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AEDC-TR-57-8
ASTIA DOCUMENT NO.
AD-135331

THERMODYNAMIC PROPERTIES OF AIR: TABLES AND GRAPHS DERIVED FROM THE BEATTIE-BRIDGEMAN EQUATION OF STATE ASSUMING VARIABLE SPECIFIC HEATS

By

R. E. Randall; GDF, ARO, Inc.

August 1957

ARNOLD ENGINEERING DEVELOPMENT CENTER

AIR RESEARCH AND DEVELOPMENT COMMAND

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Project No. 933002
Contract No. AF 40(600)-700 Sup. 6(58-1)

AF - AEDC
Tullahoma, Tennessee

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SUMMARY

The Beattie-Bridgeman equation of state was used to calculate several of the thermodynamic properties and flow process correction factors for air. The increase in the specific heats due to the vibration of diatomic molecules was included by assuming the molecules to be perfect harmonic oscillators. This report contains the equations used and the tabulated results of these calculations. Graphs are included to provide a general picture of the effects of temperature and pressure on the tabulated quantities. In order to illustrate the use of the tables, the calculation procedures and the results of several calculations are included. These procedures and results are for isentropic expansions and flow through normal shock waves.

NOMENCLATURE

a	0.30931 ft^3/lb mol
A_o	4906.5 ft^3 lb/$in.^2$ lb mol
b	-0.17636 ft^3/lb mol
B_o	0.73860 ft^3/lb mol
c	4.0543×10^6 ft^3 ^oR/lb mol
C_p	Specific heat, Btu/lb, at constant pressure
C_v	Specific heat, Btu/lb, at constant volume
e_1, e_2, e_3	Defined by Eq. (1)
F	Defined by Eq. (11)
g_1, to g_6	Defined by Eq. (2)
I	Defined by Eq. (7)
J	Defined by Eq. (8)
K	Defined by Eq. (9)
L	Defined by Eq. (10)
M	Mach number
p	Pressure, psia
R	Gas constant, ft^3 lb/$in.^2$ ^oR lb mol
S	Entropy, Btu/lb ^oR
T	Temperature, ^oR
X	Defined by Eq. (15)
γ	Specific heat ratio
ρ	Density, lb/ft^3

PRESUBSCRIPTS

o	Perfect gas property

SUBSCRIPTS

N_2	Nitrogen
O_2	Oxygen
t	Total (isentropic stagnation condition)
vib	Vibrational component

INTRODUCTION

The research work of recent years has created the need for a method of calculating the thermodynamic properties of air with an accuracy greater than that provided by the perfect gas equations. The Beattie-Bridgeman equation of state and its accompanying thermodynamic equations provide this increased accuracy only by increasing the complexity of the calculation procedure. The need for an accurate calibration of the wind tunnels at the Gas Dynamics Facility, Arnold Engineering Development Center (GDF, AEDC) has encouraged further study of this equation.

A similar study of the Beattie-Bridgeman equation of state was made by Crown (see Ref. 1), whose results were presented in graphical form. The work by Crown is extended and elaborated upon in Ref. 2.

This report presents the tables and graphs of several of the thermodynamic properties and flow process correction factors for air which were calculated using the Beattie-Bridgeman equation. A method of calculating isentropic expansions and flow through normal shock waves is included as well as the tabulated results of several sample calculations. The tables cover a temperature range from 70° to 2200°R and a pressure range from 0.025 to 4000 psia.

THERMODYNAMIC EQUATIONS

This report is intended for use with the basic theoretical work in which these equations were derived (Ref. 2). The material in Ref. 2 will permit the calculation of many additional types of thermodynamic processes and of the properties of gases other than air. The tables for thermodynamic properties of air, given in the appendix of this report, were computed using the Beattie-Bridgeman equation of state in the form

$$p = \frac{RT}{v} + \left(B_o - \frac{A_o}{RT} - \frac{c}{T^3}\right)\frac{RT}{v^2} + \left(\frac{A_o a}{RT} - B_o b - \frac{B_o c}{T^3}\right)\frac{RT}{v^3} + \left(\frac{B_o bc}{T^3}\right)\frac{RT}{v^4}$$

In order to show the type of expressions used to calculate the tabulated values, the equations below are included:

$$\left.\begin{aligned} e_1 &= B_o - \frac{A_o}{RT} - \frac{c}{T^3} \\ e_2 &= \frac{A_o a}{RT} - B_o b - \frac{B_o c}{T^3} \\ e_3 &= \frac{B_o bc}{T^3} \end{aligned}\right\} \qquad (1)$$

$$
\left.
\begin{aligned}
g_1 &= -\frac{e_1}{RT} \\
g_2 &= \frac{2e_1^2 - e_2}{(RT)^2} \\
g_3 &= \frac{5e_1(e_2 - e_1^2) - e_3}{(RT)^3} \\
g_4 &= \frac{6e_1e_3 + 3e_2^2 + 7e_1^2(2e_1^2 - 3e_2)}{(RT)^4} \\
g_5 &= \frac{7[e_2e_3 - 4e_1(e_2^2 + e_1e_3) + 6e_1^3(2e_2 - e_1^2)]}{(RT)^5} \\
g_6 &= \frac{6[10e_1^2(3e_2^2 + 2e_1e_3) + 11e_1^4(2e_1^2 - 5e_2) - 2e_2^3] + e_3(4e_3 - 73e_1e_2)}{(RT)^6}
\end{aligned}
\right\} \quad (2)
$$

$$
C_p = R\left\{\frac{\left[\left(1 + \frac{2c}{T^3}\rho\right)(1 + B_o\rho - B_ob\rho^2)\right]^2}{1 + 2e_1\rho + 3e_2\rho^2 + 4e_3\rho^3}\right\} + C_v \quad (3)
$$

$$
C_v = {}_oC_v + C_{\text{vib}} + \frac{6Rc}{T^3}\rho\left(1 + \frac{B_o}{2}\rho - \frac{B_ob}{3}\rho^2\right) \quad (4)
$$

$$
\gamma = \frac{C_p}{C_v} \quad (5)
$$

$$
\frac{\rho}{{}_o\rho} = 1 + g_1p + g_2p^2 + g_3p^3 + \cdots \quad (6)
$$

$$
I = \frac{\gamma}{{}_o\gamma}(1 + 2e_1\rho + 3e_2\rho^2 + 4e_3\rho^3) \quad (7)
$$

$$
J = 1 + \frac{{}_o\gamma - 1}{{}_o\gamma}\left[G + \rho\left(B_o - \frac{2A_o}{RT} - \frac{4c}{T^3}\right) + \rho^2\left(\frac{3A_oa}{2RT} - \frac{5B_oc}{2T^3} - B_ob\right) + \rho^3\left(\frac{2B_obc}{T^3}\right)\right] \quad (8)
$$

$$
K = \frac{E}{F}(1 + e_1\rho + e_2\rho^2 + e_3\rho^3) \quad (9)
$$

$$
L = \frac{p}{\rho RTJ} \quad (10)
$$

$$
F = \exp\left[\rho\left(B_o + \frac{2c}{T^3}\right) + \rho^2\left(\frac{B_oc}{T^3} - \frac{B_ob}{2}\right) - \rho^3\left(\frac{2B_obc}{3T^3}\right)\right] \quad (11)
$$

The entropy change between two conditions is given by

$$
S - S_1 = R\,\ln\left[\left(\frac{T}{T_1}\right)^{2.5}\frac{E\rho_1F_1}{E_1\rho F}\right]
$$

TABULATION OF CONSTANTS

The Beattie-Bridgeman constants used in the numerical computations for the thermodynamic properties of air are:

$$A_o = 4906.5 \ \frac{\text{ft}^3 \ \text{lb}}{\text{in}^2 \ \text{lb mol}} \qquad a = 0.30931 \ \frac{\text{ft}^3}{\text{lb mol}}$$

$$B_o = 0.73860 \ \frac{\text{ft}^3}{\text{lb mol}} \qquad b = -0.17636 \ \frac{\text{ft}^3}{\text{lb mol}}$$

$$c = 4.0543 \times 10^6 \ \frac{\text{ft}^3 \ {}^\circ\text{R}}{\text{lb mol}}$$

Other constants used in the computations are:

$${}_o\gamma = 1.4000 \qquad {}_oC_v = 0.17141 \ \frac{\text{Btu}}{\text{lb } {}^\circ\text{R}}$$

$$R = 10.729 \ \frac{\text{ft}^3 \ \text{lb}}{\text{in}^2 \ \text{lb mol } {}^\circ\text{R}} = 0.068561 \ \frac{\text{Btu}}{\text{lb } {}^\circ\text{R}}$$

The vibrational specific heat was calculated from the equation

$$C_{vib} = \left[\frac{706.85 / T}{\sinh (3054.9/T)} \right]^2 + \left[\frac{245.22/ T}{\sinh (2046.1/ T)} \right]^2$$

The quantity G was calculated using the expression

$$G = 0.78088 \ G_{N_2} + 0.20950 \ G_{O_2} = \frac{-4770.9/ T}{1 - \exp (6109.7/T)} - \frac{857.29/ T}{1 - \exp (4092.1/T)}$$

The value of E was obtained by the equation

$$E = \left[\frac{\exp G_{N_2}}{1 - \exp (-6109.7/ T)} \right]^{0.78088} \left[\frac{\exp G_{O_2}}{1 - \exp (-4092.1/ T)} \right]^{0.20950}$$

CALCULATION PROCEDURE

ISENTROPIC EXPANSION

After an isentropic expansion from the stagnation conditions T_{t_1} and p_{t_1} to a pressure, p_1, the Mach number, M_1, and temperature, T_1, can be obtained as follows:

(1) Determine the perfect gas values of the Mach number ${}_oM_1$, and the temperature, ${}_oT_1$, ${}_oP_1$

(2) From the enclosed tables find the values of I_1, J_1, K_1, for the values of p_1 and ${}_oT_1$. Obtain the values of J_{t_1} and K_{t_1} for the values of p_{t_1} and T_{t_1}.

(3) Solve for M_1 and T_1 from the following two equations:

$$M_1 = \sqrt{\frac{J_{t_1}\left(\frac{p_{t_1}}{p_1}\frac{K_1}{K_{t_1}}\right)^{2/7} - J_1}{0.2\ I_1}} \qquad (12)$$

$$T_1 = \frac{T_{t_1}\ J_{t_1}}{0.2\ I_1 M_1^2 + J_1} \qquad (13)$$

(NOTE: The last value obtained for a quantity should be substituted in subsequent equations which require that quantity. For example, the value for M_1 obtained with Eq. (12) should be used in Eq. (13) to calculate T_1.)

(4) Determine new values of I_1, J_1, K_1, using p_1 and the value of T_1 obtained from solving Eq. (13).

(5) Solve Eq. (12) for M_1 and Eq. (13) for T_1. Repeat this iteration process until successive approximations produce the same value of M_1 and T_1 to the accuracy desired.

Several values found by using this procedure are listed in the following table:

CALCULATED VALUES

Eqs.	p_{t_1}	T_{t_1}	p_1	T_1	M_1
PG*	2200	2200	0.150	142	8.52
BB**				155	8.46
PG	2000	2200	0.100	130	8.93
BB				141	8.86
PG	2000	1500	0.750	158	6.53
BB				162	6.56
PG	2000	1000	1.50	128	5.84
BB				127	5.89
PG	1500	1000	10.0	239	3.99
BB				238	4.02

*Perfect gas equation
**Beattie-Bridgeman equation

NORMAL SHOCK WAVES

With T_{t_1}, p_{t_1}, and p_{t_2} Known

With T_{t_1}, p_{t_1} (stagnation condition ahead of shock wave), and p_{t_2} (behind the shock wave) known, the Mach number, M_1, ahead of normal shock wave can be obtained. Additional gas properties obtained during the calculation process are: p_1, T_1, p_2, T_2, T_{t_2} and ρ_1/ρ_2. The calculation procedure is as follows:

(1) Assuming $T_{t_2} = T_{t_1}$ and using the values of p_{t_1} and p_{t_2}, determine J_{t_1} and J_{t_2} from the enclosed tables.

(2) Solve for T_{t_2} using the equation

$$T_{t_2} = \frac{T_{t_1} J_{t_1}}{J_{t_2}} \tag{14}$$

(3) Determine J_{t_2} for p_{t_2} and the value of T_{t_2} obtained with Eq. (14).

(4) Solve Eq. (14) again for T_{t_2}. Repeat this iteration process until successive approximations produce the same value of T_{t_2} to the accuracy desired.

(5) Calculate the perfect gas values of ${}_oM_1$, ${}_oT_1$, ${}_oP_1$, ${}_oT_2$, ${}_oP_2$, and ${}_o(\rho_1/\rho_2)$.

(6) Determine I_1, J_1, $(\rho/{}_o\rho)_1$ for ${}_oT_1$ and ${}_oP_1$; J_2, K_2, $(\rho/{}_o\rho)_2$ for ${}_oT_2$ and ${}_oP_2$; and K_{t2} for T_{t2} and p_{t2}. Solve in order for X_1, X_2, T_1, T_2, p_2, and p_1 from the following equations:

$$X_1 = \frac{M_1^2}{M_1^2 + 5\frac{J_1}{I_1}} \tag{15}$$

$$X_2 = X_1(\rho_1/\rho_2)^2 \tag{16}$$

$$T_1 = \frac{T_{t1}\, J_{t1}}{J_1}\,(1 - X_1) \tag{17}$$

$$T_2 = \frac{T_{t1}\, J_{t1}}{J_2}\,(1 - X_2) \tag{18}$$

$$p_2 = \frac{p_{t2}\, K_2}{K_{t2}}\left(\frac{T_2}{T_{t2}}\right)^{3.5} \tag{19}$$

$$p_1 = p_2\,\frac{T_1\,[\,(\rho/{}_o\rho)_2\, X_2\, T_{t1}\, J_{t1} + 0.14286\, T_2\,]}{T_2\,[\,(\rho/{}_o\rho)_1\, X_1\, T_{t1}\, J_{t1} + 0.14286\, T_1\,]} \tag{20}$$

(NOTE: The last value obtained for a quantity should be substituted in subsequent equations which require that quantity. For example, when calculating p_1 with Eq. (20) the values of X_1, X_2, T_1, T_2, and p_2 obtained in Eq. (15) through (19) should be used in Eq. (20).)

(8) Determine I_1, J_1, K_1, L_1 for the new values of T_1 and p_1; and J_2, K_2, L_2 for the new values of T_2 and p_2.

(9) Solve for ρ_1/ρ_2 and M_1 from the following equations:

$$O = [\,X_1\,(L_2 - 7)\,]\left(\frac{\rho_1}{\rho_2}\right)^2 + [\,X_1(7 - L_1) + L_1\,]\left(\frac{\rho_1}{\rho_2}\right) - L_2 \tag{21}$$

$$M_1 = \sqrt{\frac{J_{t1}\left(\frac{p_{t1}\, K_1}{p_1\, K_{t1}}\right)^{2/7} - J_1}{0.2\, I_1}} \tag{22}$$

(10) Repeat the above procedure for X_1, X_2, T_1, T_2, p_2, and p_1. Determine new values I_1, J_1, K_1, L_1 for these new values of p_1 and T_1; J_2, K_2, L_2 for the new values of p_2 and T_2 and solve for ρ_1/ρ_2 and M_1. Continue this iteration process until all calculated values repeat to the accuracy desired.

With T_{t_1}, p_{t_1}, and M_1 Known

The static conditions before and after a normal shock wave and the stagnation conditions after the shock can be determined when M_1, p_{t_1}, and T_{t_1} are known. The gas properties obtained during the calculation process are: p_1, T_1, p_2, T_2, p_{t_2}, T_{t_2} and ρ_1/ρ_2. The calculation procedure is as follows:

(1) Calculate the perfect gas values of ${}_o p_1$, ${}_o T_1$, ${}_o p_2$, ${}_o T_2$, and ${}_o p_{t_2}$.

(2) Determine I_1, J_1, K_1, from the enclosed tables for ${}_o p_1$ and ${}_o T_1$; J_{t_1}, K_{t_1} for p_{t_1} and T_{t_1}.

(3) Solve in order for X_1, T_1, and p_1 from the following equations:

$$X_1 = \frac{M_1^2}{M_1^2 + 5\frac{I_1}{J_1}} \tag{15}$$

$$T_1 = \frac{T_{t_1} J_{t_1}}{J_1}(1 - X_1) \tag{17}$$

$$p_1 = \frac{p_{t_1} K_1}{K_{t_1}} \left(\frac{T_1}{T_{t_1}}\right)^{3.5} \tag{23}$$

(NOTE: The last value obtained for a quantity should be substituted in subsequent equations which require that quantity. For example, when calculating p_1 with Eq. (23), the value of T_1 obtained in Eq. (17) should be used in Eq. (23).)

(4) Determine I_1, J_1, K_1 for these new values of p_1 and T_1.

(5) Repeat the above calculation procedure for X_1, T_1, and p_1. This iteration process should be continued until all calculated values repeat to the accuracy desired.

(6) Determine L_1 for p_1 and T_1; J_2, L_2 for ${}_o p_2$ and ${}_o T_2$.

(7) Solve in order for ρ_1/ρ_2, X_2, T_2, and p_2 from the following equations:

$$O = \left[X_1\left(L_2 - 7\right)\right]\left(\frac{\rho_1}{\rho_2}\right)^2 + \left[X_1\left(7 - L_1\right) + L_1\right]\left(\frac{\rho_1}{\rho_2}\right) - L_2 \tag{21}$$

$$X_2 = X_1\left(\frac{\rho_1}{\rho_2}\right)^2 \tag{16}$$

$$T_2 = \frac{T_{t_1} J_{t_1}}{J_2}(1 - X_2) \tag{18}$$

$$p_2 = \frac{p_1 L_2 (1 - X_2)}{\frac{\rho_1}{\rho_2} L_1 (1 - X_1)} \tag{24}$$

(8) Determine J_2 and L_2 for these new values of p_2 and T_2.

(9) Repeat the above calculation procedure for ρ_1/ρ_2, X_2, T_2, and p_2. This iteration process should be continued until all calculated values repeat to the accuracy desired.

(10) Assuming ${}_oT_{t_2} = {}_oT_{t_1}$ determine ${}_oJ_{t_2}$ and ${}_oK_{t_2}$.

(11) Solve for T_{t_2} and p_{t_2} from the following equations:

$$T_{t_2} = \frac{T_{t_1} J_{t_1}}{J_{t_2}} \tag{14}$$

$$p_{t_2} = \frac{p_2 K_{t_2}}{K_2} \left(\frac{T_{t_2}}{T_2}\right)^{3.5} \tag{25}$$

(12) Determine J_{t_2} and K_{t_2} for these new values of T_{t_2} and p_{t_2}.

(13) Repeat the above calculations for T_{t_2} and p_{t_2}. This iteration process should be continued until all calculated values repeat to the accuracy desired.

CALCULATED VALUES

Eq.	p_{t_1}	T_{t_1}	p_{t_2}	p_1	T_1	p_2	T_2	ρ_1/ρ_2	T_{t_2}	M_1
PG*	4000	1900	40	0.519	147	35.9	1842	0.181	1900	7.71
BB**				0.508	154	36.2	1877	0.171	1925	7.78
PG	3000	1900	30	0.389	147	27.0	1842	0.181	1900	7.71
BB				0.385	155	27.1	1871	0.172	1919	7.74
PG	2500	1900	25	0.324	147	22.5	1842	0.181	1900	7.71
BB				0.323	156	22.6	1867	0.172	1915	7.72
PG	2000	1900	20	0.259	147	18.0	1842	0.181	1900	7.71
BB				0.260	156	18.1	1864	0.172	1912	7.70
PG	1500	1900	15	0.195	147	13.5	1842	0.181	1900	7.71
BB				0.195	156	13.6	1861	0.172	1909	7.68
PG	1000	1900	10	0.130	147	8.98	1842	0.181	1900	7.71
BB				0.131	157	9.04	1858	0.172	1906	7.66
PG	500	1900	5	0.0648	147	4.49	1842	0.181	1900	7.71
BB				0.0659	157	4.52	1855	0.172	1903	7.64
PG	2500	2200	7	0.0523	101	6.31	2134	0.175	2200	10.20
BB				0.0526	110	6.36	2167	0.163	2218	10.10
PG	2500	1960	11	0.0997	108	9.91	1901	0.176	1960	9.24
BB				0.0994	115	9.97	1928	0.167	1976	9.23
PG	2000	1900	15	0.171	131	13.5	1844	0.179	1900	8.22
BB				0.171	139	13.6	1865	0.170	1912	8.21
PG	1500	1900	100	3.19	328	88.8	1837	0.201	1900	4.90
BB				3.20	348	89.4	1855	0.192	1909	4.87
PG	1000	1700	50	1.40	259	44.5	1645	0.197	1700	5.28
BB				1.38	271	44.7	1657	0.189	1705	5.26

*Perfect gas equation
**Beattie-Bridgeman equation

REFERENCES

1. Crown, J. C. "Flow of a Beattie-Bridgeman Gas With Variable Specific Heat." Navord Report 2148, 1951.

2. Randall, R. E. "The Thermodynamic Properties of Gases: Equations Derived from the Beattie-Bridgeman Equation of State Assuming Variable Specific Heats." AEDC-TR-57-10, August 1957.

MOLLIER DIAGRAM
For
AIR
Using Beattie - Bridgeman
Constants and Variable Specific
Heats

Pressure psia

4000 3000 2500 2000 1500 1000 700 500 400 300 200 150 100 70 50 40 30 20 15 10

Temperature
Degrees R

2200 2100 2000 1900 1800 1700 1600 1500 1400 1300 1200 1100 1000 950 900 850 800 750 700 650 600 550 500 460 420 390 360 330 300 260 200 150 100

