370.000	.9301E+01	.41017E+03	.38442	.292420	.15883	28002.4	29185.1	222.026	110.95	163.16	.32947E+00	483	1.52865
380.000	.8867E+01	.39099E+03	.39266	.255871	.12806	29486.7	30727.3	226.138	97.40	153.44	.36808E+00	449	1.50009
390.000	.8393E+01	.37012E+03	.40417	.221589	.10156	30967.7	32278.3	230.166	96.56	157.26	.40670E+00	406	1.46942
400.000	.7876E+01	.34730E+03	.41996	.189773	.07967	32482.3	33879.0	234.218	96.99	163.10	.44489E+00	366	1.43642
410.000	.7314E+01	.32255E+03	.44115	.160808	.06287	34038.0	35541.9	238.325	97.92	169.40	.48204E+00	329	1.40122
420.000	.6724E+01	.29651E+03	.46847	.135349	.05161	35624.9	37260.8	242.466	99.06	173.83	.51770E+00	300	1.36486
430.000	.6140E+01	.27075E+03	.50112	.114107	.04569	37212.2	39003.8	246.568	100.23	173.95	.55133E+00	281	1.32955
440.000	.5603E+01	.24709E+03	.53662	.097269	.04384	38762.8	40726.0	250.528	101.39	169.97	.58271E+00	271	1.29771
450.000	.5136E+01	.22650E+03	.57238	.084247	.04433	40256.8	42398.4	254.286	102.53	164.46	.61184E+00	266	1.27047
460.000	.4739E+01	.20896E+03	.60695	.074120	.04585	41695.2	44016.6	257.843	103.69	159.35	.63879E+00	265	0.00000
470.000	.4400E+01	.19403E+03	.63975	.066099	.04803	43087.6	45587.6	261.222	104.87	154.95	.66371E+00	266	0.00000
480.000	.4112E+01	.18131E+03	.67037	.059650	.05081	44442.4	47117.8	264.444	106.10	151.19	.68674E+00	269	0.00000
490.000	.3865E+01	.17043E+03	.69860	.054390	.05401	45767.6	48613.8	267.528	107.37	148.11	.70806E+00	272	0.00000
500.000	.3652E+01	.16106E+03	.72444	.050039	.05747	47070.7	50082.4	270.496	108.67	145.70	.72778E+00	277	0.00000
520.000	.3307E+01	.14581E+03	.76945	.043286	.06478	49634.8	52961.5	276.142	111.36	142.56	.76305E+00	287	0.00000
540.000	.3037E+01	.13391E+03	.80681	.038301	.07220	52173.5	55795.9	281.491	114.13	141.11	.79363E+00	298	0.00000
560.000	.2819E+01	.12432E+03	.83798	.034467	.07951	54711.8	58613.5	286.615	116.93	140.80	.82019E+00	309	0.00000
580.000	.2639E+01	.11639E+03	.86419	.031423	.08663	57265.6	61433.0	291.561	119.73	141.25	.84343E+00	319	0.00000
620.000	.2357E+01	.10394E+03	.90533	.026875	.10020	62456.7	67123.7	301.048	125.26	143.51	.88182E+00	338	0.00000
660.000	.2142E+01	.94472E+02	.93567	.023620	.11292	67791.8	72926.3	310.117	130.62	146.73	.91182E+00	356	0.00000
700.000	.1972E+01	.86949E+02	.95853	.021159	.12492	73288.8	78867.7	318.856	135.75	150.38	.93559E+00	371	0.00000

Table 21. (Continued)

Propane Isobar at P = 12 MPa

Temp. K	Density mol/L	Density kg/m³	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa•m³/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol•K)	C_v J/(mol•K)	C_p J/(mol•K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
86.581	.1669E+02	.73612E+03	.99857	3.110667	3.11859	11.9	730.7	82.697	62.12	83.98	.59898E-10	2053	2.09433
90.000	.1662E+02	.73272E+03	.96511	3.016777	3.03414	303.4	1025.6	86.068	61.96	84.13	.21253E-09	2029	2.08684
100.000	.1639E+02	.72282E+03	.88049	2.767149	2.80655	1153.4	1885.5	95.175	61.56	84.58	.50670E-08	1963	2.06554
110.000	.1617E+02	.71300E+03	.81148	2.548437	2.60269	2000.8	2743.0	103.352	61.27	85.08	.64903E-07	1901	2.04502
120.000	.1595E+02	.70323E+03	.75418	2.354470	2.41754	2847.3	3599.7	110.796	61.08	85.61	.52361E-06	1840	2.02512
130.000	.1573E+02	.69351E+03	.70593	2.180723	2.24752	3694.7	4457.7	117.653	60.99	86.21	.29683E-05	1782	2.00574
140.000	.1551E+02	.68382E+03	.66479	2.023783	2.09004	4545.4	5319.2	124.033	60.98	86.86	.12783E-04	1725	1.98680
150.000	.1529E+02	.67414E+03	.62938	1.881010	1.94317	5401.4	6186.3	130.018	61.07	87.57	.44271E-04	1669	1.96821
160.000	.1507E+02	.66445E+03	.59865	1.750326	1.80548	6264.8	7061.2	135.671	61.24	88.36	.12869E-03	1613	1.94990
170.000	.1485E+02	.65475E+03	.57179	1.630064	1.67585	7137.6	7945.8	141.043	61.50	89.23	.32437E-03	1559	1.93181
180.000	.1463E+02	.64500E+03	.54819	1.518870	1.55344	8021.5	8841.9	146.173	61.85	90.18	.72693E-03	1505	1.91390
190.000	.1440E+02	.63518E+03	.52735	1.415627	1.43760	8917.9	9751.0	151.094	62.28	91.23	.14771E-02	1451	1.89609
200.000	.1418E+02	.62529E+03	.50891	1.319408	1.32779	9828.1	10674.4	155.833	62.81	92.38	.27641E-02	1397	1.87836
210.000	.1395E+02	.61530E+03	.49255	1.229435	1.22363	10753.0	11613.0	160.413	63.43	93.64	.48224E-02	1344	1.86065
220.000	.1372E+02	.60519E+03	.47801	1.145049	1.12477	11693.4	12567.8	164.853	64.15	95.02	.79233E-02	1290	1.84291
230.000	.1349E+02	.59494E+03	.46511	1.065689	1.03097	12649.7	13539.2	169.168	64.97	96.53	.12361E-01	1237	1.82510
240.000	.1326E+02	.58451E+03	.45368	.990875	.94201	13622.4	14527.7	173.372	65.90	98.19	.18434E-01	1184	1.80718
250.000	.1301E+02	.57389E+03	.44360	.920197	.85774	14611.6	15533.6	177.475	66.94	99.99	.26431E-01	1131	1.78910
260.000	.1277E+02	.56304E+03	.43475	.853300	.77802	15617.6	16557.4	181.486	68.11	101.96	.36611E-01	1079	1.77081
270.000	.1252E+02	.55194E+03	.42707	.789879	.70272	16640.6	17599.3	185.415	69.40	104.10	.49194E-01	1026	1.75226
280.000	.1226E+02	.54055E+03	.42050	.729672	.63177	17681.0	18659.9	189.269	70.83	106.44	.64342E-01	974	1.73340
290.000	.1199E+02	.52883E+03	.41499	.672456	.56507	18739.3	19740.0	193.056	72.40	108.99	.82157E-01	922	1.71417
300.000	.1172E+02	.51673E+03	.41055	.618038	.50255	19816.4	20840.4	196.786	74.11	111.77	.10267E+00	870	1.69451
310.000	.1143E+02	.50422E+03	.40717	.566259	.44413	20913.2	21962.7	200.467	75.97	114.79	.12584E+00	819	1.67435
320.000	.1114E+02	.49121E+03	.40489	.516986	.38977	22031.1	23108.4	204.107	77.97	118.08	.15156E+00	768	1.65361
330.000	.1083E+02	.47766E+03	.40376	.470111	.33940	23171.9	24279.7	207.715	80.11	121.64	.17970E+00	717	1.63219
340.000	.1051E+02	.46348E+03	.40387	.425553	.29297	24337.2	25478.9	211.297	82.32	125.46	.21011E+00	668	1.61001
350.000	.1017E+02	.44858E+03	.40537	.383256	.25045	25528.9	26708.6	214.860	84.46	129.45	.24263E+00	619	1.58692
360.000	.9815E+01	.43284E+03	.40844	.343188	.21181	26748.2	27970.8	218.417	85.83	132.95	.27677E+00	572	1.56281
370.000	.9437E+01	.41612E+03	.41336	.305343	.17706	27849.9	29121.6	221.566	110.87	160.48	.31268E+00	506	1.53749
380.000	.9032E+01	.39829E+03	.42050	.269747	.14624	29304.1	30632.7	225.595	97.28	149.84	.34955E+00	474	1.51081
390.000	.8599E+01	.37918E+03	.43037	.236464	.11943	30746.1	32141.7	229.514	96.40	152.40	.38659E+00	434	1.48257
400.000	.8134E+01	.35866E+03	.44362	.205615	.09681	32210.6	33686.0	233.424	96.78	156.65	.42342E+00	395	1.45268
410.000	.7636E+01	.33674E+03	.46097	.177416	.07865	33705.2	35276.6	237.352	97.68	161.48	.45954E+00	360	1.42122
420.000	.7115E+01	.31373E+03	.48300	.152208	.06523	35226.7	36913.4	241.295	98.82	165.65	.49460E+00	330	1.38871
430.000	.6586E+01	.29043E+03	.50961	.130412	.05658	36760.1	38582.1	245.222	100.05	167.63	.52809E+00	307	1.35635
440.000	.6079E+01	.26805E+03	.53963	.112292	.05213	38281.7	40255.9	249.070	101.30	166.62	.55973E+00	292	1.32577
450.000	.5615E+01	.24762E+03	.57117	.097692	.05077	39770.1	41907.1	252.781	102.54	163.38	.58943E+00	284	1.29830
460.000	.5207E+01	.22961E+03	.60258	.086070	.05125	41216.3	43521.0	256.329	103.78	159.39	.61717E+00	280	0.00000
470.000	.4852E+01	.21395E+03	.63292	.076764	.05265	42622.6	45096.0	259.716	105.02	155.70	.64301E+00	279	0.00000
480.000	.4543E+01	.20034E+03	.66183	.069205	.05457	43995.6	46637.0	262.960	106.29	152.58	.66706E+00	279	0.00000
490.000	.4274E+01	.18849E+03	.68907	.062982	.05698	45341.7	48149.1	266.078	107.58	149.91	.68943E+00	281	0.00000
500.000	.4040E+01	.17815E+03	.71448	.057801	.05980	46666.5	49636.8	269.084	108.89	147.70	.71021E+00	284	0.00000
520.000	.3653E+01	.16110E+03	.75972	.049730	.06621	49272.3	52557.0	274.811	111.59	144.59	.74758E+00	292	0.00000
540.000	.3349E+01	.14769E+03	.79803	.043772	.07309	51847.4	55430.4	280.233	114.34	142.96	.78010E+00	302	0.00000
560.000	.3104E+01	.13686E+03	.83039	.039206	.08010	54416.3	58282.7	285.420	117.13	142.43	.80846E+00	312	0.00000
580.000	.2901E+01	.12792E+03	.85782	.035597	.08705	56995.8	61132.6	290.420	119.91	142.67	.83332E+00	321	0.00000
620.000	.2583E+01	.11390E+03	.90120	.030245	.10052	62227.1	66872.8	299.990	125.41	144.59	.87445E+00	340	0.00000
660.000	.2343E+01	.10332E+03	.93336	.026449	.11331	67591.9	72713.8	309.119	130.74	147.58	.90666E+00	357	0.00000
700.000	.2153E+01	.94939E+02	.95767	.023602	.12544	73111.7	78685.4	317.902	135.85	151.06	.93221E+00	373	0.00000

Table 21. (Continued)

