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A new thermodynamic property formulation for argon is presented. The formulation includes a fundamental equation explicit in Helmholtz energy, a vapor pressure equation, and estimating functions for the densities of saturated liquid and vapor states. The coefficients of the fundamental equation and ancillary functions were determined by a weighted least-squares fit of selected experimental data using a statistical procedure to select the terms for the equation most appropriate for the representation of the data. In determining the coefficients of the fundamental equation, multi-property fitting methods were used to represent pressure-density-temperature data, saturated liquid and saturated vapor densities, and velocity of sound measurements. The fundamental equation is valid for liquid and vapor phases except near the critical point. The equation has been developed to conform to the Maxwell criterion for two-phase liquid–vapor equilibrium states. Comparisons between the data used to determine the fundamental equation and values calculated from the formulation are given to verify the accuracy of the fundamental equation. The formulation given here may be used to calculate pressures and densities generally with an accuracy of $\pm 0.1\%$, heat capacities within $\pm 3\%$, and velocity of sound within $\pm 2\%$ except near the critical point. Tables of thermodynamic properties of argon calculated with the formulation presented here are given for fluid states within the range of validity of the correlation.

Key words: argon; density; equation of state; enthalpy; entropy; heat capacity; pressure; property tables; thermodynamic properties; velocity of sound.

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Nomenclature

Symbol	Physical quantity	Unit
T	Temperature	K
P	Pressure	MPa
ρ	Density	mol/dm^3
v	Molar volume	dm^3/mol
Z	Compressibility factor, $Z = P/\rho RT$	
U	Internal energy	J/mol
A	Helmholtz energy	J/mol
G	Gibbs energy	J/mol
H	Enthalpy	J/mol
S	Entropy	J/(mol K)
C_p	Isobaric heat capacity	J/(mol K)
C_v	Isochoric heat capacity	J/(mol K)
C_σ	Saturation heat capacity	J/(mol K)
γ	Heat capacity ratio, $\gamma = C_p/C_v$	
W	Velocity of sound	m/s
B	Second virial coefficient	dm^3/mol
C	Third virial coefficient	(dm^3/mol)^2
D	Fourth virial coefficient	(dm^3/mol)^3
$(\partial P/\partial \rho)_T$	Isotherm derivative	dm^3 MPa/mol
$(\partial P/\partial T)_\rho$	Isochore derivative	MPa/K
R	Gas constant (8.314 34)	J/(mol K)
M	Molecular weight of argon (39.948)	
α	Reduced Helmholtz energy, $\alpha = A/RT$	
τ,Θ	Reduced temperature, $\tau = T_c/T$ (or as noted in the text)	
δ	Reduced density, $\delta = \rho/\rho_c$	
POS	Points off scale	

Superscript	
°	Ideal gas property

Subscripts	
0	Reference state property
c	Critical-point property
σ	Property at saturation
tp	Triple point property
eqn	Calculated using an equation
data	Experimental value
max	Calculated from Eq. (10) using the Maxwell Criteria
nbp	Normal boiling point
SV	Saturated vapor
SL	Saturated liquid
tpv	Triple point (vapor)
tpl	Triple point (liquid)

Additional abbreviations	
exp	Exponential function
Δ	Difference

Fixed Points for Argon

Symbol	Quantity	Value
T_c	Critical temperature	150.6633 K
P_c	Critical pressure	4.860 MPa
ρ_c	Critical density	13.29 mol/dm^3
T_{tp}	Triple point temperature	83.804 K
P_{tp}	Triple point pressure	0.068 95 MPa
ρ_{tpv}	Triple point density (vapor)	0.101 52 mol/dm^3
ρ_{tpl}	Triple point density (liquid)	35.475 mol/dm^3
T_{nbp}	Normal boiling point temperature	87.293 K
ρ_{nbpv}	Normal boiling density (vapor)	0.145 mol/dm^3
ρ_{nbpl}	Normal boiling density (liquid)	34.95 mol/dm^3
T_0	Reference temperature	298.15 K
H_0°	Reference enthalpy at T_0	6197 J/mol
S_0°	Reference entropy at T_0	154.732 (J/mol K)
P_0	Reference pressure	0.101 325 MPa

1. Introduction

Whenever the subject of a new correlation for thermodynamic properties of argon is mentioned, it is usually received with a general lack of enthusiasm. The molecular simplicity and chemically inert behavior of argon, coupled with its widespread commercial use, suggest that there should be little uncertainty about its thermodynamic behavior. Indeed, argon is often used as a calibration or test fluid for a new apparatus for thermophysical property measurement. Although there is such a large quantity of measured thermophysical property data of acceptable accuracy, in certain regions of the thermodynamic surface the data are discordant. The regions where discrepancies occur in alternate data sets are identified in Sec. 6.

This work has been motivated primarily by the need for an accurate fundamental equation as a companion to those published for nitrogen[1] and oxygen,[2] and as part of a continuing effort in the development of an accurate wide-range thermodynamic property formulation for air. The fundamental equation and associated fitting methods and property calculation procedures applied to other fluids have been described in previous publications.[1-4] Because the procedures followed for argon are generally the same as those used for these other fluids, details of the equation development and of property calculation methods are not repeated here.

This work is intended to supersede the previous work by Stewart *et al*,[5] and it represents an improvement in accuracy over those correlations published prior to 1981. Comparisons of thermodynamic property values calculated using this formulation with experimental measurements are given to substantiate the estimated accuracies of the various calculated properties.

Throughout this manuscript, the word "data" is used to refer to experimental measurements. The term "property formulation" refers to the set of equations required for the calculation of thermodynamic properties of argon. The term "fundamental equation" is used here to describe the equation for Helmholtz energy, $A = A(\rho,T)$, which is presented in a dimensionless form for this property formulation. This equation differs from the conventional pressure-explicit equation of state by the inclusion of calorimetric (ideal-gas heat capacity) information and by the ability to represent all thermodynamic property values by mathematical differentiation. The fundamental equation form has some advantages over pressure-explicit equations of state which require lengthy integrations for system analysis work, and appears to have some advantages in correlating properties near the critical point. The fundamental equation is readily adaptable to iterative calculations of properties, including the definition of liquid–vapor coexistence states using the Maxwell criterion.

A fundamental equation for argon is presented which is explicit in dimensionless Helmholtz energy with independent variables of reduced temperature and reduced density. The data used to determine the coefficients of the fundamental equation include pressure-density-temperature (P-ρ-T) data, saturated liquid and vapor density pairs with vapor pressure to define the conditions for liquid–vapor equilibrium, and velocity of sound data.

In correlating the data used to determine the fundamental equation, independent ancillary equations were used for the vapor pressure, melting line, orthobaric densities, and the second and third virial coefficients. These ancillary equations may be used to calculate approximate values for properties. However, to ensure thermodynamic consistency, all the thermodynamic functions should be obtained directly from the fundamental equation.

1.1. Prior Correlations of Thermodynamic Properties of Argon

An earlier compilation of the thermodynamic properties of argon is the international table edited and compiled by Angus *et al*.[6] This book was published in 1972 and is based on the compilation by Gosman, McCarty, and Hust,[7] published in 1969, and the compilations by Vasserman and Rabinovich,[8] and by Vasserman, Kazavchinskii, and Rabinovich,[9] published in 1968 and 1966, respectively.

The correlation by Stewart *et al*.,[5] published in 1982, utilized a fundamental equation based upon selected data, some of which were published after the previous correlations had been completed. Additional new data have been included in the data set considered in the study reported here. Among the P-ρ-T data investigated in this work that were not used in previous correlations are those of Albuquerque *et al*.,[10] Barreiros,[11] Barreiros *et al*.,[12] da Ponte *et al*.,[13] and Steele.[14] Although these data were not all used in the correlation given here, they represent a significant body of data (454 data points) which were not available for use in previous correlations.

1.2. The Fundamental Equation for Argon

The fundamental equation used in this work is of the same form as that used in previous correlations of thermodynamic properties of ethylene, nitrogen, and oxygen. The general form of the equation is based upon the expression for the Helmholtz energy

$$A(\rho,T) = A^{\circ}(\rho,T) + \overline{A}(\rho,T), \tag{1}$$

where $A^{\circ}(\rho,T)$ is the ideal gas contribution to the Helmholtz energy and $\overline{A}(\rho,T)$ is the contribution of the compressibility of the real fluid. The reduced form of the fundamental equation

$$\alpha(\delta,\tau) = \alpha^{\circ}(\delta,\tau) + \bar{\alpha}(\delta,\tau), \tag{2}$$

where $\tau = T_c/T$, $\delta = \rho/\rho_c$, $\alpha^{\circ} = A^{\circ}/RT$ and $\bar{\alpha} = \overline{A}/RT$ is used in this work.

A 95 term comprehensive function was specified as the "bank of terms" from which the selection algorithm would determine the optimum set of coefficients for the fundamental equation determined by a weighted least-squares fit to selected data for argon. The coefficients for the fundamental equation were determined by a least-squares fit to 2117 weighted experimental values including 1527 pressure-density-temperature data points, 133 coexistence density data values, and 457 velocity of sound data points. The coexistence density data values (saturated liquid density, saturated vapor density and vapor pressure) were calculated at

temperature intervals of 0.5 K from the ancillary equations described below. The equation was constrained at the critical point to provide $(\partial P/\partial\rho)_T = 0$ and $(\partial^2 P/\partial\rho^2)_T = 0$ at the critical temperature and pressure selected for argon (T_c = 150.6633 K, P_c = 4.860 MPa, and ρ_c = 13.29 mol/dm^3).

In this work comparisons of calculated properties to experimental data are used to illustrate the validity and the accuracy of the correlation. In the comparisons given throughout this paper, percentage deviations are defined as

$$[(X_{\text{data}} - X_{\text{eqn}})/(X_{\text{data}})]100, \quad (3)$$

where X is the property compared. Detailed comparisons of calculated thermodynamic properties to experimental data are given in Sec. 6.

In addition to the fundamental equation, ancillary functions including a vapor pressure equation, equations for the density of the saturated liquid and saturated vapor and equations for the second and third virial coefficients are included in this paper. The equations for saturated liquid and saturated vapor density are intended for use as approximating functions for iterative calculations. For thermodynamic consistency with other states, the saturation densities should be calculated by applying phase equilibrium criteria to the fundamental equation.

The fundamental equation may be used for the calculation of accurate tables of thermodynamic properties of argon within its range of applicability. The fundamental equation conforms closely to the Maxwell criterion for liquid-vapor phase equilibrium. The vapor pressure and the density of the coexistence states may be calculated with acceptable accuracy using the fundamental equation. However, vapor pressures from the fundamental equation are closely approximated by the vapor pressure equation, and the thermodynamic inconsistency is small when the vapor pressure equation is used to identify the coexistence states.

In the critical region, the fundamental equation for argon may be used for the calculation of pressure with a small reduction in accuracy compared to the remainder of the P-ρ-T surface. However, since the functions for the calculation of heat capacities, C_v and C_p, and velocity of sound include the second derivatives of the fundamental equation, large errors can occur in the calculation of these properties.

2. Experimental Data for Argon

The experimental data for argon are summarized in this section. These data were used in the development of the thermodynamic property formulation reported here. Some of the points in the selected data sets were not used in determining the fundamental equation. However, all the data in the selected sets are compared to values calculated with the fundamental equation in Sec. 6. Literature sources for the property data with temperature, pressure, and density ranges are tabulated. The data for the liquid–vapor coexistence states are summarized in Sec. 4.

2.1. P-ρ-T Data

The experimental P-ρ-T data for argon are summarized in Table 1. The distribution of the P-ρ-T data used in the determination of the fundamental equation is shown in Figs. 1(a) and 2(a). The distribution of other P-ρ-T data are illustrated in Figs. 1(b) and 2(b). Data in the critical region and the data from Lecocq[31] for temperatures from 573 to 1223 K and not included in these figures. Most of the data published before 1940 included in Table 1 are of historical interest only and have also been excluded from the figures.

The sixth column in Table 1 lists the average density deviations of the data sets. The deviations are defined by Eq. (3) where Eq. (10) was used to calculate the density for the values of X_{eqn}. These deviations are discussed in Sec. 6.

2.2. Heat Capacity Data

The 82 experimental values of the isochoric heat capacity data by Gladun[15] for the liquid phase from 88 to 151 K at pressures from 2 to 12 MPa are used in this work as an indication of the accuracy of the fundamental equation. The 59 points by Anisimov *et al.*[16] are all at a density of 13.29 mol/dm^3 at temperatures between 151 and 263 K. No experimental values of isochoric heat capacity were used in determining the coefficients of the fundamental equation. Figure 3 illustrates the experimental data for the isochoric heat capacity for argon, and Table 2 is a summary of the available data sources.

2.3. Velocity of Sound Data

There is a large set of available data for the velocity of sound of argon. The recent data are summarized in Table 3 and illustrated in Fig. 4. The available data include values for saturated liquid and saturated vapor states, and some of these values were selected for inclusion in the data set used for determining the coefficients of the fundamental equation.

2.4. Virial Coefficients

Values of the second and third virial coefficient for argon are given in several sources summarized in Table 4. Selected values of the second virial coefficients by Levelt Sengers *et al.*[30] were used to verify the accuracy of calculated properties at low densities.

3. Fixed Points and Reference Values for Argon

The molecular weight of argon used in this work is 39.948 from International Union of Pure and Applied Chemistry (IUPAC).[64] The enthalpy and entropy datum values from Committee on Data for Science and Technology (CODATA)[65] are the following:

$H°(298.15\ \text{K}) - H°(0\ \text{K}) = 6197\ (\text{J/mol})$,

[$H°$ (0 K) was assigned as 0.0],

$S°$ (298.15 K, $P_0 = 0.101\,325$ MPa) = 154.732 (J/mol K).

The triple point temperature and pressure from Gosman *et al.*[7] are $T_{\text{tp}} = 83.804$ K and $P_{\text{tp}} = 0.068\,95$ MPa. The normal boiling point temperature is 87.293 K.

The critical point temperature and density used in this

Table 1. Summary of P-ρ-T data for argon

Source	Date	Range of Values: Temperature (K)	Range of Values: Pressure (MPa)	Number of Data Points	Average Density Deviation
Albuquerque et al.[10]	1980	94-147	0.7-89.1	80	0.196
Amagat[17]	1888				a
Barreiros[11]	1981	94-119	5.5-146.7	50	0.074
Barreiros et al.[12]	1982	129-147	5.6-142.2	73	0.155
Baxter & Starkweather[18]	1929	273 only	0.3-.10	3	0.006
Blancett et al.[19]	1970	223,272,323	.03-71.4	74	0.027
Bridgman[20]	1935	101-328	69-1471	78	a
Bridgman[21]	1924	328 only	196-1471	15	a
Cheng[22]	1972	200-308	29-1066	268	0.192
Crain & Sonntag[23]	1966	143-273	0.2-52.2	78	0.072
Crawford & Daniels[24]	1969	95-210	20-646	270	0.444[d]
*da Ponte et al.[13]	1981	110-120	1.3-137.6	99	0.042
*Gielen et al.[25]	1973	149-153	4.6-5.3	53	b
Grigor & Steele[26]	1968	(graphical data only)			
Steele[14]	1980	144-156	3-6	152	b
Holborn & Otto[27]	1924	323-373	2-7.5	14	a
Holborn & Otto[28]	1925	90-673	0-1	88	a
Holborn & Schultz[29]	1915	273-473	.22-1	43	a
Kamerlingh Onnes and Crommelin[30]	1910	123	1.4-6.3	135	a
*Lecocq[31]	1960	573-1223	2.1-93.3	66	0.066
Lippold[32]	1969	97-149	9.8-98.1	69	0.337[d]

Table 1. Summary of P-ρ-T data for argon-Continued

Source	Date	Range of Values: Temperature (K)	Range of Values: Pressure (MPa)	Number of Data Points	Average Density Deviation[a]
*Michels et al.[33]	1958	118-248	.6-104.2	288	0.086[c]
*Michels et al.[34]	1949	273-423	1.9-292.7	355	0.019
Morris & Wylie[35]	1980	253-308	200-480	equations	
Polyakov & Tsiklis[36]	1970	373-673	152-1013	68	1.247[d]
Pope[37]	1972	101-138	1-2.6	37	0.082
*Provine & Canfield[38]	1971	143,158,183	.3-6.7	62	0.096
Rabinovich et al.[39]	1970	287-774	10-55	61	0.822[d]
*Robertson et al.[40]	1969	308-673	119-1013	290	0.055
Rogovaya & Kaganer[41]	1961	90-248	2.5-20	74	0.238[d]
Sorokin & Blagoi[42]	1970	90-129	0.1-48.8	48	0.456[d]
Stishov & Fedosimov[43]	1971	198-323	614-1535	9	0.716[d]
*Streett & Staveley[44]	1969	101-143	0.7-68.9	140	0.077
Townsend[45]	1956	298,323	0.17-13.6	36	0.029
Van Itterbeek & Verbeke[46]	1960	86-89	1.3-14.7	50	0.146[d]
Van Itterbeek et al.[47]	1963	90-148	1.1-29.3	116	0.244[d]
Van Witzenburg & Stryland[48]	1968	96-154	7.5-198	112	0.275[d]
*Verbeke et al.[49]	1969	87-202	0.2-15.2	321	0.288[c]

* Selected data used in determining Eq. (10).
a Data of historical interest only.
b Data are in the critical region or adjacent to the critical region.
c Average deviation excluding data in the critical region.
d Data with large systematic differences from the selected data.

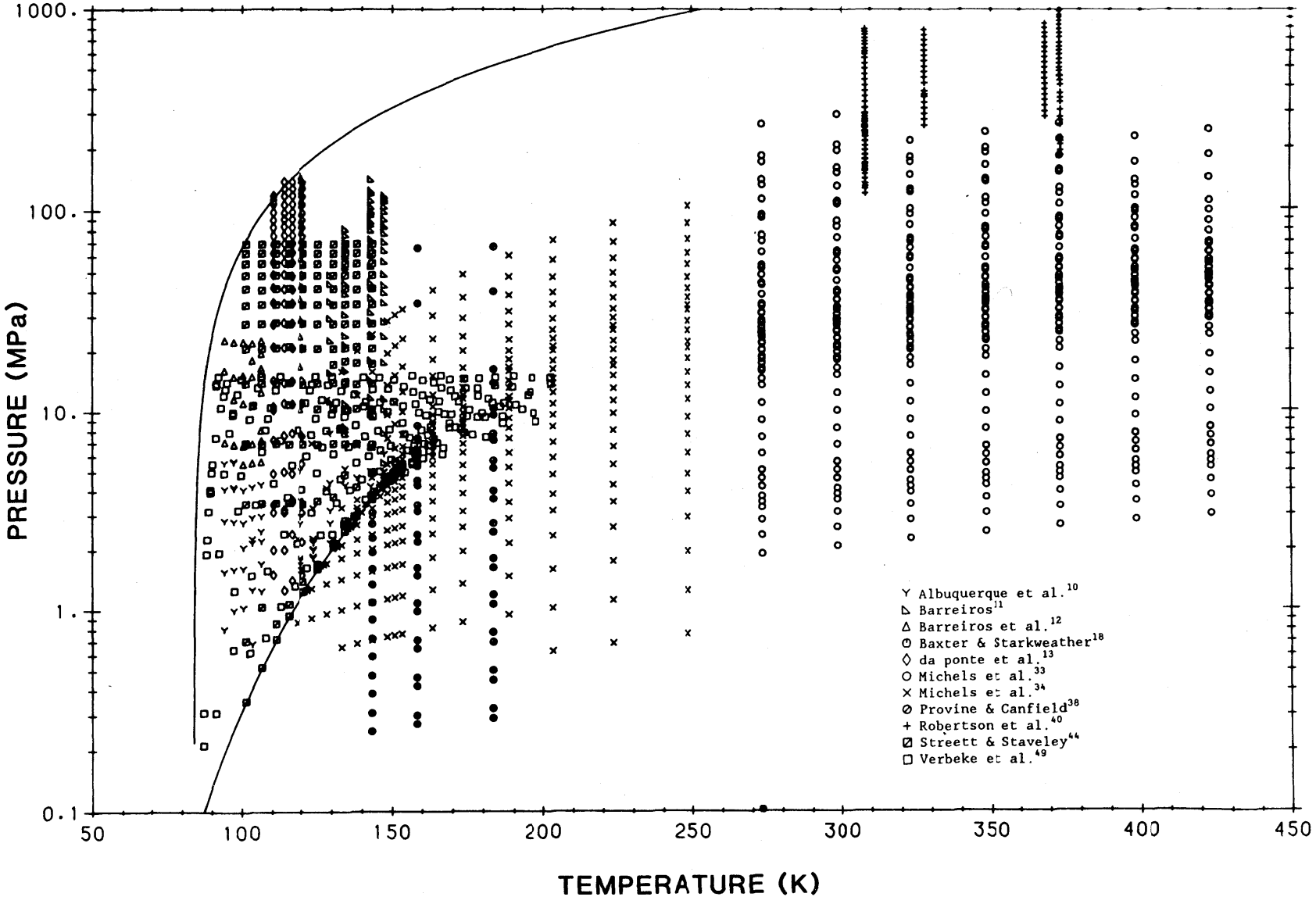

FIG. 1. P-ρ-T data for argon (P-T coordinates).

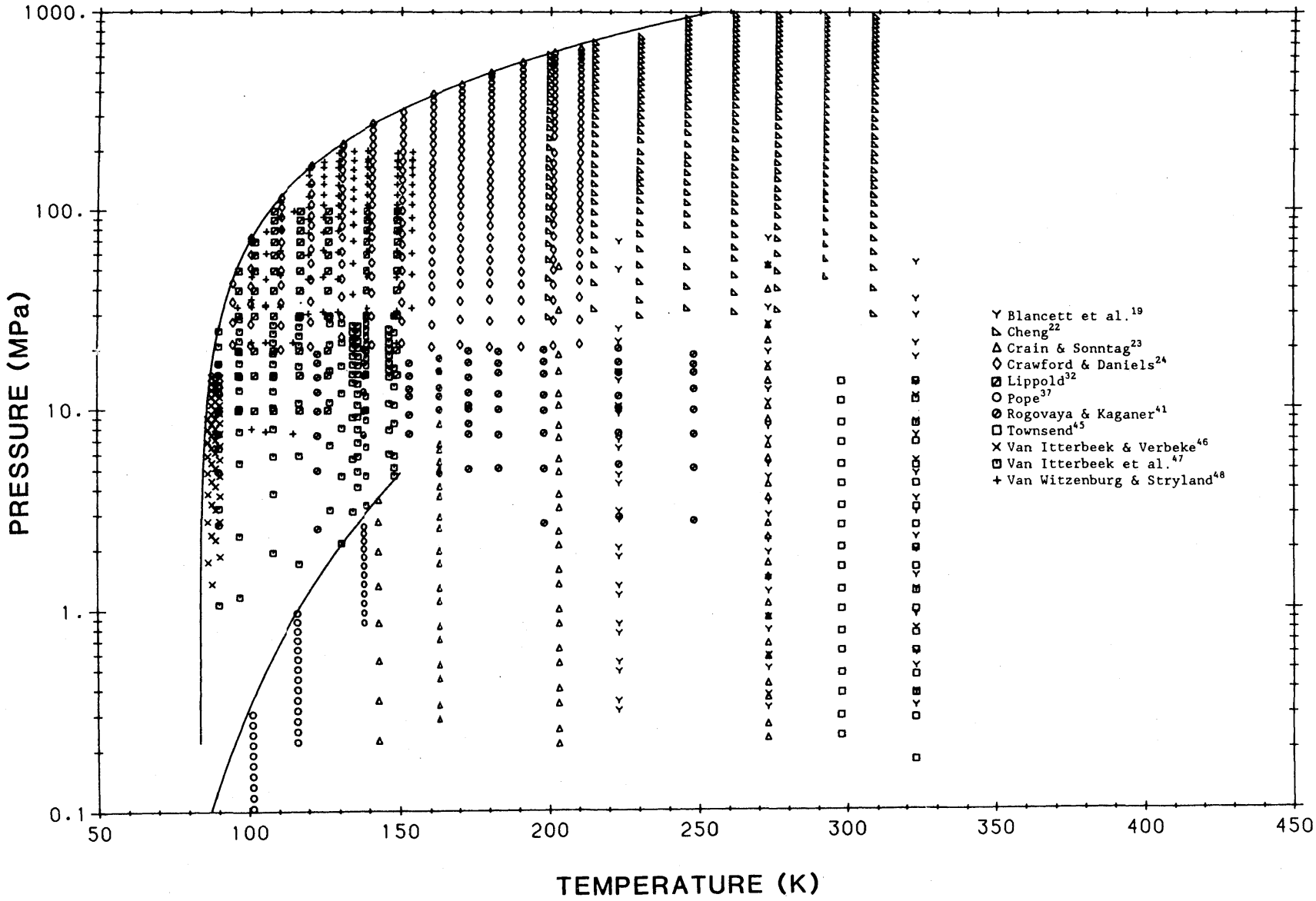

FIG. 1. P-ρ-T data for argon (P-T coordinates)-Continued.

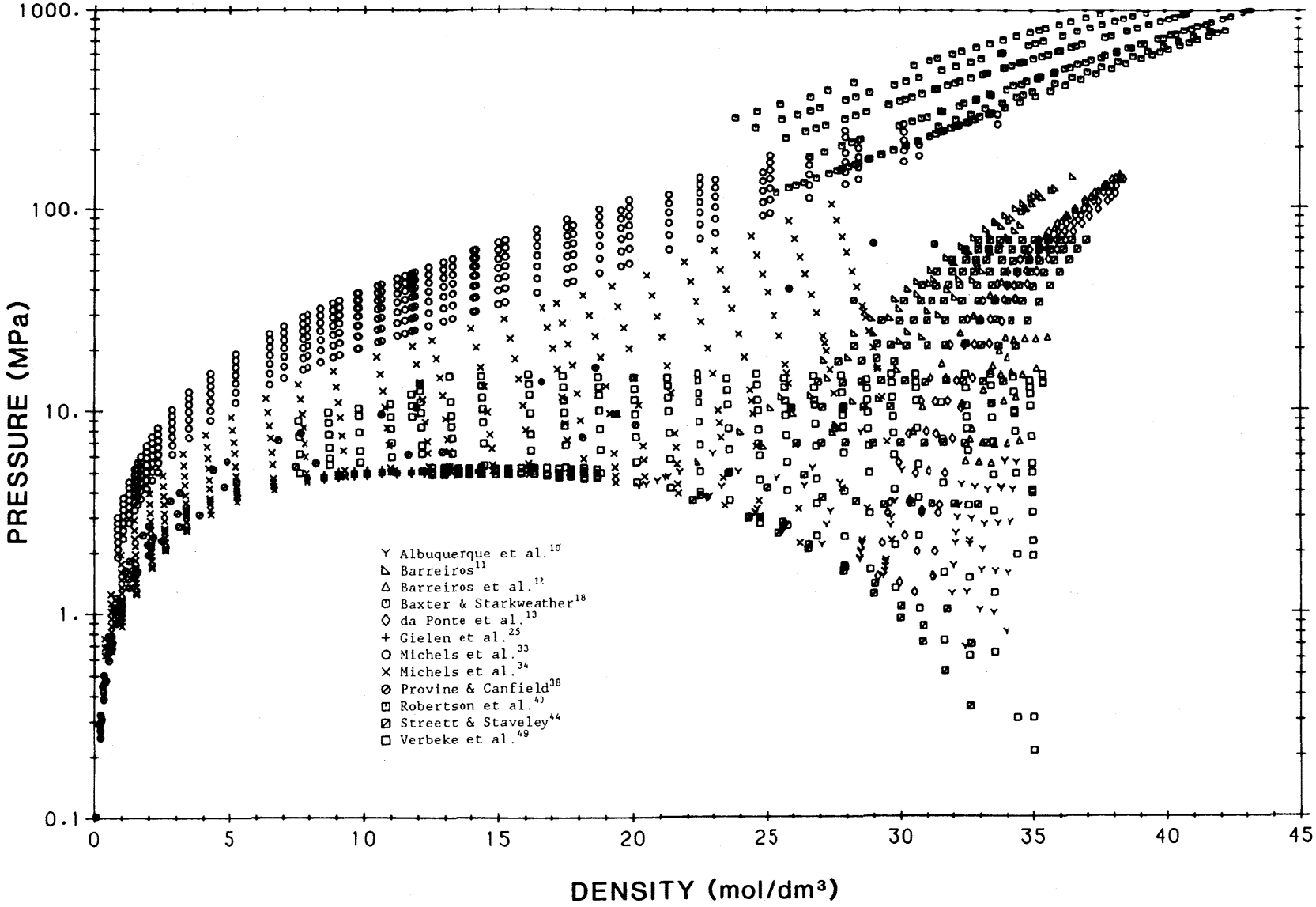

FIG. 2. P-ρ-T data for argon (P-ρ coordinates).

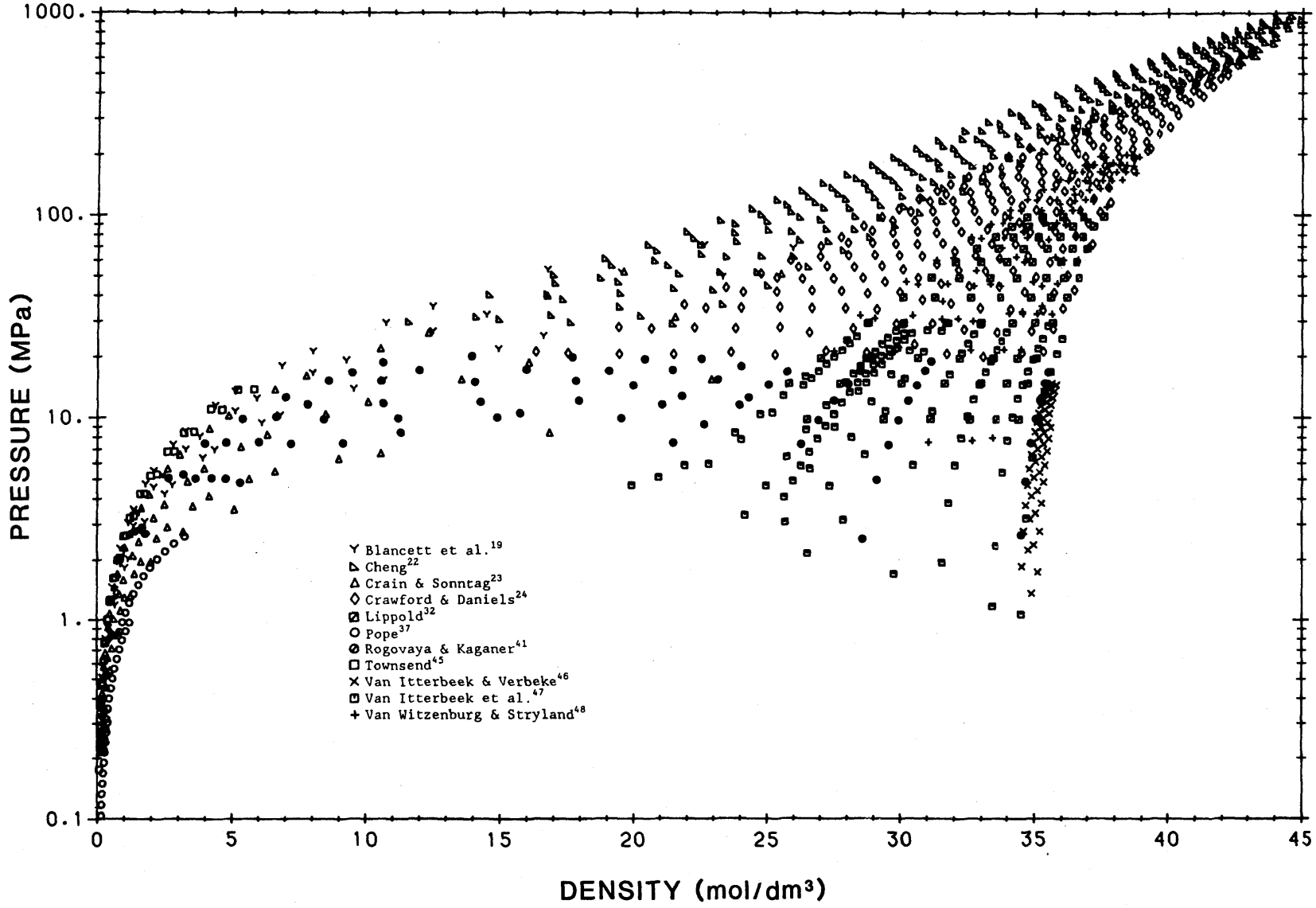

FIG. 2. P-ρ-T data for argon (P-ρ coordinetes)-Continued.

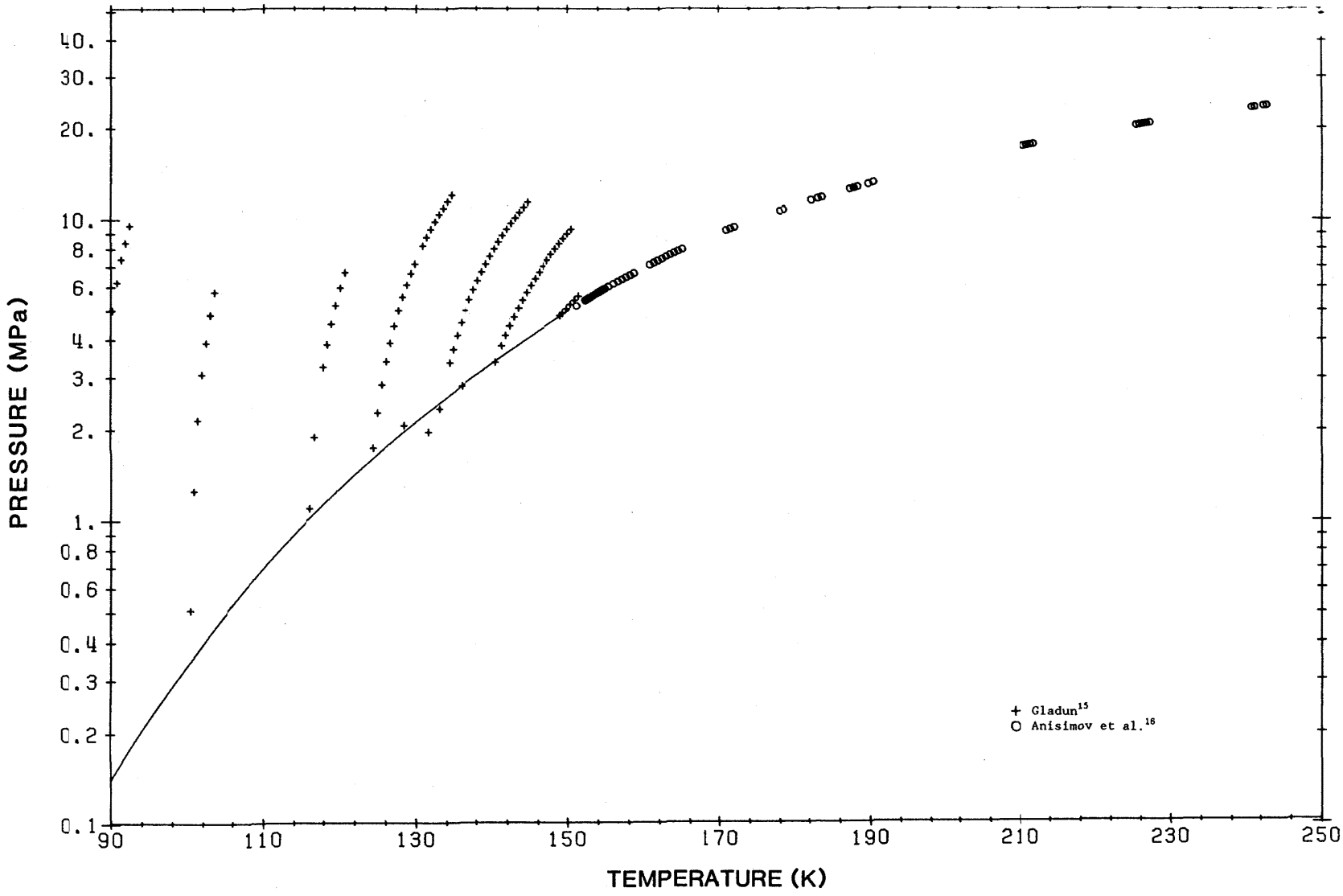

FIG. 3.Isochoric heat capacity data for argon.

Table 2. Summary of isochoric heat capacity data for argon

Source	Date	Range of Values		Number of Data Points
		Temperature (K)	Density (Mol/dm^3)	
Anisimov et al.[16]	1975	151-263	13.29	59
Gladun[15]	1971	88-151	18.47-34.88	82

Table 3. Summary of velocity of sound data for argon

Source	Date	Range of Values		Number of Data Points
		Temperature (K)	Pressure (MPa)	
Dobbs & Finegold[52]	1960	80-97	0.1-13.7	27
Lim & Aziz[53]	1967	84-88	0.07-0.11	19
Streett & Costantino[54]	1974	90-140	0.3-51.6	157
Thoen et al.[55]	1969	100-150	0.3-51.6	158
Thoen et al.[56] (including saturated liquid & vapor values)	1971	121-169	0.3-6.9	158
Van Dael et al.[57]	1966	85-149	0.08-4.5	27

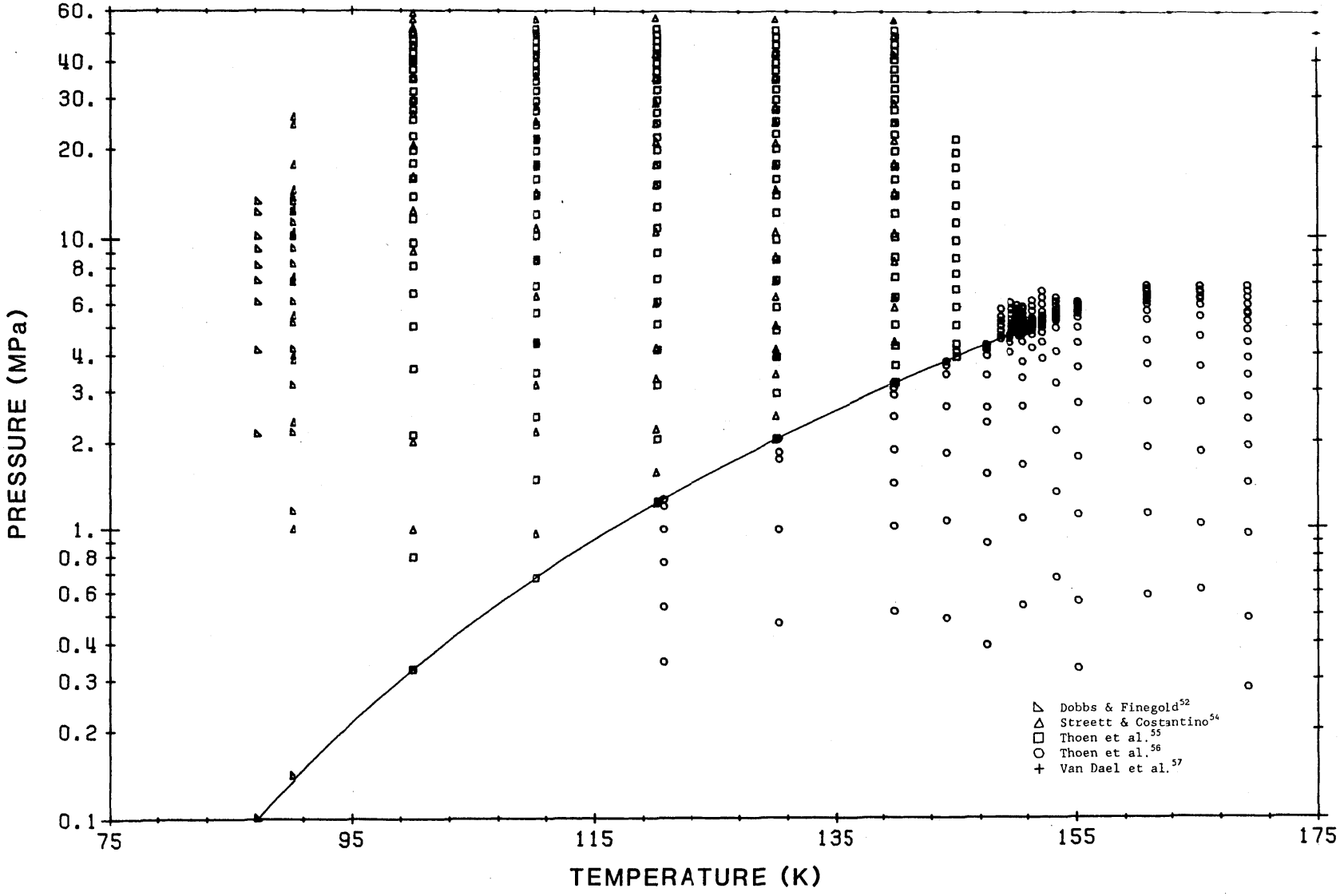

FIG. 4. Velocity of sound data for argon.

Table 4. Summary of virial coefficient data for argon

Source	Date	Range of Temperature (K)	Number of Data Points B(T)	C(T)
Blancett et al.[19]	1970	223-323	3	3
Brewer & Vaughn[58]	1969	123-323	9	9
Byrne et al.[59]	1968	84-271	17	
Crain & Sonntag[23]	1966	143-273	4	4
Fender & Halsey[60]	1962	85-124	11	
Michels et al.[33]	1958	133-248	12	12
Pope et al.[61]	1973	101-138	3	3
Provine & Canfield[38]	1971	143-183	3	3
Schramm & Hebgen[62]	1974	77-90	3	
Levelt Sengers et al.[50]	1972	80-1100[a]	63	31
Weir et al.[63]	1967	80-190	17	16
Whalley et al.[51]	1953	273-873[b]	9	6

[a]for C(T) temperature range is 80-600 K
[b]for C(T) temperature range is 273-573 K

formulation from Voronel *et al.*[66] are $T_c = 150.6633 \pm 0.01$ K and $\rho_c = 13.29 \pm 0.03$ mol/dm^3. The uncertainty of T_c is given by Voronel *et al.*[66] as ± 0.001 K, based on the scale of the thermometer used in the experiment. However, they identify the uncertainty of their thermometer scale as ± 0.01 K as compared to the thermodynamic scale. The uncertainty of T_c is therefore given as ± 0.01 K. The uncertainty of ρ_c was estimated by Voronel *et al.*[66] from an evaluation of the coexistence density data near the critical point and was confirmed in this work. The pressure at the critical point, $P_c = 4.860 \pm 0.005$ MPa, was determined by an extrapolation of the vapor pressure correlation from Wagner[67] to the critical temperature.

The ideal-gas heat capacity for argon is represented by the relationship $C_p^\circ = (5/2)R$, where R is the gas constant in appropriate units. Other ideal-gas functions may be derived from the well known relations among the various properties.

4. Ancillary Equations and Coexistence Properties for Argon

4.1. Vapor Pressure

The vapor pressure correlation by Wagner[67] is a thorough study and the vapor pressure equation reported by Wagner[67] is an accurate representation of the published vapor pressure data. The correlation by Wagner[67] was accepted for this work. However, it was necessary to adjust the coefficients of Wagner's[67] equation to conform to the selected critical temperature of 150.6633 K. The vapor pressure data for argon have been thoroughly discussed and evaluated by Wagner,[67] and this evaluation is not repeated here. The vapor pressure equation for argon is

$$\ln(P/P_c) = (T_c/T)(N_1\tau + N_2\tau^{1.5} + N_3\tau^3 + N_4\tau^6), \quad (4)$$

Table 5. Coefficients for vapor equations for argon, Eq. (4)

N_1	= -5.904188529
N_2	= 1.125495907
N_3	= -0.7632579126
N_4	= -1.697334376

where $\tau = (1 - T/T_c)$, P is the vapor pressure, T is the saturation temperature, and $P_c = 4.860$ MPa and $T_c = 150.6633$ K are the critical pressure and temperature, respectively. The coefficients for Eq. (4) are given in Table 5.

4.2 Virial Coefficients

Table 4 summarizes the data for the second and third virial coefficients for argon. The equation for the second virial coefficient, $B(T)$ is

$$B(T) = N_1 + N_2 T^{-5/4} + N_3 T^{-3/2} + N_4 T^{-11/2} + N_5 T^{-23/4}. \quad (5)$$

The equation for the third virial coefficient $C(T)$ is

$$C(T) = N_1 T^{-11/4} + N_2 T^{-7/2} + N_3 T^{-15/4} + N_4 T^{-9/2} + N_5 T^{-21/4} + N_6 T^{-11/2}. \quad (6)$$

The coefficients for Eqs. (5) and (6) are given in Table 6. Figures 5 and 6 illustrate calculated values of the second and third virial coefficients, experimental values and values from the correlation by Levelt Sengers *et al.*[50] Values from Eq. (6) are not reliable below 100 K. Table 7 lists values for the second and third virial coefficients calculated from Eqs. (5) and (6), and values from the correlation by Levelt Sengers *et al.*[50] Values of $B(T)$ calculated with the fundamental equation, Eq. (10), are also included in Table 7 (see Sect. 6.4).

4.3. Saturated Liquid Density

Table 8 is a summary of the saturated liquid density data for argon. The saturated liquid density for argon is given by

$$(\rho_{SL}/\rho_c) = 1 + N_1\tau^{2/3} + N_2\tau + N_3\tau^{4/3} + N_4 \ln\theta + N_5\tau^{0.325}, \quad (7)$$

where $\tau = (T_c - T)/T$, $\theta = T/T_c$, ρ_{SL} is the saturated liquid density, T is the saturation temperature, and ρ_c and T_c are the critical density and temperature, respectively. The coefficients for Eq. (7) are given in Table 9.

Figure 7 illustrates comparisons of calculated values of saturated liquid density from Eq. (7) with experimental data. The data points from Voronel, *et al.*[66] for temperatures above 150 K have been omitted for clarity. The deviations of the 59 data points from Voronel, *et al.*[66] for temperatures from 147.7 to 150.6633 K have an average deviation of 0.25%. The 18 liquid data points in series 5 of the data from Voronel *et al.*,[66] which were used in this work for defining the liquid saturation states in the critical region, have an average deviation from Eq. (7) of 0.12%.

A correction was applied to the P-ρ-T data reported by Streett and Staveley.[44] In their experiment the volume of the sample cell was obtained using saturation density measurements from Terry *et al.*[72] The density values from Streett and Staveley[44] were corrected by the differences between the density of the data of Terry *et al.*[72] and the saturation densities from Eq. (7). As a consequence of this correction, the data from Streett and Staveley[44] appear to be more concordant with the data in adjacent regions.

The lack of concordance in the saturated liquid density data as illustrated in Fig. 7 emphasizes a need for additional measurements for both the saturated liquid densities and the density of the liquid in the single phase near the liquid phase boundary between 120 K and the critical temperature. In fitting Eq. (7), emphasis was given to the data of Haynes.[70]

Table 6. Coefficients for equation for B(T) and C(T) for argon Eqs. (5) and (6), respectively

Second virial coefficients, Eq. (5)	
N_1	= 0.2866924170 x 10^{-1}
N_2	= -0.3554066483 x 10^{2}
N_3	= -0.8003312290 x 10^{2}
N_4	= -0.1388893486 x 10^{11}
N_5	= 0.3663978029 x 10^{11}
Third virial coefficients, Eq. (6)	
N_1	= 0.2850918168 x 10^{6}
N_2	= -0.1472740048 x 10^{9}
N_3	= 0.6616737314 x 10^{9}
N_4	= -0.1262999051 x 10^{11}
N_5	= 0.3794222032 x 10^{12}
N_6	= -0.6465333262 x 10^{12}

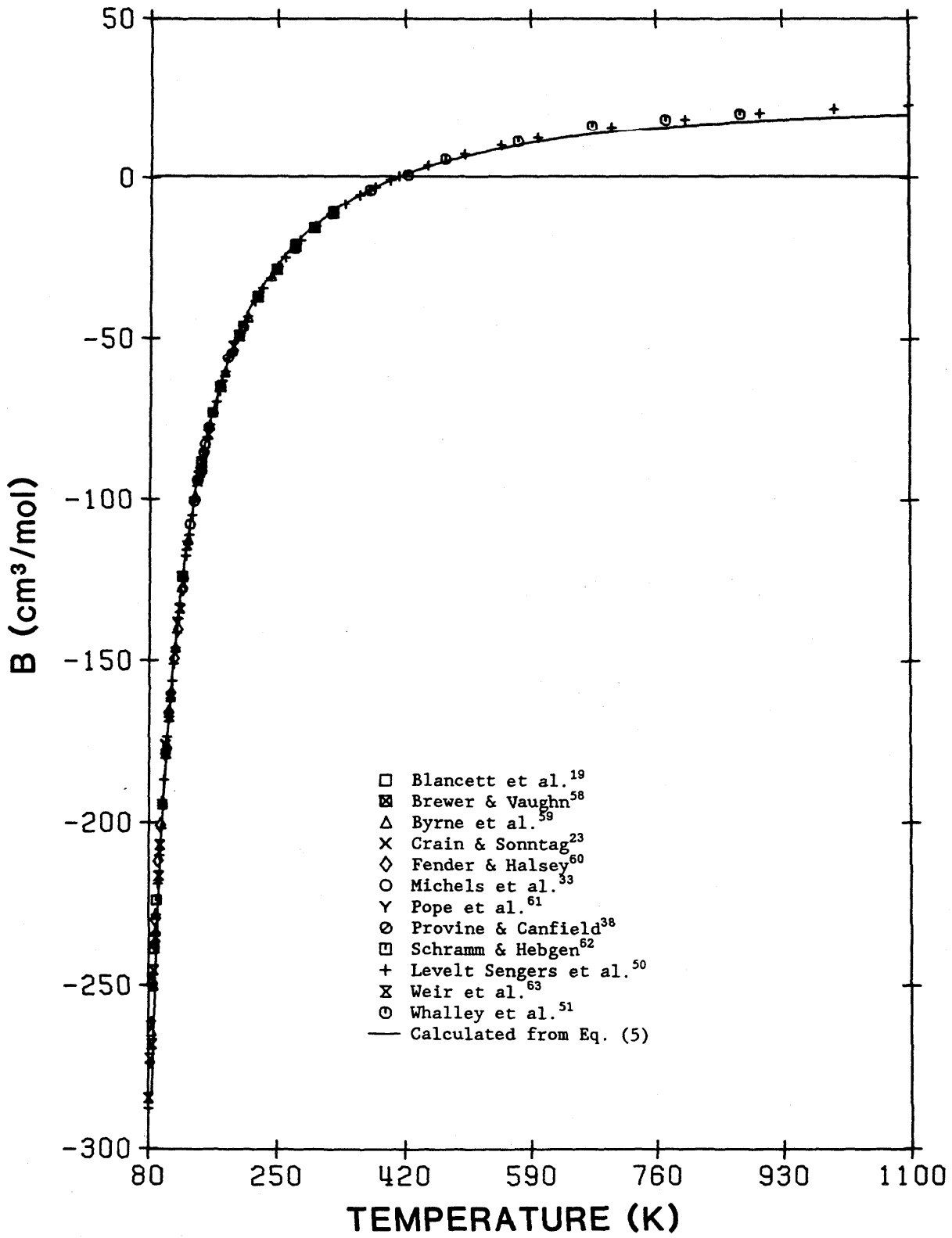

FIG. 5.Second virial coefficients for argon.

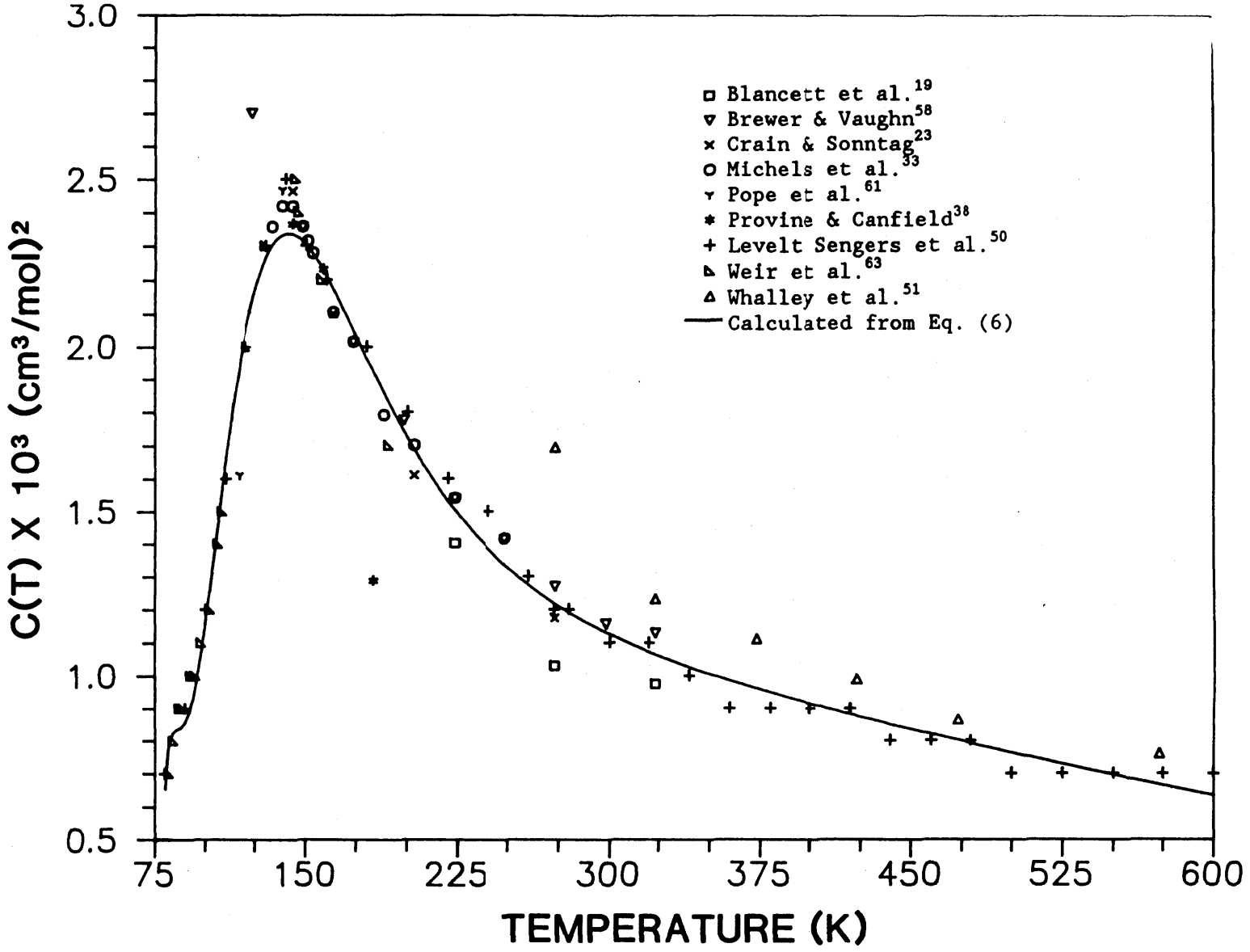

FIG. 6. Third virial coefficients for argon.

Table 7. Second and third virial coefficients for argon

Second virial coefficients B(T), (cm^3/mol)				Third virial coefficients C(T) x 10^3, (cm^3/mol)^2		
T (K)	Eq.(5)	Ref. 50[a]	Eq.(10)[b]	T (K)	Eq.(6)	Ref. 50[a]
80	-287.6	-288.0	-341.8	80	.65	.7
84	-261.6	-261.4	-293.1	90	.85	.9
88	-239.1	-238.7	-257.0	100	1.16	1.2
92	-219.3	-219.1	-229.3	110	1.65	1.6
96	-202.0	-202.0	-207.2	120	2.04	2.0
100	-186.8	-187.0	-189.2	130	2.26	2.3
104	-173.3	-173.8	-174.1	140	2.33	2.5
108	-161.2	-161.9	-161.3	150	2.30	2.3
112	-150.5	-151.3	-150.1	160	2.21	2.2
116	-140.8	-141.7	-140.2	180	1.96	2.0
120	-132.0	-133.1	-131.4	200	1.72	1.8
124	-124.1	-125.2	-123.5	220	1.53	1.6
128	-116.9	-118.0	-116.4	240	1.38	1.5
132	-110.2	-111.4	-109.8	260	1.27	1.3
136	-104.1	-105.4	-103.8	280	1.19	1.2
140	-98.5	-99.8	-98.3	300	1.12	1.1
144	-93.4	-94.6	-93.2	320	1.07	1.1
148	-88.5	-89.8	-88.4	340	1.03	1.0
152	-84.1	-85.3	-84.0	360	.99	.9
156	-79.9	-81.1	-79.9	380	.95	.9
160	-76.0	-77.2	-76.0	400	.91	.9
164	-72.4	-73.5	-72.4	420	.88	.9
168	-69.0	-70.1	-69.0	440	.85	.8
172	-65.8	-66.9	-65.8	460	.82	.8
176	-62.8	-63.8	-62.7	480	.79	.8
180	-59.9	-60.9	-59.9	500	.76	.7
190	-53.5	-54.4	-53.4	525	.73	.7
200	-47.8	-48.7	-47.7	550	.69	.7
210	-42.8	-43.7	-42.7	575	.66	.7
220	-38.4	-39.2	-38.2	600	.63	.7
230	-34.4	-35.2	-34.2			
240	-30.9	-31.5	-30.7			
250	-27.6	-28.2	-27.4			
260	-24.7	-25.3	-24.5			
270	-22.0		-21.8			
280	-19.6	-20.1	-19.4			
290	-17.4		-17.2			
300	-15.3	-15.7	-15.1			
320	-11.7	-11.9	-11.5			
340	-8.5	-8.7	-8.3			
360	-5.8	-5.8	-5.6			
380	-3.4	-3.4	-3.3			
400	-1.2	-1.1	-1.2			
450	3.1	3.4	3.1			
500	6.5	6.9	6.3			
550	9.1	9.7	8.8			
600	11.3	11.9	10.8			
700	14.5	15.4	13.8			
800	16.8	17.8	15.9			
900	18.5	19.7	17.4			
1000	19.8	21.1	18.5			
1100	20.9	22.2	19.3			
1200	21.7		20.0			

[a] Tabular values from Levelt Sengers, et al.[50]
[b] Values calculated from the fundamental equation, Eq. (10)

Table 8. Summary of saturated liquid density data for argon

Source	Date	Range of Temperature (K)	Number of Data Points
Albuquerque et al.[10]	1980	94-147	16
Baly and Donnan[68]	1902	84-89	12
Gladun[15]	1971	88-145	12
Goldman and Scrase[69]	1969	87-149	36
Haynes[70]	1978	100-120	6
Michels et al.[33]	1958	116-150.5	21
Pan et al.[71]	1975	91-115	4
Streett and Staveley[44]	1969	101-143	10
Terry et al.[72]	1969	85-118	16
Verbeke et al.[49]	1969	87-150.6	27
Voronel et al.[66]	1973	147.8-150.663	59

Measurements by Haynes for other fluids have demonstrated that the magnetic densimeter used for these measurements is an accurate instrument and generally superior to other experiments in the measurement of saturated liquid density. The measurements from Haynes[70] are limited to temperatures from 100 to 120 K. The data from Albuquerque *et al.*[10] are in close agreement with those of Haynes[70] for temperatures below 116 K and were emphasized for temperatures from 94 to 116 K. For temperatures above 120 K there is no clear choice between the data of Albuquerque *et al.*[10] and those from Verbeke *et al.*,[49] with the result that Eq. (7) represents an average of these two data sets.

In the calculation of properties of the saturated liquid, the density should be calculated with the fundamental equation, Eq. (10). Equation (7) is given since it is convenient as an estimating function for iterative calculations. However, Eq. (7) was used to determine values for the saturated liquid as a part of the data set used in determining the fundamental equation, and the uncertaintly of this equation has contributed to the uncertainty of the fundamental equation as given in Sec. 8.