6 4 2.5 1.5 1.0

0.60 0.40 0.20 0.10 0.050 0.025

Saturation Line

Enthalpy $\frac{Btu}{lb}$

600 550 500 450 400 350 300 250 200 150 100 50

Entropy $\frac{Btu}{lb\ °R}$

0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70

Fig. 1. Mollier Diagram

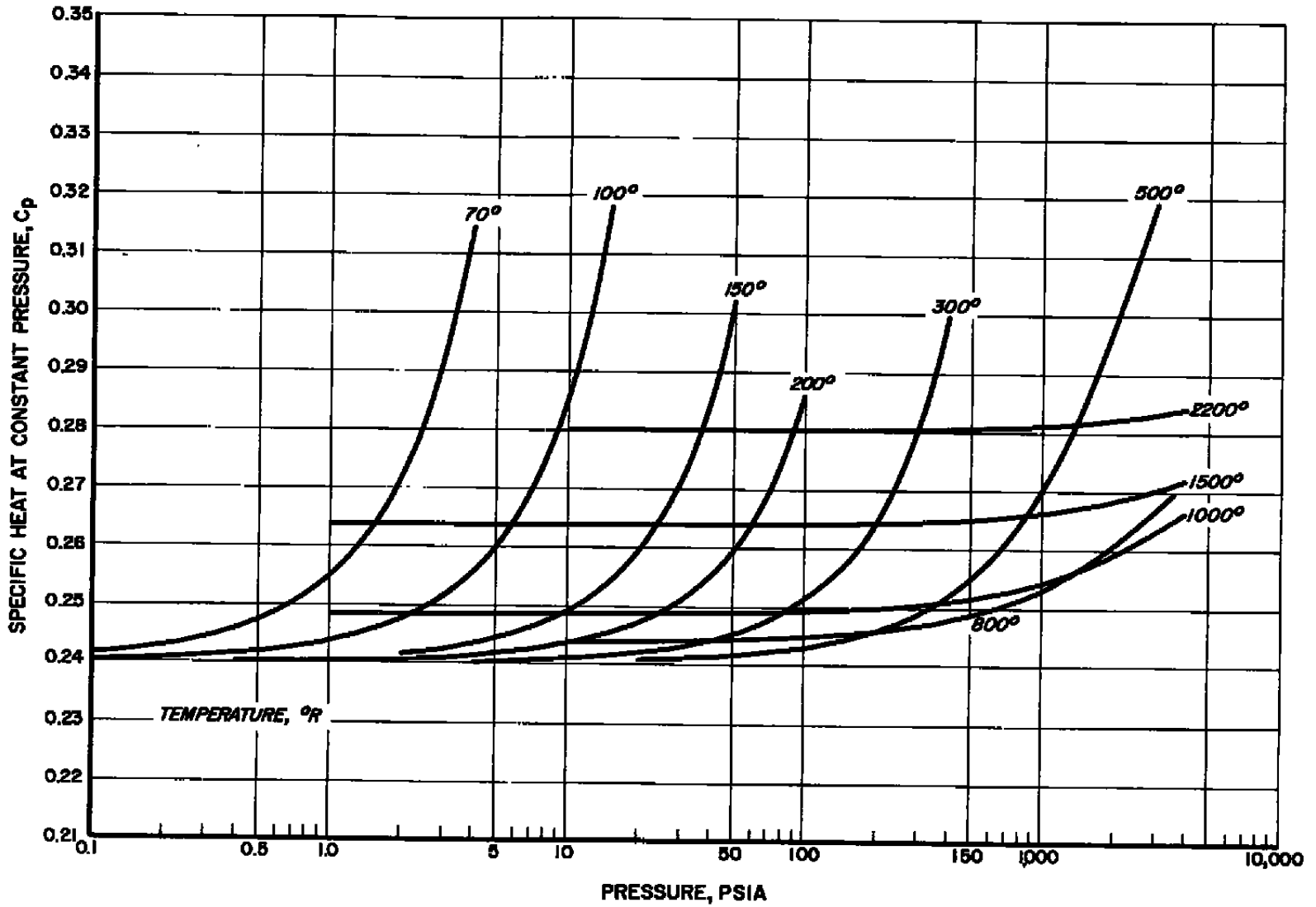

Fig. 2. Specific Heat at Constant Pressure vs Pressure

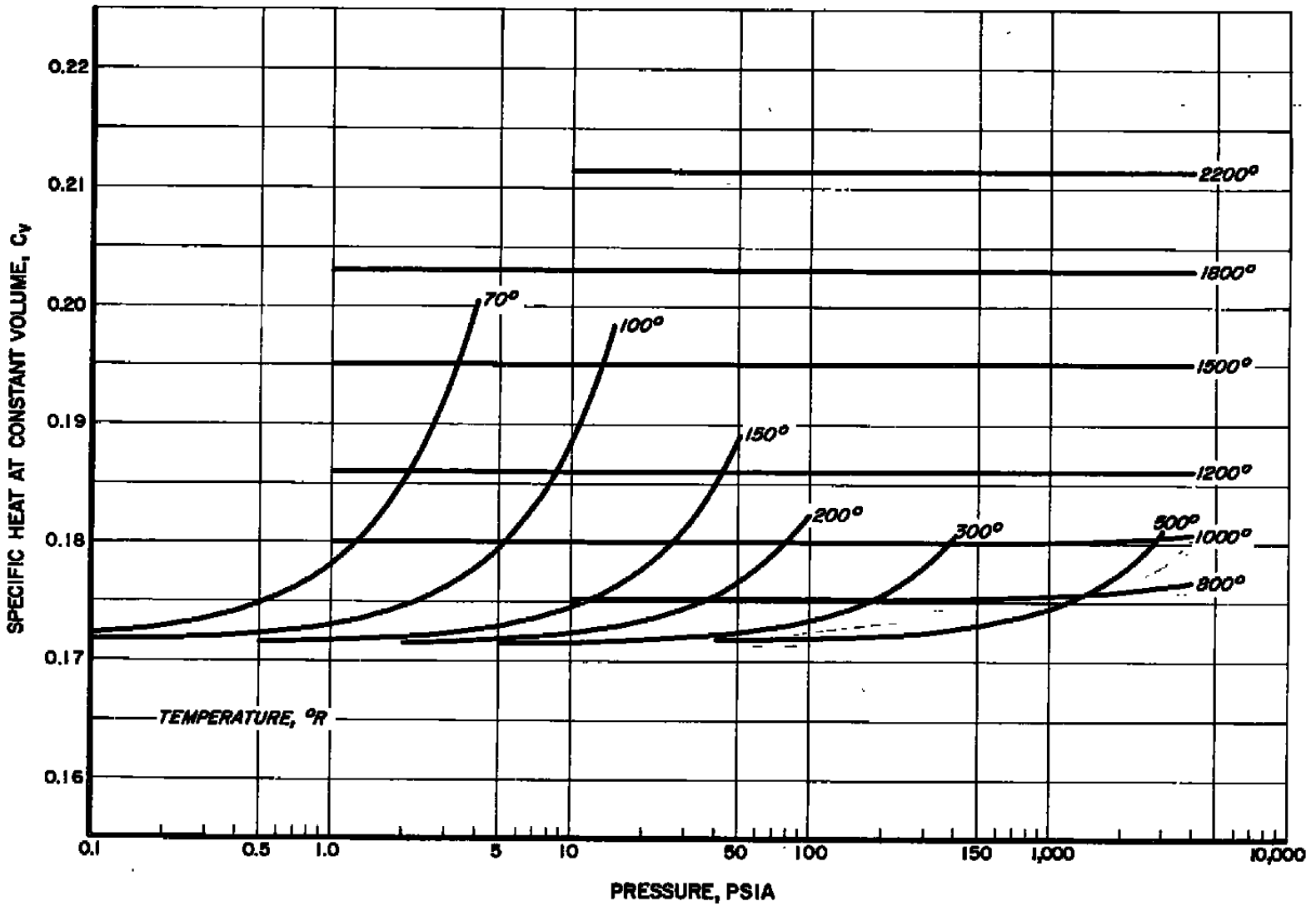

Fig. 3. Specific Heat at Constant Volume vs Pressure

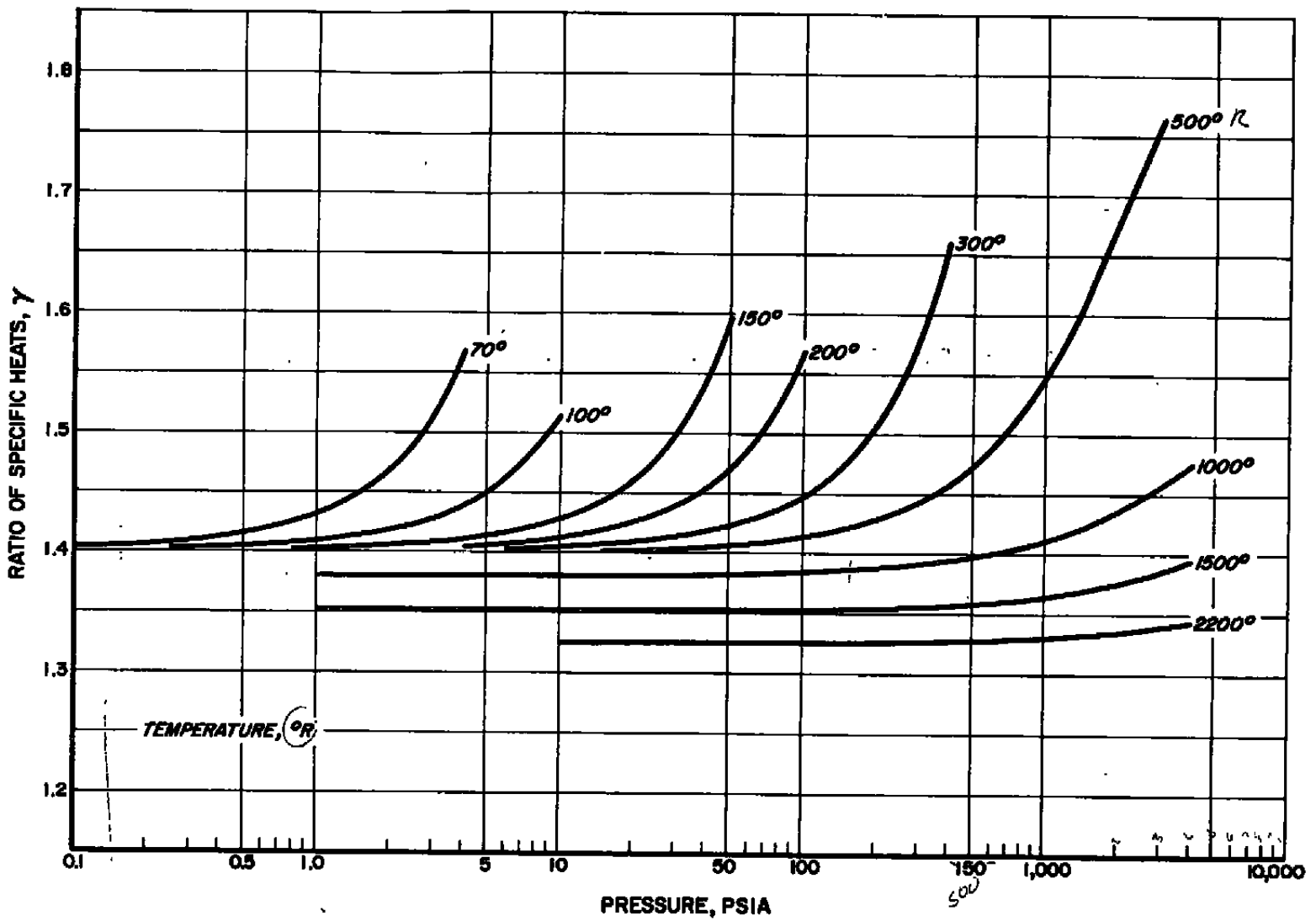

Fig. 4. Ratio of Specific Heats vs Pressure

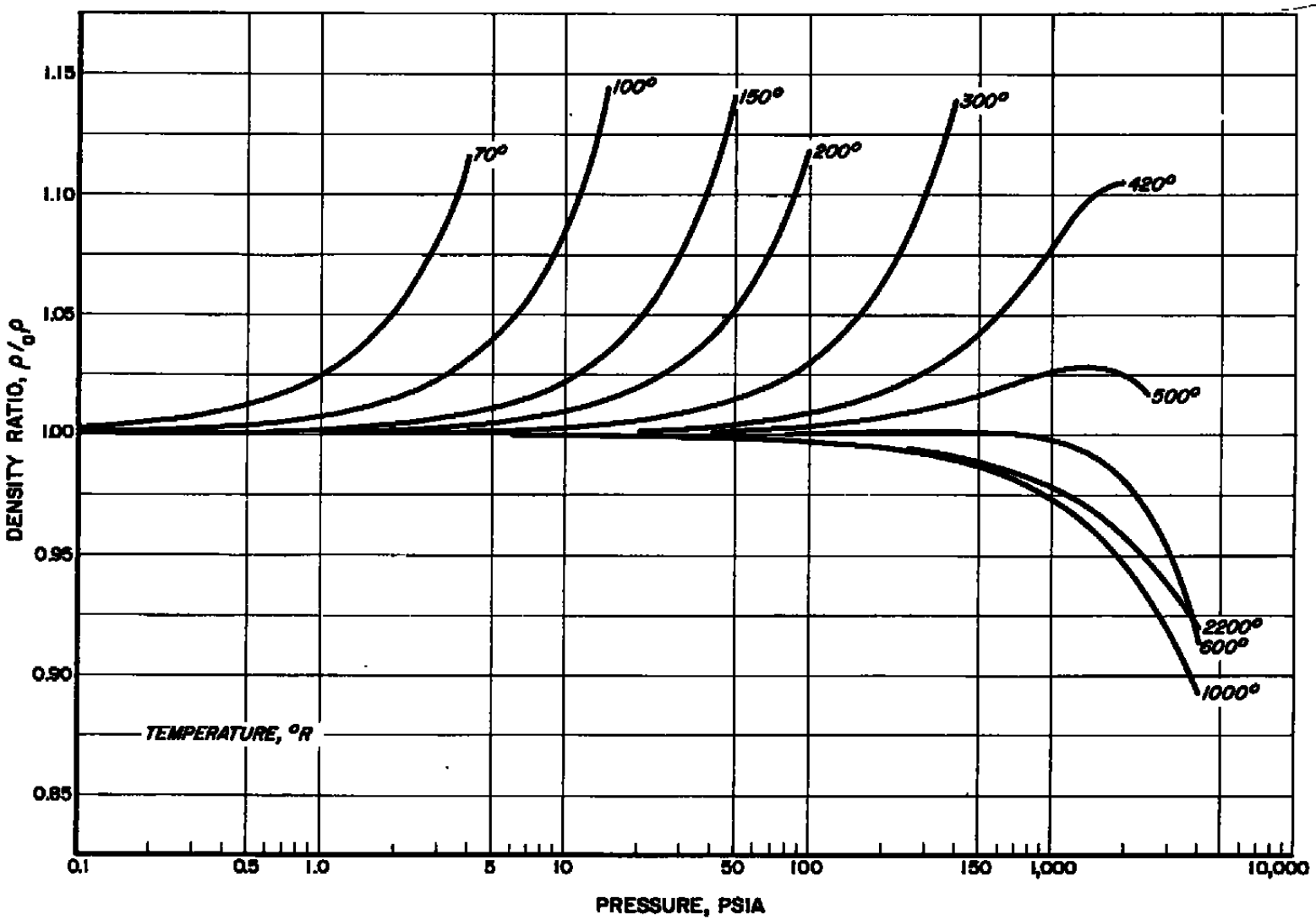

Fig. 5. Density Ratio vs Pressure

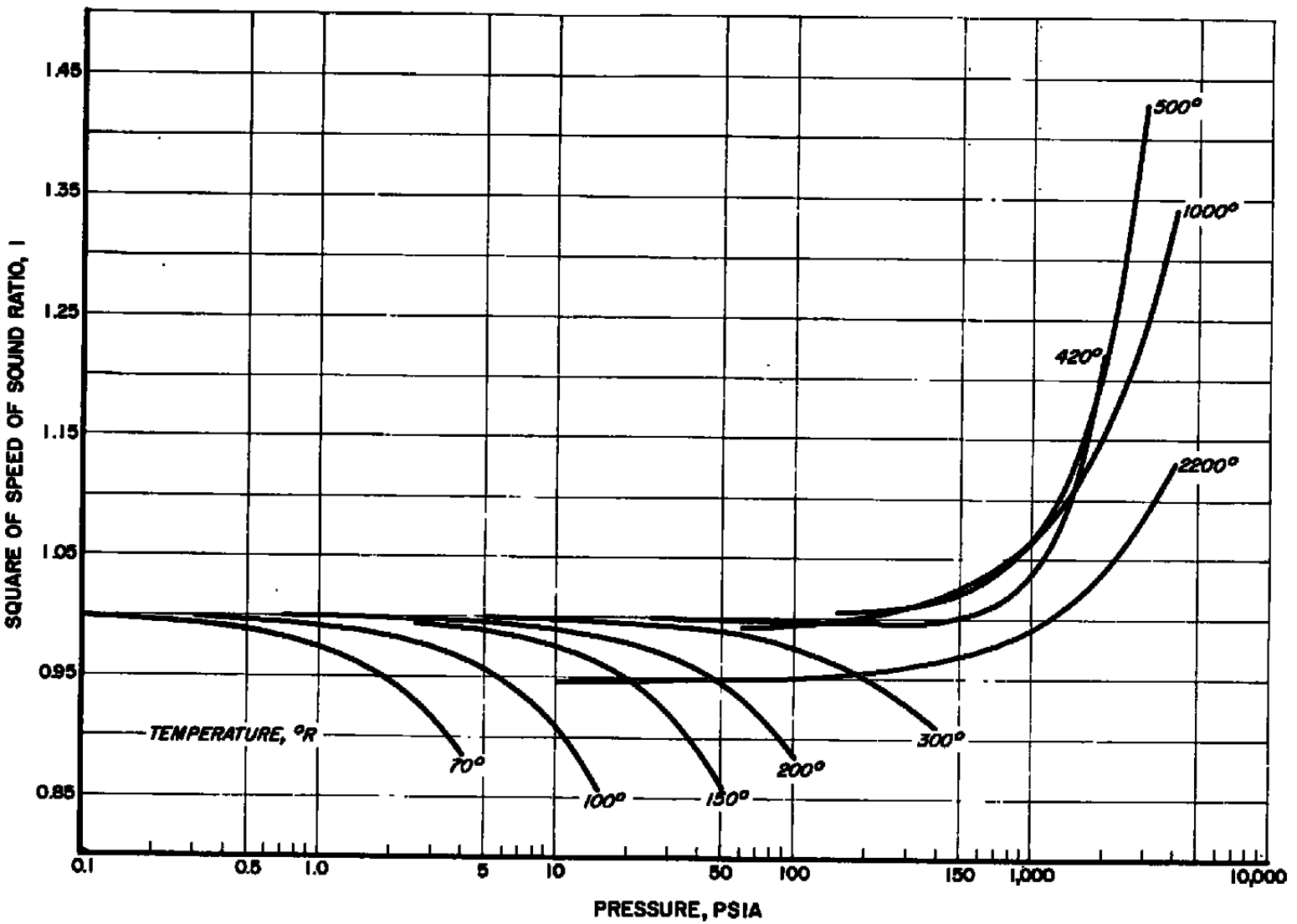

Fig. 6. Speed of Sound Ratio Squared vs Pressure

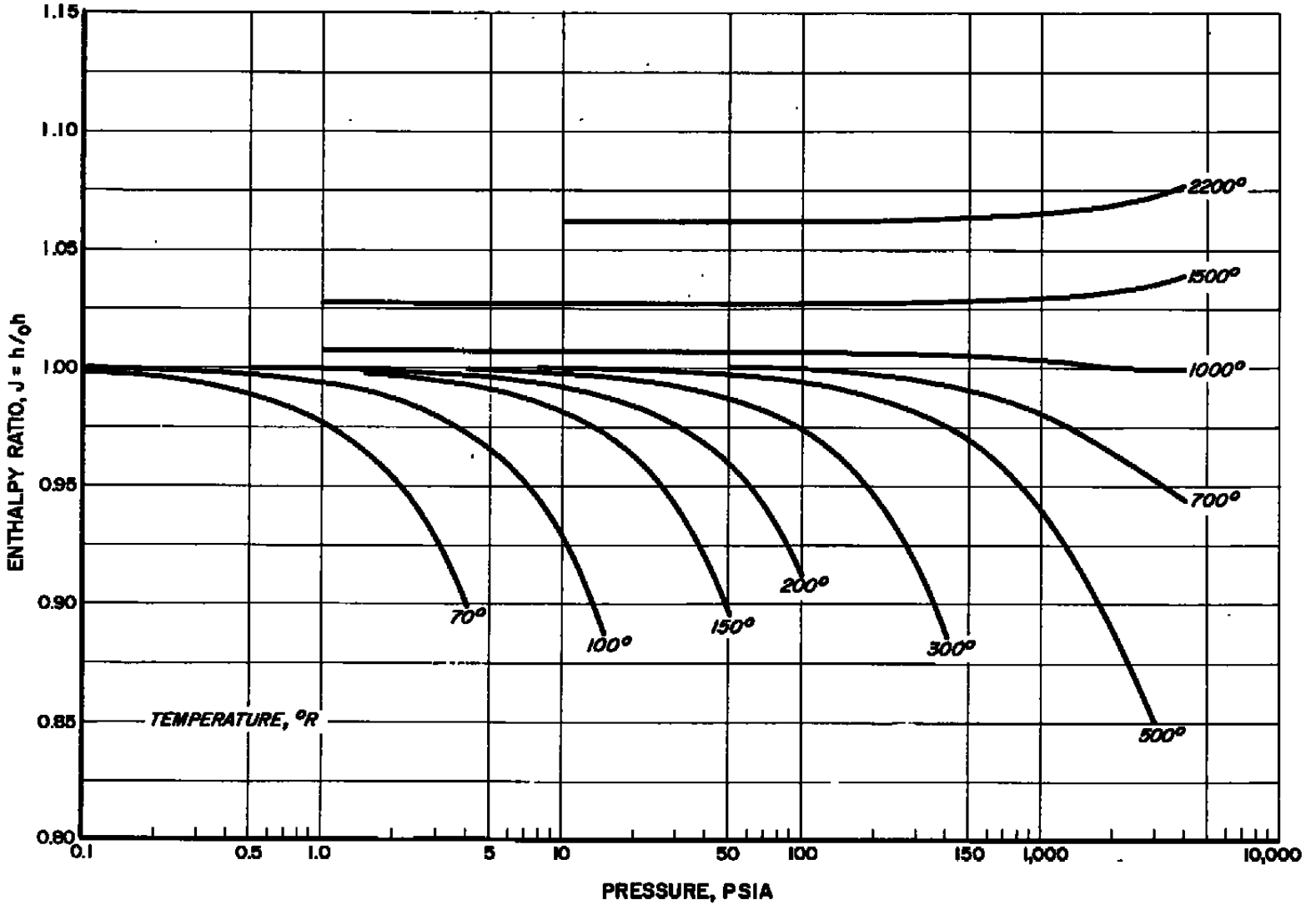

Fig. 7. Enthalpy Ratio vs Pressure

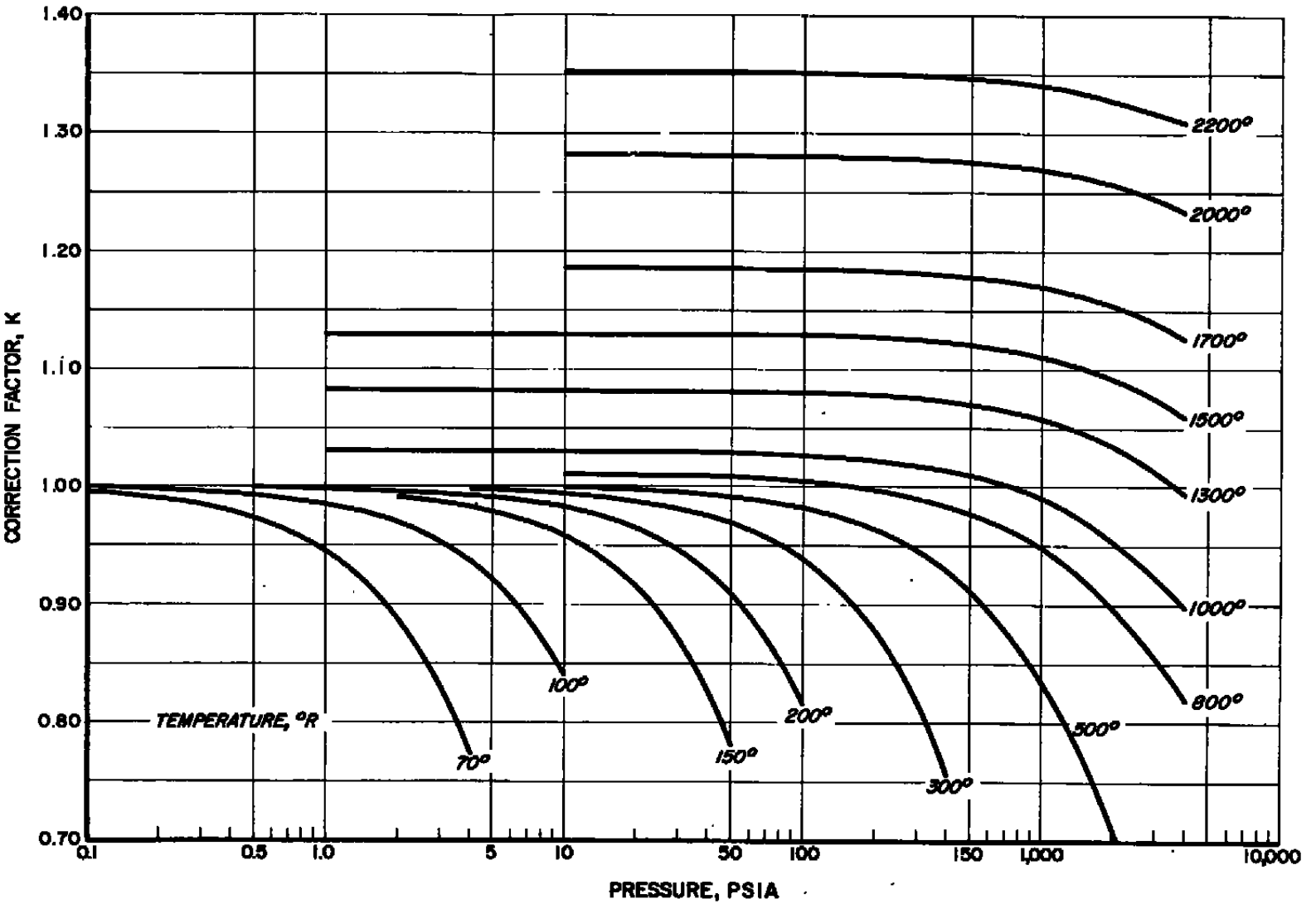

Fig. 8. Correction Factor K vs Pressure

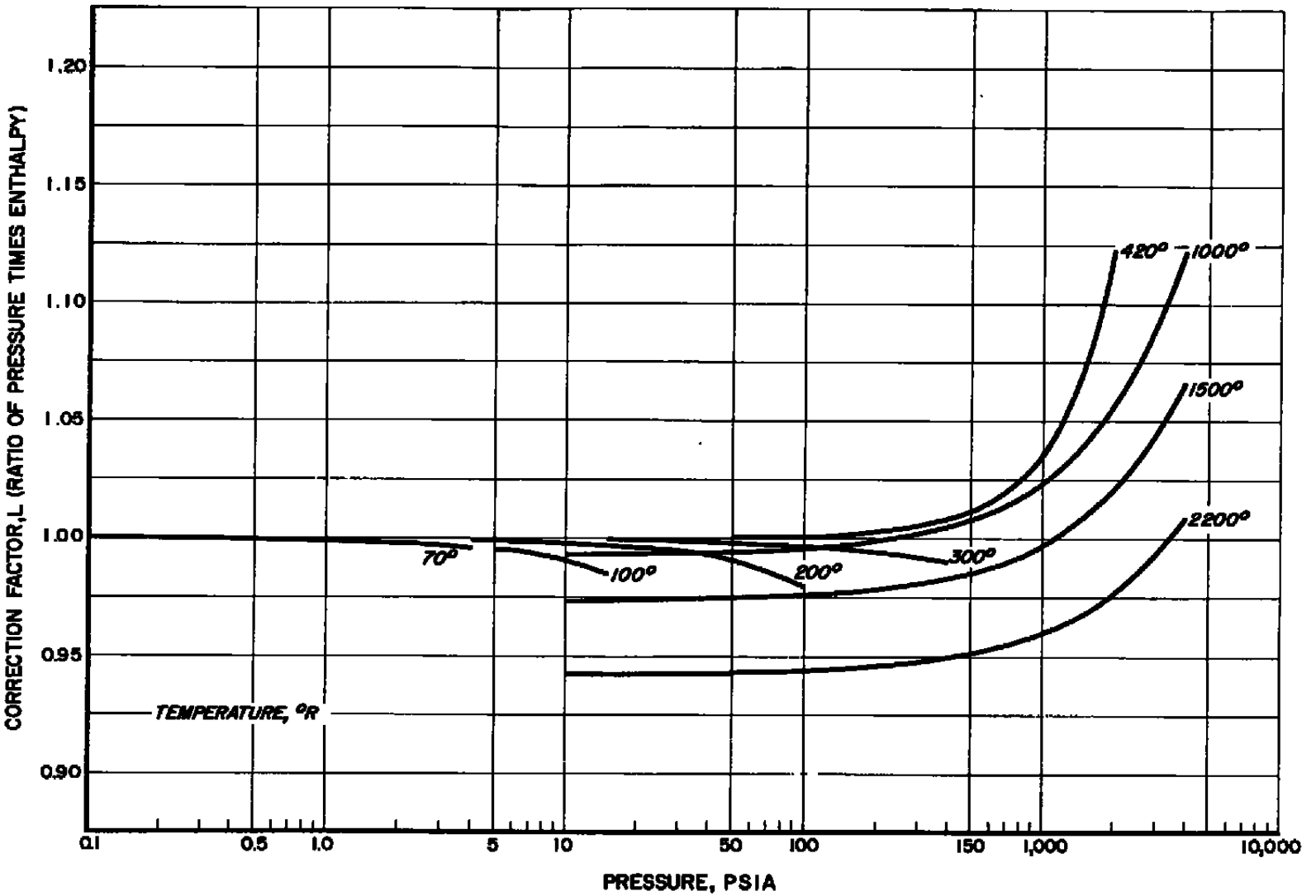

Fig. 9. Correction Factor L vs Pressure

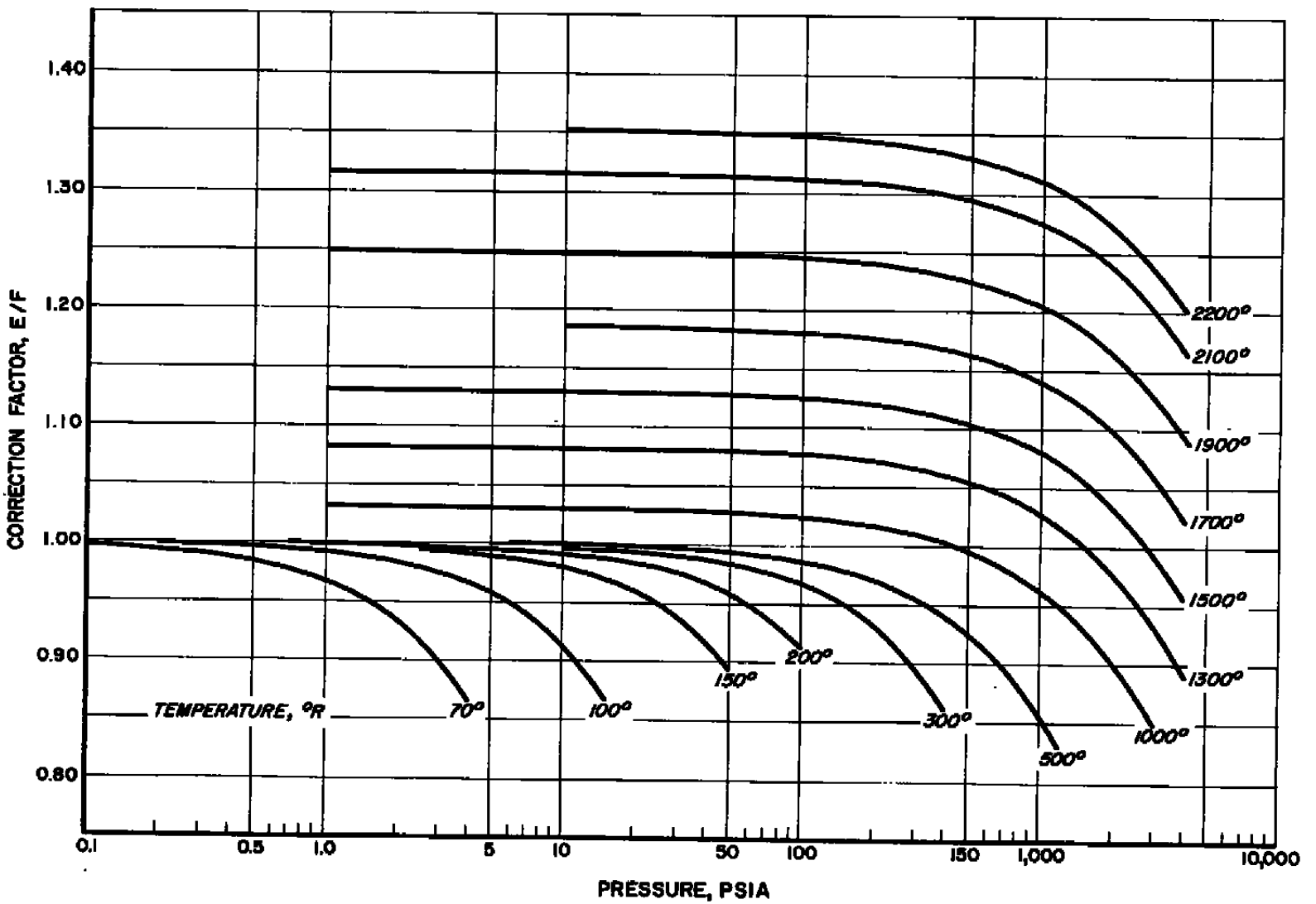

Fig. 10. Correction Factor E/F vs Pressure

APPENDIX

TABLES OF THERMODYNAMIC PROPERTIES OF AIR

Temperature 70°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
.025	.24033	.17157	1.4007	1.0006	.9993	.9994	.9986	1.0000	.9992
.050	.24068	.17173	1.4015	1.0012	.9987	.9989	.9972	1.0000	.9984
.075	.24103	.17190	1.4022	1.0018	.9981	.9983	.9958	.9999	.9976
.10	.24139	.17206	1.4030	1.0024	.9974	.9977	.9944	.9999	.9968
.15	.24211	.17238	1.4045	1.0035	.9961	.9966	.9916	.9999	.9951
.20	.24283	.17271	1.4060	1.0047	.9948	.9955	.9888	.9998	.9935
.25	.24356	.17304	1.4075	1.0059	.9935	.9943	.9860	.9998	.9919
.30	.24428	.17337	1.4091	1.0071	.9922	.9932	.9832	.9998	.9902
.40	.24576	.17402	1.4122	1.0096	.9896	.9909	.9776	.9997	.9870
.50	.24724	.17469	1.4154	1.0120	.9870	.9885	.9720	.9996	.9837
.60	.24875	.17535	1.4186	1.0145	.9843	.9862	.9664	.9995	.9804
.70	.25027	.17602	1.4218	1.0170	.9817	.9839	.9608	.9994	.9771
.80	.25181	.17669	1.4251	1.0195	.9790	.9815	.9552	.9993	.9739
.90	.25337	.17737	1.4285	1.0221	.9763	.9792	.9496	.9992	.9706
1.0	.25495	.17805	1.4319	1.0246	.9736	.9768	.9440	.9991	.9673
1.5	.26314	.18150	1.4498	1.0379	.9599	.9648	.9159	.9987	.9507
2.0	.27189	.18505	1.4693	1.0520	.9458	.9524	.8878	.9982	.9339
2.5	.28128	.18870	1.4906	1.0668	.9313	.9396	.8596	.9977	.9170
3.0	.29140	.19247	1.5140	1.0825	.9163	.9264	.8312	.9971	.8998
4.0	.31434	.20040	1.5686	1.1169	.8848	.8987	.7742	.9962	.8647

Temperature 75°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
.025	.24024	.17153	1.4006	1.0005	.9995	.9996	.9989	1.0000	.9994
.050	.24052	.17166	1.4011	1.0009	.9989	.9991	.9979	1.0000	.9988
.075	.24079	.17178	1.4017	1.0014	.9984	.9987	.9967	.9999	.9981
.10	.24106	.17190	1.4023	1.0019	.9979	.9982	.9956	.9999	.9975
.15	.24161	.17215	1.4035	1.0028	.9969	.9973	.9935	.9999	.9963
.20	.24217	.17240	1.4047	1.0037	.9959	.9965	.9914	.9999	.9950
.25	.24271	.17264	1.4059	1.0047	.9948	.9956	.9892	.9998	.9938
.30	.24328	.17289	1.4071	1.0056	.9938	.9947	.9870	.9997	.9926
.40	.24439	.17339	1.4095	1.0076	.9917	.9929	.9826	.9996	.9901
.50	.24554	.17389	1.4120	1.0095	.9897	.9911	.9783	.9995	.9876
.60	.24667	.17439	1.4145	1.0114	.9876	.9893	.9739	.9995	.9850
.70	.24782	.17490	1.4169	1.0134	.9854	.9875	.9695	.9993	.9825
.80	.24897	.17540	1.4194	1.0153	.9832	.9856	.9652	.9993	.9800
.90	.25015	.17591	1.4220	1.0173	.9811	.9838	.9609	.9992	.9775
1.0	.25132	.17642	1.4246	1.0193	.9790	.9820	.9566	.9991	.9750
1.5	.25744	.17900	1.4382	1.0296	.9682	.9727	.9347	.9985	.9624
2.0	.26385	.18164	1.4526	1.0403	.9572	.9632	.9129	.9980	.9497
2.5	.27062	.18434	1.4680	1.0515	.9459	.9535	.8909	.9974	.9368
3.0	.27774	.18710	1.4844	1.0631	.9342	.9436	.8690	.9969	.9239
4.0	.29341	.19284	1.5215	1.0882	.9103	.9229	.8248	.9957	.8975
5.0	.31125	.19889	1.5649	1.1160	.8849	.9012	.7800	.9943	.8705
6.0	.33198	.20531	1.6170	1.1465	.8581	.8781	.7350	.9933	.8427

Temperature 80°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
.025	.24019	.17151	1.4004	1.0004	.9995	.9996	.9991	1.0000	.9995
.050	.24039	.17160	1.4009	1.0008	.9991	.9993	.9982	1.0000	.9990
.075	.24061	.17169	1.4014	1.0011	.9987	.9989	.9974	1.0000	.9985
.10	.24082	.17179	1.4018	1.0015	.9983	.9986	.9966	.9999	.9981
.15	.24125	.17198	1.4028	1.0023	.9975	.9979	.9948	.9999	.9971
.20	.24168	.17217	1.4037	1.0030	.9966	.9972	.9931	.9998	.9961
.25	.24211	.17236	1.4047	1.0038	.9958	.9965	.9914	.9998	.9951
.30	.24256	.17255	1.4057	1.0045	.9950	.9958	.9898	.9998	.9942
.40	.24341	.17294	1.4075	1.0061	.9932	.9943	.9862	.9996	.9923
.50	.24429	.17332	1.4095	1.0076	.9916	.9929	.9828	.9995	.9903
.60	.24519	.17371	1.4115	1.0092	.9899	.9915	.9793	.9994	.9883
.70	.24608	.17410	1.4134	1.0107	.9881	.9900	.9759	.9994	.9864
.80	.24696	.17448	1.4154	1.0123	.9864	.9886	.9725	.9992	.9844
.90	.24787	.17487	1.4175	1.0139	.9847	.9872	.9690	.9991	.9825
1.0	.24879	.17527	1.4195	1.0155	.9829	.9857	.9656	.9990	.9806
1.5	.25344	.17724	1.4299	1.0236	.9742	.9784	.9484	.9985	.9708
2.0	.25832	.17925	1.4411	1.0320	.9655	.9709	.9311	.9980	.9609
2.5	.26335	.18130	1.4526	1.0407	.9564	.9634	.9137	.9974	.9509
3.0	.26864	.18338	1.4649	1.0497	.9472	.9556	.8964	.9969	.9409
4.0	.27994	.18766	1.4917	1.0687	.9283	.9398	.8615	.9957	.9206
5.0	.29241	.19213	1.5219	1.0893	.9087	.9232	.8262	.9943	.8999
6.0	.30629	.19680	1.5564	1.1116	.8881	.9059	.7906	.9930	.8788
7.0	.32193	.20169	1.5962	1.1359	.8665	.8878	.7546	.9916	.8572

Temperature 85°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
.025	.24014	.17148	1.4004	1.0003	.9997	.9997	.9993	1.0000	.9996
.050	.24030	.17156	1.4007	1.0006	.9993	.9994	.9986	1.0000	.9992
.075	.24049	.17163	1.4012	1.0009	.9990	.9991	.9979	1.0000	.9988
.10	.24065	.17171	1.4015	1.0012	.9986	.9989	.9973	.9999	.9985
.15	.24099	.17186	1.4022	1.0019	.9979	.9983	.9958	.9998	.9977
.20	.24134	.17201	1.4031	1.0025	.9972	.9977	.9944	.9998	.9969
.25	.24167	.17216	1.4038	1.0031	.9965	.9971	.9931	.9998	.9962
.30	.24202	.17231	1.4046	1.0037	.9958	.9966	.9918	.9997	.9954
.40	.24270	.17261	1.4061	1.0050	.9944	.9954	.9889	.9996	.9938
.50	.24341	.17291	1.4077	1.0062	.9930	.9943	.9862	.9996	.9924