Propane Isobar at P = 13 MPa

Temp. K	Density mol/L	Density kg/m³	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa·m³/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol·K)	C_v J/(mol·K)	C_p J/(mol·K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
86.674	.1670E+02	.73635E+03	1.08030	3.111171	3.12749	13.1	791.6	82.709	62.16	83.97	.62263E-10	2055	2.09465
90.000	.1662E+02	.73305E+03	1.04506	3.020019	3.04540	296.4	1078.4	85.987	62.00	84.12	.21261E-09	2032	2.08738
100.000	.1640E+02	.72318E+03	.95340	2.770734	2.81795	1145.5	1938.2	95.092	61.60	84.57	.50332E-08	1966	2.06613
110.000	.1618E+02	.71338E+03	.87863	2.552295	2.61424	1991.9	2795.5	103.267	61.30	85.06	.64101E-07	1904	2.04564
120.000	.1596E+02	.70364E+03	.81655	2.358554	2.42925	2837.3	3652.0	110.709	61.12	85.59	.51468E-06	1844	2.02579
130.000	.1574E+02	.69396E+03	.76426	2.185003	2.25942	3683.7	4509.8	117.564	61.02	86.18	.29060E-05	1786	2.00647
140.000	.1552E+02	.68430E+03	.71969	2.028239	2.10214	4533.2	5370.9	123.942	61.02	86.82	.12471E-04	1729	1.98758
150.000	.1530E+02	.67465E+03	.68131	1.885631	1.95549	5387.9	6237.7	129.924	61.11	87.53	.43065E-04	1673	1.96905
160.000	.1508E+02	.66501E+03	.64800	1.755105	1.81803	6250.0	7112.1	135.574	61.28	88.31	.12487E-03	1618	1.95080
170.000	.1486E+02	.65534E+03	.61887	1.635000	1.68864	7121.4	7996.2	140.943	61.54	89.17	.31403E-03	1564	1.93278
180.000	.1464E+02	.64564E+03	.59328	1.523964	1.56648	8003.7	8891.6	146.069	61.88	90.11	.70236E-03	1510	1.91494
190.000	.1442E+02	.63588E+03	.57068	1.420885	1.45089	8898.5	9800.0	150.986	62.32	91.15	.14247E-02	1456	1.89722
200.000	.1420E+02	.62604E+03	.55066	1.324838	1.34135	9806.8	10722.5	155.721	62.84	92.29	.26619E-02	1403	1.87958
210.000	.1397E+02	.61612E+03	.53289	1.235047	1.23745	10729.7	11660.2	160.296	63.46	93.53	.46378E-02	1350	1.86196
220.000	.1374E+02	.60608E+03	.51709	1.150855	1.13887	11667.9	12613.7	164.731	64.18	94.90	.76108E-02	1297	1.84434
230.000	.1351E+02	.59590E+03	.50306	1.071703	1.04534	12621.8	13583.8	169.040	65.00	96.39	.11860E-01	1244	1.82665
240.000	.1328E+02	.58556E+03	.49061	.997116	.95667	13591.7	14570.7	173.237	65.93	98.01	.17671E-01	1192	1.80887
250.000	.1304E+02	.57504E+03	.47960	.926683	.87268	14577.9	15574.8	177.332	66.98	99.78	.25315E-01	1140	1.79095
260.000	.1280E+02	.56432E+03	.46992	.860053	.79324	15580.4	16596.3	181.335	68.14	101.72	.35040E-01	1088	1.77284
270.000	.1255E+02	.55335E+03	.46148	.796925	.71823	16599.6	17635.6	185.254	69.44	103.82	.47053E-01	1036	1.75450
280.000	.1229E+02	.54211E+03	.45422	.737039	.64756	17635.6	18693.1	189.096	70.86	106.10	.61508E-01	984	1.73587
290.000	.1203E+02	.53057E+03	.44810	.680174	.58114	18689.0	19769.4	192.871	72.42	108.59	.78501E-01	933	1.71692
300.000	.1176E+02	.51869E+03	.44309	.626143	.51890	19760.3	20865.5	196.586	74.13	111.28	.98063E-01	882	1.69758
310.000	.1148E+02	.50643E+03	.43918	.574790	.46076	20850.4	21982.4	200.249	75.99	114.21	.12016E+00	832	1.67779
320.000	.1120E+02	.49373E+03	.43640	.525984	.40665	21960.6	23121.7	203.869	77.99	117.37	.14469E+00	782	1.65749
330.000	.1090E+02	.48054E+03	.43479	.479624	.35653	23092.2	24285.2	207.453	80.11	120.77	.17153E+00	733	1.63661
340.000	.1059E+02	.46680E+03	.43442	.435631	.31033	24246.7	25474.8	211.006	82.31	124.39	.20057E+00	684	1.61507
350.000	.1026E+02	.45244E+03	.43540	.393950	.26800	25425.4	26692.4	214.534	84.44	128.10	.23162E+00	637	1.59277
360.000	.9918E+01	.43737E+03	.43789	.354549	.22950	26628.8	27939.5	218.048	85.79	131.25	.26428E+00	592	1.56962
370.000	.9559E+01	.42151E+03	.44209	.317419	.19480	27711.0	29071.0	221.145	110.81	158.30	.29868E+00	527	1.54551
380.000	.9179E+01	.40475E+03	.44828	.282573	.16391	29140.9	30557.3	225.108	97.19	147.02	.33407E+00	497	1.52032
390.000	.8776E+01	.38700E+03	.45682	.250052	.13684	30552.8	32034.1	228.943	96.27	148.74	.36974E+00	459	1.49396
400.000	.8349E+01	.36818E+03	.46816	.219927	.11367	31979.9	33536.9	232.748	96.62	151.99	.40537E+00	422	1.46639
410.000	.7899E+01	.34832E+03	.48278	.192321	.09453	33429.8	35075.6	236.547	97.49	155.80	.44051E+00	388	1.43766
420.000	.7429E+01	.32760E+03	.50111	.167415	.07958	34902.2	36652.1	240.346	98.62	159.41	.47488E+00	358	1.40812
430.000	.6949E+01	.30645E+03	.52322	.145443	.06886	36389.4	38260.0	244.129	99.88	161.91	.50803E+00	334	1.37843
440.000	.6477E+01	.28563E+03	.54860	.126597	.06213	37877.0	39884.0	247.863	101.18	162.53	.53966E+00	315	1.34964
450.000	.6031E+01	.26596E+03	.57610	.110872	.05874	39348.6	41504.1	251.504	102.49	161.20	.56965E+00	303	1.32283
460.000	.5624E+01	.24801E+03	.60434	.097994	.05773	40792.4	43103.8	255.020	103.79	158.64	.59788E+00	297	0.00000
470.000	.5262E+01	.23202E+03	.63225	.087505	.05823	42204.9	44675.6	258.401	105.09	155.71	.62437E+00	293	0.00000
480.000	.4941E+01	.21790E+03	.65920	.078911	.05954	43588.2	46219.0	261.650	106.40	153.02	.64917E+00	292	0.00000
490.000	.4659E+01	.20544E+03	.68492	.071789	.06129	44947.2	47737.6	264.781	107.72	150.77	.67237E+00	292	0.00000
500.000	.4409E+01	.19441E+03	.70930	.065817	.06345	46286.9	49235.6	267.808	109.06	148.88	.69402E+00	294	0.00000
520.000	.3990E+01	.17594E+03	.75362	.056443	.06879	48924.8	52183.1	273.589	111.77	146.08	.73316E+00	299	0.00000
540.000	.3656E+01	.16121E+03	.79200	.049491	.07495	51530.8	55086.8	279.068	114.53	144.47	.76741E+00	307	0.00000
560.000	.3385E+01	.14925E+03	.82493	.044162	.08150	54127.3	57968.3	284.308	117.30	143.83	.79740E+00	316	0.00000
580.000	.3160E+01	.13934E+03	.85313	.039958	.08816	56730.8	60844.9	289.355	120.08	143.93	.82375E+00	325	0.00000
620.000	.2808E+01	.12382E+03	.89815	.033751	.10136	62000.4	66630.4	299.000	125.55	145.60	.86748E+00	342	0.00000
660.000	.2542E+01	.11211E+03	.93179	.029380	.11409	67394.1	72507.4	308.185	130.86	148.38	.90180E+00	359	0.00000
700.000	.2333E+01	.10289E+03	.95733	.026123	.12626	72936.3	78508.1	317.011	135.95	151.71	.92906E+00	375	0.00000

Table 21. (Continued)

Propane Isobar at P = 14 MPa

Temp. K	Density mol/L	Density kg/m^3	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa•m^3/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol•K)	C_v J/(mol•K)	C_p J/(mol•K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
86.766	.1670E+02	.73658E+03	1.16180	3.111693	3.13640	14.3	852.4	82.721	62.19	83.96	.65089E-10	2057	2.09497
90.000	.1663E+02	.73338E+03	1.12495	3.023266	3.05667	289.4	1131.2	85.905	62.04	84.10	.21394E-09	2035	2.08792
100.000	.1641E+02	.72353E+03	1.02623	2.774321	2.82934	1137.6	1990.9	95.009	61.63	84.55	.50293E-08	1970	2.06671
110.000	.1619E+02	.71376E+03	.94571	2.556151	2.62577	1983.1	2848.0	103.182	61.34	85.04	.63683E-07	1907	2.04627
120.000	.1597E+02	.70406E+03	.87885	2.362633	2.44095	2827.5	3704.3	110.623	61.15	85.57	.50889E-06	1848	2.02647
130.000	.1575E+02	.69440E+03	.82253	2.189275	2.27130	3672.8	4561.8	117.476	61.06	86.15	.28617E-05	1790	2.00719
140.000	.1553E+02	.68477E+03	.77451	2.032683	2.11422	4521.1	5422.7	123.851	61.06	86.79	.12239E-04	1733	1.98835
150.000	.1531E+02	.67516E+03	.73317	1.890236	1.96779	5374.6	6289.0	129.831	61.14	87.49	.42140E-04	1678	1.96988
160.000	.1509E+02	.66555E+03	.69727	1.759865	1.83055	6235.4	7163.0	135.478	61.32	88.26	.12187E-03	1623	1.95169
170.000	.1487E+02	.65593E+03	.66588	1.639913	1.70139	7105.4	8046.6	140.844	61.57	89.11	.30581E-03	1569	1.93374
180.000	.1466E+02	.64627E+03	.63829	1.529032	1.57948	7986.2	8941.4	145.967	61.92	90.05	.68263E-03	1515	1.91597
190.000	.1444E+02	.63656E+03	.61391	1.426112	1.46414	8879.3	9849.1	150.880	62.35	91.07	.13823E-02	1462	1.89833
200.000	.1421E+02	.62679E+03	.59232	1.330232	1.35485	9785.8	10770.8	155.610	62.88	92.20	.25787E-02	1409	1.88078
210.000	.1399E+02	.61692E+03	.57313	1.240616	1.25122	10706.8	11707.5	160.181	63.50	93.43	.44866E-02	1356	1.86326
220.000	.1376E+02	.60695E+03	.55607	1.156610	1.15290	11642.7	12659.9	164.610	64.22	94.77	.73537E-02	1304	1.84575
230.000	.1353E+02	.59685E+03	.54089	1.077659	1.05964	12594.2	13628.6	168.913	65.04	96.24	.11447E-01	1252	1.82818
240.000	.1330E+02	.58660E+03	.52741	1.003288	.97123	13561.5	14614.0	173.104	65.97	97.84	.17039E-01	1200	1.81054
250.000	.1307E+02	.57618E+03	.51547	.933089	.88751	14544.7	15616.2	177.192	67.01	99.59	.24390E-01	1148	1.79277
260.000	.1283E+02	.56557E+03	.50495	.866712	.80834	15544.0	16635.6	181.186	68.18	101.49	.33734E-01	1096	1.77483
270.000	.1258E+02	.55473E+03	.49575	.803860	.73360	16559.5	17672.4	185.095	69.47	103.55	.45268E-01	1045	1.75669
280.000	.1233E+02	.54364E+03	.48779	.744274	.66320	17591.4	18727.0	188.927	70.89	105.79	.59142E-01	994	1.73829
290.000	.1207E+02	.53227E+03	.48103	.687737	.59704	18640.0	19799.8	192.690	72.45	108.21	.75446E-01	944	1.71959
300.000	.1181E+02	.52059E+03	.47543	.634063	.53505	19705.9	20891.8	196.390	74.16	110.84	.94210E-01	894	1.70055
310.000	.1153E+02	.50856E+03	.47098	.583099	.47716	20789.8	22003.8	200.038	76.01	113.67	.11540E+00	844	1.68112
320.000	.1125E+02	.49614E+03	.46768	.534716	.42329	21892.9	23137.2	203.639	78.00	116.72	.13893E+00	795	1.66123
330.000	.1096E+02	.48328E+03	.46558	.488815	.37338	23016.1	24293.6	207.201	80.12	119.99	.16468E+00	747	1.64083
340.000	.1066E+02	.46993E+03	.46471	.445318	.32737	24160.8	25474.5	210.728	82.31	123.44	.19255E+00	700	1.61987
350.000	.1034E+02	.45605E+03	.46518	.404169	.28519	25327.9	26681.6	214.226	84.43	126.93	.22238E+00	654	1.59826
360.000	.1001E+02	.44157E+03	.46709	.365333	.24679	26517.5	27915.6	217.703	85.76	129.80	.25377E+00	611	1.57595
370.000	.9670E+01	.42642E+03	.47061	.328794	.21212	27583.1	29030.8	220.755	110.76	156.49	.28688E+00	547	1.55285
380.000	.9310E+01	.41055E+03	.47594	.294554	.18114	28993.0	30496.7	224.664	97.12	144.74	.32101E+00	519	1.52890
390.000	.8932E+01	.39388E+03	.48336	.262633	.15383	30380.5	31947.9	228.433	96.18	145.88	.35550E+00	483	1.50404
400.000	.8536E+01	.37640E+03	.49317	.233068	.13022	31778.5	33418.7	232.156	96.50	148.44	.39006E+00	447	1.47827
410.000	.8121E+01	.35811E+03	.50572	.205923	.11033	33194.3	34918.3	235.859	97.35	151.54	.42430E+00	414	1.45165
420.000	.7691E+01	.33913E+03	.52130	.181293	.09424	34629.0	36449.4	239.548	98.47	154.64	.45798E+00	384	1.42440
430.000	.7251E+01	.31976E+03	.54003	.159299	.08196	36078.3	38009.1	243.218	99.74	157.15	.49069E+00	359	1.39695
440.000	.6813E+01	.30044E+03	.56168	.140051	.07338	37533.9	39588.7	246.850	101.06	158.52	.52215E+00	339	1.36997
450.000	.6390E+01	.28178E+03	.58557	.123572	.06809	38983.9	41174.8	250.415	102.41	158.46	.55221E+00	324	1.34425
460.000	.5994E+01	.26430E+03	.61073	.109724	.06546	40417.8	42753.7	253.885	103.77	157.17	.58073E+00	314	0.00000
470.000	.5631E+01	.24832E+03	.63619	.098211	.06474	41829.8	44315.9	257.245	105.11	155.19	.60767E+00	309	0.00000
480.000	.5305E+01	.23395E+03	.66120	.088656	.06526	43218.2	45857.0	260.489	106.46	153.04	.63302E+00	306	0.00000
490.000	.5014E+01	.22111E+03	.68533	.080682	.06651	44585.2	47377.3	263.624	107.81	151.07	.65685E+00	305	0.00000
500.000	.4754E+01	.20963E+03	.70840	.073964	.06815	45934.7	48879.7	266.659	109.17	149.45	.67920E+00	305	0.00000
520.000	.4311E+01	.19012E+03	.75105	.063340	.07242	48595.9	51843.0	272.471	111.91	147.06	.71983E+00	308	0.00000
540.000	.3953E+01	.17432E+03	.78878	.055401	.07776	51226.8	54768.2	277.991	114.68	145.61	.75559E+00	314	0.00000
560.000	.3659E+01	.16137E+03	.82168	.049297	.08371	53847.1	57673.0	283.273	117.45	144.98	.78703E+00	321	0.00000
580.000	.3415E+01	.15057E+03	.85020	.044479	.08998	56472.1	60572.1	288.360	120.22	145.03	.81475E+00	329	0.00000
620.000	.3030E+01	.13362E+03	.89627	.037382	.10273	61777.6	66397.8	298.072	125.68	146.51	.86090E+00	346	0.00000
660.000	.2740E+01	.12084E+03	.93103	.032407	.11527	67199.0	72308.1	307.309	130.97	149.13	.89724E+00	362	0.00000
700.000	.2512E+01	.11077E+03	.95757	.028718	.12740	72763.0	78336.2	316.176	136.05	152.34	.92615E+00	377	0.00000

Table 21. (Continued)