Table 9. Coefficients for the saturated liquid density equation for argon, Eq. (7)

N_1	- 1.025505795
N_2	29.08970055
N_3	-14.10840728
N_4	19.80680944
N_5	1.505322783

4.4. Saturated Vapor Density

The saturated vapor density data values for argon used in this work for densities up to 125 K were calculated from a truncated virial equation using the second and third virial coefficients. For values between 125 K and the critical region of Voronel *et al.*,[66] saturated vapor densities were calculated by intersecting a preliminary equation of state with the vapor pressure Eq. (4). The saturated vapor density is given by

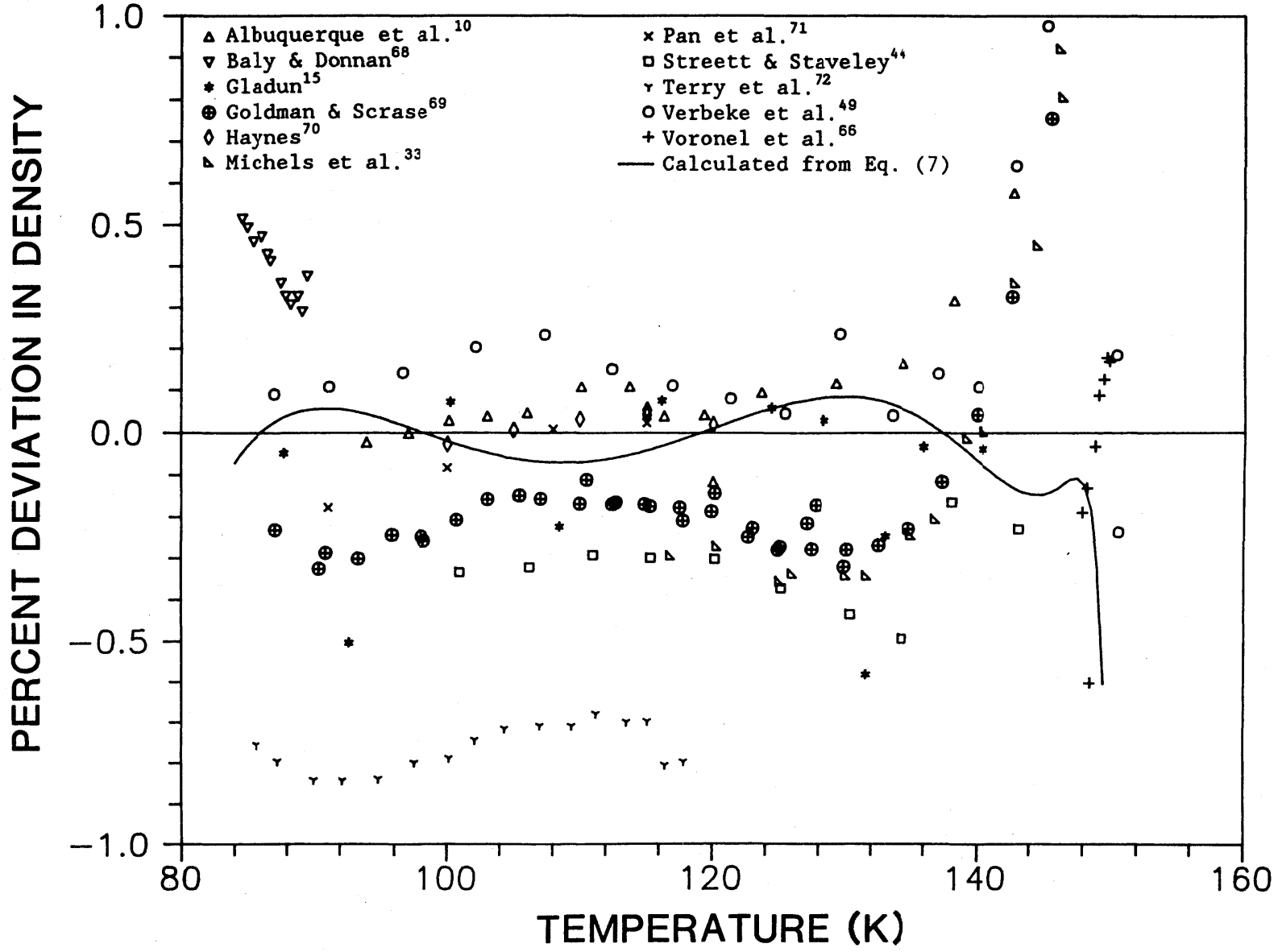

FIG. 7. Comparison between saturated liquid density data and values calculated from Eq. (10).

Table 10. Coefficients for the saturated vapor density equation for argon, Eq. (8)

N_2	0.1382517446×10^6
N_3	0.2926927099×10^4
N_4	$-0.2402924478 \times 10^5$
N_5	0.3072168644×10^5
N_6	$-0.2332736879 \times 10^6$
N_7	0.3041585803×10^6
N_8	$-0.1433399795 \times 10^6$
N_9	0.2020870978×10^5
N_{10}	0.3083431008×10^3
N_{11}	$-0.1537528779 \times 10^2$
N_{12}	0.1383867855×10^6
N_{13}	-0.1504585810×10

$$\ln(\rho_{SV}/\rho_c) = \sum_{i=2}^{9} N_i \tau^{(i+1)/3} + N_{10}\tau^{(16/3)} + N_{11}\tau^9 + N_{12}\ln\theta + N_{13}\tau^{0.325}, \quad (8)$$

where $\tau = (T_c - T)/T$, $\theta = T/T_c$, ρ_{SV} is the density of the saturated vapor, and ρ_c and T_c are the critical density and temperature as previously defined. Table 10 lists the coefficients of Eq. (8) for argon. The values of saturated vapor density calculated using Eq. (8) are estimated to be accurate to within ± 0.5 percent for temperatures up to 144 K. Eq. (8) is not valid above 144 K.

4.5. Melting Line Equation

A melting line equation was used to identify the states of the coexisting liquid and solid phases. The modified Simon melting Eq. (9) from Hardy, Crawford, and Daniels[73] was used,

$$P = A(T + D)^c + B, \quad (9)$$

where: $A = 4.993\,134\,9$, $B = -1484.9379$, $c = 1.430\,567\,5$, and $D = -30.179\,276$; and where P is in bars and T is in kelvins.

5. The Fundamental Equation for Argon

The fundamental equation for argon was selected from a comprehensive function of 95 terms on the basis of statistical analysis of the quality of the fit. The coefficients of the fundamental equation were determined by a weighted least-squares fit to 2117 selected data values including P-ρ-T data, saturated liquid, and saturated vapor density data to define the phase equilibrium criteria and velocity of sound data. The procedures for developing the fundamental equation are given in previous publications by Jahangiri *et al.*[3] and Jacobsen *et al.*,[1] and are not repeated here. Detailed comparisons of calculated thermodynamic properties to experimental data are given in Sec. 6.

The fundamental equation used in this work is explicit in reduced Helmholtz energy, and other thermodynamic properties are derived from it by differentiation. The coefficients of the fundamental equation were determined using a least-squares regression procedure of de Reuck *et al.*[74] and Wagner[75] for selection of an optimum group of terms from an initial bank of 95 proposed terms. The range of validity of the fundamental equation for argon is from the freezing line to 1200 K at pressures to 1000 MPa. With a few exceptions, the equation presented here represents the selected experimental P-ρ-T data to within the estimated accuracies of these data.

The fundamental equation may be used for the calculation of accurate tables of thermodynamic properties of argon within its range of applicability. This equation may also be readily used for systems analysis where iterative solutions are required to solve the equation for known variable pairs other than density and temperature. The fundamental equation was developed to conform to the Maxwell criterion for liquid–vapor phase equilibrium. The thermodynamic property formulation should not be used in the critical region, where large inaccuracies in calculated properties may occur.

The functional form used for the fundamental equation for argon is a nondimensional potential function

$$\alpha(\delta,\tau) = \frac{A(\rho,T)}{RT} = \alpha^\circ(\delta,\tau) + \bar{\alpha}(\delta,\tau), \quad (10)$$

and where

$$\alpha^\circ = \frac{H_0^\circ \tau}{RT_c} - \frac{S_0^\circ}{R} - 1 + \ln\frac{\delta\tau_0}{\delta_0\tau} - \frac{\tau}{R}\int_{\tau_0}^{\tau}\frac{C_P^\circ}{\tau^2}\,d\tau + \frac{1}{R}\int_{\tau_0}^{\tau}\frac{C_P^\circ}{\tau}\,d\tau, \quad (11)$$

and where

$\tau = T_c/T$, $\tau_0 = T_c/T_0$, $\delta = \rho/\rho_c$,

$\delta_0 = \rho_0/\rho_c$, the reduced ideal-gas density at P_0 and T_0,

ρ_c is the critical density, 13.29 mol/dm^3,

T_c is the critical temperature, 150.6633 K,

T_0 is the reference temperature, 298.15 K,

P_0 is the reference pressure, 0.101 325 MPa,

ρ_0 is the ideal-gas density at T_0 and P_0, 0.040 90 mol/dm^3,

H_0° is the reference enthalpy at T_0, 6197 J/mol,

S_0° is the reference entropy at T_0 and P_0, 154.732 J/mol K, and R is the gas constant, 0.008 314 34 (MPa dm^3)/(mol K).

The real fluid contribution to dimensionless Helmholtz energy is given by

Table 11. Coefficients for the fundamental equation for argon,[a] Eq. (10)

		i	j	M
N_1	= 0.7918675715	1	0.25	0
N_2	= -1.6333461510	1	1.00	0
N_3	= -0.4395302930	1	3.00	0
N_4	= 0.1033899999	1	4.00	0
N_5	= 0.2061801664	2	0.25	0
N_6	= -0.2888681776	2	1.00	0
N_7	= 0.4398010550	2	2.50	0
N_8	= -0.08429550391	2	3.50	0
N_9	= -0.2155658654	3	0.75	0
N_{10}	= 0.4786509099	3	1.00	0
N_{11}	= -0.3525884593	3	1.50	0
N_{12}	= 0.03015073692	3	2.50	0
N_{13}	= 0.02987679059	4	1.00	0
N_{14}	= -0.01522568583	4	2.00	0
N_{15}	= 0.0007435785786	6	2.00	0
N_{16}	= 0.07099541624	1	5.00	3
N_{17}	= -0.02904237185	1	7.00	3
N_{18}	= -0.06223078525	2	5.00	2
N_{19}	= 0.0001410895187	2	22.00	4
N_{20}	= -0.001481241783	2	16.00	6
N_{21}	= 0.03023342784	3	10.00	3
N_{22}	= -0.06126784685	3	14.00	3
N_{23}	= 0.02709967090	3	16.00	3
N_{24}	= 0.09411034405	4	4.00	2
N_{25}	= -0.007291645114	4	8.00	2
N_{26}	= -0.001586314976	4	10.00	4
N_{27}	= 0.0009510948813	8	5.00	2
N_{28}	= 0.0007786181844	8	6.00	2

[a] $\gamma = 0$ for terms N_k with k equal to 1 through 15 and $\gamma = 1$ for terms with N_k equal to 16 through 28.

$$\bar{\alpha}(\delta,\tau) = \sum_{k=1}^{28} N_k \delta^i \tau^j \exp(-\gamma\delta^l), \tag{12}$$

where the N_k are the coefficients of the fundamental equation, and $\gamma = 0$ for k from 1–15, $\gamma = 1$ for k from 16–28. The values of j are generally greater than zero, and i and l are integers greater than or equal to zero. The coefficients and parameters for argon are given in Table 11.

The units adopted for this work were (MPa) for pressure, (mol/dm^3) for density, (K, IPTS-68) for temperature, and (Joule) for energy. Units of the experimental data were converted as necessary from those of the original publications to these units. All temperatures were converted to the International Practical Temperature Scale of 1968 (IPTS-68) as suggested by Douglas.[76] Each data point used in the least-squares determination of the coefficients of the equation of state was assigned a weighting factor based upon estimates of uncertainties of the variables reported by the experimenter.

6. Comparisons of the Fundamental Equation to Data

Comparisons of thermodynamic properties calculated using the fundamental equation with experimental data are given in this section. The experimental data in these comparisons include P-ρ-T data, isochoric heat capacity data and velocity of sound data. Separate comparisons to the P-ρ-T data in the critical region are given. Vapor pressure values calculated with the fundamental equation, Eq. (10), and values calculated with the vapor pressure equation, Eq. (4), are also compared. Graphs illustrating the percentage differences between the calculated values and the data are used in most of these comparisons. The data sets included in the graphical comparisons are those data that were selected for determining the fundamental equation and other data that were judged to be of high quality, but are redundant with the selected data sets. Data sets are also included in the comparisons to verify the accuracy of extrapolated values to high temperatures and high pressures. There are also data points in each of the selected data sets that were weighted zero and, therefore, were excluded from the fit of the equation. The zero weighted data are included in the comparisons.

6.1. Comparisons of the Fundamental Equation to P-ρ-T Data

Comparisons of values of density calculated using the fundamental equation with experimental densities are given in Figs. 8–11, and illustrate the quality of the fit in four regions: Fig. 8—vapor states at temperatures below the critical temperature; Fig. 9—liquid states at temperatures below the critical temperature; Fig. 10—states at temperatures above the critical temperature; and Fig. 11—states in and adjacent to the critical region. Data included in Fig. 11 are also included in Fig. 10. Data reported by experimenters on isotherms are illustrated on graphs for the isotherms. Other data (e.g., data reported on isochores) are grouped for arbitrary ranges of temperature. Data with deviations from the calculated values exceeding the scales of the graphs are noted on the graphs. Those data sets identified in Table 1 as of historic interest only are not included in this comparison. In addition, those data sets with average density deviations exceeding 0.3% are also excluded from this comparison (see Table 1), with the exception of the data from Crawford and Daniels[24].

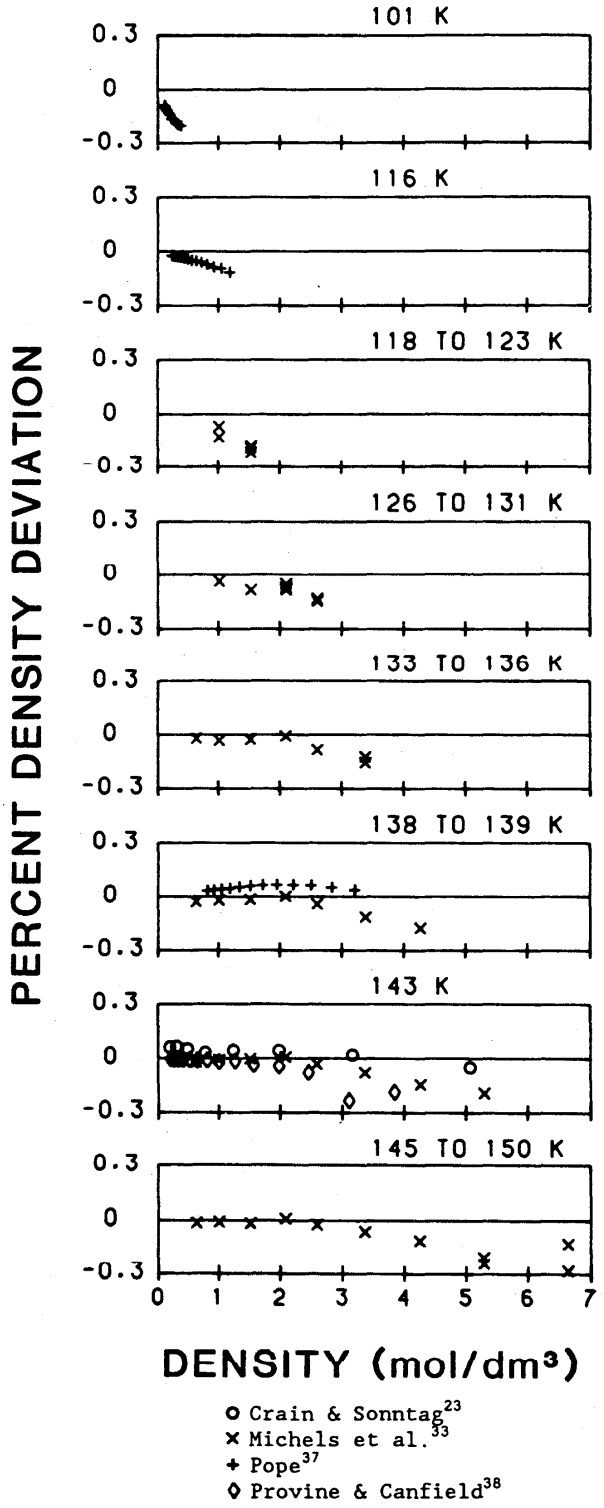

FIG. 8.Comparisons of calculated density values to P-ρ-T data for vapor states below the critical temperature.

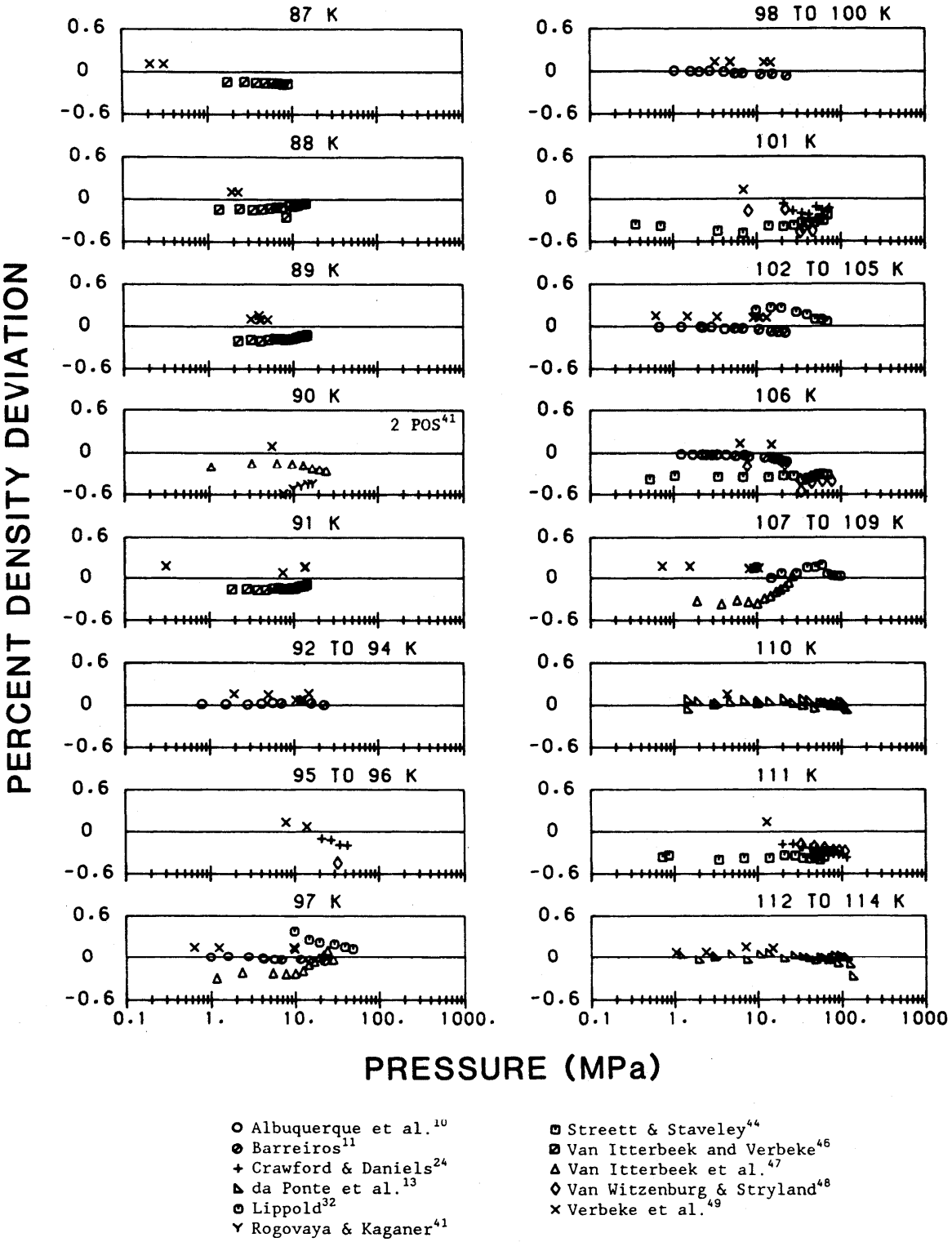

FIG. 9. Comparisons of calculated density values to P-ρ-T data for liquid states below the critical temperature.

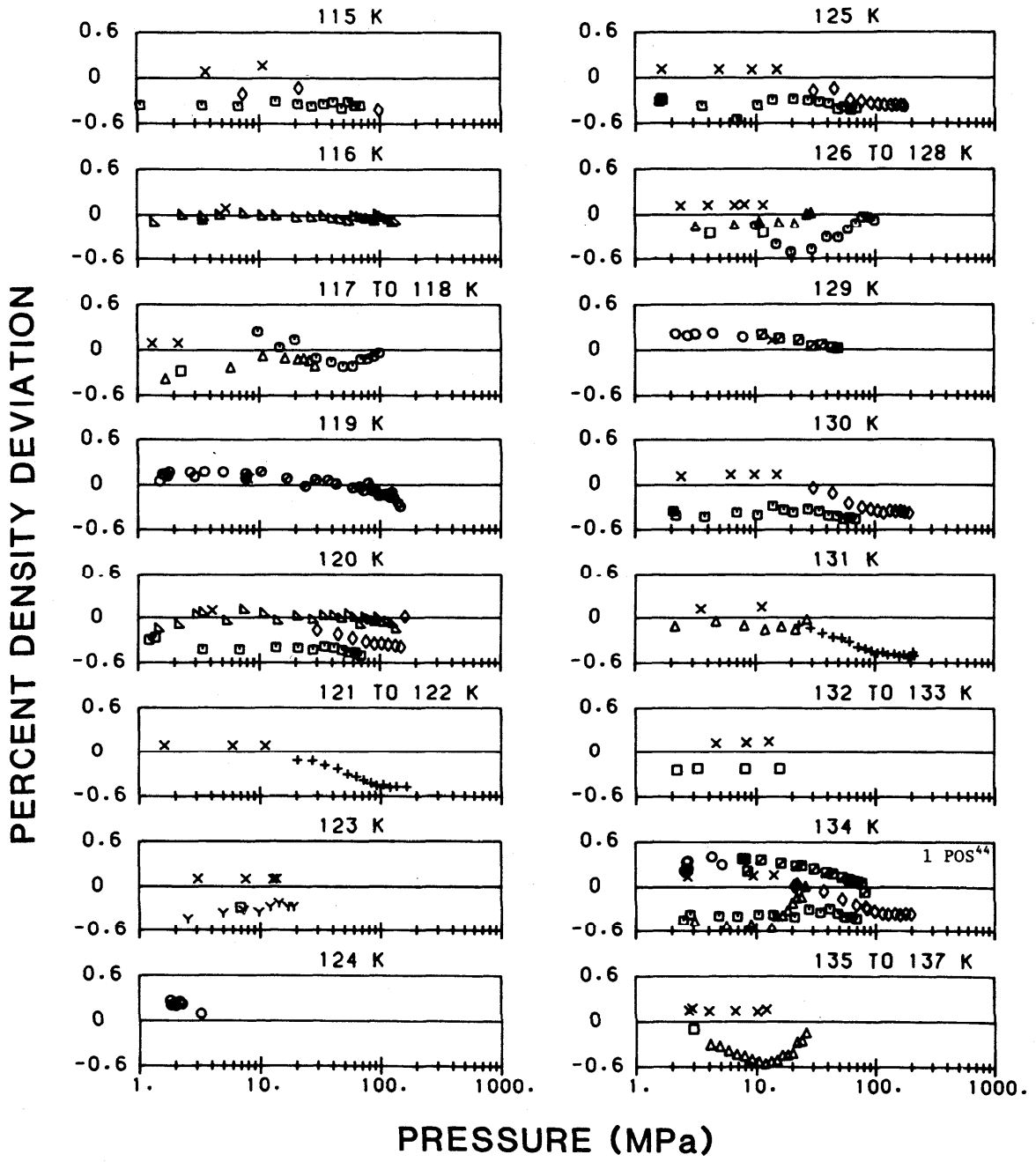

FIG. 9.Comparisons of calculated density values to P-ρ-T data for liquid states below the critical temperature-Continued.

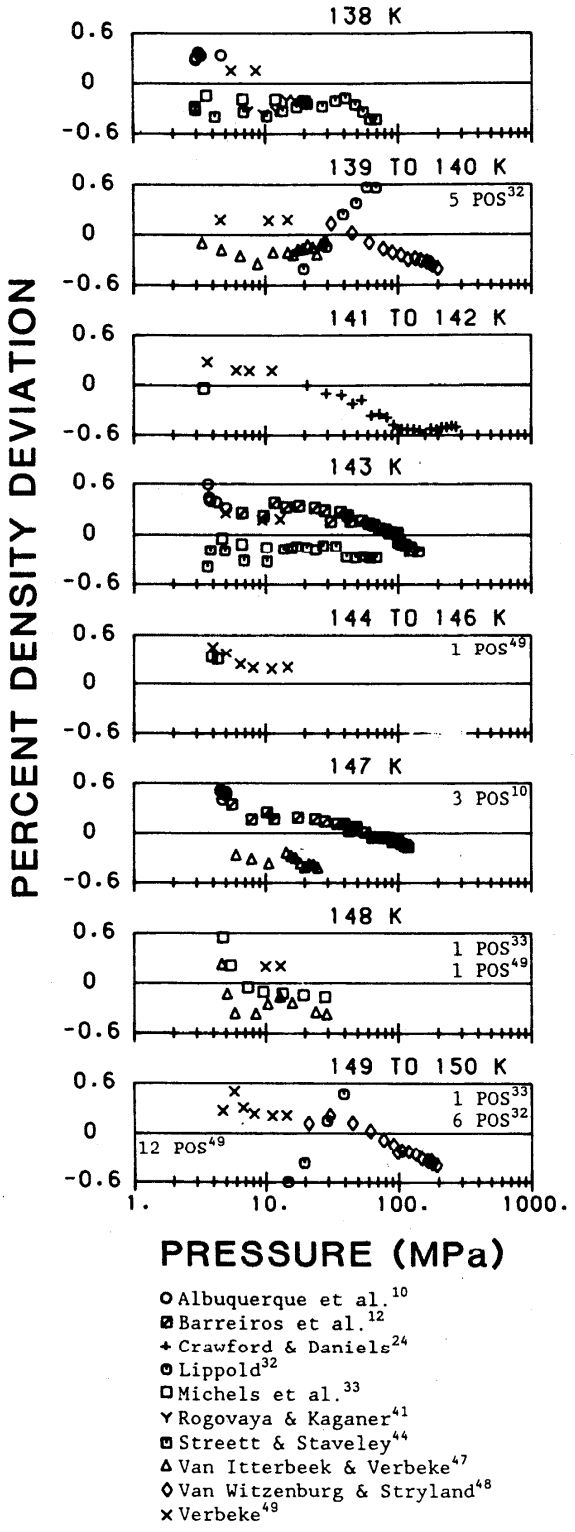

FIG. 9.Comparisons of calculated density values to P-ρ-T data for liquid states below the critical temperature-Continued.

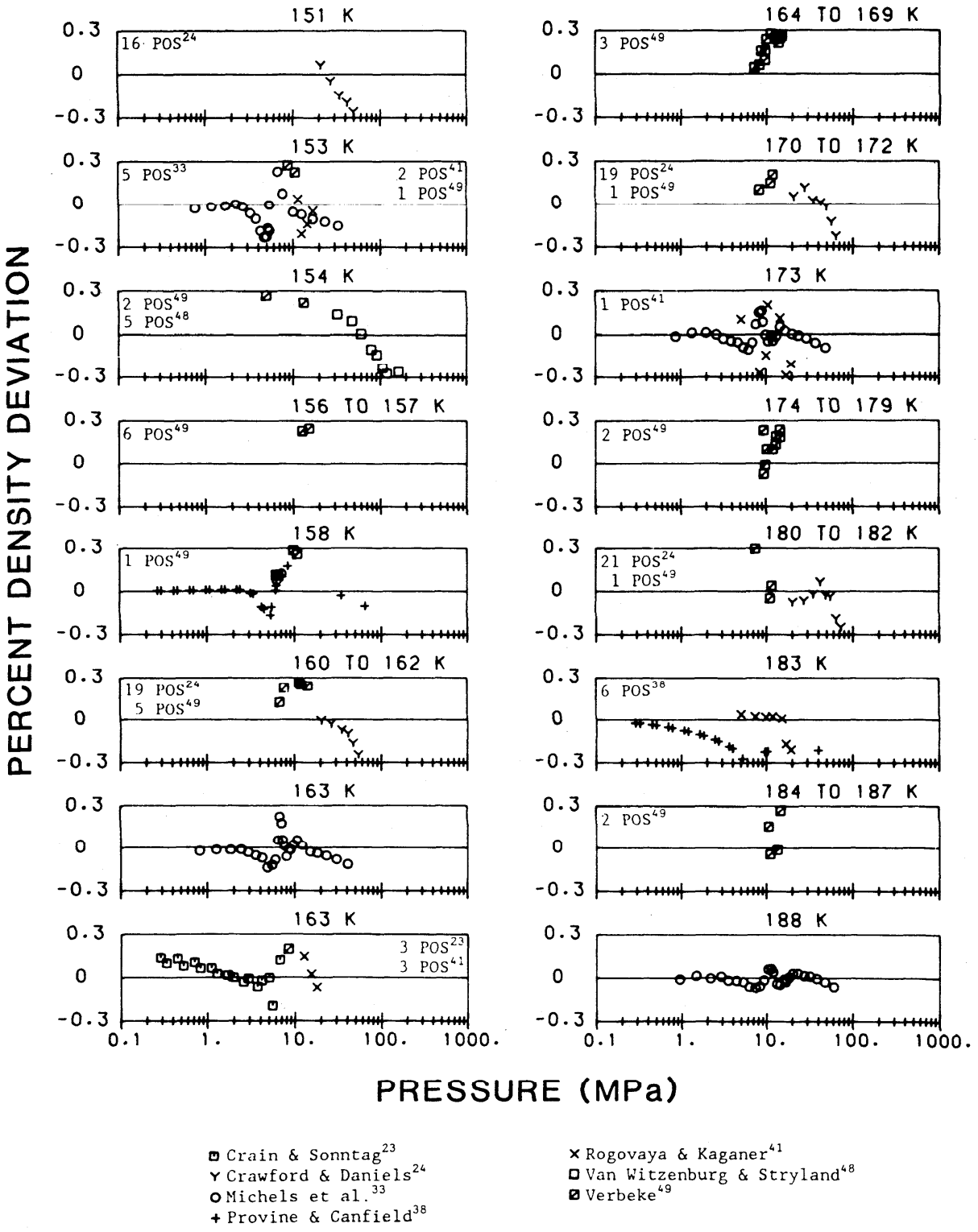

FIG. 10.Comparisons of calculated density values to P-ρ-T data for fluid states above the critical temperature.

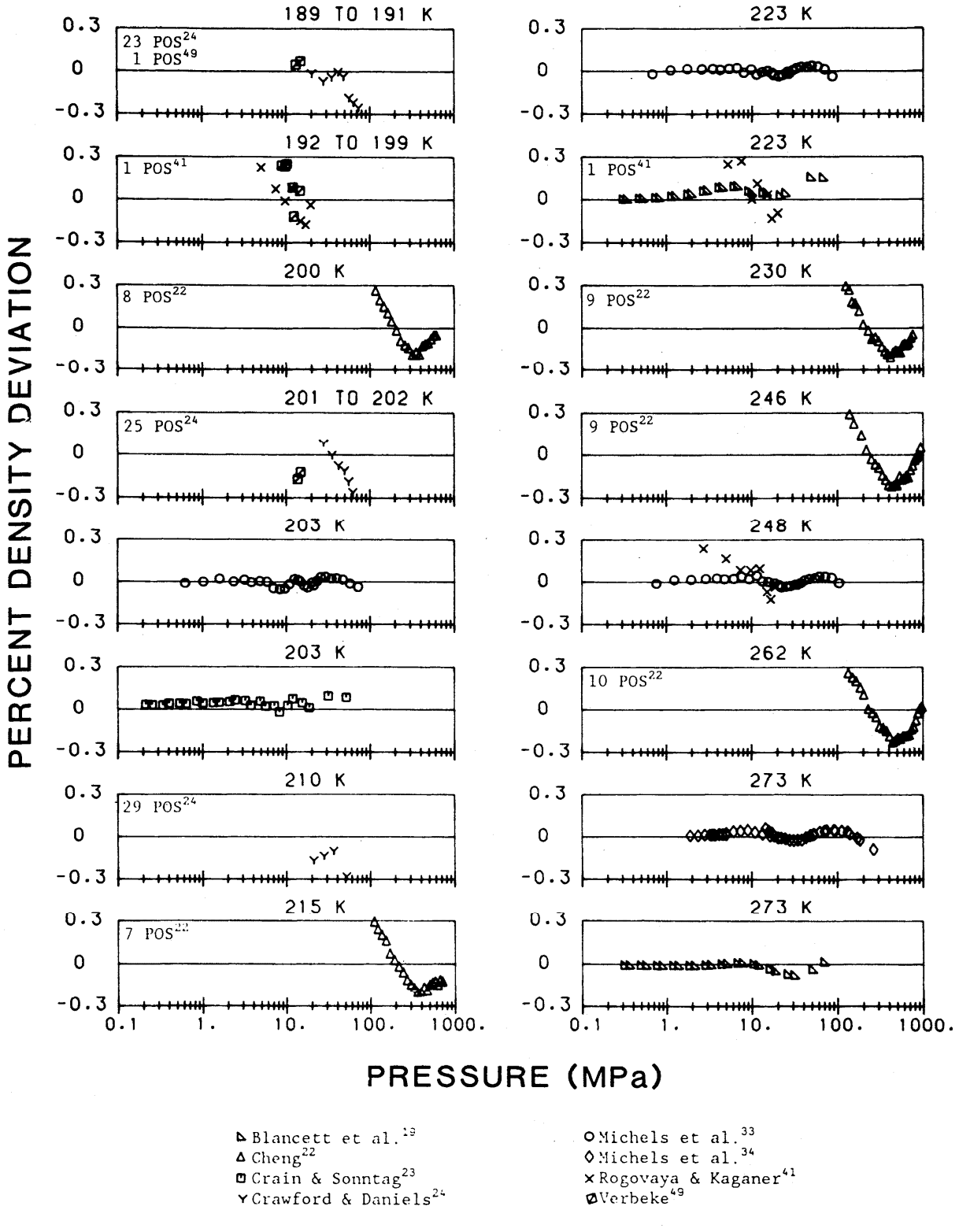

FIG. 10.Comparisons of calculated density values to P-ρ-T data for fluid states above the critical temperature-Continued.

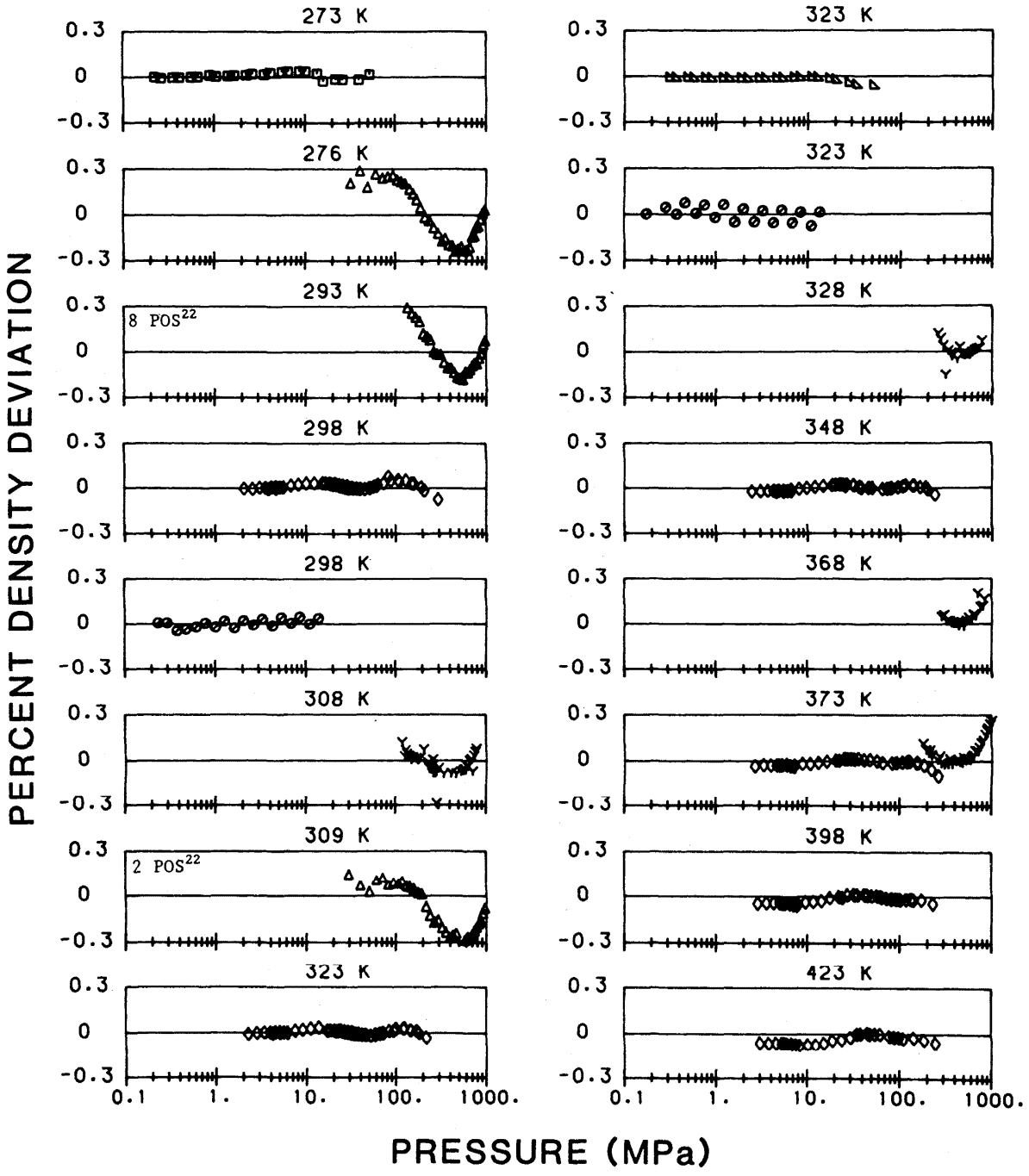

FIG. 10.Comparisons of calculated density values to P-ρ-T data for fluid states above the critical temperature-Continued.

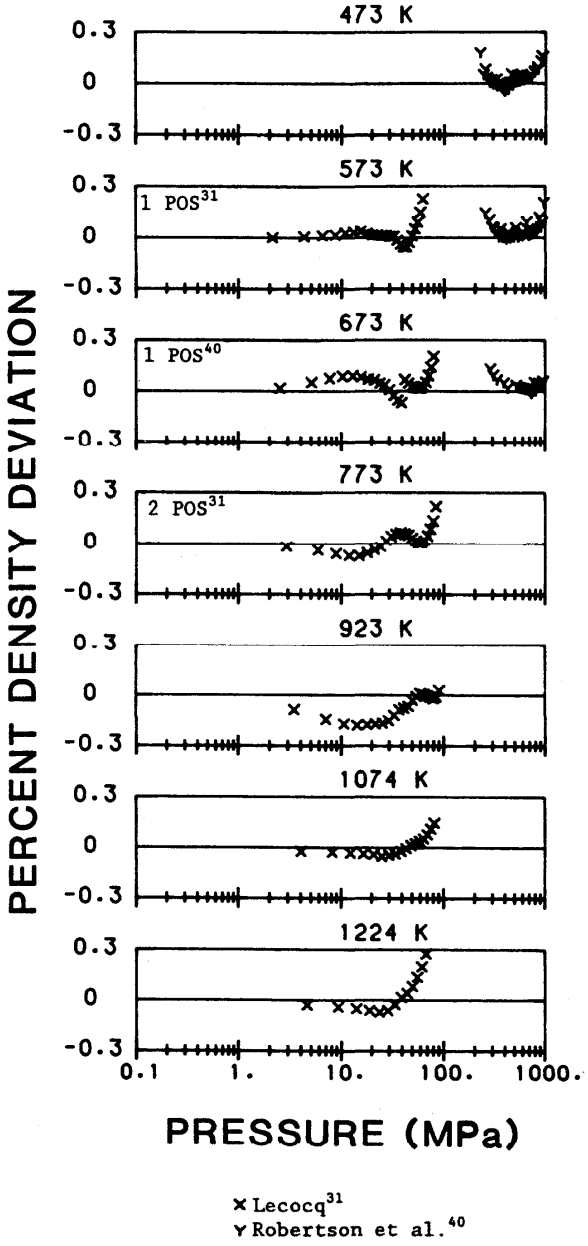

FIG. 10. Comparisons of calculated density values to P-ρ-T data for fluid states above the critical temperature-Continued.

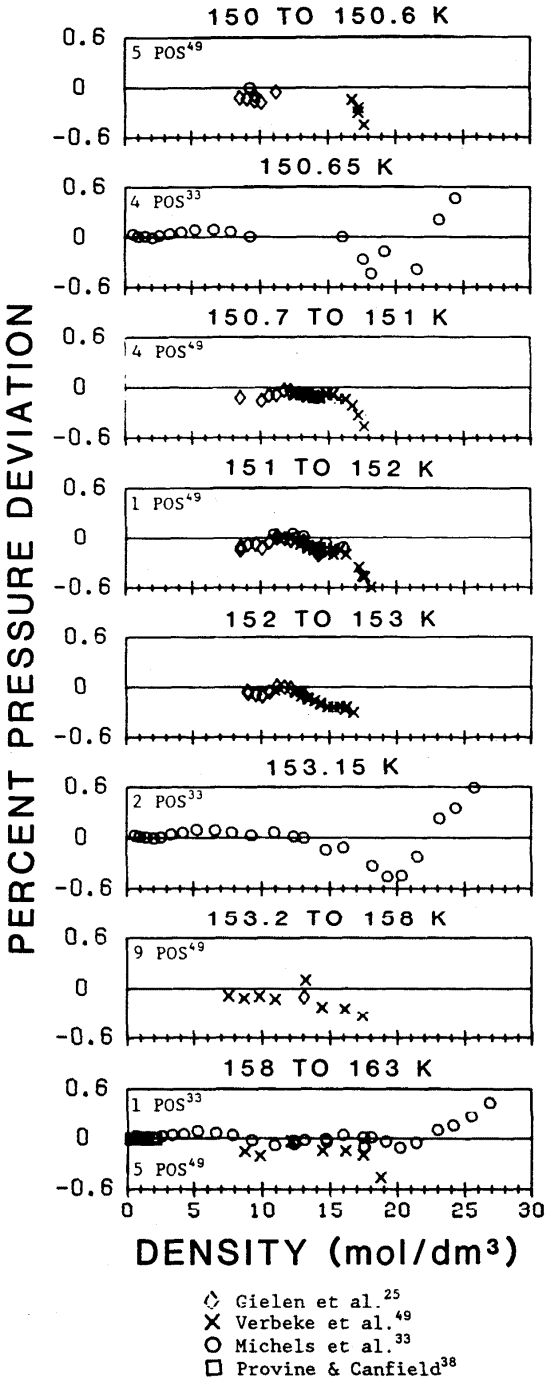

FIG. 11. Comparisons of calculated pressure values to P-ρ-T data in the critical region.

Table 12. Comparison of calculated density values to "virial" P-ρ-T data

Temperature Range (K)	Density range (mol/dm^3)	Range of Density Deviations (mol/dm^3)	Average Density Deviation (percent)	No. of values
85 to 100	.1 to .2	-.07 to .05	.047	9
105 to 135	.1 to .5	-.03 to .04	.016	29
140	.1 to 2.5	-.03 to .02	.010	8
145 to 155	.1 to 4.0	-.05 to .02	.009	38
160 to 240	.1 to 1.5	-.04 to .01	.007	32
260 to 300	.1 to 3.5	-.01 to .04	.023	18
350 to 900	.1 to 2.0	-.05 to .05	.026	36

6.1.a. Vapor Region (Temperatures Less than the Critical Temperature)

Figure 8 compares density values calculated using the fundamental equation with P-ρ-T data of argon vapor at temperatures below the critical temperature. There is a paucity of data in this region and the lower temperature limit for the P-ρ-T data is 101 K. In the least-squares fit, 170 values of density calculated with a truncated virial equation using second and third virial coefficients from Eqs. (5) and (6) were also included in the data set. These virial data are compared to density values from the fundamental equation in Table 12.

The only experimental P-ρ-T data used in this region are those at temperatures of 143 to 148 K by Michels *et al.*[33] and at 143 K by Provine and Canfield[38]. All other data were considered to be redundant with the virial data. The fundamental equation is in good agreement with all four of the P-ρ-T data sets for the low temperature vapor.

6.1.b. Liquid Region (Temperatures Less than the Critical Temperature)

Figure 9 compares density values calculated using the fundamental equation with P-ρ-T data of liquid argon at temperatures below the critical temperature. In the least-squares fit, selected values were used from the data sets of the following references: Albuquerque *et al.*,[10] Barreiros,[11] Barreiros *et al.*,[12] da Ponte *et al.*,[13] Streett and Staveley,[44] Verbeke *et al.*[49] From these selected data sets, values that were redundant and data that appeared to have systematic deviations from other data sets in the adjacent regions were weighted zero. The data sets from the following references were not used: Crawford and Daniels,[24] Lippold[32] Michels *et al.*,[33] Rogovaya and Kaganer,[41] Sorokin and Blagoi,[42] Van Itterbeek and Verbeke,[46] Van Itterbeek *et al.*,[47] Van Witzenburg and Stryland.[48]

There are systematic differences between the several data sets. No reason has been identified for these systematic differences, and in the opinion of the authors, the uncertainty of the fundamental equation for liquid argon must include most of the data from Albuquerque *et al.*,[10] Barreiros,[11] Barreiros *et al.*,[12] da Ponte *et al.*,[13] Van Itterbeke and Verbeke[46] and Verbeke *et al.*[49].

The data from Crawford & Daniels[24] are for pressures from 20 MPa to the melting line. Although these data are in accord with the other data for temperatures from 95 to 210 K and pressures near 20 MPa, they deviate systematically from the other data at higher pressures. The calculation of density by the fundamental equation for pressures above those of the data used in fitting is an extrapolation whose accuracy cannot be assured. It is prudent to assume that the accuracy of this extrapolation is within the deviations of the data from Crawford & Daniels.[24]

6.1.c. Fluid Region for Temperatures Greater than the Critical Temperature

Figure 10 compares density values calculated using the fundamental equation with P-ρ-T data of argon at temperatures above the critical temperature. Pressure deviations for the data at temperatures from 150 to 163 K are also given in Fig. 11. Comparisons to the virial data are included in Table 12. A discussion of the data in the critical region is given in the following section.

In the least-squares fit, selected values were used from the data sets of the following references: Baxter & Starkweather,[18] Michels *et al.*,[33] Michels *et al.*,[34] Provine & Canfield,[38] Robertson *et al.*,[40] Verbeke *et al.*[49] The data sets from the following references were not used: Blancett *et al.*,[19] Cheng,[22] Crain and Sonntag,[23] Crawford and Daniels,[24] Lecocq,[31] Morris and Wylie,[35] Rogovaya and Kaganer,[41] Townsend.[45] The primary data sets for this region are those of Michels *et al.*[33] and Michels *et al.*[34] and data at high pressures from Robertson *et al.*[40] These high pressure data appear to be concordant with the other data, except for the systematic deviations at the low pressure limit. The systematic deviation of the data from Michels *et al.*[33] at tempera-

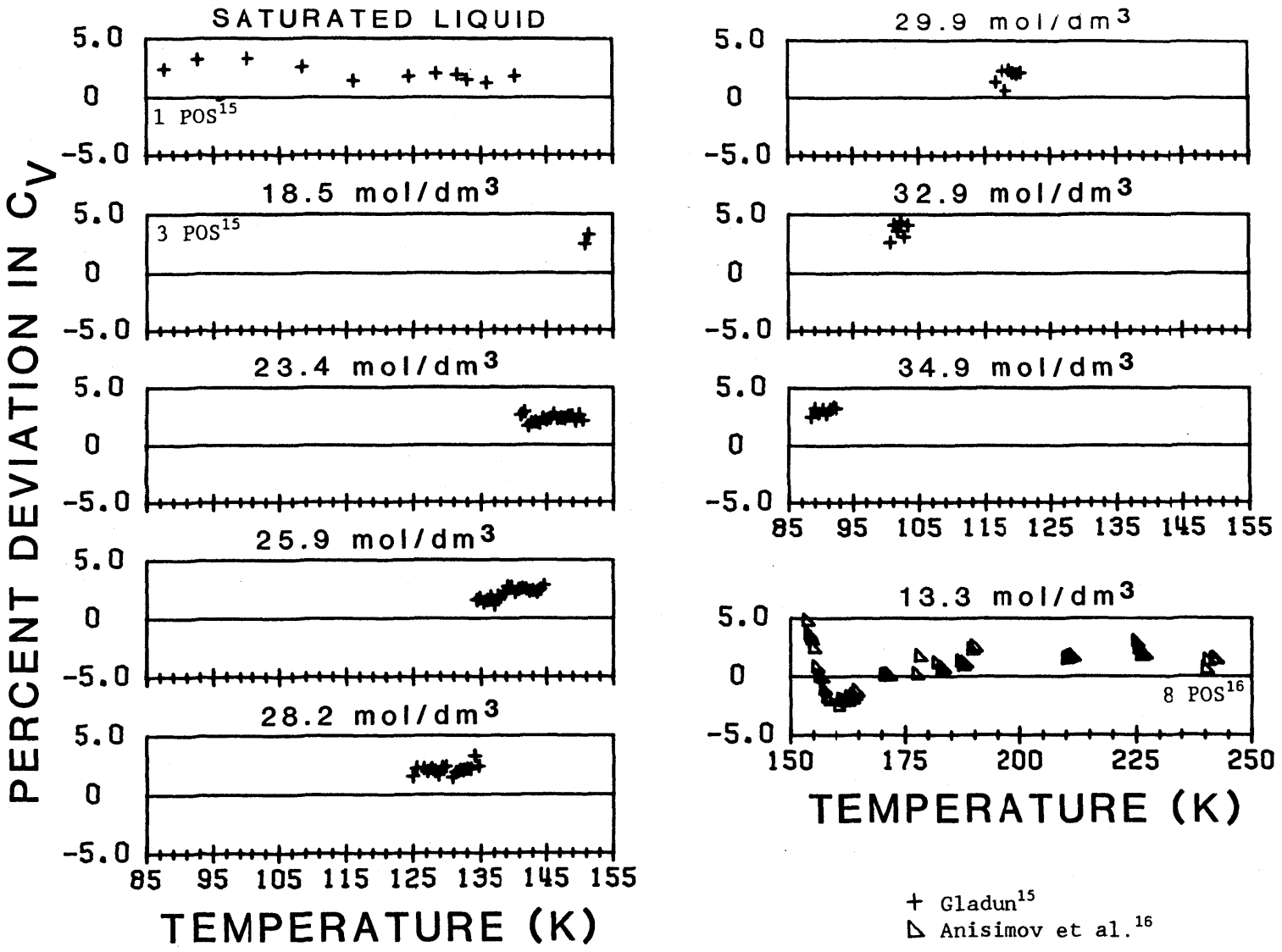

FIG. 12.Comparisons of calculated values of isochoric heat capacity to data.

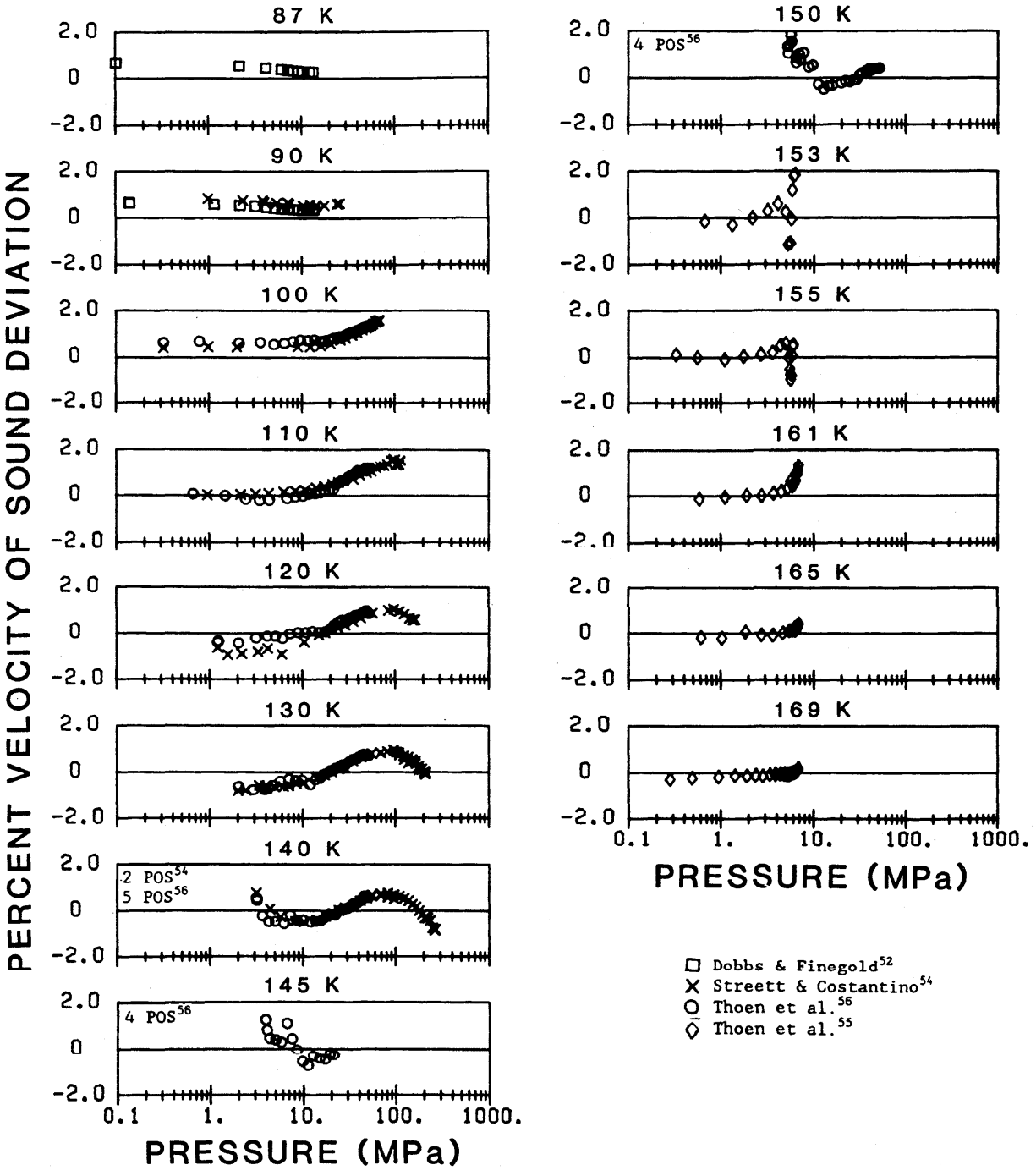

FIG. 13.Comparisons of calculated values of velocity of sound to data.

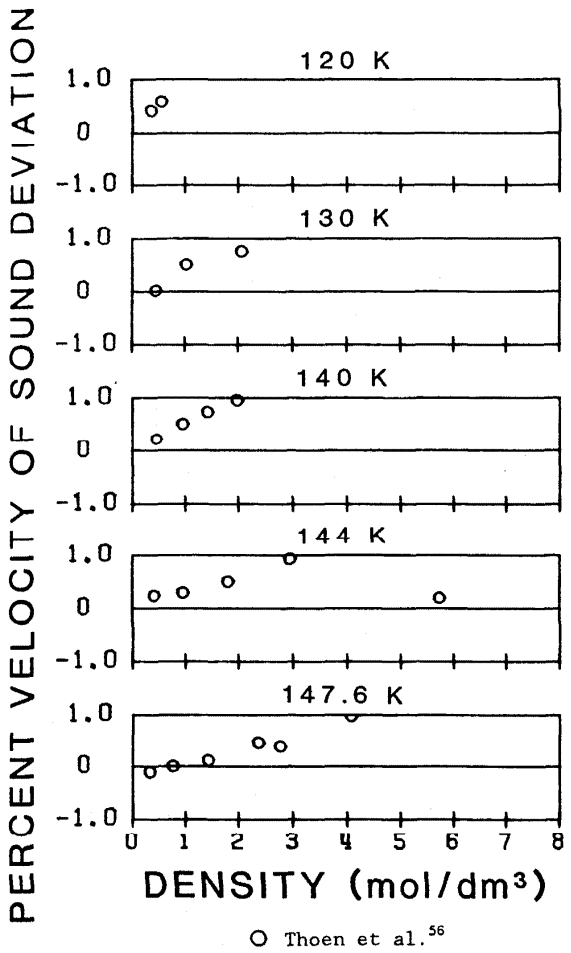

FIG. 13. Comparisons of calculated values of velocity of sound to data-Continued.

tures from 153 to 188 K must be attributed to errors in the fundamental equation.

The data from Crawford and Daniels[24] extend from 95 to 210 K and were discussed in the preceeding section on liquid data. The data from Cheng[22] are for pressures from about 30 MPa to the melting line. Although these data are in accord with the other data for temperatures from 200 to 308 K and pressures near 30 MPa, they deviate systematically from the other data at higher pressures. The calculation of density by the fundamental equation for pressures above those of the data used in fitting is an extrapolation whose accuracy cannot be assured. It is prudent to assume that the accuracy of this extrapolation is within the deviations of the data from Cheng.[22]

Although the data from Lecocq[31] were not used in fitting the fundamental equation, the accuracy of the equation at temperatures from 573 to 1223 K and pressures to 93 MPa is substantiated by the comparison to these data. The accuracy of the equation to high temperatures is attributed in part to the use of second virial coefficient values to 1200 K in fitting the fundamental equation.

The fundamental equation was also compared to values calculated from the equations for density from Morris and Wylie[35] for seven isotherms from 253 to 308 K with pressures from 200 to 480 MPa. In this comparison of 43 values, the average density deviation is 0.030%, with absolute deviations ranging from − 0.05 to 0.6%.

6.1.d. Fluid Near the Critical Region (Temperatures from 150 to 163 K)

The critical region is generally described as bounded by temperatures within ± 5% of the critical temperature and ± 25% of the critical density. For argon, the critical region is thus the region between temperatures of 149 and 152 K and densities from 7 to 19 mol/dm³. Figure 11 compares pressures calculated from the fundamental equation with P-ρ-T data of argon at temperatures from 150 to 163 K, which includes the P-ρ-T data in the critical region and adjacent to the critical region.

The data sets from Gielen *et al.*,[25] and from Verbeke *et al.*[49] are from the same experimenters and are concordant. The data by Michels *et al.*[33] are in good agreement with the other data, and have systematic deviations from the fundamental equation only above the density range of the other data. The general agreement between the data from Michels *et al.*[33] and Verbeke *et al.*[49] is at variance with the lack of concordance of their liquid data at lower temperatures.

6.2. Heat Capacity Data

Comparisons of the isochoric heat capacity data with calculated values from the fundamental equation are presented. The relative agreement of these data with the fundamental equation is shown in Fig. 12.

6.3. Velocity of Sound Data

Figure 13 illustrates the comparisons between calculated values of velocity of sound from the fundamental equation and data values. Figure 14 is a similar comparison for saturated liquid velocity of sound data.