.60	.24411	.17321	1.4093	1.0075	.9916	.9931	.9834	.9994	.9908
.70	.24480	.17351	1.4109	1.0088	.9902	.9920	.9806	.9993	.9892
.80	.24552	.17382	1.4125	1.0101	.9888	.9908	.9779	.9992	.9878
.90	.24622	.17412	1.4141	1.0114	.9874	.9896	.9751	.9991	.9862
1.0	.24694	.17443	1.4157	1.0126	.9859	.9885	.9724	.9991	.9846
1.5	.25057	.17597	1.4239	1.0192	.9787	.9826	.9585	.9986	.9769
2.0	.25437	.17753	1.4328	1.0260	.9716	.9766	.9445	.9980	.9691
2.5	.25826	.17911	1.4419	1.0329	.9643	.9706	.9306	.9975	.9613
3.0	.26226	.18071	1.4513	1.0400	.9567	.9644	.9167	.9970	.9534
4.0	.27076	.18400	1.4715	1.0549	.9415	.9519	.8887	.9959	.9375
5.0	.27991	.18739	1.4937	1.0708	.9257	.9389	.8603	.9946	.9212
6.0	.28989	.19089	1.5186	1.0876	.9097	.9256	.8319	.9934	.9048
7.0	.30075	.19453	1.5460	1.1057	.8928	.9117	.8032	.9920	.8881
8.0	.31269	.19831	1.5768	1.1250	.8754	.8973	.7742	.9907	.8710
9.0	.32597	.20224	1.6118	1.1458	.8572	.8822	.7450	.9892	.8536

Temperature 90°R

p	C_p	C_v	γ	$p/_o p$	I	J	K	L	E/F
.025	.24011	.17147	1.4003	1.0003	.9997	.9998	.9994	1.0000	.9997
.050	.24025	.17153	1.4006	1.0005	.9994	.9995	.9989	1.0000	.9994
.075	.24038	.17159	1.4009	1.0008	.9991	.9993	.9983	.9999	.9991
.10	.24052	.17165	1.4012	1.0010	.9988	.9991	.9978	.9999	.9988
.15	.24079	.17177	1.4019	1.0015	.9982	.9986	.9966	.9999	.9981
.20	.24107	.17188	1.4025	1.0021	.9977	.9981	.9954	.9998	.9975
.25	.24134	.17200	1.4031	1.0026	.9971	.9977	.9943	.9998	.9969
.30	.24162	.17212	1.4038	1.0031	.9965	.9972	.9932	.9997	.9963
.40	.24217	.17236	1.4050	1.0041	.9953	.9962	.9911	.9997	.9951
.50	.24273	.17260	1.4063	1.0052	.9941	.9953	.9887	.9995	.9938
.60	.24331	.17284	1.4077	1.0062	.9930	.9944	.9865	.9995	.9927
.70	.24385	.17308	1.4089	1.0073	.9918	.9934	.9842	.9993	.9914
.80	.24442	.17332	1.4102	1.0083	.9906	.9925	.9819	.9993	.9901
.90	.24499	.17356	1.4116	1.0094	.9895	.9915	.9797	.9992	.9889
1.0	.24557	.17381	1.4129	1.0105	.9883	.9906	.9774	.9990	.9877
1.5	.24848	.17502	1.4197	1.0159	.9824	.9858	.9661	.9986	.9815
2.0	.25145	.17625	1.4267	1.0214	.9764	.9809	.9548	.9981	.9752
2.5	.25454	.17750	1.4340	1.0271	.9703	.9760	.9433	.9976	.9689
3.0	.25769	.17876	1.4415	1.0329	.9641	.9710	.9320	.9970	.9627
4.0	.26426	.18133	1.4573	1.0448	.9515	.9609	.9091	.9961	.9499
5.0	.27122	.18396	1.4743	1.0574	.9387	.9505	.8862	.9949	.9370
6.0	.27869	.18667	1.4930	1.0707	.9255	.9398	.8629	.9937	.9240
7.0	.28666	.18945	1.5131	1.0846	.9120	.9289	.8397	.9926	.9108
8.0	.29522	.19232	1.5350	1.0993	.8980	.9176	.8162	.9914	.8973
9.0	.30448	.19527	1.5593	1.1149	.8837	.9060	.7926	.9901	.8836
10	.31454	.19834	1.5859	1.1315	.8687	.8939	.7686	.9887	.8697

Temperature 95°R

p	C_p	C_v	γ	$p/_o p$	I	J	K	L	E/F
.025	.24008	.17146	1.4002	1.0003	.9997	.9998	.9994	1.0000	.9997
.050	.24020	.17151	1.4005	1.0004	.9995	.9996	.9991	1.0000	.9995
.075	.24031	.17155	1.4008	1.0006	.9993	.9994	.9986	.9999	.9992
.10	.24042	.17160	1.4010	1.0009	.9990	.9992	.9981	.9999	.9990
.15	.24065	.17170	1.4016	1.0013	.9985	.9988	.9972	.9999	.9985
.20	.24087	.17179	1.4021	1.0017	.9980	.9984	.9963	.9999	.9980
.25	.24110	.17189	1.4026	1.0022	.9976	.9981	.9953	.9998	.9975
.30	.24132	.17198	1.4032	1.0026	.9971	.9977	.9944	.9997	.9970
.40	.24177	.17218	1.4042	1.0035	.9960	.9969	.9925	.9996	.9960
.50	.24223	.17237	1.4053	1.0044	.9951	.9961	.9907	.9995	.9950
.60	.24268	.17256	1.4064	1.0052	.9941	.9953	.9889	.9995	.9940
.70	.24315	.17275	1.4075	1.0061	.9932	.9945	.9869	.9994	.9930
.80	.24361	.17295	1.4086	1.0070	.9921	.9937	.9851	.9993	.9920
.90	.24407	.17314	1.4097	1.0079	.9911	.9929	.9832	.9992	.9910
1.0	.24453	.17334	1.4107	1.0088	.9900	.9922	.9814	.9991	.9900
1.5	.24688	.17431	1.4163	1.0133	.9850	.9882	.9720	.9987	.9849
2.0	.24929	.17530	1.4221	1.0179	.9801	.9842	.9626	.9982	.9798
2.5	.25174	.17629	1.4280	1.0226	.9749	.9801	.9532	.9977	.9748
3.0	.25427	.17730	1.4341	1.0274	.9698	.9760	.9438	.9972	.9696
4.0	.25947	.17934	1.4468	1.0372	.9592	.9677	.9249	.9963	.9593
5.0	.26496	.18142	1.4605	1.0474	.9487	.9592	.9059	.9953	.9489
6.0	.27072	.18355	1.4749	1.0581	.9377	.9506	.8869	.9942	.9384
7.0	.27679	.18573	1.4903	1.0692	.9266	.9417	.8677	.9931	.9277
8.0	.28325	.18796	1.5070	1.0809	.9152	.9326	.8483	.9920	.9169
9.0	.29008	.19025	1.5247	1.0930	.9035	.9233	.8289	.9909	.9060
10	.29737	.19260	1.5440	1.1058	.8915	.9138	.8093	.9896	.8949

Temperature 100°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
.025	.24007	.17145	1.4002	1.0002	.9997	.9998	.9996	1.0000	.9998
.050	.24015	.17149	1.4004	1.0004	.9996	.9997	.9992	1.0000	.9996
.075	.24026	.17153	1.4007	1.0006	.9994	.9995	.9988	1.0000	.9994
.10	.24036	.17157	1.4009	1.0007	.9991	.9993	.9985	1.0000	.9992
.15	.24052	.17164	1.4013	1.0011	.9987	.9990	.9977	.9999	.9988
.20	.24071	.17172	1.4018	1.0015	.9983	.9987	.9968	.9999	.9983
.25	.24090	.17180	1.4022	1.0018	.9979	.9984	.9961	.9998	.9979
.30	.24109	.17188	1.4027	1.0022	.9975	.9980	.9953	.9998	.9975
.40	.24146	.17203	1.4036	1.0030	.9967	.9974	.9937	.9996	.9967
.50	.24183	.17219	1.4044	1.0037	.9957	.9967	.9922	.9996	.9959
.60	.24221	.17235	1.4053	1.0045	.9949	.9961	.9906	.9995	.9950
.70	.24258	.17250	1.4063	1.0052	.9941	.9954	.9891	.9994	.9942
.80	.24297	.17266	1.4072	1.0060	.9932	.9947	.9874	.9993	.9933
.90	.24334	.17282	1.4081	1.0067	.9924	.9941	.9860	.9993	.9926
1.0	.24374	.17298	1.4091	1.0075	.9916	.9934	.9844	.9991	.9918
1.5	.24566	.17377	1.4137	1.0113	.9873	.9901	.9765	.9987	.9876
2.0	.24762	.17457	1.4185	1.0152	.9829	.9867	.9687	.9983	.9834
2.5	.24964	.17537	1.4235	1.0191	.9787	.9833	.9608	.9979	.9791
3.0	.25167	.17619	1.4284	1.0231	.9742	.9799	.9529	.9975	.9749
4.0	.25589	.17783	1.4390	1.0313	.9655	.9730	.9372	.9966	.9666
5.0	.26028	.17951	1.4499	1.0398	.9563	.9659	.9213	.9956	.9579
6.0	.26483	.18121	1.4615	1.0485	.9472	.9588	.9054	.9947	.9493
7.0	.26965	.18295	1.4739	1.0576	.9380	.9515	.8894	.9937	.9406
8.0	.27497	.18483	1.4877	1.0671	.9278	.9436	.8727	.9931	.9313
9.0	.27990	.18653	1.5006	1.0769	.9187	.9365	.8570	.9916	.9229
10	.28541	.18837	1.5152	1.0870	.9088	.9287	.8408	.9906	.9140
15	.31829	.19826	1.6054	1.1446	.8559	.8873	.7577	.9846	.8673