Propane Isobar at P = 16 MPa

Temp. K	Density mol/L	Density kg/m³	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa•m³/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol•K)	C_v J/(mol•K)	C_p J/(mol•K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
86.951	.1671E+02	.73703E+03	1.32414	3.112792	3.15424	16.8	974.1	82.745	62.27	83.95	.72121E-10	2062	2.09560
90.000	.1665E+02	.73403E+03	1.28452	3.029775	3.07922	275.7	1236.9	85.744	62.12	84.08	.21982E-09	2041	2.08898
100.000	.1642E+02	.72423E+03	1.17170	2.781497	2.85211	1122.1	2096.3	94.844	61.71	84.52	.50951E-08	1976	2.06786
110.000	.1620E+02	.71452E+03	1.07966	2.563855	2.64881	1965.6	2953.1	103.015	61.42	85.00	.63779E-07	1914	2.04751
120.000	.1598E+02	.70487E+03	1.00324	2.370773	2.46430	2808.0	3808.9	110.451	61.23	85.52	.50480E-06	1855	2.02780
130.000	.1577E+02	.69527E+03	.93885	2.197791	2.29501	3651.1	4665.9	117.300	61.13	86.09	.28160E-05	1797	2.00862
140.000	.1555E+02	.68571E+03	.88394	2.041536	2.13831	4497.2	5526.2	123.671	61.13	86.72	.11962E-04	1741	1.98989
150.000	.1533E+02	.67617E+03	.83665	1.899402	1.99229	5348.4	6391.8	129.646	61.22	87.41	.40941E-04	1686	1.97153
160.000	.1512E+02	.66664E+03	.79558	1.769331	1.85548	6206.6	7265.0	135.288	61.39	88.17	.11780E-03	1632	1.95346
170.000	.1490E+02	.65710E+03	.75966	1.649674	1.72679	7073.8	8147.5	140.647	61.64	89.01	.29426E-03	1579	1.93564
180.000	.1468E+02	.64753E+03	.72805	1.539090	1.60534	7951.6	9041.2	145.764	61.99	89.92	.65427E-03	1526	1.91802
190.000	.1447E+02	.63792E+03	.70013	1.436475	1.49048	8841.5	9947.5	150.669	62.42	90.93	.13202E-02	1473	1.90053
200.000	.1425E+02	.62825E+03	.67536	1.340912	1.38169	9744.5	10867.6	155.392	62.95	92.02	.24553E-02	1421	1.88315
210.000	.1403E+02	.61850E+03	.65333	1.251629	1.27855	10661.7	11802.4	159.953	63.57	93.23	.42603E-02	1369	1.86582
220.000	.1380E+02	.60866E+03	.63372	1.167977	1.18074	11593.5	12752.7	164.372	64.28	94.54	.69657E-02	1317	1.84851
230.000	.1358E+02	.59871E+03	.61624	1.089404	1.08799	12540.4	13718.9	168.664	65.10	95.97	.10820E-01	1266	1.83118
240.000	.1335E+02	.58863E+03	.60068	1.015437	1.00009	13502.6	14701.3	172.842	66.03	97.53	.16074E-01	1215	1.81380
250.000	.1312E+02	.57840E+03	.58685	.945673	.91688	14480.2	15700.1	176.916	67.08	99.22	.22968E-01	1164	1.79631
260.000	.1288E+02	.56799E+03	.57462	.879766	.83821	15473.3	16715.5	180.895	68.24	101.05	.31720E-01	1114	1.77870
270.000	.1264E+02	.55740E+03	.56385	.817419	.76397	16481.8	17747.6	184.787	69.53	103.04	.42510E-01	1064	1.76093
280.000	.1240E+02	.54659E+03	.55447	.758380	.69404	17505.9	18796.7	188.599	70.95	105.20	.55474E-01	1014	1.74295
290.000	.1214E+02	.53554E+03	.54640	.702433	.62836	18545.8	19863.2	192.339	72.51	107.52	.70696E-01	965	1.72473
300.000	.1189E+02	.52422E+03	.53958	.649396	.56682	19601.7	20947.6	196.014	74.21	110.02	.88206E-01	916	1.70624
310.000	.1162E+02	.51261E+03	.53400	.599116	.50935	20674.4	22050.8	199.632	76.05	112.71	.10797E+00	868	1.68744
320.000	.1135E+02	.50069E+03	.52964	.551468	.45587	21764.6	23173.8	203.200	78.03	115.58	.12992E+00	821	1.66829
330.000	.1108E+02	.48841E+03	.52650	.506350	.40632	22873.1	24317.7	206.724	80.14	118.63	.15395E+00	775	1.64875
340.000	.1079E+02	.47575E+03	.52461	.463683	.36060	24000.7	25483.7	210.207	82.32	121.81	.17997E+00	730	1.62878
350.000	.1049E+02	.46268E+03	.52402	.423405	.31864	25148.0	26672.9	213.652	84.41	124.98	.20785E+00	686	1.60835
360.000	.1019E+02	.44917E+03	.52479	.385473	.28035	26314.6	27885.4	217.070	85.73	127.43	.23723E+00	645	1.58742
370.000	.9868E+01	.43517E+03	.52703	.349855	.24567	27353.3	28974.6	220.050	110.69	153.62	.26829E+00	583	1.56596
380.000	.9540E+01	.42068E+03	.53084	.316532	.21451	28731.6	30408.8	223.874	97.02	141.25	.30039E+00	558	1.54394
390.000	.9199E+01	.40566E+03	.53638	.285491	.18679	30082.2	31821.5	227.543	96.05	141.65	.33295E+00	524	1.52137
400.000	.8847E+01	.39011E+03	.54381	.256727	.16246	31437.2	33245.8	231.149	96.33	143.35	.36574E+00	491	1.49825
410.000	.8483E+01	.37407E+03	.55330	.230239	.14146	32803.9	34690.1	234.716	97.15	145.57	.39843E+00	460	1.47465
420.000	.8109E+01	.35759E+03	.56501	.206034	.12376	34184.5	36157.6	238.251	98.26	147.94	.43084E+00	431	1.45070
430.000	.7729E+01	.34083E+03	.57901	.184122	.10931	35578.1	37648.2	241.759	99.52	150.14	.46261E+00	406	1.42661
440.000	.7347E+01	.32399E+03	.59526	.164513	.09803	36981.3	39159.0	245.232	100.87	151.90	.49351E+00	384	1.40270
450.000	.6970E+01	.30737E+03	.61351	.147192	.08973	38388.5	40684.0	248.659	102.26	152.97	.52339E+00	366	1.37939
460.000	.6606E+01	.29129E+03	.63330	.132095	.08412	39793.5	42215.7	252.026	103.67	153.26	.55207E+00	352	0.00000
470.000	.6260E+01	.27605E+03	.65405	.119086	.08075	41190.8	43746.7	255.319	105.08	152.85	.57946E+00	342	0.00000
480.000	.5938E+01	.26185E+03	.67515	.107961	.07915	42576.5	45271.0	258.528	106.49	151.95	.60551E+00	336	0.00000
490.000	.5642E+01	.24878E+03	.69611	.098473	.07884	43949.1	46785.1	261.649	107.90	150.84	.63020E+00	331	0.00000
500.000	.5371E+01	.23686E+03	.71654	.090370	.07942	45309.0	48287.8	264.686	109.30	149.72	.65354E+00	329	0.00000
520.000	.4901E+01	.21612E+03	.75510	.077404	.08209	47998.4	51263.1	270.521	112.11	147.94	.69641E+00	329	0.00000
540.000	.4510E+01	.19887E+03	.79019	.067586	.08582	50663.1	54210.9	276.083	114.91	146.95	.73458E+00	331	0.00000
560.000	.4182E+01	.18441E+03	.82171	.059957	.09042	53319.2	57145.2	281.419	117.70	146.56	.76846E+00	335	0.00000
580.000	.3905E+01	.17218E+03	.84973	.053901	.09565	55979.1	60076.8	286.562	120.47	146.67	.79855E+00	341	0.00000
620.000	.3463E+01	.15272E+03	.89620	.044962	.10707	61346.7	65966.6	296.382	125.91	148.04	.84903E+00	354	0.00000
660.000	.3128E+01	.13794E+03	.93211	.038716	.11893	66818.9	71934.0	305.708	131.18	150.46	.88906E+00	369	0.00000
700.000	.2864E+01	.12628E+03	.95995	.034113	.13072	72423.9	78011.0	314.647	136.23	153.46	.92105E+00	383	0.00000

Table 21. (Continued)

Propane Isobar at P = 18 MPa

Temp. K	Density mol/L	Density kg/m3	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa•m3/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol•K)	C_v J/(mol•K)	C_p J/(mol•K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
87.136	.1672E+02	.73748E+03	1.48559	3.113962	3.17211	19.5	1095.7	82.771	62.34	83.93	.81091E-10	2066	2.09623
90.000	.1666E+02	.73468E+03	1.44381	3.036301	3.10177	262.1	1342.5	85.583	62.20	84.05	.22941E-09	2047	2.09004
100.000	.1644E+02	.72493E+03	1.31689	2.788675	2.87486	1106.7	2201.7	94.681	61.79	84.49	.52430E-08	1982	2.06900
110.000	.1622E+02	.71527E+03	1.21334	2.571548	2.67182	1948.4	3058.1	102.848	61.50	84.96	.64879E-07	1921	2.04873
120.000	.1600E+02	.70568E+03	1.12735	2.378891	2.48761	2788.8	3913.6	110.281	61.30	85.48	.50863E-06	1862	2.02912
130.000	.1579E+02	.69614E+03	1.05489	2.206273	2.31865	3629.9	4770.1	117.126	61.21	86.04	.28146E-05	1805	2.01004
140.000	.1557E+02	.68664E+03	.99309	2.050343	2.16232	4473.8	5629.7	123.493	61.20	86.66	.11874E-04	1749	1.99141
150.000	.1536E+02	.67717E+03	.93985	1.908510	2.01669	5322.6	6494.7	129.463	61.29	87.34	.40401E-04	1695	1.97315
160.000	.1514E+02	.66771E+03	.89359	1.778725	1.88030	6178.3	7367.1	135.100	61.46	88.08	.11565E-03	1641	1.95521
170.000	.1493E+02	.65825E+03	.85312	1.659349	1.75203	7042.8	8248.7	140.453	61.71	88.90	.28759E-03	1588	1.93752
180.000	.1471E+02	.64876E+03	.81750	1.549047	1.63104	7917.8	9141.2	145.563	62.06	89.80	.63692E-03	1536	1.92003
190.000	.1450E+02	.63925E+03	.78600	1.446720	1.51664	8804.5	10046.2	150.462	62.49	90.79	.12808E-02	1484	1.90269
200.000	.1428E+02	.62968E+03	.75805	1.351454	1.40831	9704.2	10964.8	155.177	63.01	91.86	.23745E-02	1432	1.88547
210.000	.1406E+02	.62005E+03	.73317	1.262483	1.30565	10617.7	11897.9	159.730	63.63	93.04	.41088E-02	1381	1.86832
220.000	.1384E+02	.61034E+03	.71098	1.179160	1.20831	11545.6	12846.1	164.139	64.35	94.32	.67014E-02	1330	1.85121
230.000	.1362E+02	.60053E+03	.69117	1.100935	1.11604	12488.1	13809.9	168.421	65.17	95.71	.10386E-01	1280	1.83410
240.000	.1339E+02	.59060E+03	.67351	1.027339	1.02862	13445.6	14789.5	172.587	66.10	97.23	.15400E-01	1230	1.81696
250.000	.1317E+02	.58055E+03	.65777	.957971	.94587	14417.9	15785.2	176.648	67.14	98.88	.21967E-01	1180	1.79975
260.000	.1293E+02	.57034E+03	.64378	.892488	.86766	15405.2	16796.9	180.612	68.30	100.66	.30291E-01	1130	1.78244
270.000	.1270E+02	.55997E+03	.63142	.830595	.79386	16407.3	17824.8	184.488	69.59	102.59	.40539E-01	1081	1.76501
280.000	.1246E+02	.54941E+03	.62058	.772040	.72436	17424.2	18869.0	188.282	71.01	104.66	.52839E-01	1033	1.74741
290.000	.1221E+02	.53864E+03	.61115	.716609	.65909	18456.1	19929.7	192.002	72.56	106.90	.67270E-01	985	1.72963
300.000	.1197E+02	.52766E+03	.60308	.664122	.59793	19503.2	21007.5	195.654	74.25	109.30	.83857E-01	938	1.71163
310.000	.1171E+02	.51642E+03	.59632	.614424	.54082	20565.8	22102.9	199.247	76.09	111.87	.10257E+00	891	1.69339
320.000	.1145E+02	.50493E+03	.59084	.567389	.48766	21644.7	23216.8	202.787	78.07	114.61	.12335E+00	846	1.67487
330.000	.1118E+02	.49315E+03	.58662	.522914	.43836	22740.5	24350.1	206.278	80.16	117.49	.14611E+00	801	1.65606
340.000	.1091E+02	.48106E+03	.58367	.480912	.39285	23853.8	25503.8	209.724	82.33	120.47	.17075E+00	758	1.63693
350.000	.1063E+02	.46866E+03	.58200	.441317	.35103	24984.8	26678.4	213.127	84.41	123.40	.19718E+00	716	1.61747
360.000	.1034E+02	.45591E+03	.58165	.404073	.31279	26132.8	27873.8	216.496	85.71	125.58	.22506E+00	676	1.59764
370.000	.1004E+02	.44282E+03	.58267	.369136	.27804	27150.4	28942.9	219.422	110.66	151.44	.25457E+00	616	1.57745
380.000	.9737E+01	.42936E+03	.58512	.336468	.24668	28504.7	30353.4	223.182	96.97	138.68	.28514E+00	593	1.55690
390.000	.9423E+01	.41554E+03	.58908	.306036	.21860	29828.0	31738.2	226.779	95.97	138.64	.31622E+00	561	1.53599
400.000	.9102E+01	.40137E+03	.59463	.277808	.19370	31152.3	33130.0	230.302	96.23	139.86	.34763E+00	530	1.51476
410.000	.8773E+01	.38687E+03	.60187	.251751	.17188	32485.1	34536.8	233.777	97.03	141.57	.37908E+00	500	1.49325
420.000	.8438E+01	.37209E+03	.61087	.227830	.15306	33828.8	35962.0	237.210	98.12	143.48	.41041E+00	473	1.47157
430.000	.8099E+01	.35713E+03	.62166	.206011	.13714	35183.8	37406.3	240.609	99.37	145.38	.44132E+00	447	1.44983
440.000	.7758E+01	.34210E+03	.63423	.186253	.12404	36548.8	38869.0	243.972	100.72	147.09	.47158E+00	425	1.42822
450.000	.7419E+01	.32716E+03	.64845	.168510	.11361	37920.9	40347.1	247.294	102.13	148.47	.50109E+00	406	1.40697
460.000	.7087E+01	.31250E+03	.66411	.152714	.10568	39296.8	41836.8	250.568	103.57	149.41	.52966E+00	390	0.00000
470.000	.6765E+01	.29832E+03	.68087	.138773	.09998	40673.0	43333.7	253.787	105.02	149.88	.55715E+00	377	0.00000
480.000	.6458E+01	.28479E+03	.69836	.126558	.09621	42045.9	44833.0	256.943	106.47	149.91	.58352E+00	368	0.00000
490.000	.6169E+01	.27205E+03	.71616	.115908	.09402	43413.2	46330.9	260.032	107.92	149.63	.60871E+00	361	0.00000
500.000	.5899E+01	.26015E+03	.73392	.106646	.09306	44774.0	47825.1	263.051	109.36	149.17	.63268E+00	356	0.00000
520.000	.5419E+01	.23894E+03	.76833	.091558	.09368	47476.3	50798.2	268.881	112.22	148.16	.67708E+00	351	0.00000
540.000	.5009E+01	.22090E+03	.80030	.079980	.09621	50160.8	53754.0	274.459	115.06	147.51	.71702E+00	351	0.00000
560.000	.4660E+01	.20551E+03	.82951	.070909	.09963	52839.8	56702.1	279.819	117.87	147.38	.75279E+00	352	0.00000
580.000	.4361E+01	.19229E+03	.85597	.063652	.10374	55524.1	59652.0	284.995	120.65	147.67	.78478E+00	356	0.00000
620.000	.3875E+01	.17089E+03	.90103	.052865	.11347	60940.1	65584.9	294.886	126.10	149.16	.83892E+00	366	0.00000
660.000	.3501E+01	.15441E+03	.93679	.045304	.12428	66455.4	71596.1	304.281	131.36	151.52	.88220E+00	378	0.00000
700.000	.3205E+01	.14133E+03	.96499	.039740	.13545	72097.1	77713.5	313.279	136.40	154.42	.91697E+00	391	0.00000

Table 21. (Continued)