6.4. The Second Virial Coefficient

Table 7 (Sec. 4.2) lists values of the second virial coefficient for argon calculated from Eq. (5), values calculated with the fundamental equation, Eq. (10) and values from the correlation of Levelt Sengers *et al.*[50]

6.5. Comparisons to Properties at the Vapor Pressure

At temperatures below the critical, the fundamental equation can be used with a relation between the vapor pressure and the saturated liquid and saturated vapor densities to predict fluid properties at the vapor pressure. By applying the Maxwell criterion for phase equilibrium, $G_{SL}(T,P) = G_{SV}(T,P)$, to the fundamental equation, a relation among all three properties is obtained. Simultaneous solution of the appropriate equations gives numerical values of the pressure and the vapor and liquid densities at saturation at any given temperature. This method gives values which

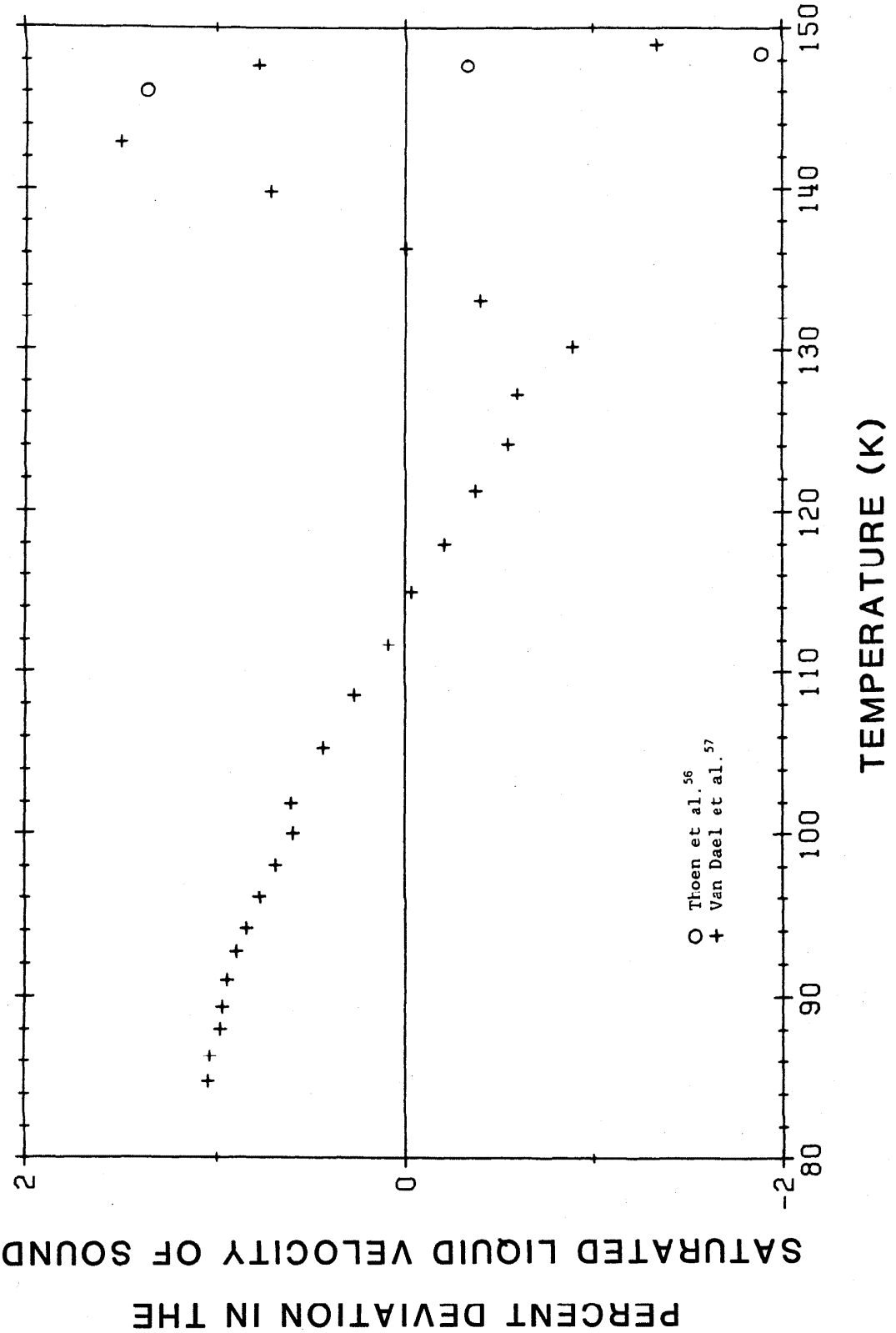

FIG. 14. Comparisons of calculated values of velocity of sound for the saturated liquid to data.

Table 13. Comparison of values of the saturation temperatures and vapor pressures from the fundamental equation, Eq.(10) and values from the vapor pressure equation, Eq.(4).

T_σ (K)	Vapor Pressure (MPa)	Temperature Differences[a] (K)	Pressure Differences[b] (percent)
84	.07052	.00157	-.0180
90	.13362	-.00060	.0059
95	.21322	-.00056	.0049
100	.32401	-.00021	.0017
105	.47258	-.00006	.0005
110	.66575	-.00017	.0011
115	.91048	-.00038	.0023
120	1.21394	-.00049	.0027
125	1.58351	-.00026	.0014
130	2.02695	.00053	-.0025
135	2.55270	.00214	-.0096
140	3.17038	.00464	-.0195
145	3.89198	.00616	-.0246
150	4.73632	.00177	.0069

[a] Temperature Differences = $(T_{\sigma Eq.4} - T_{\sigma Eq.10})$

[b] Pressure Differences = $\dfrac{(VP_{Eq.4} - VP_{Eq.10}) \times 100}{VP_{Eq.4}}$

are thermodynamically consistent with the fundamental equation in single phase states.

Values of the vapor pressure from Eq. (4) and values of the coexistence densities from Eqs. (7) and (8) were used to calculate the fit variable to define the phase equilibrium criteria. Vapor pressures calculated from the fundamental equation by applying the Maxwell criterion conform closely to vapor pressures from Eq. (4). Table 13 lists saturation temperature differences and percentage pressure deviations of values calculated with Eq. (4) and values from Eq. (10). Saturated liquid densities calculated from the fundamental equation by applying the Maxwell criterion conform closely to density values from Eq. (7). Figure 7 includes a comparison of the percentage deviation of saturated liquid density values from Eq. (10) with values from Eq. (7). Saturated vapor densities calculated from the fundamental equation by applying the Maxwell criterion agree with values from Eq. (8) within $\pm$ 0.2% for temperatures from 84 to 125 K, and to within $\pm$ 0.5% from 126 to 144 K. From 145 to 150 K Eq. (8) is not valid.

As the critical point is approached, the analytic fundamental equation is unable to reproduce the surface accurately. The ancillary equations, as discussed in Sec. 4, represent the selected data quite accurately over the whole temperature range.

6.6. The Critical Region

The critical region for the equation of state for argon is arbitrarily defined to include states at temperatures between 149 and 152 K at densities from 7 to 19 mol/dm^3. The fundamental equation was determined by least-squares fitting of selected data with constraints at the critical point. The critical point of the fundamental equation was determined as that point where $(\partial P/\partial \rho)_T$ and $(\partial^2 P/\partial \rho^2)_T$ are simultaneously zero. The behavior of the fundamental equation in the critical region is illustrated in Fig. 15. Values for the saturation properties calculated by application of the Maxwell criterion are included in Fig. 15. Also included are the saturation properties calculated from the ancillary equations of Sec. 4, which were used in determining the coefficients of the fundamental equation.

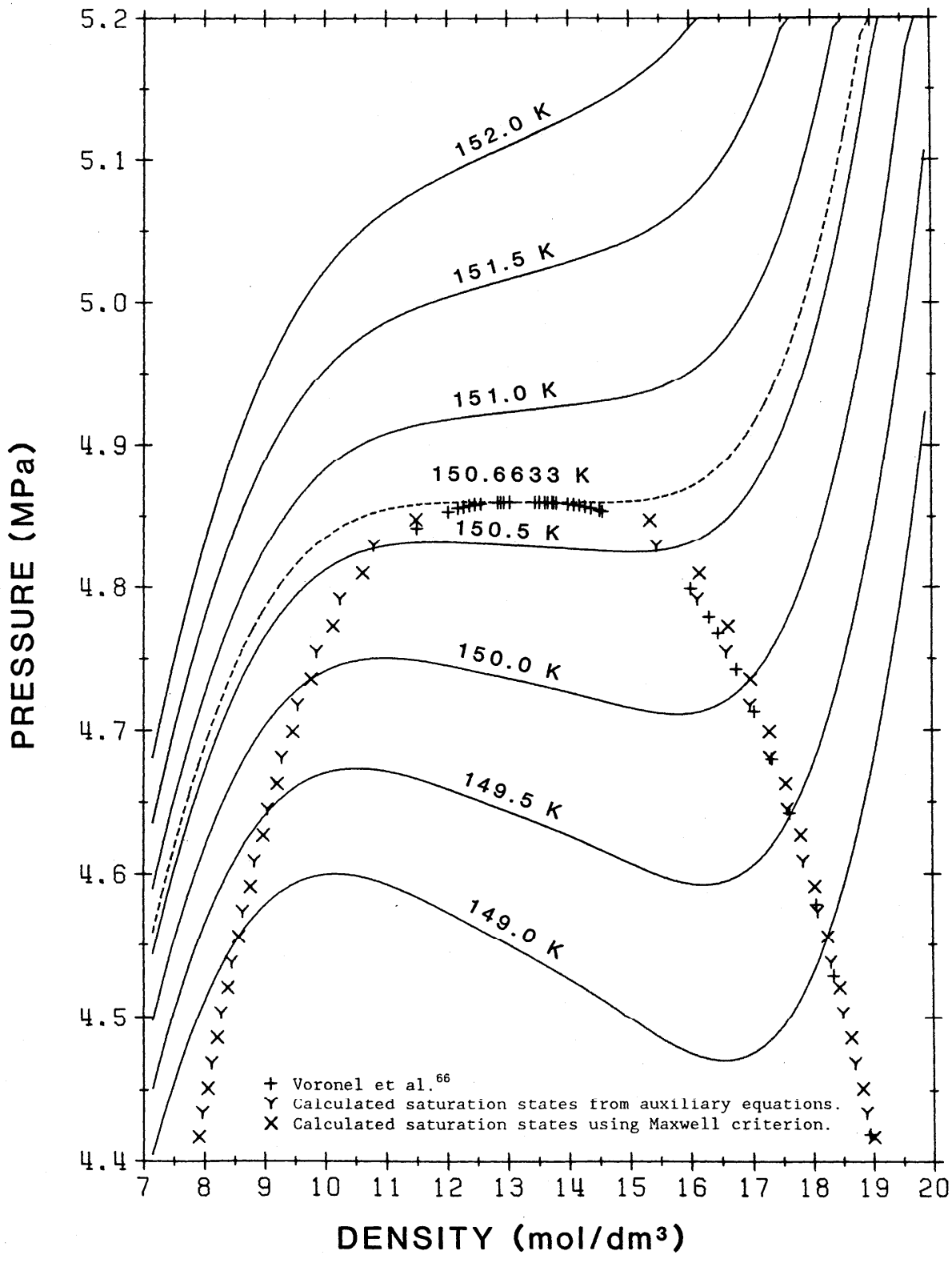

FIG. 15.Behavior of the fundamental equation in the critical region.

7. Derived Thermodynamic Properties

The functions used for calculating internal energy, enthalpy, entropy, isochoric heat capacity, isobaric heat capacity, Gibbs energy, and the velocity of sound from the fundamental equation are given as Eqs. (13)–(20). These functions were used in calculating the tables of thermodynamic properties of argon given in the Appendix [In the expressions for derived properties [Eqs. (13)–(20)] the superscripts for the properties held constant during differentiation are omitted.],

$$\frac{P}{P_c} = \frac{\delta}{\tau Z_c}\left(1 + \frac{\partial \bar{\alpha}}{\partial \delta}\right). \tag{13}$$

Similarly

$$\frac{U}{RT} = \tau\left(\frac{\partial \alpha^\circ}{\partial \tau} + \frac{\partial \bar{\alpha}}{\partial \tau}\right), \tag{14}$$

$$\frac{S}{R} = \tau\left(\frac{\partial \alpha^\circ}{\partial \tau} + \frac{\partial \bar{\alpha}}{\partial \tau}\right) - \alpha^\circ - \bar{\alpha}, \tag{15}$$

$$\frac{H}{RT} = \tau\left(\frac{\partial \alpha^\circ}{\partial \tau} + \frac{\partial \bar{\alpha}}{\partial \tau}\right) + \delta\frac{\partial \bar{\alpha}}{\partial \delta} + 1, \tag{16}$$

$$\frac{G}{RT} = 1 + \alpha^\circ + \bar{\alpha} + \delta\frac{\partial \bar{\alpha}}{\partial \delta}, \tag{17}$$

$$\frac{C_v}{R} = -\tau^2\left(\frac{\partial^2 \alpha^\circ}{\partial \tau^2} + \frac{\partial^2 \bar{\alpha}}{\partial \tau^2}\right), \tag{18}$$

$$\frac{C_p}{R} = \frac{C_v}{R} + \left[1 + \delta\frac{\partial \bar{\alpha}}{\partial \delta} - \delta\tau\frac{\partial^2 \bar{\alpha}}{\partial \delta \partial \tau}\right]^2 \div \left[1 + 2\delta\frac{\partial \bar{\alpha}}{\partial \delta} - \delta^2\frac{\partial^2 \bar{\alpha}}{\partial \delta^2}\right], \tag{19}$$

and

$$\frac{W^2}{RT} = 1 + 2\delta\frac{\partial \bar{\alpha}}{\partial \delta} + \delta^2\frac{\partial^2 \bar{\alpha}}{\partial \delta^2} - \left[1 + \delta\frac{\partial \bar{\alpha}}{\partial \delta} - \delta\tau\frac{\partial^2 \bar{\alpha}}{\partial \delta \partial \tau}\right]^2 \div \left[\tau^2\frac{\partial^2 \alpha^\circ}{\partial \tau^2} + \tau^2\frac{\partial^2 \bar{\alpha}}{\partial \tau^2}\right]. \tag{20}$$

8. Estimated Accuracy of Calculated Properties

The estimated accuracy of density values calculated with the formulation presented here is as follows:

vapor region $(T < T_c)$ $\rho < 2\text{mol/dm}^3 \pm 0.05\%$,

$\rho > 2\text{mol/dm}^3$ increasing to $\pm 0.2\%$;

liquid region $(T < T_c)$, 84 to 116 K $\pm 0.15\%$,

116 to 150 K increasing to $\pm 0.3\%$

fluid region $(T > T_c)$ $\pm 0.1\%$,

except in the near critical region (between 7 and 19 mol/dm^3 at temperatures between 149 and 152 K). The formulation given here may be expected to give pressures in the critical region with an estimated accuracy of $\pm 0.2\%$. Calculated densities may be substantially in error near the critical point. At high pressures in the liquid and fluid regions, the errors may be as large as $\pm 0.6\%$ as indicated by the deviations for the data of Cheng[22] and Crawford and Daniels[24] (see Sec. 6.1).

The calculated values of heat capacity (C_p and C_v) are estimated to be accurate to within $\pm 3\%$. Although the comparisons of Sec. 6 indicate some deviations of calculated isochoric heat capacity (C_v) values larger than $\pm 5\%$, the overall accuracy is estimated on the basis of comparisons to the data considered most reliable by the authors. Calculated values of velocity of sound are estimated to be accurate to within $\pm 2\%$. The accuracies of other calculated derived properties may be inferred from those discussed in Sec. 6.

9. Acknowledgment

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Appendix. Thermodynamic Properties of Argon

Saturation entries for isobar tables are calculated using temperatures determined by iterative solution of the vapor pressure equation, Eq. (4). The densities for the saturated liquid and vapor are calculated iteratively using the fundamental equation, Eq. (10). Table entries for the liquid–vapor saturation table are calculated using the vapor pressure equation to determine P_σ at the table value of T_σ. Densities and derived properties are calculated using the same methods as those for the saturation entries in the isobar tables.

Table 14. Thermodynamic properties of saturated argon

Temperature K	Pressure MPa	Density mol/dm³	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
[a] 83.804	.06895	35.475	-4835.9	53.29	21.34	42.61	853
		.10152	1701.4	131.30			208
84	.07052	35.446	-4827.5	53.39	21.31	42.64	851
		.10364	1704.0	131.15			207
85	.07897	35.298	-4784.6	53.90	21.19	42.77	845
		.11500	1716.9	130.39			201
86	.08819	35.149	-4741.6	54.40	21.06	42.90	838
		.12728	1729.5	129.64			196
87	.09822	34.998	-4698.5	54.89	20.94	43.04	831
		.14053	1741.9	128.92			193
88	.10911	34.846	-4655.2	55.38	20.82	43.18	825
		.15478	1754.1	128.21			190
89	.12089	34.693	-4611.7	55.87	20.70	43.34	818
		.17009	1765.9	127.53			188
90	.13362	34.538	-4568.1	56.35	20.59	43.49	811
		.18651	1777.5	126.86			186
91	.14735	34.383	-4524.3	56.83	20.47	43.66	804
		.20408	1788.8	126.21			184
92	.16212	34.226	-4480.3	57.31	20.36	43.83	798
		.22287	1799.9	125.57			183
93	.17799	34.067	-4436.1	57.78	20.25	44.01	791
		.24291	1810.6	124.95			182
94	.19501	33.907	-4391.7	58.25	20.14	44.20	784
		.26427	1821.0	124.34			182
95	.21322	33.746	-4347.1	58.72	20.04	44.39	777
		.28701	1831.2	123.75			181
96	.23267	33.584	-4302.3	59.18	19.94	44.59	770
		.31117	1840.9	123.17			181
97	.25343	33.419	-4257.3	59.64	19.84	44.80	763
		.33681	1850.4	122.61			180
98	.27553	33.254	-4212.1	60.10	19.74	45.02	756
		.36400	1859.4	122.05			180

[a]Triple Point

Table 14. Thermodynamic properties of saturated argon-Continued

Temperature K	Pressure MPa	Density mol/dm^3	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
99	.29904	33.087	-4166.6	60.55	19.65	45.24	749
		.39280	1868.1	121.51			180
100	.32401	32.918	-4120.9	61.00	19.55	45.48	742
		.42327	1876.3	120.98			180
101	.35049	32.748	-4074.9	61.45	19.46	45.73	735
		.45547	1884.2	120.45			180
102	.37853	32.576	-4028.6	61.90	19.38	45.98	728
		.48948	1891.5	119.94			180
103	.40819	32.402	-3982.1	62.35	19.29	46.25	720
		.52536	1898.4	119.44			180
104	.43952	32.226	-3935.3	62.79	19.21	46.52	713
		.56319	1904.8	118.94			180
105	.47258	32.049	-3888.2	63.23	19.13	46.81	706
		.60305	1910.7	118.46			180
106	.50743	31.870	-3840.9	63.67	19.05	47.11	698
		.64501	1916.0	117.98			180
107	.54411	31.689	-3793.2	64.10	18.97	47.42	691
		.68916	1920.8	117.51			180
108	.58269	31.506	-3745.1	64.54	18.89	47.75	683
		.73558	1924.9	117.04			180
109	.62321	31.321	-3696.8	64.97	18.82	48.09	676
		.78437	1928.5	116.58			180
110	.66575	31.133	-3648.1	65.41	18.75	48.45	668
		.83561	1931.3	116.13			181
111	.71034	30.944	-3599.0	65.84	18.68	48.82	660
		.88942	1933.5	115.68			181
112	.75706	30.752	-3549.6	66.27	18.61	49.22	652
		.94590	1935.0	115.24			181
113	.80595	30.558	-3499.7	66.70	18.55	49.63	645
		1.0052	1935.8	114.80			181
114	.85707	30.362	-3449.5	67.12	18.48	50.07	636
		1.0673	1935.8	114.36			181

Table 14. Thermodynamic properties of saturated argon-Continued

Temperature	Pressure	Density	Enthalpy	Entropy	C_v	C_p	Velocity of Sound
K	MPa	mol/dm^3	J/mol	J/mol K	J/mol K	J/mol K	m/s
115	.91048	30.162	-3398.8	67.55	18.42	50.53	628
		1.1325	1935.0	113.93			181
116	.96624	29.961	-3347.7	67.98	18.37	51.01	620
		1.2009	1933.3	113.50			181
117	1.0244	29.756	-3296.1	68.40	18.31	51.53	612
		1.2725	1930.8	113.08			182
118	1.0850	29.548	-3244.1	68.83	18.26	52.07	603
		1.3476	1927.4	112.66			182
119	1.1482	29.337	-3191.5	69.25	18.21	52.65	595
		1.4264	1923.0	112.23	16.63	35.36	182
120	1.2139	29.123	-3138.4	69.68	18.16	53.27	586
		1.5090	1917.7	111.81	16.75	36.15	182
121	1.2823	28.906	-3084.7	70.11	18.11	53.92	577
		1.5955	1911.3	111.40	16.87	36.99	182
122	1.3534	28.685	-3030.4	70.53	18.07	54.63	568
		1.6863	1903.9	110.98	16.98	37.89	182
123	1.4273	28.459	-2975.5	70.96	18.03	55.39	559
		1.7815	1895.3	110.56	17.10	38.85	182
124	1.5039	28.230	-2920.0	71.39	18.00	56.20	550
		1.8814	1885.5	110.14	17.23	39.88	182
125	1.5835	27.996	-2863.7	71.82	17.96	57.08	541
		1.9863	1874.5	109.72	17.35	41.00	182
126	1.6660	27.758	-2806.7	72.25	17.94	58.03	531
		2.0965	1862.1	109.30	17.48	42.22	182
127	1.7516	27.514	-2748.9	72.68	17.91	59.07	521
		2.2122	1848.4	108.88	17.61	43.54	182
128	1.8402	27.265	-2690.2	73.12	17.90	60.19	511
		2.3339	1833.2	108.45	17.75	44.98	182
129	1.9320	27.010	-2630.6	73.55	17.89	61.43	501
		2.4621	1816.5	108.03	17.90	46.56	182
130	2.0270	26.748	-2570.0	73.99	17.88	62.79	490
		2.5970	1798.1	107.59	18.05	48.30	182

Table 14. Thermodynamic properties of saturated argon-Continued

Temperature K	Pressure MPa	Density mol/dm³	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
131	2.1252	26.479	-2508.3	74.44	17.88	64.29	480
		2.7394	1777.9	107.16	18.21	50.22	182
132	2.2269	26.203	-2445.4	74.89	17.89	65.96	469
		2.8897	1755.9	106.71	18.37	52.36	182
133	2.3319	25.918	-2381.3	75.34	17.91	67.82	457
		3.0486	1731.8	106.27	18.55	54.75	181
134	2.4405	25.624	-2315.8	75.80	17.94	69.91	446
		3.2169	1705.5	105.81	18.74	57.44	181
135	2.5527	25.320	-2248.7	76.26	17.98	72.27	434
		3.3956	1676.9	105.34	18.93	60.49	181
136	2.6685	25.004	-2180.0	76.74	18.03	74.97	421
		3.5856	1645.7	104.87	19.14	63.96	181
137	2.7881	24.674	-2109.3	77.22	18.10	78.08	409
		3.7882	1611.6	104.38	19.37	67.96	180
138	2.9116	24.331	-2036.6	77.71	18.19	81.68	396
		4.0048	1574.4	103.88	19.61	72.62	180
139	3.0390	23.970	-1961.4	78.22	18.30	85.92	382
		4.2372	1533.8	103.36	19.87	78.08	180
140	3.1704	23.590	-1883.5	78.74	18.44	90.97	368
		4.4877	1489.2	102.83	20.15	84.59	179
141	3.3059	23.188	-1802.3	79.27	18.61	97.07	354
		4.7588	1440.1	102.27	20.46	92.47	179
142	3.4457	22.759	-1717.5	79.83	18.81	104.61	339
		5.0539	1386.0	101.69	20.80	102.17	178
143	3.5899	22.298	-1628.3	80.41	19.06	114.11	323
		5.3777	1325.8	101.07	21.17	114.41	178
144	3.7386	21.800	-1533.8	81.02	19.37	126.45	307
		5.7357	1258.7	100.42	21.58	130.27	177
145	3.8920	21.253	-1432.7	81.67	19.75	143.03	290
		6.1362	1182.8	99.71	22.04	151.60	177
146	4.0502	20.647	-1323.3	82.37	20.21	166.30	272
		6.5912	1096.2	98.94	22.57	181.77	176

Table 14. Thermodynamic properties of saturated argon-Continued

Temperature K	Pressure MPa	Density mol/dm^3	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
147	4.2134	19.963	-1203.1	83.14	20.80	200.87	254
		7.1193	995.2	98.09	23.18	227.64	175
148	4.3819	19.175	-1068.2	83.99	21.53	256.79	236
		7.7534	873.7	97.12	23.90	305.98	174
149	4.5560	18.235	-911.4	84.99	22.45	366.37	218
		8.5637	718.6	95.93	24.78	472.06	173
150	4.7363	16.973	-707.3	86.28	23.74	762.20	198
		9.7789	487.7	94.25	26.00	1098.27	171
[b] 150.6633	4.860	13.29	-142.3	89.99	27.30		168

[b]Critical point

Table 15 Thermodynamic properties of argon

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
			0.08 MPa Isobar				
84	35.447	-4829.6	-4827.3	53.39	21.31	42.64	852
* 85.12	35.281	-4781.9	-4779.7	53.95	21.17	42.78	844
* 85.12	0.11638	1030.9	1718.4	130.30			201
86	0.11515	1037.0	1731.7	130.45			188
88	0.11240	1056.2	1767.9	130.87			178
90	0.10973	1079.8	1808.9	131.33			176
92	0.10717	1105.6	1852.1	131.81			177
94	0.10472	1132.4	1896.3	132.28			178
96	0.10239	1159.6	1940.9	132.75			180
98	0.10016	1186.7	1985.5	133.21			182
100	0.09803	1213.8	2029.9	133.66			184
102	0.09600	1240.7	2074.0	134.10			186
104	0.09406	1267.5	2118.0	134.52			188
106	0.09220	1294.0	2161.7	134.94			190
108	0.09041	1320.4	2205.3	135.35			192
110	0.08869	1346.6	2248.6	135.74	12.84	21.63	194
112	0.08705	1372.7	2291.8	136.13	12.80	21.55	196
114	0.08546	1398.7	2334.8	136.51	12.76	21.48	197
116	0.08393	1424.6	2377.7	136.89	12.72	21.42	199
118	0.08246	1450.4	2420.5	137.25	12.69	21.37	201
120	0.08104	1476.1	2463.2	137.61	12.67	21.33	203
122	0.07968	1501.7	2505.8	137.96	12.65	21.29	205
124	0.07835	1527.3	2548.4	138.31	12.63	21.25	206
126	0.07708	1552.9	2590.8	138.65	12.61	21.22	208
128	0.07584	1578.4	2633.3	138.98	12.60	21.20	210
130	0.07464	1603.9	2675.6	139.31	12.59	21.17	212
132	0.07349	1629.3	2717.9	139.63	12.58	21.15	213
134	0.07236	1654.7	2760.2	139.95	12.57	21.13	215
136	0.07128	1680.1	2802.5	140.26	12.56	21.11	216
138	0.07022	1705.4	2844.7	140.57	12.55	21.09	218
140	0.06920	1730.7	2886.8	140.88	12.55	21.08	220
142	0.06820	1756.0	2929.0	141.18	12.54	21.07	221
144	0.06724	1781.3	2971.1	141.47	12.54	21.05	223
146	0.06630	1806.6	3013.2	141.76	12.53	21.04	225
148	0.06539	1831.8	3055.3	142.05	12.53	21.03	226
150	0.06450	1857.1	3097.3	142.33	12.53	21.02	228
152	0.06364	1882.3	3139.4	142.61	12.52	21.01	229
154	0.06280	1907.5	3181.4	142.88	12.52	21.00	231

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
156	0.06199	1932.7	3223.4	143.15	12.52	20.99	232
158	0.06119	1957.9	3265.3	143.42	12.52	20.99	234
160	0.06041	1983.1	3307.3	143.68	12.51	20.98	235
162	0.05966	2008.3	3349.3	143.94	12.51	20.97	237
164	0.05892	2033.5	3391.2	144.20	12.51	20.97	238
166	0.05820	2058.6	3433.1	144.46	12.51	20.96	240
168	0.05750	2083.8	3475.0	144.71	12.51	20.96	241
170	0.05682	2108.9	3517.0	144.95	12.51	20.95	243
172	0.05615	2134.1	3558.8	145.20	12.50	20.94	244
174	0.05550	2159.2	3600.7	145.44	12.50	20.94	245
176	0.05486	2184.3	3642.6	145.68	12.50	20.94	247
178	0.05424	2209.4	3684.5	145.92	12.50	20.93	248
180	0.05363	2234.5	3726.3	146.15	12.50	20.93	250
185	0.05216	2297.3	3830.9	146.72	12.50	20.92	253
190	0.05078	2360.0	3935.5	147.28	12.50	20.91	257
195	0.04947	2422.8	4040.0	147.83	12.49	20.90	260
200	0.04822	2485.4	4144.5	148.35	12.49	20.89	263
205	0.04704	2548.1	4248.9	148.87	12.49	20.89	267
210	0.04591	2610.8	4353.4	149.37	12.49	20.88	270
215	0.04483	2673.4	4457.7	149.86	12.49	20.87	273
220	0.04381	2736.0	4562.1	150.34	12.49	20.87	276
225	0.04283	2798.6	4666.4	150.81	12.49	20.86	279
230	0.04189	2861.2	4770.8	151.27	12.49	20.86	282
235	0.04100	2923.8	4875.0	151.72	12.48	20.86	285
240	0.04014	2986.3	4979.3	152.16	12.48	20.85	288
245	0.03932	3048.9	5083.6	152.59	12.48	20.85	291
250	0.03853	3111.4	5187.8	153.01	12.48	20.85	294
255	0.03777	3174.0	5292.0	153.42	12.48	20.84	297
260	0.03704	3236.5	5396.3	153.83	12.48	20.84	300
265	0.03634	3299.0	5500.4	154.23	12.48	20.84	303
270	0.03566	3361.5	5604.6	154.61	12.48	20.84	306
275	0.03501	3424.0	5708.8	155.00	12.48	20.83	309
280	0.03439	3486.5	5813.0	155.37	12.48	20.83	312
285	0.03378	3549.0	5917.1	155.74	12.48	20.83	314
290	0.03320	3611.5	6021.3	156.10	12.48	20.83	317
295	0.03263	3674.0	6125.4	156.46	12.48	20.83	320
300	0.03209	3736.4	6229.5	156.81	12.48	20.82	323
310	0.03105	3861.4	6437.8	157.49	12.48	20.82	328
320	0.03008	3986.3	6646.0	158.15	12.48	20.82	333
330	0.02917	4111.2	6854.1	158.79	12.48	20.82	338
340	0.02831	4236.1	7062.3	159.42	12.48	20.81	344

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
350	0.02750	4360.9	7270.4	160.02	12.48	20.81	349
360	0.02673	4485.8	7478.5	160.60	12.48	20.81	353
370	0.02601	4610.7	7686.6	161.18	12.48	20.81	358
380	0.02532	4735.5	7894.7	161.73	12.48	20.81	363
390	0.02467	4860.3	8102.8	162.27	12.48	20.81	368
400	0.02406	4985.2	8310.8	162.80	12.47	20.80	373
410	0.02347	5110.0	8518.9	163.31	12.47	20.80	377
420	0.02291	5234.8	8726.9	163.81	12.47	20.80	382
430	0.02238	5359.6	8934.9	164.30	12.47	20.80	386
440	0.02187	5484.4	9142.9	164.78	12.47	20.80	391
450	0.02138	5609.2	9350.9	165.25	12.47	20.80	395
460	0.02092	5734.0	9558.9	165.70	12.47	20.80	400
470	0.02047	5858.8	9766.9	166.15	12.47	20.80	404
480	0.02004	5983.6	9974.9	166.59	12.47	20.80	408
490	0.01963	6108.4	10183.	167.02	12.47	20.80	412
500	0.01924	6233.2	10391.	167.44	12.47	20.80	417
520	0.01850	6482.7	10807.	168.25	12.47	20.80	425
540	0.01782	6732.3	11223.	169.04	12.47	20.80	433
560	0.01718	6981.8	11639.	169.80	12.47	20.79	441
580	0.01659	7231.3	12054.	170.53	12.47	20.79	449
600	0.01603	7480.9	12470.	171.23	12.47	20.79	456
620	0.01552	7730.4	12886.	171.91	12.47	20.79	464
640	0.01503	7979.9	13302.	172.57	12.47	20.79	471
660	0.01458	8229.4	13718.	173.21	12.47	20.79	479
680	0.01415	8478.9	14134.	173.83	12.47	20.79	486
700	0.01374	8728.4	14550.	174.44	12.47	20.79	493
720	0.01336	8977.9	14965.	175.02	12.47	20.79	500
740	0.01300	9227.4	15381.	175.59	12.47	20.79	507
760	0.01266	9476.8	15797.	176.14	12.47	20.79	514
780	0.01233	9726.3	16213.	176.68	12.47	20.79	520
800	0.01203	9975.8	16629.	177.21	12.47	20.79	527
850	0.01132	10599.	17668.	178.47	12.47	20.79	543
900	0.01069	11223.	18707.	179.66	12.47	20.79	559
950	0.01013	11847.	19747.	180.78	12.47	20.79	574
1000	0.00962	12470.	20786.	181.85	12.47	20.79	589
1050	0.00916	13094.	21826.	182.86	12.47	20.79	604
1100	0.00875	13718.	22865.	183.83	12.47	20.79	618
1150	0.00837	14341.	23904.	184.76	12.47	20.79	632
1200	0.00802	14965.	24944.	185.64	12.47	20.79	645

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
			0.10 MPa Isobar				
84	35.448	-4829.8	-4827.0	53.39	21.31	42.63	852
86	35.149	-4744.3	-4741.4	54.39	21.06	42.90	839
* 87.17	34.972	-4694.1	-4691.2	54.97	20.92	43.06	831
* 87.17	0.14286	1044.0	1744.0	128.80			193
88	0.14144	1050.8	1757.9	128.96			185
90	0.13806	1071.8	1796.1	129.39			179
92	0.13480	1096.6	1838.4	129.85			177
94	0.13167	1123.1	1882.6	130.33			178
96	0.12869	1150.4	1927.5	130.80			179
98	0.12585	1178.0	1972.6	131.26			181
100	0.12314	1205.5	2017.6	131.72			183
102	0.12055	1232.9	2062.4	132.16			185
104	0.11807	1260.0	2106.9	132.59			187
106	0.11571	1287.0	2151.2	133.02			189
108	0.11344	1313.7	2195.2	133.43			191
110	0.11126	1340.3	2239.0	133.83	12.94	21.84	193
112	0.10917	1366.6	2282.6	134.22	12.88	21.75	195
114	0.10717	1392.9	2326.0	134.61	12.83	21.66	197
116	0.10523	1419.0	2369.3	134.98	12.79	21.59	199
118	0.10337	1445.0	2412.4	135.35	12.75	21.53	201
120	0.10158	1471.0	2455.4	135.71	12.72	21.47	203
122	0.09985	1496.8	2498.3	136.07	12.69	21.42	204
124	0.09818	1522.6	2541.1	136.41	12.67	21.38	206
126	0.09657	1548.3	2583.8	136.76	12.65	21.34	208
128	0.09501	1573.9	2626.4	137.09	12.63	21.30	210
130	0.09350	1599.5	2669.0	137.42	12.62	21.27	211
132	0.09205	1625.1	2711.5	137.75	12.61	21.24	213
134	0.09063	1650.6	2754.0	138.07	12.59	21.22	215
136	0.08926	1676.1	2796.4	138.38	12.58	21.19	216
138	0.08793	1701.5	2838.7	138.69	12.58	21.17	218
140	0.08665	1727.0	2881.1	138.99	12.57	21.15	220
142	0.08540	1752.4	2923.4	139.29	12.56	21.14	221
144	0.08418	1777.7	2965.6	139.59	12.56	21.12	223
146	0.08300	1803.1	3007.9	139.88	12.55	21.11	224
148	0.08186	1828.4	3050.1	140.17	12.54	21.09	226
150	0.08074	1853.7	3092.2	140.45	12.54	21.08	227
152	0.07966	1879.0	3134.4	140.73	12.54	21.07	229
154	0.07861	1904.3	3176.5	141.01	12.53	21.06	231

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
156	0.07758	1929.6	3218.6	141.28	12.53	21.05	232
158	0.07658	1954.8	3260.7	141.55	12.53	21.04	234
160	0.07560	1980.1	3302.8	141.81	12.52	21.03	235
162	0.07466	2005.3	3344.8	142.07	12.52	21.02	237
164	0.07373	2030.6	3386.8	142.33	12.52	21.01	238
166	0.07283	2055.8	3428.9	142.58	12.52	21.01	240
168	0.07195	2081.0	3470.9	142.83	12.52	21.00	241
170	0.07109	2106.2	3512.9	143.08	12.51	20.99	242
172	0.07025	2131.4	3554.8	143.33	12.51	20.98	244
174	0.06943	2156.5	3596.8	143.57	12.51	20.98	245
176	0.06863	2181.7	3638.7	143.81	12.51	20.97	247
178	0.06785	2206.9	3680.7	144.05	12.51	20.97	248
180	0.06709	2232.0	3722.6	144.28	12.51	20.96	250
185	0.06525	2294.9	3827.4	144.86	12.50	20.95	253
190	0.06352	2357.7	3932.1	145.42	12.50	20.94	256
195	0.06187	2420.5	4036.8	145.96	12.50	20.93	260
200	0.06031	2483.3	4141.4	146.49	12.50	20.92	263
205	0.05883	2546.0	4246.0	147.01	12.50	20.91	267
210	0.05741	2608.8	4350.5	147.51	12.49	20.90	270
215	0.05607	2671.5	4455.0	148.00	12.49	20.90	273
220	0.05478	2734.1	4559.5	148.48	12.49	20.89	276
225	0.05356	2796.8	4663.9	148.95	12.49	20.88	279
230	0.05239	2859.5	4768.3	149.41	12.49	20.88	282
235	0.05127	2922.1	4872.7	149.86	12.49	20.87	285
240	0.05019	2984.7	4977.1	150.30	12.49	20.87	288
245	0.04916	3047.3	5081.4	150.73	12.49	20.87	291
250	0.04817	3109.9	5185.7	151.15	12.49	20.86	294
255	0.04722	3172.5	5290.0	151.56	12.48	20.86	297
260	0.04631	3235.0	5394.3	151.97	12.48	20.85	300
265	0.04543	3297.6	5498.6	152.36	12.48	20.85	303
270	0.04459	3360.1	5602.8	152.75	12.48	20.85	306
275	0.04378	3422.7	5707.1	153.14	12.48	20.85	309
280	0.04299	3485.2	5811.3	153.51	12.48	20.84	312
285	0.04223	3547.7	5915.5	153.88	12.48	20.84	314
290	0.04150	3610.2	6019.7	154.24	12.48	20.84	317
295	0.04080	3672.7	6123.9	154.60	12.48	20.84	320
300	0.04012	3735.2	6228.0	154.95	12.48	20.83	323
310	0.03882	3860.2	6436.4	155.63	12.48	20.83	328
320	0.03760	3985.2	6644.6	156.29	12.48	20.83	333
330	0.03646	4110.1	6852.9	156.94	12.48	20.82	338
340	0.03539	4235.1	7061.1	157.56	12.48	20.82	344

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
350	0.03437	4360.0	7269.3	158.16	12.48	20.82	349
360	0.03342	4484.9	7477.5	158.75	12.48	20.82	353
370	0.03251	4609.8	7685.7	159.32	12.48	20.81	358
380	0.03165	4734.7	7893.8	159.87	12.48	20.81	363
390	0.03084	4859.5	8101.9	160.41	12.48	20.81	368
400	0.03007	4984.4	8310.0	160.94	12.48	20.81	373
410	0.02934	5109.2	8518.1	161.45	12.48	20.81	377
420	0.02864	5234.1	8726.2	161.96	12.48	20.81	382
430	0.02797	5358.9	8934.2	162.44	12.48	20.81	386
440	0.02733	5483.8	9142.3	162.92	12.47	20.80	391
450	0.02673	5608.6	9350.3	163.39	12.47	20.80	395
460	0.02614	5733.4	9558.4	163.85	12.47	20.80	400
470	0.02559	5858.2	9766.4	164.30	12.47	20.80	404
480	0.02505	5983.0	9974.4	164.73	12.47	20.80	408
490	0.02454	6107.8	10182.	165.16	12.47	20.80	412
500	0.02405	6232.6	10390.	165.58	12.47	20.80	417
520	0.02313	6482.2	10806.	166.40	12.47	20.80	425
540	0.02227	6731.8	11222.	167.18	12.47	20.80	433
560	0.02147	6981.3	11638.	167.94	12.47	20.80	441
580	0.02073	7230.9	12054.	168.67	12.47	20.80	449
600	0.02004	7480.4	12470.	169.37	12.47	20.79	456
620	0.01939	7730.0	12886.	170.06	12.47	20.79	464
640	0.01879	7979.5	13302.	170.72	12.47	20.79	471
660	0.01822	8229.0	13718.	171.36	12.47	20.79	479
680	0.01768	8478.5	14134.	171.98	12.47	20.79	486
700	0.01718	8728.0	14549.	172.58	12.47	20.79	493
720	0.01670	8977.5	14965.	173.17	12.47	20.79	500
740	0.01625	9227.0	15381.	173.73	12.47	20.79	507
760	0.01582	9476.5	15797.	174.29	12.47	20.79	514
780	0.01542	9726.0	16213.	174.83	12.47	20.79	520
800	0.01503	9975.5	16629.	175.36	12.47	20.79	527
850	0.01415	10599.	17668.	176.62	12.47	20.79	543
900	0.01336	11223.	18708.	177.80	12.47	20.79	559
950	0.01266	11847.	19747.	178.93	12.47	20.79	574
1000	0.01202	12470.	20786.	179.99	12.47	20.79	589
1050	0.01145	13094.	21826.	181.01	12.47	20.79	604
1100	0.01093	13718.	22865.	181.98	12.47	20.79	618
1150	0.01046	14341.	23905.	182.90	12.47	20.79	632
1200	0.01002	14965.	24944.	183.78	12.47	20.79	645

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
			0.101325 MPa Isobar				
84	35.449	-4829.8	-4826.9	53.39	21.31	42.63	852
86	35.150	-4744.3	-4741.4	54.39	21.06	42.90	839
* 87.29	34.953	-4688.7	-4685.8	55.04	20.90	43.08	830
* 87.29	0.14460	1044.8	1745.5	128.71			192
88	0.14337	1050.6	1757.3	128.84			186
90	0.13995	1071.3	1795.3	129.27			179
92	0.13664	1096.0	1837.5	129.74			177
94	0.13347	1122.5	1881.7	130.21			178
96	0.13044	1149.8	1926.6	130.68			179
98	0.12756	1177.4	1971.7	131.15			181
100	0.12481	1204.9	2016.8	131.60			183
102	0.12218	1232.3	2061.6	132.05			185
104	0.11967	1259.5	2106.2	132.48			187
106	0.11727	1286.5	2150.5	132.90			189
108	0.11497	1313.2	2194.6	133.31			191
110	0.11276	1339.8	2238.4	133.72	12.94	21.86	193
112	0.11065	1366.2	2282.0	134.11	12.89	21.76	195
114	0.10861	1392.5	2325.4	134.49	12.84	21.68	197
116	0.10665	1418.7	2368.7	134.87	12.79	21.60	199
118	0.10476	1444.7	2411.9	135.24	12.76	21.54	201
120	0.10295	1470.6	2454.9	135.60	12.72	21.48	203
122	0.10119	1496.5	2497.8	135.95	12.70	21.43	204
124	0.09950	1522.3	2540.6	136.30	12.67	21.38	206
126	0.09787	1548.0	2583.3	136.64	12.65	21.34	208
128	0.09629	1573.6	2626.0	136.98	12.64	21.31	210
130	0.09476	1599.2	2668.6	137.31	12.62	21.28	211
132	0.09328	1624.8	2711.1	137.64	12.61	21.25	213
134	0.09184	1650.3	2753.5	137.95	12.60	21.22	215
136	0.09046	1675.8	2796.0	138.27	12.59	21.20	216
138	0.08911	1701.3	2838.4	138.58	12.58	21.18	218
140	0.08780	1726.7	2880.7	138.88	12.57	21.16	220
142	0.08654	1752.1	2923.0	139.18	12.56	21.14	221
144	0.08531	1777.5	2965.3	139.48	12.56	21.13	223
146	0.08411	1802.8	3007.5	139.77	12.55	21.11	224
148	0.08295	1828.2	3049.7	140.06	12.55	21.10	226
150	0.08182	1853.5	3091.9	140.34	12.54	21.08	227
152	0.08072	1878.8	3134.0	140.62	12.54	21.07	229
154	0.07965	1904.1	3176.2	140.89	12.53	21.06	231

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
156	0.07861	1929.4	3218.3	141.17	12.53	21.05	232
158	0.07760	1954.6	3260.4	141.43	12.53	21.04	234
160	0.07661	1979.9	3302.5	141.70	12.53	21.03	235
162	0.07565	2005.1	3344.5	141.96	12.52	21.02	237
164	0.07471	2030.4	3386.6	142.22	12.52	21.02	238
166	0.07380	2055.6	3428.6	142.47	12.52	21.01	240
168	0.07291	2080.8	3470.6	142.72	12.52	21.00	241
170	0.07204	2106.0	3512.6	142.97	12.51	20.99	242
172	0.07119	2131.2	3554.6	143.22	12.51	20.99	244
174	0.07036	2156.4	3596.5	143.46	12.51	20.98	245
176	0.06955	2181.5	3638.5	143.70	12.51	20.98	247
178	0.06875	2206.7	3680.4	143.94	12.51	20.97	248
180	0.06798	2231.9	3722.4	144.17	12.51	20.96	250
185	0.06612	2294.7	3827.2	144.75	12.50	20.95	253
190	0.06436	2357.6	3931.9	145.30	12.50	20.94	256
195	0.06269	2420.4	4036.6	145.85	12.50	20.93	260
200	0.06111	2483.2	4141.2	146.38	12.50	20.92	263
205	0.05961	2545.9	4245.8	146.89	12.50	20.91	266
210	0.05818	2608.6	4350.3	147.40	12.49	20.91	270
215	0.05681	2671.3	4454.8	147.89	12.49	20.90	273
220	0.05551	2734.0	4559.3	148.37	12.49	20.89	276
225	0.05427	2796.7	4663.7	148.84	12.49	20.89	279
230	0.05308	2859.3	4768.2	149.30	12.49	20.88	282
235	0.05195	2922.0	4872.6	149.75	12.49	20.88	285
240	0.05086	2984.6	4976.9	150.19	12.49	20.87	288
245	0.04981	3047.2	5081.3	150.62	12.49	20.87	291
250	0.04881	3109.8	5185.6	151.04	12.49	20.86	294
255	0.04785	3172.4	5289.9	151.45	12.48	20.86	297
260	0.04693	3234.9	5394.2	151.86	12.48	20.86	300
265	0.04604	3297.5	5498.4	152.26	12.48	20.85	303
270	0.04518	3360.0	5602.7	152.64	12.48	20.85	306
275	0.04436	3422.6	5706.9	153.03	12.48	20.85	309
280	0.04356	3485.1	5811.2	153.40	12.48	20.84	312
285	0.04279	3547.6	5915.4	153.77	12.48	20.84	314
290	0.04205	3610.2	6019.6	154.13	12.48	20.84	317
295	0.04134	3672.7	6123.8	154.49	12.48	20.84	320
300	0.04065	3735.2	6227.9	154.84	12.48	20.83	323
310	0.03933	3860.2	6436.3	155.52	12.48	20.83	328
320	0.03810	3985.1	6644.6	156.19	12.48	20.83	333
330	0.03694	4110.1	6852.8	156.83	12.48	20.82	338
340	0.03585	4235.0	7061.0	157.45	12.48	20.82	344

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
350	0.03483	4359.9	7269.3	158.05	12.48	20.82	349
360	0.03386	4484.8	7477.4	158.64	12.48	20.82	353
370	0.03294	4609.7	7685.6	159.21	12.48	20.81	358
380	0.03207	4734.6	7893.7	159.76	12.48	20.81	363
390	0.03125	4859.5	8101.9	160.30	12.48	20.81	368
400	0.03047	4984.3	8310.0	160.83	12.48	20.81	373
410	0.02972	5109.2	8518.1	161.34	12.48	20.81	377
420	0.02902	5234.0	8726.1	161.85	12.48	20.81	382
430	0.02834	5358.9	8934.2	162.34	12.48	20.81	386
440	0.02770	5483.7	9142.3	162.81	12.47	20.80	391
450	0.02708	5608.5	9350.3	163.28	12.47	20.80	395
460	0.02649	5733.3	9558.3	163.74	12.47	20.80	400
470	0.02593	5858.2	9766.4	164.19	12.47	20.80	404
480	0.02539	5983.0	9974.4	164.62	12.47	20.80	408
490	0.02487	6107.8	10182.	165.05	12.47	20.80	412
500	0.02437	6232.6	10390.	165.47	12.47	20.80	417
520	0.02343	6482.2	10806.	166.29	12.47	20.80	425
540	0.02256	6731.7	11222.	167.07	12.47	20.80	433
560	0.02176	6981.3	11638.	167.83	12.47	20.80	441
580	0.02101	7230.9	12054.	168.56	12.47	20.80	449
600	0.02031	7480.4	12470.	169.26	12.47	20.79	456
620	0.01965	7729.9	12886.	169.95	12.47	20.79	464
640	0.01904	7979.5	13302.	170.61	12.47	20.79	471
660	0.01846	8229.0	13718.	171.25	12.47	20.79	479
680	0.01792	8478.5	14134.	171.87	12.47	20.79	486
700	0.01741	8728.0	14549.	172.47	12.47	20.79	493
720	0.01692	8977.5	14965.	173.06	12.47	20.79	500
740	0.01646	9227.0	15381.	173.63	12.47	20.79	507
760	0.01603	9476.5	15797.	174.18	12.47	20.79	514
780	0.01562	9726.0	16213.	174.72	12.47	20.79	520
800	0.01523	9975.5	16629.	175.25	12.47	20.79	527
850	0.01433	10599.	17668.	176.51	12.47	20.79	543
900	0.01354	11223.	18708.	177.69	12.47	20.79	559
950	0.01283	11847.	19747.	178.82	12.47	20.79	574
1000	0.01218	12470.	20786.	179.89	12.47	20.79	589
1050	0.01160	13094.	21826.	180.90	12.47	20.79	604
1100	0.01108	13718.	22865.	181.87	12.47	20.79	618
1150	0.01059	14341.	23905.	182.79	12.47	20.79	632
1200	0.01015	14965.	24944.	183.68	12.47	20.79	645

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
			0.15 MPa Isobar				
84	35.452	-4830.3	-4826.0	53.38	21.31	42.62	852
86	35.153	-4744.8	-4740.5	54.39	21.06	42.89	839
88	34.849	-4658.8	-4654.5	55.38	20.82	43.18	825
90	34.540	-4572.2	-4567.8	56.35	20.59	43.49	812
* 91.18	34.354	-4520.5	-4516.2	56.92	20.45	43.69	804
* 91.18	0.20746	1067.9	1790.9	126.09			185
92	0.20541	1076.6	1806.9	126.26			182
94	0.20049	1101.1	1849.3	126.72			179
96	0.19578	1128.1	1894.3	127.19			179
98	0.19128	1156.2	1940.4	127.67			180
100	0.18700	1184.6	1986.7	128.14			182
102	0.18293	1212.9	2032.9	128.59			184
104	0.17904	1241.1	2078.9	129.04			186
106	0.17534	1269.1	2124.5	129.47			188
108	0.17180	1296.7	2169.8	129.90			190
110	0.16841	1324.1	2214.8	130.31	13.17	22.40	192
112	0.16517	1351.3	2259.5	130.71	13.09	22.26	194
114	0.16205	1378.2	2303.9	131.11	13.02	22.13	196
116	0.15907	1405.0	2348.0	131.49	12.95	22.02	198
118	0.15619	1431.6	2391.9	131.87	12.90	21.92	200
120	0.15343	1458.0	2435.7	132.23	12.85	21.83	202
122	0.15077	1484.3	2479.3	132.59	12.81	21.75	204
124	0.14820	1510.5	2522.7	132.95	12.77	21.69	205
126	0.14572	1536.7	2566.0	133.29	12.74	21.63	207
128	0.14333	1562.7	2609.2	133.63	12.72	21.57	209
130	0.14102	1588.6	2652.3	133.97	12.69	21.52	211
132	0.13878	1614.5	2695.3	134.30	12.67	21.48	212
134	0.13662	1640.3	2738.2	134.62	12.66	21.44	214
136	0.13453	1666.1	2781.1	134.94	12.64	21.41	216
138	0.13250	1691.8	2823.9	135.25	12.63	21.37	218
140	0.13053	1717.5	2866.6	135.55	12.62	21.35	219
142	0.12863	1743.1	2909.2	135.86	12.61	21.32	221
144	0.12678	1768.7	2951.9	136.16	12.60	21.29	222
146	0.12498	1794.3	2994.4	136.45	12.59	21.27	224
148	0.12324	1819.8	3037.0	136.74	12.58	21.25	226
150	0.12154	1845.3	3079.4	137.02	12.58	21.23	227
152	0.11990	1870.8	3121.9	137.30	12.57	21.21	229
154	0.11829	1896.3	3164.3	137.58	12.56	21.20	230

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
156	0.11673	1921.7	3206.7	137.86	12.56	21.18	232
158	0.11522	1947.1	3249.0	138.12	12.56	21.17	233
160	0.11374	1972.5	3291.3	138.39	12.55	21.15	235
162	0.11230	1997.9	3333.6	138.65	12.55	21.14	236
164	0.11089	2023.3	3375.9	138.91	12.54	21.13	238
166	0.10953	2048.6	3418.2	139.17	12.54	21.12	239
168	0.10819	2074.0	3460.4	139.42	12.54	21.11	241
170	0.10689	2099.3	3502.6	139.67	12.54	21.10	242
172	0.10562	2124.6	3544.8	139.92	12.53	21.09	244
174	0.10438	2149.9	3586.9	140.16	12.53	21.08	245
176	0.10317	2175.2	3629.1	140.40	12.53	21.07	247
178	0.10199	2200.5	3671.2	140.64	12.53	21.06	248
180	0.10084	2225.7	3713.3	140.88	12.52	21.05	249
185	0.09806	2288.9	3818.5	141.45	12.52	21.03	253
190	0.09544	2351.9	3923.6	142.01	12.52	21.02	256
195	0.09295	2415.0	4028.7	142.56	12.51	21.00	260
200	0.09060	2477.9	4133.6	143.09	12.51	20.99	263
205	0.08836	2540.9	4238.5	143.61	12.51	20.97	266
210	0.08623	2603.8	4343.4	144.11	12.51	20.96	270
215	0.08420	2666.7	4448.2	144.61	12.50	20.95	273
220	0.08226	2729.5	4552.9	145.09	12.50	20.94	276
225	0.08042	2792.3	4657.6	145.56	12.50	20.93	279
230	0.07865	2855.1	4762.3	146.02	12.50	20.93	282
235	0.07696	2917.9	4866.9	146.47	12.50	20.92	285
240	0.07534	2980.6	4971.5	146.91	12.50	20.91	288
245	0.07379	3043.3	5076.0	147.34	12.49	20.91	291
250	0.07231	3106.0	5180.5	147.76	12.49	20.90	294
255	0.07088	3168.7	5285.0	148.18	12.49	20.89	297
260	0.06951	3231.4	5389.4	148.58	12.49	20.89	300
265	0.06819	3294.0	5493.9	148.98	12.49	20.88	303
270	0.06692	3356.7	5598.3	149.37	12.49	20.88	306
275	0.06569	3419.3	5702.7	149.75	12.49	20.88	309
280	0.06451	3481.9	5807.0	150.13	12.49	20.87	312
285	0.06338	3544.5	5911.4	150.50	12.49	20.87	314
290	0.06228	3607.1	6015.7	150.86	12.49	20.86	317
295	0.06122	3669.7	6120.0	151.22	12.49	20.86	320
300	0.06019	3732.3	6224.3	151.57	12.48	20.86	323
310	0.05824	3857.4	6432.9	152.25	12.48	20.85	328
320	0.05641	3982.5	6641.4	152.92	12.48	20.85	333
330	0.05470	4107.6	6849.8	153.56	12.48	20.84	338
340	0.05309	4232.6	7058.2	154.18	12.48	20.84	344

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm^3	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
350	0.05156	4357.6	7266.6	154.78	12.48	20.84	349
360	0.05013	4482.6	7474.9	155.37	12.48	20.83	354
370	0.04877	4607.6	7683.3	155.94	12.48	20.83	358
380	0.04748	4732.6	7891.5	156.50	12.48	20.83	363
390	0.04626	4857.5	8099.8	157.04	12.48	20.82	368
400	0.04511	4982.4	8308.0	157.56	12.48	20.82	373
410	0.04400	5107.4	8516.2	158.08	12.48	20.82	377
420	0.04295	5232.3	8724.4	158.58	12.48	20.82	382
430	0.04195	5357.2	8932.6	159.07	12.48	20.82	386
440	0.04100	5482.0	9140.7	159.55	12.48	20.81	391
450	0.04009	5606.9	9348.8	160.02	12.48	20.81	395
460	0.03921	5731.8	9557.0	160.47	12.48	20.81	400
470	0.03838	5856.7	9765.1	160.92	12.48	20.81	404
480	0.03758	5981.5	9973.2	161.36	12.48	20.81	408
490	0.03681	6106.4	10181.	161.79	12.48	20.81	413
500	0.03607	6231.2	10389.	162.21	12.48	20.81	417
520	0.03469	6480.9	10805.	163.02	12.48	20.80	425
540	0.03340	6730.5	11222.	163.81	12.47	20.80	433
560	0.03221	6980.1	11638.	164.57	12.47	20.80	441
580	0.03110	7229.7	12054.	165.30	12.47	20.80	449
600	0.03006	7479.3	12470.	166.00	12.47	20.80	456
620	0.02909	7728.9	12886.	166.68	12.47	20.80	464
640	0.02818	7978.5	13302.	167.34	12.47	20.80	471
660	0.02733	8228.1	13717.	167.98	12.47	20.80	479
680	0.02652	8477.6	14133.	168.60	12.47	20.80	486
700	0.02576	8727.2	14549.	169.21	12.47	20.80	493
720	0.02505	8976.7	14965.	169.79	12.47	20.79	500
740	0.02437	9226.2	15381.	170.36	12.47	20.79	507
760	0.02373	9475.8	15797.	170.92	12.47	20.79	514
780	0.02312	9725.3	16213.	171.46	12.47	20.79	520
800	0.02254	9974.8	16629.	171.98	12.47	20.79	527
850	0.02122	10599.	17668.	173.24	12.47	20.79	543
900	0.02004	11222.	18708.	174.43	12.47	20.79	559
950	0.01898	11846.	19747.	175.56	12.47	20.79	574
1000	0.01804	12470.	20787.	176.62	12.47	20.79	589
1050	0.01718	13093.	21826.	177.64	12.47	20.79	604
1100	0.01640	13717.	22866.	178.60	12.47	20.79	618
1150	0.01568	14341.	23905.	179.53	12.47	20.79	632
1200	0.01503	14964.	24945.	180.41	12.47	20.79	645

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
			0.20 MPa Isobar				
84	35.455	-4830.8	-4825.1	53.38	21.32	42.62	853
86	35.157	-4745.3	-4739.6	54.38	21.07	42.88	839
88	34.853	-4659.3	-4653.6	55.37	20.82	43.17	826
90	34.544	-4572.7	-4567.0	56.34	20.59	43.48	812
92	34.229	-4485.5	-4479.7	57.30	20.36	43.82	798
94	33.908	-4397.5	-4391.6	58.25	20.14	44.19	784
* 94.28	33.862	-4385.1	-4379.2	58.38	20.11	44.25	782
* 94.28	0.27052	1084.6	1823.9	124.18			182
96	0.26486	1106.7	1861.8	124.57			180
98	0.25856	1134.6	1908.1	125.05			180
100	0.25255	1163.5	1955.4	125.53			181
102	0.24685	1192.7	2003.0	126.00			183
104	0.24142	1221.9	2050.3	126.46			185
106	0.23626	1250.8	2097.3	126.91			187
108	0.23134	1279.4	2143.9	127.34			189
110	0.22665	1307.7	2190.1	127.77			191
112	0.22216	1335.6	2235.9	128.18			193
114	0.21787	1363.3	2281.3	128.58			195
116	0.21376	1390.7	2326.4	128.97	13.12	22.46	197
118	0.20981	1417.9	2371.2	129.36	13.05	22.33	199
120	0.20601	1444.9	2415.7	129.73	12.98	22.21	201
122	0.20237	1471.7	2460.0	130.10	12.93	22.10	203
124	0.19886	1498.4	2504.1	130.45	12.88	22.01	205
126	0.19547	1524.9	2548.0	130.81	12.84	21.92	207
128	0.19221	1551.3	2591.8	131.15	12.80	21.85	208
130	0.18906	1577.6	2635.5	131.49	12.77	21.78	210
132	0.18602	1603.8	2679.0	131.82	12.74	21.73	212
134	0.18308	1629.9	2722.4	132.15	12.72	21.67	214
136	0.18023	1656.0	2765.7	132.47	12.70	21.62	215
138	0.17748	1682.0	2808.9	132.78	12.68	21.58	217
140	0.17481	1707.9	2852.0	133.09	12.67	21.54	219
142	0.17222	1733.8	2895.0	133.40	12.65	21.51	220
144	0.16972	1759.6	2938.0	133.70	12.64	21.47	222
146	0.16729	1785.4	2980.9	134.00	12.63	21.44	224
148	0.16493	1811.1	3023.8	134.29	12.62	21.41	225
150	0.16263	1836.8	3066.6	134.57	12.61	21.39	227
152	0.16041	1862.5	3109.3	134.86	12.60	21.36	228
154	0.15824	1888.1	3152.0	135.14	12.60	21.34	230