Temperature 105°R

p	C_p	C_v	γ	$p/_o p$	I	J	K	L	E/F
.025	.24005	.17144	1.4002	1.0002	.9998	.9999	.9996	1.0000	.9998
.050	.24011	.17147	1.4003	1.0003	.9996	.9997	.9994	1.0000	.9997
.075	.24021	.17151	1.4006	1.0005	.9994	.9996	.9990	1.0000	.9995
.10	.24029	.17154	1.4008	1.0006	.9993	.9994	.9987	.9999	.9993
.15	.24043	.17160	1.4011	1.0009	.9989	.9992	.9980	.9999	.9989
.20	.24058	.17167	1.4014	1.0013	.9985	.9989	.9973	.9998	.9986
.25	.24076	.17173	1.4020	1.0016	.9982	.9986	.9967	.9998	.9983
.30	.24090	.17179	1.4023	1.0019	.9978	.9983	.9960	.9998	.9979
.40	.24103	.17185	1.4026	1.0025	.9975	.9978	.9951	.9997	.9976
.50	.24152	.17205	1.4038	1.0032	.9963	.9972	.9933	.9996	.9965
.60	.24183	.17218	1.4045	1.0038	.9956	.9966	.9921	.9996	.9959
.70	.24217	.17231	1.4054	1.0045	.9950	.9961	.9908	.9994	.9952
.80	.24247	.17244	1.4061	1.0051	.9942	.9955	.9895	.9994	.9945
.90	.24278	.17257	1.4068	1.0058	.9934	.9950	.9881	.9993	.9938
1.0	.24312	.17270	1.4078	1.0064	.9928	.9944	.9868	.9992	.9931
1.5	.24471	.17335	1.4117	1.0097	.9891	.9916	.9801	.9988	.9896
2.0	.24633	.17400	1.4157	1.0130	.9853	.9887	.9735	.9984	.9862
2.5	.24800	.17466	1.4199	1.0163	.9816	.9859	.9669	.9981	.9827
3.0	.24968	.17533	1.4241	1.0197	.9778	.9830	.9602	.9977	.9791
4.0	.25314	.17667	1.4328	1.0267	.9702	.9771	.9468	.9968	.9721
5.0	.25670	.17803	1.4419	1.0338	.9625	.9712	.9335	.9960	.9651
6.0	.26043	.17942	1.4515	1.0411	.9548	.9652	.9200	.9951	.9579
7.0	.26425	.18082	1.4614	1.0487	.9469	.9591	.9065	.9942	.9507
8.0	.26826	.18225	1.4719	1.0565	.9389	.9529	.8929	.9932	.9434
9.0	.27242	.18370	1.4830	1.0645	.9308	.9466	.8794	.9924	.9361
10	.27674	.18518	1.4944	1.0728	.9224	.9402	.8657	.9914	.9287
15	.30157	.19299	1.5626	1.1188	.8785	.9064	.7960	.9861	.8906

Temperature 110°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
.025	.24004	.17144	1.4001	1.0001	.9998	.9999	.9998	1.0000	.9999
.050	.24010	.17146	1.4003	1.0003	.9997	.9998	.9994	1.0000	.9997
.075	.24016	.17149	1.4004	1.0004	.9995	.9996	.9992	1.0000	.9996
.10	.24024	.17152	1.4007	1.0005	.9994	.9995	.9989	1.0000	.9994
.15	.24036	.17157	1.4009	1.0008	.9990	.9993	.9983	.9999	.9991
.20	.24048	.17162	1.4012	1.0011	.9987	.9990	.9977	.9999	.9988
.25	.24064	.17168	1.4017	1.0014	.9985	.9988	.9971	.9998	.9985
.30	.24076	.17173	1.4020	1.0016	.9981	.9986	.9967	.9998	.9983
.40	.24103	.17184	1.4026	1.0022	.9975	.9981	.9955	.9997	.9977
.50	.24128	.17194	1.4033	1.0028	.9969	.9976	.9943	.9996	.9971
.60	.24155	.17205	1.4040	1.0033	.9963	.9971	.9932	.9996	.9965
.70	.24180	.17216	1.4045	1.0039	.9955	.9966	.9921	.9995	.9959
.80	.24207	.17226	1.4053	1.0044	.9950	.9962	.9910	.9995	.9953
.90	.24235	.17237	1.4060	1.0050	.9943	.9957	.9898	.9993	.9947
1.0	.24261	.17248	1.4066	1.0055	.9936	.9952	.9888	.9993	.9942
1.5	.24396	.17302	1.4100	1.0084	.9904	.9928	.9830	.9989	.9913
2.0	.24532	.17356	1.4135	1.0112	.9872	.9903	.9774	.9986	.9883
2.5	.24671	.17410	1.4171	1.0141	.9841	.9879	.9717	.9982	.9854
3.0	.24798	.17453	1.4208	1.0170	.9810	.9854	.9661	.9978	.9825
4.0	.25100	.17576	1.4281	1.0229	.9743	.9805	.9547	.9971	.9766
5.0	.25395	.17688	1.4357	1.0290	.9676	.9754	.9432	.9963	.9706
6.0	.25700	.17802	1.4437	1.0352	.9610	.9703	.9318	.9955	.9646
7.0	.26015	.17917	1.4520	1.0416	.9542	.9652	.9203	.9947	.9586
8.0	.26338	.18034	1.4605	1.0482	.9472	.9599	.9087	.9938	.9525
9.0	.26673	.18152	1.4694	1.0549	.9403	.9546	.8972	.9930	.9464
10	.27021	.18272	1.4788	1.0618	.9332	.9492	.8855	.9922	.9402
15	.28965	.18901	1.5325	1.0995	.8963	.9211	.8263	.9875	.9085
20	.31365	.19586	1.6014	1.1433	.8563	.8905	.7656	.9822	.8753

Temperature 115°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	K/F
.025	.24002	.17143	1.4001	1.0001	.9999	.9999	.9998	1.0000	.9999
.050	.24008	.17145	1.4003	1.0002	.9997	.9998	.9995	1.0000	.9997
.075	.24014	.17148	1.4004	1.0004	.9996	.9997	.9992	.9999	.9996
.10	.24019	.17150	1.4006	1.0005	.9994	.9996	.9990	.9999	.9995
.15	.24030	.17154	1.4008	1.0007	.9992	.9994	.9986	.9999	.9993
.20	.24042	.17159	1.4011	1.0010	.9989	.9992	.9980	.9998	.9990
.25	.24052	.17163	1.4014	1.0012	.9986	.9990	.9976	.9998	.9988
.30	.24065	.17168	1.4017	1.0014	.9983	.9988	.9971	.9998	.9985
.40	.24086	.17177	1.4022	1.0019	.9978	.9983	.9961	.9998	.9980
.50	.24109	.17186	1.4028	1.0024	.9972	.9979	.9951	.9997	.9975
.60	.24131	.17194	1.4035	1.0029	.9967	.9975	.9941	.9996	.9970
.70	.24152	.17203	1.4039	1.0034	.9961	.9971	.9931	.9995	.9965
.80	.24176	.17212	1.4046	1.0039	.9956	.9967	.9922	.9994	.9960
.90	.24198	.17221	1.4051	1.0043	.9949	.9963	.9913	.9994	.9955
1.0	.24221	.17230	1.4057	1.0048	.9944	.9958	.9903	.9994	.9950
1.5	.24335	.17275	1.4087	1.0073	.9917	.9938	.9854	.9990	.9926
2.0	.24451	.17321	1.4116	1.0098	.9888	.9917	.9805	.9986	.9901
2.5	.24568	.17366	1.4147	1.0123	.9860	.9895	.9756	.9983	.9877
3.0	.24687	.17412	1.4178	1.0148	.9832	.9874	.9708	.9980	.9851
4.0	.24927	.17504	1.4241	1.0199	.9775	.9831	.9610	.9973	.9801
5.0	.25176	.17597	1.4307	1.0252	.9717	.9788	.9511	.9965	.9750
6.0	.25431	.17692	1.4374	1.0305	.9659	.9744	.9413	.9958	.9700
7.0	.25691	.17787	1.4444	1.0360	.9600	.9700	.9314	.9951	.9649
8.0	.25961	.17883	1.4517	1.0416	.9541	.9655	.9215	.9943	.9598
9.0	.26235	.17981	1.4590	1.0473	.9480	.9610	.9114	.9935	.9546
10	.26521	.18080	1.4669	1.0531	.9421	.9564	.9015	.9929	.9494
15	.28082	.18594	1.5103	1.0845	.9105	.9327	.8509	.9886	.9228
20	.29936	.19146	1.5636	1.1202	.8768	.9072	.7990	.9841	.8950

Temperature 120°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
.025	.24002	.17143	1.4001	1.0001	.9999	.9999	.9998	1.0000	.9999
.050	.24007	.17145	1.4002	1.0002	.9997	.9998	.9996	1.0000	.9998
.075	.24011	.17147	1.4004	1.0003	.9996	.9997	.9994	1.0000	.9997
.10	.24016	.17148	1.4005	1.0004	.9995	.9996	.9992	.9999	.9996
.15	.24026	.17152	1.4007	1.0006	.9993	.9995	.9987	.9999	.9994
.20	.24035	.17156	1.4010	1.0008	.9990	.9993	.9983	.9999	.9992
.25	.24045	.17160	1.4012	1.0011	.9988	.9991	.9979	.9999	.9989
.30	.24054	.17164	1.4015	1.0013	.9985	.9989	.9975	.9998	.9987
.40	.24074	.17171	1.4020	1.0017	.9980	.9986	.9966	.9998	.9983
.50	.24093	.17179	1.4025	1.0021	.9976	.9982	.9958	.9997	.9979
.60	.24112	.17186	1.4030	1.0025	.9971	.9978	.9949	.9996	.9975
.70	.24131	.17194	1.4035	1.0030	.9966	.9975	.9941	.9996	.9970
.80	.24151	.17201	1.4040	1.0034	.9961	.9971	.9933	.9995	.9966
.90	.24170	.17209	1.4045	1.0038	.9956	.9967	.9924	.9995	.9962
1.0	.24190	.17216	1.4050	1.0042	.9951	.9964	.9916	.9994	.9958
1.5	.24287	.17254	1.4076	1.0064	.9927	.9946	.9873	.9991	.9937
2.0	.24386	.17292	1.4102	1.0086	.9902	.9927	.9831	.9988	.9915
2.5	.24486	.17331	1.4129	1.0108	.9877	.9909	.9789	.9985	.9894
3.0	.24587	.17369	1.4156	1.0130	.9852	.9891	.9746	.9981	.9873
4.0	.24792	.17446	1.4210	1.0174	.9802	.9853	.9661	.9975	.9830
5.0	.25002	.17525	1.4267	1.0220	.9752	.9816	.9576	.9968	.9786
6.0	.25217	.17604	1.4325	1.0266	.9701	.9778	.9490	.9962	.9743
7.0	.25436	.17683	1.4384	1.0314	.9650	.9740	.9405	.9955	.9700
8.0	.25661	.17764	1.4446	1.0362	.9598	.9701	.9319	.9948	.9656
9.0	.25892	.17845	1.4509	1.0411	.9546	.9662	.9232	.9941	.9612
10	.26128	.17928	1.4574	1.0461	.9493	.9623	.9146	.9934	.9567
15	.27407	.18353	1.4934	1.0727	.9220	.9419	.8708	.9897	.9341
20	.28885	.18804	1.5361	1.1022	.8932	.9204	.8263	.9858	.9107
25	.30624	.19286	1.5879	1.1352	.8626	.8974	.7808	.9816	.8864

Temperature 130°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
.025	.24001	.17142	1.4001	1.0001	.9999	.9999	.9998	1.0000	.9999
.050	.24004	.17144	1.4002	1.0002	.9998	.9999	.9996	1.0000	.9998
.075	.24008	.17145	1.4003	1.0002	.9997	.9998	.9996	1.0000	.9998
.10	.24011	.17146	1.4004	1.0003	.9996	.9997	.9994	1.0000	.9997
.15	.24019	.17149	1.4006	1.0005	.9994	.9996	.9990	.9999	.9995
.20	.24025	.17152	1.4007	1.0007	.9992	.9994	.9987	.9999	.9994
.25	.24034	.17155	1.4010	1.0008	.9990	.9993	.9984	.9999	.9992
.30	.24041	.17157	1.4012	1.0010	.9989	.9992	.9980	.9998	.9990
.40	.24055	.17163	1.4016	1.0013	.9984	.9989	.9974	.9998	.9987
.50	.24069	.17168	1.4020	1.0017	.9981	.9986	.9967	.9997	.9984
.60	.24084	.17174	1.4024	1.0020	.9977	.9983	.9961	.9997	.9981
.70	.24099	.17179	1.4028	1.0023	.9973	.9980	.9955	.9997	.9978
.80	.24112	.17185	1.4031	1.0027	.9969	.9978	.9947	.9996	.9974
.90	.24128	.17190	1.4036	1.0030	.9966	.9975	.9941	.9995	.9971
1.0	.24142	.17196	1.4039	1.0033	.9961	.9972	.9935	.9995	.9968
1.5	.24215	.17223	1.4060	1.0050	.9943	.9958	.9903	.9992	.9952
2.0	.24289	.17251	1.4080	1.0067	.9923	.9944	.9870	.9990	.9936
2.5	.24363	.17278	1.4101	1.0084	.9904	.9930	.9838	.9987	.9921
3.0	.24438	.17306	1.4121	1.0102	.9883	.9915	.9804	.9984	.9904
4.0	.24589	.17362	1.4163	1.0136	.9844	.9887	.9739	.9979	.9872
5.0	.24745	.17418	1.4207	1.0172	.9806	.9858	.9673	.9973	.9840
6.0	.24903	.17475	1.4251	1.0207	.9766	.9829	.9608	.9968	.9807
7.0	.25063	.17532	1.4296	1.0244	.9725	.9799	.9541	.9961	.9774
8.0	.25228	.17590	1.4342	1.0280	.9685	.9770	.9476	.9957	.9742
9.0	.25393	.17648	1.4389	1.0318	.9645	.9740	.9409	.9950	.9709
10	.25563	.17706	1.4437	1.0355	.9604	.9710	.9344	.9945	.9676
15	.26464	.18006	1.4697	1.0554	.9395	.9557	.9008	.9915	.9508
20	.27462	.18320	1.4990	1.0769	.9177	.9397	.8669	.9882	.9335
25	.28587	.18649	1.5329	1.1004	.8950	.9229	.8323	.9846	.9158
30	.29865	.18996	1.5722	1.1261	.8711	.9053	.7970	.9810	.8975

Temperature 140°R

p	C_p	C_v	γ	$p/_o p$	I	J	K	L	E/F
.025	.24000	.17142	1.4001	1.0001	.9999	.9999	.9998	1.0000	.9999
.050	.24003	.17143	1.4001	1.0001	.9998	.9999	.9998	1.0000	.9999
.075	.24005	.17144	1.4002	1.0002	.9998	.9998	.9996	1.0000	.9998
.10	.24008	.17145	1.4003	1.0003	.9997	.9998	.9994	.9999	.9997
.15	.24014	.17147	1.4005	1.0004	.9995	.9997	.9992	.9999	.9996
.20	.24019	.17149	1.4006	1.0005	.9994	.9996	.9990	.9999	.9995
.25	.24025	.17151	1.4008	1.0007	.9992	.9994	.9987	.9999	.9994
.30	.24030	.17153	1.4009	1.0008	.9991	.9993	.9985	.9999	.9993
.40	.24041	.17157	1.4012	1.0011	.9988	.9991	.9979	.9998	.9990
.50	.24052	.17161	1.4016	1.0013	.9984	.9989	.9975	.9998	.9988
.60	.24064	.17165	1.4019	1.0016	.9982	.9987	.9969	.9997	.9985
.70	.24075	.17169	1.4022	1.0019	.9979	.9984	.9964	.9997	.9983
.80	.24086	.17173	1.4026	1.0021	.9976	.9982	.9959	.9997	.9980
.90	.24098	.17178	1.4028	1.0024	.9972	.9980	.9954	.9996	.9978
1.0	.24109	.17182	1.4032	1.0027	.9969	.9978	.9948	.9995	.9975
1.5	.24165	.17202	1.4048	1.0040	.9953	.9967	.9923	.9994	.9963
2.0	.24222	.17223	1.4064	1.0054	.9938	.9955	.9897	.9991	.9950
2.5	.24279	.17243	1.4080	1.0068	.9922	.9944	.9871	.9988	.9938
3.0	.24335	.17263	1.4097	1.0081	.9907	.9933	.9846	.9987	.9926
4.0	.24453	.17305	1.4131	1.0109	.9876	.9910	.9794	.9982	.9901
5.0	.24570	.17346	1.4165	1.0137	.9845	.9887	.9743	.9977	.9877
6.0	.24688	.17388	1.4198	1.0165	.9811	.9864	.9691	.9973	.9851
7.0	.24809	.17430	1.4234	1.0194	.9780	.9841	.9639	.9968	.9826
8.0	.24935	.17473	1.4271	1.0223	.9749	.9818	.9587	.9963	.9801
9.0	.25058	.17515	1.4307	1.0252	.9716	.9795	.9535	.9958	.9775
10	.25185	.17558	1.4344	1.0282	.9684	.9771	.9482	.9953	.9749
15	.25847	.17777	1.4540	1.0435	.9519	.9652	.9220	.9929	.9621
20	.26566	.18003	1.4756	1.0593	.9349	.9529	.8959	.9907	.9490
25	.27351	.18238	1.4997	1.0773	.9174	.9401	.8684	.9875	.9355
30	.28216	.18482	1.5267	1.0960	.8993	.9268	.8411	.9844	.9218
40	.30237	.19003	1.5912	1.1378	.8609	.8986	.7850	.9780	.8932

Temperature 150°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
.025	.23999	.17142	1.4000	1.0001	.9999	1.0000	.9999	1.0000	1.0000
.050	.24001	.17143	1.4001	1.0001	.9999	.9999	.9998	1.0000	.9999
.075	.24004	.17143	1.4002	1.0002	.9998	.9999	.9996	1.0000	.9998
.10	.24006	.17144	1.4002	1.0002	.9997	.9998	.9996	1.0000	.9998
.15	.24010	.17146	1.4004	1.0003	.9996	.9997	.9994	1.0000	.9997
.20	.24014	.17147	1.4005	1.0004	.9995	.9996	.9992	1.0000	.9996
.25	.24019	.17149	1.4006	1.0005	.9993	.9995	.9990	1.0000	.9995
.30	.24023	.17150	1.4008	1.0007	.9992	.9995	.9987	.9998	.9994
.40	.24032	.17153	1.4010	1.0009	.9989	.9993	.9983	.9998	.9992
.50	.24040	.17156	1.4013	1.0011	.9987	.9991	.9979	.9998	.9990
.60	.24049	.17159	1.4015	1.0013	.9985	.9989	.9975	.9998	.9988
.70	.24058	.17163	1.4017	1.0015	.9981	.9987	.9971	.9997	.9986
.80	.24068	.17166	1.4021	1.0018	.9980	.9986	.9966	.9997	.9984
.90	.24076	.17169	1.4023	1.0020	.9977	.9984	.9962	.9996	.9982
1.0	.24086	.17172	1.4026	1.0022	.9975	.9982	.9958	.9996	.9980
1.5	.24129	.17187	1.4039	1.0033	.9962	.9973	.9938	.9994	.9971
2.0	.24174	.17203	1.4052	1.0048	.9949	.9964	.9914	.9992	.9961
2.5	.24219	.17218	1.4066	1.0055	.9937	.9955	.9897	.9991	.9951
3.0	.24264	.17234	1.4079	1.0066	.9923	.9946	.9876	.9989	.9941
4.0	.24355	.17265	1.4107	1.0089	.9899	.9927	.9834	.9984	.9922
5.0	.24445	.17296	1.4133	1.0112	.9872	.9909	.9792	.9980	.9902
6.0	.24539	.17328	1.4161	1.0134	.9847	.9890	.9752	.9977	.9882
7.0	.24634	.17360	1.4190	1.0158	.9822	.9872	.9709	.9972	.9862
8.0	.24729	.17392	1.4219	1.0181	.9795	.9853	.9667	.9969	.9842
9.0	.24825	.17424	1.4248	1.0204	.9769	.9834	.9626	.9965	.9822
10	.24924	.17456	1.4278	1.0229	.9744	.9815	.9583	.9960	.9802
15	.25428	.17619	1.4432	1.0350	.9611	.9719	.9372	.9941	.9700
20	.25968	.17788	1.4599	1.0479	.9475	.9619	.9159	.9921	.9598
25	.26546	.17961	1.4780	1.0614	.9336	.9517	.8944	.9900	.9493
30	.27167	.18139	1.4977	1.0756	.9194	.9411	.8726	.9878	.9386
40	.28564	.18514	1.5428	1.1067	.8896	.9189	.8282	.9834	.9166
50	.30234	.18917	1.5982	1.1417	.8580	.8948	.7826	.9789	.8935

Temperature 160°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
.025	.23999	.17142	1.4000	1.0000	.9999	1.0000	1.0000	1.0000	1.0000
.050	.24001	.17142	1.4001	1.0001	.9999	.9999	.9998	1.0000	.9999
.075	.24002	.17143	1.4001	1.0001	.9998	.9999	.9998	1.0000	.9999
.10	.24004	.17143	1.4002	1.0002	.9998	.9999	.9996	1.0000	.9998
.15	.24008	.17145	1.4003	1.0003	.9997	.9998	.9995	1.0000	.9998
.20	.24011	.17146	1.4004	1.0004	.9996	.9997	.9993	1.0000	.9997
.25	.24015	.17147	1.4005	1.0004	.9995	.9996	.9992	1.0000	.9996
.30	.24018	.17148	1.4006	1.0005	.9994	.9996	.9990	1.0000	.9995
.40	.24026	.17150	1.4009	1.0007	.9991	.9994	.9987	.9999	.9994
.50	.24032	.17153	1.4010	1.0009	.9989	.9993	.9983	.9999	.9992
.60	.24040	.17155	1.4013	1.0011	.9987	.9991	.9979	.9998	.9990
.70	.24047	.17158	1.4015	1.0013	.9986	.9990	.9976	.9998	.9989
.80	.24052	.17160	1.4016	1.0015	.9982	.9988	.9972	.9997	.9987
.90	.24060	.17162	1.4019	1.0016	.9981	.9987	.9970	.9997	.9986
1.0	.24068	.17165	1.4022	1.0018	.9980	.9985	.9966	.9997	.9984
1.5	.24102	.17177	1.4032	1.0027	.9968	.9978	.9949	.9995	.9976
2.0	.24140	.17189	1.4044	1.0036	.9958	.9970	.9932	.9994	.9968
2.5	.24176	.17201	1.4055	1.0046	.9948	.9963	.9915	.9991	.9960
3.0	.24212	.17213	1.4066	1.0055	.9937	.9955	.9898	.9990	.9952
4.0	.24282	.17237	1.4087	1.0074	.9915	.9940	.9863	.9986	.9936
5.0	.24357	.17261	1.4111	1.0092	.9895	.9925	.9830	.9984	.9921
6.0	.24430	.17285	1.4134	1.0111	.9874	.9910	.9795	.9980	.9904
7.0	.24505	.17309	1.4157	1.0130	.9852	.9895	.9761	.9977	.9888
8.0	.24582	.17334	1.4181	1.0149	.9831	.9879	.9727	.9973	.9872
9.0	.24657	.17359	1.4204	1.0168	.9810	.9864	.9693	.9970	.9856
10	.24734	.17383	1.4229	1.0188	.9789	.9849	.9658	.9966	.9840
15	.25130	.17508	1.4353	1.0287	.9680	.9771	.9486	.9949	.9758
20	.25548	.17636	1.4486	1.0391	.9569	.9691	.9311	.9930	.9675
25	.25990	.17767	1.4628	1.0498	.9458	.9610	.9136	.9912	.9591
30	.26457	.17901	1.4780	1.0611	.9343	.9527	.8958	.9892	.9506
40	.27485	.18180	1.5118	1.0851	.9107	.9355	.8599	.9851	.9331
50	.28656	.18475	1.5511	1.1115	.8858	.9174	.8232	.9807	.9150
60	.30018	.18789	1.5976	1.1407	.8597	.8983	.7856	.9760	.8961

Temperature 170°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
.050	.24000	.17142	1.4001	1.0001	.9999	.9999	.9998	1.0000	.9999
.075	.24001	.17142	1.4001	1.0001	.9999	.9999	.9998	1.0000	.9999
.10	.24003	.17143	1.4002	1.0002	.9998	.9999	.9997	1.0000	.9999
.15	.24006	.17144	1.4003	1.0002	.9997	.9998	.9996	1.0000	.9998
.20	.24009	.17145	1.4004	1.0003	.9996	.9998	.9994	1.0000	.9997
.25	.24012	.17146	1.4004	1.0004	.9995	.9997	.9993	.9999	.9997
.30	.24014	.17147	1.4005	1.0005	.9995	.9996	.9991	.9999	.9996
.40	.24020	.17148	1.4007	1.0006	.9993	.9995	.9989	.9999	.9995
.50	.24026	.17150	1.4009	1.0008	.9991	.9994	.9985	.9999	.9993
.60	.24032	.17152	1.4011	1.0009	.9989	.9993	.9983	.9999	.9992
.70	.24037	.17154	1.4012	1.0011	.9988	.9991	.9980	.9998	.9991
.80	.24043	.17156	1.4014	1.0012	.9986	.9990	.9977	.9998	.9989
.90	.24050	.17158	1.4017	1.0014	.9985	.9989	.9974	.9997	.9988
1.0	.24055	.17160	1.4018	1.0015	.9982	.9988	.9972	.9997	.9987
1.5	.24084	.17169	1.4028	1.0023	.9974	.9981	.9957	.9996	.9980
2.0	.24112	.17178	1.4037	1.0031	.9965	.9975	.9943	.9994	.9974
2.5	.24142	.17188	1.4046	1.0038	.9956	.9969	.9929	.9993	.9967
3.0	.24170	.17197	1.4055	1.0046	.9947	.9963	.9915	.9992	.9960
4.0	.24229	.17216	1.4074	1.0062	.9930	.9950	.9886	.9988	.9947
5.0	.24290	.17235	1.4093	1.0077	.9912	.9937	.9858	.9986	.9934
6.0	.24351	.17254	1.4113	1.0093	.9895	.9925	.9829	.9983	.9921
7.0	.24411	.17273	1.4132	1.0109	.9877	.9912	.9801	.9980	.9908
8.0	.24471	.17292	1.4152	1.0125	.9860	.9899	.9772	.9977	.9894
9.0	.24533	.17311	1.4172	1.0141	.9842	.9887	.9744	.9974	.9881
10	.24592	.17330	1.4190	1.0157	.9826	.9874	.9715	.9971	.9868
15	.24914	.17428	1.4295	1.0239	.9734	.9809	.9571	.9956	.9800
20	.25246	.17527	1.4404	1.0324	.9641	.9744	.9427	.9941	.9732
25	.25592	.17628	1.4518	1.0412	.9550	.9677	.9281	.9926	.9664
30	.25957	.17731	1.4639	1.0503	.9456	.9609	.9135	.9909	.9594
40	.26742	.17944	1.4903	1.0694	.9265	.9469	.8838	.9876	.9452
50	.27613	.18167	1.5200	1.0901	.9066	.9323	.8536	.9840	.9305
60	.28591	.18400	1.5539	1.1124	.8859	.9171	.8229	.9802	.9154
70	.29699	.18646	1.5928	1.1368	.8643	.9011	.7916	.9762	.8998