Propane Isobar at P = 20 MPa

Temp. K	Density mol/L	Density kg/m³	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa•m³/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol•K)	C_v J/(mol•K)	C_p J/(mol•K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
87.320	.1673E+02	.73793E+03	1.64617	3.115201	3.19001	22.2	1217.4	82.796	62.41	83.92	.92212E-10	2071	2.09685
90.000	.1667E+02	.73532E+03	1.60283	3.042844	3.12432	248.8	1448.2	85.424	62.28	84.03	.24238E-09	2053	2.09108
100.000	.1646E+02	.72563E+03	1.46182	2.795855	2.89760	1091.6	2307.0	94.519	61.87	84.46	.54618E-08	1988	2.07013
110.000	.1624E+02	.71602E+03	1.34676	2.579230	2.69480	1931.4	3163.2	102.683	61.57	84.93	.66814E-07	1927	2.04995
120.000	.1602E+02	.70648E+03	1.25119	2.386985	2.51087	2769.9	4018.2	110.112	61.38	85.43	.51882E-06	1869	2.03043
130.000	.1581E+02	.69700E+03	1.17066	2.214720	2.34222	3608.9	4874.3	116.954	61.28	85.99	.28480E-05	1812	2.01144
140.000	.1559E+02	.68756E+03	1.10196	2.059104	2.18624	4450.7	5733.4	123.316	61.27	86.60	.11932E-04	1757	1.99291
150.000	.1538E+02	.67816E+03	1.04276	1.917559	2.04099	5297.2	6597.7	129.282	61.36	87.27	.40360E-04	1703	1.97476
160.000	.1517E+02	.66877E+03	.99131	1.788049	1.90499	6150.5	7469.3	134.914	61.52	88.00	.11494E-03	1650	1.95693
170.000	.1495E+02	.65938E+03	.94628	1.668941	1.77714	7012.4	8350.0	140.262	61.78	88.80	.28455E-03	1598	1.93936
180.000	.1474E+02	.64998E+03	.90663	1.558907	1.65657	7884.6	9241.5	145.366	62.12	89.69	.62768E-03	1546	1.92200
190.000	.1453E+02	.64055E+03	.87156	1.456851	1.54261	8768.4	10145.2	150.258	62.56	90.65	.12578E-02	1495	1.90481
200.000	.1431E+02	.63109E+03	.84040	1.361865	1.43473	9664.8	11062.3	154.965	63.08	91.71	.23246E-02	1444	1.88775
210.000	.1410E+02	.62157E+03	.81264	1.273185	1.33252	10574.8	11993.7	159.510	63.70	92.86	.40113E-02	1393	1.87077
220.000	.1388E+02	.61197E+03	.78786	1.190168	1.23563	11498.9	12940.0	163.910	64.42	94.11	.65264E-02	1343	1.85385
230.000	.1366E+02	.60230E+03	.76571	1.112265	1.14380	12437.3	13901.6	168.182	65.24	95.48	.10093E-01	1293	1.83695
240.000	.1344E+02	.59252E+03	.74592	1.039010	1.05682	13390.2	14878.7	172.337	66.16	96.96	.14935E-01	1244	1.82004
250.000	.1321E+02	.58263E+03	.72824	.970004	.97450	14357.6	15871.4	176.386	67.20	98.56	.21267E-01	1195	1.80308
260.000	.1299E+02	.57261E+03	.71248	.904904	.89671	15339.5	16879.7	180.337	68.36	100.29	.29279E-01	1146	1.78606
270.000	.1275E+02	.56244E+03	.69850	.843418	.82331	16335.6	17903.7	184.198	69.65	102.17	.39131E-01	1098	1.76894
280.000	.1252E+02	.55211E+03	.68615	.785294	.75420	17345.9	18943.3	187.976	71.06	104.18	.50941E-01	1051	1.75170
290.000	.1228E+02	.54161E+03	.67534	.730318	.68928	18370.5	19998.9	191.677	72.61	106.35	.64785E-01	1004	1.73431
300.000	.1204E+02	.53092E+03	.66597	.678309	.62846	19409.5	21070.7	195.310	74.30	108.66	.80685E-01	958	1.71676
310.000	.1179E+02	.52002E+03	.65800	.629111	.57164	20463.2	22159.2	198.880	76.14	111.14	.98618E-01	913	1.69901
320.000	.1154E+02	.50890E+03	.65136	.582596	.51873	21532.2	23265.2	202.394	78.11	113.76	.11852E+00	869	1.68106
330.000	.1128E+02	.49755E+03	.64603	.538655	.46964	22616.9	24389.4	205.858	80.20	116.51	.14031E+00	826	1.66288
340.000	.1102E+02	.48596E+03	.64199	.497197	.42428	23717.8	25532.6	209.272	82.35	119.34	.16392E+00	784	1.64447
350.000	.1075E+02	.47411E+03	.63923	.458148	.38253	24834.9	26695.1	212.640	84.42	122.10	.18924E+00	743	1.62581
360.000	.1048E+02	.46200E+03	.63776	.421442	.34429	25967.6	27876.5	215.970	85.71	124.08	.21598E+00	705	1.60690
370.000	.1020E+02	.44963E+03	.63760	.387025	.30945	26968.0	28929.5	218.851	110.64	149.71	.24431E+00	647	1.58774
380.000	.9910E+01	.43699E+03	.63878	.354844	.27788	28303.2	30321.4	222.562	96.94	136.70	.27371E+00	625	1.56834
390.000	.9617E+01	.42409E+03	.64132	.324853	.24946	29605.4	31685.0	226.104	95.92	136.37	.30365E+00	595	1.54871
400.000	.9319E+01	.41095E+03	.64529	.297000	.22407	30906.4	33052.5	229.566	96.17	137.28	.33397E+00	565	1.52890
410.000	.9016E+01	.39760E+03	.65070	.271234	.20160	32213.9	34432.1	232.973	96.95	138.69	.36442E+00	537	1.50895
420.000	.8709E+01	.38406E+03	.65759	.247501	.18192	33530.5	35826.9	236.333	98.03	140.31	.39487E+00	510	1.48892
430.000	.8400E+01	.37041E+03	.66597	.225741	.16492	34857.3	37238.3	239.654	99.28	141.98	.42504E+00	485	1.46891
440.000	.8089E+01	.35672E+03	.67582	.205894	.15049	36193.9	38666.3	242.938	100.63	143.58	.45473E+00	463	1.44903
450.000	.7780E+01	.34308E+03	.68706	.187892	.13851	37538.7	40109.4	246.181	102.04	145.01	.48383E+00	443	1.42943
460.000	.7475E+01	.32963E+03	.69956	.171661	.12883	38889.9	41565.5	249.381	103.49	146.19	.51217E+00	426	0.00000
470.000	.7177E+01	.31648E+03	.71313	.157114	.12128	40245.4	43032.2	252.535	104.96	147.08	.53962E+00	412	0.00000
480.000	.6888E+01	.30376E+03	.72751	.144151	.11563	41602.7	44506.1	255.638	106.43	147.66	.56611E+00	400	0.00000
490.000	.6612E+01	.29158E+03	.74243	.132654	.11165	42959.7	45984.5	258.686	107.91	147.96	.59156E+00	391	0.00000
500.000	.6350E+01	.28002E+03	.75762	.122490	.10908	44315.1	47464.7	261.677	109.37	148.05	.61593E+00	384	0.00000
520.000	.5872E+01	.25893E+03	.78782	.105605	.10712	47018.5	50424.6	267.482	112.29	147.89	.66141E+00	375	0.00000
540.000	.5455E+01	.24053E+03	.81665	.092406	.10800	49713.8	53380.4	273.059	115.16	147.70	.70268E+00	372	0.00000
560.000	.5093E+01	.22459E+03	.84340	.081963	.11044	52407.7	56334.7	278.431	118.00	147.78	.73991E+00	371	0.00000
580.000	.4779E+01	.21072E+03	.86789	.073561	.11367	55108.8	59294.1	283.623	120.80	148.22	.77342E+00	373	0.00000
620.000	.4262E+01	.18793E+03	.91039	.060978	.12169	60560.7	65253.8	293.559	126.26	149.91	.83060E+00	380	0.00000
660.000	.3857E+01	.17008E+03	.94495	.052101	.13123	66111.1	71296.6	303.004	131.51	152.32	.87670E+00	389	0.00000
700.000	.3533E+01	.15578E+03	.97273	.045554	.14155	71784.3	77445.7	312.048	136.54	155.19	.91395E+00	401	0.00000

Table 21. (Continued)

Propane Isobar at P = 22 MPa

Temp. K	Density mol/L	Density kg/m³	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa·m³/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol·K)	C_v J/(mol·K)	C_p J/(mol·K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
87.504	.1674E+02	.73838E+03	1.80588	3.116504	3.20794	25.1	1338.9	82.822	62.48	83.90	.10580E-09	2075	2.09747
90.000	.1669E+02	.73596E+03	1.76158	3.049401	3.14688	235.6	1553.8	85.266	62.35	84.00	.25864E-09	2059	2.09212
100.000	.1647E+02	.72631E+03	1.60647	2.803035	2.92033	1076.7	2412.4	94.358	61.94	84.43	.57464E-08	1995	2.07125
110.000	.1625E+02	.71676E+03	1.47991	2.586899	2.71774	1914.7	3268.2	102.519	61.64	84.89	.69492E-07	1934	2.05116
120.000	.1604E+02	.70727E+03	1.37477	2.395055	2.53407	2751.3	4122.9	109.945	61.45	85.39	.53448E-06	1876	2.03172
130.000	.1583E+02	.69785E+03	1.28615	2.223132	2.36572	3588.3	4978.5	116.783	61.35	85.94	.29104E-05	1820	2.01283
140.000	.1561E+02	.68847E+03	1.21055	2.067819	2.21008	4428.0	5837.1	123.141	61.34	86.54	.12110E-04	1765	1.99439
150.000	.1540E+02	.67913E+03	1.14539	1.926552	2.06518	5272.3	6700.8	129.103	61.42	87.20	.40720E-04	1712	1.97635
160.000	.1519E+02	.66981E+03	1.08874	1.797304	1.92957	6123.2	7571.6	134.730	61.59	87.92	.11537E-03	1659	1.95863
170.000	.1498E+02	.66050E+03	1.03915	1.678452	1.80212	6982.6	8451.4	140.072	61.85	88.71	.28433E-03	1607	1.94118
180.000	.1477E+02	.65118E+03	.99546	1.568671	1.68195	7852.1	9341.9	145.170	62.19	89.58	.62472E-03	1556	1.92395
190.000	.1456E+02	.64184E+03	.95679	1.466872	1.56841	8732.9	10244.4	150.056	62.62	90.52	.12475E-02	1505	1.90690
200.000	.1434E+02	.63247E+03	.92242	1.372149	1.46095	9626.3	11160.2	154.756	63.15	91.56	.22984E-02	1455	1.88999
210.000	.1413E+02	.62305E+03	.89177	1.283742	1.35916	10532.9	12090.0	159.293	63.76	92.69	.39550E-02	1405	1.87318
220.000	.1391E+02	.61357E+03	.86439	1.201009	1.26270	11453.4	13034.5	163.685	64.48	93.92	.64188E-02	1356	1.85644
230.000	.1370E+02	.60402E+03	.83988	1.123404	1.17129	12387.8	13994.0	167.948	65.30	95.25	.99044E-02	1307	1.83973
240.000	.1348E+02	.59439E+03	.81793	1.050464	1.08472	13336.5	14968.7	172.093	66.22	96.70	.14627E-01	1258	1.82304
250.000	.1326E+02	.58465E+03	.79829	.981788	1.00280	14299.3	15958.6	176.130	67.26	98.27	.20791E-01	1210	1.80632
260.000	.1303E+02	.57480E+03	.78074	.917037	.92539	15276.0	16963.8	180.069	68.42	99.96	.28579E-01	1162	1.78956
270.000	.1281E+02	.56483E+03	.76510	.855918	.85236	16266.5	17984.1	183.916	69.70	101.78	.38141E-01	1115	1.77274
280.000	.1258E+02	.55471E+03	.75122	.798179	.78360	17270.8	19019.7	187.679	71.12	103.74	.49591E-01	1069	1.75582
290.000	.1235E+02	.54445E+03	.73899	.743605	.71899	18288.7	20070.5	191.364	72.67	105.84	.62999E-01	1023	1.73879
300.000	.1211E+02	.53403E+03	.72831	.692014	.65845	19320.3	21136.9	194.978	74.35	108.09	.78386E-01	978	1.72164
310.000	.1187E+02	.52343E+03	.71908	.643249	.60188	20365.9	22219.4	198.529	76.18	110.48	.95730E-01	934	1.70434
320.000	.1163E+02	.51265E+03	.71126	.597177	.54918	21425.9	23318.4	202.021	78.15	113.01	.11497E+00	891	1.68689
330.000	.1138E+02	.50168E+03	.70479	.553686	.50025	22500.8	24434.6	205.460	80.23	115.66	.13603E+00	849	1.66927
340.000	.1112E+02	.49051E+03	.69963	.512679	.45499	23590.9	25568.7	208.847	82.38	118.38	.15885E+00	808	1.65148
350.000	.1087E+02	.47914E+03	.69577	.474074	.41327	24696.2	26721.0	212.185	84.44	121.00	.18333E+00	769	1.63351
360.000	.1060E+02	.46757E+03	.69319	.437799	.37500	25815.8	27890.7	215.482	85.72	122.83	.20920E+00	733	1.61537
370.000	.1034E+02	.45579E+03	.69188	.403788	.34004	26801.8	28930.3	218.327	110.64	148.30	.23662E+00	675	1.59706
380.000	.1006E+02	.44382E+03	.69184	.371980	.30826	28121.4	30307.3	221.998	96.92	135.11	.26510E+00	655	1.57860
390.000	.9789E+01	.43166E+03	.69309	.342315	.27952	29406.5	31654.0	225.496	95.89	134.58	.29416E+00	626	1.56001
400.000	.9509E+01	.41933E+03	.69563	.314732	.25371	30689.2	33002.7	228.910	96.13	135.29	.32363E+00	597	1.54133
410.000	.9226E+01	.40686E+03	.69947	.289167	.23068	31976.9	34361.3	232.265	96.90	136.49	.35330E+00	570	1.52258
420.000	.8941E+01	.39428E+03	.70461	.265555	.21029	33272.7	35733.2	235.571	97.97	137.92	.38304E+00	544	1.50383
430.000	.8654E+01	.38162E+03	.71104	.243823	.19244	34577.8	37119.9	238.834	99.21	139.43	.41259E+00	520	1.48514
440.000	.8367E+01	.36896E+03	.71874	.223900	.17699	35892.5	38521.9	242.057	100.56	140.93	.44178E+00	498	1.46660
450.000	.8081E+01	.35635E+03	.72763	.205709	.16381	37215.8	39938.3	245.240	101.98	142.34	.47050E+00	478	1.44831
460.000	.7798E+01	.34387E+03	.73764	.189169	.15279	38546.9	41368.1	248.383	103.43	143.61	.49860E+00	460	0.00000
470.000	.7520E+01	.33161E+03	.74863	.174196	.14377	39884.3	42809.8	251.483	104.91	144.69	.52593E+00	445	0.00000
480.000	.7249E+01	.31966E+03	.76043	.160697	.13658	41226.5	44261.3	254.539	106.40	145.56	.55244E+00	432	0.00000
490.000	.6987E+01	.30811E+03	.77286	.148574	.13106	42571.8	45720.5	257.547	107.89	146.23	.57803E+00	421	0.00000
500.000	.6735E+01	.29701E+03	.78569	.137720	.12699	43919.0	47185.3	260.507	109.38	146.71	.60265E+00	412	0.00000
520.000	.6268E+01	.27640E+03	.81181	.119369	.12241	46615.8	50125.7	266.273	112.33	147.27	.64889E+00	400	0.00000
540.000	.5851E+01	.25802E+03	.83744	.104745	.12128	49314.5	53074.4	271.837	115.23	147.59	.69117E+00	394	0.00000
560.000	.5483E+01	.24180E+03	.86170	.093023	.12236	52017.6	56029.8	277.211	118.10	147.97	.72957E+00	391	0.00000
580.000	.5160E+01	.22752E+03	.88418	.083521	.12474	54730.6	58994.5	282.413	120.91	148.54	.76431E+00	391	0.00000
620.000	.4621E+01	.20375E+03	.92363	.069207	.13137	60209.1	64970.4	292.376	126.39	150.40	.82404E+00	395	0.00000
660.000	.4192E+01	.18487E+03	.95631	.059038	.13960	65787.2	71035.0	301.854	131.65	152.91	.87258E+00	402	0.00000
700.000	.3845E+01	.16956E+03	.98302	.051508	.14893	71486.9	77208.2	310.934	136.68	155.80	.91203E+00	412	0.00000