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
156	0.15614	1913.8	3194.7	135.41	12.59	21.32	232
158	0.15409	1939.3	3237.3	135.68	12.58	21.30	233
160	0.15209	1964.9	3279.9	135.95	12.58	21.28	235
162	0.15015	1990.4	3322.4	136.22	12.57	21.26	236
164	0.14826	2015.9	3364.9	136.48	12.57	21.25	238
166	0.14642	2041.4	3407.4	136.73	12.56	21.23	239
168	0.14462	2066.9	3449.8	136.99	12.56	21.22	241
170	0.14287	2092.4	3492.3	137.24	12.56	21.20	242
172	0.14116	2117.8	3534.7	137.49	12.55	21.19	244
174	0.13949	2143.2	3577.0	137.73	12.55	21.18	245
176	0.13786	2168.6	3619.4	137.97	12.55	21.16	246
178	0.13627	2194.0	3661.7	138.21	12.55	21.15	248
180	0.13472	2219.4	3704.0	138.45	12.54	21.14	249
185	0.13099	2282.8	3809.6	139.03	12.54	21.12	253
190	0.12747	2346.1	3915.1	139.59	12.53	21.09	256
195	0.12413	2409.4	4020.5	140.14	12.53	21.07	260
200	0.12097	2472.6	4125.9	140.67	12.52	21.05	263
205	0.11797	2535.7	4231.1	141.19	12.52	21.04	266
210	0.11511	2598.8	4336.3	141.70	12.52	21.02	270
215	0.11239	2661.8	4441.3	142.19	12.51	21.01	273
220	0.10980	2724.8	4546.3	142.68	12.51	21.00	276
225	0.10733	2787.8	4651.3	143.15	12.51	20.98	279
230	0.10496	2850.7	4756.2	143.61	12.51	20.97	282
235	0.10270	2913.6	4861.0	144.06	12.50	20.96	285
240	0.10054	2976.5	4965.8	144.50	12.50	20.95	288
245	0.09846	3039.4	5070.6	144.93	12.50	20.95	291
250	0.09647	3102.2	5175.3	145.36	12.50	20.94	294
255	0.09456	3165.0	5280.0	145.77	12.50	20.93	297
260	0.09273	3227.7	5384.6	146.18	12.50	20.92	300
265	0.09096	3290.5	5489.2	146.58	12.50	20.92	303
270	0.08926	3353.2	5593.8	146.97	12.49	20.91	306
275	0.08763	3416.0	5698.3	147.35	12.49	20.91	309
280	0.08605	3478.7	5802.8	147.73	12.49	20.90	312
285	0.08453	3541.4	5907.3	148.10	12.49	20.90	315
290	0.08307	3604.0	6011.8	148.46	12.49	20.89	317
295	0.08165	3666.7	6116.2	148.82	12.49	20.89	320
300	0.08028	3729.3	6220.6	149.17	12.49	20.88	323
310	0.07768	3854.6	6429.4	149.85	12.49	20.87	328
320	0.07524	3979.8	6638.1	150.51	12.49	20.87	333
330	0.07295	4105.0	6846.8	151.16	12.48	20.86	339
340	0.07079	4230.1	7055.4	151.78	12.48	20.86	344

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
350	0.06876	4355.3	7263.9	152.38	12.48	20.85	349
360	0.06684	4480.3	7472.4	152.97	12.48	20.85	354
370	0.06503	4605.4	7680.8	153.54	12.48	20.84	359
380	0.06332	4730.5	7889.3	154.10	12.48	20.84	363
390	0.06169	4855.5	8097.6	154.64	12.48	20.84	368
400	0.06014	4980.5	8306.0	155.17	12.48	20.83	373
410	0.05867	5105.5	8514.3	155.68	12.48	20.83	377
420	0.05727	5230.4	8722.6	156.18	12.48	20.83	382
430	0.05594	5355.4	8930.9	156.67	12.48	20.83	387
440	0.05466	5480.3	9139.1	157.15	12.48	20.82	391
450	0.05345	5605.3	9347.3	157.62	12.48	20.82	395
460	0.05228	5730.2	9555.6	158.08	12.48	20.82	400
470	0.05117	5855.1	9763.7	158.53	12.48	20.82	404
480	0.05010	5980.0	9971.9	158.96	12.48	20.82	408
490	0.04908	6104.9	10180.	159.39	12.48	20.81	413
500	0.04810	6229.8	10388.	159.81	12.48	20.81	417
520	0.04624	6479.5	10804.	160.63	12.48	20.81	425
540	0.04453	6729.2	11221.	161.42	12.48	20.81	433
560	0.04294	6978.9	11637.	162.17	12.48	20.81	441
580	0.04146	7228.6	12053.	162.90	12.48	20.81	449
600	0.04007	7478.3	12469.	163.61	12.48	20.80	457
620	0.03878	7727.9	12885.	164.29	12.47	20.80	464
640	0.03757	7977.5	13301.	164.95	12.47	20.80	472
660	0.03643	8227.1	13717.	165.59	12.47	20.80	479
680	0.03536	8476.7	14133.	166.21	12.47	20.80	486
700	0.03435	8726.3	14549.	166.81	12.47	20.80	493
720	0.03339	8975.9	14965.	167.40	12.47	20.80	500
740	0.03249	9225.5	15381.	167.97	12.47	20.80	507
760	0.03164	9475.0	15797.	168.52	12.47	20.80	514
780	0.03082	9724.6	16213.	169.06	12.47	20.80	520
800	0.03005	9974.1	16629.	169.59	12.47	20.79	527
850	0.02829	10598.	17668.	170.85	12.47	20.79	543
900	0.02672	11222.	18708.	172.04	12.47	20.79	559
950	0.02531	11846.	19748.	173.16	12.47	20.79	574
1000	0.02404	12469.	20787.	174.23	12.47	20.79	589
1050	0.02290	13093.	21827.	175.25	12.47	20.79	604
1100	0.02186	13717.	22866.	176.21	12.47	20.79	618
1150	0.02091	14340.	23906.	177.14	12.47	20.79	632
1200	0.02004	14964.	24945.	178.02	12.47	20.79	645

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
			0.25 MPa Isobar				
* 83.81	35.487	-4839.3	-4832.2	53.27	21.34	42.58	854
84	35.459	-4831.3	-4824.2	53.37	21.32	42.61	853
86	35.160	-4745.8	-4738.7	54.38	21.07	42.87	839
88	34.857	-4659.9	-4652.7	55.36	20.82	43.16	826
90	34.548	-4573.3	-4566.1	56.34	20.59	43.47	812
92	34.233	-4486.1	-4478.8	57.30	20.36	43.81	799
94	33.912	-4398.2	-4390.8	58.24	20.15	44.18	785
96	33.585	-4309.5	-4302.1	59.18	19.94	44.59	771
* 96.84	33.446	-4272.1	-4264.6	59.57	19.85	44.77	765
* 96.84	0.33258	1097.2	1848.9	122.70			181
98	0.32781	1113.2	1875.8	122.97			180
100	0.31991	1142.3	1923.8	123.46			180
102	0.31241	1172.2	1972.5	123.94			182
104	0.30530	1202.3	2021.2	124.41			184
106	0.29855	1232.2	2069.6	124.87			186
108	0.29214	1261.7	2117.5	125.32			188
110	0.28603	1290.9	2164.9	125.76			190
112	0.28021	1319.7	2211.8	126.18			192
114	0.27466	1348.1	2258.3	126.59			194
116	0.26934	1376.2	2304.4	126.99			196
118	0.26425	1404.0	2350.1	127.38	13.20	22.76	198
120	0.25937	1431.5	2395.4	127.76	13.12	22.60	200
122	0.25469	1458.9	2440.5	128.13	13.05	22.46	202
124	0.25018	1486.0	2485.3	128.50	12.99	22.34	204
126	0.24585	1513.0	2529.9	128.86	12.93	22.24	206
128	0.24167	1539.8	2574.2	129.20	12.89	22.14	208
130	0.23764	1566.4	2618.4	129.55	12.85	22.05	210
132	0.23376	1593.0	2662.5	129.88	12.82	21.98	211
134	0.23001	1619.4	2706.3	130.21	12.79	21.91	213
136	0.22638	1645.8	2750.1	130.54	12.76	21.85	215
138	0.22288	1672.0	2793.7	130.86	12.74	21.79	217
140	0.21948	1698.2	2837.3	131.17	12.72	21.74	218
142	0.21620	1724.4	2880.7	131.48	12.70	21.70	220
144	0.21301	1750.4	2924.1	131.78	12.68	21.65	222
146	0.20993	1776.4	2967.3	132.08	12.67	21.61	223
148	0.20693	1802.4	3010.5	132.37	12.66	21.58	225
150	0.20402	1828.3	3053.6	132.66	12.65	21.54	227
152	0.20120	1854.2	3096.7	132.95	12.64	21.51	228

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
154	0.19846	1880.0	3139.7	133.23	12.63	21.48	230
156	0.19579	1905.8	3182.6	133.51	12.62	21.46	231
158	0.19320	1931.5	3225.5	133.78	12.61	21.43	233
160	0.19068	1957.2	3268.4	134.05	12.61	21.41	234
162	0.18822	1982.9	3311.1	134.31	12.60	21.39	236
164	0.18583	2008.6	3353.9	134.58	12.59	21.36	237
166	0.18350	2034.2	3396.6	134.83	12.59	21.35	239
168	0.18123	2059.8	3439.3	135.09	12.58	21.33	240
170	0.17902	2085.4	3481.9	135.34	12.58	21.31	242
172	0.17686	2111.0	3524.5	135.59	12.58	21.29	243
174	0.17476	2136.5	3567.1	135.84	12.57	21.28	245
176	0.17271	2162.1	3609.6	136.08	12.57	21.26	246
178	0.17070	2187.6	3652.1	136.32	12.56	21.25	248
180	0.16874	2213.1	3694.6	136.56	12.56	21.23	249
185	0.16405	2276.7	3800.7	137.14	12.55	21.20	253
190	0.15961	2340.3	3906.6	137.70	12.55	21.17	256
195	0.15541	2403.8	4012.4	138.25	12.54	21.15	260
200	0.15143	2467.2	4118.1	138.79	12.54	21.12	263
205	0.14765	2530.5	4223.6	139.31	12.53	21.10	266
210	0.14406	2593.8	4329.1	139.82	12.53	21.08	270
215	0.14065	2657.0	4434.5	140.31	12.52	21.07	273
220	0.13739	2720.2	4539.8	140.80	12.52	21.05	276
225	0.13429	2783.3	4645.0	141.27	12.52	21.03	279
230	0.13132	2846.4	4750.1	141.73	12.52	21.02	282
235	0.12848	2909.4	4855.2	142.19	12.51	21.01	285
240	0.12577	2972.4	4960.2	142.63	12.51	21.00	288
245	0.12317	3035.4	5065.2	143.06	12.51	20.99	291
250	0.12067	3098.3	5170.1	143.48	12.51	20.98	294
255	0.11828	3161.2	5274.9	143.90	12.50	20.97	297
260	0.11598	3224.1	5379.7	144.31	12.50	20.96	300
265	0.11376	3287.0	5484.5	144.71	12.50	20.95	303
270	0.11164	3349.8	5589.2	145.10	12.50	20.94	306
275	0.10959	3412.6	5693.9	145.48	12.50	20.94	309
280	0.10761	3475.4	5798.6	145.86	12.50	20.93	312
285	0.10571	3538.2	5903.2	146.23	12.50	20.92	315
290	0.10387	3600.9	6007.8	146.59	12.50	20.92	317
295	0.10209	3663.7	6112.4	146.95	12.49	20.91	320
300	0.10038	3726.4	6216.9	147.30	12.49	20.91	323
310	0.09712	3851.8	6425.9	147.99	12.49	20.90	328
320	0.09406	3977.1	6634.9	148.65	12.49	20.89	333
330	0.09120	4102.4	6843.7	149.29	12.49	20.88	339

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm^3	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
340	0.08850	4227.7	7052.5	149.92	12.49	20.87	344
350	0.08596	4352.9	7261.2	150.52	12.49	20.87	349
360	0.08356	4478.1	7469.8	151.11	12.49	20.86	354
370	0.08129	4603.2	7678.4	151.68	12.48	20.86	359
380	0.07915	4728.4	7887.0	152.24	12.48	20.85	363
390	0.07711	4853.5	8095.5	152.78	12.48	20.85	368
400	0.07518	4978.5	8304.0	153.31	12.48	20.85	373
410	0.07334	5103.6	8512.4	153.82	12.48	20.84	377
420	0.07159	5228.6	8720.8	154.32	12.48	20.84	382
430	0.06992	5353.6	8929.2	154.81	12.48	20.84	387
440	0.06833	5478.6	9137.5	155.29	12.48	20.83	391
450	0.06681	5603.6	9345.9	155.76	12.48	20.83	395
460	0.06535	5728.6	9554.1	156.22	12.48	20.83	400
470	0.06396	5853.6	9762.4	156.67	12.48	20.83	404
480	0.06262	5978.5	9970.7	157.11	12.48	20.82	408
490	0.06134	6103.4	10179.	157.53	12.48	20.82	413
500	0.06011	6228.4	10387.	157.96	12.48	20.82	417
520	0.05780	6478.2	10803.	158.77	12.48	20.82	425
540	0.05566	6728.0	11220.	159.56	12.48	20.81	433
560	0.05367	6977.7	11636.	160.31	12.48	20.81	441
580	0.05182	7227.5	12052.	161.04	12.48	20.81	449
600	0.05009	7477.2	12468.	161.75	12.48	20.81	457
620	0.04847	7726.9	12885.	162.43	12.48	20.81	464
640	0.04696	7976.5	13301.	163.09	12.48	20.81	472
660	0.04553	8226.2	13717.	163.73	12.48	20.80	479
680	0.04419	8475.8	14133.	164.35	12.48	20.80	486
700	0.04293	8725.5	14549.	164.96	12.47	20.80	493
720	0.04174	8975.1	14965.	165.54	12.47	20.80	500
740	0.04061	9224.7	15381.	166.11	12.47	20.80	507
760	0.03954	9474.3	15797.	166.67	12.47	20.80	514
780	0.03853	9723.8	16213.	167.21	12.47	20.80	521
800	0.03756	9973.4	16629.	167.73	12.47	20.80	527
850	0.03535	10597.	17669.	169.00	12.47	20.80	543
900	0.03339	11221.	18708.	170.18	12.47	20.79	559
950	0.03163	11845.	19748.	171.31	12.47	20.79	574
1000	0.03005	12469.	20788.	172.37	12.47	20.79	589
1050	0.02862	13093.	21827.	173.39	12.47	20.79	604
1100	0.02732	13716.	22867.	174.36	12.47	20.79	618
1150	0.02613	14340.	23907.	175.28	12.47	20.79	632
1200	0.02504	14964.	24946.	176.17	12.47	20.79	646

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
			0.30 MPa Isobar				
* 83.82	35.488	-4839.3	-4830.8	53.27	21.34	42.58	854
84	35.462	-4831.8	-4823.3	53.36	21.32	42.60	853
86	35.164	-4746.4	-4737.8	54.37	21.07	42.86	840
88	34.860	-4660.4	-4651.8	55.36	20.83	43.15	826
90	34.552	-4573.9	-4565.2	56.33	20.59	43.46	813
92	34.237	-4486.7	-4478.0	57.29	20.36	43.80	799
94	33.917	-4398.9	-4390.0	58.24	20.15	44.17	785
96	33.590	-4310.2	-4301.3	59.17	19.94	44.57	771
98	33.256	-4220.7	-4211.7	60.09	19.74	45.01	757
* 99.04	33.080	-4173.9	-4164.8	60.57	19.64	45.25	749
* 99.04	0.39397	1106.9	1868.4	121.49			180
100	0.38923	1121.1	1891.8	121.72			180
102	0.37976	1151.4	1941.4	122.21			181
104	0.37079	1182.3	1991.4	122.70			183
106	0.36231	1213.1	2041.2	123.17			185
108	0.35427	1243.6	2090.5	123.63			187
110	0.34663	1273.7	2139.2	124.08			189
112	0.33938	1303.4	2187.3	124.51			191
114	0.33247	1332.6	2234.9	124.94			193
116	0.32587	1361.4	2282.0	125.34			195
118	0.31957	1389.8	2328.6	125.74	13.36	23.20	197
120	0.31353	1418.0	2374.8	126.13	13.26	23.01	200
122	0.30775	1445.8	2420.7	126.51	13.17	22.84	202
124	0.30220	1473.5	2466.2	126.88	13.10	22.69	203
126	0.29686	1500.9	2511.4	127.24	13.03	22.56	205
128	0.29173	1528.1	2556.4	127.60	12.98	22.44	207
130	0.28679	1555.1	2601.2	127.94	12.93	22.33	209
132	0.28203	1582.0	2645.8	128.28	12.89	22.24	211
134	0.27743	1608.8	2690.2	128.62	12.85	22.15	213
136	0.27300	1635.5	2734.4	128.95	12.82	22.08	214
138	0.26871	1662.0	2778.5	129.27	12.79	22.01	216
140	0.26456	1688.5	2822.4	129.58	12.77	21.95	218
142	0.26055	1714.9	2866.3	129.89	12.75	21.89	220
144	0.25667	1741.2	2910.0	130.20	12.73	21.84	221
146	0.25290	1767.4	2953.6	130.50	12.71	21.79	223
148	0.24926	1793.6	2997.2	130.80	12.70	21.75	225
150	0.24572	1819.7	3040.6	131.09	12.68	21.70	226
152	0.24228	1845.8	3084.0	131.38	12.67	21.67	228

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm^3	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
154	0.23894	1871.8	3127.3	131.66	12.66	21.63	229
156	0.23570	1897.7	3170.5	131.94	12.65	21.60	231
158	0.23255	1923.7	3213.7	132.21	12.64	21.57	233
160	0.22949	1949.5	3256.8	132.48	12.63	21.54	234
162	0.22651	1975.4	3299.8	132.75	12.63	21.51	236
164	0.22361	2001.2	3342.8	133.02	12.62	21.49	237
166	0.22078	2027.0	3385.8	133.28	12.61	21.46	239
168	0.21803	2052.7	3428.7	133.53	12.61	21.44	240
170	0.21535	2078.5	3471.5	133.79	12.60	21.42	242
172	0.21274	2104.2	3514.3	134.04	12.60	21.40	243
174	0.21019	2129.8	3557.1	134.28	12.59	21.38	245
176	0.20770	2155.5	3599.8	134.53	12.59	21.36	246
178	0.20528	2181.1	3642.5	134.77	12.58	21.34	248
180	0.20291	2206.7	3685.2	135.01	12.58	21.32	249
185	0.19722	2270.6	3791.7	135.59	12.57	21.29	253
190	0.19186	2334.4	3898.1	136.16	12.56	21.25	256
195	0.18679	2398.1	4004.3	136.71	12.56	21.22	259
200	0.18198	2461.8	4110.3	137.25	12.55	21.19	263
205	0.17742	2525.3	4216.2	137.77	12.54	21.17	266
210	0.17309	2588.8	4322.0	138.28	12.54	21.14	269
215	0.16897	2652.2	4427.6	138.78	12.54	21.12	273
220	0.16504	2715.5	4533.2	139.26	12.53	21.10	276
225	0.16130	2778.8	4638.6	139.74	12.53	21.08	279
230	0.15773	2842.0	4744.0	140.20	12.52	21.07	282
235	0.15431	2905.2	4849.3	140.65	12.52	21.05	285
240	0.15104	2968.3	4954.6	141.10	12.52	21.04	288
245	0.14790	3031.4	5059.7	141.53	12.52	21.03	291
250	0.14490	3094.4	5164.8	141.95	12.51	21.01	294
255	0.14202	3157.5	5269.9	142.37	12.51	21.00	297
260	0.13925	3220.5	5374.9	142.78	12.51	20.99	300
265	0.13659	3283.4	5479.8	143.18	12.51	20.98	303
270	0.13403	3346.3	5584.7	143.57	12.51	20.97	306
275	0.13156	3409.2	5689.5	143.95	12.50	20.97	309
280	0.12919	3472.1	5794.4	144.33	12.50	20.96	312
285	0.12690	3535.0	5899.1	144.70	12.50	20.95	315
290	0.12469	3597.8	6003.9	145.07	12.50	20.94	317
295	0.12255	3660.6	6108.6	145.42	12.50	20.94	320
300	0.12049	3723.4	6213.2	145.78	12.50	20.93	323
310	0.11657	3849.0	6422.5	146.46	12.50	20.92	328
320	0.11290	3974.4	6631.6	147.13	12.49	20.91	333
330	0.10946	4099.8	6840.7	147.77	12.49	20.90	339

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
340	0.10622	4225.2	7049.6	148.39	12.49	20.89	344
350	0.10316	4350.5	7258.5	149.00	12.49	20.88	349
360	0.10028	4475.8	7467.3	149.59	12.49	20.88	354
370	0.09756	4601.0	7676.1	150.16	12.49	20.87	359
380	0.09498	4726.2	7884.7	150.72	12.49	20.87	363
390	0.09254	4851.4	8093.4	151.26	12.48	20.86	368
400	0.09021	4976.6	8302.0	151.79	12.48	20.86	373
410	0.08801	5101.7	8510.5	152.30	12.48	20.85	378
420	0.08590	5226.8	8719.0	152.80	12.48	20.85	382
430	0.08390	5351.9	8927.5	153.29	12.48	20.85	387
440	0.08199	5476.9	9136.0	153.77	12.48	20.84	391
450	0.08016	5602.0	9344.4	154.24	12.48	20.84	396
460	0.07842	5727.0	9552.7	154.70	12.48	20.84	400
470	0.07674	5852.0	9761.1	155.15	12.48	20.83	404
480	0.07514	5977.0	9969.4	155.59	12.48	20.83	409
490	0.07361	6102.0	10178.	156.02	12.48	20.83	413
500	0.07213	6226.9	10386.	156.44	12.48	20.83	417
520	0.06935	6476.8	10803.	157.25	12.48	20.82	425
540	0.06678	6726.7	11219.	158.04	12.48	20.82	433
560	0.06439	6976.5	11635.	158.80	12.48	20.82	441
580	0.06217	7226.3	12052.	159.53	12.48	20.82	449
600	0.06010	7476.1	12468.	160.23	12.48	20.81	457
620	0.05816	7725.8	12884.	160.92	12.48	20.81	464
640	0.05634	7975.5	13300.	161.58	12.48	20.81	472
660	0.05463	8225.2	13717.	162.22	12.48	20.81	479
680	0.05302	8474.9	14133.	162.84	12.48	20.81	486
700	0.05151	8724.6	14549.	163.44	12.48	20.80	493
720	0.05008	8974.2	14965.	164.03	12.48	20.80	500
740	0.04872	9223.9	15381.	164.60	12.48	20.80	507
760	0.04744	9473.5	15797.	165.15	12.47	20.80	514
780	0.04623	9723.1	16213.	165.69	12.47	20.80	521
800	0.04507	9972.7	16629.	166.22	12.47	20.80	527
850	0.04242	10597.	17669.	167.48	12.47	20.80	543
900	0.04006	11221.	18709.	168.67	12.47	20.80	559
950	0.03796	11844.	19749.	169.79	12.47	20.79	575
1000	0.03606	12468.	20788.	170.86	12.47	20.79	589
1050	0.03434	13092.	21828.	171.87	12.47	20.79	604
1100	0.03278	13716.	22868.	172.84	12.47	20.79	618
1150	0.03136	14340.	23907.	173.76	12.47	20.79	632
1200	0.03005	14963.	24947.	174.65	12.47	20.79	646

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
			0.40 MPa Isobar				
* 83.85	35.491	-4839.2	-4827.9	53.28	21.34	42.56	855
84	35.469	-4832.7	-4821.5	53.35	21.32	42.58	854
86	35.171	-4747.4	-4736.0	54.36	21.07	42.84	840
88	34.868	-4661.5	-4650.1	55.35	20.83	43.13	827
90	34.560	-4575.1	-4563.5	56.32	20.59	43.44	813
92	34.246	-4488.0	-4476.3	57.28	20.37	43.77	800
94	33.926	-4400.2	-4388.4	58.22	20.15	44.14	786
96	33.599	-4311.6	-4299.7	59.16	19.94	44.54	772
98	33.266	-4222.2	-4210.2	60.08	19.75	44.98	757
100	32.926	-4131.9	-4119.8	60.99	19.56	45.45	743
102	32.578	-4040.6	-4028.3	61.90	19.38	45.97	728
* 102.73	32.449	-4007.1	-3994.7	62.23	19.31	46.17	723
* 102.73	0.51546	1120.6	1896.6	119.57			180
104	0.50713	1141.1	1929.9	119.90			181
106	0.49465	1173.8	1982.4	120.40			182
108	0.48289	1206.2	2034.5	120.88			184
110	0.47180	1238.2	2086.0	121.36			187
112	0.46132	1269.7	2136.7	121.81			189
114	0.45138	1300.5	2186.7	122.25			191
116	0.44195	1330.9	2236.0	122.68			194
118	0.43297	1360.7	2284.6	123.10	13.68	24.16	196
120	0.42441	1390.2	2332.6	123.50	13.55	23.88	198
122	0.41624	1419.2	2380.2	123.89	13.43	23.64	200
124	0.40842	1447.8	2427.2	124.28	13.33	23.43	202
126	0.40093	1476.2	2473.9	124.65	13.24	23.24	204
128	0.39374	1504.3	2520.2	125.02	13.16	23.07	206
130	0.38684	1532.2	2566.2	125.37	13.10	22.92	208
132	0.38020	1559.8	2611.9	125.72	13.04	22.79	210
134	0.37381	1587.3	2657.3	126.06	12.99	22.67	212
136	0.36765	1614.6	2702.5	126.40	12.95	22.56	214
138	0.36172	1641.7	2747.6	126.73	12.91	22.46	215
140	0.35598	1668.8	2792.4	127.05	12.87	22.37	217
142	0.35045	1695.7	2837.1	127.37	12.85	22.29	219
144	0.34509	1722.5	2881.6	127.68	12.82	22.22	221
146	0.33991	1749.2	2926.0	127.98	12.80	22.15	222
148	0.33489	1775.8	2970.2	128.28	12.78	22.09	224
150	0.33003	1802.3	3014.3	128.58	12.76	22.03	226
152	0.32532	1828.8	3058.3	128.87	12.74	21.98	227

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
154	0.32075	1855.2	3102.3	129.16	12.73	21.93	229
156	0.31632	1881.5	3146.1	129.44	12.71	21.89	230
158	0.31201	1907.8	3189.8	129.72	12.70	21.84	232
160	0.30782	1934.0	3233.5	129.99	12.69	21.80	234
162	0.30375	1960.2	3277.0	130.26	12.68	21.77	235
164	0.29980	1986.3	3320.5	130.53	12.67	21.73	237
166	0.29595	2012.4	3364.0	130.80	12.66	21.70	238
168	0.29220	2038.4	3407.3	131.05	12.65	21.67	240
170	0.28856	2064.4	3450.6	131.31	12.65	21.64	241
172	0.28500	2090.4	3493.9	131.56	12.64	21.61	243
174	0.28154	2116.3	3537.1	131.81	12.63	21.58	244
176	0.27816	2142.2	3580.2	132.06	12.63	21.56	246
178	0.27487	2168.1	3623.3	132.30	12.62	21.53	247
180	0.27166	2193.9	3666.3	132.54	12.62	21.51	249
185	0.26396	2258.4	3773.8	133.13	12.60	21.46	252
190	0.25670	2322.7	3880.9	133.70	12.59	21.41	256
195	0.24984	2386.9	3987.9	134.26	12.58	21.37	259
200	0.24335	2450.9	4094.6	134.80	12.58	21.33	263
205	0.23720	2514.9	4201.2	135.33	12.57	21.30	266
210	0.23136	2578.7	4307.6	135.84	12.56	21.27	269
215	0.22581	2642.4	4413.9	136.34	12.56	21.24	273
220	0.22052	2706.1	4520.0	136.83	12.55	21.21	276
225	0.21549	2769.7	4626.0	137.30	12.55	21.19	279
230	0.21068	2833.2	4731.8	137.77	12.54	21.16	282
235	0.20609	2896.7	4837.6	138.22	12.54	21.14	285
240	0.20169	2960.1	4943.3	138.67	12.53	21.13	288
245	0.19749	3023.4	5048.9	139.10	12.53	21.11	291
250	0.19346	3086.7	5154.4	139.53	12.53	21.09	294
255	0.18959	3150.0	5259.8	139.95	12.52	21.08	297
260	0.18588	3213.2	5365.1	140.36	12.52	21.06	300
265	0.18231	3276.3	5470.4	140.76	12.52	21.05	303
270	0.17888	3339.4	5575.6	141.15	12.52	21.04	306
275	0.17557	3402.5	5680.8	141.54	12.51	21.03	309
280	0.17239	3465.6	5785.9	141.92	12.51	21.02	312
285	0.16932	3528.6	5890.9	142.29	12.51	21.01	315
290	0.16636	3591.6	5995.9	142.65	12.51	21.00	317
295	0.16351	3654.6	6100.9	143.01	12.51	20.99	320
300	0.16075	3717.5	6205.8	143.37	12.51	20.98	323
310	0.15551	3843.3	6415.5	144.05	12.50	20.96	328
320	0.15060	3969.0	6625.1	144.72	12.50	20.95	334
330	0.14599	4094.7	6834.5	145.36	12.50	20.94	339

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
340	0.14166	4220.3	7043.9	145.99	12.50	20.93	344
350	0.13758	4345.8	7253.1	146.59	12.49	20.92	349
360	0.13374	4471.3	7462.2	147.18	12.49	20.91	354
370	0.13010	4596.7	7671.3	147.76	12.49	20.90	359
380	0.12665	4722.0	7880.2	148.31	12.49	20.89	364
390	0.12339	4847.4	8089.1	148.86	12.49	20.89	368
400	0.12029	4972.7	8298.0	149.38	12.49	20.88	373
410	0.11734	5097.9	8506.8	149.90	12.49	20.88	378
420	0.11454	5223.1	8715.5	150.40	12.49	20.87	382
430	0.11186	5348.3	8924.2	150.89	12.49	20.87	387
440	0.10931	5473.5	9132.8	151.37	12.48	20.86	391
450	0.10687	5598.7	9341.4	151.84	12.48	20.86	396
460	0.10454	5723.8	9549.9	152.30	12.48	20.85	400
470	0.10231	5848.9	9758.5	152.75	12.48	20.85	404
480	0.10018	5974.0	9966.9	153.19	12.48	20.85	409
490	0.09813	6099.1	10175.	153.62	12.48	20.84	413
500	0.09616	6224.1	10384.	154.04	12.48	20.84	417
520	0.09245	6474.2	10801.	154.86	12.48	20.84	425
540	0.08903	6724.2	11217.	155.64	12.48	20.83	433
560	0.08584	6974.1	11634.	156.40	12.48	20.83	441
580	0.08288	7224.0	12050.	157.13	12.48	20.82	449
600	0.08011	7473.9	12467.	157.84	12.48	20.82	457
620	0.07753	7723.8	12883.	158.52	12.48	20.82	464
640	0.07510	7973.6	13300.	159.18	12.48	20.82	472
660	0.07283	8223.4	13716.	159.82	12.48	20.81	479
680	0.07068	8473.1	14132.	160.44	12.48	20.81	486
700	0.06866	8722.9	14548.	161.05	12.48	20.81	493
720	0.06675	8972.6	14965.	161.63	12.48	20.81	500
740	0.06495	9222.3	15381.	162.20	12.48	20.81	507
760	0.06324	9472.0	15797.	162.76	12.48	20.81	514
780	0.06162	9721.7	16213.	163.30	12.48	20.81	521
800	0.06008	9971.3	16629.	163.82	12.48	20.80	527
850	0.05655	10595.	17669.	165.09	12.48	20.80	544
900	0.05341	11219.	18709.	166.27	12.48	20.80	559
950	0.05060	11843.	19749.	167.40	12.47	20.80	575
1000	0.04807	12467.	20789.	168.47	12.47	20.80	590
1050	0.04578	13091.	21829.	169.48	12.47	20.80	604
1100	0.04370	13715.	22869.	170.45	12.47	20.79	618
1150	0.04180	14339.	23908.	171.37	12.47	20.79	632
1200	0.04006	14963.	24948.	172.26	12.47	20.79	646

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
			0.50 MPa Isobar				
* 83.87	35.495	-4839.1	-4825.0	53.28	21.34	42.55	855
84	35.476	-4833.7	-4819.6	53.34	21.32	42.57	854
86	35.178	-4748.5	-4734.2	54.35	21.07	42.83	841
88	34.876	-4662.6	-4648.3	55.33	20.83	43.11	827
90	34.568	-4576.3	-4561.8	56.31	20.60	43.42	814
92	34.254	-4489.2	-4474.6	57.26	20.37	43.75	800
94	33.935	-4401.5	-4386.8	58.21	20.15	44.12	786
96	33.609	-4313.0	-4298.1	59.14	19.95	44.52	772
98	33.276	-4223.7	-4208.7	60.06	19.75	44.95	758
100	32.937	-4133.5	-4118.3	60.98	19.56	45.42	744
102	32.589	-4042.3	-4027.0	61.88	19.38	45.93	729
104	32.234	-3950.1	-3934.5	62.78	19.21	46.50	714
* 105.79	31.908	-3866.5	-3850.8	63.58	19.06	47.05	700
* 105.79	0.63607	1128.9	1914.9	118.08			180
106	0.63431	1132.5	1920.7	118.13			181
108	0.61808	1166.9	1975.8	118.65			182
110	0.60287	1200.9	2030.3	119.15			185
112	0.58858	1234.4	2083.9	119.63			187
114	0.57512	1267.1	2136.5	120.09			189
116	0.56241	1299.1	2188.2	120.54			192
118	0.55038	1330.5	2239.0	120.98	14.03	25.21	194
120	0.53897	1361.3	2289.0	121.40	13.86	24.84	196
122	0.52810	1391.6	2338.4	121.81	13.71	24.52	198
124	0.51775	1421.4	2387.1	122.20	13.58	24.23	201
126	0.50787	1450.8	2435.3	122.59	13.46	23.97	203
128	0.49842	1479.9	2483.0	122.96	13.36	23.75	205
130	0.48936	1508.6	2530.3	123.33	13.27	23.55	207
132	0.48068	1537.0	2577.2	123.69	13.20	23.37	209
134	0.47233	1565.2	2623.8	124.04	13.13	23.21	211
136	0.46432	1593.2	2670.1	124.38	13.08	23.07	213
138	0.45660	1621.0	2716.1	124.72	13.03	22.94	214
140	0.44916	1648.7	2761.9	125.05	12.98	22.82	216
142	0.44198	1676.1	2807.4	125.37	12.95	22.72	218
144	0.43505	1703.5	2852.7	125.69	12.91	22.62	220
146	0.42836	1730.7	2897.9	126.00	12.88	22.53	222
148	0.42189	1757.7	2942.9	126.31	12.86	22.45	223
150	0.41563	1784.7	2987.7	126.61	12.83	22.38	225
152	0.40957	1811.6	3032.4	126.90	12.81	22.31	227

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
154	0.40370	1838.4	3076.9	127.19	12.79	22.25	228
156	0.39801	1865.1	3121.4	127.48	12.78	22.19	230
158	0.39248	1891.8	3165.7	127.76	12.76	22.13	232
160	0.38712	1918.3	3209.9	128.04	12.75	22.08	233
162	0.38192	1944.8	3254.0	128.31	12.73	22.03	235
164	0.37686	1971.3	3298.0	128.58	12.72	21.99	236
166	0.37194	1997.7	3342.0	128.85	12.71	21.94	238
168	0.36716	2024.0	3385.8	129.11	12.70	21.90	239
170	0.36250	2050.3	3429.6	129.37	12.69	21.86	241
172	0.35797	2076.5	3473.3	129.63	12.68	21.83	242
174	0.35356	2102.7	3516.9	129.88	12.67	21.79	244
176	0.34926	2128.8	3560.4	130.13	12.67	21.76	245
178	0.34507	2155.0	3603.9	130.37	12.66	21.73	247
180	0.34098	2181.0	3647.4	130.62	12.65	21.70	248
185	0.33120	2246.0	3755.7	131.21	12.64	21.63	252
190	0.32199	2310.9	3863.7	131.79	12.62	21.57	256
195	0.31330	2375.5	3971.5	132.35	12.61	21.52	259
200	0.30508	2440.0	4078.9	132.89	12.60	21.47	262
205	0.29730	2504.4	4186.2	133.42	12.59	21.43	266
210	0.28992	2568.6	4293.2	133.94	12.59	21.39	269
215	0.28291	2632.7	4400.1	134.44	12.58	21.35	272
220	0.27624	2696.7	4506.8	134.93	12.57	21.32	276
225	0.26988	2760.6	4613.3	135.41	12.57	21.29	279
230	0.26382	2824.4	4719.6	135.88	12.56	21.26	282
235	0.25804	2888.2	4825.9	136.33	12.55	21.24	285
240	0.25250	2951.8	4932.0	136.78	12.55	21.21	288
245	0.24721	3015.4	5038.0	137.22	12.55	21.19	291
250	0.24214	3079.0	5143.9	137.64	12.54	21.17	294
255	0.23727	3142.4	5249.7	138.06	12.54	21.15	297
260	0.23261	3205.8	5355.4	138.47	12.53	21.13	300
265	0.22812	3269.2	5461.0	138.88	12.53	21.12	303
270	0.22381	3332.5	5566.6	139.27	12.53	21.10	306
275	0.21966	3395.8	5672.0	139.66	12.53	21.09	309
280	0.21567	3459.0	5777.4	140.04	12.52	21.07	312
285	0.21182	3522.2	5882.8	140.41	12.52	21.06	315
290	0.20810	3585.4	5988.0	140.78	12.52	21.05	317
295	0.20452	3648.5	6093.3	141.14	12.52	21.04	320
300	0.20106	3711.6	6198.4	141.49	12.51	21.03	323
310	0.19448	3837.7	6408.6	142.18	12.51	21.01	328
320	0.18833	3963.6	6618.6	142.85	12.51	20.99	334
330	0.18256	4089.5	6828.4	143.49	12.51	20.98	339

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm^3	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
340	0.17713	4215.3	7038.1	144.12	12.50	20.96	344
350	0.17202	4341.0	7247.7	144.73	12.50	20.95	349
360	0.16720	4466.7	7457.1	145.32	12.50	20.94	354
370	0.16264	4592.3	7666.5	145.89	12.50	20.93	359
380	0.15833	4717.8	7875.7	146.45	12.50	20.92	364
390	0.15425	4843.3	8084.9	146.99	12.49	20.91	368
400	0.15037	4968.8	8294.0	147.52	12.49	20.90	373
410	0.14668	5094.1	8503.0	148.04	12.49	20.90	378
420	0.14317	5219.5	8711.9	148.54	12.49	20.89	382
430	0.13982	5344.8	8920.8	149.03	12.49	20.89	387
440	0.13663	5470.1	9129.6	149.51	12.49	20.88	391
450	0.13358	5595.4	9338.4	149.98	12.49	20.88	396
460	0.13067	5720.6	9547.1	150.44	12.49	20.87	400
470	0.12788	5845.8	9755.8	150.89	12.49	20.87	405
480	0.12520	5971.0	9964.5	151.33	12.49	20.86	409
490	0.12264	6096.1	10173.	151.76	12.48	20.86	413
500	0.12018	6221.3	10382.	152.18	12.48	20.86	417
520	0.11555	6471.5	10799.	153.00	12.48	20.85	426
540	0.11126	6721.6	11216.	153.78	12.48	20.84	434
560	0.10728	6971.7	11632.	154.54	12.48	20.84	442
580	0.10358	7221.8	12049.	155.27	12.48	20.83	449
600	0.10012	7471.7	12466.	155.98	12.48	20.83	457
620	0.09689	7721.7	12882.	156.66	12.48	20.83	465
640	0.09386	7971.6	13299.	157.32	12.48	20.82	472
660	0.09101	8221.5	13715.	157.96	12.48	20.82	479
680	0.08833	8471.3	14132.	158.58	12.48	20.82	487
700	0.08581	8721.2	14548.	159.19	12.48	20.82	494
720	0.08342	8971.0	14964.	159.77	12.48	20.82	501
740	0.08117	9220.7	15381.	160.34	12.48	20.81	507
760	0.07903	9470.5	15797.	160.90	12.48	20.81	514
780	0.07701	9720.2	16213.	161.44	12.48	20.81	521
800	0.07508	9969.9	16629.	161.97	12.48	20.81	528
850	0.07067	10594.	17670.	163.23	12.48	20.81	544
900	0.06674	11218.	18710.	164.42	12.48	20.80	560
950	0.06323	11842.	19750.	165.54	12.48	20.80	575
1000	0.06007	12466.	20790.	166.61	12.48	20.80	590
1050	0.05721	13090.	21830.	167.62	12.48	20.80	604
1100	0.05461	13714.	22870.	168.59	12.47	20.80	618
1150	0.05224	14338.	23910.	169.52	12.47	20.80	632
1200	0.05006	14962.	24949.	170.40	12.47	20.79	646

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
			0.60 MPa Isobar				
* 83.90	35.498	-4839.0	-4822.1	53.28	21.34	42.54	856
84	35.483	-4834.7	-4817.8	53.33	21.33	42.55	855
86	35.185	-4749.5	-4732.4	54.33	21.08	42.81	841
88	34.883	-4663.7	-4646.5	55.32	20.83	43.09	828
90	34.576	-4577.4	-4560.1	56.29	20.60	43.39	814
92	34.262	-4490.5	-4472.9	57.25	20.37	43.73	801
94	33.943	-4402.8	-4385.1	58.19	20.16	44.09	787
96	33.618	-4314.4	-4296.6	59.13	19.95	44.49	773
98	33.286	-4225.2	-4207.2	60.05	19.75	44.92	759
100	32.947	-4135.1	-4116.9	60.96	19.56	45.39	744
102	32.600	-4044.0	-4025.6	61.86	19.38	45.90	730
104	32.245	-3951.9	-3933.2	62.76	19.21	46.45	715
106	31.882	-3858.6	-3839.7	63.65	19.05	47.07	700
108	31.508	-3764.0	-3744.9	64.54	18.89	47.74	684
* 108.43	31.426	-3743.3	-3724.2	64.73	18.86	47.90	681
* 108.43	0.75642	1133.3	1926.5	116.84			181
110	0.74073	1161.7	1971.7	117.25			182
112	0.72191	1197.3	2028.4	117.77			185
114	0.70431	1232.0	2083.9	118.26			187
116	0.68779	1266.0	2138.3	118.73			190
118	0.67224	1299.0	2191.6	119.19	14.40	26.37	192
120	0.65756	1331.4	2243.8	119.62	14.19	25.90	195
122	0.64366	1363.0	2295.2	120.05	14.00	25.48	197
124	0.63047	1394.1	2345.8	120.46	13.84	25.10	199
126	0.61792	1424.6	2395.6	120.86	13.69	24.77	201
128	0.60596	1454.7	2444.9	121.25	13.57	24.48	204
130	0.59453	1484.4	2493.6	121.62	13.46	24.22	206
132	0.58360	1513.7	2541.8	121.99	13.36	23.99	208
134	0.57314	1542.7	2589.6	122.35	13.28	23.79	210
136	0.56309	1571.4	2637.0	122.70	13.21	23.61	212
138	0.55345	1599.9	2684.0	123.05	13.15	23.45	214
140	0.54417	1628.2	2730.8	123.38	13.10	23.30	215
142	0.53524	1656.2	2777.2	123.71	13.05	23.16	217
144	0.52663	1684.1	2823.4	124.04	13.01	23.04	219
146	0.51833	1711.8	2869.4	124.35	12.97	22.93	221
148	0.51031	1739.4	2915.2	124.66	12.94	22.83	223
150	0.50257	1766.9	2960.7	124.97	12.91	22.74	224
152	0.49508	1794.2	3006.1	125.27	12.88	22.65	226

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
154	0.48783	1821.4	3051.3	125.57	12.86	22.57	228
156	0.48081	1848.5	3096.4	125.86	12.84	22.50	229
158	0.47401	1875.5	3141.3	126.14	12.82	22.43	231
160	0.46741	1902.5	3186.1	126.42	12.80	22.36	233
162	0.46101	1929.3	3230.8	126.70	12.79	22.30	234
164	0.45480	1956.1	3275.3	126.97	12.77	22.25	236
166	0.44877	1982.8	3319.8	127.24	12.76	22.19	237
168	0.44290	2009.4	3364.1	127.51	12.75	22.14	239
170	0.43720	2036.0	3408.4	127.77	12.73	22.10	241
172	0.43166	2062.5	3452.5	128.03	12.72	22.05	242
174	0.42626	2089.0	3496.6	128.28	12.71	22.01	244
176	0.42100	2115.4	3540.5	128.54	12.71	21.97	245
178	0.41588	2141.7	3584.4	128.78	12.70	21.93	247
180	0.41090	2168.0	3628.3	129.03	12.69	21.90	248
185	0.39896	2233.6	3737.5	129.63	12.67	21.81	252
190	0.38774	2299.0	3846.4	130.21	12.65	21.74	255
195	0.37716	2364.1	3955.0	130.77	12.64	21.67	259
200	0.36717	2429.1	4063.2	131.32	12.63	21.62	262
205	0.35772	2493.8	4171.1	131.85	12.62	21.56	266
210	0.34877	2558.5	4278.8	132.37	12.61	21.51	269
215	0.34027	2622.9	4386.3	132.88	12.60	21.47	272
220	0.33218	2687.3	4493.5	133.37	12.59	21.43	276
225	0.32449	2751.5	4600.6	133.85	12.58	21.39	279
230	0.31716	2815.6	4707.4	134.32	12.58	21.36	282
235	0.31016	2879.6	4814.1	134.78	12.57	21.33	285
240	0.30347	2943.6	4920.7	135.23	12.57	21.30	288
245	0.29707	3007.4	5027.1	135.67	12.56	21.27	291
250	0.29095	3071.2	5133.4	136.10	12.56	21.25	294
255	0.28508	3134.9	5239.6	136.52	12.55	21.22	297
260	0.27944	3198.5	5345.7	136.93	12.55	21.20	300
265	0.27403	3262.1	5451.6	137.33	12.54	21.18	303
270	0.26883	3325.6	5557.5	137.73	12.54	21.16	306
275	0.26383	3389.1	5663.3	138.12	12.54	21.15	309
280	0.25901	3452.5	5769.0	138.50	12.53	21.13	312
285	0.25437	3515.8	5874.6	138.87	12.53	21.12	315
290	0.24990	3579.1	5980.1	139.24	12.53	21.10	318
295	0.24558	3642.4	6085.6	139.60	12.53	21.09	320
300	0.24141	3705.6	6191.0	139.95	12.52	21.08	323
310	0.23350	3832.0	6401.7	140.65	12.52	21.05	328
320	0.22609	3958.2	6612.1	141.31	12.52	21.03	334
330	0.21914	4084.4	6822.3	141.96	12.51	21.01	339

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
340	0.21262	4210.4	7032.4	142.59	12.51	21.00	344
350	0.20647	4336.3	7242.3	143.20	12.51	20.98	349
360	0.20068	4462.2	7452.1	143.79	12.50	20.97	354
370	0.19520	4587.9	7661.7	144.36	12.50	20.96	359
380	0.19002	4713.6	7871.2	144.92	12.50	20.95	364
390	0.18511	4839.3	8080.6	145.46	12.50	20.94	369
400	0.18044	4964.8	8290.0	145.99	12.50	20.93	373
410	0.17601	5090.4	8499.2	146.51	12.50	20.92	378
420	0.17180	5215.9	8708.4	147.01	12.49	20.91	383
430	0.16778	5341.3	8917.5	147.51	12.49	20.91	387
440	0.16394	5466.7	9126.5	147.99	12.49	20.90	392
450	0.16028	5592.1	9335.4	148.46	12.49	20.89	396
460	0.15678	5717.4	9544.3	148.92	12.49	20.89	400
470	0.15343	5842.7	9753.2	149.37	12.49	20.88	405
480	0.15022	5968.0	9962.0	149.80	12.49	20.88	409
490	0.14715	6093.2	10171.	150.24	12.49	20.87	413
500	0.14420	6218.4	10379.	150.66	12.49	20.87	417
520	0.13863	6468.8	10797.	151.48	12.49	20.86	426
540	0.13349	6719.1	11214.	152.26	12.48	20.86	434
560	0.12871	6969.3	11631.	153.02	12.48	20.85	442
580	0.12426	7219.5	12048.	153.75	12.48	20.84	450
600	0.12012	7469.6	12465.	154.46	12.48	20.84	457
620	0.11624	7719.6	12881.	155.14	12.48	20.84	465
640	0.11260	7969.6	13298.	155.80	12.48	20.83	472
660	0.10919	8219.6	13715.	156.44	12.48	20.83	479
680	0.10597	8469.5	14131.	157.07	12.48	20.83	487
700	0.10294	8719.4	14548.	157.67	12.48	20.82	494
720	0.10008	8969.3	14964.	158.26	12.48	20.82	501
740	0.09738	9219.2	15381.	158.83	12.48	20.82	508
760	0.09482	9469.0	15797.	159.38	12.48	20.82	514
780	0.09239	9718.8	16213.	159.92	12.48	20.81	521
800	0.09008	9968.5	16630.	160.45	12.48	20.81	528
850	0.08478	10593.	17670.	161.71	12.48	20.81	544
900	0.08007	11217.	18711.	162.90	12.48	20.81	560
950	0.07586	11841.	19751.	164.03	12.48	20.80	575
1000	0.07207	12465.	20791.	165.09	12.48	20.80	590
1050	0.06864	13090.	21831.	166.11	12.48	20.80	604
1100	0.06552	13714.	22871.	167.08	12.48	20.80	619
1150	0.06267	14338.	23911.	168.00	12.48	20.80	632
1200	0.06006	14961.	24951.	168.88	12.48	20.80	646

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
			0.80 MPa Isobar				
* 83.95	35.504	-4838.8	-4816.3	53.28	21.34	42.51	856
84	35.496	-4836.7	-4814.1	53.31	21.33	42.52	856
86	35.200	-4751.6	-4728.8	54.31	21.08	42.77	843
88	34.898	-4665.9	-4643.0	55.30	20.84	43.05	829
90	34.591	-4579.7	-4556.6	56.27	20.61	43.35	816
92	34.279	-4492.9	-4469.6	57.22	20.38	43.68	802
94	33.961	-4405.4	-4381.9	58.17	20.16	44.04	788
96	33.637	-4317.2	-4293.4	59.10	19.96	44.43	774
98	33.306	-4228.1	-4204.1	60.02	19.76	44.86	760
100	32.968	-4138.2	-4113.9	60.93	19.57	45.32	746
102	32.623	-4047.3	-4022.8	61.83	19.39	45.82	731
104	32.269	-3955.4	-3930.6	62.73	19.22	46.37	716
106	31.907	-3862.4	-3837.3	63.61	19.06	46.97	701
108	31.535	-3768.1	-3742.7	64.50	18.90	47.63	686
110	31.153	-3672.4	-3646.7	65.38	18.75	48.37	670
112	30.759	-3575.2	-3549.2	66.26	18.61	49.19	653
* 112.88	30.581	-3531.8	-3505.7	66.65	18.56	49.58	646
* 112.88	0.99795	1134.1	1935.7	114.85			181
114	0.98228	1156.1	1970.6	115.16			183
116	0.95595	1194.5	2031.4	115.69			186
118	0.93151	1231.7	2090.5	116.19	15.19	29.14	188
120	0.90873	1267.6	2148.0	116.67	14.91	28.38	191
122	0.88740	1302.6	2204.1	117.14	14.64	27.71	193
124	0.86736	1336.5	2258.9	117.58	14.40	27.12	196
126	0.84845	1369.7	2312.6	118.01	14.20	26.60	198
128	0.83058	1402.1	2365.3	118.43	14.02	26.14	201
130	0.81363	1433.9	2417.2	118.83	13.86	25.74	203
132	0.79751	1465.2	2468.3	119.22	13.72	25.39	205
134	0.78218	1496.0	2518.8	119.60	13.60	25.08	207
136	0.76753	1526.3	2568.6	119.97	13.50	24.80	210
138	0.75353	1556.3	2618.0	120.33	13.41	24.55	212
140	0.74013	1586.0	2666.9	120.68	13.34	24.33	214
142	0.72727	1615.3	2715.3	121.03	13.27	24.13	216
144	0.71493	1644.4	2763.4	121.36	13.21	23.95	217
146	0.70307	1673.3	2811.1	121.69	13.16	23.79	219
148	0.69165	1701.9	2858.6	122.01	13.11	23.64	221
150	0.68065	1730.3	2905.7	122.33	13.07	23.50	223
152	0.67005	1758.6	2952.6	122.64	13.03	23.37	225

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
154	0.65981	1786.7	2999.2	122.94	13.00	23.26	227
156	0.64992	1814.7	3045.6	123.24	12.97	23.15	228
158	0.64035	1842.5	3091.8	123.54	12.94	23.05	230
160	0.63110	1870.2	3137.8	123.83	12.92	22.96	232
162	0.62214	1897.8	3183.6	124.11	12.90	22.87	233
164	0.61346	1925.2	3229.3	124.39	12.88	22.79	235
166	0.60504	1952.6	3274.8	124.67	12.86	22.72	237
168	0.59687	1979.9	3320.2	124.94	12.84	22.65	238
170	0.58895	2007.0	3365.4	125.21	12.83	22.58	240
172	0.58125	2034.1	3410.5	125.47	12.81	22.52	241
174	0.57376	2061.2	3455.5	125.73	12.80	22.46	243
176	0.56649	2088.1	3500.3	125.99	12.79	22.40	244
178	0.55941	2115.0	3545.1	126.24	12.77	22.35	246
180	0.55252	2141.8	3589.7	126.49	12.76	22.30	247
185	0.53607	2208.6	3700.9	127.10	12.74	22.18	251
190	0.52065	2275.0	3811.6	127.69	12.72	22.08	255
195	0.50614	2341.2	3921.7	128.26	12.70	21.99	258
200	0.49247	2407.0	4031.5	128.82	12.68	21.91	262
205	0.47956	2472.7	4140.8	129.36	12.67	21.83	265
210	0.46735	2538.1	4249.8	129.88	12.65	21.77	269
215	0.45578	2603.3	4358.5	130.39	12.64	21.71	272
220	0.44479	2668.3	4466.9	130.89	12.63	21.65	275
225	0.43435	2733.2	4575.0	131.38	12.62	21.60	279
230	0.42441	2797.9	4682.9	131.85	12.61	21.56	282
235	0.41492	2862.5	4790.6	132.32	12.60	21.51	285
240	0.40587	2927.0	4898.1	132.77	12.60	21.47	288
245	0.39723	2991.4	5005.3	133.21	12.59	21.44	291
250	0.38895	3055.6	5112.4	133.64	12.58	21.40	294
255	0.38102	3119.8	5219.4	134.07	12.58	21.37	297
260	0.37343	3183.8	5326.2	134.48	12.57	21.34	300
265	0.36613	3247.8	5432.8	134.89	12.57	21.32	303
270	0.35913	3311.7	5539.3	135.29	12.56	21.29	306
275	0.35239	3375.6	5645.8	135.68	12.56	21.27	309
280	0.34591	3439.3	5752.0	136.06	12.55	21.25	312
285	0.33967	3503.0	5858.2	136.44	12.55	21.23	315
290	0.33366	3566.7	5964.3	136.80	12.55	21.21	318
295	0.32786	3630.2	6070.3	137.17	12.54	21.19	320
300	0.32226	3693.8	6176.2	137.52	12.54	21.17	323
310	0.31164	3820.7	6387.8	138.22	12.53	21.14	329
320	0.30170	3947.4	6599.1	138.89	12.53	21.12	334
330	0.29239	4074.0	6810.1	139.54	12.53	21.09	339

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
340	0.28365	4200.5	7020.9	140.17	12.52	21.07	344
350	0.27542	4326.8	7231.5	140.78	12.52	21.05	349
360	0.26766	4453.1	7441.9	141.37	12.51	21.03	354
370	0.26033	4579.2	7652.2	141.95	12.51	21.02	359
380	0.25340	4705.2	7862.2	142.51	12.51	21.00	364
390	0.24683	4831.2	8072.2	143.05	12.51	20.99	369
400	0.24060	4957.0	8282.0	143.58	12.50	20.98	374
410	0.23468	5082.8	8491.7	144.10	12.50	20.96	378
420	0.22905	5208.6	8701.3	144.61	12.50	20.95	383
430	0.22368	5334.3	8910.8	145.10	12.50	20.95	387
440	0.21856	5459.9	9120.2	145.58	12.50	20.94	392
450	0.21367	5585.5	9329.5	146.05	12.50	20.93	396
460	0.20900	5711.0	9538.8	146.51	12.50	20.92	401
470	0.20453	5836.5	9748.0	146.96	12.49	20.91	405
480	0.20024	5962.0	9957.1	147.40	12.49	20.91	409
490	0.19614	6087.4	10166.	147.83	12.49	20.90	414
500	0.19220	6212.8	10375.	148.25	12.49	20.90	418
520	0.18478	6463.5	10793.	149.07	12.49	20.89	426
540	0.17791	6714.0	11211.	149.86	12.49	20.88	434
560	0.17154	6964.5	11628.	150.62	12.49	20.87	442
580	0.16561	7214.9	12045.	151.35	12.49	20.86	450
600	0.16008	7465.2	12463.	152.06	12.49	20.86	458
620	0.15491	7715.5	12880.	152.74	12.48	20.85	465
640	0.15007	7965.7	13297.	153.41	12.48	20.85	473
660	0.14551	8215.8	13714.	154.05	12.48	20.84	480
680	0.14123	8465.9	14130.	154.67	12.48	20.84	487
700	0.13719	8716.0	14547.	155.27	12.48	20.84	494
720	0.13338	8966.0	14964.	155.86	12.48	20.83	501
740	0.12978	9216.0	15380.	156.43	12.48	20.83	508
760	0.12636	9466.0	15797.	156.99	12.48	20.83	515
780	0.12312	9715.9	16214.	157.53	12.48	20.82	521
800	0.12004	9965.8	16630.	158.05	12.48	20.82	528
850	0.11298	10590.	17671.	159.32	12.48	20.82	544
900	0.10671	11215.	18712.	160.51	12.48	20.81	560
950	0.10110	11839.	19752.	161.63	12.48	20.81	575
1000	0.09605	12464.	20793.	162.70	12.48	20.81	590
1050	0.09148	13088.	21833.	163.71	12.48	20.80	605
1100	0.08732	13712.	22873.	164.68	12.48	20.80	619
1150	0.08353	14336.	23913.	165.61	12.48	20.80	633
1200	0.08005	14960.	24953.	166.49	12.48	20.80	646