Temperature 180°R

P	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
.075	.24001	.17142	1.4001	1.0001	.9999	.9999	.9998	1.0000	.9999
.10	.24002	.17143	1.4001	1.0001	.9998	.9999	.9998	1.0000	.9999
.15	.24005	.17144	1.4002	1.0002	.9998	.9998	.9996	1.0000	.9998
.20	.24007	.17144	1.4003	1.0003	.9997	.9998	.9995	1.0000	.9998
.25	.24010	.17145	1.4004	1.0003	.9996	.9997	.9994	1.0000	.9997
.30	.24012	.17146	1.4004	1.0004	.9995	.9997	.9993	.9999	.9997
.40	.24017	.17148	1.4006	1.0005	.9994	.9996	.9991	.9999	.9996
.50	.24022	.17150	1.4007	1.0006	.9992	.9995	.9988	.9999	.9994
.60	.24027	.17151	1.4009	1.0008	.9991	.9994	.9985	.9998	.9993
.70	.24032	.17153	1.4010	1.0009	.9989	.9993	.9983	.9998	.9992
.80	.24038	.17155	1.4012	1.0010	.9988	.9992	.9981	.9998	.9991
.90	.24040	.17156	1.4013	1.0012	.9986	.9991	.9978	.9998	.9990
1.0	.24047	.17158	1.4015	1.0013	.9985	.9989	.9976	.9998	.9989
1.5	.24073	.17167	1.4023	1.0019	.9977	.9984	.9964	.9997	.9983
2.0	.24097	.17175	1.4030	1.0026	.9969	.9979	.9952	.9995	.9978
2.5	.24124	.17184	1.4039	1.0033	.9963	.9974	.9939	.9993	.9972
3.0	.24150	.17193	1.4046	1.0039	.9955	.9968	.9928	.9993	.9967
4.0	.24199	.17210	1.4061	1.0052	.9940	.9958	.9905	.9991	.9956
5.0	.24250	.17227	1.4077	1.0065	.9924	.9947	.9880	.9988	.9944
6.0	.24303	.17245	1.4093	1.0079	.9909	.9936	.9856	.9985	.9933
7.0	.24355	.17262	1.4109	1.0092	.9894	.9926	.9832	.9983	.9923
8.0	.24408	.17280	1.4125	1.0106	.9878	.9915	.9807	.9980	.9911
9.0	.24462	.17298	1.4142	1.0119	.9863	.9904	.9784	.9978	.9900
10	.24514	.17315	1.4158	1.0133	.9848	.9893	.9759	.9975	.9888
15	.24787	.17404	1.4242	1.0202	.9771	.9839	.9637	.9962	.9832
20	.25068	.17495	1.4329	1.0272	.9693	.9784	.9516	.9950	.9775
25	.25360	.17587	1.4420	1.0345	.9613	.9728	.9394	.9936	.9718
30	.25666	.17681	1.4516	1.0420	.9534	.9671	.9271	.9924	.9660
40	.26311	.17873	1.4721	1.0576	.9371	.9555	.9022	.9895	.9542
50	.27010	.18072	1.4946	1.0743	.9203	.9435	.8761	.9866	.9412
60	.27778	.18280	1.5196	1.0920	.9030	.9311	.8514	.9835	.9297
70	.28623	.18496	1.5475	1.1109	.8853	.9182	.8255	.9803	.9170
80	.29562	.18721	1.5791	1.1312	.8669	.9049	.7991	.9769	.9039

Temperature 190°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
.15	.24003	.17143	1.4002	1.0002	.9998	.9999	.9997	1.0000	.9999
.20	.24005	.17143	1.4003	1.0002	.9997	.9998	.9996	1.0000	.9998
.25	.24007	.17144	1.4003	1.0003	.9997	.9998	.9995	1.0000	.9998
.30	.24009	.17145	1.4004	1.0003	.9996	.9997	.9994	1.0000	.9997
.40	.24013	.17146	1.4005	1.0004	.9995	.9996	.9992	1.0000	.9996
.50	.24017	.17147	1.4007	1.0006	.9994	.9995	.9989	.9999	.9995
.60	.24021	.17148	1.4008	1.0007	.9992	.9995	.9987	.9999	.9994
.70	.24025	.17149	1.4009	1.0008	.9991	.9994	.9985	.9998	.9993
.80	.24029	.17151	1.4011	1.0009	.9990	.9993	.9983	.9998	.9992
.90	.24033	.17152	1.4012	1.0010	.9989	.9992	.9981	.9998	.9991
1.0	.24038	.17153	1.4014	1.0011	.9988	.9991	.9980	.9998	.9991
1.5	.24058	.17159	1.4021	1.0017	.9982	.9986	.9969	.9997	.9986
2.0	.24078	.17165	1.4027	1.0022	.9975	.9982	.9959	.9996	.9981
2.5	.24098	.17171	1.4034	1.0028	.9968	.9977	.9948	.9995	.9976
3.0	.24118	.17177	1.4041	1.0033	.9962	.9973	.9939	.9994	.9972
4.0	.24159	.17189	1.4055	1.0045	.9950	.9964	.9917	.9991	.9962
5.0	.24200	.17201	1.4069	1.0056	.9937	.9955	.9897	.9990	.9952
6.0	.24241	.17213	1.4083	1.0067	.9924	.9946	.9877	.9988	.9943
7.0	.24283	.17225	1.4098	1.0079	.9913	.9936	.9856	.9985	.9933
8.0	.24325	.17237	1.4112	1.0090	.9900	.9927	.9836	.9983	.9925
9.0	.24368	.17250	1.4126	1.0102	.9887	.9918	.9815	.9981	.9915
10	.24410	.17262	1.4141	1.0113	.9875	.9909	.9794	.9979	.9905
15	.24624	.17324	1.4214	1.0172	.9810	.9863	.9690	.9968	.9857
20	.24848	.17386	1.4292	1.0232	.9747	.9816	.9586	.9956	.9809
25	.25076	.17449	1.4371	1.0293	.9682	.9768	.9482	.9945	.9760
30	.25316	.17514	1.4455	1.0355	.9617	.9720	.9378	.9935	.9711
40	.25815	.17645	1.4630	1.0485	.9484	.9623	.9166	.9912	.9611
50	.26352	.17781	1.4820	1.0622	.9349	.9522	.8952	.9887	.9508
60	.26931	.17921	1.5028	1.0766	.9211	.9419	.8736	.9862	.9405
70	.27555	.18065	1.5253	1.0918	.9069	.9312	.8517	.9836	.9299
80	.28237	.18215	1.5502	1.1079	.8925	.9203	.8295	.9808	.9190
90	.28983	.18371	1.5776	1.1249	.8776	.9089	.8070	.9780	.9079
100	.29802	.18532	1.6081	1.1427	.8623	.8973	.7845	.9753	.8965

Temperature 200°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
.15	.24002	.17142	1.4002	1.0001	.9998	.9999	.9998	1.0000	.9999
.20	.24004	.17143	1.4002	1.0002	.9998	.9998	.9996	1.0000	.9998
.25	.24006	.17143	1.4003	1.0002	.9997	.9998	.9996	1.0000	.9998
.30	.24007	.17144	1.4003	1.0003	.9997	.9998	.9994	.9999	.9997
.40	.24011	.17145	1.4005	1.0004	.9996	.9997	.9993	.9999	.9997
.50	.24014	.17146	1.4006	1.0005	.9995	.9996	.9991	.9999	.9996
.60	.24018	.17147	1.4007	1.0006	.9993	.9995	.9989	.9999	.9995
.70	.24021	.17148	1.4008	1.0007	.9992	.9995	.9987	.9999	.9994
.80	.24025	.17149	1.4009	1.0008	.9991	.9994	.9985	.9998	.9993
.90	.24028	.17150	1.4011	1.0009	.9990	.9993	.9984	.9998	.9993
1.0	.24031	.17151	1.4012	1.0010	.9989	.9992	.9982	.9998	.9992
1.5	.24048	.17156	1.4017	1.0014	.9983	.9988	.9974	.9998	.9988
2.0	.24065	.17160	1.4024	1.0019	.9979	.9984	.9965	.9997	.9984
2.5	.24083	.17165	1.4030	1.0024	.9973	.9980	.9955	.9996	.9979
3.0	.24099	.17170	1.4036	1.0029	.9968	.9977	.9946	.9994	.9975
4.0	.24135	.17180	1.4048	1.0039	.9957	.9969	.9928	.9992	.9967
5.0	.24170	.17190	1.4061	1.0048	.9947	.9961	.9912	.9991	.9959
6.0	.24206	.17200	1.4073	1.0058	.9936	.9953	.9894	.9989	.9951
7.0	.24239	.17210	1.4084	1.0068	.9924	.9945	.9875	.9987	.9942
8.0	.24275	.17219	1.4098	1.0078	.9915	.9937	.9858	.9985	.9934
9.0	.24310	.17229	1.4110	1.0088	.9904	.9929	.9840	.9983	.9927
10	.24347	.17239	1.4123	1.0098	.9893	.9921	.9821	.9981	.9918
15	.24527	.17289	1.4186	1.0148	.9838	.9882	.9732	.9972	.9877
20	.24714	.17340	1.4253	1.0199	.9785	.9841	.9643	.9963	.9835
25	.24905	.17391	1.4321	1.0251	.9729	.9801	.9553	.9954	.9792
30	.25103	.17443	1.4391	1.0304	.9673	.9759	.9462	.9944	.9749
40	.25515	.17549	1.4539	1.0414	.9562	.9676	.9280	.9925	.9664
50	.25954	.17657	1.4699	1.0528	.9449	.9591	.9096	.9904	.9577
60	.26419	.17769	1.4868	1.0647	.9334	.9503	.8911	.9883	.9488
70	.26915	.17883	1.5051	1.0772	.9217	.9414	.8724	.9862	.9398
80	.27445	.18001	1.5246	1.0902	.9096	.9322	.8536	.9840	.9306
90	.28018	.18123	1.5460	1.1039	.8974	.9228	.8345	.9816	.9212
100	.28638	.18249	1.5693	1.1183	.8850	.9131	.8152	.9793	.9117

Temperature 220°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
.20	.24002	.17142	1.4002	1.0001	.9998	.9999	.9998	1.0000	.9999
.25	.24004	.17143	1.4002	1.0002	.9998	.9999	.9996	1.0000	.9998
.30	.24005	.17143	1.4003	1.0002	.9998	.9998	.9996	1.0000	.9998
.40	.24007	.17144	1.4004	1.0003	.9997	.9998	.9994	1.0000	.9997
.50	.24010	.17144	1.4005	1.0004	.9996	.9997	.9993	1.0000	.9997
.60	.24012	.17145	1.4005	1.0004	.9995	.9996	.9992	1.0000	.9996
.70	.24015	.17146	1.4006	1.0005	.9994	.9996	.9990	.9999	.9995
.80	.24017	.17146	1.4007	1.0006	.9994	.9995	.9989	.9999	.9995
.90	.24020	.17147	1.4008	1.0007	.9993	.9995	.9987	.9999	.9994
1.0	.24022	.17148	1.4009	1.0007	.9992	.9994	.9987	.9998	.9994
1.5	.24035	.17151	1.4014	1.0011	.9988	.9991	.9979	.9998	.9990
2.0	.24046	.17154	1.4018	1.0015	.9984	.9988	.9972	.9997	.9987
2.5	.24061	.17158	1.4023	1.0018	.9979	.9985	.9966	.9997	.9984
3.0	.24073	.17161	1.4028	1.0022	.9976	.9982	.9959	.9996	.9981
4.0	.24100	.17168	1.4038	1.0029	.9968	.9976	.9945	.9995	.9974
5.0	.24125	.17174	1.4047	1.0037	.9961	.9970	.9931	.9993	.9968
6.0	.24150	.17181	1.4056	1.0044	.9952	.9964	.9918	.9992	.9962
7.0	.24177	.17188	1.4066	1.0052	.9944	.9958	.9904	.9990	.9955
8.0	.24202	.17194	1.4076	1.0059	.9936	.9952	.9891	.9989	.9949
9.0	.24228	.17201	1.4085	1.0066	.9928	.9946	.9877	.9988	.9942
10	.24257	.17208	1.4096	1.0074	.9921	.9940	.9863	.9987	.9936
15	.24388	.17242	1.4145	1.0112	.9881	.9910	.9794	.9980	.9904
20	.24524	.17276	1.4195	1.0150	.9840	.9879	.9726	.9973	.9872
25	.24665	.17311	1.4248	1.0188	.9801	.9848	.9657	.9967	.9839
30	.24805	.17346	1.4300	1.0228	.9760	.9817	.9587	.9959	.9806
40	.25098	.17416	1.4411	1.0308	.9680	.9754	.9449	.9945	.9740
50	.25406	.17489	1.4527	1.0391	.9597	.9690	.9310	.9931	.9674
60	.25724	.17562	1.4648	1.0476	.9515	.9626	.9170	.9917	.9606
70	.26059	.17637	1.4775	1.0564	.9431	.9560	.9028	.9902	.9537
80	.26410	.17714	1.4909	1.0655	.9346	.9493	.8887	.9886	.9469
90	.26781	.17793	1.5051	1.0749	.9261	.9425	.8744	.9872	.9398
100	.27171	.17873	1.5202	1.0846	.9175	.9355	.8599	.9855	.9327
150	.29482	.18304	1.6107	1.1381	.8729	.8987	.7869	.9777	.8956

Temperature 240°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
.25	.24002	.17142	1.4002	1.0001	.9998	.9999	.9997	1.0000	.9999
.30	.24003	.17142	1.4002	1.0002	.9998	.9999	.9997	1.0000	.9999
.40	.24005	.17143	1.4003	1.0002	.9997	.9998	.9996	1.0000	.9998
.50	.24007	.17143	1.4004	1.0003	.9997	.9998	.9995	1.0000	.9997
.60	.24009	.17144	1.4004	1.0003	.9996	.9997	.9994	.9999	.9997
.70	.24011	.17144	1.4005	1.0004	.9996	.9997	.9992	.9999	.9996
.80	.24013	.17145	1.4006	1.0005	.9995	.9996	.9991	.9999	.9996
.90	.24015	.17145	1.4007	1.0005	.9995	.9996	.9990	.9999	.9995
1.0	.24017	.17146	1.4007	1.0006	.9994	.9995	.9989	.9999	.9995
1.5	.24026	.17148	1.4011	1.0009	.9991	.9993	.9984	.9999	.9992
2.0	.24036	.17150	1.4015	1.0011	.9988	.9991	.9978	.9998	.9990
2.5	.24046	.17153	1.4019	1.0014	.9985	.9988	.9973	.9998	.9987
3.0	.24056	.17155	1.4023	1.0017	.9982	.9986	.9967	.9997	.9985
4.0	.24076	.17160	1.4030	1.0023	.9976	.9981	.9957	.9996	.9979
5.0	.24095	.17165	1.4038	1.0028	.9970	.9976	.9946	.9995	.9974
6.0	.24115	.17169	1.4046	1.0034	.9964	.9972	.9935	.9994	.9969
7.0	.24135	.17174	1.4053	1.0040	.9958	.9967	.9924	.9993	.9964
8.0	.24155	.17179	1.4061	1.0046	.9952	.9962	.9913	.9992	.9959
9.0	.24175	.17183	1.4069	1.0051	.9946	.9958	.9903	.9991	.9954
10	.24195	.17188	1.4077	1.0057	.9940	.9953	.9892	.9990	.9948
15	.24297	.17212	1.4116	1.0086	.9910	.9929	.9837	.9985	.9922
20	.24400	.17236	1.4156	1.0116	.9881	.9905	.9783	.9980	.9896
25	.24505	.17260	1.4197	1.0145	.9851	.9881	.9729	.9975	.9870
30	.24611	.17285	1.4239	1.0175	.9821	.9857	.9674	.9970	.9844
40	.24829	.17334	1.4324	1.0236	.9760	.9808	.9565	.9960	.9791
50	.25055	.17384	1.4412	1.0299	.9700	.9759	.9455	.9950	.9737
60	.25288	.17435	1.4504	1.0362	.9639	.9709	.9345	.9940	.9684
70	.25530	.17487	1.4600	1.0427	.9578	.9658	.9235	.9930	.9629
80	.25780	.17539	1.4699	1.0494	.9516	.9607	.9124	.9919	.9574
90	.26040	.17592	1.4802	1.0562	.9455	.9555	.9012	.9909	.9519
100	.26310	.17647	1.4909	1.0632	.9393	.9503	.8901	.9898	.9463
150	.27831	.17933	1.5519	1.1007	.9078	.9230	.8336	.9844	.9175
200	.29721	.18248	1.6288	1.1432	.8754	.8936	.7759	.9788	.8870

Temperature 260°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
.30	.24002	.17142	1.4002	1.0001	.9999	.9999	.9998	1.0000	.9999
.40	.24003	.17142	1.4002	1.0002	.9998	.9998	.9996	1.0000	.9998
.50	.24005	.17143	1.4003	1.0002	.9998	.9998	.9996	1.0000	.9998
.60	.24006	.17143	1.4004	1.0003	.9997	.9998	.9994	1.0000	.9997
.70	.24008	.17143	1.4004	1.0003	.9997	.9997	.9994	1.0000	.9997
.80	.24009	.17144	1.4005	1.0004	.9996	.9997	.9993	1.0000	.9997
.90	.24011	.17144	1.4005	1.0004	.9996	.9997	.9992	1.0000	.9996
1.0	.24013	.17144	1.4006	1.0004	.9995	.9996	.9992	1.0000	.9996
1.5	.24020	.17146	1.4009	1.0007	.9993	.9994	.9986	.9999	.9993
2.0	.24028	.17148	1.4012	1.0009	.9991	.9992	.9982	.9999	.9991
2.5	.24036	.17150	1.4015	1.0011	.9989	.9991	.9978	.9998	.9989
3.0	.24044	.17151	1.4019	1.0013	.9986	.9989	.9974	.9998	.9987
4.0	.24059	.17155	1.4025	1.0018	.9982	.9985	.9965	.9997	.9983
5.0	.24075	.17158	1.4031	1.0023	.9977	.9981	.9955	.9996	.9978
6.0	.24090	.17161	1.4038	1.0027	.9973	.9977	.9947	.9996	.9974
7.0	.24108	.17165	1.4045	1.0032	.9969	.9973	.9938	.9995	.9970
8.0	.24121	.17168	1.4050	1.0036	.9964	.9970	.9929	.9995	.9965
9.0	.24138	.17172	1.4057	1.0041	.9960	.9966	.9921	.9993	.9961
10	.24155	.17175	1.4064	1.0045	.9956	.9962	.9913	.9993	.9957
15	.24233	.17192	1.4096	1.0068	.9933	.9943	.9875	.9989	.9935
20	.24313	.17210	1.4127	1.0091	.9909	.9924	.9824	.9986	.9914
25	.24395	.17227	1.4161	1.0114	.9887	.9904	.9780	.9983	.9891
30	.24478	.17245	1.4194	1.0138	.9864	.9885	.9735	.9978	.9870
40	.24646	.17280	1.4263	1.0185	.9819	.9846	.9648	.9972	.9826
50	.24819	.17316	1.4333	1.0233	.9773	.9807	.9559	.9965	.9782
60	.24999	.17353	1.4406	1.0282	.9728	.9767	.9470	.9957	.9737
70	.25180	.17389	1.4480	1.0332	.9683	.9727	.9380	.9950	.9692
80	.25368	.17427	1.4557	1.0382	.9637	.9687	.9292	.9943	.9647
90	.25560	.17464	1.4636	1.0433	.9591	.9646	.9203	.9936	.9602
100	.25761	.17503	1.4718	1.0486	.9547	.9605	.9113	.9929	.9556
150	.26843	.17702	1.5164	1.0761	.9317	.9394	.8662	.9892	.9321
200	.28111	.17916	1.5690	1.1062	.9089	.9173	.8207	.9855	.9079
250	.29614	.18147	1.6319	1.1395	.8860	.8940	.7744	.9816	.8825

Temperature 280°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
.40	.24002	.17142	1.4002	1.0001	.9999	.9999	.9997	1.0000	.9998
.50	.24003	.17142	1.4002	1.0002	.9998	.9998	.9996	1.0000	.9998
.60	.24005	.17143	1.4003	1.0002	.9998	.9998	.9996	1.0000	.9998
.70	.24006	.17143	1.4003	1.0003	.9997	.9998	.9994	1.0000	.9997
.80	.24007	.17143	1.4004	1.0003	.9997	.9998	.9994	1.0000	.9997
.90	.24008	.17143	1.4005	1.0003	.9997	.9997	.9994	1.0000	.9997
1.0	.24010	.17144	1.4005	1.0004	.9996	.9997	.9992	1.0000	.9996
1.5	.24016	.17145	1.4008	1.0005	.9995	.9995	.9989	1.0000	.9994
2.0	.24022	.17146	1.4010	1.0007	.9993	.9994	.9986	.9999	.9993
2.5	.24028	.17147	1.4013	1.0009	.9991	.9992	.9982	.9999	.9991
3.0	.24035	.17149	1.4016	1.0011	.9990	.9991	.9978	.9998	.9989
4.0	.24047	.17151	1.4021	1.0014	.9986	.9988	.9971	.9998	.9985
5.0	.24060	.17154	1.4026	1.0018	.9983	.9984	.9963	.9998	.9981
6.0	.24072	.17156	1.4031	1.0022	.9979	.9981	.9956	.9997	.9978
7.0	.24086	.17159	1.4037	1.0025	.9976	.9978	.9949	.9997	.9974
8.0	.24098	.17161	1.4042	1.0029	.9972	.9975	.9941	.9996	.9970
9.0	.24111	.17164	1.4047	1.0033	.9969	.9972	.9934	.9995	.9967
10	.24123	.17166	1.4053	1.0036	.9966	.9969	.9927	.9995	.9963
15	.24187	.17179	1.4079	1.0054	.9947	.9953	.9891	.9993	.9944
20	.24253	.17192	1.4107	1.0073	.9931	.9938	.9854	.9990	.9926
25	.24318	.17205	1.4134	1.0091	.9914	.9922	.9818	.9988	.9907
30	.24383	.17218	1.4161	1.0110	.9896	.9906	.9781	.9985	.9888
40	.24519	.17244	1.4219	1.0147	.9863	.9874	.9708	.9980	.9851
50	.24655	.17270	1.4276	1.0185	.9829	.9843	.9635	.9975	.9814
60	.24795	.17297	1.4335	1.0223	.9794	.9811	.9562	.9971	.9775
70	.24939	.17324	1.4396	1.0262	.9761	.9778	.9489	.9966	.9737
80	.25084	.17352	1.4456	1.0301	.9726	.9746	.9416	.9961	.9699
90	.25233	.17379	1.4519	1.0341	.9692	.9713	.9342	.9956	.9661
100	.25387	.17407	1.4584	1.0381	.9658	.9680	.9269	.9951	.9622
150	.26203	.17551	1.4930	1.0589	.9491	.9512	.8902	.9929	.9426
200	.27118	.17703	1.5318	1.0812	.9325	.9338	.8531	.9905	.9223
250	.28153	.17864	1.5760	1.1050	.9164	.9157	.8159	.9883	.9016
300	.29335	.18035	1.6266	1.1306	.9007	.8969	.7792	.9862	.8810