Table 21. (Continued)

Propane Isobar at P = 25 MPa

Temp. K	Density mol/L	Density kg/m³	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa•m³/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol•K)	C_v J/(mol•K)	C_p J/(mol•K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
87.781	.1676E+02	.73904E+03	2.04384	3.118573	3.23489	29.6	1521.3	82.862	62.58	83.88	.13174E-09	2082	2.09840
90.000	.1671E+02	.73690E+03	1.99922	3.059261	3.18073	216.2	1712.3	85.030	62.47	83.97	.28935E-09	2067	2.09367
100.000	.1649E+02	.72733E+03	1.82298	2.813802	2.95439	1054.8	2570.5	94.118	62.05	84.39	.62944E-08	2004	2.07291
110.000	.1628E+02	.71785E+03	1.67914	2.598379	2.75210	1890.1	3425.8	102.275	61.75	84.84	.74815E-07	1944	2.05295
120.000	.1607E+02	.70845E+03	1.55965	2.407115	2.56879	2723.9	4280.0	109.697	61.55	85.33	.56723E-06	1887	2.03364
130.000	.1585E+02	.69911E+03	1.45891	2.235684	2.40086	3558.0	5134.9	116.529	61.45	85.87	.30516E-05	1831	2.01488
140.000	.1564E+02	.68982E+03	1.37294	2.080806	2.24568	4394.6	5992.7	122.882	61.44	86.46	.12568E-04	1777	1.99659
150.000	.1543E+02	.68057E+03	1.29882	1.939935	2.10130	5235.7	6855.5	128.837	61.52	87.10	.41885E-04	1724	1.97870
160.000	.1522E+02	.67135E+03	1.23437	1.811061	1.96622	6083.1	7725.3	134.457	61.69	87.80	.11775E-03	1672	1.96114
170.000	.1502E+02	.66215E+03	1.17791	1.692570	1.83933	6938.9	8603.8	139.792	61.95	88.58	.28825E-03	1621	1.94386
180.000	.1481E+02	.65294E+03	1.12815	1.583145	1.71975	7804.5	9492.9	144.882	62.29	89.42	.62957E-03	1571	1.92681
190.000	.1460E+02	.64373E+03	1.08407	1.481705	1.60679	8681.2	10393.8	149.759	62.72	90.34	.12505E-02	1521	1.90996
200.000	.1439E+02	.63450E+03	1.04486	1.387348	1.49993	9570.1	11307.6	154.449	63.24	91.35	.22932E-02	1471	1.89327
210.000	.1418E+02	.62523E+03	1.00985	1.299317	1.39873	10471.9	12235.2	158.975	63.86	92.45	.39296E-02	1423	1.87669
220.000	.1397E+02	.61591E+03	.97853	1.216975	1.30286	11387.2	13177.1	163.355	64.57	93.64	.63537E-02	1374	1.86021
230.000	.1375E+02	.60654E+03	.95044	1.139778	1.21203	12316.1	14133.7	167.605	65.39	94.94	.97711E-02	1326	1.84378
240.000	.1354E+02	.59710E+03	.92524	1.067263	1.12603	13258.7	15105.0	171.736	66.32	96.34	.14387E-01	1279	1.82739
250.000	.1332E+02	.58758E+03	.90262	.999033	1.04466	14214.9	16091.2	175.758	67.35	97.86	.20395E-01	1232	1.81101
260.000	.1311E+02	.57797E+03	.88234	.934746	.96778	15184.6	17092.0	179.679	68.51	99.50	.27967E-01	1185	1.79462
270.000	.1289E+02	.56826E+03	.86418	.874112	.89524	16167.4	18107.4	183.508	69.79	101.26	.37244E-01	1139	1.77820
280.000	.1266E+02	.55844E+03	.84797	.816877	.82692	17163.3	19137.4	187.251	71.20	103.15	.48331E-01	1094	1.76173
290.000	.1244E+02	.54850E+03	.83356	.762826	.76273	18172.1	20182.0	190.914	72.74	105.17	.61294E-01	1050	1.74519
300.000	.1221E+02	.53844E+03	.82084	.711771	.70255	19193.8	21241.3	194.504	74.43	107.33	.76151E-01	1006	1.72858
310.000	.1198E+02	.52824E+03	.80970	.663553	.64628	20228.6	22315.6	198.028	76.25	109.63	.92879E-01	963	1.71188
320.000	.1174E+02	.51790E+03	.80005	.618034	.59382	21276.9	23405.5	201.491	78.21	112.05	.11142E+00	922	1.69508
330.000	.1151E+02	.50742E+03	.79183	.575095	.54506	22338.9	24511.5	204.898	80.28	114.58	.13171E+00	881	1.67818
340.000	.1127E+02	.49680E+03	.78498	.534632	.49988	23415.1	25634.2	208.251	82.43	117.16	.15369E+00	842	1.66119
350.000	.1102E+02	.48603E+03	.77944	.496554	.45816	24505.3	26773.5	211.552	84.48	119.64	.17727E+00	805	1.64409
360.000	.1077E+02	.47512E+03	.77519	.460777	.41979	25608.5	27928.8	214.808	85.74	121.31	.20219E+00	770	1.62691
370.000	.1052E+02	.46408E+03	.77218	.427226	.38463	26576.9	28952.4	217.609	110.65	146.60	.22863E+00	713	1.60965
380.000	.1027E+02	.45291E+03	.77040	.395828	.35253	27877.4	30311.5	221.233	96.92	133.23	.25612E+00	696	1.59232
390.000	.1001E+02	.44163E+03	.76983	.366511	.32336	29142.1	31638.4	224.679	95.88	132.51	.28420E+00	668	1.57496
400.000	.9757E+01	.43025E+03	.77043	.339203	.29697	30403.1	32965.4	228.039	96.10	133.02	.31275E+00	641	1.55758
410.000	.9497E+01	.41879E+03	.77220	.313831	.27323	31667.9	34300.3	231.335	96.87	134.02	.34154E+00	614	1.54022
420.000	.9236E+01	.40729E+03	.77512	.290316	.25198	32939.8	35646.6	234.579	97.92	135.27	.37048E+00	589	1.52293
430.000	.8975E+01	.39576E+03	.77914	.268582	.23310	34220.3	37005.9	237.777	99.16	136.62	.39933E+00	566	1.50575
440.000	.8714E+01	.38426E+03	.78423	.248546	.21645	35510.1	38379.1	240.935	100.50	138.01	.42793E+00	545	1.48874
450.000	.8454E+01	.37281E+03	.79034	.230126	.20191	36808.9	39766.0	244.051	101.92	139.37	.45619E+00	525	1.47195
460.000	.8197E+01	.36148E+03	.79740	.213238	.18935	38116.3	41166.1	247.128	103.38	140.66	.48395E+00	507	0.00000
470.000	.7944E+01	.35031E+03	.80532	.197797	.17864	39431.7	42578.8	250.167	104.87	141.86	.51110E+00	491	0.00000
480.000	.7695E+01	.33935E+03	.81400	.183718	.16965	40754.2	44002.8	253.165	106.37	142.94	.53756E+00	477	0.00000
490.000	.7453E+01	.32866E+03	.82332	.170912	.16225	42082.8	45437.1	256.122	107.87	143.89	.56325E+00	465	0.00000
500.000	.7218E+01	.31830E+03	.83313	.159291	.15630	43416.6	46880.2	259.037	109.38	144.71	.58808E+00	454	0.00000
520.000	.6773E+01	.29869E+03	.85368	.139244	.14812	46097.1	49788.0	264.740	112.37	146.01	.63510E+00	438	0.00000
540.000	.6366E+01	.28074E+03	.87461	.122860	.14390	48791.8	52718.6	270.269	115.31	147.00	.67849E+00	428	0.00000
560.000	.5999E+01	.26453E+03	.89505	.109457	.14255	51499.9	55667.3	275.631	118.20	147.86	.71824E+00	422	0.00000
580.000	.5669E+01	.24999E+03	.91446	.098434	.14314	54223.4	58633.3	280.835	121.04	148.74	.75447E+00	419	0.00000
620.000	.5109E+01	.22530E+03	.94921	.081631	.14769	59730.3	64623.4	290.821	126.55	150.85	.81730E+00	419	0.00000
660.000	.4656E+01	.20532E+03	.97844	.069588	.15429	65339.4	70708.7	300.332	131.82	153.49	.86888E+00	423	0.00000
700.000	.4284E+01	.18889E+03	1.00277	.060612	.16208	71070.5	76906.8	309.448	136.85	156.46	.91114E+00	430	0.00000

Table 21. (Continued)

Propane Isobar at P = 30 MPa

Temp. K	Density mol/L	Density kg/m³	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa•m³/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol•K)	C_v J/(mol•K)	C_p J/(mol•K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
88.241	.1678E+02	.74014E+03	2.43621	3.122306	3.27994	37.6	1825.0	82.930	62.74	83.85	.19473E-09	2093	2.09991
90.000	.1675E+02	.73846E+03	2.39401	3.075748	3.23717	184.8	1976.3	84.643	62.65	83.92	.35951E-09	2082	2.09620
100.000	.1653E+02	.72901E+03	2.18254	2.831736	3.01110	1019.3	2833.9	93.725	62.23	84.33	.75497E-08	2019	2.07564
110.000	.1632E+02	.71965E+03	2.00993	2.617439	2.80920	1850.3	3688.6	101.875	61.92	84.76	.87192E-07	1960	2.05587
120.000	.1611E+02	.71037E+03	1.86650	2.427091	2.62642	2679.6	4541.9	109.289	61.72	85.24	.64545E-06	1904	2.03677
130.000	.1590E+02	.70116E+03	1.74555	2.256433	2.45911	3509.1	5395.8	116.114	61.62	85.76	.34032E-05	1850	2.01823
140.000	.1569E+02	.69202E+03	1.64230	2.102229	2.30464	4340.7	6252.4	122.457	61.61	86.33	.13776E-04	1797	2.00017
150.000	.1549E+02	.68292E+03	1.55323	1.961969	2.16102	5176.6	7113.8	128.403	61.68	86.95	.45237E-04	1745	1.98251
160.000	.1528E+02	.67386E+03	1.47574	1.833666	2.02676	6018.7	7981.9	134.012	61.85	87.63	.12555E-03	1694	1.96521
170.000	.1508E+02	.66482E+03	1.40781	1.715721	1.90072	6868.7	8858.5	139.336	62.10	88.37	.30387E-03	1644	1.94820
180.000	.1487E+02	.65580E+03	1.34789	1.606832	1.78202	7728.1	9745.4	144.413	62.44	89.18	.65711E-03	1595	1.93145
190.000	.1467E+02	.64678E+03	1.29475	1.505926	1.66996	8598.3	10643.7	149.276	62.87	90.07	.12937E-02	1546	1.91491
200.000	.1446E+02	.63776E+03	1.24741	1.412109	1.56400	9480.3	11554.6	153.951	63.39	91.04	.23539E-02	1498	1.89855
210.000	.1426E+02	.62872E+03	1.20509	1.324630	1.46370	10374.7	12478.9	158.461	64.01	92.09	.40053E-02	1451	1.88234
220.000	.1405E+02	.61966E+03	1.16714	1.242855	1.36872	11282.0	13417.0	162.823	64.72	93.24	.64355E-02	1404	1.86624
230.000	.1385E+02	.61056E+03	1.13303	1.166243	1.27875	12202.4	14369.2	167.054	65.54	94.48	.98411E-02	1357	1.85024
240.000	.1364E+02	.60141E+03	1.10233	1.094333	1.19358	13135.9	15335.6	171.163	66.46	95.82	.14417E-01	1311	1.83431
250.000	.1343E+02	.59222E+03	1.07467	1.026730	1.11301	14082.3	16316.2	175.163	67.50	97.27	.20344E-01	1266	1.81843
260.000	.1322E+02	.58296E+03	1.04974	.963091	1.03687	15041.4	17310.7	179.060	68.65	98.83	.27782E-01	1221	1.80258
270.000	.1301E+02	.57364E+03	1.02729	.903123	.96502	16012.9	18319.1	182.862	69.93	100.51	.36862E-01	1177	1.78675
280.000	.1280E+02	.56424E+03	1.00710	.846572	.89733	16996.5	19341.1	186.576	71.33	102.31	.47678E-01	1134	1.77093
290.000	.1258E+02	.55477E+03	.98898	.793217	.83368	17992.1	20376.8	190.207	72.87	104.23	.60287E-01	1091	1.75509
300.000	.1236E+02	.54521E+03	.97277	.742867	.77396	18999.7	21426.1	193.764	74.55	106.28	.74703E-01	1050	1.73925
310.000	.1215E+02	.53557E+03	.95834	.695355	.71806	20019.3	22489.4	197.251	76.37	108.46	.90903E-01	1009	1.72338
320.000	.1192E+02	.52584E+03	.94556	.650536	.66586	21051.1	23566.9	200.675	78.32	110.75	.10883E+00	970	1.70749
330.000	.1170E+02	.51603E+03	.93434	.608280	.61725	22095.7	24659.3	204.040	80.38	113.14	.12842E+00	932	1.69157
340.000	.1148E+02	.50614E+03	.92459	.568475	.57210	23153.0	25766.8	207.348	82.51	115.57	.14962E+00	895	1.67564
350.000	.1125E+02	.49616E+03	.91623	.531016	.53029	24223.2	26889.5	210.601	84.55	117.89	.17236E+00	859	1.65970
360.000	.1102E+02	.48611E+03	.90920	.495809	.49169	25305.0	28026.5	213.806	85.80	119.39	.19639E+00	827	1.64375
370.000	.1079E+02	.47600E+03	.90342	.462765	.45615	26250.7	29030.0	216.552	110.70	144.51	.22190E+00	771	1.62781
380.000	.1056E+02	.46582E+03	.89886	.431799	.42353	27527.3	30367.3	220.117	96.96	130.95	.24844E+00	756	1.61190
390.000	.1033E+02	.45561E+03	.89544	.402829	.39369	28766.9	31670.5	223.502	95.90	130.05	.27558E+00	730	1.59603
400.000	.1010E+02	.44537E+03	.89314	.375770	.36648	30001.6	32972.0	226.797	96.11	130.37	.30321E+00	705	1.58023
410.000	.9867E+01	.43511E+03	.89190	.350543	.34176	31239.1	34279.5	230.026	96.86	131.20	.33114E+00	680	1.56453
420.000	.9635E+01	.42486E+03	.89167	.327062	.31936	32482.9	35596.7	233.199	97.91	132.28	.35929E+00	656	1.54894
430.000	.9403E+01	.41463E+03	.89241	.305245	.29917	33734.8	36925.4	236.325	99.13	133.48	.38744E+00	634	1.53351
440.000	.9172E+01	.40446E+03	.89406	.285006	.28103	34995.8	38266.6	239.409	100.47	134.75	.41544E+00	613	1.51826
450.000	.8943E+01	.39436E+03	.89658	.266262	.26483	36266.0	39620.6	242.452	101.89	136.05	.44323E+00	594	1.50322
460.000	.8716E+01	.38436E+03	.89991	.248930	.25044	37545.4	40987.3	245.456	103.35	137.33	.47065E+00	576	0.00000
470.000	.8492E+01	.37449E+03	.90398	.232926	.23774	38834.2	42366.8	248.422	104.84	138.57	.49760E+00	560	0.00000
480.000	.8272E+01	.36477E+03	.90872	.218169	.22662	40131.9	43758.5	251.352	106.35	139.77	.52398E+00	545	0.00000
490.000	.8056E+01	.35524E+03	.91406	.204580	.21697	41438.0	45161.9	254.246	107.87	140.90	.54975E+00	532	0.00000
500.000	.7845E+01	.34593E+03	.91991	.192081	.20868	42752.1	46576.3	257.104	109.39	141.97	.57480E+00	520	0.00000
520.000	.7439E+01	.32802E+03	.93281	.170057	.19575	45402.5	49435.5	262.710	112.42	143.90	.62265E+00	500	0.00000
540.000	.7058E+01	.31122E+03	.94675	.151519	.18699	48080.0	52330.8	268.173	115.40	145.58	.66731E+00	485	0.00000
560.000	.6704E+01	.29563E+03	.96108	.135930	.18158	50782.8	55257.7	273.495	118.33	147.08	.70866E+00	475	0.00000
580.000	.6379E+01	.28128E+03	.97529	.122804	.17876	53510.2	58213.4	278.681	121.20	148.47	.74670E+00	467	0.00000
620.000	.5808E+01	.25613E+03	1.00195	.102288	.17844	59041.5	64206.6	288.672	126.75	151.19	.81345E+00	461	0.00000
660.000	.5333E+01	.23515E+03	1.02518	.087285	.18227	64684.9	70310.6	298.212	132.05	154.05	.86895E+00	461	0.00000
700.000	.4934E+01	.21756E+03	1.04478	.075992	.18809	70452.3	76533.1	307.365	137.09	157.11	.91489E+00	464	0.00000