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
			1.00 MPa Isobar				
* 84.00	35.510	-4838.7	-4810.5	53.28	21.34	42.49	857
84	35.510	-4838.6	-4810.5	53.28	21.34	42.49	857
86	35.214	-4753.6	-4725.2	54.29	21.09	42.74	844
88	34.913	-4668.1	-4639.5	55.27	20.85	43.01	830
90	34.607	-4582.1	-4553.2	56.24	20.61	43.31	817
92	34.296	-4495.4	-4466.2	57.20	20.39	43.64	803
94	33.979	-4408.0	-4378.6	58.14	20.17	43.99	789
96	33.655	-4319.9	-4290.2	59.07	19.96	44.38	776
98	33.325	-4231.1	-4201.1	59.99	19.77	44.80	761
100	32.989	-4141.3	-4111.0	60.90	19.58	45.25	747
102	32.645	-4050.7	-4020.0	61.80	19.40	45.75	733
104	32.293	-3959.0	-3928.0	62.69	19.23	46.29	718
106	31.932	-3866.2	-3834.8	63.58	19.06	46.88	703
108	31.562	-3772.1	-3740.4	64.46	18.91	47.53	687
110	31.181	-3676.7	-3644.7	65.34	18.76	48.25	672
112	30.790	-3579.9	-3547.4	66.22	18.62	49.05	655
114	30.385	-3481.3	-3448.4	67.09	18.49	49.95	638
116	29.967	-3380.9	-3347.5	67.97	18.37	50.98	621
* 116.59	29.841	-3351.1	-3317.6	68.23	18.33	51.31	616
* 116.59	1.2424	1127.1	1932.0	113.25	16.35	33.64	182
118	1.2165	1156.9	1978.9	113.65	16.09	32.73	184
120	1.1826	1197.6	2043.2	114.19	15.73	31.55	187
122	1.1513	1236.6	2105.2	114.71	15.37	30.51	190
124	1.1223	1274.2	2165.3	115.20	15.05	29.60	193
126	1.0952	1310.6	2223.7	115.66	14.77	28.82	195
128	1.0699	1345.9	2280.6	116.11	14.52	28.13	198
130	1.0460	1380.3	2336.3	116.54	14.31	27.54	200
132	1.0236	1413.9	2390.8	116.96	14.12	27.02	203
134	1.0023	1446.7	2444.4	117.36	13.96	26.57	205
136	0.98219	1479.0	2497.1	117.75	13.82	26.17	207
138	0.96303	1510.7	2549.1	118.13	13.70	25.81	210
140	0.94478	1541.9	2600.4	118.50	13.60	25.50	212
142	0.92736	1572.8	2651.1	118.86	13.50	25.21	214
144	0.91070	1603.2	2701.3	119.21	13.43	24.96	216
146	0.89475	1633.3	2750.9	119.55	13.36	24.73	218
148	0.87946	1663.1	2800.2	119.89	13.29	24.52	220
150	0.86478	1692.7	2849.1	120.22	13.24	24.33	222
152	0.85066	1722.0	2897.5	120.54	13.19	24.16	223

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
154	0.83707	1751.1	2945.7	120.85	13.15	24.00	225
156	0.82397	1779.9	2993.6	121.16	13.11	23.86	227
158	0.81135	1808.6	3041.1	121.46	13.07	23.72	229
160	0.79916	1837.1	3088.5	121.76	13.04	23.60	231
162	0.78738	1865.5	3135.5	122.05	13.01	23.48	232
164	0.77599	1893.7	3182.4	122.34	12.99	23.37	234
166	0.76496	1921.8	3229.0	122.62	12.96	23.27	236
168	0.75429	1949.7	3275.5	122.90	12.94	23.18	237
170	0.74395	1977.6	3321.8	123.18	12.92	23.09	239
172	0.73391	2005.3	3367.8	123.45	12.90	23.01	241
174	0.72418	2032.9	3413.8	123.71	12.88	22.93	242
176	0.71473	2060.4	3459.6	123.97	12.87	22.85	244
178	0.70555	2087.9	3505.2	124.23	12.85	22.78	245
180	0.69663	2115.2	3550.7	124.49	12.84	22.72	247
185	0.67537	2183.2	3663.9	125.11	12.81	22.57	251
190	0.65548	2250.8	3776.4	125.71	12.78	22.43	254
195	0.63682	2317.9	3888.2	126.29	12.76	22.31	258
200	0.61928	2384.8	3999.5	126.85	12.74	22.21	262
205	0.60275	2451.3	4110.3	127.40	12.72	22.11	265
210	0.58714	2517.5	4220.7	127.93	12.70	22.03	269
215	0.57236	2583.5	4330.6	128.45	12.68	21.95	272
220	0.55836	2649.2	4440.2	128.95	12.67	21.88	275
225	0.54507	2714.8	4549.4	129.44	12.66	21.81	279
230	0.53243	2780.1	4658.3	129.92	12.65	21.76	282
235	0.52039	2845.3	4767.0	130.39	12.64	21.70	285
240	0.50891	2910.4	4875.3	130.84	12.63	21.65	288
245	0.49794	2975.2	4983.5	131.29	12.62	21.61	291
250	0.48746	3040.0	5091.4	131.73	12.61	21.56	294
255	0.47744	3104.6	5199.1	132.15	12.60	21.52	297
260	0.46783	3169.1	5306.7	132.57	12.60	21.49	300
265	0.45861	3233.5	5414.0	132.98	12.59	21.45	303
270	0.44977	3297.8	5521.2	133.38	12.59	21.42	306
275	0.44127	3362.0	5628.2	133.77	12.58	21.39	309
280	0.43309	3426.1	5735.1	134.16	12.57	21.37	312
285	0.42523	3490.2	5841.9	134.54	12.57	21.34	315
290	0.41765	3554.2	5948.5	134.91	12.57	21.32	318
295	0.41034	3618.1	6055.0	135.27	12.56	21.29	321
300	0.40330	3681.9	6161.4	135.63	12.56	21.27	323
310	0.38993	3809.4	6374.0	136.33	12.55	21.23	329
320	0.37743	3936.6	6586.1	137.00	12.54	21.20	334
330	0.36573	4063.7	6797.9	137.65	12.54	21.17	339

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
340	0.35475	4190.6	7009.5	138.28	12.53	21.14	345
350	0.34442	4317.3	7220.8	138.89	12.53	21.12	350
360	0.33469	4443.9	7431.8	139.49	12.53	21.09	355
370	0.32550	4570.4	7642.6	140.07	12.52	21.07	360
380	0.31681	4696.8	7853.3	140.63	12.52	21.06	364
390	0.30857	4823.0	8063.7	141.18	12.52	21.04	369
400	0.30077	4949.2	8274.1	141.71	12.51	21.02	374
410	0.29335	5075.3	8484.2	142.23	12.51	21.01	379
420	0.28629	5201.3	8694.2	142.73	12.51	21.00	383
430	0.27957	5327.2	8904.2	143.23	12.51	20.98	388
440	0.27316	5453.1	9113.9	143.71	12.50	20.97	392
450	0.26704	5578.9	9323.6	144.18	12.50	20.96	397
460	0.26119	5704.6	9533.2	144.64	12.50	20.95	401
470	0.25560	5830.3	9742.7	145.09	12.50	20.95	405
480	0.25024	5956.0	9952.2	145.53	12.50	20.94	410
490	0.24510	6081.6	10162.	145.96	12.50	20.93	414
500	0.24017	6207.1	10371.	146.39	12.50	20.92	418
520	0.23089	6458.1	10789.	147.21	12.49	20.91	426
540	0.22231	6709.0	11207.	148.00	12.49	20.90	434
560	0.21434	6959.7	11625.	148.76	12.49	20.89	442
580	0.20693	7210.4	12043.	149.49	12.49	20.88	450
600	0.20002	7460.9	12461.	150.20	12.49	20.88	458
620	0.19355	7711.4	12878.	150.88	12.49	20.87	465
640	0.18749	7961.8	13295.	151.54	12.49	20.86	473
660	0.18181	8212.1	13712.	152.19	12.49	20.86	480
680	0.17645	8462.4	14130.	152.81	12.49	20.85	487
700	0.17141	8712.6	14547.	153.41	12.48	20.85	494
720	0.16665	8962.7	14963.	154.00	12.48	20.84	501
740	0.16214	9212.9	15380.	154.57	12.48	20.84	508
760	0.15787	9462.9	15797.	155.13	12.48	20.84	515
780	0.15383	9713.0	16214.	155.67	12.48	20.83	522
800	0.14998	9963.0	16630.	156.20	12.48	20.83	528
850	0.14116	10588.	17672.	157.46	12.48	20.83	545
900	0.13333	11213.	18713.	158.65	12.48	20.82	560
950	0.12632	11837.	19754.	159.77	12.48	20.82	576
1000	0.12001	12462.	20795.	160.84	12.48	20.81	590
1050	0.11430	13086.	21835.	161.86	12.48	20.81	605
1100	0.10911	13710.	22876.	162.83	12.48	20.81	619
1150	0.10437	14335.	23916.	163.75	12.48	20.80	633
1200	0.10003	14959.	24956.	164.64	12.48	20.80	647

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
			1.50 MPa Isobar				
* 84.12	35.526	-4838.2	-4796.0	53.29	21.33	42.42	859
86	35.250	-4758.7	-4716.2	54.23	21.10	42.65	846
88	34.951	-4673.5	-4630.6	55.21	20.86	42.92	833
90	34.646	-4587.8	-4544.5	56.18	20.63	43.21	820
92	34.337	-4501.4	-4457.8	57.13	20.40	43.53	806
94	34.022	-4414.5	-4370.4	58.07	20.19	43.87	792
96	33.701	-4326.8	-4282.3	59.00	19.98	44.24	779
98	33.374	-4238.3	-4193.4	59.91	19.78	44.65	765
100	33.040	-4149.0	-4103.6	60.82	19.59	45.09	751
102	32.699	-4058.9	-4013.0	61.72	19.41	45.57	736
104	32.351	-3967.7	-3921.3	62.61	19.24	46.09	722
106	31.994	-3875.5	-3828.6	63.49	19.08	46.65	707
108	31.628	-3782.1	-3734.7	64.37	18.92	47.27	692
110	31.252	-3687.5	-3639.5	65.24	18.77	47.96	676
112	30.866	-3591.4	-3542.8	66.11	18.63	48.72	660
114	30.467	-3493.8	-3444.5	66.98	18.50	49.57	644
116	30.056	-3394.4	-3344.5	67.85	18.38	50.53	627
118	29.628	-3292.9	-3242.3	68.73	18.26	51.63	609
120	29.184	-3189.2	-3137.8	69.60	18.16	52.91	590
122	28.719	-3082.8	-3030.5	70.49	18.07	54.41	571
* 123.95	28.242	-2975.9	-2922.8	71.37	18.00	56.16	551
* 123.95	1.8763	1086.6	1886.0	110.16	17.22	39.83	183
124	1.8746	1087.8	1888.0	110.18	17.20	39.77	183
126	1.8117	1137.2	1965.2	110.80	16.64	37.46	186
128	1.7554	1183.6	2038.1	111.37	16.15	35.57	190
130	1.7043	1227.5	2107.7	111.91	15.72	34.02	193
132	1.6575	1269.4	2174.4	112.42	15.36	32.72	196
134	1.6144	1309.6	2238.7	112.90	15.05	31.63	199
136	1.5745	1348.3	2301.0	113.36	14.78	30.70	202
138	1.5372	1385.8	2361.6	113.81	14.55	29.90	204
140	1.5023	1422.2	2420.6	114.23	14.35	29.21	207
142	1.4695	1457.7	2478.4	114.64	14.19	28.60	209
144	1.4386	1492.4	2535.1	115.04	14.04	28.07	212
146	1.4094	1526.5	2590.8	115.42	13.91	27.60	214
148	1.3817	1559.9	2645.5	115.79	13.80	27.19	216
150	1.3553	1592.8	2699.5	116.16	13.71	26.81	218
152	1.3302	1625.2	2752.8	116.51	13.62	26.47	220
154	1.3063	1657.2	2805.5	116.85	13.55	26.17	222

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
156	1.2834	1688.7	2857.5	117.19	13.48	25.89	224
158	1.2615	1719.9	2909.0	117.52	13.42	25.64	226
160	1.2404	1750.8	2960.1	117.84	13.37	25.41	228
162	1.2203	1781.4	3010.7	118.15	13.32	25.20	230
164	1.2009	1811.8	3060.9	118.46	13.27	25.00	232
166	1.1822	1841.9	3110.7	118.76	13.23	24.82	233
168	1.1642	1871.7	3160.2	119.06	13.20	24.65	235
170	1.1468	1901.4	3209.3	119.35	13.17	24.49	237
172	1.1301	1930.8	3258.2	119.64	13.13	24.35	239
174	1.1139	1960.1	3306.7	119.92	13.11	24.21	240
176	1.0982	1989.2	3355.0	120.19	13.08	24.08	242
178	1.0831	2018.1	3403.0	120.46	13.06	23.96	244
180	1.0684	2046.9	3450.9	120.73	13.03	23.85	245
185	1.0336	2118.2	3569.4	121.38	12.98	23.59	249
190	1.0014	2188.8	3686.8	122.01	12.94	23.37	253
195	0.97127	2258.8	3803.2	122.61	12.90	23.17	257
200	0.94315	2328.1	3918.6	123.19	12.87	23.00	261
205	0.91678	2397.0	4033.2	123.76	12.84	22.84	264
210	0.89199	2465.4	4147.0	124.31	12.82	22.70	268
215	0.86863	2533.4	4260.2	124.84	12.79	22.58	271
220	0.84657	2601.0	4372.8	125.36	12.77	22.47	275
225	0.82570	2668.3	4484.9	125.86	12.75	22.36	278
230	0.80592	2735.2	4596.5	126.35	12.74	22.27	282
235	0.78713	2801.9	4707.6	126.83	12.72	22.18	285
240	0.76925	2868.4	4818.3	127.30	12.71	22.11	288
245	0.75223	2934.6	4928.7	127.75	12.69	22.03	291
250	0.73599	3000.6	5038.7	128.20	12.68	21.97	294
255	0.72048	3066.5	5148.4	128.63	12.67	21.91	298
260	0.70565	3132.1	5257.8	129.06	12.66	21.85	301
265	0.69146	3197.6	5366.9	129.47	12.65	21.80	304
270	0.67785	3262.9	5475.8	129.88	12.64	21.75	307
275	0.66479	3328.1	5584.4	130.28	12.63	21.70	310
280	0.65225	3393.1	5692.8	130.67	12.63	21.66	312
285	0.64020	3458.0	5801.0	131.05	12.62	21.62	315
290	0.62861	3522.8	5909.0	131.43	12.61	21.59	318
295	0.61744	3587.5	6016.9	131.80	12.61	21.55	321
300	0.60668	3652.1	6124.6	132.16	12.60	21.52	324
310	0.58630	3781.0	6339.4	132.86	12.59	21.46	329
320	0.56728	3909.6	6553.8	133.54	12.58	21.41	335
330	0.54950	4037.9	6767.6	134.20	12.57	21.36	340
340	0.53283	4165.9	6981.0	134.84	12.56	21.32	345

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
350	0.51717	4293.6	7194.0	135.46	12.56	21.28	350
360	0.50244	4421.2	7406.6	136.06	12.55	21.25	355
370	0.48853	4548.6	7619.0	136.64	12.55	21.22	360
380	0.47540	4675.7	7831.0	137.20	12.54	21.19	365
390	0.46296	4802.8	8042.8	137.75	12.54	21.16	370
400	0.45118	4929.7	8254.3	138.29	12.53	21.14	375
410	0.43999	5056.4	8465.6	138.81	12.53	21.12	379
420	0.42935	5183.1	8676.7	139.32	12.53	21.10	384
430	0.41922	5309.6	8887.7	139.82	12.52	21.08	389
440	0.40957	5436.1	9098.4	140.30	12.52	21.07	393
450	0.40036	5562.4	9309.0	140.77	12.52	21.05	397
460	0.39156	5688.7	9519.5	141.24	12.52	21.04	402
470	0.38315	5814.8	9729.8	141.69	12.51	21.03	406
480	0.37509	5940.9	9940.0	142.13	12.51	21.01	410
490	0.36737	6067.0	10150.	142.56	12.51	21.00	415
500	0.35996	6193.0	10360.	142.99	12.51	20.99	419
520	0.34602	6444.8	10780.	143.81	12.51	20.97	427
540	0.33313	6696.3	11199.	144.60	12.50	20.96	435
560	0.32118	6947.7	11618.	145.36	12.50	20.94	443
580	0.31006	7199.0	12037.	146.10	12.50	20.93	451
600	0.29969	7450.1	12455.	146.81	12.50	20.92	459
620	0.28999	7701.1	12874.	147.49	12.50	20.91	466
640	0.28091	7952.0	13292.	148.16	12.49	20.90	474
660	0.27238	8202.7	13710.	148.80	12.49	20.89	481
680	0.26436	8453.4	14127.	149.42	12.49	20.89	488
700	0.25680	8704.0	14545.	150.03	12.49	20.88	495
720	0.24966	8954.5	14963.	150.62	12.49	20.87	502
740	0.24292	9205.0	15380.	151.19	12.49	20.87	509
760	0.23652	9455.4	15797.	151.75	12.49	20.86	516
780	0.23046	9705.8	16215.	152.29	12.49	20.86	523
800	0.22470	9956.0	16632.	152.82	12.49	20.85	529
850	0.21149	10582.	17674.	154.08	12.49	20.84	545
900	0.19975	11207.	18716.	155.27	12.48	20.84	561
950	0.18926	11832.	19758.	156.40	12.48	20.83	576
1000	0.17981	12457.	20799.	157.47	12.48	20.83	591
1050	0.17126	13082.	21840.	158.48	12.48	20.82	606
1100	0.16349	13706.	22881.	159.45	12.48	20.82	620
1150	0.15639	14331.	23922.	160.38	12.48	20.81	634
1200	0.14989	14955.	24963.	161.26	12.48	20.81	647

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
			2.00 MPa Isobar				
* 84.25	35.541	-4837.8	-4781.5	53.29	21.33	42.36	861
86	35.285	-4763.8	-4707.1	54.17	21.12	42.57	849
88	34.987	-4678.9	-4621.7	55.15	20.88	42.83	836
90	34.685	-4593.5	-4535.8	56.11	20.64	43.11	822
92	34.378	-4507.4	-4449.3	57.06	20.42	43.42	809
94	34.065	-4420.8	-4362.1	58.00	20.20	43.75	795
96	33.747	-4333.5	-4274.2	58.93	20.00	44.11	782
98	33.422	-4245.5	-4185.6	59.84	19.80	44.51	768
100	33.091	-4156.6	-4096.2	60.74	19.61	44.93	754
102	32.753	-4066.9	-4005.9	61.64	19.43	45.39	740
104	32.408	-3976.3	-3914.6	62.52	19.26	45.89	725
106	32.054	-3884.7	-3822.3	63.40	19.09	46.44	711
108	31.693	-3791.9	-3728.8	64.28	18.94	47.03	696
110	31.321	-3698.0	-3634.1	65.14	18.79	47.68	680
112	30.940	-3602.7	-3538.1	66.01	18.65	48.41	665
114	30.547	-3505.9	-3440.5	66.87	18.52	49.21	649
116	30.142	-3407.5	-3341.1	67.74	18.39	50.12	632
118	29.723	-3307.2	-3239.9	68.60	18.27	51.14	615
120	29.287	-3204.8	-3136.5	69.47	18.17	52.32	597
122	28.832	-3099.9	-3030.5	70.35	18.07	53.70	578
124	28.355	-2992.0	-2921.5	71.23	17.99	55.33	558
126	27.852	-2880.8	-2808.9	72.13	17.93	57.30	537
128	27.316	-2765.2	-2692.0	73.06	17.89	59.75	515
* 129.72	26.822	-2661.6	-2587.0	73.87	17.88	62.39	494
* 129.72	2.5585	1021.7	1803.4	107.72	18.00	47.79	182
130	2.5433	1030.3	1816.7	107.82	17.89	47.16	183
132	2.4439	1088.7	1907.0	108.51	17.18	43.35	187
134	2.3572	1142.2	1990.7	109.14	16.59	40.45	191
136	2.2802	1192.1	2069.2	109.72	16.10	38.16	194
138	2.2110	1239.1	2143.6	110.26	15.69	36.32	198
140	2.1482	1283.7	2214.7	110.77	15.34	34.81	201
142	2.0905	1326.4	2283.0	111.26	15.05	33.54	204
144	2.0373	1367.4	2349.0	111.72	14.81	32.47	207
146	1.9880	1407.0	2413.0	112.16	14.59	31.56	209
148	1.9419	1445.4	2475.3	112.58	14.41	30.76	212
150	1.8988	1482.8	2536.2	112.99	14.26	30.07	214
152	1.8582	1519.4	2595.7	113.39	14.12	29.46	217
154	1.8199	1555.1	2654.1	113.77	14.00	28.92	219

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
156	1.7837	1590.1	2711.4	114.14	13.90	28.44	221
158	1.7493	1624.6	2767.9	114.50	13.81	28.01	223
160	1.7167	1658.4	2823.5	114.85	13.73	27.62	225
162	1.6855	1691.8	2878.4	115.19	13.65	27.26	227
164	1.6559	1724.7	2932.6	115.52	13.59	26.94	229
166	1.6275	1757.2	2986.1	115.85	13.53	26.65	231
168	1.6003	1789.4	3039.2	116.16	13.48	26.37	233
170	1.5742	1821.2	3091.7	116.47	13.43	26.12	235
172	1.5491	1852.6	3143.7	116.78	13.38	25.89	237
174	1.5251	1883.8	3195.2	117.08	13.34	25.68	239
176	1.5019	1914.7	3246.4	117.37	13.30	25.48	240
178	1.4796	1945.4	3297.1	117.66	13.27	25.29	242
180	1.4580	1975.8	3347.6	117.94	13.24	25.12	244
185	1.4073	2051.0	3472.1	118.62	13.16	24.73	248
190	1.3606	2125.0	3594.9	119.27	13.10	24.39	252
195	1.3174	2198.0	3716.1	119.90	13.05	24.10	256
200	1.2772	2270.1	3836.0	120.51	13.01	23.85	260
205	1.2398	2341.5	3954.7	121.10	12.97	23.62	264
210	1.2048	2412.2	4072.3	121.66	12.93	23.42	267
215	1.1719	2482.3	4188.9	122.21	12.90	23.24	271
220	1.1410	2551.9	4304.7	122.75	12.87	23.08	275
225	1.1119	2621.0	4419.8	123.26	12.85	22.94	278
230	1.0844	2689.7	4534.1	123.77	12.82	22.81	281
235	1.0583	2758.0	4647.8	124.25	12.80	22.69	285
240	1.0336	2826.0	4761.0	124.73	12.78	22.58	288
245	1.0101	2893.6	4873.6	125.20	12.77	22.48	291
250	0.98773	2960.9	4985.8	125.65	12.75	22.39	295
255	0.96642	3028.0	5097.5	126.09	12.74	22.30	298
260	0.94607	3094.8	5208.8	126.52	12.72	22.22	301
265	0.92663	3161.4	5319.7	126.95	12.71	22.15	304
270	0.90803	3227.7	5430.3	127.36	12.70	22.08	307
275	0.89020	3293.9	5540.6	127.76	12.69	22.02	310
280	0.87311	3359.9	5650.5	128.16	12.68	21.96	313
285	0.85671	3425.7	5760.2	128.55	12.67	21.91	316
290	0.84094	3491.4	5869.6	128.93	12.66	21.86	319
295	0.82578	3556.9	5978.8	129.30	12.65	21.81	321
300	0.81118	3622.2	6087.8	129.67	12.64	21.77	324
310	0.78356	3752.6	6305.0	130.38	12.63	21.69	330
320	0.75784	3882.5	6521.6	131.07	12.62	21.62	335
330	0.73382	4012.0	6737.4	131.73	12.60	21.55	341
340	0.71134	4141.1	6952.7	132.38	12.59	21.50	346

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
350	0.69025	4269.9	7167.4	133.00	12.59	21.45	351
360	0.67042	4398.4	7381.6	133.60	12.58	21.40	356
370	0.65172	4526.7	7595.5	134.19	12.57	21.36	361
380	0.63408	4654.7	7808.9	134.76	12.56	21.32	366
390	0.61739	4782.5	8022.0	135.31	12.56	21.29	371
400	0.60158	4910.2	8234.7	135.85	12.55	21.26	375
410	0.58658	5037.6	8447.2	136.37	12.55	21.23	380
420	0.57233	5164.9	8659.4	136.88	12.55	21.21	385
430	0.55877	5292.0	8871.3	137.38	12.54	21.18	389
440	0.54586	5419.1	9083.0	137.87	12.54	21.16	394
450	0.53353	5546.0	9294.5	138.35	12.53	21.14	398
460	0.52177	5672.7	9505.9	138.81	12.53	21.12	403
470	0.51052	5799.4	9717.0	139.26	12.53	21.11	407
480	0.49975	5926.0	9928.0	139.71	12.53	21.09	411
490	0.48943	6052.5	10139.	140.14	12.52	21.08	416
500	0.47954	6178.9	10349.	140.57	12.52	21.06	420
520	0.46093	6431.4	10770.	141.39	12.52	21.04	428
540	0.44373	6683.7	11191.	142.19	12.51	21.01	436
560	0.42778	6935.8	11611.	142.95	12.51	21.00	444
580	0.41295	7187.6	12031.	143.69	12.51	20.98	452
600	0.39913	7439.3	12450.	144.40	12.51	20.96	460
620	0.38621	7690.8	12869.	145.09	12.50	20.95	467
640	0.37410	7942.2	13288.	145.75	12.50	20.94	475
660	0.36274	8193.4	13707.	146.39	12.50	20.93	482
680	0.35205	8444.5	14125.	147.02	12.50	20.92	489
700	0.34198	8695.5	14544.	147.63	12.50	20.91	496
720	0.33248	8946.4	14962.	148.21	12.50	20.90	503
740	0.32349	9197.2	15380.	148.79	12.50	20.89	510
760	0.31498	9447.9	15798.	149.34	12.49	20.89	517
780	0.30690	9698.5	16215.	149.89	12.49	20.88	523
800	0.29924	9949.1	16633.	150.42	12.49	20.88	530
850	0.28165	10575.	17676.	151.68	12.49	20.86	546
900	0.26603	11201.	18719.	152.87	12.49	20.85	562
950	0.25205	11827.	19762.	154.00	12.49	20.85	577
1000	0.23947	12452.	20804.	155.07	12.49	20.84	592
1050	0.22810	13077.	21846.	156.09	12.49	20.83	607
1100	0.21775	13702.	22887.	157.05	12.48	20.83	621
1150	0.20831	14327.	23928.	157.98	12.48	20.82	634
1200	0.19965	14952.	24969.	158.87	12.48	20.82	648

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
			2.50 MPa Isobar				
* 84.37	35.557	-4837.3	-4767.0	53.30	21.33	42.30	862
86	35.320	-4768.8	-4698.0	54.11	21.13	42.49	852
88	35.024	-4684.2	-4612.8	55.09	20.89	42.74	838
90	34.724	-4599.1	-4527.1	56.05	20.66	43.01	825
92	34.418	-4513.4	-4440.7	57.00	20.44	43.31	812
94	34.108	-4427.1	-4353.8	57.93	20.22	43.64	798
96	33.792	-4340.2	-4266.2	58.86	20.01	43.99	785
98	33.469	-4252.5	-4177.8	59.77	19.82	44.37	771
100	33.141	-4164.1	-4088.7	60.67	19.63	44.78	757
102	32.806	-4074.9	-3998.7	61.56	19.45	45.22	743
104	32.464	-3984.8	-3907.8	62.44	19.28	45.70	729
106	32.114	-3893.7	-3815.9	63.32	19.11	46.23	715
108	31.756	-3801.6	-3722.8	64.19	18.96	46.80	700
110	31.389	-3708.3	-3628.6	65.05	18.81	47.42	685
112	31.013	-3613.7	-3533.1	65.91	18.66	48.11	669
114	30.626	-3517.8	-3436.2	66.77	18.53	48.87	653
116	30.227	-3420.3	-3337.6	67.63	18.40	49.72	637
118	29.814	-3321.1	-3237.2	68.48	18.28	50.68	620
120	29.386	-3219.8	-3134.8	69.34	18.18	51.78	603
122	28.942	-3116.4	-3030.0	70.21	18.08	53.05	584
124	28.476	-3010.2	-2922.4	71.08	17.99	54.53	565
126	27.987	-2901.0	-2811.7	71.97	17.92	56.31	545
128	27.469	-2788.0	-2697.0	72.87	17.87	58.47	524
130	26.915	-2670.3	-2577.4	73.80	17.85	61.18	501
132	26.315	-2546.7	-2451.7	74.76	17.86	64.71	476
134	25.653	-2415.2	-2317.7	75.77	17.93	69.53	448
* 134.53	25.463	-2378.4	-2280.2	76.05	17.96	71.13	440
* 134.53	3.3111	935.48	1690.5	105.56	18.84	59.02	182
136	3.1913	989.54	1772.9	106.17	18.13	53.64	185
138	3.0525	1055.6	1874.6	106.91	17.35	48.36	190
140	2.9342	1115.3	1967.3	107.58	16.73	44.52	194
142	2.8309	1170.2	2053.3	108.19	16.22	41.59	197
144	2.7391	1221.4	2134.1	108.76	15.81	39.29	201
146	2.6565	1269.7	2210.7	109.28	15.46	37.43	204
148	2.5815	1315.6	2284.0	109.78	15.17	35.89	207
150	2.5127	1359.5	2354.5	110.26	14.93	34.60	210
152	2.4492	1401.8	2422.5	110.71	14.72	33.50	213
154	2.3903	1442.7	2488.6	111.14	14.54	32.56	215

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
156	2.3353	1482.3	2552.8	111.55	14.38	31.73	218
158	2.2839	1520.9	2615.6	111.95	14.25	31.01	220
160	2.2355	1558.6	2676.9	112.34	14.13	30.37	223
162	2.1899	1595.5	2737.1	112.71	14.03	29.81	225
164	2.1467	1631.6	2796.2	113.07	13.93	29.29	227
166	2.1058	1667.1	2854.3	113.43	13.85	28.83	229
168	2.0669	1702.0	2911.6	113.77	13.77	28.42	231
170	2.0298	1736.4	2968.0	114.10	13.71	28.04	233
172	1.9944	1770.2	3023.7	114.43	13.65	27.69	235
174	1.9606	1803.7	3078.8	114.75	13.59	27.37	237
176	1.9283	1836.7	3133.2	115.06	13.54	27.07	239
178	1.8972	1869.4	3187.1	115.36	13.49	26.80	241
180	1.8674	1901.7	3240.4	115.66	13.45	26.55	243
185	1.7978	1981.2	3371.8	116.38	13.35	25.99	247
190	1.7343	2059.0	3500.5	117.07	13.27	25.52	251
195	1.6760	2135.4	3627.1	117.72	13.21	25.11	255
200	1.6222	2210.6	3751.7	118.36	13.15	24.76	259
205	1.5723	2284.7	3874.7	118.96	13.10	24.46	263
210	1.5259	2357.9	3996.3	119.55	13.05	24.18	267
215	1.4825	2430.4	4116.6	120.12	13.01	23.94	271
220	1.4420	2502.1	4235.8	120.66	12.97	23.73	274
225	1.4038	2573.1	4354.0	121.19	12.94	23.54	278
230	1.3679	2643.6	4471.2	121.71	12.91	23.36	281
235	1.3340	2713.6	4587.6	122.21	12.89	23.21	285
240	1.3019	2783.1	4703.3	122.70	12.86	23.06	288
245	1.2715	2852.2	4818.3	123.17	12.84	22.93	291
250	1.2427	2920.9	4932.7	123.63	12.82	22.81	295
255	1.2152	2989.2	5046.4	124.08	12.80	22.70	298
260	1.1891	3057.2	5159.7	124.52	12.78	22.60	301
265	1.1641	3124.9	5272.5	124.95	12.77	22.51	304
270	1.1403	3192.4	5384.8	125.37	12.75	22.42	307
275	1.1175	3259.6	5496.7	125.79	12.74	22.34	310
280	1.0956	3326.5	5608.3	126.19	12.73	22.27	313
285	1.0747	3393.2	5719.5	126.58	12.71	22.20	316
290	1.0546	3459.8	5830.3	126.97	12.70	22.14	319
295	1.0353	3526.1	5940.8	127.34	12.69	22.08	322
300	1.0167	3592.2	6051.1	127.71	12.68	22.02	325
310	0.98167	3724.1	6270.8	128.44	12.67	21.92	330
320	0.94906	3855.3	6489.5	129.13	12.65	21.83	336
330	0.91866	3986.0	6707.4	129.80	12.64	21.75	341
340	0.89025	4116.3	6924.5	130.45	12.62	21.68	346

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
350	0.86362	4246.1	7140.9	131.08	12.61	21.61	352
360	0.83860	4375.6	7356.8	131.68	12.60	21.56	357
370	0.81505	4504.8	7572.1	132.27	12.60	21.51	362
380	0.79283	4633.7	7786.9	132.85	12.59	21.46	367
390	0.77184	4762.3	8001.3	133.40	12.58	21.42	371
400	0.75196	4890.6	8215.3	133.95	12.57	21.38	376
410	0.73312	5018.8	8428.9	134.47	12.57	21.34	381
420	0.71522	5146.7	8642.2	134.99	12.56	21.31	386
430	0.69820	5274.5	8855.1	135.49	12.56	21.28	390
440	0.68200	5402.1	9067.8	135.98	12.55	21.25	395
450	0.66654	5529.5	9280.2	136.45	12.55	21.23	399
460	0.65179	5656.8	9492.4	136.92	12.55	21.21	404
470	0.63769	5784.0	9704.4	137.38	12.54	21.18	408
480	0.62421	5911.0	9916.1	137.82	12.54	21.17	412
490	0.61129	6037.9	10128.	138.26	12.54	21.15	416
500	0.59891	6164.8	10339.	138.69	12.53	21.13	421
520	0.57561	6418.1	10761.	139.51	12.53	21.10	429
540	0.55409	6671.1	11183.	140.31	12.52	21.07	437
560	0.53415	6923.9	11604.	141.07	12.52	21.05	445
580	0.51561	7176.3	12025.	141.81	12.52	21.03	453
600	0.49833	7428.5	12445.	142.53	12.52	21.01	460
620	0.48219	7680.6	12865.	143.21	12.51	20.99	468
640	0.46707	7932.4	13285.	143.88	12.51	20.98	475
660	0.45288	8184.0	13704.	144.53	12.51	20.96	483
680	0.43953	8435.6	14123.	145.15	12.51	20.95	490
700	0.42695	8686.9	14542.	145.76	12.50	20.94	497
720	0.41508	8938.2	14961.	146.35	12.50	20.93	504
740	0.40386	9189.4	15380.	146.92	12.50	20.92	511
760	0.39324	9440.4	15798.	147.48	12.50	20.91	518
780	0.38316	9691.4	16216.	148.02	12.50	20.90	524
800	0.37359	9942.2	16634.	148.55	12.50	20.90	531
850	0.35164	10569.	17679.	149.82	12.50	20.88	547
900	0.33214	11196.	18722.	151.01	12.49	20.87	563
950	0.31470	11822.	19766.	152.14	12.49	20.86	578
1000	0.29900	12447.	20809.	153.21	12.49	20.85	593
1050	0.28481	13073.	21851.	154.23	12.49	20.84	607
1100	0.27190	13698.	22893.	155.20	12.49	20.84	621
1150	0.26012	14324.	23935.	156.12	12.49	20.83	635
1200	0.24931	14949.	24976.	157.01	12.49	20.83	649

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
			3.00 MPa Isobar				
* 84.50	35.572	-4836.9	-4752.5	53.30	21.33	42.24	864
86	35.354	-4773.8	-4688.9	54.05	21.15	42.41	854
88	35.060	-4689.4	-4603.9	55.03	20.91	42.65	841
90	34.762	-4604.6	-4518.3	55.99	20.68	42.92	828
92	34.458	-4519.2	-4432.2	56.93	20.45	43.21	815
94	34.150	-4433.3	-4345.4	57.87	20.24	43.52	801
96	33.836	-4346.7	-4258.1	58.79	20.03	43.86	788
98	33.516	-4259.5	-4170.0	59.69	19.84	44.23	774
100	33.190	-4171.5	-4081.1	60.59	19.65	44.63	761
102	32.858	-4082.7	-3991.4	61.48	19.47	45.06	747
104	32.519	-3993.1	-3900.9	62.36	19.29	45.52	733
106	32.173	-3902.6	-3809.3	63.23	19.13	46.02	718
108	31.819	-3811.0	-3716.7	64.10	18.97	46.57	704
110	31.456	-3718.4	-3623.0	64.96	18.82	47.17	689
112	31.084	-3624.5	-3528.0	65.81	18.68	47.82	674
114	30.702	-3529.4	-3431.7	66.66	18.54	48.54	658
116	30.309	-3432.8	-3333.8	67.52	18.42	49.35	642
118	29.903	-3334.6	-3234.2	68.37	18.30	50.25	626
120	29.483	-3234.5	-3132.7	69.22	18.19	51.27	608
122	29.047	-3132.3	-3029.0	70.08	18.08	52.44	591
124	28.593	-3027.8	-2922.8	70.94	17.99	53.80	572
126	28.117	-2920.4	-2813.7	71.81	17.92	55.41	553
128	27.615	-2809.6	-2701.0	72.70	17.86	57.34	532
130	27.081	-2694.8	-2584.0	73.61	17.82	59.72	510
132	26.508	-2574.9	-2461.7	74.54	17.82	62.72	487
134	25.884	-2448.4	-2332.5	75.51	17.85	66.68	461
136	25.189	-2313.1	-2194.0	76.54	17.95	72.18	432
138	24.393	-2164.9	-2041.9	77.65	18.16	80.50	400
* 138.70	24.081	-2109.0	-1984.4	78.06	18.27	84.56	387
* 138.70	4.1651	826.19	1546.5	103.52	19.79	76.33	180
140	3.9941	888.29	1639.4	104.19	18.96	66.99	184
142	3.7820	970.14	1763.4	105.07	17.98	57.70	189
144	3.6097	1041.2	1872.3	105.83	17.23	51.58	194
146	3.4642	1104.8	1970.9	106.51	16.64	47.22	198
148	3.3380	1163.1	2061.9	107.13	16.17	43.93	202
150	3.2266	1217.3	2147.1	107.70	15.78	41.36	205
152	3.1268	1268.2	2227.6	108.23	15.46	39.29	208
154	3.0364	1316.5	2304.5	108.74	15.19	37.59	211

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
156	2.9539	1362.6	2378.2	109.21	14.96	36.17	214
158	2.8779	1406.9	2449.3	109.67	14.76	34.96	217
160	2.8076	1449.6	2518.1	110.10	14.59	33.92	220
162	2.7421	1491.0	2585.1	110.51	14.44	33.01	222
164	2.6809	1531.2	2650.3	110.91	14.31	32.21	224
166	2.6235	1570.4	2714.0	111.30	14.20	31.51	227
168	2.5694	1608.8	2776.3	111.67	14.10	30.88	229
170	2.5184	1646.3	2837.5	112.04	14.01	30.31	231
172	2.4700	1683.0	2897.6	112.39	13.93	29.80	233
174	2.4241	1719.2	2956.8	112.73	13.85	29.34	235
176	2.3804	1754.7	3015.0	113.06	13.79	28.92	237
178	2.3388	1789.7	3072.4	113.39	13.73	28.53	239
180	2.2990	1824.3	3129.2	113.70	13.67	28.18	241
185	2.2069	1908.7	3268.0	114.46	13.55	27.40	246
190	2.1237	1990.8	3403.4	115.19	13.45	26.76	250
195	2.0479	2070.9	3535.8	115.87	13.36	26.22	255
200	1.9786	2149.5	3665.7	116.53	13.29	25.75	259
205	1.9147	2226.6	3793.4	117.16	13.23	25.35	263
210	1.8556	2302.5	3919.2	117.77	13.17	24.99	267
215	1.8007	2377.4	4043.4	118.35	13.12	24.68	270
220	1.7495	2451.4	4166.2	118.92	13.08	24.41	274
225	1.7016	2524.5	4287.6	119.46	13.04	24.16	278
230	1.6566	2596.9	4407.8	119.99	13.00	23.94	281
235	1.6143	2668.6	4527.0	120.51	12.97	23.75	285
240	1.5743	2739.8	4645.3	121.00	12.94	23.57	288
245	1.5366	2810.4	4762.7	121.49	12.91	23.40	292
250	1.5008	2880.5	4879.4	121.96	12.89	23.25	295
255	1.4669	2950.1	4995.3	122.42	12.87	23.12	298
260	1.4346	3019.4	5110.6	122.87	12.84	22.99	301
265	1.4039	3088.3	5225.2	123.30	12.83	22.88	304
270	1.3746	3156.8	5339.3	123.73	12.81	22.77	308
275	1.3466	3225.0	5452.9	124.15	12.79	22.67	311
280	1.3198	3293.0	5566.1	124.55	12.78	22.58	314
285	1.2941	3360.6	5678.8	124.95	12.76	22.50	317
290	1.2696	3428.1	5791.0	125.34	12.75	22.42	320
295	1.2460	3495.2	5902.9	125.73	12.74	22.34	322
300	1.2233	3562.2	6014.5	126.10	12.72	22.28	325
310	1.1806	3695.5	6236.6	126.83	12.70	22.15	331
320	1.1409	3828.1	6457.5	127.53	12.69	22.04	336
330	1.1040	3960.1	6677.5	128.21	12.67	21.94	342
340	1.0695	4091.5	6896.5	128.86	12.65	21.86	347

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
350	1.0372	4222.4	7114.7	129.49	12.64	21.78	352
360	1.0070	4352.9	7332.1	130.11	12.63	21.71	357
370	0.97847	4482.9	7548.9	130.70	12.62	21.65	362
380	0.95163	4612.7	7765.2	131.28	12.61	21.59	367
390	0.92628	4742.1	7980.8	131.84	12.60	21.54	372
400	0.90229	4871.2	8196.0	132.38	12.59	21.50	377
410	0.87956	5000.0	8410.8	132.91	12.59	21.45	382
420	0.85799	5128.6	8625.1	133.43	12.58	21.42	386
430	0.83749	5257.0	8839.1	133.93	12.58	21.38	391
440	0.81798	5385.1	9052.7	134.42	12.57	21.35	395
450	0.79938	5513.1	9266.1	134.90	12.57	21.32	400
460	0.78163	5640.9	9479.1	135.37	12.56	21.29	404
470	0.76467	5768.6	9691.9	135.83	12.56	21.26	409
480	0.74845	5896.1	9904.4	136.28	12.55	21.24	413
490	0.73292	6023.5	10117.	136.71	12.55	21.22	417
500	0.71804	6150.7	10329.	137.14	12.55	21.20	422
520	0.69006	6404.9	10752.	137.97	12.54	21.16	430
540	0.66422	6658.6	11175.	138.77	12.54	21.13	438
560	0.64028	6912.0	11597.	139.54	12.53	21.10	446
580	0.61803	7165.0	12019.	140.28	12.53	21.07	454
600	0.59730	7417.8	12440.	140.99	12.52	21.05	461
620	0.57793	7670.3	12861.	141.68	12.52	21.03	469
640	0.55980	7922.6	13282.	142.35	12.52	21.01	476
660	0.54278	8174.7	13702.	143.00	12.52	21.00	484
680	0.52678	8426.7	14122.	143.62	12.51	20.98	491
700	0.51171	8678.4	14541.	144.23	12.51	20.97	498
720	0.49748	8930.1	14960.	144.82	12.51	20.96	505
740	0.48403	9181.5	15379.	145.40	12.51	20.95	512
760	0.47130	9432.9	15798.	145.95	12.51	20.94	518
780	0.45922	9684.2	16217.	146.50	12.50	20.93	525
800	0.44775	9935.3	16635.	147.03	12.50	20.92	532
850	0.42146	10563.	17681.	148.30	12.50	20.90	548
900	0.39809	11190.	18726.	149.49	12.50	20.89	564
950	0.37720	11816.	19770.	150.62	12.50	20.87	579
1000	0.35840	12443.	20813.	151.69	12.49	20.86	594
1050	0.34139	13069.	21856.	152.71	12.49	20.86	608
1100	0.32593	13694.	22899.	153.68	12.49	20.85	622
1150	0.31182	14320.	23941.	154.60	12.49	20.84	636
1200	0.29887	14945.	24983.	155.49	12.49	20.84	649

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
			4.00 MPa Isobar				
* 84.74	35.602	-4835.9	-4723.6	53.31	21.33	42.12	868
86	35.422	-4783.5	-4670.6	53.93	21.18	42.25	859
88	35.132	-4699.7	-4585.9	54.91	20.94	42.48	846
90	34.837	-4615.5	-4500.7	55.86	20.71	42.73	833
92	34.537	-4530.8	-4414.9	56.81	20.49	43.01	820
94	34.233	-4445.5	-4328.6	57.73	20.27	43.30	807
96	33.923	-4359.6	-4241.7	58.65	20.07	43.62	794
98	33.608	-4273.1	-4154.1	59.55	19.87	43.97	781
100	33.288	-4186.0	-4065.8	60.44	19.68	44.34	767
102	32.961	-4098.1	-3976.7	61.33	19.50	44.74	753
104	32.628	-4009.4	-3886.8	62.20	19.33	45.18	740
106	32.288	-3919.9	-3796.0	63.06	19.16	45.64	726
108	31.941	-3829.4	-3704.2	63.92	19.01	46.15	711
110	31.586	-3738.0	-3611.4	64.77	18.86	46.69	697
112	31.223	-3645.5	-3517.4	65.62	18.71	47.29	682
114	30.850	-3551.9	-3422.2	66.46	18.58	47.94	667
116	30.468	-3456.9	-3325.6	67.30	18.45	48.66	652
118	30.074	-3360.5	-3227.5	68.14	18.32	49.46	636
120	29.669	-3262.5	-3127.7	68.98	18.21	50.35	620
122	29.249	-3162.8	-3026.0	69.82	18.10	51.36	603
124	28.814	-3061.0	-2922.2	70.66	18.00	52.52	585
126	28.360	-2956.9	-2815.8	71.52	17.92	53.86	567
128	27.886	-2850.0	-2706.6	72.38	17.85	55.43	548
130	27.386	-2740.0	-2593.9	73.25	17.79	57.30	528
132	26.856	-2626.0	-2477.1	74.14	17.75	59.58	507
134	26.289	-2507.4	-2355.2	75.06	17.75	62.43	484
136	25.675	-2382.6	-2226.8	76.01	17.78	66.10	459
138	24.998	-2250.0	-2090.0	77.01	17.86	71.04	433
140	24.233	-2106.3	-1941.3	78.08	18.04	78.12	402
142	23.334	-1946.2	-1774.8	79.26	18.36	89.34	368
144	22.202	-1757.7	-1577.5	80.64	18.97	110.7	326
* 145.69	20.845	-1550.5	-1358.7	82.15	20.06	158.1	278
* 145.69	6.4417	503.75	1124.7	99.19	22.40	171.0	177
146	6.2934	539.66	1175.2	99.54	21.92	152.0	178
148	5.6535	705.82	1413.3	101.16	19.87	97.31	186
150	5.2481	822.44	1584.6	102.31	18.61	76.39	193
152	4.9468	916.31	1724.9	103.24	17.72	64.86	198
154	4.7058	996.70	1846.7	104.04	17.05	57.42	202

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
156	4.5046	1068.0	1956.0	104.74	16.53	52.17	206
158	4.3318	1132.9	2056.3	105.38	16.11	48.25	210
160	4.1804	1192.8	2149.6	105.97	15.76	45.20	213
162	4.0457	1248.8	2237.5	106.51	15.48	42.76	216
164	3.9243	1301.6	2320.9	107.02	15.24	40.75	219
166	3.8140	1352.0	2400.7	107.51	15.03	39.08	222
168	3.7130	1400.1	2477.4	107.97	14.85	37.65	225
170	3.6197	1446.4	2551.5	108.41	14.70	36.42	227
172	3.5333	1491.1	2623.2	108.83	14.56	35.36	230
174	3.4527	1534.5	2693.0	109.23	14.44	34.42	232
176	3.3773	1576.6	2761.0	109.62	14.33	33.59	234
178	3.3065	1617.6	2827.4	109.99	14.23	32.84	237
180	3.2398	1657.7	2892.4	110.36	14.15	32.18	239
185	3.0883	1754.4	3049.6	111.22	13.96	30.77	244
190	2.9548	1846.8	3200.6	112.02	13.81	29.65	249
195	2.8358	1935.9	3346.4	112.78	13.68	28.73	253
200	2.7286	2022.2	3488.1	113.50	13.58	27.97	258
205	2.6313	2106.2	3626.3	114.18	13.49	27.32	262
210	2.5424	2188.2	3761.5	114.83	13.41	26.77	266
215	2.4606	2268.5	3894.2	115.46	13.34	26.29	270
220	2.3851	2347.4	4024.5	116.06	13.28	25.87	274
225	2.3150	2425.0	4152.9	116.63	13.23	25.50	278
230	2.2496	2501.5	4279.6	117.19	13.18	25.17	281
235	2.1886	2577.1	4404.7	117.73	13.13	24.88	285
240	2.1313	2651.7	4528.5	118.25	13.09	24.62	289
245	2.0774	2725.5	4651.0	118.75	13.06	24.38	292
250	2.0266	2798.6	4772.3	119.24	13.02	24.17	295
255	1.9786	2871.1	4892.7	119.72	12.99	23.97	299
260	1.9332	2942.9	5012.1	120.18	12.97	23.79	302
265	1.8901	3014.3	5130.6	120.64	12.94	23.63	305
270	1.8491	3085.1	5248.4	121.08	12.92	23.48	308
275	1.8100	3155.5	5365.4	121.51	12.89	23.34	312
280	1.7728	3225.5	5481.8	121.93	12.87	23.21	315
285	1.7372	3295.1	5597.6	122.34	12.86	23.10	318
290	1.7032	3364.3	5712.8	122.74	12.84	22.99	321
295	1.6707	3433.2	5827.5	123.13	12.82	22.89	324
300	1.6394	3501.8	5941.7	123.51	12.81	22.79	326
310	1.5807	3638.2	6168.7	124.26	12.78	22.62	332
320	1.5264	3773.6	6394.1	124.97	12.75	22.47	338
330	1.4760	3908.1	6618.2	125.66	12.73	22.34	343
340	1.4290	4041.8	6841.0	126.33	12.71	22.22	349

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
350	1.3852	4174.9	7062.6	126.97	12.70	22.12	354
360	1.3441	4307.3	7283.3	127.59	12.68	22.02	359
370	1.3055	4439.2	7503.1	128.19	12.67	21.94	364
380	1.2693	4570.7	7722.1	128.78	12.65	21.86	369
390	1.2350	4701.7	7940.4	129.34	12.64	21.79	374
400	1.2027	4832.2	8158.0	129.89	12.63	21.73	379
410	1.1721	4962.5	8375.0	130.43	12.62	21.68	383
420	1.1431	5092.4	8591.5	130.95	12.62	21.62	388
430	1.1156	5222.0	8807.5	131.46	12.61	21.58	393
440	1.0894	5351.3	9023.1	131.96	12.60	21.53	397
450	1.0645	5480.4	9238.2	132.44	12.60	21.49	402
460	1.0407	5609.3	9452.9	132.91	12.59	21.45	406
470	1.0180	5737.9	9667.3	133.37	12.58	21.42	411
480	0.99627	5866.3	9881.3	133.82	12.58	21.39	415
490	0.97550	5994.6	10095.	134.26	12.57	21.36	419
500	0.95560	6122.7	10309.	134.70	12.57	21.33	423
520	0.91822	6378.4	10735.	135.53	12.56	21.28	432
540	0.88372	6633.5	11160.	136.33	12.56	21.24	440
560	0.85178	6888.2	11584.	137.11	12.55	21.20	448
580	0.82212	7142.5	12008.	137.85	12.55	21.17	455
600	0.79450	7396.4	12431.	138.57	12.54	21.14	463
620	0.76871	7649.9	12853.	139.26	12.54	21.11	471
640	0.74456	7903.2	13275.	139.93	12.53	21.09	478
660	0.72191	8156.2	13697.	140.58	12.53	21.07	485
680	0.70062	8408.9	14118.	141.21	12.53	21.05	493
700	0.68057	8661.5	14539.	141.82	12.52	21.03	500
720	0.66164	8913.8	14959.	142.41	12.52	21.01	507
740	0.64376	9166.0	15380.	142.98	12.52	21.00	513
760	0.62682	9418.0	15799.	143.54	12.52	20.99	520
780	0.61077	9669.9	16219.	144.09	12.52	20.97	527
800	0.59552	9921.6	16638.	144.62	12.51	20.96	533
850	0.56057	10550.	17686.	145.89	12.51	20.94	549
900	0.52953	11179.	18732.	147.09	12.51	20.92	565
950	0.50176	11806.	19778.	148.22	12.50	20.90	580
1000	0.47678	12433.	20823.	149.29	12.50	20.89	595
1050	0.45419	13060.	21867.	150.31	12.50	20.88	610
1100	0.43364	13687.	22911.	151.28	12.50	20.87	624
1150	0.41489	14313.	23954.	152.21	12.50	20.86	637
1200	0.39769	14939.	24997.	153.09	12.49	20.85	651

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
			5.00 MPa Isobar				
* 84.99	35.633	-4834.9	-4694.6	53.32	21.34	42.00	871
86	35.489	-4793.1	-4652.2	53.82	21.22	42.10	864
88	35.202	-4709.8	-4567.8	54.79	20.98	42.32	852
90	34.911	-4626.1	-4482.9	55.74	20.75	42.56	839
92	34.615	-4542.0	-4397.6	56.68	20.53	42.81	826
94	34.314	-4457.4	-4311.7	57.60	20.31	43.09	813
96	34.009	-4372.2	-4225.2	58.51	20.11	43.40	800
98	33.698	-4286.4	-4138.0	59.41	19.91	43.72	787
100	33.382	-4200.0	-4050.3	60.30	19.72	44.07	773
102	33.061	-4113.0	-3961.7	61.18	19.54	44.45	760
104	32.733	-4025.2	-3872.4	62.04	19.37	44.85	746
106	32.399	-3936.6	-3782.3	62.90	19.20	45.28	733
108	32.059	-3847.2	-3691.3	63.75	19.04	45.75	719
110	31.711	-3757.0	-3599.3	64.60	18.89	46.25	705
112	31.356	-3665.7	-3506.2	65.43	18.75	46.80	690
114	30.993	-3573.4	-3412.1	66.27	18.61	47.39	676
116	30.620	-3479.9	-3316.6	67.10	18.48	48.04	661
118	30.238	-3385.2	-3219.9	67.92	18.35	48.75	646
120	29.844	-3289.1	-3121.6	68.75	18.23	49.54	630
122	29.439	-3191.5	-3021.6	69.58	18.12	50.42	614
124	29.020	-3092.1	-2919.8	70.40	18.02	51.42	597
126	28.586	-2990.8	-2815.9	71.24	17.93	52.55	580
128	28.134	-2887.2	-2709.5	72.07	17.85	53.86	562
130	27.662	-2781.0	-2600.3	72.92	17.78	55.38	544
132	27.166	-2671.8	-2487.8	73.78	17.72	57.18	524
134	26.642	-2559.0	-2371.3	74.65	17.69	59.35	504
136	26.083	-2441.7	-2250.0	75.55	17.68	62.02	482
138	25.480	-2319.0	-2122.8	76.48	17.70	65.38	459
140	24.822	-2189.3	-1987.9	77.45	17.77	69.76	433
142	24.088	-2050.3	-1842.7	78.48	17.91	75.74	406
144	23.249	-1898.2	-1683.1	79.60	18.16	84.45	375
146	22.248	-1726.2	-1501.4	80.85	18.58	98.48	340
148	20.958	-1519.4	-1280.8	82.35	19.36	125.7	298
150	18.975	-1229.6	-966.11	84.46	21.06	209.4	245
152	9.6224	79.64	599.26	94.81	24.43	460.7	178
154	7.7774	438.36	1081.2	97.96	21.01	153.3	189
156	6.9935	615.82	1330.8	99.57	19.36	104.4	196
158	6.4787	744.02	1515.8	100.75	18.29	82.87	202

Table 15 Thermodynamic properties of argon--Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
160	6.0937	847.61	1668.1	101.71	17.52	70.45	206
162	5.7859	936.17	1800.3	102.53	16.93	62.27	211
164	5.5296	1014.5	1918.8	103.26	16.46	56.45	214
166	5.3102	1085.5	2027.1	103.92	16.09	52.07	218
168	5.1185	1150.8	2127.7	104.52	15.78	48.65	221
170	4.9485	1211.7	2222.1	105.08	15.52	45.90	224
172	4.7959	1269.0	2311.6	105.60	15.30	43.63	227
174	4.6575	1323.4	2396.9	106.09	15.11	41.73	229
176	4.5311	1375.2	2478.7	106.56	14.94	40.11	232
178	4.4148	1424.9	2557.5	107.01	14.80	38.72	234
180	4.3072	1472.8	2633.7	107.43	14.67	37.51	237
185	4.0691	1586.1	2814.8	108.42	14.40	35.06	242
190	3.8658	1691.9	2985.3	109.33	14.19	33.20	248
195	3.6890	1792.0	3147.4	110.18	14.02	31.74	253
200	3.5328	1887.8	3303.1	110.96	13.87	30.56	257
205	3.3933	1979.9	3453.3	111.71	13.75	29.58	262
210	3.2676	2069.0	3599.1	112.41	13.65	28.77	266
215	3.1534	2155.6	3741.2	113.08	13.56	28.07	270
220	3.0489	2240.1	3880.0	113.72	13.48	27.47	274
225	2.9528	2322.7	4016.0	114.33	13.41	26.95	278
230	2.8639	2403.8	4149.6	114.91	13.35	26.50	282
235	2.7813	2483.4	4281.1	115.48	13.30	26.09	286
240	2.7044	2561.8	4410.6	116.03	13.25	25.73	289
245	2.6324	2639.1	4538.5	116.55	13.20	25.41	293
250	2.5649	2715.4	4664.8	117.06	13.16	25.12	296
255	2.5014	2790.9	4789.8	117.56	13.12	24.86	300
260	2.4414	2865.5	4913.5	118.04	13.08	24.63	303
265	2.3848	2939.4	5036.1	118.51	13.05	24.41	306
270	2.3311	3012.7	5157.6	118.96	13.02	24.21	310
275	2.2801	3085.4	5278.2	119.40	13.00	24.03	313
280	2.2317	3157.5	5398.0	119.83	12.97	23.86	316
285	2.1855	3229.1	5516.9	120.25	12.95	23.71	319
290	2.1414	3300.2	5635.1	120.67	12.92	23.57	322
295	2.0993	3370.9	5752.6	121.07	12.90	23.44	325
300	2.0591	3441.2	5869.5	121.46	12.89	23.31	328
310	1.9835	3580.7	6101.5	122.22	12.85	23.09	334
320	1.9139	3718.9	6331.4	122.95	12.82	22.90	339
330	1.8494	3856.0	6559.6	123.65	12.79	22.73	345
340	1.7895	3992.1	6786.2	124.33	12.77	22.58	350
350	1.7337	4127.4	7011.3	124.98	12.75	22.45	355
360	1.6816	4261.8	7235.2	125.61	12.73	22.33	361