Temperature 300°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
.50	.24002	.17142	1.4002	1.0001	.9998	.9999	.9997	1.0000	.9998
.60	.24003	.17142	1.4003	1.0002	.9998	.9998	.9996	1.0000	.9998
.70	.24004	.17142	1.4003	1.0002	.9998	.9998	.9996	1.0000	.9998
.80	.24005	.17143	1.4003	1.0002	.9998	.9998	.9995	1.0000	.9997
.90	.24006	.17143	1.4004	1.0003	.9997	.9998	.9994	1.0000	.9997
1.0	.24007	.17143	1.4004	1.0003	.9997	.9997	.9994	1.0000	.9997
1.5	.24013	.17144	1.4006	1.0004	.9996	.9996	.9991	1.0000	.9995
2.0	.24018	.17145	1.4009	1.0006	.9995	.9995	.9987	1.0000	.9993
2.5	.24023	.17146	1.4011	1.0007	.9993	.9994	.9985	1.0000	.9992
3.0	.24028	.17147	1.4013	1.0009	.9992	.9992	.9981	.9999	.9990
4.0	.24039	.17149	1.4018	1.0012	.9989	.9990	.9975	.9999	.9987
5.0	.24049	.17151	1.4022	1.0015	.9987	.9987	.9969	.9999	.9984
6.0	.24061	.17153	1.4027	1.0017	.9984	.9985	.9964	.9998	.9981
7.0	.24070	.17154	1.4032	1.0020	.9982	.9982	.9957	.9998	.9977
8.0	.24079	.17156	1.4035	1.0023	.9978	.9979	.9951	.9998	.9974
9.0	.24090	.17158	1.4040	1.0026	.9976	.9977	.9945	.9997	.9971
10	.24100	.17160	1.4044	1.0029	.9973	.9974	.9939	.9997	.9968
15	.24154	.17170	1.4068	1.0044	.9961	.9961	.9908	.9995	.9951
20	.24207	.17180	1.4090	1.0059	.9947	.9948	.9877	.9993	.9935
25	.24260	.17189	1.4114	1.0073	.9934	.9935	.9847	.9992	.9919
30	.24313	.17199	1.4136	1.0088	.9921	.9922	.9817	.9991	.9903
40	.24424	.17219	1.4184	1.0118	.9895	.9896	.9755	.9987	.9870
50	.24535	.17239	1.4232	1.0149	.9870	.9870	.9692	.9983	.9837
60	.24648	.17259	1.4281	1.0179	.9844	.9843	.9632	.9981	.9804
70	.24764	.17279	1.4332	1.0210	.9819	.9817	.9570	.9977	.9771
80	.24879	.17300	1.4381	1.0241	.9792	.9790	.9509	.9974	.9738
90	.24999	.17320	1.4434	1.0272	.9768	.9763	.9448	.9971	.9705
100	.25119	.17341	1.4485	1.0304	.9742	.9736	.9386	.9968	.9671
150	.25756	.17448	1.4762	1.0466	.9618	.9599	.9079	.9954	.9502
200	.26454	.17559	1.5066	1.0635	.9499	.9459	.8772	.9941	.9329
250	.27218	.17676	1.5398	1.0813	.9384	.9314	.8465	.9929	.9153
300	.28063	.17799	1.5767	1.0999	.9274	.9166	.8158	.9919	.8973
400	.30018	.18063	1.6619	1.1400	.9071	.8857	.7544	.9904	.8601

Temperature 330°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
.70	.24003	.17142	1.4002	1.0002	.9999	.9999	.9996	1.0000	.9998
.80	.24003	.17142	1.4003	1.0002	.9998	.9998	.9996	1.0000	.9998
.90	.24004	.17142	1.4003	1.0002	.9998	.9998	.9995	1.0000	.9997
1.0	.24005	.17142	1.4003	1.0002	.9998	.9998	.9995	1.0000	.9997
1.5	.24009	.17143	1.4005	1.0003	.9997	.9997	.9993	1.0000	.9996
2.0	.24013	.17144	1.4007	1.0004	.9996	.9996	.9991	1.0000	.9995
2.5	.24017	.17144	1.4009	1.0005	.9996	.9995	.9988	1.0000	.9993
3.0	.24021	.17145	1.4011	1.0006	.9995	.9994	.9986	1.0000	.9992
4.0	.24029	.17146	1.4014	1.0009	.9993	.9992	.9980	.9999	.9989
5.0	.24037	.17148	1.4018	1.0011	.9991	.9990	.9975	.9999	.9986
6.0	.24045	.17149	1.4021	1.0013	.9990	.9988	.9971	.9999	.9984
7.0	.24053	.17150	1.4025	1.0015	.9988	.9986	.9966	.9999	.9981
8.0	.24062	.17152	1.4029	1.0017	.9987	.9984	.9961	.9999	.9978
9.0	.24070	.17153	1.4033	1.0019	.9985	.9982	.9956	.9999	.9975
10	.24077	.17154	1.4036	1.0022	.9983	.9980	.9951	.9998	.9973
15	.24118	.17161	1.4054	1.0032	.9974	.9970	.9927	.9998	.9959
20	.24158	.17167	1.4072	1.0043	.9965	.9960	.9903	.9997	.9945
25	.24199	.17174	1.4090	1.0054	.9956	.9950	.9878	.9996	.9931
30	.24241	.17181	1.4109	1.0065	.9948	.9940	.9854	.9996	.9918
40	.24324	.17194	1.4147	1.0087	.9932	.9920	.9805	.9994	.9890
50	.24408	.17208	1.4184	1.0109	.9914	.9899	.9757	.9993	.9863
60	.24493	.17221	1.4223	1.0131	.9898	.9879	.9709	.9992	.9836
70	.24581	.17235	1.4262	1.0153	.9882	.9858	.9660	.9991	.9808
80	.24669	.17249	1.4302	1.0175	.9867	.9838	.9612	.9990	.9780
90	.24754	.17262	1.4340	1.0198	.9849	.9818	.9563	.9988	.9752
100	.24844	.17276	1.4381	1.0220	.9833	.9797	.9514	.9988	.9724
150	.25309	.17347	1.4590	1.0334	.9756	.9693	.9274	.9983	.9584
200	.25807	.17421	1.4814	1.0452	.9684	.9588	.9034	.9979	.9442
250	.26330	.17497	1.5048	1.0572	.9615	.9480	.8795	.9977	.9298
300	.26893	.17576	1.5301	1.0695	.9551	.9372	.8558	.9977	.9152
400	.28130	.17742	1.5855	1.0951	.9441	.9148	.8086	.9982	.8855
500	.29534	.17920	1.6481	1.1216	.9357	.8919	.7624	.9996	.8551
600	.31128	.18112	1.7186	1.1497	.9300	.8682	.7167	1.0018	.8240

Temperature 360°R

P	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
.90	.24003	.17142	1.4002	1.0001	.9999	.9999	.9997	1.0000	.9998
1.0	.24003	.17142	1.4003	1.0002	.9999	.9998	.9996	1.0000	.9998
1.5	.24007	.17142	1.4004	1.0002	.9998	.9998	.9994	1.0000	.9996
2.0	.24010	.17143	1.4006	1.0003	.9998	.9997	.9992	1.0000	.9995
2.5	.24013	.17143	1.4007	1.0004	.9997	.9996	.9990	1.0000	.9994
3.0	.24016	.17144	1.4009	1.0005	.9997	.9995	.9988	1.0000	.9993
4.0	.24023	.17145	1.4012	1.0006	.9996	.9994	.9984	1.0000	.9990
5.0	.24029	.17146	1.4015	1.0008	.9994	.9992	.9980	1.0000	.9988
6.0	.24035	.17147	1.4018	1.0010	.9993	.9990	.9976	1.0000	.9986
7.0	.24042	.17147	1.4021	1.0011	.9992	.9989	.9972	1.0000	.9983
8.0	.24048	.17148	1.4024	1.0013	.9991	.9987	.9968	1.0000	.9981
9.0	.24054	.17149	1.4027	1.0014	.9990	.9986	.9965	1.0000	.9979
10	.24061	.17150	1.4030	1.0016	.9989	.9984	.9960	1.0000	.9976
15	.24094	.17155	1.4046	1.0024	.9985	.9976	.9940	1.0000	.9964
20	.24125	.17160	1.4059	1.0032	.9978	.9968	.9920	1.0000	.9952
25	.24157	.17164	1.4074	1.0040	.9973	.9960	.9901	1.0000	.9940
30	.24192	.17169	1.4091	1.0048	.9969	.9952	.9881	1.0000	.9929
40	.24256	.17178	1.4120	1.0064	.9958	.9936	.9842	1.0000	.9905
50	.24322	.17188	1.4151	1.0081	.9947	.9920	.9802	1.0000	.9881
60	.24388	.17197	1.4182	1.0097	.9937	.9904	.9763	1.0000	.9858
70	.24455	.17207	1.4212	1.0113	.9926	.9888	.9724	1.0000	.9834
80	.24526	.17217	1.4245	1.0129	.9917	.9872	.9685	1.0000	.9810
90	.24594	.17226	1.4277	1.0146	.9908	.9856	.9645	1.0000	.9786
100	.24663	.17236	1.4309	1.0162	.9898	.9840	.9606	1.0001	.9762
150	.25017	.17285	1.4473	1.0245	.9852	.9759	.9411	1.0002	.9641
200	.25391	.17336	1.4646	1.0328	.9810	.9677	.9218	1.0006	.9520
250	.25778	.17388	1.4825	1.0412	.9772	.9594	.9027	1.0010	.9398
300	.26184	.17441	1.5013	1.0498	.9740	.9511	.8835	1.0015	.9275
400	.27047	.17552	1.5410	1.0670	.9687	.9342	.8460	1.0032	.9027
500	.27989	.17669	1.5841	1.0844	.9655	.9171	.8092	1.0055	.8775
600	.29004	.17792	1.6302	1.1019	.9645	.8998	.7733	1.0086	.8522
700	.30103	.17922	1.6797	1.1195	.9662	.8823	.7383	1.0124	.8265
800	.31268	.18058	1.7315	1.1369	.9702	.8646	.7044	1.0173	.8008

$\frac{p}{\rho} = ZRT$

$Z = \frac{\partial p}{\rho} = L \cdot J$

Temperature 390°R

P	C_p	C_v	γ	$p/_o p$	Z	I	$\gamma_E = \frac{I\partial}{Z} = \frac{IL}{Z}$ J	K	L	E/F
2.0	.24012	.17147	1.4004	1.0002	.9998	.9998	.9998	.9993	1.0000	.9996
2.5	.24015	.17148	1.4005	1.0003		.9997	.9997	.9992	1.0000	.9995
3.0	.24018	.17148	1.4006	1.0004		.9997	.9996	.9990	1.0000	.9994
4.0	.24023	.17149	1.4009	1.0005		.9996	.9995	.9987	1.0000	.9992
5.0	.24028	.17149	1.4011	1.0006		.9996	.9994	.9984	1.0000	.9990
6.0	.24033	.17150	1.4014	1.0007		.9995	.9992	.9980	1.0000	.9987
7.0	.24039	.17151	1.4016	1.0008		.9995	.9991	.9977	1.0000	.9985
8.0	.24044	.17151	1.4018	1.0010		.9994	.9990	.9974	1.0000	.9983
9.0	.24049	.17152	1.4021	1.0011		.9993	.9989	.9970	1.0001	.9981
10	.24054	.17153	1.4024	1.0012		.9993	.9987	.9967	1.0001	.9979
15	.24080	.17156	1.4036	1.0018		.9990	.9981	.9951	1.0001	.9969
20	.24106	.17159	1.4048	1.0024	.9970	.9987	.9975	.9934	1.0002	.9958
25	.24133	.17163	1.4061	1.0030		.9984	.9968	.9918	1.0002	.9948
30	.24159	.17166	1.4074	1.0036		.9981	.9962	.9902	1.0002	.9937
40	.24212	.17173	1.4099	1.0048	.9952	.9975	.9949	.9869	1.0003	.9916
50	.24266	.17180	1.4124	1.0060		.9969	.9936	.9836	1.0004	.9895
60	.24320	.17187	1.4150	1.0072	.9929	.9963	.9923	.9803	1.0005	.9874
70	.24374	.17194	1.4176	1.0084		.9958	.9910	.9771	1.0006	.9853
80	.24428	.17201	1.4202	1.0096	.9905	.9952	.9897	.9738	1.0007	.9832
90	.24483	.17208	1.4228	1.0108		.9947	.9884	.9706	1.0009	.9811
100	.24538	.17215	1.4254	1.0120	.9881	.9942	.9871	.9673	1.0010	.9790
150	.24820	.17250	1.4388	1.0181	.9822	.9919	.9807	.9512	1.0016	.9684
200	.25108	.17286	1.4525	1.0241	.9765	.9898	.9742	.9353	1.0024	.9578
250	.25410	.17323	1.4668	1.0301		.9882	1.425 .9676	.9194	1.0032	.9471
300	.25719	.17361	1.4814	1.0361		.9869	.9611	.9038	1.0042	.9364
400	.26365	.17438	1.5119	1.0481	.9541	.9856	.9479	.8730	1.0065	.9150
500	.27047	.17519	1.5439	1.0599		.9858	1.44 .9347	.8429	1.0094	.8934
600	.27765	.17603	1.5773	1.0716	.9332	.9879	.9214	.8135	1.0128	.8718
700	.28517	.17690	1.6120	1.0829		.9918	.9081	.7851	1.0170	.8501
800	.29299	.17780	1.6478	1.0938	.9147	.9977	.8948	.7575	1.0217	.8285
900	.30107	.17874	1.6844	1.1042	.9056	1.0056	.8816	.7308	1.0272	.8070
1000	.30937	.17971	1.7216	1.1142	.8975	1.0156	.8685	.7051	1.0335	.7855
1200	.32631	.18172	1.7957	1.1317	.8836	1.0422	.8427	.6569	1.0486	.7434
1500	.35142	.18491	1.9005	1.1506	.8691	1.0981	.8059	.5937	1.0784	.6831

Temperature 420°R

P	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
2.0	.24015	.17151	1.4002	1.0002	.9998	.9998	.9994	1.0000	.9996
2.5	.24017	.17151	1.4003	1.0002	.9998	.9998	.9993	1.0000	.9995
3.0	.24019	.17151	1.4004	1.0003	.9998	.9997	.9991	1.0000	.9994
4.0	.24023	.17152	1.4006	1.0004	.9997	.9996	.9988	1.0000	.9992
5.0	.24028	.17152	1.4008	1.0004	.9997	.9995	.9987	1.0001	.9991
6.0	.24032	.17153	1.4010	1.0005	.9997	.9994	.9984	1.0001	.9989
7.0	.24036	.17154	1.4012	1.0006	.9996	.9993	.9981	1.0001	.9987
8.0	.24041	.17154	1.4015	1.0007	.9996	.9992	.9978	1.0001	.9985
9.0	.24045	.17155	1.4017	1.0008	.9996	.9991	.9975	1.0001	.9983
10	.24049	.17155	1.4019	1.0009	.9995	.9990	.9972	1.0001	.9981
15	.24071	.17158	1.4029	1.0013	.9994	.9985	.9959	1.0002	.9972
20	.24093	.17160	1.4040	1.0018	.9993	.9979	.9944	1.0003	.9962
25	.24114	.17163	1.4050	1.0022	.9991	.9974	.9931	1.0004	.9953
30	.24135	.17165	1.4061	1.0027	.9990	.9969	.9917	1.0004	.9943
40	.24181	.17170	1.4083	1.0036	.9987	.9958	.9889	1.0006	.9925
50	.24223	.17175	1.4104	1.0045	.9985	.9948	.9862	1.0007	.9906
60	.24269	.17180	1.4126	1.0054	.9983	.9937	.9834	1.0009	.9887
70	.24311	.17185	1.4147	1.0063	.9980	.9927	.9806	1.0011	.9868
80	.24358	.17191	1.4169	1.0072	.9979	.9916	.9779	1.0012	.9849
90	.24404	.17196	1.4192	1.0080	.9977	.9906	.9752	1.0015	.9830
100	.24449	.17201	1.4214	1.0089	.9975	.9895	.9725	1.0017	.9812
150	.24676	.17227	1.4324	1.0134	.9966	.9843	.9589	1.0025	.9717
200	.24911	.17253	1.4439	1.0177	.9964	.9790	.9455	1.0037	.9622
250	.25151	.17280	1.4555	1.0221	.9961	.9737	.9321	1.0048	.9527
300	.25397	.17308	1.4674	1.0264	.9963	.9685	.9190	1.0060	.9432
400	.25900	.17364	1.4916	1.0348	.9976	.9579	.8931	1.0088	.9242
500	.26423	.17422	1.5172	1.0429	1.0007	.9474	.8680	1.0121	.9052
600	.26961	.17482	1.5422	1.0508	1.0043	.9369	.8434	1.0158	.8863
700	.27518	.17543	1.5686	1.0583	1.0098	.9265	.8196	1.0199	.8674
800	.28089	.17606	1.5954	1.0653	1.0170	.9161	.7965	1.0247	.8485
900	.28666	.17671	1.6222	1.0720	1.0254	.9059	.7741	1.0298	.8299
1000	.29255	.17738	1.6493	1.0782	1.0357	.8957	.7525	1.0354	.8114
1200	.30436	.17875	1.7027	1.0889	1.0606	.8759	.7117	1.0485	.7750
1500	.32173	.18091	1.7784	1.1003	1.1098	.8476	.6567	1.0723	.7225
2000	.34767	.18467	1.8827	1.1057	1.2203	.8053	.5812	1.1231	.6426

Temperature 440°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
100	.24401	.17195	1.4191	1.0073	.9991	.9908	.9752	1.0020	.9823
150	.24604	.17217	1.4291	1.0109	.9993	.9862	.9629	1.0031	.9734
200	.24807	.17238	1.4391	1.0144	.9995	.9816	.9509	1.0043	.9646
250	.25019	.17261	1.4495	1.0179	1.0003	.9770	.9389	1.0056	.9557
300	.25230	.17283	1.4598	1.0213	1.0010	.9724	.9271	1.0070	.9469
400	.25666	.17329	1.4811	1.0279	1.0037	.9632	.9041	1.0100	.9293
500	.26115	.17376	1.5029	1.0343	1.0076	.9541	.8814	1.0134	.9116
600	.26575	.17425	1.5251	1.0403	1.0128	.9450	.8594	1.0172	.8941
700	.27039	.17474	1.5474	1.0460	1.0190	.9360	.8381	1.0214	.8767
800	.27516	.17525	1.5701	1.0514	1.0266	.9271	.8172	1.0259	.8592
900	.27998	.17577	1.5929	1.0562	1.0356	.9183	.7972	1.0310	.8420
1000	.28482	.17630	1.6155	1.0608	1.0458	.9096	.7777	1.0364	.8250
1200	.29449	.17740	1.6600	1.0684	1.0701	.8927	.7407	1.0485	.7914
1500	.30861	.17910	1.7231	1.0761	1.1163	.8685	.6905	1.0700	.7431
2000	.33001	.18208	1.8124	1.0796	1.2175	.8321	.6192	1.1131	.6685
2500	.34773	.18521	1.8775	1.0772	1.3474	.8005	.5580	1.1597	.6011

Temperature 460°R $Z = \frac{P_o}{P}$

P	C_p	C_v	γ	$\rho/_o\rho$	$\rho/_p$ Z	I	J	K	L	E/F
2.5	.24023	.17159	1.4000	1.0002		.9997	.9999	.9994	.9999	.9996
3.0	.24024	.17159	1.4001	1.0002		.9997	.9998	.9993	1.0000	.9995
4.0	.24028	.17159	1.4003	1.0002		.9997	.9998	.9991	1.0000	.9993
5.0	.24031	.17160	1.4004	1.0003		.9997	.9997	.9989	1.0000	.9992
6.0	.24035	.17160	1.4006	1.0004		.9997	.9996	.9986	1.0000	.9990
7.0	.24038	.17160	1.4008	1.0004		.9997	.9995	.9984	1.0001	.9988
8.0	.24042	.17161	1.4010	1.0005		.9997	.9994	.9982	1.0001	.9987
9.0	.24045	.17161	1.4011	1.0005		.9997	.9993	.9980	1.0002	.9985
10	.24049	.17161	1.4013	1.0006		.9997	.9993	.9977	1.0002	.9983
15	.24066	.17163	1.4022	1.0009		.9998	.9989	.9966	1.0003	.9975
20	.24083	.17165	1.4031	1.0012	.9988	.9998	.9984	.9955	1.0004	.9967
25	.24101	.17167	1.4039	1.0015		.9998	.9980	.9943	1.0005	.9958
30	.24118	.17168	1.4048	1.0018		.9998	.9976	.9932	1.0006	.9950
40	.24153	.17172	1.4065	1.0024	.9976	.9999	.9968	.9910	1.0008	.9933
50	.24188	.17175	1.4083	1.0030		1.0000	.9960	.9887	1.0010	.9917
60	.24224	.17179	1.4101	1.0036	.9964	1.0001	.9952	.9864	1.0012	.9900
70	.24259	.17183	1.4118	1.0042		1.0002	.9944	.9842	1.0015	.9883
80	.24294	.17186	1.4136	1.0048	.9952	1.0002	.9935	.9820	1.0017	.9867
90	.24328	.17190	1.4152	1.0053		1.0003	.9927	.9798	1.0020	.9850
100	.24365	.17193	1.4171	1.0059	.9941	1.0006	.9919	.9776	1.0022	.9834
150	.24545	.17211	1.4261	1.0088		1.0012	.9878	.9665	1.0035	.9750
200	.24727	.17229	1.4352	1.0116	.9885	1.0022	.9838	.9557	1.0048	.9667
250	.24912	.17248	1.4443	1.0144		1.0034	.9797	.9448	1.0062	.9584
300	.25100	.17266	1.4537	1.0171		1.0051	.9757	.9341	1.0077	.9501
400	.25479	.17304	1.4724	1.0223	.9782	1.0087	.9676	.9132	1.0109	.9335
500	.25869	.17343	1.4916	1.0272		1.0136	.9597	.8928	1.0145	.9171
600	.26266	.17383	1.5110	1.0319	.9691	1.0195	.9517	.8728	1.0182	.9007
700	.26664	.17424	1.5303	1.0362		1.0264	.9439	.8535	1.0224	.8844
800	.27068	.17465	1.5498	1.0401	.9614	1.0344	.9362	.8347	1.0270	.8682
900	.27478	.17508	1.5695	1.0437		1.0437	.9286	.8165	1.0318	.8522
1000	.27887	.17551	1.5889	1.0469	.9552	1.0539	.9211	.7989	1.0371	.8363
1200	.28694	.17639	1.6267	1.0521	.9505	1.0777	.9065	.7654	1.0486	.8053
1500	.29878	.17776	1.6808	1.0569	.9462	1.1218	.8856	.7194	1.0684	.7603
2000	.31671	.18015	1.7580	1.0577	.9454	1.2153	.8542	.6529	1.1068	.6906
2500	.33186	.18266	1.8168	1.0548	.9480	1.3336	.8264	.5943	1.1472	.6268

Temperature 480°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
150	.24500	.17209	1.4237	1.0071	1.0029	.9892	.9694	1.0038	.9763
200	.24663	.17224	1.4319	1.0093	1.0045	.9856	.9594	1.0053	.9683
250	.24828	.17240	1.4401	1.0115	1.0061	.9820	.9496	1.0068	.9605
300	.24996	.17255	1.4486	1.0136	1.0082	.9784	.9399	1.0084	.9527
400	.25332	.17287	1.4654	1.0176	1.0129	.9713	.9207	1.0118	.9369
500	.25676	.17320	1.4824	1.0214	1.0185	.9642	.9021	1.0154	.9214
600	.26025	.17353	1.4997	1.0249	1.0251	.9572	.8839	1.0193	.9060
700	.26376	.17387	1.5170	1.0281	1.0327	.9504	.8662	1.0235	.8906
800	.26725	.17421	1.5341	1.0309	1.0411	.9436	.8491	1.0280	.8754
900	.27078	.17457	1.5511	1.0334	1.0505	.9369	.8325	1.0329	.8603
1000	.27429	.17492	1.5681	1.0356	1.0610	.9303	.8164	1.0379	.8455
1200	.28123	.17565	1.6011	1.0390	1.0845	.9175	.7856	1.0490	.8162
1500	.29136	.17677	1.6482	1.0414	1.1272	.8994	.7432	1.0676	.7740
2000	.30670	.17872	1.7161	1.0396	1.2157	.8720	.6813	1.1031	.7083
2500	.31970	.18069	1.7693	1.0344	1.3251	.8481	.6265	1.1399	.6481