Table 21. (Continued)

Propane Isobar at P = 35 MPa

Temp. K	Density mol/L	Density kg/m³	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa·m³/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol·K)	C_v J/(mol·K)	C_p J/(mol·K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
88.700	.1681E+02	.74122E+03	2.82341	3.126359	3.32514	46.3	2128.6	83.001	62.89	83.82	.29408E-09	2105	2.10140
90.000	.1678E+02	.73999E+03	2.78723	3.092283	3.29364	154.6	2240.3	84.262	62.83	83.87	.45906E-09	2096	2.09868
100.000	.1657E+02	.73066E+03	2.54056	2.849638	3.06772	985.0	3097.3	93.338	62.40	84.26	.93064E-08	2035	2.07831
110.000	.1636E+02	.72141E+03	2.33920	2.636402	2.86613	1811.9	3951.3	101.481	62.09	84.69	.10443E-06	1977	2.05874
120.000	.1615E+02	.71226E+03	2.17183	2.446908	2.68377	2636.9	4803.9	108.889	61.89	85.16	.75482E-06	1921	2.03983
130.000	.1595E+02	.70317E+03	2.03066	2.276963	2.51699	3461.9	5656.9	115.706	61.78	85.66	.39004E-05	1868	2.02150
140.000	.1574E+02	.69416E+03	1.91010	2.123378	2.36313	4289.0	6512.4	122.042	61.76	86.21	.15520E-04	1816	2.00365
150.000	.1554E+02	.68520E+03	1.80607	1.983673	2.22018	5120.0	7372.4	127.978	61.84	86.81	.50209E-04	1765	1.98622
160.000	.1534E+02	.67629E+03	1.71551	1.855881	2.08665	5956.9	8239.1	133.578	62.00	87.47	.13756E-03	1715	1.96916
170.000	.1513E+02	.66741E+03	1.63607	1.738422	1.96138	6801.5	9114.0	138.892	62.25	88.19	.32919E-03	1666	1.95240
180.000	.1493E+02	.65856E+03	1.56595	1.630004	1.84346	7655.2	9998.8	143.957	62.59	88.97	.70477E-03	1618	1.93592
190.000	.1473E+02	.64972E+03	1.50370	1.529563	1.73220	8519.4	10894.9	148.808	63.02	89.83	.13753E-02	1571	1.91967
200.000	.1453E+02	.64089E+03	1.44820	1.436210	1.62704	9395.0	11803.2	153.470	63.54	90.76	.24826E-02	1524	1.90361
210.000	.1433E+02	.63206E+03	1.39850	1.349201	1.52754	10282.6	12724.5	157.965	64.15	91.78	.41945E-02	1478	1.88773
220.000	.1413E+02	.62323E+03	1.35386	1.267903	1.43333	11182.7	13659.2	162.312	64.87	92.88	.66969E-02	1432	1.87199
230.000	.1393E+02	.61437E+03	1.31367	1.191778	1.34411	12095.4	14607.6	166.525	65.68	94.07	.10182E-01	1387	1.85637
240.000	.1373E+02	.60549E+03	1.27739	1.120367	1.25966	13020.8	15569.8	170.617	66.60	95.37	.14840E-01	1343	1.84085
250.000	.1353E+02	.59658E+03	1.24461	1.053272	1.17976	13958.5	16545.6	174.596	67.63	96.76	.20844E-01	1299	1.82541
260.000	.1333E+02	.58763E+03	1.21496	.990153	1.10424	14908.3	17534.7	178.473	68.78	98.26	.28346E-01	1255	1.81004
270.000	.1312E+02	.57864E+03	1.18814	.930712	1.03295	15869.9	18537.1	182.252	70.06	99.88	.37468E-01	1213	1.79472
280.000	.1292E+02	.56961E+03	1.16388	.874693	.96576	16843.0	19552.5	185.942	71.46	101.61	.48297E-01	1171	1.77945
290.000	.1271E+02	.56053E+03	1.14195	.821871	.90253	17827.3	20580.8	189.548	73.00	103.46	.60882E-01	1130	1.76421
300.000	.1250E+02	.55140E+03	1.12216	.772050	.84315	18823.0	21622.0	193.076	74.67	105.43	.75232E-01	1091	1.74900
310.000	.1230E+02	.54222E+03	1.10436	.725059	.78749	19829.9	22676.4	196.535	76.48	107.52	.91320E-01	1052	1.73382
320.000	.1209E+02	.53298E+03	1.08838	.680744	.73544	20848.4	23744.1	199.928	78.42	109.73	.10909E+00	1014	1.71866
330.000	.1188E+02	.52370E+03	1.07409	.638969	.68688	21878.7	24825.8	203.260	80.48	112.02	.12847E+00	977	1.70353
340.000	.1166E+02	.51438E+03	1.06140	.599613	.64168	22921.1	25921.6	206.533	82.61	114.36	.14942E+00	942	1.68844
350.000	.1145E+02	.50502E+03	1.05019	.562564	.59970	23975.5	27031.7	209.749	84.64	116.58	.17188E+00	908	1.67338
360.000	.1124E+02	.49562E+03	1.04038	.527720	.56082	25040.9	28155.0	212.915	85.88	117.98	.19558E+00	877	1.65838
370.000	.1103E+02	.48620E+03	1.03187	.494983	.52490	25969.4	29143.8	215.621	110.77	142.99	.22075E+00	823	1.64343
380.000	.1081E+02	.47676E+03	1.02460	.464261	.49178	27228.1	30465.4	219.144	97.02	129.33	.24693E+00	809	1.62857
390.000	.1060E+02	.46732E+03	1.01850	.435466	.46133	28449.3	31751.9	222.486	95.95	128.32	.27370E+00	785	1.61379
400.000	.1038E+02	.45789E+03	1.01349	.408509	.43340	29664.9	33035.6	225.735	96.15	128.55	.30098E+00	761	1.59912
410.000	.1017E+02	.44848E+03	1.00953	.383305	.40784	30883.0	34324.4	228.918	96.90	129.28	.32857E+00	737	1.58458
420.000	.9958E+01	.43910E+03	1.00654	.359769	.38452	32107.0	35622.0	232.044	97.94	130.27	.35642E+00	715	1.57019
430.000	.9746E+01	.42977E+03	1.00447	.337816	.36328	33339.0	36930.2	235.123	99.16	131.41	.38430E+00	693	1.55596
440.000	.9536E+01	.42051E+03	1.00327	.317362	.34401	34580.0	38250.4	238.158	100.49	132.62	.41209E+00	673	1.54193
450.000	.9328E+01	.41132E+03	1.00287	.298325	.32657	35830.5	39582.7	241.152	101.91	133.87	.43972E+00	654	1.52811
460.000	.9122E+01	.40224E+03	1.00323	.280623	.31083	37090.6	40927.6	244.108	103.37	135.13	.46706E+00	637	0.00000
470.000	.8918E+01	.39327E+03	1.00427	.264177	.29670	38360.7	42285.2	247.027	104.86	136.38	.49400E+00	621	0.00000
480.000	.8718E+01	.38444E+03	1.00594	.248910	.28406	39640.6	43655.2	249.912	106.38	137.62	.52045E+00	606	0.00000
490.000	.8521E+01	.37575E+03	1.00819	.234749	.27280	40929.9	45037.4	252.762	107.90	138.82	.54636E+00	592	0.00000
500.000	.8328E+01	.36723E+03	1.01095	.221620	.26284	42228.7	46431.4	255.578	109.43	139.98	.57164E+00	579	0.00000
520.000	.7954E+01	.35075E+03	1.01775	.198189	.24642	44853.1	49253.3	261.112	112.47	142.18	.62017E+00	558	0.00000
540.000	.7599E+01	.33509E+03	1.02585	.178102	.23411	47511.7	52117.6	266.516	115.48	144.21	.66578E+00	540	0.00000
560.000	.7264E+01	.32034E+03	1.03477	.160892	.22525	50202.8	55020.8	271.795	118.43	146.09	.70828E+00	527	0.00000
580.000	.6951E+01	.30653E+03	1.04410	.146137	.21924	52925.3	57960.3	276.952	121.32	147.84	.74766E+00	516	0.00000
620.000	.6389E+01	.28175E+03	1.06265	.122544	.21361	58462.3	63940.3	286.921	126.91	151.12	.81736E+00	504	0.00000
660.000	.5907E+01	.26050E+03	1.07967	.104888	.21370	64124.2	70049.0	296.468	132.23	154.31	.87585E+00	499	0.00000
700.000	.5495E+01	.24231E+03	1.09441	.091408	.21709	69915.7	76285.3	305.641	137.28	157.52	.92461E+00	499	0.00000

Table 21. (Continued)