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
370	1.6327	4395.6	7458.0	126.22	12.71	22.23	366
380	1.5868	4528.7	7679.8	126.82	12.70	22.13	371
390	1.5435	4661.3	7900.7	127.39	12.69	22.04	376
400	1.5027	4793.4	8120.7	127.95	12.67	21.97	380
410	1.4642	4925.1	8340.0	128.49	12.66	21.89	385
420	1.4276	5056.3	8558.6	129.01	12.65	21.83	390
430	1.3930	5187.1	8776.6	129.53	12.64	21.77	395
440	1.3600	5317.6	8994.0	130.03	12.63	21.72	399
450	1.3287	5447.8	9210.9	130.51	12.63	21.66	404
460	1.2988	5577.7	9427.3	130.99	12.62	21.62	408
470	1.2703	5707.3	9643.3	131.45	12.61	21.58	412
480	1.2431	5836.7	9858.9	131.91	12.61	21.54	417
490	1.2171	5965.8	10074.	132.35	12.60	21.50	421
500	1.1922	6094.8	10289.	132.79	12.59	21.46	425
520	1.1453	6352.0	10718.	133.63	12.59	21.40	433
540	1.1022	6608.6	11145.	134.43	12.58	21.35	442
560	1.0623	6864.6	11572.	135.21	12.57	21.30	450
580	1.0252	7120.1	11997.	135.96	12.56	21.26	457
600	0.99070	7375.1	12422.	136.68	12.56	21.22	465
620	0.95850	7629.6	12846.	137.37	12.55	21.19	472
640	0.92837	7883.8	13270.	138.04	12.55	21.16	480
660	0.90011	8137.7	13693.	138.69	12.54	21.13	487
680	0.87355	8391.3	14115.	139.32	12.54	21.11	494
700	0.84854	8644.6	14537.	139.94	12.54	21.09	501
720	0.82495	8897.7	14959.	140.53	12.53	21.07	508
740	0.80265	9150.5	15380.	141.11	12.53	21.05	515
760	0.78155	9403.2	15801.	141.67	12.53	21.04	522
780	0.76154	9655.6	16221.	142.21	12.53	21.02	529
800	0.74254	9907.9	16642.	142.75	12.52	21.01	535
850	0.69899	10538.	17691.	144.02	12.52	20.98	551
900	0.66032	11167.	18739.	145.22	12.52	20.95	567
950	0.62573	11796.	19786.	146.35	12.51	20.93	582
1000	0.59462	12424.	20833.	147.42	12.51	20.92	597
1050	0.56647	13052.	21878.	148.44	12.51	20.90	611
1100	0.54089	13679.	22923.	149.42	12.50	20.89	625
1150	0.51752	14306.	23967.	150.34	12.50	20.88	639
1200	0.49610	14932.	25011.	151.23	12.50	20.87	652

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
			6.00 MPa Isobar				
* 85.24	35.662	-4833.9	-4665.6	53.33	21.34	41.88	874
86	35.555	-4802.5	-4633.7	53.71	21.25	41.96	869
88	35.271	-4719.7	-4549.6	54.67	21.02	42.16	857
90	34.983	-4636.6	-4465.1	55.62	20.79	42.39	844
92	34.691	-4553.0	-4380.1	56.56	20.56	42.63	831
94	34.394	-4469.0	-4294.5	57.48	20.35	42.90	818
96	34.092	-4384.5	-4208.5	58.38	20.14	43.18	805
98	33.786	-4299.4	-4121.8	59.28	19.95	43.49	792
100	33.475	-4213.7	-4034.5	60.16	19.76	43.82	779
102	33.158	-4127.5	-3946.5	61.03	19.58	44.17	766
104	32.836	-4040.5	-3857.8	61.89	19.41	44.55	753
106	32.508	-3952.9	-3768.3	62.74	19.24	44.95	740
108	32.174	-3864.5	-3678.0	63.59	19.08	45.38	726
110	31.833	-3775.2	-3586.8	64.42	18.93	45.85	712
112	31.485	-3685.1	-3494.6	65.25	18.78	46.34	698
114	31.130	-3594.1	-3401.3	66.08	18.64	46.88	684
116	30.766	-3502.0	-3307.0	66.90	18.51	47.47	670
118	30.394	-3408.8	-3211.4	67.72	18.38	48.11	655
120	30.012	-3314.4	-3114.5	68.53	18.26	48.82	640
122	29.619	-3218.7	-3016.1	69.34	18.15	49.59	624
124	29.215	-3121.4	-2916.1	70.16	18.04	50.46	609
126	28.797	-3022.5	-2814.2	70.97	17.94	51.44	592
128	28.365	-2921.8	-2710.2	71.79	17.85	52.54	575
130	27.915	-2818.9	-2603.9	72.62	17.77	53.81	558
132	27.447	-2713.5	-2494.9	73.45	17.71	55.27	540
134	26.955	-2605.3	-2382.7	74.29	17.65	56.99	521
136	26.437	-2493.7	-2266.7	75.15	17.62	59.03	501
138	25.887	-2378.0	-2146.3	76.03	17.60	61.50	480
140	25.298	-2257.5	-2020.3	76.94	17.62	64.55	458
142	24.660	-2130.8	-1887.5	77.88	17.67	68.40	435
144	23.958	-1996.4	-1745.9	78.87	17.78	73.42	410
146	23.173	-1851.6	-1592.6	79.92	17.97	80.25	382
148	22.271	-1692.4	-1423.0	81.08	18.26	90.05	353
150	21.193	-1512.0	-1228.9	82.38	18.74	105.3	320
152	19.830	-1296.7	-994.14	83.94	19.53	132.3	283
154	17.913	-1013.4	-678.46	86.00	20.84	193.8	242
156	14.552	-541.63	-129.31	89.54	22.99	363.3	200
158	11.058	-5.95	536.62	93.78	22.27	259.5	195

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
160	9.3915	294.70	933.57	96.28	20.40	154.5	200
162	8.4528	484.98	1194.8	97.90	19.10	112.1	206
164	7.8114	626.98	1395.1	99.13	18.18	90.21	210
166	7.3273	742.37	1561.2	100.14	17.48	76.87	214
168	6.9402	840.88	1705.4	101.00	16.95	67.85	218
170	6.6185	927.73	1834.3	101.76	16.52	61.34	222
172	6.3441	1006.0	1951.8	102.45	16.17	56.40	225
174	6.1052	1077.8	2060.6	103.08	15.87	52.52	228
176	5.8941	1144.4	2162.4	103.66	15.63	49.40	231
178	5.7053	1206.9	2258.5	104.21	15.41	46.82	233
180	5.5347	1265.9	2349.9	104.72	15.23	44.65	236
185	5.1696	1401.6	2562.2	105.88	14.86	40.50	242
190	4.8694	1524.7	2756.9	106.92	14.58	37.53	247
195	4.6155	1638.7	2938.7	107.86	14.35	35.29	252
200	4.3963	1745.8	3110.6	108.73	14.17	33.54	257
205	4.2041	1847.5	3274.7	109.54	14.02	32.14	262
210	4.0334	1944.8	3432.4	110.30	13.89	30.99	266
215	3.8802	2038.6	3584.9	111.02	13.78	30.03	271
220	3.7416	2129.4	3732.9	111.70	13.68	29.21	275
225	3.6152	2217.6	3877.2	112.35	13.60	28.52	279
230	3.4993	2303.6	4018.3	112.97	13.52	27.91	283
235	3.3924	2387.8	4156.4	113.57	13.46	27.38	287
240	3.2933	2470.3	4292.1	114.14	13.39	26.91	290
245	3.2012	2551.3	4425.6	114.69	13.34	26.49	294
250	3.1152	2631.1	4557.1	115.22	13.29	26.12	297
255	3.0346	2709.7	4686.9	115.73	13.24	25.79	301
260	2.9589	2787.2	4815.0	116.23	13.20	25.48	304
265	2.8875	2863.9	4941.8	116.71	13.16	25.21	308
270	2.8201	2939.7	5067.2	117.18	13.13	24.96	311
275	2.7564	3014.7	5191.4	117.64	13.09	24.73	314
280	2.6959	3089.0	5314.6	118.08	13.06	24.53	317
285	2.6385	3162.7	5436.7	118.51	13.04	24.33	320
290	2.5838	3235.8	5558.0	118.94	13.01	24.16	323
295	2.5316	3308.3	5678.3	119.35	12.99	23.99	326
300	2.4818	3380.3	5797.9	119.75	12.96	23.84	329
310	2.3886	3523.1	6035.0	120.53	12.92	23.57	335
320	2.3030	3664.2	6269.5	121.27	12.89	23.34	341
330	2.2240	3803.9	6501.8	121.99	12.85	23.13	347
340	2.1508	3942.5	6732.1	122.67	12.83	22.95	352
350	2.0827	4079.9	6960.8	123.34	12.80	22.79	357
360	2.0192	4216.4	7187.9	123.98	12.78	22.64	362

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
370	1.9597	4352.0	7413.7	124.60	12.76	22.51	368
380	1.9040	4486.9	7638.2	125.19	12.74	22.40	373
390	1.8516	4621.1	7861.6	125.77	12.73	22.29	377
400	1.8021	4754.7	8084.1	126.34	12.71	22.20	382
410	1.7555	4887.8	8305.6	126.88	12.70	22.11	387
420	1.7113	5020.3	8526.4	127.42	12.69	22.03	392
430	1.6695	5152.4	8746.3	127.93	12.67	21.96	396
440	1.6297	5284.1	8965.6	128.44	12.66	21.90	401
450	1.5920	5415.3	9184.3	128.93	12.66	21.84	405
460	1.5560	5546.3	9402.4	129.41	12.65	21.78	410
470	1.5217	5676.9	9619.9	129.88	12.64	21.73	414
480	1.4889	5807.2	9837.0	130.33	12.63	21.68	419
490	1.4576	5937.2	10054.	130.78	12.62	21.64	423
500	1.4276	6067.0	10270.	131.22	12.62	21.60	427
520	1.3714	6325.8	10701.	132.06	12.61	21.52	435
540	1.3196	6583.8	11131.	132.87	12.60	21.46	443
560	1.2717	6841.1	11559.	133.65	12.59	21.40	451
580	1.2272	7097.8	11987.	134.40	12.58	21.35	459
600	1.1859	7353.8	12413.	135.13	12.57	21.31	467
620	1.1473	7609.4	12839.	135.82	12.57	21.27	474
640	1.1112	7864.6	13264.	136.50	12.56	21.23	482
660	1.0774	8119.3	13689.	137.15	12.56	21.20	489
680	1.0456	8373.7	14112.	137.78	12.55	21.17	496
700	1.0156	8627.8	14535.	138.40	12.55	21.15	503
720	0.98739	8881.6	14958.	138.99	12.55	21.12	510
740	0.96071	9135.1	15380.	139.57	12.54	21.10	517
760	0.93546	9388.4	15802.	140.13	12.54	21.08	524
780	0.91152	9641.5	16224.	140.68	12.54	21.07	530
800	0.88880	9894.3	16645.	141.21	12.53	21.05	537
850	0.83672	10526.	17697.	142.49	12.53	21.01	553
900	0.79047	11156.	18746.	143.69	12.52	20.98	568
950	0.74911	11786.	19795.	144.82	12.52	20.96	584
1000	0.71191	12415.	20843.	145.90	12.52	20.94	598
1050	0.67825	13043.	21889.	146.92	12.51	20.92	613
1100	0.64766	13671.	22935.	147.89	12.51	20.91	627
1150	0.61972	14298.	23980.	148.82	12.51	20.90	640
1200	0.59411	14926.	25025.	149.71	12.51	20.89	654

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
			8.00 MPa Isobar				
* 85.73	35.721	-4831.6	-4607.6	53.36	21.36	41.66	880
86	35.684	-4820.7	-4596.5	53.49	21.33	41.68	879
88	35.406	-4738.9	-4513.0	54.45	21.09	41.87	866
90	35.124	-4656.8	-4429.0	55.39	20.86	42.07	854
92	34.838	-4574.3	-4344.7	56.32	20.64	42.29	841
94	34.548	-4491.4	-4259.9	57.23	20.43	42.52	829
96	34.254	-4408.1	-4174.6	58.13	20.22	42.78	816
98	33.956	-4324.4	-4088.8	59.01	20.03	43.05	804
100	33.653	-4240.1	-4002.4	59.88	19.84	43.34	791
102	33.346	-4155.3	-3915.4	60.74	19.66	43.65	778
104	33.034	-4069.9	-3827.7	61.60	19.48	43.99	766
106	32.716	-3983.9	-3739.4	62.44	19.32	44.34	753
108	32.393	-3897.3	-3650.4	63.27	19.16	44.71	740
110	32.065	-3810.0	-3560.6	64.09	19.00	45.11	727
112	31.730	-3722.0	-3469.9	64.91	18.86	45.54	713
114	31.389	-3633.2	-3378.4	65.72	18.72	45.99	700
116	31.042	-3543.6	-3285.9	66.52	18.58	46.48	686
118	30.687	-3453.1	-3192.4	67.32	18.45	47.01	672
120	30.325	-3361.7	-3097.9	68.12	18.33	47.57	658
122	29.954	-3269.2	-3002.1	68.91	18.21	48.19	644
124	29.574	-3175.6	-2905.1	69.70	18.10	48.87	629
126	29.183	-3080.7	-2806.6	70.49	17.99	49.61	614
128	28.782	-2984.5	-2706.6	71.27	17.89	50.44	599
130	28.369	-2886.8	-2604.8	72.06	17.80	51.35	584
132	27.942	-2787.4	-2501.1	72.85	17.71	52.38	567
134	27.500	-2686.1	-2395.2	73.65	17.64	53.55	551
136	27.040	-2582.6	-2286.8	74.45	17.57	54.87	534
138	26.561	-2476.7	-2175.5	75.27	17.52	56.39	516
140	26.059	-2368.0	-2061.0	76.09	17.48	58.16	498
142	25.531	-2256.1	-1942.7	76.93	17.45	60.22	479
144	24.971	-2140.3	-1819.9	77.79	17.45	62.65	460
146	24.375	-2020.0	-1691.8	78.67	17.47	65.57	440
148	23.734	-1894.3	-1557.2	79.59	17.53	69.09	418
150	23.041	-1762.1	-1414.9	80.54	17.62	73.40	396
152	22.282	-1622.0	-1262.9	81.55	17.76	78.75	374
154	21.443	-1472.1	-1099.0	82.62	17.95	85.47	350
156	20.506	-1310.0	-919.87	83.77	18.21	93.97	327
158	19.448	-1132.9	-721.56	85.04	18.54	104.8	303

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
160	18.246	-937.44	-498.98	86.44	18.91	118.3	281
162	16.882	-720.33	-246.46	88.00	19.26	134.4	261
164	15.388	-483.75	36.13	89.74	19.49	146.6	245
166	13.908	-244.78	330.43	91.52	19.43	145.3	235
168	12.607	-25.39	609.17	93.19	19.05	132.1	231
170	11.548	163.65	856.42	94.65	18.50	115.1	230
172	10.704	323.37	1070.8	95.91	17.95	99.77	231
174	10.025	459.63	1257.7	96.99	17.46	87.64	233
176	9.4662	578.07	1423.2	97.93	17.04	78.29	235
178	8.9968	682.99	1572.2	98.78	16.68	71.02	237
180	8.5948	777.46	1708.3	99.54	16.37	65.25	239
185	7.7955	980.93	2007.2	101.18	15.77	55.12	245
190	7.1904	1152.7	2265.3	102.55	15.34	48.57	250
195	6.7089	1303.7	2496.1	103.75	15.01	44.01	255
200	6.3123	1440.0	2707.3	104.82	14.74	40.65	260
205	5.9772	1565.5	2903.9	105.79	14.53	38.08	265
210	5.6885	1682.7	3089.1	106.69	14.35	36.05	269
215	5.4359	1793.4	3265.1	107.51	14.20	34.41	274
220	5.2121	1898.8	3433.7	108.29	14.07	33.06	278
225	5.0117	1999.8	3596.0	109.02	13.95	31.92	282
230	4.8307	2097.1	3753.2	109.71	13.85	30.95	286
235	4.6661	2191.3	3905.8	110.37	13.76	30.12	290
240	4.5154	2282.9	4054.6	110.99	13.68	29.40	293
245	4.3767	2372.1	4199.9	111.59	13.61	28.77	297
250	4.2485	2459.3	4342.3	112.17	13.54	28.21	301
255	4.1293	2544.7	4482.1	112.72	13.48	27.71	304
260	4.0182	2628.5	4619.5	113.25	13.42	27.26	308
265	3.9142	2711.0	4754.8	113.77	13.37	26.86	311
270	3.8166	2792.1	4888.2	114.27	13.33	26.50	314
275	3.7248	2872.1	5019.9	114.75	13.28	26.17	318
280	3.6382	2951.1	5150.0	115.22	13.24	25.88	321
285	3.5563	3029.1	5278.7	115.68	13.21	25.60	324
290	3.4786	3106.3	5406.1	116.12	13.17	25.35	327
295	3.4049	3182.7	5532.2	116.55	13.14	25.12	330
300	3.3348	3258.3	5657.3	116.97	13.11	24.91	333
310	3.2041	3407.7	5904.5	117.78	13.06	24.53	339
320	3.0848	3554.8	6148.1	118.56	13.01	24.20	345
330	2.9753	3699.9	6388.7	119.30	12.97	23.92	350
340	2.8743	3843.3	6626.6	120.01	12.94	23.67	356
350	2.7807	3985.2	6862.2	120.69	12.90	23.45	361
360	2.6938	4125.8	7095.7	121.35	12.87	23.25	366

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm^3	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
370	2.6126	4265.3	7327.3	121.98	12.85	23.08	371
380	2.5367	4403.7	7557.4	122.59	12.83	22.92	377
390	2.4655	4541.1	7785.9	123.19	12.80	22.78	381
400	2.3986	4677.8	8013.1	123.76	12.79	22.66	386
410	2.3355	4813.6	8239.1	124.32	12.77	22.54	391
420	2.2759	4948.8	8463.9	124.86	12.75	22.44	396
430	2.2195	5083.4	8687.8	125.39	12.74	22.34	400
440	2.1660	5217.4	8910.8	125.90	12.73	22.25	405
450	2.1152	5350.8	9132.9	126.40	12.71	22.17	409
460	2.0670	5483.8	9354.3	126.89	12.70	22.10	414
470	2.0210	5616.4	9574.9	127.36	12.69	22.03	418
480	1.9771	5748.6	9794.9	127.83	12.68	21.97	423
490	1.9352	5880.3	10014.	128.28	12.67	21.91	427
500	1.8951	6011.8	10233.	128.72	12.67	21.85	431
520	1.8201	6273.7	10669.	129.58	12.65	21.76	439
540	1.7510	6534.6	11103.	130.40	12.64	21.67	447
560	1.6872	6794.4	11536.	131.18	12.63	21.60	455
580	1.6280	7053.5	11967.	131.94	12.62	21.53	463
600	1.5730	7311.7	12397.	132.67	12.61	21.47	471
620	1.5218	7569.4	12826.	133.37	12.60	21.42	478
640	1.4738	7826.4	13254.	134.05	12.59	21.38	485
660	1.4289	8082.9	13681.	134.71	12.59	21.33	493
680	1.3868	8338.9	14108.	135.34	12.58	21.30	500
700	1.3471	8594.5	14533.	135.96	12.58	21.26	507
720	1.3096	8849.7	14958.	136.56	12.57	21.23	514
740	1.2743	9104.5	15383.	137.14	12.57	21.20	520
760	1.2408	9359.1	15806.	137.71	12.56	21.18	527
780	1.2091	9613.3	16230.	138.26	12.56	21.15	534
800	1.1790	9867.3	16653.	138.79	12.56	21.13	540
850	1.1100	10501.	17708.	140.07	12.55	21.09	556
900	1.0488	11134.	18761.	141.27	12.54	21.05	572
950	0.99408	11765.	19813.	142.41	12.54	21.02	587
1000	0.94483	12396.	20863.	143.49	12.53	20.99	601
1050	0.90029	13026.	21912.	144.51	12.53	20.97	616
1100	0.85979	13655.	22960.	145.49	12.52	20.95	630
1150	0.82281	14284.	24007.	146.42	12.52	20.93	643
1200	0.78890	14912.	25053.	147.31	12.52	20.92	657

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
			10.00 MPa Isobar				
* 86.22	35.778	-4829.2	-4549.7	53.38	21.38	41.45	886
88	35.536	-4757.4	-4476.0	54.23	21.17	41.59	875
90	35.260	-4676.2	-4392.6	55.16	20.94	41.77	863
92	34.981	-4594.7	-4308.9	56.08	20.72	41.97	851
94	34.697	-4512.9	-4224.7	56.99	20.51	42.18	839
96	34.410	-4430.8	-4140.2	57.88	20.30	42.41	826
98	34.120	-4348.2	-4055.1	58.75	20.11	42.65	814
100	33.825	-4265.2	-3969.5	59.62	19.92	42.91	802
102	33.525	-4181.7	-3883.4	60.47	19.74	43.19	790
104	33.222	-4097.8	-3796.8	61.31	19.56	43.48	777
106	32.914	-4013.3	-3709.5	62.14	19.40	43.79	765
108	32.601	-3928.3	-3621.6	62.97	19.24	44.12	753
110	32.284	-3842.8	-3533.0	63.78	19.08	44.47	740
112	31.961	-3756.6	-3443.7	64.58	18.94	44.83	727
114	31.633	-3669.8	-3353.6	65.38	18.79	45.22	714
116	31.299	-3582.3	-3262.8	66.17	18.66	45.63	702
118	30.959	-3494.1	-3171.1	66.95	18.53	46.07	688
120	30.613	-3405.1	-3078.5	67.73	18.40	46.54	675
122	30.260	-3315.4	-2984.9	68.51	18.28	47.05	662
124	29.900	-3224.7	-2890.3	69.27	18.16	47.59	648
126	29.532	-3133.1	-2794.5	70.04	18.05	48.18	634
128	29.155	-3040.5	-2697.5	70.80	17.94	48.81	620
130	28.769	-2946.8	-2599.2	71.57	17.84	49.51	606
132	28.374	-2851.9	-2499.5	72.33	17.75	50.27	591
134	27.967	-2755.6	-2398.1	73.09	17.66	51.12	576
136	27.548	-2657.9	-2294.9	73.85	17.58	52.05	561
138	27.115	-2558.6	-2189.8	74.62	17.50	53.09	546
140	26.668	-2457.5	-2082.5	75.39	17.44	54.25	530
142	26.203	-2354.3	-1972.7	76.17	17.38	55.56	514
144	25.720	-2248.9	-1860.1	76.96	17.34	57.04	497
146	25.216	-2141.0	-1744.4	77.76	17.30	58.71	480
148	24.689	-2030.2	-1625.1	78.57	17.28	60.60	463
150	24.134	-1916.2	-1501.8	79.40	17.28	62.77	445
152	23.549	-1798.5	-1373.9	80.24	17.29	65.23	427
154	22.930	-1676.8	-1240.7	81.11	17.32	68.04	409
156	22.273	-1550.5	-1101.5	82.01	17.37	71.22	391
158	21.573	-1419.0	-955.51	82.94	17.44	74.82	373
160	20.828	-1282.1	-801.95	83.91	17.53	78.81	356

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm^3	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
162	20.035	-1139.2	-640.02	84.91	17.63	83.17	338
164	19.192	-990.15	-469.10	85.96	17.73	87.77	322
166	18.304	-835.24	-288.91	87.05	17.82	92.40	308
168	17.378	-675.23	-99.79	88.19	17.87	96.61	294
170	16.431	-511.90	96.72	89.35	17.88	99.60	283
172	15.487	-348.52	297.17	90.52	17.82	100.4	274
174	14.581	-189.19	496.65	91.67	17.69	98.65	267
176	13.737	-37.63	690.33	92.78	17.50	94.73	263
178	12.972	103.79	874.65	93.82	17.26	89.45	260
180	12.291	234.18	1047.8	94.79	17.01	83.67	259
185	10.911	515.25	1431.8	96.90	16.41	70.42	259
190	9.8823	745.91	1757.8	98.63	15.92	60.56	261
195	9.0879	941.71	2042.1	100.11	15.53	53.53	264
200	8.4524	1113.1	2296.2	101.40	15.22	48.39	268
205	7.9291	1266.9	2528.0	102.54	14.96	44.51	272
210	7.4884	1407.3	2742.7	103.58	14.75	41.49	276
215	7.1101	1537.5	2943.9	104.53	14.57	39.08	280
220	6.7806	1659.5	3134.3	105.40	14.41	37.12	283
225	6.4899	1774.9	3315.7	106.22	14.27	35.50	287
230	6.2308	1884.8	3489.7	106.98	14.15	34.14	291
235	5.9977	1990.1	3657.4	107.70	14.04	32.97	295
240	5.7865	2091.6	3819.7	108.39	13.94	31.97	298
245	5.5939	2189.7	3977.4	109.04	13.85	31.10	302
250	5.4172	2285.0	4130.9	109.66	13.77	30.34	305
255	5.2542	2377.7	4280.9	110.25	13.70	29.67	309
260	5.1032	2468.2	4427.8	110.82	13.63	29.07	312
265	4.9628	2556.8	4571.7	111.37	13.57	28.54	316
270	4.8318	2643.6	4713.2	111.90	13.51	28.06	319
275	4.7091	2728.8	4852.4	112.41	13.46	27.62	322
280	4.5938	2812.7	4989.5	112.90	13.41	27.23	325
285	4.4853	2895.2	5124.7	113.38	13.37	26.87	329
290	4.3828	2976.6	5258.3	113.85	13.33	26.55	332
295	4.2858	3057.0	5390.2	114.30	13.29	26.25	335
300	4.1939	3136.4	5520.8	114.74	13.25	25.97	338
310	4.0235	3292.6	5778.0	115.58	13.19	25.48	343
320	3.8686	3445.8	6030.7	116.38	13.13	25.06	349
330	3.7271	3596.4	6279.4	117.15	13.08	24.70	355
340	3.5971	3744.8	6524.8	117.88	13.04	24.38	360
350	3.4771	3891.2	6767.2	118.58	13.00	24.10	366
360	3.3659	4036.0	7007.0	119.26	12.97	23.86	371
370	3.2624	4179.2	7244.4	119.91	12.93	23.64	376

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm^3	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
380	3.1659	4321.1	7479.8	120.54	12.91	23.44	381
390	3.0756	4461.8	7713.3	121.14	12.88	23.26	386
400	2.9908	4601.5	7945.1	121.73	12.86	23.10	391
410	2.9110	4740.2	8175.4	122.30	12.84	22.96	395
420	2.8358	4878.0	8404.4	122.85	12.82	22.83	400
430	2.7647	5015.0	8632.0	123.39	12.80	22.71	405
440	2.6974	5151.3	8858.6	123.91	12.78	22.60	409
450	2.6336	5287.0	9084.1	124.41	12.77	22.50	414
460	2.5729	5422.0	9308.6	124.91	12.76	22.41	418
470	2.5153	5556.6	9532.3	125.39	12.74	22.32	422
480	2.4603	5690.6	9755.1	125.86	12.73	22.25	427
490	2.4078	5824.1	9977.2	126.32	12.72	22.17	431
500	2.3577	5957.2	10199.	126.76	12.71	22.11	435
520	2.2638	6222.2	10640.	127.63	12.69	21.99	443
540	2.1776	6485.9	11078.	128.46	12.68	21.88	451
560	2.0980	6748.3	11515.	129.25	12.66	21.79	459
580	2.0243	7009.6	11950.	130.01	12.65	21.71	467
600	1.9558	7270.1	12383.	130.75	12.64	21.63	475
620	1.8920	7529.7	12815.	131.46	12.63	21.57	482
640	1.8324	7788.6	13246.	132.14	12.62	21.51	489
660	1.7765	8046.8	13676.	132.80	12.61	21.46	496
680	1.7241	8304.4	14105.	133.44	12.61	21.42	504
700	1.6748	8561.5	14532.	134.06	12.60	21.37	511
720	1.6283	8818.1	14960.	134.66	12.60	21.34	517
740	1.5844	9074.3	15386.	135.25	12.59	21.30	524
760	1.5428	9330.0	15812.	135.81	12.58	21.27	531
780	1.5035	9585.5	16237.	136.37	12.58	21.24	537
800	1.4661	9840.5	16661.	136.90	12.58	21.21	544
850	1.3805	10477.	17721.	138.19	12.57	21.16	560
900	1.3046	11112.	18777.	139.40	12.56	21.11	575
950	1.2366	11745.	19832.	140.54	12.55	21.07	590
1000	1.1755	12378.	20884.	141.62	12.55	21.04	605
1050	1.1203	13009.	21936.	142.64	12.54	21.01	619
1100	1.0700	13640.	22985.	143.62	12.54	20.99	633
1150	1.0241	14270.	24034.	144.55	12.53	20.97	646
1200	0.98207	14899.	25082.	145.44	12.53	20.95	660
			15.00 MPa Isobar				
* 87.45	35.918	-4822.4	-4404.8	53.44	21.44	40.94	900

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
88	35.845	-4800.6	-4382.1	53.70	21.38	40.98	897
90	35.583	-4721.6	-4300.0	54.62	21.15	41.11	885
92	35.317	-4642.4	-4217.6	55.53	20.93	41.26	873
94	35.049	-4562.9	-4135.0	56.42	20.72	41.42	862
96	34.777	-4483.3	-4051.9	57.29	20.51	41.60	850
98	34.502	-4403.3	-3968.6	58.15	20.32	41.79	839
100	34.224	-4323.1	-3884.8	59.00	20.13	41.99	827
102	33.943	-4242.5	-3800.6	59.83	19.94	42.20	816
104	33.659	-4161.6	-3716.0	60.65	19.77	42.42	805
106	33.371	-4080.4	-3630.9	61.46	19.60	42.65	793
108	33.079	-3998.8	-3545.4	62.26	19.44	42.90	782
110	32.784	-3916.9	-3459.3	63.05	19.29	43.15	770
112	32.486	-3834.5	-3372.8	63.83	19.14	43.41	759
114	32.184	-3751.8	-3285.7	64.60	18.99	43.68	747
116	31.877	-3668.6	-3198.0	65.36	18.85	43.97	736
118	31.567	-3585.0	-3109.8	66.12	18.72	44.26	724
120	31.253	-3500.9	-3021.0	66.86	18.59	44.57	712
122	30.934	-3416.4	-2931.5	67.60	18.47	44.90	700
124	30.611	-3331.4	-2841.4	68.34	18.34	45.24	688
126	30.283	-3245.9	-2750.5	69.06	18.23	45.59	676
128	29.951	-3159.8	-2659.0	69.78	18.11	45.97	664
130	29.613	-3073.2	-2566.7	70.50	18.00	46.36	652
132	29.270	-2986.0	-2473.5	71.21	17.90	46.78	640
134	28.921	-2898.2	-2379.5	71.92	17.80	47.23	628
136	28.565	-2809.7	-2284.6	72.62	17.70	47.70	615
138	28.204	-2720.5	-2188.7	73.32	17.60	48.20	603
140	27.836	-2630.6	-2091.8	74.02	17.51	48.74	590
142	27.460	-2539.9	-1993.7	74.71	17.43	49.32	578
144	27.077	-2448.4	-1894.5	75.41	17.35	49.93	565
146	26.686	-2356.0	-1793.9	76.10	17.27	50.59	552
148	26.286	-2262.7	-1692.1	76.79	17.20	51.29	539
150	25.877	-2168.4	-1588.7	77.49	17.13	52.04	526
152	25.458	-2073.1	-1483.9	78.18	17.06	52.84	513
154	25.029	-1976.7	-1377.4	78.88	17.00	53.68	500
156	24.590	-1879.1	-1269.1	79.58	16.95	54.58	488
158	24.140	-1780.4	-1159.0	80.28	16.90	55.51	475
160	23.678	-1680.5	-1047.0	80.98	16.85	56.49	462
162	23.206	-1579.4	-933.04	81.69	16.81	57.50	450
164	22.722	-1477.2	-817.02	82.40	16.78	58.52	438
166	22.227	-1373.8	-698.95	83.12	16.74	59.55	426
168	21.722	-1269.4	-578.83	83.84	16.71	60.57	415

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
170	21.207	-1164.0	-456.71	84.56	16.67	61.55	404
172	20.685	-1057.9	-332.68	85.28	16.64	62.47	393
174	20.155	-951.12	-206.89	86.01	16.60	63.30	383
176	19.621	-844.04	-79.55	86.74	16.56	64.02	374
178	19.084	-736.89	49.09	87.47	16.51	64.59	366
180	18.548	-630.01	178.70	88.19	16.46	64.99	358
185	17.227	-366.27	504.46	89.98	16.31	65.08	341
190	15.971	-112.20	827.01	91.70	16.12	63.70	329
195	14.818	127.10	1139.4	93.32	15.91	61.07	320
200	13.790	348.77	1436.5	94.82	15.70	57.71	315
205	12.889	552.39	1716.2	96.20	15.49	54.17	312
210	12.104	739.29	1978.5	97.47	15.30	50.81	310
215	11.421	911.49	2224.9	98.63	15.12	47.79	310
220	10.823	1071.1	2457.1	99.70	14.96	45.15	311
225	10.297	1220.1	2676.9	100.68	14.81	42.85	313
230	9.8297	1360.1	2886.1	101.60	14.67	40.86	314
235	9.4129	1492.5	3086.0	102.46	14.55	39.14	317
240	9.0383	1618.2	3277.8	103.27	14.43	37.63	319
245	8.6994	1738.4	3462.6	104.03	14.33	36.31	322
250	8.3912	1853.6	3641.2	104.76	14.23	35.15	324
255	8.1093	1964.6	3814.3	105.44	14.14	34.12	327
260	7.8504	2071.9	3982.6	106.10	14.05	33.20	330
265	7.6115	2175.8	4146.5	106.72	13.98	32.38	332
270	7.3902	2276.8	4306.5	107.32	13.90	31.64	335
275	7.1844	2375.2	4463.1	107.89	13.84	30.98	338
280	6.9925	2471.3	4616.4	108.44	13.77	30.38	341
285	6.8128	2565.2	4766.9	108.98	13.72	29.83	344
290	6.6443	2657.2	4914.8	109.49	13.66	29.33	346
295	6.4857	2747.5	5060.3	109.99	13.61	28.87	349
300	6.3362	2836.3	5203.6	110.47	13.56	28.45	352
310	6.0610	3009.5	5484.4	111.39	13.48	27.71	357
320	5.8132	3177.9	5758.2	112.26	13.40	27.08	363
330	5.5886	3342.2	6026.2	113.09	13.33	26.53	368
340	5.3837	3503.0	6289.1	113.87	13.28	26.06	373
350	5.1958	3660.6	6547.6	114.62	13.22	25.64	378
360	5.0226	3815.6	6802.1	115.34	13.17	25.27	383
370	4.8624	3968.3	7053.2	116.03	13.13	24.95	388
380	4.7136	4118.9	7301.2	116.69	13.09	24.66	393
390	4.5749	4267.6	7546.4	117.32	13.06	24.40	398
400	4.4452	4414.7	7789.2	117.94	13.03	24.16	403
410	4.3235	4560.3	8029.7	118.53	13.00	23.95	407

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
420	4.2092	4704.6	8268.2	119.11	12.97	23.76	412
430	4.1015	4847.7	8504.9	119.66	12.95	23.58	416
440	3.9998	4989.7	8739.9	120.20	12.92	23.42	421
450	3.9035	5130.7	8973.4	120.73	12.90	23.28	425
460	3.8123	5270.8	9205.5	121.24	12.88	23.14	429
470	3.7256	5410.1	9436.3	121.74	12.87	23.02	434
480	3.6432	5548.6	9665.9	122.22	12.85	22.90	438
490	3.5646	5686.4	9894.4	122.69	12.83	22.80	442
500	3.4897	5823.6	10122.	123.15	12.82	22.70	446
520	3.3497	6096.1	10574.	124.04	12.79	22.53	454
540	3.2213	6366.6	11023.	124.88	12.77	22.37	462
560	3.1030	6635.2	11469.	125.69	12.75	22.24	470
580	2.9937	6902.3	11913.	126.47	12.74	22.12	477
600	2.8923	7168.0	12354.	127.22	12.72	22.02	485
620	2.7979	7432.5	12794.	127.94	12.71	21.93	492
640	2.7099	7695.9	13231.	128.64	12.69	21.84	499
660	2.6274	7958.3	13667.	129.31	12.68	21.77	506
680	2.5501	8219.8	14102.	129.96	12.67	21.70	513
700	2.4774	8480.6	14535.	130.58	12.66	21.64	520
720	2.4088	8740.6	14968.	131.19	12.65	21.59	527
740	2.3442	9000.0	15399.	131.78	12.65	21.54	534
760	2.2830	9258.8	15829.	132.36	12.64	21.49	540
780	2.2251	9517.1	16258.	132.92	12.63	21.45	547
800	2.1701	9774.8	16687.	133.46	12.63	21.41	553
850	2.0441	10417.	17755.	134.75	12.61	21.33	569
900	1.9324	11058.	18820.	135.97	12.60	21.26	584
950	1.8325	11696.	19881.	137.12	12.59	21.20	599
1000	1.7426	12332.	20940.	138.20	12.58	21.15	613
1050	1.6613	12968.	21997.	139.24	12.58	21.11	627
1100	1.5874	13602.	23052.	140.22	12.57	21.08	641
1150	1.5198	14235.	24105.	141.15	12.56	21.05	654
1200	1.4579	14867.	25156.	142.05	12.56	21.02	667
			20.00 MPa Isobar				
* 88.66	36.052	-4814.8	-4260.0	53.51	21.52	40.49	912
90	35.883	-4763.0	-4205.6	54.12	21.37	40.55	905
92	35.629	-4685.7	-4124.4	55.01	21.15	40.66	894
94	35.373	-4608.3	-4042.9	55.89	20.93	40.79	883
96	35.115	-4530.8	-3961.2	56.75	20.73	40.92	872

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
98	34.854	-4453.0	-3879.2	57.59	20.53	41.07	861
100	34.590	-4375.1	-3796.9	58.42	20.34	41.23	850
102	34.324	-4297.0	-3714.3	59.24	20.15	41.39	840
104	34.055	-4218.6	-3631.4	60.05	19.98	41.56	829
106	33.783	-4140.1	-3548.1	60.84	19.81	41.74	818
108	33.509	-4061.2	-3464.4	61.62	19.65	41.93	808
110	33.232	-3982.2	-3380.3	62.39	19.49	42.12	797
112	32.953	-3902.8	-3295.9	63.15	19.34	42.32	786
114	32.670	-3823.2	-3211.1	63.90	19.19	42.52	776
116	32.385	-3743.4	-3125.8	64.65	19.06	42.73	765
118	32.098	-3663.3	-3040.2	65.38	18.92	42.94	754
120	31.807	-3582.9	-2954.1	66.10	18.79	43.15	744
122	31.513	-3502.2	-2867.5	66.82	18.66	43.38	733
124	31.216	-3421.2	-2780.6	67.52	18.54	43.61	722
126	30.917	-3340.0	-2693.1	68.22	18.42	43.84	712
128	30.614	-3258.5	-2605.2	68.92	18.30	44.08	701
130	30.308	-3176.7	-2516.8	69.60	18.19	44.33	690
132	29.999	-3094.6	-2427.9	70.28	18.08	44.59	679
134	29.686	-3012.1	-2338.4	70.95	17.98	44.86	669
136	29.370	-2929.4	-2248.4	71.62	17.87	45.13	658
138	29.050	-2846.3	-2157.9	72.28	17.77	45.42	647
140	28.727	-2762.9	-2066.7	72.93	17.68	45.72	636
142	28.400	-2679.2	-1975.0	73.59	17.58	46.03	625
144	28.068	-2595.1	-1882.6	74.23	17.49	46.35	615
146	27.733	-2510.7	-1789.6	74.87	17.40	46.69	604
148	27.394	-2425.9	-1695.8	75.51	17.31	47.04	593
150	27.050	-2340.8	-1601.4	76.14	17.23	47.40	582
152	26.702	-2255.2	-1506.2	76.78	17.15	47.77	572
154	26.350	-2169.3	-1410.3	77.40	17.07	48.16	561
156	25.993	-2083.0	-1313.6	78.03	17.00	48.56	550
158	25.631	-1996.4	-1216.0	78.65	16.92	48.97	540
160	25.265	-1909.3	-1117.7	79.27	16.85	49.39	529
162	24.894	-1821.9	-1018.5	79.88	16.79	49.81	519
164	24.519	-1734.2	-918.46	80.50	16.72	50.23	509
166	24.139	-1646.1	-817.57	81.11	16.66	50.66	499
168	23.755	-1557.8	-715.84	81.72	16.60	51.07	490
170	23.368	-1469.2	-613.29	82.32	16.54	51.48	480
172	22.976	-1380.4	-509.95	82.93	16.48	51.86	471
174	22.582	-1291.5	-405.85	83.53	16.43	52.23	462
176	22.186	-1202.5	-301.04	84.13	16.37	52.57	454
178	21.787	-1113.6	-195.60	84.72	16.32	52.87	445

Table 15 Thermodynamic properties of argon–Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
180	21.387	-1024.7	-89.59	85.32	16.26	53.13	437
185	20.387	-803.70	177.30	86.78	16.13	53.57	419
190	19.397	-585.57	445.50	88.21	15.99	53.64	404
195	18.432	-372.04	713.05	89.60	15.86	53.31	390
200	17.503	-164.70	977.95	90.94	15.72	52.58	379
205	16.623	35.07	1238.2	92.23	15.58	51.48	371
210	15.798	226.34	1492.3	93.45	15.44	50.10	364
215	15.034	408.61	1738.9	94.61	15.30	48.53	359
220	14.331	581.87	1977.4	95.71	15.17	46.87	355
225	13.687	746.39	2207.6	96.74	15.05	45.21	353
230	13.098	902.69	2429.6	97.72	14.93	43.59	351
235	12.561	1051.4	2643.7	98.64	14.82	42.06	351
240	12.069	1193.3	2850.4	99.51	14.71	40.64	351
245	11.619	1328.9	3050.3	100.33	14.61	39.32	351
250	11.205	1459.0	3243.8	101.12	14.51	38.12	352
255	10.825	1584.0	3431.6	101.86	14.42	37.01	353
260	10.474	1704.6	3614.1	102.57	14.34	36.01	355
265	10.148	1821.0	3791.8	103.25	14.26	35.09	356
270	9.8462	1933.9	3965.1	103.89	14.18	34.24	358
275	9.5650	2043.4	4134.4	104.51	14.11	33.47	360
280	9.3025	2150.0	4300.0	105.11	14.04	32.77	362
285	9.0568	2253.8	4462.1	105.69	13.98	32.12	364
290	8.8263	2355.2	4621.2	106.24	13.92	31.52	366
295	8.6095	2454.4	4777.4	106.77	13.86	30.97	369
300	8.4053	2551.5	4931.0	107.29	13.81	30.46	371
310	8.0299	2740.2	5230.9	108.27	13.71	29.55	375
320	7.6928	2922.6	5522.4	109.20	13.63	28.77	380
330	7.3878	3099.5	5806.6	110.07	13.55	28.09	385
340	7.1104	3271.7	6084.5	110.90	13.48	27.49	389
350	6.8566	3439.8	6356.7	111.69	13.41	26.97	394
360	6.6233	3604.4	6624.1	112.44	13.36	26.51	398
370	6.4080	3766.0	6887.1	113.17	13.31	26.10	403
380	6.2084	3924.7	7146.2	113.86	13.26	25.73	408
390	6.0227	4081.0	7401.8	114.52	13.22	25.40	412
400	5.8495	4235.2	7654.3	115.16	13.18	25.10	416
410	5.6874	4387.4	7903.9	115.78	13.14	24.83	421
420	5.5352	4537.8	8151.0	116.37	13.11	24.59	425
430	5.3921	4686.6	8395.8	116.95	13.08	24.37	429
440	5.2571	4834.0	8638.4	117.51	13.05	24.16	434
450	5.1295	4980.1	8879.1	118.05	13.03	23.98	438
460	5.0088	5125.0	9118.0	118.57	13.00	23.81	442

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
470	4.8942	5268.8	9355.3	119.08	12.98	23.65	446
480	4.7853	5411.6	9591.1	119.58	12.96	23.50	450
490	4.6817	5553.5	9825.4	120.06	12.94	23.37	454
500	4.5830	5694.5	10058.	120.53	12.92	23.24	458
520	4.3987	5974.2	10521.	121.44	12.89	23.02	466
540	4.2299	6251.2	10979.	122.30	12.86	22.83	474
560	4.0746	6525.9	11434.	123.13	12.84	22.66	481
580	3.9313	6798.4	11886.	123.92	12.82	22.50	488
600	3.7984	7069.2	12335.	124.68	12.80	22.37	496
620	3.6748	7338.3	12781.	125.42	12.78	22.25	503
640	3.5595	7606.0	13225.	126.12	12.76	22.15	510
660	3.4517	7872.5	13667.	126.80	12.75	22.05	517
680	3.3505	8137.7	14107.	127.46	12.74	21.97	524
700	3.2555	8402.0	14545.	128.09	12.72	21.89	530
720	3.1660	8665.3	14983.	128.71	12.71	21.82	537
740	3.0815	8927.8	15418.	129.31	12.70	21.75	543
760	3.0016	9189.5	15853.	129.89	12.69	21.70	550
780	2.9259	9450.5	16286.	130.45	12.68	21.64	556
800	2.8541	9710.9	16718.	131.00	12.68	21.59	562
850	2.6896	10359.	17795.	132.30	12.66	21.49	578
900	2.5437	11005.	18867.	133.53	12.64	21.40	593
950	2.4132	11648.	19935.	134.68	12.63	21.32	607
1000	2.2958	12288.	21000.	135.77	12.62	21.26	621
1050	2.1896	12927.	22062.	136.81	12.61	21.21	635
1100	2.0929	13565.	23121.	137.80	12.60	21.17	649
1150	2.0046	14201.	24178.	138.74	12.59	21.13	662
1200	1.9235	14836.	25234.	139.63	12.59	21.09	675
			25.00 MPa Isobar				
* 89.86	36.181	-4806.3	-4115.3	53.58	21.61	40.06	924
90	36.164	-4800.9	-4109.6	53.64	21.59	40.07	923
92	35.921	-4725.4	-4029.4	54.52	21.37	40.15	912
94	35.676	-4649.8	-3949.0	55.39	21.15	40.24	902
96	35.429	-4574.1	-3868.4	56.24	20.94	40.35	891
98	35.179	-4498.3	-3787.6	57.07	20.74	40.46	881
100	34.928	-4422.3	-3706.6	57.89	20.54	40.58	871
102	34.675	-4346.3	-3625.3	58.69	20.36	40.71	861
104	34.419	-4270.1	-3543.7	59.48	20.18	40.85	851
106	34.161	-4193.7	-3461.9	60.26	20.01	40.99	841

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm^3	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
108	33.901	-4117.2	-3379.7	61.03	19.85	41.14	831
110	33.639	-4040.5	-3297.3	61.79	19.69	41.29	821
112	33.375	-3963.7	-3214.6	62.53	19.54	41.44	811
114	33.109	-3886.6	-3131.6	63.27	19.39	41.59	801
116	32.841	-3809.5	-3048.2	63.99	19.25	41.75	791
118	32.571	-3732.1	-2964.5	64.71	19.12	41.91	782
120	32.298	-3654.6	-2880.6	65.41	18.99	42.07	772
122	32.024	-3576.9	-2796.3	66.11	18.86	42.23	762
124	31.747	-3499.1	-2711.7	66.80	18.74	42.39	752
126	31.469	-3421.1	-2626.7	67.48	18.62	42.56	742
128	31.188	-3343.0	-2541.4	68.15	18.50	42.72	732
130	30.905	-3264.7	-2455.8	68.81	18.39	42.89	723
132	30.621	-3186.3	-2369.9	69.47	18.27	43.06	713
134	30.334	-3107.8	-2283.6	70.12	18.17	43.23	703
136	30.045	-3029.1	-2197.0	70.76	18.06	43.40	693
138	29.753	-2950.2	-2110.0	71.39	17.96	43.58	684
140	29.460	-2871.3	-2022.7	72.02	17.86	43.76	674
142	29.165	-2792.2	-1935.0	72.64	17.76	43.94	664
144	28.867	-2712.9	-1846.9	73.26	17.67	44.13	655
146	28.567	-2633.6	-1758.5	73.87	17.57	44.32	645
148	28.265	-2554.1	-1669.6	74.47	17.48	44.51	636
150	27.960	-2474.5	-1580.4	75.07	17.39	44.71	626
152	27.653	-2394.9	-1490.8	75.67	17.31	44.91	617
154	27.344	-2315.0	-1400.8	76.26	17.22	45.11	608
156	27.033	-2235.1	-1310.4	76.84	17.14	45.32	598
158	26.720	-2155.2	-1219.5	77.42	17.06	45.52	589
160	26.404	-2075.1	-1128.3	77.99	16.98	45.73	580
162	26.086	-1995.0	-1036.6	78.56	16.91	45.94	571
164	25.766	-1914.8	-944.50	79.13	16.84	46.15	562
166	25.444	-1834.5	-852.00	79.69	16.76	46.35	554
168	25.121	-1754.3	-759.10	80.24	16.69	46.55	545
170	24.795	-1674.1	-665.80	80.79	16.63	46.75	537
172	24.468	-1593.8	-572.12	81.34	16.56	46.93	529
174	24.140	-1513.7	-478.07	81.89	16.50	47.11	521
176	23.811	-1433.6	-383.69	82.43	16.43	47.27	513
178	23.480	-1353.7	-288.99	82.96	16.37	47.42	505
180	23.150	-1273.9	-194.01	83.49	16.31	47.56	498
185	22.322	-1075.5	44.45	84.80	16.17	47.80	481
190	21.499	-879.06	283.79	86.07	16.03	47.91	465
195	20.686	-685.36	523.22	87.32	15.90	47.84	451
200	19.888	-495.13	761.88	88.53	15.77	47.60	438

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
205	19.114	-309.09	998.89	89.70	15.64	47.18	427
210	18.366	-127.82	1233.4	90.83	15.52	46.59	418
215	17.650	48.19	1464.6	91.92	15.41	45.87	410
220	16.970	218.64	1691.9	92.96	15.29	45.03	404
225	16.325	383.32	1914.7	93.96	15.18	44.10	399
230	15.718	542.24	2132.7	94.92	15.08	43.11	395
235	15.149	695.46	2345.8	95.84	14.98	42.10	391
240	14.615	843.15	2553.7	96.71	14.88	41.08	389
245	14.116	985.57	2756.6	97.55	14.79	40.08	387
250	13.650	1123.0	2954.5	98.35	14.70	39.10	386
255	13.214	1255.8	3147.7	99.11	14.61	38.17	386
260	12.807	1384.2	3336.3	99.85	14.53	37.28	385
265	12.426	1508.6	3520.6	100.55	14.45	36.44	386
270	12.069	1629.3	3700.8	101.22	14.38	35.65	386
275	11.734	1746.6	3877.1	101.87	14.31	34.91	387
280	11.420	1860.7	4049.9	102.49	14.24	34.21	388
285	11.124	1971.9	4219.3	103.09	14.18	33.56	389
290	10.845	2080.3	4385.6	103.67	14.12	32.95	390
295	10.582	2186.3	4548.9	104.23	14.06	32.38	392
300	10.333	2290.1	4709.4	104.77	14.00	31.85	393
310	9.8746	2491.2	5023.0	105.80	13.90	30.88	396
320	9.4612	2685.1	5327.5	106.76	13.81	30.04	400
330	9.0865	2872.7	5624.0	107.68	13.72	29.29	404
340	8.7450	3054.8	5913.6	108.54	13.65	28.63	408
350	8.4324	3232.1	6196.9	109.36	13.58	28.04	411
360	8.1448	3405.2	6474.6	110.14	13.52	27.52	415
370	7.8794	3574.6	6747.4	110.89	13.46	27.05	420
380	7.6333	3740.7	7015.8	111.61	13.41	26.63	424
390	7.4045	3903.9	7280.2	112.29	13.36	26.25	428
400	7.1911	4064.4	7540.9	112.95	13.31	25.91	432
410	6.9914	4222.6	7798.4	113.59	13.27	25.59	436
420	6.8041	4378.7	8052.9	114.20	13.24	25.31	440
430	6.6280	4532.8	8304.7	114.80	13.20	25.05	444
440	6.4619	4685.2	8554.0	115.37	13.17	24.81	448
450	6.3051	4836.0	8801.1	115.92	13.14	24.60	452
460	6.1567	4985.4	9046.0	116.46	13.11	24.40	456
470	6.0160	5133.4	9289.0	116.99	13.09	24.21	459
480	5.8823	5280.2	9530.3	117.49	13.06	24.04	463
490	5.7551	5425.9	9769.8	117.99	13.04	23.88	467
500	5.6340	5570.5	10008.	118.47	13.02	23.73	471
520	5.4079	5857.0	10480.	119.39	12.98	23.47	478

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
540	5.2011	6140.1	10947.	120.27	12.95	23.24	486
560	5.0109	6420.4	11409.	121.12	12.92	23.03	493
580	4.8354	6698.2	11868.	121.92	12.89	22.86	500
600	4.6728	6973.7	12324.	122.69	12.87	22.70	507
620	4.5216	7247.2	12776.	123.44	12.85	22.56	514
640	4.3805	7519.1	13226.	124.15	12.83	22.43	521
660	4.2487	7789.3	13674.	124.84	12.81	22.31	528
680	4.1250	8058.2	14119.	125.50	12.80	22.21	534
700	4.0088	8325.8	14562.	126.14	12.78	22.12	541
720	3.8994	8592.3	15004.	126.77	12.77	22.03	547
740	3.7961	8857.8	15444.	127.37	12.76	21.96	554
760	3.6984	9122.3	15882.	127.95	12.74	21.89	560
780	3.6059	9385.9	16319.	128.52	12.73	21.82	566
800	3.5181	9648.8	16755.	129.07	12.72	21.76	572
850	3.3170	10303.	17840.	130.39	12.70	21.63	587
900	3.1385	10953.	18919.	131.62	12.68	21.53	602
950	2.9789	11601.	19993.	132.78	12.67	21.44	616
1000	2.8352	12245.	21063.	133.88	12.65	21.37	630
1050	2.7051	12888.	22130.	134.92	12.64	21.30	644
1100	2.5867	13529.	23193.	135.91	12.63	21.25	657
1150	2.4785	14168.	24255.	136.86	12.62	21.20	670
1200	2.3791	14806.	25314.	137.76	12.61	21.16	683
			30.00 MPa Isobar				
* 91.05	36.307	-4797.1	-3970.8	53.65	21.69	39.67	934
92	36.195	-4761.9	-3933.1	54.06	21.58	39.70	930
94	35.960	-4687.9	-3853.6	54.92	21.36	39.77	919
96	35.723	-4613.8	-3774.0	55.76	21.15	39.85	910
98	35.484	-4539.7	-3694.2	56.58	20.94	39.94	900
100	35.243	-4465.5	-3614.2	57.39	20.75	40.03	890
102	35.001	-4391.2	-3534.1	58.18	20.56	40.14	881
104	34.756	-4316.8	-3453.7	58.96	20.38	40.25	871
106	34.510	-4242.4	-3373.1	59.73	20.21	40.36	862
108	34.263	-4167.8	-3292.2	60.48	20.05	40.48	852
110	34.013	-4093.2	-3211.1	61.23	19.89	40.60	843
112	33.762	-4018.4	-3129.8	61.96	19.73	40.72	834
114	33.509	-3943.6	-3048.3	62.68	19.59	40.84	825
116	33.255	-3868.6	-2966.5	63.39	19.45	40.96	815
118	32.999	-3793.5	-2884.4	64.09	19.31	41.08	806

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
120	32.742	-3718.4	-2802.1	64.79	19.18	41.20	797
122	32.483	-3643.2	-2719.6	65.47	19.05	41.32	788
124	32.223	-3567.9	-2636.9	66.14	18.93	41.44	779
126	31.961	-3492.5	-2553.9	66.80	18.81	41.56	770
128	31.698	-3417.1	-2470.6	67.46	18.69	41.68	761
130	31.433	-3341.6	-2387.1	68.11	18.58	41.79	751
132	31.167	-3266.0	-2303.4	68.75	18.46	41.91	742
134	30.900	-3190.4	-2219.5	69.38	18.36	42.02	733
136	30.631	-3114.8	-2135.4	70.00	18.25	42.14	725
138	30.361	-3039.1	-2051.0	70.62	18.15	42.25	716
140	30.089	-2963.4	-1966.4	71.23	18.05	42.36	707
142	29.817	-2887.7	-1881.5	71.83	17.95	42.47	698
144	29.543	-2812.0	-1796.5	72.42	17.85	42.58	689
146	29.268	-2736.2	-1711.2	73.01	17.76	42.69	681
148	28.991	-2660.5	-1625.7	73.59	17.66	42.81	672
150	28.714	-2584.8	-1540.0	74.17	17.57	42.92	663
152	28.435	-2509.1	-1454.0	74.74	17.49	43.03	655
154	28.155	-2433.4	-1367.9	75.30	17.40	43.14	646
156	27.874	-2357.8	-1281.5	75.86	17.31	43.25	638
158	27.591	-2282.2	-1194.9	76.41	17.23	43.35	630
160	27.308	-2206.6	-1108.1	76.95	17.15	43.46	622
162	27.024	-2131.2	-1021.0	77.49	17.07	43.57	614
164	26.739	-2055.8	-933.80	78.03	16.99	43.67	606
166	26.453	-1980.5	-846.35	78.56	16.92	43.77	598
168	26.166	-1905.2	-758.71	79.08	16.85	43.87	590
170	25.878	-1830.2	-670.88	79.60	16.77	43.96	582
172	25.590	-1755.2	-582.86	80.12	16.70	44.05	575
174	25.302	-1680.4	-494.68	80.63	16.64	44.13	568
176	25.013	-1605.7	-406.33	81.13	16.57	44.21	561
178	24.724	-1531.3	-317.84	81.63	16.50	44.28	554
180	24.434	-1457.0	-229.23	82.13	16.44	44.34	547
185	23.712	-1272.4	-7.25	83.35	16.29	44.44	530
190	22.994	-1089.6	215.08	84.53	16.14	44.48	515
195	22.282	-909.01	437.37	85.69	16.00	44.42	501
200	21.580	-730.99	659.17	86.81	15.87	44.28	489
205	20.892	-555.95	880.02	87.90	15.75	44.04	477
210	20.220	-384.23	1099.5	88.96	15.63	43.71	467
215	19.568	-216.14	1317.0	89.98	15.52	43.30	458
220	18.937	-51.93	1532.3	90.97	15.41	42.80	450
225	18.330	108.26	1744.9	91.93	15.30	42.24	443
230	17.748	264.28	1954.6	92.85	15.20	41.63	437

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
235	17.192	416.09	2161.1	93.74	15.11	40.97	433
240	16.662	563.71	2364.2	94.59	15.02	40.28	428
245	16.158	707.20	2563.9	95.42	14.93	39.58	425
250	15.679	846.65	2760.0	96.21	14.84	38.86	422
255	15.226	982.20	2952.5	96.97	14.76	38.16	420
260	14.796	1114.0	3141.6	97.70	14.68	37.46	419
265	14.389	1242.3	3327.1	98.41	14.61	36.77	417
270	14.004	1367.1	3509.3	99.09	14.53	36.11	417
275	13.640	1488.8	3688.2	99.75	14.47	35.47	416
280	13.294	1607.4	3864.0	100.38	14.40	34.85	416
285	12.967	1723.3	4036.8	100.99	14.34	34.27	416
290	12.657	1836.4	4206.8	101.59	14.28	33.71	417
295	12.362	1947.1	4373.9	102.16	14.22	33.17	417
300	12.082	2055.5	4538.5	102.71	14.16	32.67	418
310	11.562	2265.8	4860.4	103.77	14.06	31.73	420
320	11.091	2468.5	5173.5	104.76	13.96	30.89	422
330	10.661	2664.5	5478.6	105.70	13.87	30.14	425
340	10.267	2854.5	5776.5	106.59	13.79	29.46	428
350	9.9055	3039.4	6068.0	107.43	13.72	28.85	431
360	9.5722	3219.6	6353.7	108.24	13.65	28.30	434
370	9.2637	3395.7	6634.1	109.01	13.59	27.80	437
380	8.9774	3568.1	6909.9	109.74	13.54	27.35	441
390	8.7107	3737.3	7181.3	110.45	13.48	26.94	444
400	8.4617	3903.4	7448.8	111.12	13.44	26.57	448
410	8.2285	4067.0	7712.8	111.78	13.39	26.23	452
420	8.0097	4228.1	7973.5	112.40	13.35	25.92	455
430	7.8038	4387.0	8231.3	113.01	13.31	25.63	459
440	7.6096	4543.9	8486.3	113.60	13.28	25.37	463
450	7.4261	4699.0	8738.8	114.16	13.24	25.13	466
460	7.2525	4852.4	8988.9	114.71	13.21	24.91	470
470	7.0877	5004.3	9236.9	115.25	13.19	24.70	473
480	6.9312	5154.8	9483.0	115.77	13.16	24.51	477
490	6.7824	5304.0	9727.1	116.27	13.13	24.33	481
500	6.6405	5451.9	9969.6	116.76	13.11	24.16	484
520	6.3759	5744.7	10450.	117.70	13.07	23.87	491
540	6.1337	6033.5	10925.	118.60	13.03	23.61	498
560	5.9110	6319.1	11394.	119.45	13.00	23.38	505
580	5.7055	6601.7	11860.	120.27	12.97	23.17	512
600	5.5150	6881.7	12321.	121.05	12.94	22.99	519
620	5.3379	7159.4	12780.	121.80	12.92	22.83	526
640	5.1728	7435.2	13235.	122.52	12.89	22.69	532