Temperature 500°R

P	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
3.0	.24037	.17173	1.3997	1.0001	.9996	1.0000	1.0000	.9999	1.0001
4.0	.24039	.17173	1.3998	1.0002	.9996	.9999	.9998	.9999	1.0000
5.0	.24042	.17173	1.4000	1.0002	.9996	.9998	.9996	1.0000	.9998
6.0	.24045	.17173	1.4001	1.0002	.9996	.9998	.9995	1.0000	.9997
7.0	.24048	.17174	1.4003	1.0003	.9996	.9997	.9992	1.0000	.9995
8.0	.24051	.17174	1.4004	1.0003	.9997	.9996	.9991	1.0001	.9994
9.0	.24054	.17174	1.4006	1.0003	.9997	.9996	.9989	1.0001	.9992
10	.24056	.17174	1.4007	1.0004	.9997	.9995	.9987	1.0001	.9991
15	.24071	.17176	1.4014	1.0006	.9999	.9992	.9977	1.0002	.9983
20	.24085	.17177	1.4022	1.0008	1.0000	.9989	.9968	1.0004	.9976
25	.24099	.17178	1.4029	1.0010	1.0001	.9985	.9958	1.0005	.9968
30	.24113	.17179	1.4036	1.0012	1.0003	.9982	.9949	1.0006	.9961
40	.24142	.17182	1.4051	1.0015	1.0005	.9976	.9931	1.0009	.9946
50	.24171	.17185	1.4065	1.0019	1.0008	.9969	.9913	1.0012	.9932
60	.24199	.17187	1.4080	1.0023	1.0011	.9963	.9893	1.0014	.9916
70	.24228	.17190	1.4094	1.0027	1.0014	.9956	.9874	1.0017	.9901
80	.24256	.17192	1.4109	1.0030	1.0018	.9950	.9857	1.0020	.9886
90	.24285	.17195	1.4123	1.0034	1.0021	.9943	.9838	1.0023	.9872
100	.24313	.17197	1.4138	1.0038	1.0024	.9937	.9819	1.0025	.9856
150	.24459	.17210	1.4212	1.0056	1.0041	.9905	.9728	1.0040	.9782
200	.24606	.17223	1.4287	1.0073	1.0062	.9873	.9637	1.0055	.9707
250	.24754	.17236	1.4362	1.0090	1.0084	.9841	.9547	1.0071	.9633
300	.24902	.17249	1.4437	1.0107	1.0107	.9809	.9458	1.0086	.9559
400	.25201	.17276	1.4587	1.0137	1.0160	.9747	.9284	1.0121	.9411
500	.25504	.17303	1.4740	1.0165	1.0223	.9685	.9114	1.0158	.9265
600	.25809	.17331	1.4892	1.0191	1.0293	.9623	.8949	1.0197	.9120
700	.26114	.17359	1.5043	1.0213	1.0370	.9563	.8788	1.0239	.8976
800	.26421	.17387	1.5196	1.0233	1.0458	.9504	.8632	1.0283	.8833
900	.26729	.17416	1.5347	1.0250	1.0554	.9445	.8480	1.0329	.8692
1000	.27032	.17446	1.5495	1.0263	1.0657	.9388	.8333	1.0379	.8552
1200	.27633	.17506	1.5785	1.0282	1.0888	.9276	.8051	1.0484	.8278
1500	.28504	.17598	1.6197	1.0288	1.1295	.9118	.7662	1.0660	.7882
2000	.29825	.17757	1.6796	1.0247	1.2119	.8880	.7090	1.0990	.7265
2500	.30959	.17921	1.7275	1.0171	1.3115	.8672	.6587	1.1337	.6699
3000	.31930	.18096	1.7645	1.0122	1.4307	.8489	.6094	1.1638	.6168

Temperature 525°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
150	.24429	.17214	1.4191	1.0040	1.0057	.9918	.9758	1.0042	.9797
200	.24562	.17225	1.4260	1.0053	1.0084	.9890	.9676	1.0058	.9727
250	.24693	.17235	1.4327	1.0065	1.0110	.9863	.9595	1.0074	.9657
300	.24825	.17246	1.4395	1.0076	1.0139	.9836	.9516	1.0091	.9588
400	.25096	.17268	1.4533	1.0097	1.0203	.9781	.9359	1.0125	.9450
500	.25362	.17290	1.4669	1.0115	1.0272	.9728	.9207	1.0163	.9312
600	.25631	.17312	1.4805	1.0131	1.0348	.9675	.9058	1.0202	.9177
700	.25903	.17335	1.4943	1.0144	1.0435	.9623	.8913	1.0244	.9041
800	.26174	.17358	1.5079	1.0155	1.0527	.9572	.8773	1.0287	.8909
900	.26442	.17382	1.5212	1.0164	1.0625	.9522	.8635	1.0332	.8777
1000	.26709	.17405	1.5346	1.0170	1.0731	.9473	.8502	1.0380	.8646
1200	.27235	.17453	1.5605	1.0173	1.0964	.9378	.8248	1.0482	.8390
1500	.27998	.17527	1.5974	1.0161	1.1365	.9243	.7893	1.0648	.8021
2000	.29163	.17653	1.6520	1.0097	1.2159	.9040	.7372	1.0956	.7444
2500	.30177	.17783	1.6970	.9997	1.3091	.8864	.6917	1.1285	.6915
3000	.31047	.17916	1.7329	.9896	1.4167	.8711	.6493	1.1600	.6426

Temperature 550°R

P	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
1.0	.24056	.17198	1.3988	1.0000	.9991	1.0002	1.0010	.9997	1.0011
1.5	.24058	.17198	1.3988	1.0000	.9991	1.0002	1.0010	.9998	1.0010
2.0	.24059	.17198	1.3989	1.0000	.9991	1.0002	1.0009	.9998	1.0009
2.5	.24060	.17198	1.3989	1.0000	.9992	1.0002	1.0008	.9998	1.0009
3.0	.24061	.17199	1.3990	1.0001	.9992	1.0002	1.0007	.9998	1.0008
4.0	.24063	.17199	1.3991	1.0001	.9992	1.0001	1.0006	.9998	1.0007
5.0	.24065	.17199	1.3993	1.0001	.9993	1.0001	1.0004	.9999	1.0005
6.0	.24068	.17199	1.3994	1.0001	.9993	1.0000	1.0003	.9999	1.0004
7.0	.24070	.17199	1.3995	1.0001	.9994	1.0000	1.0001	.9999	1.0003
8.0	.24072	.17199	1.3996	1.0002	.9994	.9999	1.0000	.9999	1.0001
9.0	.24075	.17200	1.3997	1.0002	.9994	.9999	.9998	1.0000	1.0000
10	.24077	.17200	1.3998	1.0002	.9995	.9998	.9997	1.0000	.9999
15	.24088	.17201	1.4004	1.0003	.9997	.9996	.9989	1.0001	.9992
20	.24100	.17201	1.4010	1.0004	1.0000	.9993	.9981	1.0003	.9985
25	.24111	.17202	1.4016	1.0005	1.0002	.9991	.9974	1.0004	.9979
30	.24122	.17203	1.4022	1.0006	1.0004	.9988	.9966	1.0006	.9972
40	.24145	.17205	1.4034	1.0008 .9992	1.0009	.9983	.9951	1.0009	.9959
50	.24168	.17207	1.4046	1.0010	1.0013	.9978	.9936	1.0012	.9945
60	.24191	.17208	1.4058	1.0012 .9988	1.0018	.9973	.9920	1.0015	.9932
70	.24214	.17210	1.4070	1.0013	1.0023	.9969	.9905	1.0018	.9919
80	.24236	.17212	1.4081	1.0015 .9985	1.0028	.9964	.9890	1.0021	.9905
90	.24259	.17213	1.4093	1.0017	1.0033	.9959	.9875	1.0024	.9892
100	.24282	.17215	1.4105	1.0019 .9981	1.0038	.9954	.9860	1.0027	.9879
150	.24397	.17224	1.4165	1.0028	1.0064	.9930	.9785	1.0043	.9812
200	.24512	.17233	1.4224	1.0036 .9964	1.0092	.9905	.9712	1.0060	.9747
250	.24628	.17241	1.4284	1.0043	1.0122	.9881	.9639	1.0076	.9681
300	.24743	.17250	1.4344	1.0051	1.0152	.9858	.9567	1.0093	.9615
400	.24975	.17268	1.4463	1.0063 .9937	1.0219	.9811	.9425	1.0129	.9485
500	.25207	.17286	1.4582	1.0074	1.0291	.9764	.9287	1.0167	.9356
600	.25439	.17305	1.4701	1.0082 .9919	1.0370	.9719	.9153	1.0206	.9228
700	.25670	.17323	1.4818	1.0088 .9913	1.0455	.9674	.9021	1.0247	.9101
800	.25900	.17342	1.4935	1.0092 .9909	1.0546	.9630	.8894	1.0290	.8976
900	.26128	.17361	1.5050	1.0094 .9907	1.0643	.9586	.8769	1.0334	.8852
1000	.26353	.17381	1.5163	1.0094 .9907	1.0747	.9544	.8648	1.0381	.8729
1500	.27431	.17479	1.5694	1.0060 .9940	1.1350	.9346	.8093	1.0636	.8142
2000	.28398	.17581	1.6153	.9978 1.0022	1.2085	.9172	.7615	1.0926	.7598
2500	.29235	.17685	1.6531	.9862 1.0140	1.2934	.9022	.7200	1.1239	.7100
3000	.29943	.17790	1.6832	.9729 1.0278	1.3886	.8893	.6829	1.1558	.6644
4000	.31054	.18009	1.7244	.9504 1.0522	1.6118	.8689	.6125	1.2110	.5821

Temperature 575°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
10	.24092	.17216	1.3993	1.0001	.9993	1.0000	1.0002	.9999	1.0003
15	.24102	.17217	1.3999	1.0002	.9995	.9998	.9995	1.0001	.9997
20	.24112	.17218	1.4004	1.0002	.9998	.9995	.9989	1.0003	.9991
25	.24122	.17219	1.4010	1.0003	1.0001	.9993	.9981	1.0004	.9984
30	.24133	.17219	1.4015	1.0004	1.0003	.9991	.9974	1.0005	.9978
40	.24153	.17221	1.4026	1.0005	1.0009	.9987	.9960	1.0008	.9965
50	.24174	.17222	1.4036	1.0006	1.0014	.9982	.9946	1.0012	.9952
60	.24194	.17224	1.4047	1.0007	1.0020	.9978	.9934	1.0015	.9940
70	.24215	.17225	1.4058	1.0008	1.0025	.9974	.9920	1.0018	.9928
80	.24236	.17226	1.4069	1.0009	1.0031	.9970	.9906	1.0021	.9915
90	.24256	.17228	1.4079	1.0011	1.0035	.9965	.9891	1.0024	.9902
100	.24276	.17229	1.4090	1.0012	1.0041	.9961	.9878	1.0027	.9889
150	.24380	.17237	1.4144	1.0017	1.0071	.9940	.9810	1.0044	.9826
200	.24483	.17244	1.4198	1.0022	1.0101	.9919	.9743	1.0060	.9764
250	.24586	.17251	1.4252	1.0026	1.0134	.9898	.9677	1.0077	.9702
300	.24691	.17259	1.4306	1.0030	1.0167	.9877	.9611	1.0094	.9640
400	.24898	.17273	1.4414	1.0036	1.0239	.9836	.9482	1.0131	.9516
500	.25104	.17289	1.4520	1.0040	1.0313	.9795	.9357	1.0168	.9394
600	.25309	.17304	1.4626	1.0042	1.0395	.9756	.9234	1.0208	.9273
700	.25513	.17319	1.4731	1.0042	1.0482	.9717	.9115	1.0249	.9153
800	.25717	.17335	1.4835	1.0041	1.0575	.9678	.8998	1.0290	.9035
900	.25916	.17351	1.4936	1.0037	1.0672	.9641	.8885	1.0334	.8917
1000	.26112	.17366	1.5036	1.0032	1.0774	.9604	.8774	1.0379	.8802
1500	.27059	.17447	1.5509	.9978	1.1362	.9433	.8265	1.0624	.8247
2000	.27910	.17531	1.5920	.9883	1.2061	.9283	.7824	1.0899	.7733
2500	.28650	.17615	1.6265	.9757	1.2858	.9153	.7442	1.1197	.7261
3000	.29277	.17700	1.6541	.9608	1.3729	.9043	.7109	1.1509	.6830
4000	.30251	.17867	1.6931	.9265	1.5651	.8875	.6564	1.2160	.6081

$\frac{p}{\rho} = ZRT \qquad \frac{p}{\rho_0} = RT \qquad \rho ZRT = \rho_0 RT$

$\therefore \frac{\rho}{\rho_0} = \frac{1}{Z} \quad , \quad \frac{\rho_0}{\rho} = Z$

Temperature 600°R

p	C_p	C_v	γ	$Z = 1/(\rho/_0\rho)$	I	J	K	L	E/F
7.0	.24104	.17236	1.3985	1.0000	.9988	1.0003	1.0013	.9997	1.0013
8.0	.24106	.17236	1.3986	1.0001	.9989	1.0002	1.0010	.9997	1.0011
9.0	.24108	.17236	1.3987	1.0001	.9989	1.0002	1.0009	.9997	1.0010
10	.24110	.17236	1.3988	1.0001	.9990	1.0001	1.0008	.9998	1.0009
15	.24119	.17237	1.3993	1.0001	.9993	1.0000	1.0002	.9999	1.0003
20	.24128	.17237	1.3998	1.0001	.9996	.9998	.9996	1.0001	.9997
25	.24138	.17238	1.4003	1.0002	.9999	.9996	.9989	1.0002	.9991
30	.24147	.17239	1.4007	1.0002	1.0002	.9994	.9983	1.0004	.9985
40	.24166	.17240	1.4017	1.0002	1.0008	.9990	.9971	1.0008	.9973
50	.24184	.17241	1.4027	1.0003	1.0013	.9986	.9958	1.0011	.9961
60	.24203	.17242	1.4037	1.0004	1.0019	.9983	.9944	1.0014	.9948
70	.24222	.17243	1.4047	1.0004	1.0025	.9979	.9933	1.0017	.9937
80	.24241	.17245	1.4057	1.0005	1.0032	.9975	.9920	1.0020	.9925
90	.24258	.17246	1.4066	1.0005	1.0037	.9971	.9908	1.0024	.9913
100	.24277	.17247	1.4076	1.0006	1.0043	.9967	.9894	1.0027	.9900
150	.24371	.17253	1.4126	1.0008	1.0076	.9949	.9833	1.0043	.9841
200	.24464	.17259	1.4175	1.0010	1.0109	.9930	.9772	1.0060	.9781
250	.24557	.17265	1.4224	1.0011	1.0143	.9912	.9711	1.0078	.9722
300	.24653	.17272	1.4273	1.0012	1.0178	.9894	.9651	1.0095	.9663
400	.24836	.17284	1.4369	1.0013	1.0252	.9858	.9533	1.0131	.9546
500	.25021	.17297	1.4466	1.0012	1.0331	.9822	.9418	1.0156	.9430
600	.25203	.17310	1.4560	1.0009	1.0414	.9788	.9307	1.0208	.9315
700	.25384	.17322	1.4654	1.0004	1.0502	.9754	.9198	1.0249	.9201
800	.25566	.17335	1.4748	.9998	1.0595	.9720	.9090	1.0290	.9089
900	.25744	.17349	1.4839	.9991	1.0692	.9688	.8986	1.0332	.8978
1000	.25921	.17362	1.4930	.9981	1.0794	.9656	.8885	1.0376	.8868
1500	.26758	.17429	1.5353	.9911	1.1368	.9507	.8416	1.0613	.8341
2000	.27511	.17498	1.5722	.9807	1.2039	.9377	.8007	1.0875	.7852
2500	.28170	.17567	1.6036	.9674	1.2792	.9265	.7652	1.1157	.7403
3000	.28734	.17637	1.6292	.9518	1.3608	.9170	.7346	1.1458	.6992
4000	.29601	.17771	1.6657	.9129	1.5350	.9028	.6888	1.2213	.6288

Temperature 650°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
10	.24174	.17303	1.3971	1.0000	.9980	1.0006	1.0027	.9994	1.0027
15	.24182	.17303	1.3976	1.0000	.9984	1.0005	1.0022	.9995	1.0021
20	.24190	.17304	1.3979	.9999	.9986	1.0003	1.0017	.9998	1.0016
25	.24196	.17304	1.3983	.9999	.9990	1.0002	1.0011	.9999	1.0010
30	.24205	.17305	1.3987	.9999	.9993	1.0001	1.0006	1.0000	1.0005
40	.24219	.17305	1.3995	.9999	.9999	.9998	.9995	1.0004	.9994
50	.24236	.17306	1.4004	.9998	1.0006	.9995	.9985	1.0007	.9983
60	.24252	.17307	1.4013	.9998	1.0013	.9992	.9974	1.0010	.9972
70	.24267	.17308	1.4021	.9998	1.0020	.9989	.9964	1.0013	.9961
80	.24282	.17309	1.4029	.9997	1.0027	.9986	.9952	1.0017	.9949
90	.24298	.17310	1.4037	.9997	1.0033	.9983	.9942	1.0020	.9939
100	.24313	.17311	1.4045	.9996	1.0040	.9980	.9931	1.0024	.9928
150	.24392	.17315	1.4087	.9994	1.0075	.9965	.9879	1.0041	.9873
200	.24468	.17320	1.4127	.9991	1.0111	.9951	.9827	1.0057	.9819
250	.24546	.17324	1.4169	.9988	1.0148	.9937	.9776	1.0075	.9765
300	.24622	.17329	1.4209	.9985	1.0186	.9923	.9725	1.0093	.9711
400	.24775	.17337	1.4290	.9977	1.0264	.9895	.9626	1.0129	.9604
500	.24926	.17347	1.4369	.9968	1.0347	.9867	.9529	1.0166	.9498
600	.25077	.17356	1.4449	.9958	1.0433	.9841	.9433	1.0205	.9394
700	.25224	.17365	1.4526	.9950	1.0522	.9815	.9336	1.0240	.9289
800	.25372	.17374	1.4603	.9934	1.0616	.9789	.9249	1.0284	.9187
900	.25515	.17383	1.4678	.9920	1.0712	.9764	.9160	1.0325	.9087
1000	.25658	.17393	1.4752	.9904	1.0812	.9740	.9074	1.0367	.8987
1500	.26332	.17440	1.5099	.9811	1.1362	.9626	.8671	1.0588	.8507
2000	.26940	.17489	1.5404	.9693	1.1984	.9528	.8316	1.0828	.8060
2500	.27476	.17537	1.5667	.9554	1.2670	.9443	.8004	1.1084	.7647
3000	.27939	.17586	1.5887	.9396	1.3403	.9372	.7734	1.1356	.7267
4000	.28672	.17679	1.6218	.9008	1.4941	.9266	.7341	1.1980	.6613

Temperature 700°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
1.0	.24207	.17350	1.3952	1.0000	.9966	1.0013	1.0053	.9987	1.0053
1.5	.24208	.17350	1.3953	1.0000	.9967	1.0013	1.0053	.9987	1.0052
2.0	.24209	.17350	1.3953	1.0000	.9967	1.0013	1.0052	.9987	1.0052
2.5	.24210	.17350	1.3953	1.0000	.9967	1.0013	1.0052	.9988	1.0051
3.0	.24210	.17350	1.3954	1.0000	.9968	1.0013	1.0051	.9988	1.0051
4.0	.24211	.17350	1.3954	1.0000	.9968	1.0012	1.0050	.9988	1.0050
5.0	.24213	.17350	1.3955	1.0000	.9969	1.0012	1.0049	.9988	1.0049
6.0	.24214	.17350	1.3956	.9999	.9970	1.0012	1.0048	.9989	1.0048
7.0	.24215	.17350	1.3957	.9999	.9970	1.0012	1.0048	.9989	1.0047
8.0	.24217	.17351	1.3957	.9999	.9971	1.0011	1.0047	.9989	1.0046
9.0	.24218	.17351	1.3958	.9999	.9972	1.0011	1.0046	.9990	1.0045
10	.24219	.17351	1.3959	.9999	.9972	1.0011	1.0045	.9990	1.0044
15	.24226	.17351	1.3962	.9999	.9976	1.0010	1.0040	.9992	1.0039
20	.24232	.17351	1.3966	.9998	.9980	1.0009	1.0036	.9993	1.0034
25	.24239	.17352	1.3969	.9998	.9983	1.0007	1.0031	.9995	1.0029
30	.24246	.17352	1.3973	.9997	.9987	1.0006	1.0026	.9997	1.0023
40	.24259	.17353	1.3980	.9996	.9994	1.0004	1.0017	1.0000	1.0013
50	.24272	.17353	1.3987	.9995	1.0001	1.0002	1.0008	1.0003	1.0003
60	.24285	.17354	1.3994	.9994	1.0008	.9999	.9999	1.0007	.9993
70	.24298	.17355	1.4001	.9993	1.0015	.9997	.9990	1.0010	.9983
80	.24312	.17355	1.4008	.9992	1.0023	.9995	.9981	1.0013	.9973
90	.24325	.17356	1.4015	.9991	1.0030	.9992	.9972	1.0017	.9963
100	.24338	.17356	1.4022	.9990	1.0037	.9990	.9963	1.0020	.9952
150	.24403	.17360	1.4057	.9984	1.0074	.9979	.9918	1.0037	.9902
200	.24468	.17363	1.4092	.9978	1.0112	.9967	.9873	1.0054	.9852
250	.24533	.17366	1.4127	.9972	1.0151	.9956	.9829	1.0072	.9802
300	.24598	.17370	1.4162	.9966	1.0190	.9945	.9786	1.0090	.9752
400	.24726	.17376	1.4230	.9952	1.0271	.9924	.9700	1.0125	.9654
500	.24853	.17383	1.4297	.9938	1.0355	.9902	.9616	1.0162	.9556
600	.24977	.17389	1.4364	.9922	1.0442	.9882	.9534	1.0199	.9460
700	.25102	.17396	1.4429	.9905	1.0532	.9861	.9454	1.0237	.9365
800	.25224	.17403	1.4494	.9888	1.0624	.9842	.9376	1.0276	.9271
900	.25344	.17410	1.4557	.9870	1.0720	.9822	.9299	1.0315	.9178
1000	.25462	.17417	1.4619	.9850	1.0818	.9803	.9224	1.0356	.9086
1500	.26021	.17452	1.4910	.9741	1.1346	.9716	.8873	1.0565	.8644
2000	.26526	.17487	1.5169	.9615	1.1931	.9611	.8561	1.0788	.8231
2500	.26974	.17522	1.5395	.9474	1.2565	.9577	.8283	1.1021	.7848
3000	.27369	.17557	1.5588	.9320	1.3238	.9523	.8039	1.1267	.7493
4000	.28005	.17625	1.5889	.8964	1.4650	.9444	.7663	1.1812	.6870

Temperature 750°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
10	.24294	.17428	1.3940	.9999	.9960	1.0017	1.0072	.9985	1.0070
15	.24302	.17429	1.3943	.9998	.9963	1.0016	1.0067	.9986	1.0065
20	.24306	.17429	1.3946	.9997	.9967	1.0016	1.0063	.9987	1.0060
25	.24313	.17429	1.3950	.9996	.9971	1.0015	1.0059	.9989	1.0055
30	.24317	.17429	1.3952	.9996	.9975	1.0014	1.0055	.9991	1.0051
40	.24330	.17430	1.3959	.9994	.9983	1.0012	1.0047	.9994	1.0041
50	.24340	.17430	1.3964	.9993	.9989	1.0010	1.0040	.9998	1.0032
60	.24352	.17431	1.3971	.9991	.9997	1.0008	1.0031	1.0001	1.0022
70	.24363	.17431	1.3977	.9989	1.0005	1.0006	1.0024	1.0005	1.0013
80	.24375	.17432	1.3983	.9988	1.0013	1.0005	1.0015	1.0007	1.0003
90	.24385	.17432	1.3989	.9986	1.0020	1.0003	1.0008	1.0011	.9994
100	.24397	.17433	1.3995	.9985	1.0027	1.0001	.9999	1.0014	.9984
150	.24452	.17435	1.4025	.9977	1.0066	.9992	.9961	1.0031	.9938
200	.24510	.17438	1.4056	.9969	1.0105	.9983	.9922	1.0048	.9891
250	.24565	.17440	1.4085	.9960	1.0145	.9974	.9884	1.0066	.9845
300	.24620	.17443	1.4115	.9952	1.0184	.9966	.9846	1.0082	.9799
400	.24728	.17448	1.4172	.9934	1.0266	.9949	.9772	1.0118	.9707
500	.24838	.17453	1.4231	.9915	1.0350	.9932	.9698	1.0154	.9616
600	.24944	.17458	1.4288	.9896	1.0438	.9916	.9627	1.0190	.9527
700	.25051	.17463	1.4345	.9876	1.0527	.9900	.9557	1.0227	.9439
800	.25153	.17468	1.4399	.9855	1.0617	.9885	.9489	1.0265	.9351
900	.25253	.17473	1.4453	.9834	1.0711	.9870	.9421	1.0303	.9265
1000	.25352	.17478	1.4505	.9812	1.0807	.9855	.9355	1.0341	.9179
1500	.25829	.17504	1.4756	.9693	1.1316	.9789	.9047	1.0540	.8769
2000	.26257	.17530	1.4978	.9561	1.1869	.9731	.8769	1.0748	.8384
2500	.26640	.17557	1.5173	.9419	1.2462	.9683	.8520	1.0965	.8025
3000	.26980	.17583	1.5344	.9269	1.3085	.9643	.8296	1.1189	.7690
4000	.27541	.17634	1.5618	.8943	1.4396	.9584	.7932	1.1667	.7094