Propane Isobar at P = 40 MPa

Temp. K	Density mol/L	Density kg/m³	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa•m³/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol•K)	C_v J/(mol•K)	C_p J/(mol•K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
89.159	.1683E+02	.74228E+03	3.20555	3.130696	3.37046	55.6	2431.9	83.073	63.04	83.79	.45043E-09	2116	2.10286
90.000	.1682E+02	.74150E+03	3.17894	3.108846	3.35013	125.3	2504.2	83.887	63.00	83.82	.59790E-09	2111	2.10112
100.000	.1661E+02	.73227E+03	2.89710	2.867496	3.12426	951.9	3360.7	92.957	62.57	84.21	.11701E-07	2050	2.08093
110.000	.1640E+02	.72314E+03	2.66698	2.655258	2.92287	1774.9	4214.1	101.095	62.25	84.63	.12758E-06	1993	2.06154
120.000	.1619E+02	.71410E+03	2.47568	2.466562	2.74085	2595.8	5065.9	108.496	62.04	85.08	.90037E-06	1938	2.04282
130.000	.1599E+02	.70514E+03	2.31429	2.297278	2.57451	3416.6	5918.0	115.307	61.93	85.57	.45596E-05	1885	2.02469
140.000	.1579E+02	.69625E+03	2.17642	2.144261	2.42118	4239.1	6772.5	121.635	61.92	86.10	.17833E-04	1834	2.00704
150.000	.1559E+02	.68742E+03	2.05740	2.005058	2.27883	5065.5	7631.5	127.563	61.99	86.68	.56841E-04	1785	1.98983
160.000	.1539E+02	.67865E+03	1.95375	1.877726	2.14594	5897.6	8496.7	133.155	62.15	87.32	.15372E-03	1736	1.97299
170.000	.1519E+02	.66992E+03	1.86279	1.760698	2.02134	6737.1	9370.1	138.458	62.40	88.02	.36372E-03	1688	1.95647
180.000	.1499E+02	.66123E+03	1.78243	1.652694	1.90413	7585.5	10253.1	143.514	62.74	88.78	.77093E-03	1641	1.94024
190.000	.1480E+02	.65256E+03	1.71105	1.552656	1.79358	8444.1	11147.1	148.353	63.16	89.61	.14911E-02	1595	1.92425
200.000	.1460E+02	.64391E+03	1.64733	1.459703	1.68913	9313.7	12053.1	153.003	63.68	90.51	.26702E-02	1549	1.90848
210.000	.1441E+02	.63527E+03	1.59022	1.373094	1.59033	10195.1	12971.7	157.485	64.29	91.50	.44796E-02	1504	1.89290
220.000	.1421E+02	.62664E+03	1.53884	1.292198	1.49680	11088.6	13903.5	161.819	65.00	92.56	.71063E-02	1459	1.87748
230.000	.1401E+02	.61800E+03	1.49251	1.216480	1.40825	11994.4	14848.6	166.017	65.82	93.72	.10743E-01	1416	1.86221
240.000	.1382E+02	.60936E+03	1.45061	1.145480	1.32441	12912.3	15807.0	170.093	66.73	94.97	.15576E-01	1372	1.84705
250.000	.1362E+02	.60070E+03	1.41265	1.078800	1.24509	13842.2	16778.6	174.055	67.77	96.32	.21774E-01	1330	1.83201
260.000	.1343E+02	.59203E+03	1.37822	1.016099	1.17010	14783.8	17763.2	177.914	68.91	97.78	.29485E-01	1288	1.81706
270.000	.1323E+02	.58334E+03	1.34695	.957078	1.09928	15736.7	18760.5	181.674	70.19	99.34	.38822E-01	1247	1.80219
280.000	.1303E+02	.57462E+03	1.31856	.901476	1.03248	16700.5	19770.2	185.343	71.59	101.02	.49867E-01	1207	1.78739
290.000	.1283E+02	.56587E+03	1.29276	.849066	.96958	17675.2	20792.3	188.927	73.12	102.81	.62662E-01	1167	1.77266
300.000	.1263E+02	.55710E+03	1.26934	.799648	.91044	18660.6	21826.8	192.433	74.79	104.72	.77209E-01	1129	1.75800
310.000	.1243E+02	.54831E+03	1.24810	.753044	.85495	19656.8	22873.8	195.867	76.59	106.75	.93476E-01	1091	1.74339
320.000	.1223E+02	.53949E+03	1.22886	.709097	.80298	20664.0	23933.5	199.235	78.53	108.89	.11140E+00	1055	1.72885
330.000	.1203E+02	.53065E+03	1.21148	.667666	.75440	21682.5	25006.6	202.540	80.59	111.13	.13092E+00	1019	1.71437
340.000	.1183E+02	.52179E+03	1.19581	.628621	.70909	22712.6	26093.1	205.786	82.71	113.40	.15199E+00	986	1.69996
350.000	.1163E+02	.51292E+03	1.18173	.591847	.66691	23754.3	27193.2	208.973	84.73	115.55	.17453E+00	953	1.68562
360.000	.1143E+02	.50404E+03	1.16914	.557234	.62774	24806.4	28305.9	212.109	85.97	116.88	.19831E+00	923	1.67137
370.000	.1123E+02	.49517E+03	1.15793	.524681	.59143	25721.3	29283.5	214.784	110.85	141.83	.22353E+00	869	1.65721
380.000	.1103E+02	.48630E+03	1.14801	.494091	.55783	26965.9	30593.1	218.275	97.09	128.10	.24975E+00	857	1.64315
390.000	.1083E+02	.47746E+03	1.13930	.465371	.52682	28172.7	31867.0	221.584	96.02	127.04	.27656E+00	834	1.62921
400.000	.1063E+02	.46864E+03	1.13172	.438432	.49824	29373.7	33137.5	224.801	96.22	127.20	.30387E+00	811	1.61540
410.000	.1043E+02	.45986E+03	1.12519	.413185	.47195	30576.9	34412.7	227.950	96.96	127.88	.33149E+00	788	1.60174
420.000	.1023E+02	.45113E+03	1.11965	.389547	.44782	31786.1	35696.0	231.042	97.99	128.83	.35938E+00	767	1.58824
430.000	.1003E+02	.44247E+03	1.11503	.367431	.42571	33003.1	36989.6	234.085	99.21	129.92	.38733E+00	746	1.57492
440.000	.9839E+01	.43387E+03	1.11127	.346757	.40549	34229.3	38294.7	237.086	100.54	131.10	.41520E+00	727	1.56179
450.000	.9646E+01	.42537E+03	1.10830	.327444	.38704	35465.1	39611.8	240.046	101.95	132.33	.44294E+00	708	1.54886
460.000	.9455E+01	.41696E+03	1.10608	.309413	.37024	36710.9	40941.3	242.968	103.41	133.58	.47042E+00	691	0.00000
470.000	.9267E+01	.40866E+03	1.10453	.292588	.35498	37967.1	42283.4	245.854	104.91	134.84	.49753E+00	675	0.00000
480.000	.9082E+01	.40048E+03	1.10361	.276897	.34115	39233.6	43638.0	248.706	106.43	136.09	.52420E+00	660	0.00000
490.000	.8899E+01	.39243E+03	1.10326	.262268	.32865	40510.3	45005.1	251.525	107.95	137.32	.55037E+00	646	0.00000
500.000	.8720E+01	.38452E+03	1.10343	.248634	.31740	41797.1	46384.3	254.311	109.48	138.53	.57595E+00	633	0.00000
520.000	.8372E+01	.36917E+03	1.10511	.224094	.29831	44400.4	49178.4	259.790	112.54	140.86	.62520E+00	611	0.00000
540.000	.8039E+01	.35449E+03	1.10825	.202800	.28321	47042.2	52018.0	265.148	115.56	143.07	.67168E+00	592	0.00000
560.000	.7722E+01	.34054E+03	1.11244	.184320	.27156	49720.9	54900.6	270.389	118.52	145.16	.71519E+00	576	0.00000
580.000	.7423E+01	.32735E+03	1.11737	.168270	.26283	52435.5	57823.9	275.518	121.43	147.15	.75567E+00	564	0.00000
620.000	.6878E+01	.30329E+03	1.12822	.142144	.25229	57968.8	63784.8	285.455	127.05	150.85	.82775E+00	547	0.00000
660.000	.6400E+01	.28220E+03	1.13901	.122182	.24842	63638.7	69889.1	294.995	132.38	154.34	.88864E+00	538	0.00000
700.000	.5983E+01	.26382E+03	1.14875	.106707	.24886	69445.1	76131.0	304.176	137.45	157.74	.93966E+00	534	0.00000

Table 21. (Continued)

Propane Isobar at P = 50 MPa

Temp. K	Density mol/L	Density kg/m³	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa•m³/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol•K)	Cv J/(mol•K)	Cp J/(mol•K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
90.074	.1688E+02	.74437E+03	3.95509	3.140089	3.46142	76.1	3038.1	83.225	63.32	83.74	.10832E-08	2139	2.10571
100.000	.1668E+02	.73541E+03	3.60589	2.903031	3.23712	889.2	3887.3	92.215	62.88	84.11	.19284E-07	2080	2.08602
110.000	.1647E+02	.72650E+03	3.31832	2.692619	3.03586	1704.7	4739.6	100.342	62.56	84.51	.19851E-06	2025	2.06697
120.000	.1627E+02	.71767E+03	3.07919	2.505368	2.85425	2517.9	5590.1	107.732	62.34	84.94	.13355E-05	1971	2.04861
130.000	.1608E+02	.70894E+03	2.87735	2.337267	2.68856	3330.6	6440.7	114.530	62.23	85.40	.64954E-05	1920	2.03084
140.000	.1588E+02	.70028E+03	2.70484	2.185247	2.53604	4144.9	7293.5	120.845	62.21	85.91	.24543E-04	1871	2.01358
150.000	.1569E+02	.69170E+03	2.55584	2.046917	2.39466	4962.7	8150.3	126.759	62.27	86.46	.75934E-04	1823	1.99676
160.000	.1549E+02	.68319E+03	2.42597	1.920368	2.26283	5785.9	9013.2	132.335	62.43	87.07	.20010E-03	1776	1.98033
170.000	.1530E+02	.67473E+03	2.31189	1.804062	2.13937	6616.1	9883.8	137.622	62.68	87.73	.46279E-03	1730	1.96425
180.000	.1511E+02	.66632E+03	2.21101	1.696740	2.02334	7454.8	10763.8	142.660	63.01	88.45	.96135E-03	1685	1.94847
190.000	.1492E+02	.65795E+03	2.12127	1.597357	1.91399	8303.2	11654.3	147.480	63.43	89.23	.18264E-02	1640	1.93296
200.000	.1473E+02	.64963E+03	2.04104	1.505044	1.81074	9162.2	12556.2	152.110	63.95	90.09	.32188E-02	1597	1.91770
210.000	.1454E+02	.64133E+03	1.96900	1.419064	1.71311	10032.4	13470.4	156.570	64.56	91.02	.53230E-02	1554	1.90266
220.000	.1436E+02	.63306E+03	1.90406	1.338792	1.62073	10914.3	14397.1	160.880	65.26	92.03	.83359E-02	1511	1.88780
230.000	.1417E+02	.62481E+03	1.84532	1.263695	1.53326	11807.8	15336.6	165.054	66.07	93.13	.12455E-01	1470	1.87313
240.000	.1398E+02	.61657E+03	1.79205	1.193313	1.45044	12712.9	16288.9	169.103	66.99	94.32	.17869E-01	1429	1.85861
250.000	.1380E+02	.60835E+03	1.74362	1.127249	1.37205	13629.3	17253.6	173.038	68.02	95.60	.24742E-01	1388	1.84423
260.000	.1361E+02	.60014E+03	1.69949	1.065157	1.29789	14556.8	18230.7	176.867	69.16	96.99	.33212E-01	1349	1.82999
270.000	.1342E+02	.59194E+03	1.65923	1.006736	1.22778	15494.9	19219.7	180.596	70.43	98.48	.43384E-01	1310	1.81588
280.000	.1324E+02	.58374E+03	1.62244	.951720	1.16158	16443.3	20220.5	184.232	71.82	100.08	.55325E-01	1272	1.80188
290.000	.1305E+02	.57555E+03	1.58878	.899876	1.09914	17401.9	21232.8	187.782	73.35	101.79	.69063E-01	1235	1.78799
300.000	.1287E+02	.56737E+03	1.55798	.850998	1.04032	18370.5	22256.6	191.252	75.02	103.62	.84586E-01	1198	1.77420
310.000	.1268E+02	.55919E+03	1.52976	.804901	.98500	19349.2	23292.2	194.648	76.82	105.57	.10185E+00	1163	1.76052
320.000	.1250E+02	.55102E+03	1.50392	.761419	.93304	20338.3	24339.7	197.977	78.75	107.63	.12077E+00	1129	1.74695
330.000	.1231E+02	.54287E+03	1.48025	.720405	.88432	21338.2	25399.7	201.243	80.80	109.78	.14129E+00	1096	1.73349
340.000	.1213E+02	.53473E+03	1.45858	.681721	.83872	22349.0	26472.3	204.447	82.91	111.96	.16334E+00	1064	1.72013
350.000	.1194E+02	.52661E+03	1.43875	.645243	.79609	23370.8	27557.7	207.591	84.93	114.03	.18687E+00	1033	1.70690
360.000	.1176E+02	.51852E+03	1.42061	.610857	.75631	24402.7	28654.9	210.683	86.16	115.29	.21161E+00	1005	1.69378
370.000	.1158E+02	.51046E+03	1.40404	.578454	.71925	25296.8	29616.2	213.314	111.03	140.16	.23779E+00	952	1.68079
380.000	.1139E+02	.50244E+03	1.38892	.547933	.68476	26520.5	30908.8	216.760	97.27	126.37	.26495E+00	943	1.66793
390.000	.1121E+02	.49446E+03	1.37514	.519198	.65273	27705.9	32165.0	220.023	96.19	125.24	.29266E+00	921	1.65522
400.000	.1103E+02	.48653E+03	1.36261	.492158	.62300	28885.5	33417.3	223.193	96.37	125.35	.32084E+00	900	1.64267
410.000	.1085E+02	.47866E+03	1.35123	.466724	.59546	30067.3	34673.5	226.295	97.11	125.97	.34932E+00	878	1.63027
420.000	.1068E+02	.47086E+03	1.34092	.442812	.56997	31254.9	35937.5	229.341	98.13	126.87	.37804E+00	858	1.61804
430.000	.1050E+02	.46313E+03	1.33160	.420340	.54640	32450.6	37211.4	232.338	99.35	127.93	.40681E+00	838	1.60600
440.000	.1033E+02	.45548E+03	1.32320	.399228	.52464	33655.8	38496.5	235.293	100.68	129.09	.43549E+00	820	1.59414
450.000	.1016E+02	.44791E+03	1.31565	.379402	.50456	34870.8	39793.3	238.207	102.08	130.30	.46404E+00	802	1.58247
460.000	.9988E+01	.44044E+03	1.30888	.360787	.48607	36096.4	41102.4	241.084	103.55	131.55	.49234E+00	785	0.00000
470.000	.9821E+01	.43307E+03	1.30284	.343313	.46904	37333.0	42424.3	243.926	105.04	132.81	.52030E+00	770	0.00000
480.000	.9656E+01	.42580E+03	1.29746	.326912	.45338	38580.6	43758.7	246.736	106.56	134.08	.54780E+00	755	0.00000
490.000	.9494E+01	.41865E+03	1.29270	.311520	.43901	39839.2	45105.8	249.513	108.09	135.34	.57483E+00	741	0.00000
500.000	.9334E+01	.41161E+03	1.28850	.297074	.42583	41108.8	46465.4	252.260	109.62	136.59	.60126E+00	728	0.00000
520.000	.9023E+01	.39791E+03	1.28161	.270791	.40274	43680.9	49222.0	257.666	112.69	139.06	.65229E+00	704	0.00000
540.000	.8725E+01	.38473E+03	1.27643	.247629	.38352	46296.2	52027.1	262.959	115.72	141.44	.70064E+00	684	0.00000
560.000	.8438E+01	.37209E+03	1.27265	.227201	.36767	48953.6	54879.2	268.144	118.70	143.75	.74606E+00	667	0.00000
580.000	.8164E+01	.36001E+03	1.26998	.209162	.35475	51652.1	57776.4	273.228	121.63	145.97	.78849E+00	652	0.00000
620.000	.7655E+01	.33757E+03	1.26704	.179080	.33616	57168.5	63700.0	283.102	127.28	150.17	.86448E+00	629	0.00000
660.000	.7197E+01	.31737E+03	1.26601	.155375	.32511	62838.8	69786.1	292.614	132.64	154.10	.92912E+00	614	0.00000
700.000	.6787E+01	.29928E+03	1.26581	.136514	.31952	68658.0	76025.2	301.790	137.72	157.83	.98354E+00	605	0.00000

Table 21. (Continued)