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
660	5.0183	7709.1	13687.	123.22	12.87	22.56	539
680	4.8735	7981.3	14137.	123.89	12.85	22.44	545
700	4.7373	8252.1	14585.	124.54	12.84	22.33	551
720	4.6091	8521.6	15031.	125.17	12.82	22.24	558
740	4.4880	8789.9	15474.	125.78	12.81	22.15	564
760	4.3736	9057.1	15916.	126.37	12.80	22.07	570
780	4.2651	9323.2	16357.	126.94	12.78	21.99	576
800	4.1622	9588.5	16796.	127.49	12.77	21.92	582
850	3.9264	10248.	17889.	128.82	12.75	21.78	597
900	3.7171	10903.	18974.	130.06	12.72	21.65	611
950	3.5297	11555.	20054.	131.23	12.71	21.55	625
1000	3.3610	12204.	21129.	132.33	12.69	21.46	639
1050	3.2081	12850.	22201.	133.38	12.68	21.39	652
1100	3.0690	13493.	23269.	134.37	12.66	21.33	665
1150	2.9417	14135.	24334.	135.32	12.65	21.27	678
1200	2.8248	14776.	25396.	136.22	12.64	21.22	690
			40.00 MPa Isobar				
* 93.40	36.547	-4776.8	-3682.3	53.80	21.84	38.97	954
94	36.482	-4755.5	-3659.1	54.05	21.77	38.98	952
96	36.262	-4684.2	-3581.1	54.87	21.55	39.02	943
98	36.040	-4612.9	-3503.0	55.68	21.34	39.07	934
100	35.817	-4541.6	-3424.8	56.47	21.14	39.13	925
102	35.593	-4470.3	-3346.5	57.24	20.94	39.20	916
104	35.367	-4399.0	-3268.0	58.00	20.76	39.27	908
106	35.140	-4327.7	-3189.4	58.75	20.58	39.34	899
108	34.912	-4256.4	-3110.6	59.49	20.42	39.42	891
110	34.683	-4185.0	-3031.7	60.21	20.26	39.50	883
112	34.453	-4113.6	-2952.6	60.93	20.10	39.58	874
114	34.222	-4042.2	-2873.4	61.63	19.95	39.66	866
116	33.989	-3970.8	-2794.0	62.32	19.81	39.74	858
118	33.756	-3899.4	-2714.4	63.00	19.67	39.82	850
120	33.522	-3827.9	-2634.7	63.67	19.54	39.89	842
122	33.287	-3756.5	-2554.8	64.33	19.41	39.97	833
124	33.051	-3685.1	-2474.8	64.98	19.29	40.04	825
126	32.815	-3613.7	-2394.7	65.62	19.17	40.10	817
128	32.577	-3542.3	-2314.4	66.25	19.05	40.17	809
130	32.340	-3470.9	-2234.0	66.87	18.94	40.23	801
132	32.101	-3399.6	-2153.5	67.49	18.82	40.28	793

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
134	31.862	-3328.3	-2072.9	68.09	18.72	40.33	785
136	31.622	-3257.1	-1992.2	68.69	18.61	40.38	778
138	31.382	-3186.0	-1911.4	69.28	18.51	40.43	770
140	31.142	-3114.9	-1830.5	69.86	18.41	40.47	762
142	30.901	-3044.0	-1749.5	70.44	18.31	40.51	754
144	30.660	-2973.1	-1668.4	71.01	18.21	40.55	747
146	30.418	-2902.3	-1587.3	71.57	18.11	40.59	739
148	30.176	-2831.6	-1506.1	72.12	18.02	40.62	732
150	29.934	-2761.1	-1424.8	72.66	17.93	40.65	724
152	29.692	-2690.7	-1343.5	73.20	17.84	40.67	717
154	29.449	-2620.4	-1262.1	73.73	17.75	40.70	710
156	29.206	-2550.3	-1180.7	74.26	17.67	40.72	703
158	28.964	-2480.3	-1099.3	74.78	17.58	40.74	696
160	28.721	-2410.5	-1017.8	75.29	17.50	40.75	689
162	28.478	-2340.8	-936.25	75.80	17.42	40.77	682
164	28.235	-2271.4	-854.70	76.30	17.34	40.78	675
166	27.993	-2202.1	-773.14	76.79	17.26	40.79	668
168	27.750	-2133.0	-691.56	77.28	17.19	40.79	661
170	27.508	-2064.1	-609.97	77.76	17.11	40.80	655
172	27.266	-1995.4	-528.38	78.24	17.04	40.80	648
174	27.024	-1927.0	-446.78	78.71	16.97	40.79	642
176	26.782	-1858.7	-365.20	79.18	16.90	40.79	636
178	26.541	-1790.7	-283.63	79.64	16.83	40.78	630
180	26.301	-1723.0	-202.08	80.09	16.76	40.77	624
185	25.702	-1554.7	1.65	81.21	16.60	40.72	609
190	25.107	-1388.1	205.07	82.29	16.44	40.64	595
195	24.518	-1223.4	408.05	83.35	16.29	40.54	582
200	23.936	-1060.7	610.42	84.37	16.16	40.40	570
205	23.362	-900.16	812.03	85.37	16.02	40.23	559
210	22.797	-741.87	1012.7	86.34	15.90	40.03	548
215	22.244	-585.99	1212.3	87.28	15.78	39.79	539
220	21.702	-432.61	1410.6	88.19	15.67	39.52	530
225	21.172	-281.83	1607.4	89.07	15.56	39.22	522
230	20.657	-133.70	1802.7	89.93	15.46	38.89	515
235	20.156	11.71	1996.2	90.76	15.36	38.53	508
240	19.670	154.40	2188.0	91.57	15.27	38.15	502
245	19.199	294.35	2377.7	92.35	15.18	37.76	497
250	18.744	431.56	2565.5	93.11	15.10	37.35	492
255	18.305	566.06	2751.2	93.85	15.02	36.93	488
260	17.882	697.91	2934.8	94.56	14.94	36.50	485
265	17.474	827.13	3116.2	95.25	14.86	36.07	481

Table 15 Thermodynamic properties of argon—Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
270	17.082	953.81	3295.5	95.92	14.79	35.64	479
275	16.704	1078.0	3472.6	96.57	14.72	35.21	477
280	16.341	1199.8	3647.6	97.20	14.66	34.78	475
285	15.993	1319.3	3820.5	97.81	14.59	34.36	473
290	15.658	1436.5	3991.2	98.41	14.53	33.94	472
295	15.336	1551.6	4159.9	98.99	14.48	33.54	471
300	15.027	1664.7	4326.6	99.55	14.42	33.14	470
310	14.445	1885.0	4654.1	100.62	14.31	32.38	469
320	13.907	2098.1	4974.3	101.64	14.22	31.66	469
330	13.410	2304.6	5287.5	102.60	14.13	30.99	470
340	12.949	2505.2	5594.3	103.52	14.04	30.37	471
350	12.521	2700.5	5895.1	104.39	13.96	29.80	472
360	12.123	2890.9	6190.4	105.22	13.89	29.26	474
370	11.752	3076.9	6480.5	106.01	13.83	28.77	476
380	11.405	3258.9	6765.9	106.78	13.76	28.32	478
390	11.081	3437.2	7047.0	107.51	13.71	27.90	480
400	10.777	3612.2	7324.0	108.21	13.65	27.51	483
410	10.490	3784.2	7597.3	108.88	13.60	27.15	485
420	10.221	3953.5	7867.1	109.53	13.56	26.82	488
430	9.9663	4120.2	8133.7	110.16	13.51	26.51	491
440	9.7258	4284.6	8397.3	110.77	13.47	26.22	494
450	9.4980	4446.8	8658.2	111.35	13.44	25.96	497
460	9.2820	4607.1	8916.5	111.92	13.40	25.71	500
470	9.0768	4765.6	9172.4	112.47	13.37	25.48	503
480	8.8815	4922.4	9426.1	113.00	13.34	25.26	506
490	8.6955	5077.6	9677.7	113.52	13.31	25.06	509
500	8.5180	5231.4	9927.3	114.03	13.28	24.87	512
520	8.1863	5535.0	10421.	115.00	13.23	24.53	518
540	7.8823	5834.0	10909.	115.92	13.18	24.22	525
560	7.6024	6128.9	11390.	116.79	13.14	23.96	531
580	7.3436	6420.2	11867.	117.63	13.11	23.72	537
600	7.1036	6708.3	12339.	118.43	13.07	23.50	543
620	6.8802	6993.7	12807.	119.20	13.04	23.31	549
640	6.6717	7276.5	13272.	119.93	13.02	23.14	555
660	6.4766	7557.0	13733.	120.64	12.99	22.98	561
680	6.2934	7835.5	14191.	121.33	12.97	22.84	567
700	6.1212	8112.2	14647.	121.99	12.95	22.71	573
720	5.9588	8387.2	15100.	122.63	12.93	22.60	579
740	5.8055	8660.7	15551.	123.24	12.91	22.49	585
760	5.6604	8932.8	16000.	123.84	12.89	22.39	591
780	5.5228	9203.7	16446.	124.42	12.88	22.30	597

Table 15 Thermodynamic properties of argon-Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
800	5.3922	9473.4	16892.	124.99	12.86	22.21	602
850	5.0927	10143.	17998.	126.33	12.83	22.03	616
900	4.8264	10807.	19095.	127.58	12.80	21.88	630
950	4.5878	11467.	20186.	128.76	12.78	21.75	643
1000	4.3727	12123.	21271.	129.87	12.76	21.64	656
1050	4.1775	12776.	22351.	130.93	12.74	21.55	669
1100	3.9997	13425.	23426.	131.93	12.72	21.47	682
1150	3.8368	14073.	24498.	132.88	12.71	21.41	694
1200	3.6871	14718.	25567.	133.79	12.70	21.35	706
			50.00 MPa Isobar				
* 95.72	36.776	-4754.3	-3394.7	53.96	21.96	38.35	973
96	36.747	-4744.8	-3384.2	54.07	21.93	38.35	972
98	36.540	-4675.8	-3307.4	54.86	21.71	38.38	964
100	36.331	-4606.9	-3230.7	55.64	21.50	38.41	956
102	36.122	-4538.0	-3153.8	56.40	21.30	38.45	948
104	35.911	-4469.2	-3076.8	57.14	21.11	38.50	941
106	35.700	-4400.4	-2999.8	57.88	20.93	38.55	933
108	35.487	-4331.6	-2922.6	58.60	20.75	38.61	925
110	35.274	-4262.8	-2845.4	59.31	20.59	38.66	918
112	35.060	-4194.1	-2768.0	60.01	20.43	38.72	910
114	34.845	-4125.4	-2690.5	60.69	20.28	38.78	903
116	34.630	-4056.7	-2612.9	61.37	20.14	38.83	895
118	34.414	-3988.1	-2535.2	62.03	20.00	38.88	888
120	34.197	-3919.5	-2457.4	62.68	19.87	38.93	880
122	33.980	-3850.9	-2379.4	63.33	19.74	38.98	873
124	33.762	-3782.4	-2301.4	63.96	19.61	39.03	866
126	33.544	-3713.9	-2223.3	64.59	19.49	39.07	858
128	33.326	-3645.5	-2145.2	65.20	19.38	39.10	851
130	33.107	-3577.2	-2066.9	65.81	19.26	39.14	844
132	32.889	-3508.9	-1988.6	66.41	19.15	39.17	837
134	32.669	-3440.7	-1910.3	67.00	19.04	39.19	830
136	32.450	-3372.7	-1831.9	67.58	18.94	39.21	823
138	32.231	-3304.7	-1753.4	68.15	18.84	39.23	816
140	32.012	-3236.9	-1674.9	68.71	18.74	39.24	809
142	31.792	-3169.2	-1596.5	69.27	18.64	39.25	802
144	31.573	-3101.6	-1518.0	69.82	18.54	39.25	795
146	31.354	-3034.2	-1439.5	70.36	18.45	39.25	788
148	31.135	-2966.9	-1361.0	70.89	18.35	39.25	782

Table 15 Thermodynamic properties of argon-Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
150	30.916	-2899.8	-1282.5	71.42	18.26	39.24	775
152	30.697	-2832.8	-1204.0	71.94	18.17	39.24	768
154	30.478	-2766.0	-1125.5	72.45	18.09	39.22	762
156	30.260	-2699.4	-1047.1	72.96	18.00	39.21	755
158	30.042	-2633.0	-968.69	73.46	17.92	39.19	749
160	29.825	-2566.8	-890.33	73.95	17.83	39.17	743
162	29.607	-2500.8	-812.02	74.44	17.75	39.15	737
164	29.390	-2435.0	-733.75	74.92	17.67	39.12	730
166	29.174	-2369.4	-655.53	75.39	17.60	39.09	724
168	28.958	-2304.0	-577.38	75.86	17.52	39.06	718
170	28.743	-2238.9	-499.29	76.32	17.44	39.03	712
172	28.528	-2173.9	-421.27	76.78	17.37	38.99	707
174	28.313	-2109.3	-343.32	77.23	17.30	38.96	701
176	28.100	-2044.8	-265.44	77.68	17.22	38.92	695
178	27.887	-1980.6	-187.65	78.11	17.15	38.88	690
180	27.674	-1916.7	-109.94	78.55	17.08	38.83	684
185	27.146	-1757.9	83.93	79.61	16.92	38.71	671
190	26.624	-1600.8	277.18	80.64	16.76	38.58	659
195	26.107	-1445.5	469.74	81.64	16.61	38.44	647
200	25.595	-1291.9	661.53	82.61	16.46	38.28	635
205	25.091	-1140.2	852.49	83.56	16.32	38.10	624
210	24.594	-990.43	1042.5	84.47	16.19	37.92	614
215	24.105	-842.59	1231.6	85.36	16.07	37.71	605
220	23.625	-696.75	1419.7	86.23	15.95	37.50	596
225	23.154	-552.92	1606.6	87.07	15.84	37.26	588
230	22.692	-411.17	1792.3	87.88	15.73	37.02	580
235	22.240	-271.50	1976.7	88.68	15.63	36.76	573
240	21.798	-133.90	2159.9	89.45	15.53	36.49	566
245	21.367	1.60	2341.6	90.20	15.44	36.21	560
250	20.947	135.01	2522.0	90.93	15.35	35.93	555
255	20.538	266.35	2700.9	91.63	15.26	35.63	550
260	20.139	395.64	2878.3	92.32	15.18	35.33	545
265	19.752	522.90	3054.2	92.99	15.11	35.03	541
270	19.376	648.17	3228.6	93.65	15.03	34.72	537
275	19.011	771.47	3401.5	94.28	14.96	34.41	534
280	18.657	892.86	3572.8	94.90	14.89	34.11	531
285	18.314	1012.4	3742.5	95.50	14.83	33.80	528
290	17.981	1130.1	3910.7	96.08	14.76	33.49	526
295	17.659	1246.0	4077.4	96.65	14.70	33.18	524
300	17.347	1360.2	4242.6	97.21	14.65	32.88	522
310	16.752	1583.6	4568.4	98.28	14.54	32.29	519

Table 15 Thermodynamic properties of argon-Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
320	16.194	1800.8	4888.4	99.29	14.44	31.71	517
330	15.671	2012.1	5202.8	100.26	14.34	31.16	515
340	15.180	2218.0	5511.8	101.18	14.25	30.64	515
350	14.720	2418.9	5815.6	102.06	14.17	30.14	514
360	14.288	2615.1	6114.7	102.91	14.10	29.67	515
370	13.881	2807.1	6409.1	103.71	14.03	29.23	515
380	13.498	2995.1	6699.3	104.49	13.96	28.81	516
390	13.138	3179.5	6985.4	105.23	13.90	28.41	517
400	12.797	3360.5	7267.6	105.94	13.84	28.04	519
410	12.475	3538.4	7546.3	106.63	13.79	27.70	521
420	12.171	3713.5	7821.6	107.30	13.74	27.37	522
430	11.882	3885.9	8093.8	107.94	13.69	27.07	524
440	11.608	4055.8	8363.0	108.56	13.65	26.78	527
450	11.348	4223.4	8629.5	109.15	13.61	26.51	529
460	11.100	4389.0	8893.3	109.73	13.57	26.26	531
470	10.864	4552.5	9154.7	110.30	13.53	26.02	533
480	10.639	4714.3	9413.8	110.84	13.50	25.80	536
490	10.424	4874.3	9670.7	111.37	13.46	25.59	538
500	10.219	5032.8	9925.6	111.89	13.43	25.39	541
520	9.8340	5345.3	10430.	112.88	13.37	25.03	546
540	9.4800	5652.6	10927.	113.81	13.32	24.70	552
560	9.1531	5955.4	11418.	114.71	13.28	24.41	557
580	8.8502	6254.0	11904.	115.56	13.24	24.15	563
600	8.5687	6549.1	12384.	116.37	13.20	23.92	568
620	8.3062	6840.9	12860.	117.15	13.16	23.71	574
640	8.0609	7129.9	13333.	117.90	13.13	23.51	579
660	7.8309	7416.2	13801.	118.62	13.10	23.34	585
680	7.6148	7700.2	14266.	119.32	13.07	23.18	590
700	7.4113	7982.1	14729.	119.99	13.05	23.04	596
720	7.2193	8262.0	15188.	120.64	13.03	22.90	601
740	7.0378	8540.2	15645.	121.26	13.01	22.78	607
760	6.8659	8816.8	16099.	121.87	12.99	22.67	612
780	6.7027	9091.8	16551.	122.46	12.97	22.56	617
800	6.5477	9365.6	17002.	123.03	12.95	22.47	623
850	6.1918	10045.	18120.	124.38	12.91	22.26	636
900	5.8747	10717.	19228.	125.65	12.88	22.08	649
950	5.5902	11384.	20328.	126.84	12.85	21.93	662
1000	5.3333	12047.	21422.	127.96	12.82	21.81	674
1050	5.1000	12706.	22510.	129.02	12.80	21.70	687
1100	4.8870	13361.	23592.	130.03	12.78	21.61	699

Table 15 Thermodynamic properties of argon-Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
1150	4.6918	14014.	24671.	130.99	12.77	21.53	711
1200	4.5120	14664.	25745.	131.90	12.75	21.46	723
			60.00 MPa Isobar				
* 98.01	36.994	-4730.1	-3108.2	54.12	22.04	37.80	992
100	36.799	-4663.5	-3033.0	54.88	21.82	37.81	985
102	36.602	-4596.6	-2957.4	55.63	21.62	37.84	977
104	36.404	-4529.9	-2881.7	56.36	21.42	37.87	970
106	36.205	-4463.1	-2805.9	57.08	21.23	37.90	963
108	36.005	-4396.5	-2730.1	57.79	21.06	37.94	956
110	35.805	-4329.9	-2654.1	58.49	20.89	37.99	949
112	35.604	-4263.3	-2578.1	59.17	20.73	38.03	942
114	35.402	-4196.8	-2502.0	59.85	20.58	38.07	936
116	35.200	-4130.4	-2425.8	60.51	20.43	38.11	929
118	34.998	-4064.0	-2349.6	61.16	20.29	38.15	922
120	34.795	-3997.6	-2273.2	61.80	20.16	38.19	915
122	34.592	-3931.3	-2196.8	62.43	20.03	38.22	909
124	34.389	-3865.1	-2120.3	63.06	19.91	38.26	902
126	34.185	-3798.9	-2043.8	63.67	19.79	38.28	895
128	33.982	-3732.9	-1967.2	64.27	19.67	38.31	889
130	33.778	-3666.9	-1890.6	64.87	19.56	38.32	882
132	33.574	-3601.0	-1813.9	65.45	19.45	38.34	875
134	33.370	-3535.2	-1737.2	66.03	19.34	38.35	869
136	33.166	-3469.6	-1660.5	66.60	19.24	38.36	862
138	32.963	-3404.0	-1583.8	67.16	19.13	38.36	856
140	32.759	-3338.6	-1507.1	67.71	19.04	38.35	850
142	32.556	-3273.4	-1430.4	68.25	18.94	38.35	843
144	32.353	-3208.3	-1353.7	68.79	18.84	38.34	837
146	32.150	-3143.3	-1277.0	69.32	18.75	38.32	831
148	31.947	-3078.5	-1200.4	69.84	18.66	38.30	825
150	31.745	-3013.9	-1123.8	70.35	18.57	38.28	819
152	31.543	-2949.4	-1047.3	70.86	18.48	38.26	813
154	31.342	-2885.2	-970.80	71.36	18.39	38.23	807
156	31.141	-2821.1	-894.38	71.85	18.31	38.19	801
158	30.940	-2757.2	-818.02	72.34	18.22	38.16	795
160	30.741	-2693.6	-741.74	72.82	18.14	38.12	789
162	30.541	-2630.1	-665.53	73.29	18.06	38.08	783
164	30.342	-2566.9	-589.41	73.76	17.98	38.04	778
166	30.144	-2503.8	-513.38	74.22	17.90	37.99	772

Table 15 Thermodynamic properties of argon-Continued

Temperature K	Density mol/dm^3	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
168	29.946	-2441.0	-437.44	74.67	17.83	37.95	767
170	29.749	-2378.4	-361.60	75.12	17.75	37.90	761
172	29.553	-2316.1	-285.85	75.57	17.68	37.84	756
174	29.357	-2254.0	-210.21	76.00	17.60	37.79	751
176	29.162	-2192.1	-134.69	76.43	17.53	37.74	745
178	28.968	-2130.5	-59.27	76.86	17.46	37.68	740
180	28.775	-2069.1	16.03	77.28	17.39	37.62	735
185	28.295	-1916.8	203.75	78.31	17.22	37.47	723
190	27.820	-1766.1	390.69	79.31	17.06	37.31	711
195	27.350	-1617.0	576.81	80.27	16.91	37.14	700
200	26.887	-1469.5	762.06	81.21	16.76	36.96	689
205	26.429	-1323.8	946.41	82.12	16.62	36.78	679
210	25.979	-1179.8	1129.8	83.01	16.48	36.59	670
215	25.535	-1037.5	1312.3	83.86	16.35	36.39	660
220	25.098	-896.96	1493.7	84.70	16.23	36.19	652
225	24.668	-758.18	1674.1	85.51	16.11	35.98	643
230	24.246	-621.16	1853.5	86.30	16.00	35.76	636
235	23.832	-485.90	2031.7	87.07	15.89	35.54	628
240	23.426	-352.41	2208.9	87.81	15.79	35.32	622
245	23.028	-220.66	2384.9	88.54	15.69	35.09	615
250	22.638	-90.64	2559.8	89.24	15.60	34.86	609
255	22.257	37.64	2733.5	89.93	15.51	34.62	604
260	21.884	164.22	2906.0	90.60	15.43	34.38	599
265	21.520	289.11	3077.3	91.25	15.35	34.14	594
270	21.164	412.35	3247.4	91.89	15.27	33.89	590
275	20.817	533.94	3416.2	92.51	15.19	33.65	586
280	20.478	653.94	3583.9	93.11	15.12	33.41	582
285	20.148	772.35	3750.3	93.70	15.05	33.16	579
290	19.827	889.23	3915.5	94.28	14.99	32.92	576
295	19.513	1004.6	4079.5	94.84	14.92	32.67	573
300	19.208	1118.5	4242.2	95.39	14.86	32.43	570
310	18.621	1342.0	4564.2	96.44	14.75	31.96	566
320	18.066	1560.1	4881.4	97.45	14.64	31.49	562
330	17.539	1773.1	5194.0	98.41	14.54	31.03	560
340	17.041	1981.2	5502.1	99.33	14.45	30.59	558
350	16.569	2184.8	5805.9	100.21	14.37	30.17	556
360	16.123	2384.1	6105.6	101.05	14.29	29.76	555
370	15.699	2579.4	6401.2	101.86	14.21	29.37	555
380	15.298	2771.0	6693.1	102.64	14.14	29.00	555
390	14.917	2959.1	6981.3	103.39	14.08	28.65	555
400	14.555	3143.9	7266.1	104.11	14.02	28.31	555

Table 15 Thermodynamic properties of argon-Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
410	14.212	3325.8	7547.6	104.81	13.96	27.99	556
420	13.885	3504.8	7826.0	105.48	13.91	27.69	557
430	13.574	3681.1	8101.4	106.13	13.86	27.40	558
440	13.277	3855.0	8374.0	106.75	13.81	27.12	559
450	12.994	4026.6	8643.9	107.36	13.76	26.87	561
460	12.724	4196.0	8911.3	107.95	13.72	26.62	563
470	12.466	4363.4	9176.4	108.52	13.68	26.39	564
480	12.219	4528.9	9439.1	109.07	13.64	26.17	566
490	11.983	4692.7	9699.7	109.61	13.61	25.96	568
500	11.756	4854.8	9958.3	110.13	13.57	25.76	570
520	11.330	5174.3	10470.	111.13	13.51	25.39	574
540	10.937	5488.4	10974.	112.09	13.45	25.06	579
560	10.573	5797.6	11473.	112.99	13.40	24.76	584
580	10.234	6102.4	11965.	113.86	13.36	24.49	588
600	9.9186	6403.3	12452.	114.68	13.31	24.25	593
620	9.6238	6700.6	12935.	115.47	13.27	24.03	598
640	9.3476	6994.9	13414.	116.23	13.24	23.82	603
660	9.0882	7286.2	13888.	116.96	13.21	23.64	608
680	8.8441	7575.0	14359.	117.67	13.18	23.47	613
700	8.6139	7861.4	14827.	118.34	13.15	23.31	618
720	8.3964	8145.7	15292.	119.00	13.12	23.16	623
740	8.1905	8428.0	15754.	119.63	13.10	23.03	628
760	7.9953	8708.5	16213.	120.24	13.07	22.91	633
780	7.8099	8987.4	16670.	120.84	13.05	22.80	638
800	7.6335	9264.7	17125.	121.41	13.03	22.69	643
850	7.2279	9952.1	18253.	122.78	12.99	22.46	656
900	6.8658	10632.	19371.	124.06	12.95	22.26	668
950	6.5403	11306.	20480.	125.26	12.92	22.10	680
1000	6.2458	11975.	21581.	126.39	12.89	21.96	692
1050	5.9780	12639.	22676.	127.46	12.86	21.84	704
1100	5.7332	13300.	23765.	128.47	12.84	21.73	716
1150	5.5085	13957.	24849.	129.43	12.82	21.64	727
1200	5.3014	14612.	25929.	130.35	12.80	21.56	739
			80.00 MPa Isobar				
* 102.49	37.405	-4677.4	-2538.6	54.44	22.11	36.86	1028
104	37.271	-4629.6	-2483.1	54.98	21.96	36.87	1024
106	37.092	-4566.2	-2409.3	55.68	21.76	36.89	1018
108	36.912	-4502.9	-2335.5	56.37	21.58	36.91	1012
110	36.732	-4439.6	-2261.7	57.04	21.40	36.94	1006

Table 15 Thermodynamic properties of argon-Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
112	36.551	-4376.5	-2187.8	57.71	21.24	36.97	1000
114	36.370	-4313.4	-2113.8	58.37	21.08	36.99	994
116	36.189	-4250.4	-2039.8	59.01	20.93	37.02	988
118	36.007	-4187.5	-1965.7	59.64	20.79	37.05	983
120	35.825	-4124.7	-1891.6	60.26	20.66	37.08	977
122	35.644	-4061.9	-1817.4	60.88	20.53	37.10	971
124	35.462	-3999.2	-1743.2	61.48	20.41	37.13	965
126	35.279	-3936.5	-1668.9	62.08	20.29	37.14	960
128	35.097	-3874.0	-1594.6	62.66	20.17	37.16	954
130	34.915	-3811.5	-1520.3	63.24	20.06	37.17	948
132	34.734	-3749.2	-1445.9	63.80	19.95	37.17	943
134	34.552	-3687.0	-1371.6	64.36	19.85	37.17	937
136	34.370	-3624.8	-1297.2	64.91	19.75	37.17	931
138	34.189	-3562.8	-1222.9	65.46	19.65	37.16	926
140	34.008	-3501.0	-1148.6	65.99	19.55	37.15	920
142	33.828	-3439.2	-1074.3	66.52	19.46	37.14	915
144	33.647	-3377.7	-1000.1	67.04	19.37	37.11	909
146	33.468	-3316.2	-925.86	67.55	19.28	37.09	904
148	33.288	-3254.9	-851.70	68.05	19.19	37.06	898
150	33.110	-3193.8	-777.61	68.55	19.10	37.03	893
152	32.931	-3132.9	-703.59	69.04	19.01	36.99	888
154	32.753	-3072.1	-629.65	69.52	18.93	36.95	882
156	32.576	-3011.6	-555.78	70.00	18.85	36.91	877
158	32.400	-2951.2	-482.02	70.47	18.76	36.86	872
160	32.223	-2891.0	-408.34	70.93	18.68	36.81	867
162	32.048	-2831.0	-334.77	71.39	18.61	36.76	862
164	31.873	-2771.2	-261.30	71.84	18.53	36.71	857
166	31.699	-2711.7	-187.93	72.29	18.45	36.65	852
168	31.526	-2652.3	-114.70	72.73	18.38	36.59	847
170	31.353	-2593.1	-41.58	73.16	18.30	36.53	843
172	31.181	-2534.2	31.41	73.58	18.23	36.47	838
174	31.010	-2475.5	104.28	74.01	18.16	36.40	833
176	30.840	-2417.0	177.02	74.42	18.08	36.33	829
178	30.670	-2358.8	249.62	74.83	18.01	36.27	824
180	30.501	-2300.7	322.08	75.24	17.94	36.20	820
185	30.083	-2156.7	502.62	76.23	17.78	36.02	809
190	29.669	-2014.1	682.25	77.18	17.61	35.83	798
195	29.261	-1873.0	860.95	78.11	17.46	35.64	788
200	28.859	-1733.4	1038.7	79.01	17.31	35.45	778
205	28.462	-1595.3	1215.5	79.89	17.16	35.26	769
210	28.070	-1458.8	1391.2	80.73	17.02	35.06	760

Table 15 Thermodynamic properties of argon-Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
215	27.684	-1323.7	1566.1	81.56	16.89	34.86	751
220	27.304	-1190.1	1739.9	82.35	16.76	34.66	743
225	26.930	-1058.0	1912.7	83.13	16.63	34.46	735
230	26.562	-927.32	2084.5	83.89	16.51	34.27	728
235	26.200	-798.14	2255.3	84.62	16.40	34.07	721
240	25.844	-670.37	2425.2	85.34	16.29	33.87	714
245	25.493	-544.04	2594.0	86.03	16.19	33.67	708
250	25.149	-419.10	2761.9	86.71	16.09	33.48	702
255	24.811	-295.55	2928.9	87.37	15.99	33.29	696
260	24.479	-173.35	3094.8	88.02	15.90	33.09	691
265	24.153	-52.47	3259.8	88.65	15.81	32.90	685
270	23.833	67.08	3423.8	89.26	15.72	32.71	681
275	23.519	185.34	3586.9	89.86	15.64	32.52	676
280	23.211	302.35	3749.0	90.44	15.56	32.33	672
285	22.909	418.11	3910.2	91.01	15.49	32.15	668
290	22.613	532.66	4070.5	91.57	15.41	31.96	664
295	22.323	646.01	4229.8	92.11	15.34	31.78	660
300	22.038	758.21	4388.3	92.65	15.28	31.60	657
310	21.487	979.20	4702.4	93.68	15.15	31.24	651
320	20.957	1195.8	5013.1	94.66	15.03	30.89	646
330	20.450	1408.3	5320.3	95.61	14.92	30.55	641
340	19.963	1616.8	5624.1	96.52	14.82	30.22	637
350	19.497	1821.6	5924.7	97.39	14.73	29.90	634
360	19.051	2022.7	6222.1	98.22	14.64	29.58	631
370	18.623	2220.5	6516.4	99.03	14.56	29.28	629
380	18.212	2415.1	6807.7	99.81	14.48	28.98	627
390	17.819	2606.6	7096.1	100.56	14.41	28.70	626
400	17.443	2795.2	7381.7	101.28	14.34	28.42	625
410	17.081	2981.1	7664.6	101.98	14.27	28.16	624
420	16.734	3164.4	7944.9	102.65	14.21	27.91	624
430	16.402	3345.2	8222.8	103.31	14.16	27.66	624
440	16.082	3523.8	8498.2	103.94	14.10	27.42	624
450	15.775	3700.1	8771.3	104.56	14.05	27.20	624
460	15.481	3874.4	9042.1	105.15	14.00	26.98	624
470	15.197	4046.7	9310.9	105.73	13.96	26.77	625
480	14.924	4217.1	9577.6	106.29	13.91	26.57	626
490	14.661	4385.8	9842.3	106.84	13.87	26.38	627
500	14.408	4552.8	10105.	107.37	13.83	26.19	628
520	13.929	4882.2	10626.	108.39	13.76	25.85	630
540	13.483	5205.9	11139.	109.36	13.70	25.53	633
560	13.067	5524.5	11647.	110.28	13.64	25.24	636

Table 15 Thermodynamic properties of argon-Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
580	12.678	5838.5	12149.	111.16	13.58	24.97	640
600	12.313	6148.2	12646.	112.00	13.53	24.72	643
620	11.970	6454.2	13138.	112.81	13.48	24.49	647
640	11.647	6756.7	13625.	113.58	13.44	24.28	651
660	11.343	7056.1	14109.	114.33	13.40	24.08	655
680	11.056	7352.5	14589.	115.04	13.37	23.90	659
700	10.784	7646.3	15065.	115.73	13.33	23.73	663
720	10.526	7937.7	15538.	116.40	13.30	23.58	667
740	10.281	8226.9	16008.	117.04	13.27	23.43	672
760	10.049	8514.0	16475.	117.67	13.24	23.30	676
780	9.8272	8799.2	16940.	118.27	13.22	23.17	680
800	9.6160	9082.7	17402.	118.86	13.19	23.05	685
850	9.1286	9784.3	18548.	120.25	13.14	22.79	696
900	8.6914	10477.	19682.	121.54	13.09	22.57	707
950	8.2969	11163.	20806.	122.76	13.05	22.38	718
1000	7.9387	11843.	21920.	123.90	13.01	22.22	728
1050	7.6119	12518.	23027.	124.98	12.98	22.07	739
1100	7.3123	13187.	24128.	126.00	12.95	21.95	750
1150	7.0365	13853.	25223.	126.98	12.92	21.84	761
1200	6.7817	14516.	26312.	127.91	12.90	21.74	771
			100.00 MPa Isobar				
* 106.75	37.796	-4624.0	-1978.2	54.71	22.11	36.10	1064
108	37.693	-4586.0	-1933.0	55.13	21.99	36.11	1061
110	37.528	-4525.4	-1860.8	55.79	21.81	36.13	1056
112	37.363	-4464.9	-1788.5	56.45	21.64	36.16	1051
114	37.197	-4404.5	-1716.1	57.09	21.49	36.18	1046
116	37.031	-4344.2	-1643.7	57.71	21.34	36.21	1041
118	36.865	-4283.9	-1571.3	58.33	21.20	36.24	1036
120	36.698	-4223.7	-1498.8	58.94	21.06	36.27	1031
122	36.532	-4163.6	-1426.2	59.54	20.93	36.29	1026
124	36.365	-4103.5	-1353.6	60.13	20.81	36.31	1021
126	36.199	-4043.5	-1281.0	60.71	20.70	36.33	1016
128	36.033	-3983.6	-1208.3	61.29	20.58	36.35	1011
130	35.866	-3923.7	-1135.6	61.85	20.48	36.36	1006
132	35.700	-3864.0	-1062.9	62.41	20.37	36.36	1001
134	35.534	-3804.3	-990.14	62.95	20.27	36.37	996
136	35.368	-3744.8	-917.41	63.49	20.17	36.37	991
138	35.203	-3685.3	-844.68	64.02	20.08	36.36	986
140	35.038	-3626.0	-771.97	64.55	19.98	36.35	981

Table 15 Thermodynamic properties of argon-Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
142	34.873	-3566.8	-699.28	65.06	19.89	36.34	976
144	34.709	-3507.7	-626.62	65.57	19.80	36.32	971
146	34.545	-3448.8	-554.01	66.07	19.72	36.29	966
148	34.382	-3390.0	-481.44	66.56	19.63	36.27	961
150	34.219	-3331.3	-408.95	67.05	19.55	36.23	956
152	34.056	-3272.8	-336.52	67.53	19.46	36.20	951
154	33.895	-3214.5	-264.15	68.00	19.38	36.16	947
156	33.733	-3156.3	-191.88	68.47	19.30	36.12	942
158	33.573	-3098.3	-119.69	68.93	19.22	36.07	937
160	33.413	-3040.5	-47.60	69.38	19.15	36.02	933
162	33.253	-2982.8	24.40	69.83	19.07	35.97	928
164	33.095	-2925.3	96.28	70.27	19.00	35.92	924
166	32.937	-2868.1	168.06	70.71	18.92	35.86	919
168	32.779	-2811.0	239.72	71.13	18.85	35.80	915
170	32.623	-2754.1	311.25	71.56	18.77	35.74	910
172	32.467	-2697.4	382.67	71.98	18.70	35.67	906
174	32.312	-2640.9	453.95	72.39	18.63	35.61	902
176	32.157	-2584.6	525.11	72.79	18.56	35.54	897
178	32.003	-2528.6	596.11	73.19	18.49	35.47	893
180	31.850	-2472.7	666.98	73.59	18.43	35.40	889
185	31.471	-2334.0	843.52	74.56	18.26	35.22	879
190	31.097	-2196.6	1019.1	75.50	18.10	35.03	869
195	30.728	-2060.5	1193.8	76.40	17.94	34.84	860
200	30.364	-1925.9	1367.5	77.28	17.79	34.64	851
205	30.005	-1792.6	1540.2	78.13	17.64	34.44	842
210	29.651	-1660.6	1711.9	78.96	17.50	34.24	834
215	29.302	-1530.1	1882.6	79.77	17.37	34.05	826
220	28.959	-1400.8	2052.4	80.55	17.23	33.85	818
225	28.620	-1272.9	2221.1	81.30	17.11	33.65	811
230	28.287	-1146.3	2388.9	82.04	16.98	33.46	803
235	27.959	-1021.0	2555.7	82.76	16.86	33.26	797
240	27.635	-897.02	2721.5	83.46	16.75	33.07	790
245	27.317	-774.26	2886.4	84.14	16.64	32.89	784
250	27.004	-652.74	3050.4	84.80	16.53	32.70	778
255	26.696	-532.42	3213.5	85.45	16.43	32.52	772
260	26.393	-413.30	3375.6	86.08	16.33	32.34	767
265	26.095	-295.35	3536.9	86.69	16.24	32.16	761
270	25.801	-178.54	3697.3	87.29	16.15	31.99	756
275	25.513	-62.84	3856.8	87.88	16.06	31.82	752
280	25.229	51.77	4015.4	88.45	15.98	31.65	747
285	24.950	165.29	4173.3	89.01	15.89	31.49	743

Table 15 Thermodynamic properties of argon-Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
290	24.676	277.77	4330.3	89.55	15.82	31.32	739
295	24.406	389.22	4486.5	90.09	15.74	31.16	735
300	24.141	499.67	4641.9	90.61	15.67	31.01	731
310	23.625	717.64	4950.4	91.62	15.53	30.70	724
320	23.126	931.86	5255.9	92.59	15.40	30.40	718
330	22.645	1142.5	5558.5	93.52	15.28	30.11	713
340	22.181	1349.7	5858.2	94.42	15.17	29.83	708
350	21.732	1553.7	6155.1	95.28	15.07	29.56	704
360	21.300	1754.5	6449.4	96.11	14.97	29.30	700
370	20.882	1952.4	6741.1	96.91	14.88	29.04	697
380	20.480	2147.4	7030.3	97.68	14.79	28.80	694
390	20.091	2339.8	7317.1	98.42	14.71	28.56	692
400	19.716	2529.5	7601.5	99.14	14.63	28.33	689
410	19.355	2716.9	7883.6	99.84	14.56	28.10	688
420	19.005	2901.8	8163.5	100.51	14.50	27.88	686
430	18.668	3084.6	8441.3	101.17	14.43	27.67	685
440	18.343	3265.3	8717.0	101.80	14.37	27.47	684
450	18.028	3443.9	8990.7	102.42	14.32	27.27	684
460	17.725	3620.6	9262.5	103.01	14.26	27.08	683
470	17.431	3795.5	9532.4	103.59	14.21	26.90	683
480	17.147	3968.6	9800.5	104.16	14.16	26.72	683
490	16.872	4140.0	10067.	104.71	14.12	26.55	683
500	16.607	4309.9	10331.	105.24	14.07	26.38	683
520	16.101	4645.1	10856.	106.27	13.99	26.07	684
540	15.626	4974.8	11374.	107.25	13.92	25.77	685
560	15.180	5299.5	11887.	108.18	13.85	25.50	687
580	14.760	5619.5	12394.	109.07	13.79	25.24	689
600	14.365	5935.3	12897.	109.92	13.73	25.01	692
620	13.991	6247.3	13395.	110.74	13.68	24.78	695
640	13.638	6555.7	13888.	111.52	13.63	24.58	697
660	13.303	6860.8	14378.	112.28	13.58	24.38	700
680	12.986	7163.0	14864.	113.00	13.54	24.20	704
700	12.685	7462.3	15346.	113.70	13.50	24.03	707
720	12.398	7759.1	15825.	114.37	13.47	23.87	710
740	12.125	8053.6	16301.	115.03	13.43	23.72	714
760	11.865	8345.8	16774.	115.66	13.40	23.58	718
780	11.617	8636.0	17244.	116.27	13.37	23.45	721
800	11.379	8924.3	17712.	116.86	13.34	23.33	725
850	10.829	9637.4	18872.	118.27	13.28	23.05	735
900	10.334	10341.	20018.	119.58	13.22	22.82	744
950	9.8845	11037.	21154.	120.81	13.17	22.61	754

Table 15 Thermodynamic properties of argon-Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
1000	9.4752	11726.	22280.	121.96	13.13	22.43	764
1050	9.1005	12409.	23397.	123.05	13.09	22.27	774
1100	8.7560	13087.	24508.	124.08	13.06	22.14	784
1150	8.4381	13760.	25611.	125.06	13.02	22.01	794
1200	8.1436	14430.	26709.	126.00	13.00	21.91	803
			150.00 MPa Isobar				
* 117.24	38.644	-4470.5	-588.87	55.44	21.94	34.77	1150
118	38.590	-4449.3	-562.30	55.66	21.89	34.79	1149
120	38.450	-4393.8	-492.68	56.25	21.77	34.83	1145
122	38.310	-4338.4	-422.97	56.82	21.65	34.87	1141
124	38.169	-4283.0	-353.19	57.39	21.53	34.91	1137
126	38.029	-4227.7	-283.33	57.95	21.43	34.95	1134
128	37.889	-4172.4	-213.40	58.50	21.32	34.98	1130
130	37.748	-4117.1	-143.41	59.04	21.23	35.01	1126
132	37.608	-4061.9	-73.35	59.58	21.14	35.04	1122
134	37.468	-4006.7	-3.24	60.11	21.05	35.06	1118
136	37.328	-3951.6	66.90	60.63	20.96	35.08	1114
138	37.188	-3896.5	137.07	61.14	20.88	35.10	1110
140	37.049	-3841.4	207.29	61.64	20.79	35.10	1106
142	36.910	-3786.5	277.49	62.14	20.72	35.11	1102
144	36.771	-3731.6	347.71	62.63	20.64	35.11	1098
146	36.633	-3676.8	417.92	63.12	20.56	35.10	1094
148	36.495	-3622.1	488.12	63.59	20.49	35.09	1090
150	36.357	-3567.5	558.30	64.06	20.41	35.08	1086
152	36.220	-3512.9	628.44	64.53	20.34	35.06	1082
154	36.083	-3458.5	698.54	64.99	20.27	35.04	1078
156	35.947	-3404.2	768.60	65.44	20.20	35.01	1074
158	35.811	-3350.0	838.59	65.89	20.13	34.98	1070
160	35.676	-3296.0	908.55	66.33	20.06	34.95	1066
162	35.542	-3242.0	978.39	66.76	20.00	34.91	1062
164	35.408	-3188.2	1048.2	67.19	19.93	34.87	1058
166	35.274	-3134.5	1117.9	67.61	19.86	34.82	1054
168	35.142	-3081.0	1187.5	68.03	19.79	34.78	1050
170	35.009	-3027.6	1257.0	68.44	19.73	34.73	1047
172	34.878	-2974.4	1326.4	68.84	19.66	34.67	1043
174	34.747	-2921.3	1395.7	69.24	19.60	34.62	1039
176	34.617	-2868.4	1464.8	69.64	19.53	34.56	1036
178	34.487	-2815.6	1533.9	70.03	19.47	34.50	1032
180	34.358	-2763.0	1602.8	70.41	19.41	34.44	1028

Table 15 Thermodynamic properties of argon-Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
185	34.038	-2632.2	1774.6	71.36	19.25	34.28	1020
190	33.723	-2502.5	1945.6	72.27	19.10	34.10	1011
195	33.411	-2373.8	2115.7	73.15	18.95	33.93	1003
200	33.104	-2246.3	2284.8	74.01	18.80	33.74	995
205	32.802	-2119.9	2453.0	74.84	18.66	33.55	987
210	32.503	-1994.6	2620.3	75.65	18.51	33.36	979
215	32.209	-1870.4	2786.7	76.43	18.38	33.17	972
220	31.919	-1747.4	2952.1	77.19	18.24	32.98	965
225	31.633	-1625.4	3116.5	77.93	18.11	32.79	958
230	31.351	-1504.6	3279.9	78.65	17.98	32.60	951
235	31.073	-1384.8	3442.5	79.34	17.86	32.41	945
240	30.800	-1266.1	3604.1	80.03	17.74	32.23	939
245	30.530	-1148.5	3764.7	80.69	17.62	32.04	933
250	30.264	-1031.9	3924.5	81.33	17.51	31.87	927
255	30.002	-916.28	4083.4	81.96	17.40	31.69	922
260	29.744	-801.67	4241.4	82.58	17.29	31.52	917
265	29.489	-688.04	4398.6	83.18	17.19	31.35	911
270	29.238	-575.35	4554.9	83.76	17.09	31.18	906
275	28.991	-463.61	4710.4	84.33	16.99	31.02	902
280	28.747	-352.77	4865.1	84.89	16.89	30.86	897
285	28.507	-242.82	5019.1	85.43	16.80	30.71	893
290	28.270	-133.73	5172.2	85.97	16.71	30.56	889
295	28.037	-25.49	5324.7	86.49	16.63	30.41	884
300	27.806	81.91	5476.4	87.00	16.54	30.27	881
310	27.356	294.32	5777.7	87.98	16.38	29.99	873
320	26.918	503.66	6076.3	88.93	16.23	29.73	866
330	26.491	710.07	6372.3	89.84	16.09	29.48	860
340	26.077	913.68	6665.9	90.72	15.96	29.24	854
350	25.674	1114.6	6957.1	91.56	15.84	29.01	849
360	25.282	1313.1	7246.1	92.38	15.72	28.79	844
370	24.901	1509.0	7532.9	93.16	15.61	28.58	839
380	24.530	1702.7	7817.7	93.92	15.50	28.38	835
390	24.169	1894.2	8100.5	94.66	15.41	28.19	831
400	23.818	2083.6	8381.4	95.37	15.31	28.00	828
410	23.476	2271.0	8660.5	96.06	15.23	27.82	825
420	23.143	2456.4	8937.9	96.73	15.14	27.65	822
430	22.819	2640.0	9213.5	97.38	15.06	27.48	819
440	22.503	2821.8	9487.6	98.01	14.99	27.32	817
450	22.196	3001.9	9760.0	98.62	14.92	27.17	815
460	21.896	3180.4	10031.	99.21	14.85	27.02	813
470	21.605	3357.4	10300.	99.79	14.79	26.87	811

Table 15 Thermodynamic properties of argon-Continued

Temperature K	Density mol/dm^3	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
480	21.320	3532.9	10568.	100.36	14.73	26.73	810
490	21.044	3706.9	10835.	100.91	14.67	26.59	809
500	20.774	3879.5	11100.	101.44	14.61	26.46	808
520	20.254	4220.9	11627.	102.48	14.51	26.21	806
540	19.760	4557.3	12149.	103.46	14.42	25.97	805
560	19.289	4889.2	12666.	104.40	14.33	25.74	804
580	18.841	5216.9	13178.	105.30	14.25	25.53	804
600	18.414	5540.6	13687.	106.16	14.18	25.32	804
620	18.006	5860.8	14191.	106.99	14.11	25.13	805
640	17.617	6177.5	14692.	107.78	14.05	24.95	806
660	17.245	6491.0	15189.	108.55	13.99	24.77	807
680	16.889	6801.6	15683.	109.29	13.94	24.61	808
700	16.549	7109.4	16173.	110.00	13.89	24.45	810
720	16.223	7414.7	16661.	110.68	13.84	24.30	812
740	15.910	7717.5	17146.	111.35	13.79	24.16	814
760	15.610	8018.0	17628.	111.99	13.75	24.03	816
780	15.321	8316.4	18107.	112.61	13.71	23.90	818
800	15.044	8612.8	18584.	113.22	13.68	23.78	821
850	14.396	9345.7	19765.	114.65	13.59	23.50	827
900	13.805	10068.	20934.	115.99	13.52	23.25	834
950	13.264	10782.	22091.	117.24	13.45	23.03	841
1000	12.767	11488.	23238.	118.41	13.40	22.84	849
1050	12.308	12188.	24375.	119.52	13.34	22.66	857
1100	11.883	12881.	25504.	120.57	13.30	22.50	865
1150	11.488	13569.	26625.	121.57	13.26	22.36	873
1200	11.121	14252.	27740.	122.52	13.22	22.24	881
200.00 MPa Isobar							
* 127.22	39.376	-4307.2	772.14	56.09	21.83	34.01	1230
128	39.327	-4286.9	798.58	56.30	21.80	34.04	1229
130	39.204	-4234.8	866.70	56.82	21.72	34.09	1226
132	39.080	-4182.8	934.94	57.34	21.64	34.15	1222
134	38.956	-4130.7	1003.3	57.86	21.57	34.20	1219
136	38.833	-4078.6	1071.8	58.37	21.50	34.24	1216
138	38.709	-4026.5	1140.3	58.87	21.43	34.28	1212
140	38.586	-3974.4	1208.8	59.36	21.36	34.31	1209
142	38.463	-3922.3	1277.5	59.85	21.30	34.34	1205
144	38.340	-3870.2	1346.2	60.33	21.23	34.37	1202
146	38.218	-3818.2	1415.0	60.80	21.17	34.39	1198

Table 15 Thermodynamic properties of argon-Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
148	38.096	-3766.2	1483.7	61.27	21.11	34.40	1195
150	37.974	-3714.2	1552.6	61.73	21.05	34.41	1191
152	37.852	-3662.3	1621.4	62.19	20.99	34.41	1188
154	37.731	-3610.5	1690.2	62.64	20.93	34.41	1184
156	37.610	-3558.7	1759.0	63.08	20.88	34.41	1181
158	37.490	-3506.9	1827.8	63.52	20.82	34.40	1177
160	37.370	-3455.3	1896.6	63.95	20.76	34.38	1174
162	37.251	-3403.7	1965.4	64.38	20.70	34.36	1170
164	37.132	-3352.2	2034.1	64.80	20.64	34.34	1167
166	37.013	-3300.8	2102.7	65.22	20.59	34.31	1163
168	36.895	-3249.4	2171.3	65.63	20.53	34.28	1160
170	36.778	-3198.2	2239.8	66.03	20.47	34.25	1156
172	36.661	-3147.1	2308.3	66.43	20.41	34.21	1153
174	36.545	-3096.1	2376.7	66.83	20.36	34.17	1149
176	36.429	-3045.2	2445.0	67.22	20.30	34.13	1146
178	36.313	-2994.4	2513.2	67.60	20.24	34.08	1143
180	36.199	-2943.8	2581.3	67.98	20.19	34.03	1139
185	35.914	-2817.7	2751.1	68.91	20.04	33.90	1131
190	35.633	-2692.5	2920.2	69.82	19.90	33.75	1123
195	35.356	-2568.1	3088.6	70.69	19.76	33.60	1116
200	35.083	-2444.7	3256.2	71.54	19.62	33.43	1108
205	34.813	-2322.1	3422.9	72.36	19.48	33.26	1101
210	34.547	-2200.5	3588.8	73.16	19.35	33.09	1094
215	34.284	-2079.9	3753.8	73.94	19.21	32.91	1087
220	34.025	-1960.2	3917.9	74.69	19.08	32.73	1080
225	33.770	-1841.4	4081.1	75.43	18.95	32.55	1074
230	33.518	-1723.6	4243.3	76.14	18.82	32.36	1067
235	33.270	-1606.8	4404.7	76.83	18.69	32.18	1061
240	33.025	-1490.9	4565.2	77.51	18.57	32.00	1055
245	32.783	-1376.0	4724.7	78.17	18.45	31.82	1050
250	32.545	-1261.9	4883.4	78.81	18.33	31.65	1044
255	32.310	-1148.8	5041.2	79.43	18.22	31.47	1039
260	32.079	-1036.6	5198.1	80.04	18.10	31.30	1034
265	31.850	-925.19	5354.2	80.64	17.99	31.13	1029
270	31.625	-814.69	5509.4	81.22	17.89	30.97	1024
275	31.403	-705.03	5663.9	81.78	17.78	30.81	1019
280	31.183	-596.20	5817.5	82.34	17.68	30.65	1015
285	30.967	-488.16	5970.4	82.88	17.58	30.49	1010
290	30.753	-380.92	6122.5	83.41	17.48	30.34	1006
295	30.542	-274.45	6273.8	83.93	17.39	30.20	1002
300	30.334	-168.73	6424.4	84.43	17.30	30.05	998

Table 15 Thermodynamic properties of argon-Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
310	29.926	40.51	6723.6	85.41	17.12	29.78	990
320	29.529	246.96	7020.0	86.35	16.96	29.51	983
330	29.141	450.74	7313.9	87.26	16.80	29.26	977
340	28.763	651.96	7605.4	88.13	16.65	29.03	971
350	28.394	850.77	7894.5	88.97	16.51	28.80	965
360	28.034	1047.3	8181.4	89.78	16.38	28.59	960
370	27.683	1241.6	8466.3	90.56	16.25	28.38	955
380	27.340	1433.8	8749.1	91.31	16.14	28.19	950
390	27.005	1624.0	9030.1	92.04	16.02	28.00	946
400	26.678	1812.3	9309.2	92.75	15.92	27.83	942
410	26.358	1998.8	9586.7	93.43	15.81	27.66	938
420	26.045	2183.5	9862.5	94.10	15.72	27.50	934
430	25.740	2366.6	10137.	94.74	15.63	27.34	931
440	25.441	2548.1	10409.	95.37	15.54	27.20	928
450	25.149	2728.1	10681.	95.98	15.46	27.05	925
460	24.864	2906.6	10950.	96.57	15.38	26.92	923
470	24.584	3083.6	11219.	97.15	15.30	26.78	920
480	24.311	3259.4	11486.	97.71	15.23	26.66	918
490	24.043	3433.8	11752.	98.26	15.16	26.54	916
500	23.782	3607.0	12017.	98.79	15.10	26.42	914
520	23.275	3949.9	12543.	99.83	14.98	26.19	911
540	22.789	4288.3	13065.	100.81	14.86	25.98	909
560	22.322	4622.5	13582.	101.75	14.76	25.78	907
580	21.875	4953.0	14096.	102.65	14.67	25.59	905
600	21.445	5279.8	14606.	103.52	14.58	25.41	904
620	21.032	5603.2	15112.	104.35	14.50	25.24	903
640	20.636	5923.5	15616.	105.15	14.42	25.08	903
660	20.254	6240.8	16116.	105.92	14.35	24.93	903
680	19.886	6555.4	16613.	106.66	14.29	24.78	903
700	19.532	6867.3	17107.	107.37	14.23	24.64	903
720	19.191	7176.8	17598.	108.07	14.17	24.50	904
740	18.863	7484.0	18087.	108.74	14.12	24.37	905
760	18.546	7788.9	18573.	109.38	14.07	24.25	906
780	18.240	8091.8	19057.	110.01	14.02	24.13	907
800	17.944	8392.8	19539.	110.62	13.97	24.02	908
850	17.248	9137.1	20733.	112.07	13.87	23.76	912
900	16.607	9871.3	21915.	113.42	13.78	23.52	917
950	16.015	10597.	23085.	114.69	13.71	23.30	922
1000	15.466	11314.	24245.	115.88	13.64	23.11	928
1050	14.956	12024.	25396.	117.00	13.57	22.93	934
1100	14.481	12728.	26539.	118.06	13.52	22.77	940

Table 15 Thermodynamic properties of argon-Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
1150	14.038	13426.	27673.	119.07	13.46	22.62	947
1200	13.622	14119.	28801.	120.03	13.42	22.49	953
			250.00 MPa Isobar				
* 136.79	40.021	-4137.7	2109.0	56.68	21.85	33.61	1303
138	39.954	-4107.7	2149.6	56.97	21.82	33.65	1301
140	39.842	-4057.9	2216.9	57.46	21.77	33.71	1298
142	39.731	-4008.0	2284.4	57.93	21.73	33.76	1295
144	39.619	-3958.1	2352.0	58.41	21.68	33.81	1292
146	39.508	-3908.2	2419.6	58.87	21.63	33.86	1288
148	39.397	-3858.3	2487.4	59.33	21.59	33.90	1285
150	39.286	-3808.3	2555.2	59.79	21.54	33.93	1282
152	39.176	-3758.4	2623.1	60.24	21.50	33.95	1279
154	39.066	-3708.4	2691.1	60.68	21.45	33.98	1275
156	38.956	-3658.5	2759.0	61.12	21.41	33.99	1272
158	38.846	-3608.6	2827.0	61.55	21.36	34.00	1269
160	38.737	-3558.7	2895.0	61.98	21.32	34.01	1266
162	38.628	-3508.9	2963.0	62.41	21.27	34.01	1262
164	38.520	-3459.1	3031.0	62.82	21.22	34.00	1259
166	38.412	-3409.3	3099.1	63.23	21.18	34.00	1256
168	38.305	-3359.6	3167.0	63.64	21.13	33.98	1253
170	38.197	-3310.0	3235.0	64.04	21.08	33.96	1249
172	38.091	-3260.4	3302.9	64.44	21.03	33.94	1246
174	37.985	-3210.9	3370.7	64.83	20.98	33.92	1243
176	37.879	-3161.4	3438.6	65.22	20.93	33.89	1240
178	37.773	-3112.1	3506.3	65.60	20.88	33.86	1237
180	37.669	-3062.8	3574.0	65.98	20.83	33.82	1234
185	37.409	-2940.1	3742.9	66.91	20.71	33.72	1226
190	37.152	-2817.9	3911.2	67.80	20.58	33.61	1218
195	36.898	-2696.5	4078.9	68.68	20.45	33.47	1211
200	36.648	-2575.8	4245.9	69.52	20.32	33.33	1204
205	36.401	-2455.8	4412.2	70.34	20.19	33.18	1197
210	36.157	-2336.6	4577.7	71.14	20.06	33.02	1190
215	35.916	-2218.3	4742.4	71.92	19.93	32.86	1183
220	35.679	-2100.7	4906.3	72.67	19.80	32.69	1177
225	35.444	-1984.0	5069.4	73.40	19.67	32.52	1171
230	35.213	-1868.2	5231.5	74.11	19.54	32.35	1164
235	34.985	-1753.2	5392.8	74.81	19.42	32.17	1159
240	34.760	-1639.0	5553.2	75.48	19.29	32.00	1153

Table 15 Thermodynamic properties of argon-Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
245	34.538	-1525.7	5712.8	76.14	19.17	31.82	1147
250	34.319	-1413.2	5871.5	76.78	19.05	31.65	1142
255	34.103	-1301.5	6029.3	77.41	18.93	31.48	1137
260	33.889	-1190.7	6186.3	78.02	18.81	31.31	1132
265	33.679	-1080.7	6342.4	78.61	18.70	31.14	1127
270	33.471	-971.45	6497.7	79.19	18.59	30.98	1122
275	33.266	-863.01	6652.1	79.76	18.48	30.82	1117
280	33.064	-755.33	6805.8	80.31	18.37	30.66	1113
285	32.864	-648.41	6958.7	80.86	18.27	30.50	1109
290	32.667	-542.23	7110.9	81.38	18.17	30.35	1104
295	32.472	-436.77	7262.2	81.90	18.07	30.20	1100
300	32.280	-332.02	7412.9	82.41	17.97	30.05	1096
310	31.902	-124.59	7712.0	83.39	17.78	29.77	1089
320	31.533	80.18	8008.4	84.33	17.60	29.50	1082
330	31.173	282.42	8302.1	85.23	17.43	29.25	1075
340	30.822	482.25	8593.4	86.10	17.27	29.01	1069
350	30.478	679.77	8882.3	86.94	17.12	28.78	1063
360	30.143	875.09	9169.0	87.75	16.97	28.56	1057
370	29.815	1068.3	9453.5	88.53	16.83	28.35	1052
380	29.494	1259.6	9736.0	89.28	16.70	28.15	1047
390	29.179	1448.9	10017.	90.01	16.58	27.97	1043
400	28.872	1636.4	10295.	90.72	16.46	27.79	1038
410	28.571	1822.2	10572.	91.40	16.35	27.62	1034
420	28.276	2006.3	10848.	92.06	16.24	27.46	1030
430	27.987	2188.9	11122.	92.71	16.14	27.30	1027
440	27.704	2369.9	11394.	93.33	16.04	27.15	1024
450	27.427	2549.5	11665.	93.94	15.94	27.01	1020
460	27.155	2727.7	11934.	94.53	15.86	26.88	1017
470	26.889	2904.6	12202.	95.11	15.77	26.75	1015
480	26.627	3080.2	12469.	95.67	15.69	26.63	1012
490	26.371	3254.6	12735.	96.22	15.61	26.51	1010
500	26.119	3427.8	12999.	96.76	15.54	26.39	1007
520	25.631	3770.9	13525.	97.79	15.40	26.18	1003
540	25.160	4109.8	14046.	98.77	15.27	25.97	1000
560	24.706	4444.8	14564.	99.71	15.15	25.79	997
580	24.268	4776.2	15078.	100.61	15.05	25.61	994
600	23.845	5104.2	15588.	101.48	14.95	25.44	992
620	23.438	5429.0	16096.	102.31	14.85	25.29	991
640	23.044	5750.9	16600.	103.11	14.77	25.14	989
660	22.663	6070.0	17101.	103.88	14.69	24.99	988
680	22.295	6386.5	17600.	104.63	14.61	24.86	987

Table 15 Thermodynamic properties of argon-Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
700	21.939	6700.5	18095.	105.34	14.54	24.73	987
720	21.595	7012.1	18589.	106.04	14.47	24.61	987
740	21.262	7321.6	19080.	106.71	14.41	24.49	987
760	20.939	7629.0	19568.	107.36	14.35	24.37	987
780	20.626	7934.4	20055.	108.00	14.30	24.26	987
800	20.323	8237.9	20539.	108.61	14.25	24.16	988
850	19.605	8989.0	21741.	110.07	14.13	23.91	990
900	18.939	9730.3	22931.	111.43	14.03	23.69	993
950	18.319	10463.	24110.	112.70	13.94	23.49	997
1000	17.740	11187.	25280.	113.90	13.85	23.30	1001
1050	17.200	11905.	26440.	115.03	13.78	23.12	1005
1100	16.693	12616.	27592.	116.11	13.72	22.96	1010
1150	16.218	13322.	28737.	117.12	13.66	22.82	1016
1200	15.771	14022.	29874.	118.09	13.60	22.68	1021
			300.00 MPa Isobar				
* 145.71	40.616	-3970.7	3415.5	57.15	21.99	33.41	1369
146	40.602	-3963.7	3425.2	57.21	21.99	33.42	1368
148	40.499	-3915.5	3492.1	57.67	21.96	33.48	1365
150	40.397	-3867.2	3559.1	58.12	21.93	33.54	1362
152	40.295	-3818.9	3626.2	58.56	21.90	33.59	1359
154	40.193	-3770.5	3693.4	59.00	21.87	33.63	1356
156	40.092	-3722.1	3760.7	59.44	21.84	33.67	1353
158	39.991	-3673.7	3828.1	59.87	21.81	33.70	1350
160	39.890	-3625.2	3895.5	60.29	21.77	33.72	1347
162	39.789	-3576.8	3963.0	60.71	21.74	33.74	1344
164	39.689	-3528.3	4030.5	61.12	21.70	33.76	1341
166	39.589	-3479.9	4098.0	61.53	21.67	33.77	1338
168	39.489	-3431.5	4165.6	61.94	21.63	33.77	1335
170	39.390	-3383.1	4233.1	62.34	21.59	33.77	1332
172	39.291	-3334.7	4300.6	62.73	21.56	33.77	1329
174	39.193	-3286.4	4368.2	63.12	21.52	33.76	1326
176	39.094	-3238.1	4435.6	63.51	21.47	33.74	1322
178	38.997	-3189.8	4503.2	63.89	21.43	33.72	1319
180	38.900	-3141.6	4570.6	64.26	21.39	33.70	1316
185	38.658	-3021.4	4738.9	65.19	21.28	33.63	1309
190	38.420	-2901.7	4906.9	66.08	21.17	33.55	1302
195	38.184	-2782.4	5074.4	66.95	21.05	33.44	1295
200	37.951	-2663.7	5241.3	67.80	20.93	33.32	1288
205	37.721	-2545.7	5407.6	68.62	20.81	33.19	1281

Table 15 Thermodynamic properties of argon-Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
210	37.494	-2428.2	5573.2	69.42	20.69	33.05	1274
215	37.269	-2311.5	5738.0	70.19	20.56	32.90	1268
220	37.048	-2195.5	5902.2	70.95	20.44	32.75	1261
225	36.829	-2080.2	6065.5	71.68	20.31	32.59	1255
230	36.614	-1965.7	6228.0	72.40	20.19	32.42	1249
235	36.401	-1851.9	6389.7	73.09	20.06	32.26	1244
240	36.191	-1738.9	6550.6	73.77	19.94	32.09	1238
245	35.983	-1626.7	6710.6	74.43	19.81	31.92	1232
250	35.778	-1515.2	6869.7	75.07	19.69	31.75	1227
255	35.576	-1404.5	7028.1	75.70	19.57	31.58	1222
260	35.377	-1294.6	7185.6	76.31	19.45	31.42	1217
265	35.180	-1185.4	7342.3	76.91	19.34	31.25	1212
270	34.985	-1076.9	7498.1	77.49	19.22	31.09	1207
275	34.793	-969.24	7653.1	78.06	19.11	30.92	1203
280	34.604	-862.27	7807.3	78.62	19.00	30.76	1199
285	34.417	-756.01	7960.7	79.16	18.89	30.61	1194
290	34.232	-650.46	8113.4	79.69	18.78	30.45	1190
295	34.049	-545.59	8265.3	80.21	18.68	30.30	1186
300	33.868	-441.41	8416.5	80.72	18.58	30.16	1182
310	33.514	-235.02	8716.6	81.70	18.38	29.87	1174
320	33.167	-31.19	9013.9	82.64	18.19	29.60	1167
330	32.829	170.19	9308.5	83.55	18.01	29.33	1161
340	32.498	369.23	9600.6	84.42	17.83	29.08	1154
350	32.174	566.03	9890.2	85.26	17.67	28.85	1148
360	31.858	760.70	10178.	86.07	17.51	28.62	1143
370	31.548	953.33	10463.	86.85	17.36	28.41	1137
380	31.244	1144.0	10746.	87.61	17.22	28.21	1132
390	30.947	1332.8	11027.	88.34	17.08	28.01	1128
400	30.656	1519.9	11306.	89.05	16.96	27.83	1123
410	30.370	1705.3	11583.	89.73	16.83	27.65	1119
420	30.090	1889.0	11859.	90.40	16.71	27.49	1115
430	29.815	2071.2	12133.	91.04	16.60	27.33	1111
440	29.546	2252.0	12406.	91.67	16.49	27.18	1108
450	29.281	2431.3	12677.	92.28	16.39	27.03	1104
460	29.022	2609.3	12946.	92.87	16.29	26.90	1101
470	28.767	2786.0	13215.	93.45	16.20	26.76	1098
480	28.516	2961.4	13482.	94.01	16.11	26.64	1095
490	28.270	3135.7	13748.	94.56	16.02	26.52	1092
500	28.029	3308.8	14012.	95.09	15.94	26.40	1090
520	27.558	3651.8	14538.	96.12	15.79	26.19	1085
540	27.103	3990.8	15060.	97.11	15.65	25.99	1081

Table 15 Thermodynamic properties of argon-Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
560	26.663	4326.0	15578.	98.05	15.52	25.80	1078
580	26.237	4657.7	16092.	98.95	15.39	25.63	1075
600	25.825	4986.2	16603.	99.82	15.28	25.47	1072
620	25.426	5311.6	17111.	100.65	15.18	25.31	1069
640	25.039	5634.2	17615.	101.45	15.08	25.17	1067
660	24.664	5954.2	18117.	102.22	14.99	25.03	1066
680	24.301	6271.6	18617.	102.97	14.91	24.91	1064
700	23.948	6586.7	19114.	103.69	14.83	24.78	1063
720	23.606	6899.5	19608.	104.38	14.75	24.67	1063
740	23.273	7210.2	20100.	105.06	14.68	24.56	1062
760	22.951	7518.9	20590.	105.71	14.62	24.45	1061
780	22.637	7825.7	21078.	106.35	14.56	24.35	1061
800	22.332	8130.7	21564.	106.96	14.50	24.25	1061
850	21.606	8885.9	22771.	108.42	14.37	24.02	1062
900	20.928	9631.6	23966.	109.79	14.25	23.81	1064
950	20.293	10369.	25152.	111.07	14.15	23.61	1066
1000	19.698	11098.	26328.	112.28	14.06	23.43	1069
1050	19.139	11821.	27495.	113.42	13.97	23.27	1072
1100	18.613	12537.	28655.	114.50	13.90	23.11	1076
1150	18.117	13248.	29807.	115.52	13.83	22.97	1080
1200	17.649	13953.	30952.	116.50	13.77	22.84	1085
			350.00 MPa Isobar				
* 154.64	41.143	-3791.6	4715.4	57.66	22.21	33.35	1428
156	41.078	-3759.6	4760.7	57.95	22.20	33.39	1426
158	40.984	-3712.5	4827.5	58.38	22.18	33.44	1423
160	40.890	-3665.2	4894.4	58.80	22.16	33.48	1420
162	40.795	-3618.0	4961.4	59.21	22.14	33.52	1417
164	40.702	-3570.7	5028.5	59.62	22.11	33.56	1414
166	40.608	-3523.3	5095.6	60.03	22.09	33.58	1412
168	40.515	-3476.0	5162.8	60.43	22.06	33.60	1409
170	40.422	-3428.6	5230.1	60.83	22.04	33.62	1406
172	40.329	-3381.3	5297.4	61.22	22.01	33.63	1403
174	40.237	-3333.9	5364.6	61.61	21.98	33.64	1400
176	40.145	-3286.5	5431.9	62.00	21.95	33.64	1397
178	40.053	-3239.2	5499.1	62.38	21.91	33.63	1394
180	39.962	-3191.9	5566.4	62.75	21.88	33.63	1391
185	39.736	-3073.8	5734.4	63.67	21.79	33.59	1384
190	39.512	-2955.9	5902.3	64.57	21.69	33.53	1377

Table 15 Thermodynamic properties of argon-Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
195	39.290	-2838.4	6069.7	65.44	21.59	33.45	1370
200	39.071	-2721.4	6236.7	66.29	21.48	33.35	1363
205	38.855	-2604.8	6403.2	67.11	21.37	33.24	1356
210	38.641	-2488.7	6569.1	67.91	21.25	33.12	1350
215	38.430	-2373.3	6734.3	68.68	21.13	32.98	1343
220	38.221	-2258.4	6898.9	69.44	21.01	32.84	1337
225	38.015	-2144.2	7062.8	70.18	20.89	32.69	1331
230	37.812	-2030.6	7225.9	70.89	20.77	32.54	1325
235	37.611	-1917.8	7388.2	71.59	20.65	32.38	1319
240	37.412	-1805.6	7549.6	72.27	20.52	32.22	1314
245	37.217	-1694.1	7710.3	72.94	20.40	32.06	1309
250	37.023	-1583.3	7870.2	73.58	20.28	31.90	1303
255	36.832	-1473.3	8029.3	74.21	20.16	31.73	1298
260	36.644	-1363.9	8187.6	74.83	20.04	31.57	1293
265	36.458	-1255.3	8345.0	75.43	19.92	31.40	1289
270	36.274	-1147.3	8501.6	76.01	19.80	31.24	1284
275	36.092	-1040.1	8657.4	76.58	19.68	31.08	1279
280	35.913	-933.53	8812.4	77.14	19.57	30.92	1275
285	35.735	-827.67	8966.6	77.69	19.46	30.76	1271
290	35.560	-722.48	9120.0	78.22	19.35	30.61	1266
295	35.387	-617.96	9272.7	78.74	19.24	30.46	1262
300	35.216	-514.09	9424.6	79.25	19.13	30.31	1259
310	34.880	-308.27	9726.2	80.24	18.92	30.02	1251
320	34.551	-104.94	10025.	81.19	18.73	29.74	1244
330	34.230	96.01	10321.	82.10	18.54	29.47	1237
340	33.916	294.66	10614.	82.98	18.35	29.21	1231
350	33.608	491.13	10905.	83.82	18.18	28.97	1225
360	33.307	685.49	11194.	84.63	18.01	28.74	1219
370	33.012	877.85	11480.	85.42	17.85	28.52	1214
380	32.723	1068.3	11764.	86.18	17.70	28.31	1209
390	32.439	1256.9	12046.	86.91	17.55	28.11	1204
400	32.161	1443.8	12326.	87.62	17.41	27.92	1199
410	31.889	1628.9	12605.	88.31	17.28	27.74	1195
420	31.621	1812.5	12881.	88.97	17.15	27.56	1191
430	31.358	1994.6	13156.	89.62	17.03	27.40	1187
440	31.100	2175.2	13429.	90.25	16.92	27.24	1183
450	30.847	2354.4	13701.	90.86	16.81	27.09	1179
460	30.598	2532.3	13971.	91.45	16.70	26.95	1176
470	30.353	2708.9	14240.	92.03	16.60	26.82	1173
480	30.112	2884.2	14507.	92.59	16.50	26.69	1170
490	29.876	3058.4	14774.	93.14	16.41	26.56	1167

Table 15 Thermodynamic properties of argon-Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
500	29.643	3231.5	15039.	93.68	16.32	26.45	1164
520	29.189	3574.5	15565.	94.71	16.15	26.22	1159
540	28.749	3913.4	16088.	95.70	15.99	26.02	1155
560	28.323	4248.7	16606.	96.64	15.85	25.83	1151
580	27.909	4580.6	17121.	97.54	15.72	25.66	1147
600	27.508	4909.3	17633.	98.41	15.60	25.50	1144
620	27.119	5235.0	18141.	99.24	15.48	25.35	1141
640	26.741	5557.9	18647.	100.05	15.38	25.20	1139
660	26.373	5878.3	19149.	100.82	15.28	25.07	1137
680	26.016	6196.2	19649.	101.57	15.18	24.94	1135
700	25.669	6511.8	20147.	102.29	15.10	24.83	1133
720	25.331	6825.2	20643.	102.98	15.01	24.71	1132
740	25.002	7136.6	21136.	103.66	14.94	24.60	1131
760	24.682	7446.1	21627.	104.31	14.87	24.50	1130
780	24.370	7753.7	22116.	104.95	14.80	24.40	1129
800	24.066	8059.6	22603.	105.57	14.73	24.31	1129
850	23.340	8817.2	23813.	107.03	14.59	24.09	1129
900	22.659	9565.6	25012.	108.40	14.46	23.89	1129
950	22.018	10306.	26202.	109.69	14.35	23.70	1130
1000	21.414	11039.	27383.	110.90	14.25	23.53	1132
1050	20.845	11765.	28556.	112.05	14.15	23.38	1135
1100	20.306	12485.	29721.	113.13	14.07	23.23	1138
1150	19.797	13199.	30879.	114.16	14.00	23.09	1141
1200	19.314	13908.	32030.	115.14	13.93	22.96	1145
			400.00 MPa Isobar				
* 163.31	41.628	-3608.7	6000.2	58.14	22.47	33.36	1483
164	41.598	-3592.7	6023.3	58.28	22.47	33.38	1482
166	41.509	-3546.3	6090.1	58.69	22.45	33.42	1479
168	41.421	-3499.9	6156.9	59.09	22.44	33.46	1476
170	41.334	-3453.5	6223.9	59.48	22.42	33.49	1473
172	41.246	-3407.0	6290.9	59.88	22.40	33.52	1470
174	41.159	-3360.4	6357.9	60.26	22.38	33.54	1467
176	41.072	-3313.9	6425.0	60.65	22.36	33.55	1464
178	40.986	-3267.3	6492.2	61.03	22.34	33.56	1462
180	40.900	-3220.8	6559.3	61.40	22.31	33.57	1459
185	40.686	-3104.4	6727.2	62.32	22.24	33.56	1452
190	40.474	-2988.2	6894.9	63.22	22.16	33.53	1445
195	40.264	-2872.2	7062.4	64.09	22.07	33.47	1438
200	40.056	-2756.4	7229.5	64.93	21.97	33.40	1431

Table 15 Thermodynamic properties of argon-Continued

Temperature K	Density mol/dm^3	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
205	39.851	-2641.1	7396.3	65.76	21.87	33.31	1425
210	39.648	-2526.1	7562.6	66.56	21.76	33.20	1418
215	39.448	-2411.7	7728.3	67.34	21.65	33.08	1412
220	39.250	-2297.7	7893.5	68.10	21.54	32.96	1406
225	39.054	-2184.3	8057.9	68.84	21.42	32.82	1400
230	38.861	-2071.5	8221.6	69.55	21.30	32.68	1394
235	38.670	-1959.3	8384.6	70.26	21.18	32.53	1388
240	38.482	-1847.7	8546.9	70.94	21.06	32.38	1383
245	38.295	-1736.8	8708.4	71.61	20.94	32.22	1378
250	38.111	-1626.5	8869.1	72.25	20.82	32.06	1372
255	37.930	-1516.9	9029.0	72.89	20.69	31.90	1367
260	37.750	-1407.9	9188.1	73.51	20.57	31.74	1363
265	37.573	-1299.6	9346.4	74.11	20.45	31.58	1358
270	37.398	-1192.0	9503.9	74.70	20.33	31.42	1353
275	37.225	-1085.1	9660.5	75.27	20.22	31.26	1349
280	37.054	-978.78	9816.4	75.83	20.10	31.10	1344
285	36.885	-873.14	9971.5	76.38	19.98	30.94	1340
290	36.717	-768.15	10126.	76.92	19.87	30.79	1336
295	36.552	-663.81	10279.	77.45	19.76	30.63	1332
300	36.389	-560.10	10432.	77.96	19.65	30.48	1328
310	36.068	-354.54	10736.	78.95	19.43	30.19	1320
320	35.754	-151.41	11036.	79.91	19.23	29.91	1313
330	35.447	49.38	11334.	80.82	19.03	29.63	1307
340	35.147	247.93	11629.	81.70	18.84	29.37	1300
350	34.853	444.31	11921.	82.55	18.65	29.12	1294
360	34.564	638.61	12211.	83.37	18.48	28.88	1288
370	34.282	830.92	12499.	84.16	18.31	28.66	1283
380	34.005	1021.3	12784.	84.92	18.15	28.44	1278
390	33.733	1209.9	13068.	85.65	17.99	28.23	1273
400	33.467	1396.8	13349.	86.37	17.84	28.03	1268
410	33.205	1582.0	13628.	87.06	17.70	27.85	1264
420	32.948	1765.5	13906.	87.73	17.57	27.67	1259
430	32.695	1947.6	14182.	88.37	17.44	27.50	1255
440	32.447	2128.2	14456.	89.01	17.31	27.34	1252
450	32.203	2307.4	14729.	89.62	17.19	27.18	1248
460	31.963	2485.3	15000.	90.21	17.08	27.03	1245
470	31.728	2661.9	15269.	90.79	16.97	26.89	1241
480	31.496	2837.3	15538.	91.36	16.87	26.76	1238
490	31.267	3011.5	15805.	91.91	16.77	26.63	1235
500	31.042	3184.6	16070.	92.45	16.67	26.51	1232
520	30.603	3527.6	16598.	93.48	16.49	26.28	1227

Table 15 Thermodynamic properties of argon-Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
540	30.177	3866.6	17122.	94.47	16.32	26.07	1222
560	29.764	4202.0	17641.	95.41	16.17	25.88	1218
580	29.362	4534.0	18157.	96.32	16.02	25.70	1214
600	28.972	4862.8	18669.	97.19	15.89	25.54	1211
620	28.592	5188.6	19178.	98.02	15.77	25.38	1208
640	28.223	5511.7	19685.	98.83	15.65	25.24	1205
660	27.863	5832.3	20188.	99.60	15.54	25.11	1202
680	27.513	6150.5	20689.	100.35	15.44	24.98	1200
700	27.172	6466.4	21187.	101.07	15.35	24.86	1198
720	26.839	6780.2	21684.	101.77	15.26	24.75	1196
740	26.515	7091.9	22178.	102.45	15.18	24.65	1195
760	26.199	7401.8	22669.	103.10	15.10	24.55	1194
780	25.891	7709.9	23159.	103.74	15.02	24.45	1193
800	25.590	8016.3	23647.	104.36	14.95	24.36	1192
850	24.869	8775.4	24860.	105.83	14.79	24.15	1191
900	24.189	9525.6	26062.	107.20	14.66	23.95	1190
950	23.546	10268.	27255.	108.49	14.53	23.78	1191
1000	22.939	11003.	28440.	109.71	14.42	23.61	1192
1050	22.364	11731.	29617.	110.85	14.32	23.46	1193
1100	21.819	12454.	30786.	111.94	14.24	23.32	1195
1150	21.302	13171.	31949.	112.98	14.15	23.18	1198
1200	20.810	13883.	33105.	113.96	14.08	23.06	1201
			450.00 MPa Isobar				
* 171.74	42.080	-3422.3	7271.7	58.60	22.75	33.41	1533
172	42.069	-3416.3	7280.4	58.65	22.75	33.41	1533
174	41.987	-3370.6	7347.3	59.04	22.74	33.45	1530
176	41.904	-3324.7	7414.2	59.42	22.73	33.48	1527
178	41.822	-3278.9	7481.2	59.80	22.71	33.50	1524
180	41.740	-3233.0	7548.2	60.17	22.70	33.52	1521
185	41.536	-3118.2	7715.8	61.09	22.64	33.54	1514
190	41.335	-3003.3	7883.5	61.99	22.58	33.54	1508
195	41.135	-2888.6	8051.1	62.86	22.51	33.51	1501
200	40.937	-2774.0	8218.5	63.70	22.42	33.45	1494
205	40.742	-2659.7	8385.6	64.53	22.33	33.38	1488
210	40.548	-2545.7	8552.3	65.33	22.23	33.29	1481
215	40.357	-2432.0	8718.5	66.12	22.13	33.19	1475
220	40.168	-2318.8	8884.2	66.88	22.02	33.08	1469
225	39.981	-2206.1	9049.2	67.62	21.91	32.95	1463

Table 15 Thermodynamic properties of argon-Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
230	39.797	-2093.8	9213.7	68.34	21.79	32.82	1458
235	39.614	-1982.2	9377.5	69.05	21.68	32.68	1452
240	39.434	-1871.0	9540.5	69.73	21.56	32.54	1447
245	39.256	-1760.5	9702.8	70.40	21.44	32.39	1441
250	39.080	-1650.6	9864.4	71.05	21.32	32.23	1436
255	38.906	-1541.3	10025.	71.69	21.19	32.08	1431
260	38.734	-1432.6	10185.	72.31	21.07	31.92	1426
265	38.564	-1324.5	10344.	72.92	20.95	31.76	1421
270	38.397	-1217.1	10503.	73.51	20.83	31.60	1417
275	38.231	-1110.3	10660.	74.09	20.71	31.45	1412
280	38.067	-1004.2	10817.	74.66	20.59	31.29	1408
285	37.905	-898.63	10973.	75.21	20.47	31.13	1404
290	37.745	-793.73	11129.	75.75	20.36	30.98	1400
295	37.586	-689.46	11283.	76.28	20.24	30.82	1396
300	37.430	-585.79	11437.	76.79	20.13	30.67	1392
310	37.122	-380.29	11742.	77.79	19.91	30.38	1384
320	36.821	-177.16	12044.	78.75	19.69	30.09	1377
330	36.526	23.67	12344.	79.67	19.49	29.81	1370
340	36.237	222.28	12641.	80.56	19.29	29.54	1364
350	35.954	418.75	12935.	81.41	19.10	29.29	1358
360	35.677	613.16	13226.	82.24	18.91	29.04	1352
370	35.405	805.59	13516.	83.03	18.74	28.81	1347
380	35.139	996.13	13803.	83.79	18.57	28.59	1341
390	34.877	1184.9	14087.	84.53	18.40	28.37	1336
400	34.620	1371.8	14370.	85.25	18.25	28.17	1332
410	34.368	1557.1	14651.	85.94	18.10	27.98	1327
420	34.120	1740.9	14930.	86.61	17.95	27.79	1323
430	33.876	1923.1	15207.	87.27	17.82	27.62	1319
440	33.637	2103.8	15482.	87.90	17.69	27.45	1315
450	33.401	2283.1	15756.	88.51	17.56	27.29	1311
460	33.170	2461.1	16028.	89.11	17.44	27.14	1308
470	32.942	2637.8	16298.	89.69	17.32	26.99	1304
480	32.717	2813.3	16568.	90.26	17.21	26.85	1301
490	32.496	2987.6	16835.	90.81	17.10	26.72	1298
500	32.279	3160.8	17102.	91.35	17.00	26.59	1295
520	31.853	3503.9	17631.	92.39	16.81	26.35	1290
540	31.440	3843.1	18156.	93.38	16.63	26.14	1285
560	31.038	4178.6	18677.	94.33	16.46	25.94	1280
580	30.647	4510.7	19194.	95.23	16.31	25.76	1276
600	30.267	4839.6	19707.	96.10	16.17	25.59	1272
620	29.897	5165.6	20217.	96.94	16.03	25.43	1269

Table 15 Thermodynamic properties of argon-Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
640	29.536	5488.8	20725.	97.75	15.91	25.28	1266
660	29.184	5809.6	21229.	98.52	15.80	25.15	1263
680	28.841	6127.9	21731.	99.27	15.69	25.02	1261
700	28.507	6444.0	22230.	99.99	15.59	24.90	1259
720	28.180	6757.9	22727.	100.69	15.49	24.79	1257
740	27.861	7069.9	23221.	101.37	15.40	24.68	1255
760	27.550	7380.1	23714.	102.03	15.32	24.58	1253
780	27.246	7688.5	24205.	102.67	15.24	24.49	1252
800	26.948	7995.2	24694.	103.28	15.16	24.40	1251
850	26.234	8755.1	25908.	104.76	14.99	24.19	1249
900	25.558	9506.4	27113.	106.13	14.84	24.00	1248
950	24.918	10250.	28309.	107.43	14.71	23.83	1247
1000	24.311	10986.	29497.	108.65	14.59	23.67	1248
1050	23.734	11716.	30677.	109.80	14.48	23.53	1249
1100	23.185	12440.	31849.	110.89	14.39	23.39	1250
1150	22.663	13159.	33016.	111.93	14.30	23.26	1252
1200	22.165	13874.	34176.	112.91	14.22	23.14	1255
			500.00 MPa Isobar				
* 179.96	42.504	-3232.5	8531.2	59.04	23.04	33.47	1580
180	42.502	-3231.7	8532.4	59.05	23.04	33.47	1580
185	42.308	-3118.3	8699.8	59.96	23.01	33.52	1573
190	42.115	-3004.7	8867.6	60.86	22.96	33.54	1566
195	41.924	-2891.1	9035.3	61.73	22.90	33.54	1559
200	41.735	-2777.5	9202.9	62.58	22.83	33.51	1553
205	41.548	-2664.1	9370.3	63.41	22.75	33.46	1546
210	41.363	-2550.9	9537.4	64.21	22.67	33.39	1540
215	41.179	-2437.9	9704.1	65.00	22.57	33.30	1534
220	40.998	-2325.3	9870.4	65.76	22.47	33.20	1528
225	40.819	2213.2	10036.	66.50	22.36	33.09	1522
230	40.642	-2101.4	10201.	67.23	22.25	32.96	1516
235	40.467	-1990.1	10366.	67.94	22.14	32.83	1511
240	40.294	-1879.4	10530.	68.63	22.02	32.70	1506
245	40.123	-1769.2	10693.	69.30	21.90	32.55	1500
250	39.954	-1659.5	10855.	69.96	21.78	32.41	1495
255	39.787	-1550.4	11017.	70.60	21.66	32.26	1490
260	39.621	-1441.9	11178.	71.22	21.54	32.10	1485
265	39.458	-1334.0	11338.	71.83	21.42	31.95	1481
270	39.297	-1226.7	11497.	72.43	21.30	31.79	1476

Table 15 Thermodynamic properties of argon-Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
275	39.137	-1119.9	11656.	73.01	21.18	31.64	1472
280	38.980	-1013.8	11813.	73.58	21.05	31.48	1467
285	38.824	-908.35	11970.	74.13	20.94	31.32	1463
290	38.669	-803.46	12127.	74.68	20.82	31.17	1459
295	38.517	-699.18	12282.	75.21	20.70	31.02	1455
300	38.366	-595.49	12437.	75.73	20.58	30.86	1451
310	38.070	-389.90	12744.	76.74	20.36	30.57	1443
320	37.779	-186.63	13048.	77.70	20.14	30.28	1436
330	37.495	14.37	13350.	78.63	19.92	30.00	1430
340	37.216	213.18	13648.	79.52	19.72	29.72	1423
350	36.944	409.87	13944.	80.38	19.52	29.46	1417
360	36.676	604.51	14237.	81.21	19.32	29.21	1411
370	36.414	797.18	14528.	82.00	19.14	28.97	1406
380	36.156	987.95	14817.	82.77	18.96	28.74	1400
390	35.903	1176.9	15103.	83.52	18.79	28.53	1395
400	35.655	1364.1	15387.	84.24	18.63	28.32	1391
410	35.411	1549.7	15670.	84.93	18.47	28.12	1386
420	35.171	1733.6	15950.	85.61	18.32	27.93	1382
430	34.935	1916.0	16228.	86.26	18.18	27.74	1378
440	34.703	2097.0	16505.	86.90	18.04	27.57	1374
450	34.475	2276.5	16780.	87.52	17.91	27.40	1370
460	34.251	2454.7	17053.	88.12	17.78	27.25	1366
470	34.030	2631.5	17325.	88.70	17.66	27.10	1363
480	33.812	2807.2	17595.	89.27	17.54	26.95	1360
490	33.598	2981.7	17864.	89.82	17.42	26.81	1357
500	33.386	3155.0	18131.	90.36	17.32	26.68	1354
520	32.973	3498.4	18662.	91.41	17.11	26.44	1348
540	32.571	3837.8	19189.	92.40	16.92	26.21	1343
560	32.180	4173.5	19711.	93.35	16.75	26.01	1338
580	31.800	4505.8	20229.	94.26	16.58	25.82	1334
600	31.429	4834.8	20744.	95.13	16.43	25.64	1330
620	31.067	5161.0	21255.	95.97	16.29	25.48	1326
640	30.715	5484.4	21763.	96.78	16.16	25.33	1323
660	30.371	5805.2	22268.	97.55	16.03	25.19	1320
680	30.035	6123.6	22771.	98.30	15.92	25.06	1317
700	29.707	6439.9	23271.	99.03	15.81	24.94	1315
720	29.386	6754.0	23769.	99.73	15.71	24.83	1313
740	29.073	7066.1	24264.	100.41	15.61	24.72	1311
760	28.766	7376.4	24758.	101.07	15.52	24.62	1309
780	28.467	7684.9	25249.	101.70	15.44	24.53	1308
800	28.174	7991.8	25739.	102.32	15.36	24.44	1306

Table 15 Thermodynamic properties of argon-Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
850	27.468	8752.3	26956.	103.80	15.18	24.23	1304
900	26.798	9504.2	28162.	105.18	15.02	24.05	1302
950	26.161	10248.	29360.	106.47	14.87	23.88	1301
1000	25.556	10986.	30551.	107.70	14.75	23.73	1301
1050	24.980	11717.	31733.	108.85	14.64	23.58	1301
1100	24.430	12442.	32909.	109.94	14.53	23.45	1302
1150	23.906	13163.	34078.	110.98	14.44	23.33	1304
1200	23.404	13878.	35242.	111.97	14.36	23.21	1305
			550.00 MPa Isobar				
* 188.00	42.904	-3039.9	9779.6	59.46	23.33	33.53	1623
190	42.830	-2994.8	9846.8	59.82	23.31	33.55	1621
195	42.647	-2882.2	10015.	60.69	23.27	33.57	1614
200	42.465	-2769.5	10182.	61.54	23.21	33.56	1608
205	42.285	-2656.8	10350.	62.37	23.14	33.53	1601
210	42.107	-2544.3	10518.	63.17	23.07	33.47	1595
215	41.931	-2432.0	10685.	63.96	22.98	33.40	1589
220	41.757	-2320.0	10852.	64.73	22.88	33.31	1583
225	41.584	-2208.3	11018.	65.48	22.78	33.21	1577
230	41.414	-2096.9	11184.	66.20	22.68	33.10	1572
235	41.245	-1986.0	11349.	66.92	22.57	32.98	1566
240	41.078	-1875.5	11514.	67.61	22.46	32.85	1561
245	40.914	-1765.5	11677.	68.28	22.34	32.72	1555
250	40.751	-1656.0	11841.	68.94	22.22	32.58	1550
255	40.590	-1547.1	12003.	69.59	22.10	32.43	1545
260	40.430	-1438.7	12165.	70.22	21.98	32.28	1541
265	40.273	-1330.9	12326.	70.83	21.86	32.13	1536
270	40.117	-1223.6	12486.	71.43	21.74	31.98	1531
275	39.963	-1116.9	12646.	72.01	21.61	31.83	1527
280	39.811	-1010.8	12805.	72.59	21.49	31.67	1523
285	39.660	-905.28	12963.	73.15	21.37	31.52	1518
290	39.511	-800.35	13120.	73.69	21.25	31.36	1514
295	39.364	-696.00	13276.	74.23	21.13	31.21	1510
300	39.218	-592.24	13432.	74.75	21.01	31.06	1506
310	38.932	-386.45	13741.	75.76	20.78	30.76	1499
320	38.651	-182.95	14047.	76.74	20.55	30.47	1492
330	38.376	18.32	14350.	77.67	20.33	30.18	1485
340	38.107	217.42	14651.	78.57	20.12	29.91	1479
350	37.842	414.42	14948.	79.43	19.91	29.64	1472
360	37.583	609.37	15244.	80.26	19.71	29.39	1467

Table 15 Thermodynamic properties of argon-Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
370	37.329	802.36	15536.	81.06	19.52	29.14	1461
380	37.080	993.46	15826.	81.84	19.34	28.91	1456
390	36.835	1182.7	16114.	82.58	19.16	28.68	1451
400	36.594	1370.3	16400.	83.31	18.99	28.47	1446
410	36.357	1556.1	16684.	84.01	18.83	28.26	1441
420	36.125	1740.4	16965.	84.69	18.67	28.07	1437
430	35.896	1923.0	17245.	85.34	18.52	27.88	1433
440	35.671	2104.3	17523.	85.98	18.37	27.70	1429
450	35.449	2284.0	17799.	86.60	18.23	27.53	1425
460	35.231	2462.5	18074.	87.21	18.10	27.37	1421
470	35.017	2639.6	18346.	87.79	17.97	27.21	1418
480	34.805	2815.5	18618.	88.37	17.85	27.06	1415
490	34.597	2990.2	18888.	88.92	17.73	26.92	1411
500	34.391	3163.7	19156.	89.46	17.62	26.78	1408
520	33.989	3507.5	19689.	90.51	17.40	26.53	1403
540	33.597	3847.2	20217.	91.51	17.20	26.30	1397
560	33.216	4183.1	20741.	92.46	17.01	26.08	1392
580	32.845	4515.6	21261.	93.37	16.84	25.89	1388
600	32.483	4844.9	21777.	94.25	16.68	25.71	1384
620	32.130	5171.2	22289.	95.09	16.53	25.54	1380
640	31.785	5494.8	22799.	95.89	16.39	25.39	1377
660	31.448	5815.8	23305.	96.67	16.26	25.24	1374
680	31.119	6134.3	23808.	97.42	16.14	25.11	1371
700	30.797	6450.6	24309.	98.15	16.03	24.99	1368
720	30.483	6764.9	24808.	98.85	15.92	24.87	1366
740	30.175	7077.1	25304.	99.53	15.82	24.76	1364
760	29.873	7387.5	25799.	100.19	15.72	24.66	1362
780	29.578	7696.1	26291.	100.83	15.63	24.57	1360
800	29.289	8003.1	26781.	101.45	15.55	24.48	1359
850	28.593	8763.9	28000.	102.93	15.35	24.27	1356
900	27.930	9516.1	29208.	104.31	15.18	24.08	1353
950	27.298	10261.	30409.	105.61	15.03	23.92	1352
1000	26.697	10999.	31601.	106.83	14.90	23.77	1351
1050	26.122	11731.	32786.	107.99	14.78	23.63	1351
1100	25.573	12457.	33964.	109.08	14.67	23.50	1352
1150	25.048	13178.	35136.	110.13	14.57	23.38	1353
1200	24.545	13895.	36302.	111.12	14.48	23.27	1354

Table 15 Thermodynamic properties of argon-Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
			600.00 MPa Isobar				
* 195.86	43.283	-2844.5	11018.	59.87	23.60	33.60	1665
200	43.139	-2751.8	11157.	60.57	23.56	33.60	1659
205	42.965	-2639.9	11325.	61.40	23.51	33.59	1653
210	42.794	-2528.0	11493.	62.21	23.44	33.55	1647
215	42.624	-2416.2	11660.	63.00	23.36	33.50	1641
220	42.456	-2304.7	11828.	63.77	23.27	33.43	1635
225	42.289	-2193.3	11995.	64.52	23.18	33.34	1629
230	42.125	-2082.3	12161.	65.25	23.08	33.24	1623
235	41.962	-1971.7	12327.	65.96	22.97	33.13	1618
240	41.801	-1861.5	12492.	66.66	22.86	33.00	1613
245	41.642	-1751.7	12657.	67.34	22.75	32.88	1607
250	41.484	-1642.3	12821.	68.00	22.63	32.74	1602
255	41.328	-1533.5	12984.	68.65	22.51	32.60	1597
260	41.174	-1425.1	13147.	69.28	22.39	32.46	1593
265	41.022	-1317.3	13309.	69.90	22.27	32.31	1588
270	40.871	-1210.1	13470.	70.50	22.15	32.16	1583
275	40.722	-1103.4	13631.	71.09	22.03	32.01	1579
280	40.575	-997.21	13790.	71.66	21.90	31.86	1575
285	40.429	-891.62	13949.	72.23	21.78	31.71	1570
290	40.285	-786.60	14107.	72.78	21.66	31.55	1566
295	40.142	-682.16	14265.	73.31	21.54	31.40	1562
300	40.001	-578.28	14421.	73.84	21.42	31.25	1558
310	39.723	-372.23	14732.	74.86	21.18	30.95	1551
320	39.451	-168.41	15040.	75.84	20.95	30.65	1544
330	39.184	33.20	15345.	76.78	20.72	30.37	1537
340	38.923	232.65	15648.	77.68	20.50	30.09	1531
350	38.667	430.02	15947.	78.55	20.29	29.82	1525
360	38.415	625.35	16244.	79.38	20.09	29.56	1519
370	38.169	818.73	16539.	80.19	19.89	29.31	1513
380	37.926	1010.2	16830.	80.97	19.70	29.07	1508
390	37.688	1199.9	17120.	81.72	19.51	28.84	1503
400	37.454	1387.8	17407.	82.45	19.34	28.62	1498
410	37.224	1574.0	17692.	83.15	19.17	28.41	1493
420	36.998	1758.6	17976.	83.84	19.00	28.21	1489
430	36.776	1941.6	18257.	84.50	18.85	28.02	1485
440	36.557	2123.1	18536.	85.14	18.69	27.83	1481
450	36.341	2303.2	18813.	85.76	18.55	27.66	1477
460	36.129	2482.0	19089.	86.37	18.41	27.49	1473

Table 15 Thermodynamic properties of argon-Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
470	35.920	2659.4	19363.	86.96	18.27	27.33	1470
480	35.714	2835.5	19636.	87.53	18.15	27.17	1466
490	35.511	3010.5	19907.	88.09	18.02	27.03	1463
500	35.311	3184.2	20176.	88.64	17.90	26.89	1460
520	34.918	3528.5	20711.	89.68	17.68	26.62	1454
540	34.537	3868.6	21241.	90.68	17.47	26.38	1449
560	34.165	4204.9	21767.	91.64	17.27	26.16	1444
580	33.802	4537.7	22288.	92.55	17.09	25.96	1439
600	33.448	4867.2	22805.	93.43	16.92	25.78	1435
620	33.103	5193.7	23319.	94.27	16.77	25.60	1431
640	32.765	5517.5	23830.	95.08	16.62	25.44	1428
660	32.435	5838.6	24337.	95.87	16.48	25.30	1424
680	32.112	6157.3	24842.	96.62	16.35	25.16	1422
700	31.797	6473.7	25344.	97.35	16.23	25.03	1419
720	31.488	6788.0	25843.	98.05	16.12	24.92	1416
740	31.185	7100.4	26340.	98.73	16.01	24.81	1414
760	30.889	7410.8	26835.	99.39	15.91	24.70	1412
780	30.598	7719.5	27328.	100.03	15.82	24.60	1410
800	30.314	8026.6	27820.	100.65	15.73	24.51	1408
850	29.626	8787.6	29040.	102.13	15.52	24.30	1405
900	28.971	9540.0	30250.	103.52	15.34	24.12	1402
950	28.346	10285.	31452.	104.82	15.19	23.96	1400
1000	27.748	11023.	32646.	106.04	15.04	23.81	1399
1050	27.177	11755.	33833.	107.20	14.92	23.67	1399
1100	26.629	12482.	35014.	108.30	14.80	23.55	1399
1150	26.105	13204.	36188.	109.34	14.70	23.43	1399
1200	25.603	13921.	37357.	110.34	14.61	23.32	1400
700.00 MPa Isobar							
* 210.50	44.011	-2460.4	13445.	60.54	24.10	33.70	1742
215	43.868	-2360.7	13596.	61.25	24.05	33.67	1736
220	43.710	-2249.9	13765.	62.02	23.98	33.63	1731
225	43.554	-2139.3	13933.	62.78	23.90	33.56	1725
230	43.400	-2028.8	14100.	63.52	23.81	33.48	1719
235	43.247	-1918.6	14268.	64.24	23.71	33.39	1714
240	43.096	-1808.7	14434.	64.94	23.61	33.29	1709
245	42.946	-1699.2	14600.	65.62	23.50	33.17	1703
250	42.798	-1590.0	14766.	66.29	23.39	33.05	1698
255	42.651	-1481.3	14931.	66.95	23.27	32.92	1693

Table 15 Thermodynamic properties of argon-Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
260	42.506	-1373.0	15095.	67.58	23.16	32.79	1689
265	42.363	-1265.1	15259.	68.21	23.04	32.65	1684
270	42.221	-1157.8	15422.	68.82	22.91	32.51	1679
275	42.080	-1051.0	15584.	69.41	22.79	32.36	1675
280	41.941	-944.64	15745.	69.99	22.67	32.22	1671
285	41.804	-838.84	15906.	70.56	22.54	32.07	1667
290	41.668	-733.58	16066.	71.12	22.42	31.92	1662
295	41.533	-628.85	16225.	71.66	22.29	31.77	1658
300	41.400	-524.67	16384.	72.19	22.17	31.62	1655
310	41.137	-317.93	16698.	73.23	21.93	31.32	1647
320	40.880	-113.36	17010.	74.22	21.69	31.02	1640
330	40.628	89.06	17319.	75.17	21.45	30.73	1633
340	40.380	289.37	17625.	76.08	21.22	30.45	1627
350	40.137	487.61	17928.	76.96	21.00	30.17	1621
360	39.899	683.83	18228.	77.80	20.78	29.91	1615
370	39.665	878.10	18526.	78.62	20.57	29.65	1609
380	39.435	1070.5	18821.	79.41	20.37	29.40	1604
390	39.209	1261.0	19114.	80.17	20.17	29.16	1599
400	38.987	1449.8	19404.	80.90	19.98	28.93	1594
410	38.769	1636.8	19693.	81.62	19.80	28.71	1589
420	38.554	1822.2	19979.	82.30	19.63	28.50	1585
430	38.342	2006.1	20263.	82.97	19.46	28.30	1581
440	38.134	2188.4	20545.	83.62	19.29	28.11	1577
450	37.929	2369.2	20825.	84.25	19.14	27.92	1573
460	37.727	2548.7	21103.	84.86	18.99	27.74	1569
470	37.528	2726.8	21380.	85.46	18.84	27.57	1565
480	37.331	2903.6	21655.	86.04	18.70	27.41	1562
490	37.138	3079.1	21928.	86.60	18.57	27.25	1559
500	36.947	3253.5	22200.	87.15	18.44	27.10	1555
520	36.572	3598.8	22739.	88.21	18.19	26.83	1549
540	36.208	3939.8	23273.	89.21	17.97	26.57	1544
560	35.852	4277.0	23802.	90.18	17.75	26.34	1539
580	35.504	4610.5	24326.	91.10	17.56	26.12	1534
600	35.165	4940.7	24847.	91.98	17.37	25.92	1530
620	34.834	5267.8	25363.	92.82	17.20	25.74	1526
640	34.509	5592.0	25876.	93.64	17.04	25.57	1522
660	34.192	5913.5	26386.	94.42	16.89	25.41	1519
680	33.881	6232.6	26893.	95.18	16.75	25.27	1515
700	33.577	6549.3	27397.	95.91	16.62	25.14	1512
720	33.278	6863.8	27898.	96.62	16.49	25.01	1510
740	32.986	7176.3	28398.	97.30	16.38	24.89	1507

Table 15 Thermodynamic properties of argon-Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
760	32.699	7486.9	28894.	97.96	16.27	24.79	1505
780	32.418	7795.8	29389.	98.61	16.16	24.68	1503
800	32.141	8102.9	29882.	99.23	16.07	24.59	1501
850	31.473	8864.1	31106.	100.71	15.84	24.37	1497
900	30.833	9616.6	32320.	102.10	15.65	24.19	1493
950	30.221	10362.	33525.	103.40	15.47	24.02	1491
1000	29.633	11100.	34722.	104.63	15.32	23.87	1489
1050	29.070	11833.	35912.	105.79	15.18	23.74	1488
1100	28.529	12560.	37096.	106.90	15.05	23.62	1487
1150	28.009	13282.	38275.	107.94	14.94	23.51	1487
1200	27.508	14000.	39447.	108.94	14.84	23.40	1487
			800.00 MPa Isobar				
* 225.29	44.658	-2053.2	15861.	61.27	24.53	33.76	1812
230	44.521	-1949.6	16019.	61.97	24.46	33.70	1806
235	44.377	-1839.8	16188.	62.70	24.37	33.63	1801
240	44.234	-1730.1	16356.	63.40	24.28	33.54	1796
245	44.092	-1620.8	16523.	64.09	24.18	33.44	1791
250	43.952	-1511.7	16690.	64.77	24.07	33.34	1786
255	43.813	-1403.0	16856.	65.43	23.96	33.22	1781
260	43.676	-1294.6	17022.	66.07	23.85	33.09	1776
265	43.540	-1186.7	17187.	66.70	23.73	32.97	1771
270	43.405	-1079.2	17352.	67.32	23.61	32.83	1767
275	43.272	-972.14	17516.	67.92	23.48	32.69	1762
280	43.140	-865.58	17679.	68.50	23.36	32.55	1758
285	43.009	-759.50	17841.	69.08	23.24	32.40	1754
290	42.880	-653.93	18003.	69.64	23.11	32.26	1750
295	42.752	-548.86	18164.	70.19	22.98	32.11	1746
300	42.625	-444.31	18324.	70.73	22.86	31.96	1742
310	42.375	-236.77	18642.	71.77	22.61	31.66	1735
320	42.131	-31.33	18957.	72.77	22.36	31.37	1727
330	41.890	172.01	19269.	73.73	22.12	31.08	1721
340	41.655	373.28	19579.	74.66	21.88	30.79	1714
350	41.423	572.50	19885.	75.55	21.64	30.51	1708
360	41.196	769.72	20189.	76.40	21.42	30.24	1702
370	40.973	964.99	20490.	77.23	21.20	29.98	1697
380	40.754	1158.4	20789.	78.02	20.99	29.72	1691
390	40.538	1349.9	21085.	78.79	20.78	29.47	1686
400	40.326	1539.6	21378.	79.54	20.58	29.24	1681

Table 15 Thermodynamic properties of argon-Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
410	40.117	1727.6	21669.	80.25	20.39	29.01	1677
420	39.912	1913.9	21958.	80.95	20.20	28.79	1672
430	39.709	2098.7	22245.	81.63	20.02	28.58	1668
440	39.510	2281.9	22530.	82.28	19.85	28.38	1664
450	39.314	2463.5	22813.	82.92	19.68	28.18	1660
460	39.120	2643.8	23094.	83.53	19.52	28.00	1656
470	38.930	2822.7	23373.	84.13	19.37	27.82	1653
480	38.741	3000.2	23650.	84.72	19.22	27.65	1649
490	38.556	3176.5	23926.	85.29	19.07	27.48	1646
500	38.373	3351.5	24200.	85.84	18.94	27.33	1642
520	38.014	3698.1	24743.	86.91	18.67	27.03	1636
540	37.663	4040.3	25281.	87.92	18.43	26.76	1631
560	37.321	4378.5	25814.	88.89	18.20	26.51	1626
580	36.988	4712.9	26342.	89.82	17.99	26.29	1621
600	36.661	5043.9	26865.	90.70	17.79	26.08	1616
620	36.342	5371.7	27385.	91.55	17.61	25.88	1612
640	36.029	5696.5	27901.	92.37	17.43	25.70	1608
660	35.723	6018.5	28413.	93.16	17.27	25.54	1605
680	35.423	6338.0	28922.	93.92	17.12	25.38	1601
700	35.129	6655.0	29429.	94.66	16.98	25.24	1598
720	34.840	6969.9	29932.	95.36	16.84	25.11	1595
740	34.557	7282.6	30433.	96.05	16.72	24.99	1593
760	34.279	7593.4	30932.	96.72	16.60	24.87	1590
780	34.005	7902.4	31428.	97.36	16.49	24.77	1588
800	33.737	8209.7	31922.	97.99	16.38	24.67	1586
850	33.086	8971.0	33150.	99.48	16.14	24.44	1581
900	32.463	9723.5	34367.	100.87	15.92	24.25	1577
950	31.864	10469.	35576.	102.17	15.74	24.08	1574
1000	31.288	11207.	36776.	103.40	15.57	23.93	1572
1050	30.734	11939.	37969.	104.57	15.42	23.80	1570
1100	30.200	12666.	39156.	105.67	15.28	23.68	1569
1150	29.686	13389.	40338.	106.72	15.16	23.57	1568
1200	29.191	14107.	41514.	107.72	15.05	23.47	1568
			900.00 MPa Isobar				
* 239.61	45.261	-1640.0	18245.	61.96	24.89	33.77	1876
240	45.250	-1631.5	18258.	62.02	24.88	33.77	1876
245	45.116	-1522.2	18426.	62.71	24.79	33.68	1871
250	44.983	-1413.2	18595.	63.39	24.69	33.59	1866
255	44.850	-1304.4	18762.	64.06	24.58	33.48	1861

Table 15 Thermodynamic properties of argon-Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
260	44.720	-1196.0	18929.	64.71	24.47	33.37	1856
265	44.590	-1087.9	19096.	65.34	24.36	33.25	1852
270	44.462	-980.23	19262.	65.96	24.24	33.12	1847
275	44.335	-872.96	19427.	66.57	24.12	32.99	1843
280	44.209	-766.11	19592.	67.16	23.99	32.86	1839
285	44.084	-659.73	19756.	67.74	23.87	32.72	1834
290	43.961	-553.81	19919.	68.31	23.74	32.57	1830
295	43.839	-448.37	20082.	68.86	23.62	32.43	1826
300	43.718	-343.42	20243.	69.41	23.49	32.28	1823
310	43.479	-135.02	20565.	70.46	23.23	31.99	1815
320	43.245	71.34	20883.	71.47	22.98	31.70	1808
330	43.015	275.67	21199.	72.44	22.73	31.40	1801
340	42.789	477.94	21511.	73.38	22.49	31.12	1795
350	42.568	678.20	21821.	74.27	22.24	30.83	1789
360	42.350	876.47	22128.	75.14	22.01	30.56	1783
370	42.136	1072.8	22432.	75.97	21.78	30.29	1777
380	41.926	1267.2	22734.	76.78	21.56	30.03	1772
390	41.719	1459.8	23033.	77.55	21.34	29.77	1767
400	41.516	1650.5	23329.	78.30	21.13	29.53	1762
410	41.315	1839.5	23623.	79.03	20.93	29.30	1757
420	41.118	2026.9	23915.	79.73	20.74	29.07	1753
430	40.924	2212.5	24205.	80.42	20.55	28.85	1748
440	40.732	2396.6	24492.	81.08	20.37	28.64	1744
450	40.544	2579.2	24778.	81.72	20.19	28.44	1740
460	40.358	2760.4	25061.	82.34	20.02	28.25	1736
470	40.174	2940.1	25343.	82.95	19.86	28.06	1733
480	39.993	3118.4	25622.	83.54	19.70	27.88	1729
490	39.815	3295.5	25900.	84.11	19.55	27.71	1726
500	39.638	3471.2	26177.	84.67	19.40	27.55	1723
520	39.293	3819.2	26724.	85.74	19.12	27.24	1717
540	38.955	4162.7	27266.	86.76	18.86	26.96	1711
560	38.625	4502.0	27803.	87.74	18.62	26.69	1705
580	38.303	4837.5	28334.	88.67	18.39	26.45	1701
600	37.988	5169.4	28861.	89.56	18.18	26.23	1696
620	37.680	5497.9	29384.	90.42	17.99	26.03	1692
640	37.377	5823.5	29902.	91.24	17.80	25.84	1688
660	37.081	6146.1	30417.	92.04	17.63	25.66	1684
680	36.791	6466.1	30929.	92.80	17.47	25.50	1681
700	36.506	6783.6	31437.	93.54	17.31	25.35	1677
720	36.226	7098.9	31943.	94.25	17.17	25.21	1674
740	35.951	7411.9	32446.	94.94	17.04	25.09	1672

Table 15 Thermodynamic properties of argon-Continued

Temperature K	Density mol/dm³	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
760	35.681	7723.0	32947.	95.61	16.91	24.97	1669
780	35.416	8032.1	33445.	96.25	16.79	24.85	1666
800	35.155	8339.5	33941.	96.88	16.67	24.75	1664
850	34.521	9101.0	35172.	98.37	16.41	24.51	1659
900	33.912	9853.5	36393.	99.77	16.19	24.31	1655
950	33.326	10598.	37604.	101.08	15.98	24.14	1652
1000	32.762	11336.	38807.	102.31	15.80	23.99	1649
1050	32.218	12069.	40003.	103.48	15.64	23.85	1647
1100	31.693	12795.	41193.	104.59	15.50	23.73	1645
1150	31.186	13518.	42377.	105.64	15.37	23.62	1644
1200	30.696	14236.	43556.	106.64	15.25	23.52	1644
1000 MPa Isobar							
* 253.52	45.826	-1222.1	20599.	62.61	25.18	33.75	1937
255	45.789	-1189.8	20650.	62.81	25.15	33.72	1936
260	45.664	-1081.3	20818.	63.46	25.04	33.62	1931
265	45.540	-973.02	20986.	64.10	24.93	33.51	1927
270	45.417	-865.12	21153.	64.72	24.82	33.39	1922
275	45.296	-757.59	21320.	65.34	24.70	33.27	1918
280	45.175	-650.45	21486.	65.93	24.58	33.14	1913
285	45.056	-543.73	21651.	66.52	24.45	33.00	1909
290	44.938	-437.45	21816.	67.09	24.33	32.87	1905
295	44.820	-331.63	21980.	67.65	24.20	32.73	1901
300	44.704	-226.27	22143.	68.20	24.07	32.58	1897
310	44.476	-16.98	22467.	69.27	23.82	32.29	1890
320	44.251	190.33	22789.	70.29	23.56	32.00	1883
330	44.030	395.65	23107.	71.27	23.30	31.71	1876
340	43.813	598.97	23423.	72.21	23.05	31.42	1870
350	43.601	800.29	23736.	73.12	22.80	31.14	1864
360	43.391	999.63	24046.	73.99	22.56	30.86	1858
370	43.186	1197.0	24353.	74.83	22.32	30.59	1852
380	42.983	1392.5	24658.	75.64	22.09	30.32	1847
390	42.784	1586.1	24959.	76.43	21.87	30.06	1842
400	42.588	1777.9	25259.	77.18	21.65	29.81	1837
410	42.395	1968.0	25556.	77.92	21.44	29.57	1832
420	42.205	2156.3	25850.	78.63	21.24	29.34	1827
430	42.018	2343.0	26142.	79.32	21.04	29.11	1823
440	41.833	2528.1	26433.	79.98	20.85	28.90	1819
450	41.651	2711.6	26720.	80.63	20.67	28.69	1815

Table 15 Thermodynamic properties of argon-Continued

Temperature K	Density mol/dm^3	Internal Energy J/mol	Enthalpy J/mol	Entropy J/mol K	C_v J/mol K	C_p J/mol K	Velocity of Sound m/s
460	41.472	2893.6	27006.	81.26	20.49	28.49	1811
470	41.295	3074.2	27290.	81.87	20.32	28.30	1807
480	41.120	3253.4	27572.	82.46	20.15	28.11	1804
490	40.948	3431.3	27853.	83.04	19.99	27.93	1801
500	40.778	3607.9	28131.	83.60	19.84	27.76	1797
520	40.444	3957.3	28683.	84.69	19.54	27.44	1791
540	40.117	4302.1	29229.	85.72	19.27	27.15	1785
560	39.799	4642.7	29769.	86.70	19.01	26.87	1780
580	39.487	4979.3	30304.	87.64	18.78	26.62	1775
600	39.182	5312.1	30834.	88.53	18.55	26.39	1770
620	38.883	5641.6	31360.	89.40	18.34	26.18	1766
640	38.590	5967.9	31881.	90.22	18.15	25.98	1762
660	38.303	6291.3	32399.	91.02	17.96	25.79	1758
680	38.021	6611.9	32913.	91.79	17.79	25.62	1755
700	37.744	6929.9	33424.	92.53	17.63	25.47	1751
720	37.473	7245.6	33932.	93.24	17.48	25.32	1748
740	37.205	7559.0	34437.	93.94	17.33	25.18	1745
760	36.943	7870.4	34939.	94.61	17.20	25.06	1742
780	36.685	8179.8	35439.	95.26	17.07	24.94	1740
800	36.431	8487.4	35937.	95.89	16.95	24.83	1738
850	35.813	9249.2	37172.	97.38	16.67	24.59	1732
900	35.218	10002.	38396.	98.78	16.43	24.38	1728
950	34.645	10746.	39610.	100.10	16.22	24.20	1724
1000	34.092	11484.	40816.	101.33	16.03	24.04	1721
1050	33.558	12216.	42015.	102.50	15.86	23.90	1719
1100	33.042	12942.	43207.	103.61	15.70	23.78	1717
1150	32.542	13664.	44393.	104.67	15.56	23.67	1716
1200	32.059	14382	45575	105.67	15.44	23.57	1715

* Two phase boundary