Propane Isobar at P = 60 MPa

Temp. K	Density mol/L	Density kg/m³	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa·m³/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol·K)	C_v J/(mol·K)	C_p J/(mol·K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
90.987	.1693E+02	.74640E+03	4.68569	3.150248	3.55272	98.7	3643.5	83.384	63.57	83.69	.26471E-08	2162	2.10847
100.000	.1675E+02	.73845E+03	4.30927	2.938257	3.34971	830.8	4413.7	91.494	63.18	84.02	.33005E-07	2110	2.09091
110.000	.1655E+02	.72973E+03	3.96434	2.729474	3.14824	1639.2	5265.0	99.612	62.85	84.40	.32076E-06	2056	2.07219
120.000	.1635E+02	.72111E+03	3.67742	2.543493	2.96673	2445.3	6114.4	106.992	62.62	84.82	.20571E-05	2004	2.05416
130.000	.1616E+02	.71258E+03	3.43517	2.376411	2.80138	3250.7	6963.7	113.780	62.50	85.26	.96095E-05	1954	2.03672
140.000	.1597E+02	.70414E+03	3.22803	2.225236	2.64941	4057.4	7814.9	120.084	62.48	85.75	.35078E-04	1906	2.01980
150.000	.1578E+02	.69578E+03	3.04903	2.087624	2.50871	4867.4	8670.0	125.987	62.54	86.28	.10534E-03	1860	2.00334
160.000	.1559E+02	.68750E+03	2.89291	1.961707	2.37768	5682.4	9530.9	131.550	62.69	86.85	.27047E-03	1814	1.98729
170.000	.1540E+02	.67928E+03	2.75568	1.845969	2.25510	6504.3	10399.3	136.823	62.94	87.49	.61141E-03	1770	1.97159
180.000	.1522E+02	.67112E+03	2.63422	1.739170	2.13999	7334.3	11276.7	141.846	63.27	88.17	.12447E-02	1727	1.95622
190.000	.1504E+02	.66302E+03	2.52606	1.640279	2.03159	8173.7	12164.3	146.651	63.69	88.93	.23225E-02	1684	1.94113
200.000	.1485E+02	.65497E+03	2.42925	1.548433	1.92929	9023.4	13063.0	151.264	64.20	89.75	.40278E-02	1642	1.92631
210.000	.1467E+02	.64697E+03	2.34219	1.462904	1.83260	9883.9	13973.5	155.707	64.80	90.64	.65652E-02	1601	1.91172
220.000	.1449E+02	.63901E+03	2.26359	1.383070	1.74111	10755.7	14896.2	159.997	65.51	91.61	.10148E-01	1560	1.89736
230.000	.1431E+02	.63108E+03	2.19237	1.308399	1.65449	11638.7	15831.3	164.151	66.31	92.66	.14985E-01	1520	1.88319
240.000	.1413E+02	.62319E+03	2.12762	1.238433	1.57246	12533.0	16778.6	168.180	67.23	93.81	.21268E-01	1481	1.86920
250.000	.1395E+02	.61533E+03	2.06861	1.172773	1.49477	13438.1	17738.0	172.093	68.25	95.04	.29162E-01	1442	1.85538
260.000	.1378E+02	.60750E+03	2.01469	1.111071	1.42122	14353.9	18709.2	175.898	69.39	96.38	.38799E-01	1404	1.84173
270.000	.1360E+02	.59969E+03	1.96532	1.053024	1.35163	15279.9	19691.9	179.603	70.66	97.82	.50271E-01	1367	1.82822
280.000	.1342E+02	.59192E+03	1.92003	.998364	1.28584	16215.8	20685.7	183.215	72.05	99.37	.63632E-01	1331	1.81486
290.000	.1325E+02	.58416E+03	1.87842	.946852	1.22369	17161.4	21690.7	186.739	73.57	101.03	.78891E-01	1296	1.80163
300.000	.1307E+02	.57644E+03	1.84014	.898277	1.16504	18116.7	22706.6	190.182	75.23	102.81	.96018E-01	1261	1.78854
310.000	.1290E+02	.56874E+03	1.80488	.852451	1.10976	19081.7	23733.8	193.551	77.03	104.70	.11495E+00	1228	1.77558
320.000	.1272E+02	.56108E+03	1.77236	.809204	1.05771	20056.8	24772.4	196.851	78.96	106.71	.13559E+00	1195	1.76275
330.000	.1255E+02	.55344E+03	1.74236	.768382	1.00878	21042.2	25822.9	200.088	81.00	108.81	.15785E+00	1164	1.75006
340.000	.1238E+02	.54585E+03	1.71466	.729844	.96283	22038.4	26885.6	203.262	83.11	110.95	.18167E+00	1133	1.73750
350.000	.1221E+02	.53829E+03	1.68906	.693462	.91973	23045.3	27960.6	206.377	85.12	112.98	.20698E+00	1104	1.72507
360.000	.1204E+02	.53077E+03	1.66540	.659117	.87937	24062.1	29047.0	209.438	86.35	114.19	.23349E+00	1078	1.71279
370.000	.1187E+02	.52330E+03	1.64353	.626700	.84160	24941.0	29997.1	212.038	111.22	139.02	.26147E+00	1025	1.70065
380.000	.1170E+02	.51588E+03	1.62329	.596105	.80631	26149.3	31278.2	215.453	97.45	125.20	.29040E+00	1017	1.68866
390.000	.1153E+02	.50851E+03	1.60458	.567237	.77337	27319.4	32522.5	218.685	96.36	124.03	.31983E+00	997	1.67682
400.000	.1137E+02	.50121E+03	1.58726	.540002	.74265	28483.7	33762.6	221.825	96.55	124.12	.34968E+00	977	1.66514
410.000	.1120E+02	.49397E+03	1.57123	.514315	.71404	29650.3	35006.5	224.897	97.28	124.72	.37977E+00	956	1.65363
420.000	.1104E+02	.48680E+03	1.55641	.490091	.68740	30822.8	36258.0	227.912	98.30	125.61	.41006E+00	937	1.64228
430.000	.1088E+02	.47971E+03	1.54268	.467251	.66262	32003.7	37519.1	230.879	99.51	126.66	.44034E+00	918	1.63112
440.000	.1072E+02	.47270E+03	1.52998	.445719	.63959	33194.2	38791.5	233.804	100.84	127.81	.47049E+00	900	1.62013
450.000	.1056E+02	.46578E+03	1.51822	.425422	.61820	34395.0	40075.5	236.690	102.24	129.02	.50045E+00	883	1.60933
460.000	.1041E+02	.45894E+03	1.50734	.406291	.59834	35606.7	41371.8	239.539	103.70	130.27	.53012E+00	866	0.00000
470.000	.1025E+02	.45220E+03	1.49727	.388258	.57992	36829.8	42680.9	242.354	105.20	131.54	.55941E+00	851	0.00000
480.000	.1010E+02	.44555E+03	1.48794	.371260	.56284	38064.4	44002.7	245.137	106.72	132.83	.58820E+00	836	0.00000
490.000	.9955E+01	.43901E+03	1.47931	.355238	.54702	39310.5	45337.4	247.888	108.25	134.11	.61647E+00	823	0.00000
500.000	.9809E+01	.43256E+03	1.47131	.340132	.53237	40568.2	46684.8	250.611	109.78	135.39	.64410E+00	810	0.00000
520.000	.9524E+01	.42000E+03	1.45704	.312456	.50627	43118.4	49418.0	255.970	112.85	137.92	.69743E+00	786	0.00000
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700.000	.7423E+01	.32735E+03	1.38873	.164921	.39664	68023.0	76105.6	299.896	137.96	157.71	.10436E+01	673	0.00000

Table 21. (Continued)

Propane Isobar at P = 70 MPa

Temp. K	Density mol/L	Density kg/m^3	Z	Isochore Derivative MPa/K	Isotherm Derivative MPa•m^3/kg	Internal Energy J/mol	Enthalpy J/mol	Entropy J/(mol•K)	C_v J/(mol•K)	C_p J/(mol•K)	Fugacity/ Pressure Ratio	Vel. of Sound m/s	Dielectric Constant
91.898	.1697E+02	.74838E+03	5.39817	3.160976	3.64424	123.5	4248.1	83.550	63.81	83.65	.64964E-08	2185	2.11113
100.000	.1681E+02	.74139E+03	5.00758	2.973104	3.46205	776.2	4939.8	90.795	63.45	83.94	.57932E-07	2140	2.09562
110.000	.1662E+02	.73285E+03	4.60536	2.765784	3.26006	1578.2	5790.2	98.905	63.12	84.31	.53157E-06	2086	2.07720
120.000	.1643E+02	.72442E+03	4.27073	2.580924	3.07836	2377.6	6638.6	106.277	62.89	84.71	.32500E-05	2036	2.05948
130.000	.1624E+02	.71608E+03	3.98810	2.414726	2.91309	3176.1	7486.8	113.056	62.76	85.14	.14581E-04	1987	2.04235
140.000	.1605E+02	.70784E+03	3.74637	2.264268	2.76141	3975.9	8336.8	119.350	62.73	85.61	.51419E-04	1941	2.02575
150.000	.1587E+02	.69968E+03	3.53738	2.127251	2.62116	4778.7	9190.4	125.242	62.79	86.12	.14987E-03	1896	2.00962
160.000	.1568E+02	.69161E+03	3.35502	2.001842	2.49071	5586.4	10049.6	130.795	62.94	86.68	.37492E-03	1851	1.99390
170.000	.1550E+02	.68361E+03	3.19462	1.886548	2.36878	6400.6	10916.1	136.056	63.18	87.28	.82834E-03	1808	1.97855
180.000	.1532E+02	.67568E+03	3.05255	1.780146	2.25438	7222.8	11791.3	141.067	63.51	87.95	.16524E-02	1766	1.96354
190.000	.1514E+02	.66781E+03	2.92594	1.681617	2.14672	8054.2	12676.5	145.859	63.92	88.67	.30282E-02	1725	1.94883
200.000	.1497E+02	.66001E+03	2.81251	1.590108	2.04517	8895.6	13572.5	150.458	64.43	89.46	.51675E-02	1685	1.93439
210.000	.1479E+02	.65226E+03	2.71040	1.504894	1.94921	9747.6	14480.1	154.886	65.04	90.33	.83011E-02	1645	1.92021
220.000	.1462E+02	.64456E+03	2.61809	1.425359	1.85843	10610.5	15399.5	159.162	65.74	91.27	.12664E-01	1606	1.90626
230.000	.1444E+02	.63692E+03	2.53432	1.350971	1.77247	11484.5	16330.9	163.300	66.54	92.29	.18478E-01	1567	1.89253
240.000	.1427E+02	.62932E+03	2.45805	1.281273	1.69105	12369.3	17274.3	167.311	67.45	93.40	.25943E-01	1530	1.87900
250.000	.1410E+02	.62176E+03	2.38840	1.215867	1.61390	13264.8	18229.4	171.207	68.48	94.60	.35223E-01	1493	1.86565
260.000	.1393E+02	.61425E+03	2.32463	1.154403	1.54082	14170.7	19196.0	174.994	69.61	95.90	.46440E-01	1456	1.85248
270.000	.1376E+02	.60678E+03	2.26609	1.096576	1.47160	15086.4	20173.6	178.680	70.88	97.30	.59674E-01	1421	1.83949
280.000	.1359E+02	.59935E+03	2.21226	1.042115	1.40609	16011.9	21162.2	182.272	72.26	98.81	.74959E-01	1386	1.82665
290.000	.1342E+02	.59196E+03	2.16264	.990780	1.34412	16946.8	22161.4	185.776	73.79	100.44	.92285E-01	1352	1.81397
300.000	.1326E+02	.58461E+03	2.11684	.942357	1.28555	17891.1	23171.2	189.199	75.44	102.18	.11160E+00	1319	1.80144
310.000	.1309E+02	.57730E+03	2.07449	.896653	1.23023	18844.9	24191.9	192.547	77.24	104.04	.13280E+00	1287	1.78906
320.000	.1293E+02	.57003E+03	2.03529	.853497	1.17805	19808.6	25223.8	195.826	79.16	106.02	.15579E+00	1256	1.77683
330.000	.1276E+02	.56281E+03	1.99894	.812731	1.12887	20782.5	26267.2	199.040	81.20	108.08	.18045E+00	1225	1.76475
340.000	.1260E+02	.55563E+03	1.96520	.774212	1.08256	21767.1	27322.6	202.192	83.31	110.20	.20670E+00	1196	1.75281
350.000	.1244E+02	.54851E+03	1.93386	.737809	1.03901	22762.2	28389.9	205.285	85.32	112.19	.23446E+00	1168	1.74102
360.000	.1228E+02	.54143E+03	1.90470	.703401	.99809	23767.1	29468.3	208.324	86.54	113.38	.26342E+00	1143	1.72938
370.000	.1212E+02	.53441E+03	1.87757	.670878	.95968	24634.2	30410.3	210.902	111.41	138.20	.29388E+00	1091	1.71789
380.000	.1196E+02	.52745E+03	1.85228	.640133	.92365	25830.7	31683.0	214.295	97.63	124.35	.32525E+00	1084	1.70656
390.000	.1180E+02	.52055E+03	1.82871	.611071	.88990	26989.0	32918.9	217.504	96.54	123.18	.35705E+00	1065	1.69538
400.000	.1165E+02	.51372E+03	1.80671	.583598	.85830	28141.6	34150.3	220.622	96.73	123.25	.38920E+00	1045	1.68437
410.000	.1150E+02	.50695E+03	1.78616	.557630	.82873	29296.5	35385.4	223.672	97.45	123.85	.42150E+00	1026	1.67352
420.000	.1134E+02	.50026E+03	1.76696	.533083	.80109	30457.7	36628.1	226.666	98.47	124.73	.45393E+00	1007	1.66284
430.000	.1119E+02	.49365E+03	1.74900	.509880	.77526	31627.3	37880.4	229.613	99.68	125.77	.48627E+00	989	1.65233
440.000	.1105E+02	.48711E+03	1.73218	.487947	.75114	32806.9	39143.9	232.518	101.00	126.92	.51839E+00	971	1.64200
450.000	.1090E+02	.48065E+03	1.71643	.467214	.72863	33997.0	40419.1	235.383	102.41	128.14	.55024E+00	954	1.63184
460.000	.1076E+02	.47429E+03	1.70167	.447614	.70762	35198.3	41706.7	238.213	103.87	129.40	.58171E+00	938	0.00000
470.000	.1061E+02	.46800E+03	1.68782	.429083	.68802	36411.5	43007.2	241.010	105.36	130.69	.61272E+00	923	0.00000
480.000	.1047E+02	.46181E+03	1.67481	.411561	.66975	37636.4	44320.5	243.774	106.88	131.98	.64315E+00	909	0.00000
490.000	.1033E+02	.45571E+03	1.66258	.394991	.65272	38873.2	45646.8	246.509	108.41	133.28	.67298E+00	895	0.00000
500.000	.1020E+02	.44971E+03	1.65109	.379317	.63685	40122.1	46986.0	249.215	109.95	134.58	.70209E+00	882	0.00000
520.000	.9932E+01	.43799E+03	1.63006	.350456	.60829	42655.8	49703.4	254.543	113.02	137.15	.75817E+00	859	0.00000
540.000	.9676E+01	.42667E+03	1.61135	.324595	.58355	45237.2	52471.9	259.767	116.06	139.68	.81114E+00	838	0.00000
560.000	.9428E+01	.41574E+03	1.59462	.301393	.56215	47865.5	55290.3	264.892	119.06	142.15	.86079E+00	819	0.00000
580.000	.9189E+01	.40522E+03	1.57961	.280547	.54368	50539.8	58157.3	269.922	122.00	144.55	.90709E+00	802	0.00000
620.000	.8739E+01	.38538E+03	1.55379	.244876	.51414	56022.3	64032.1	279.715	127.68	149.15	.98976E+00	774	0.00000
660.000	.8325E+01	.36710E+03	1.53230	.215785	.49262	61676.9	70085.5	289.175	133.07	153.48	.10598E+01	753	0.00000
700.000	.7944E+01	.35031E+03	1.51400	.191878	.47734	67495.7	76307.4	298.326	138.17	157.57	.11185E+01	737	0.00000

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Thermophysical properties of propane are tabulated at integral temperatures over the entire range of fluid states from 85 to 700 K along isobars to 70 MPa by using a modified form of the nonanalytic equation of state. These tables, along with a table for the saturated liquid, include values for density, compressibility factor, internal energy, enthalpy, entropy, heat capacities, fugacity, sound velocity, dielectric constant, and isochore and isotherm derivatives. In addition to the equation of state, equations are presented for vapor pressures, orthobaric vapor and liquid densities, ideal gas properties, virial coefficients, dielectric constants, heats of vaporization, melting pressures, and orthobaric liquid specific heats, enthalpies, and entropies. Coefficients were determined by a least squares fit of selected experimental data, including several new sets of data not included in previous propane correlations. Comparisons between experimental and calculated values are given, including those for sound velocities, heat capacities, P-ρ-T data, etc.

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Densities; dielectric constants; enthalpies; entropies; equation of state; fugacities; internal energies; isobars; isochores; isotherms; Joule-Thomson inversion; latent heats of vaporization; melting line; orthobaric densities; propane; specific heats; vapor pressures; velocities of sound.

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