Temperature 800°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
10	.24386	.17520	1.3919	.9998	.9946	1.0025	1.0104	.9977	1.0102
15	.24391	.17521	1.3921	.9997	.9950	1.0024	1.0101	.9979	1.0098
20	.24396	.17521	1.3924	.9996	.9953	1.0024	1.0097	.9980	1.0093
25	.24401	.17521	1.3927	.9995	.9957	1.0023	1.0094	.9982	1.0089
30	.24407	.17521	1.3930	.9994	.9961	1.0022	1.0091	.9984	1.0085
40	.24416	.17522	1.3934	.9993	.9968	1.0021	1.0084	.9987	1.0076
50	.24425	.17522	1.3940	.9991	.9976	1.0019	1.0076	.9990	1.0067
60	.24435	.17522	1.3945	.9989	.9984	1.0018	1.0069	.9992	1.0058
70	.24444	.17523	1.3950	.9987	.9991	1.0017	1.0062	.9996	1.0049
80	.24455	.17523	1.3955	.9985	.9998	1.0015	1.0055	1.0000	1.0040
90	.24465	.17523	1.3962	.9983	1.0007	1.0014	1.0049	1.0003	1.0032
100	.24475	.17524	1.3967	.9981	1.0014	1.0012	1.0042	1.0007	1.0023
150	.24524	.17526	1.3993	.9971	1.0053	1.0005	1.0007	1.0024	.9978
200	.24572	.17528	1.4019	.9962	1.0093	.9998	.9973	1.0040	.9935
250	.24621	.17530	1.4045	.9952	1.0132	.9992	.9940	1.0057	.9891
300	.24669	.17531	1.4072	.9941	1.0173	.9985	.9906	1.0074	.9848
400	.24761	.17535	1.4121	.9921	1.0253	.9971	.9841	1.0109	.9762
500	.24855	.17539	1.4171	.9899	1.0338	.9959	.9777	1.0144	.9678
600	.24948	.17543	1.4221	.9877	1.0425	.9946	.9714	1.0179	.9595
700	.25039	.17547	1.4270	.9855	1.0513	.9934	.9652	1.0215	.9512
800	.25128	.17551	1.4317	.9832	1.0601	.9922	.9591	1.0251	.9430
900	.25215	.17555	1.4363	.9808	1.0693	.9910	.9532	1.0288	.9349
1000	.25302	.17559	1.4410	.9784	1.0787	.9899	.9474	1.0325	.9269
1500	.25709	.17578	1.4626	.9658	1.1276	.9848	.9199	1.0514	.8884
2000	.26079	.17598	1.4819	.9523	1.1802	.9804	.8950	1.0711	.8522
2500	.26411	.17618	1.4991	.9381	1.2360	.9768	.8724	1.0913	.8184
3000	.26711	.17638	1.5144	.9234	1.2945	.9739	.8520	1.1120	.7867
4000	.27214	.17677	1.5395	.8929	1.4169	.9697	.8171	1.1548	.7296

Temperature 850°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
1.0	.24482	.17625	1.3890	1.0000	.9922	1.0036	1.0150	.9964	1.0150
1.5	.24482	.17625	1.3891	1.0000	.9923	1.0035	1.0150	.9965	1.0150
2.0	.24483	.17625	1.3891	1.0000	.9923	1.0035	1.0150	.9966	1.0149
2.5	.24483	.17625	1.3891	1.0000	.9923	1.0035	1.0150	.9966	1.0149
3.0	.24484	.17625	1.3891	.9999	.9924	1.0035	1.0149	.9966	1.0148
4.0	.24485	.17625	1.3892	.9999	.9924	1.0035	1.0149	.9966	1.0148
5.0	.24485	.17625	1.3892	.9999	.9925	1.0035	1.0148	.9966	1.0147
6.0	.24486	.17625	1.3893	.9999	.9926	1.0035	1.0147	.9966	1.0146
7.0	.24487	.17625	1.3893	.9999	.9927	1.0035	1.0147	.9967	1.0145
8.0	.24487	.17625	1.3893	.9998	.9927	1.0035	1.0146	.9967	1.0144
9.0	.24488	.17625	1.3894	.9998	.9928	1.0035	1.0146	.9967	1.0144
10	.24489	.17625	1.3894	.9998	.9928	1.0034	1.0145	.9968	1.0143
15	.24493	.17625	1.3897	.9997	.9932	1.0034	1.0142	.9969	1.0139
20	.24498	.17626	1.3899	.9996	.9937	1.0033	1.0138	.9971	1.0134
25	.24502	.17626	1.3901	.9995	.9940	1.0033	1.0135	.9972	1.0130
30	.24506	.17626	1.3903	.9994	.9944	1.0032	1.0132	.9974	1.0126
40	.24516	.17626	1.3909	.9991	.9952	1.0031	1.0127	.9978	1.0118
50	.24523	.17626	1.3913	.9989	.9960	1.0030	1.0121	.9981	1.0110
60	.24535	.17627	1.3919	.9987	.9967	1.0029	1.0113	.9984	1.0100
70	.24542	.17627	1.3923	.9985	.9975	1.0028	1.0107	.9987	1.0092
80	.24550	.17627	1.3927	.9983	.9983	1.0027	1.0101	.9990	1.0084
90	.24560	.17628	1.3932	.9981	.9990	1.0026	1.0096	.9993	1.0076
100	.24567	.17628	1.3936	.9979	.9997	1.0025	1.0089	.9997	1.0067
150	.24609	.17629	1.3959	.9968	1.0037	1.0019	1.0060	1.0014	1.0027
200	.24653	.17631	1.3983	.9956	1.0077	1.0013	1.0029	1.0031	.9985
250	.24696	.17632	1.4006	.9945	1.0116	1.0008	.9999	1.0047	.9944
300	.24735	.17634	1.4027	.9934	1.0155	1.0003	.9970	1.0064	.9904
400	.24819	.17637	1.4072	.9911	1.0237	.9993	.9911	1.0097	.9823
500	.24900	.17640	1.4116	.9888	1.0321	.9982	.9855	1.0132	.9744
600	.24980	.17643	1.4159	.9864	1.0406	.9973	.9798	1.0166	.9665
700	.25060	.17646	1.4202	.9839	1.0492	.9963	.9744	1.0201	.9587
800	.25138	.17649	1.4243	.9815	1.0580	.9954	.9689	1.0236	.9510
900	.25215	.17652	1.4285	.9790	1.0670	.9945	.9636	1.0271	.9434
1000	.25289	.17655	1.4324	.9765	1.0759	.9937	.9584	1.0307	.9358
1500	.25648	.17671	1.4514	.9633	1.1232	.9898	.9338	1.0488	.8995
2000	.25968	.17686	1.4683	.9496	1.1733	.9865	.9113	1.0675	.8654
2500	.26264	.17701	1.4838	.9355	1.2263	.9839	.8907	1.0865	.8333
3000	.26528	.17717	1.4973	.9211	1.2810	.9818	.8719	1.1058	.8031
4000	.26979	.17747	1.5202	.8920	1.3960	.9791	.8389	1.1450	.7483

Temperature 900°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
10	.24605	.17741	1.3869	.9998	.9911	1.0045	1.0189	.9957	1.0187
15	.24607	.17741	1.3870	.9997	.9914	1.0045	1.0187	.9959	1.0183
20	.24612	.17741	1.3873	.9995	.9918	1.0044	1.0184	.9961	1.0179
25	.24616	.17742	1.3874	.9994	.9922	1.0044	1.0182	.9962	1.0176
30	.24620	.17742	1.3877	.9993	.9926	1.0043	1.0179	.9964	1.0172
40	.24628	.17742	1.3881	.9991	.9934	1.0043	1.0172	.9966	1.0163
50	.24636	.17742	1.3886	.9988	.9941	1.0042	1.0167	.9970	1.0155
60	.24643	.17742	1.3890	.9986	.9949	1.0041	1.0161	.9973	1.0147
70	.24651	.17743	1.3893	.9984	.9956	1.0040	1.0157	.9976	1.0140
80	.24658	.17743	1.3897	.9981	.9964	1.0039	1.0151	.9980	1.0132
90	.24666	.17743	1.3902	.9979	.9973	1.0038	1.0145	.9983	1.0124
100	.24673	.17743	1.3906	.9977	.9980	1.0037	1.0140	.9987	1.0116
150	.24711	.17745	1.3926	.9965	1.0019	1.0033	1.0113	1.0003	1.0077
200	.24749	.17746	1.3946	.9953	1.0057	1.0029	1.0086	1.0019	1.0038
250	.24787	.17747	1.3967	.9941	1.0097	1.0025	1.0060	1.0035	1.0000
300	.24821	.17748	1.3985	.9928	1.0136	1.0021	1.0033	1.0051	.9961
400	.24897	.17751	1.4026	.9904	1.0218	1.0013	.9981	1.0083	.9885
500	.24968	.17753	1.4064	.9879	1.0299	1.0005	.9930	1.0117	.9809
600	.25039	.17755	1.4103	.9854	1.0383	.9998	.9880	1.0151	.9735
700	.25108	.17758	1.4139	.9828	1.0467	.9990	.9830	1.0184	.9662
800	.25178	.17760	1.4177	.9803	1.0552	.9983	.9781	1.0218	.9588
900	.25246	.17763	1.4213	.9777	1.0639	.9977	.9734	1.0253	.9516
1000	.25311	.17765	1.4248	.9750	1.0728	.9970	.9687	1.0287	.9445
1500	.25626	.17777	1.4415	.9616	1.1182	.9941	.9465	1.0461	.9101
2000	.25913	.17789	1.4567	.9478	1.1664	.9917	.9260	1.0639	.8777
2500	.26172	.17801	1.4703	.9337	1.2166	.9899	.9072	1.0820	.8470
3000	.26410	.17813	1.4826	.9195	1.2685	.9885	.8899	1.1002	.8183
4000	.26816	.17837	1.5034	.8914	1.3765	.9869	.8590	1.1368	.7657

Temperature 950°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
1.0	.24725	.17868	1.3837	1.0000	.9884	1.0058	1.0248	.9943	1.0247
1.5	.24725	.17868	1.3838	1.0000	.9885	1.0058	1.0247	.9943	1.0247
2.0	.24725	.17868	1.3838	1.0000	.9885	1.0058	1.0247	.9943	1.0246
2.5	.24726	.17868	1.3838	.9999	.9885	1.0058	1.0247	.9943	1.0246
3.0	.24726	.17868	1.3838	.9999	.9886	1.0058	1.0246	.9943	1.0246
4.0	.24727	.17868	1.3839	.9999	.9887	1.0058	1.0246	.9943	1.0245
5.0	.24727	.17868	1.3839	.9999	.9887	1.0058	1.0245	.9944	1.0244
6.0	.24728	.17868	1.3839	.9999	.9888	1.0058	1.0245	.9944	1.0243
7.0	.24729	.17868	1.3840	.9998	.9889	1.0058	1.0245	.9944	1.0243
8.0	.24730	.17868	1.3840	.9998	.9890	1.0058	1.0244	.9945	1.0242
9.0	.24730	.17868	1.3840	.9998	.9890	1.0058	1.0243	.9945	1.0241
10	.24731	.17868	1.3841	.9998	.9891	1.0058	1.0243	.9945	1.0241
15	.24734	.17868	1.3843	.9996	.9895	1.0057	1.0241	.9947	1.0237
20	.24738	.17868	1.3844	.9995	.9899	1.0057	1.0238	.9948	1.0233
25	.24741	.17868	1.3846	.9994	.9902	1.0057	1.0236	.9950	1.0229
30	.24745	.17869	1.3848	.9993	.9906	1.0056	1.0233	.9952	1.0226
40	.24752	.17869	1.3852	.9990	.9914	1.0056	1.0228	.9955	1.0218
50	.24758	.17869	1.3856	.9988	.9921	1.0055	1.0223	.9958	1.0211
60	.24765	.17869	1.3859	.9985	.9929	1.0054	1.0218	.9961	1.0203
70	.24772	.17869	1.3863	.9983	.9937	1.0054	1.0213	.9964	1.0196
80	.24779	.17870	1.3866	.9980	.9944	1.0053	1.0208	.9967	1.0188
90	.24785	.17870	1.3870	.9978	.9952	1.0052	1.0203	.9970	1.0181
100	.24792	.17870	1.3874	.9975	.9960	1.0052	1.0199	.9974	1.0173
150	.24826	.17871	1.3892	.9963	.9998	1.0048	1.0174	.9989	1.0136
200	.24859	.17872	1.3910	.9950	1.0037	1.0045	1.0150	1.0005	1.0099
250	.24892	.17873	1.3928	.9937	1.0076	1.0042	1.0126	1.0021	1.0062
300	.24925	.17874	1.3945	.9924	1.0115	1.0039	1.0102	1.0037	1.0026
400	.24991	.17876	1.3980	.9899	1.0194	1.0033	1.0055	1.0069	.9953
500	.25055	.17878	1.4015	.9873	1.0275	1.0027	1.0009	1.0101	.9882
600	.25118	.17880	1.4048	.9847	1.0356	1.0021	.9964	1.0134	.9811
700	.25180	.17881	1.4082	.9820	1.0439	1.0016	.9919	1.0167	.9741
800	.25241	.17883	1.4114	.9794	1.0522	1.0011	.9875	1.0199	.9671
900	.25301	.17885	1.4146	.9767	1.0607	1.0006	.9832	1.0232	.9603
1000	.25360	.17887	1.4178	.9740	1.0692	1.0001	.9789	1.0265	.9535
1500	.25641	.17897	1.4327	.9604	1.1133	.9980	.9586	1.0433	.9207
2000	.25897	.17907	1.4462	.9466	1.1594	.9963	.9399	1.0603	.8897
2500	.26131	.17916	1.4585	.9327	1.2072	.9951	.9226	1.0774	.8605
3000	.26345	.17926	1.4696	.9188	1.2565	.9943	.9066	1.0947	.8329
4000	.26716	.17945	1.4888	.8914	1.3588	.9936	.8775	1.1290	.7822

Temperature 1000°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
1.0	.24859	.18002	1.3809	1.0000	.9864	1.0072	1.0308	.9929	1.0308
1.5	.24859	.18002	1.3809	1.0000	.9864	1.0072	1.0308	.9929	1.0308
2.0	.24859	.18002	1.3809	1.0000	.9865	1.0072	1.0308	.9929	1.0308
2.5	.24860	.18002	1.3809	.9999	.9865	1.0072	1.0308	.9929	1.0307
3.0	.24860	.18002	1.3810	.9999	.9866	1.0072	1.0308	.9929	1.0307
4.0	.24861	.18002	1.3810	.9999	.9866	1.0072	1.0307	.9930	1.0306
5.0	.24861	.18002	1.3810	.9999	.9867	1.0072	1.0306	.9930	1.0305
6.0	.24862	.18002	1.3810	.9998	.9868	1.0071	1.0306	.9931	1.0305
7.0	.24862	.18002	1.3811	.9998	.9868	1.0071	1.0306	.9931	1.0304
8.0	.24863	.18002	1.3811	.9998	.9869	1.0071	1.0305	.9932	1.0303
9.0	.24864	.18002	1.3811	.9998	.9870	1.0071	1.0305	.9932	1.0303
10	.24864	.18002	1.3812	.9997	.9871	1.0071	1.0305	.9932	1.0302
15	.24867	.18002	1.3813	.9996	.9874	1.0071	1.0303	.9933	1.0299
20	.24870	.18002	1.3815	.9995	.9878	1.0071	1.0300	.9934	1.0295
25	.24873	.18002	1.3817	.9994	.9882	1.0071	1.0299	.9936	1.0292
30	.24876	.18002	1.3818	.9992	.9886	1.0070	1.0295	.9938	1.0287
40	.24883	.18003	1.3822	.9990	.9894	1.0070	1.0291	.9940	1.0280
50	.24888	.18003	1.3824	.9987	.9900	1.0069	1.0286	.9944	1.0273
60	.24894	.18003	1.3828	.9985	.9908	1.0069	1.0282	.9947	1.0266
70	.24902	.18003	1.3832	.9982	.9916	1.0068	1.0278	.9950	1.0259
80	.24907	.18003	1.3835	.9979	.9924	1.0068	1.0273	.9953	1.0252
90	.24913	.18003	1.3838	.9977	.9931	1.0067	1.0268	.9956	1.0244
100	.24920	.18004	1.3841	.9974	.9938	1.0067	1.0264	.9959	1.0237
150	.24949	.18004	1.3857	.9961	.9976	1.0064	1.0242	.9975	1.0202
200	.24979	.18005	1.3873	.9948	1.0014	1.0062	1.0220	.9990	1.0167
250	.25011	.18006	1.3890	.9935	1.0053	1.0060	1.0198	1.0006	1.0132
300	.25040	.18007	1.3906	.9922	1.0092	1.0057	1.0177	1.0022	1.0097
400	.25097	.18008	1.3937	.9895	1.0170	1.0053	1.0134	1.0053	1.0028
500	.25156	.18010	1.3968	.9869	1.0248	1.0049	1.0092	1.0084	.9959
600	.25210	.18011	1.3997	.9842	1.0328	1.0045	1.0051	1.0115	.9892
700	.25266	.18013	1.4027	.9815	1.0408	1.0041	1.0010	1.0147	.9825
800	.25322	.18015	1.4056	.9788	1.0490	1.0037	.9970	1.0179	.9759
900	.25377	.18016	1.4086	.9761	1.0572	1.0033	.9931	1.0211	.9693
1000	.25428	.18018	1.4113	.9734	1.0655	1.0030	.9892	1.0243	.9628
1500	.25680	.18026	1.4246	.9597	1.1081	1.0015	.9707	1.0405	.9315
2000	.25910	.18033	1.4368	.9459	1.1523	1.0005	.9535	1.0567	.9018
2500	.26124	.18041	1.4480	.9321	1.1981	.9998	.9374	1.0731	.8737
3000	.26318	.18049	1.4581	.9184	1.2451	.9994	.9225	1.0895	.8472
4000	.26658	.18065	1.4757	.8916	1.3422	.9995	.8953	1.1221	.7983

Temperature 1100°R.

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
10	.25152	.18291	1.3751	.9997	.9827	1.0103	1.0451	.9901	1.0448
15	.25154	.18291	1.3752	.9996	.9831	1.0103	1.0448	.9902	1.0444
20	.25157	.18291	1.3754	.9995	.9835	1.0103	1.0446	.9903	1.0440
25	.25159	.18291	1.3755	.9993	.9839	1.0103	1.0444	.9905	1.0437
30	.25162	.18291	1.3756	.9992	.9841	1.0102	1.0442	.9907	1.0434
40	.25166	.18291	1.3759	.9989	.9850	1.0102	1.0439	.9910	1.0428
50	.25172	.18292	1.3761	.9986	.9856	1.0102	1.0435	.9913	1.0421
60	.25176	.18292	1.3763	.9984	.9863	1.0102	1.0431	.9915	1.0414
70	.25182	.18292	1.3767	.9981	.9871	1.0101	1.0428	.9919	1.0408
80	.25187	.18292	1.3769	.9978	.9878	1.0101	1.0424	.9922	1.0401
90	.25191	.18292	1.3772	.9976	.9885	1.0101	1.0420	.9925	1.0395
100	.25197	.18292	1.3775	.9973	.9893	1.0101	1.0417	.9927	1.0389
150	.25222	.18293	1.3788	.9959	.9929	1.0100	1.0398	.9941	1.0356
200	.25245	.18293	1.3800	.9946	.9966	1.0098	1.0380	.9957	1.0324
250	.25271	.18294	1.3814	.9932	1.0003	1.0097	1.0361	.9972	1.0291
300	.25295	.18294	1.3827	.9918	1.0040	1.0096	1.0343	.9986	1.0259
400	.25342	.18295	1.3852	.9891	1.0115	1.0094	1.0307	1.0016	1.0195
500	.25390	.18296	1.3877	.9864	1.0191	1.0092	1.0273	1.0046	1.0133
600	.25435	.18297	1.3901	.9836	1.0266	1.0091	1.0237	1.0075	1.0070
700	.25482	.18298	1.3926	.9809	1.0343	1.0089	1.0204	1.0105	1.0009
800	.25528	.18300	1.3950	.9782	1.0421	1.0087	1.0170	1.0135	.9948
900	.25571	.18301	1.3972	.9754	1.0497	1.0086	1.0136	1.0165	.9887
1000	.25615	.18302	1.3996	.9727	1.0576	1.0085	1.0103	1.0194	.9827
1500	.25821	.18307	1.4104	.9590	1.0975	1.0080	.9946	1.0345	.9537
2000	.26013	.18312	1.4205	.9453	1.1386	1.0078	.9798	1.0496	.9262
2500	.26192	.18318	1.4299	.9319	1.1809	1.0079	.9659	1.0647	.9001
3000	.26354	.18323	1.4383	.9186	1.2239	1.0083	.9529	1.0797	.8753
4000	.26643	.18333	1.4533	.8928	1.3120	1.0096	.9289	1.1094	.8294

Temperature 1200°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
1.0	.25452	.18595	1.3688	1.0000	.9778	1.0140	1.0627	.9862	1.0627
1.5	.25452	.18595	1.3688	1.0000	.9778	1.0140	1.0627	.9862	1.0627
2.0	.25452	.18595	1.3688	.9999	.9778	1.0140	1.0627	.9863	1.0627
2.5	.25452	.18595	1.3688	.9999	.9778	1.0140	1.0627	.9863	1.0627
3.0	.25453	.18595	1.3688	.9999	.9779	1.0140	1.0627	.9863	1.0626
4.0	.25453	.18595	1.3688	.9999	.9779	1.0140	1.0627	.9863	1.0626
5.0	.25453	.18595	1.3688	.9999	.9780	1.0140	1.0626	.9863	1.0625
6.0	.25454	.18595	1.3688	.9998	.9781	1.0140	1.0626	.9864	1.0624
7.0	.25454	.18595	1.3689	.9998	.9781	1.0140	1.0626	.9864	1.0624
8.0	.25454	.18595	1.3689	.9998	.9782	1.0140	1.0625	.9864	1.0623
9.0	.25455	.18595	1.3689	.9998	.9783	1.0140	1.0625	.9864	1.0622
10	.25455	.18595	1.3689	.9997	.9783	1.0140	1.0625	.9865	1.0622
15	.25457	.18595	1.3690	.9996	.9787	1.0140	1.0623	.9866	1.0619
20	.25460	.18595	1.3692	.9995	.9790	1.0140	1.0621	.9868	1.0615
25	.25462	.18595	1.3693	.9993	.9794	1.0140	1.0620	.9869	1.0613
30	.25463	.18595	1.3693	.9992	.9797	1.0140	1.0619	.9870	1.0610
40	.25468	.18595	1.3696	.9989	.9804	1.0139	1.0616	.9874	1.0604
50	.25472	.18595	1.3698	.9986	.9812	1.0139	1.0612	.9877	1.0597
60	.25475	.18595	1.3700	.9984	.9818	1.0139	1.0609	.9879	1.0591
70	.25480	.18596	1.3702	.9981	.9825	1.0139	1.0606	.9882	1.0586
80	.25485	.18596	1.3705	.9978	.9832	1.0139	1.0602	.9884	1.0579
90	.25489	.18596	1.3707	.9975	.9840	1.0139	1.0599	.9887	1.0573
100	.25493	.18596	1.3709	.9972	.9846	1.0139	1.0596	.9890	1.0567
150	.25515	.18596	1.3721	.9959	.9882	1.0139	1.0580	.9904	1.0536
200	.25534	.18596	1.3731	.9945	.9917	1.0138	1.0564	.9919	1.0506
250	.25553	.18597	1.3740	.9931	.9952	1.0138	1.0549	.9932	1.0476
300	.25575	.18597	1.3752	.9917	.9988	1.0138	1.0533	.9946	1.0446
400	.25614	.18598	1.3772	.9890	1.0058	1.0138	1.0503	.9974	1.0387
500	.25655	.18599	1.3794	.9862	1.0132	1.0138	1.0472	1.0002	1.0328
600	.25693	.18599	1.3814	.9835	1.0204	1.0137	1.0444	1.0031	1.0271
700	.25732	.18600	1.3834	.9807	1.0277	1.0137	1.0414	1.0059	1.0213
800	.25769	.18601	1.3854	.9780	1.0350	1.0137	1.0384	1.0087	1.0156
900	.25806	.18602	1.3873	.9753	1.0424	1.0137	1.0356	1.0115	1.0100
1000	.25841	.18602	1.3892	.9725	1.0497	1.0138	1.0327	1.0142	1.0043
1500	.26015	.18606	1.3982	.9590	1.0872	1.0140	1.0191	1.0284	.9773
2000	.26179	.18610	1.4067	.9456	1.1257	1.0145	1.0062	1.0424	.9515
2500	.26329	.18614	1.4145	.9325	1.1648	1.0151	.9940	1.0564	.9269
3000	.26469	.18617	1.4218	.9196	1.2046	1.0159	.9825	1.0704	.9035
4000	.26719	.18625	1.4346	.8946	1.2855	1.0180	.9614	1.0981	.8600

Temperature 1300°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
1.0	.25760	.18904	1.3627	1.0000	.9734	1.0180	1.0829	.9823	1.0828
1.5	.25761	.18904	1.3627	1.0000	.9734	1.0180	1.0829	.9824	1.0828
2.0	.25761	.18904	1.3627	.9999	.9735	1.0180	1.0829	.9824	1.0828
2.5	.25761	.18904	1.3627	.9999	.9735	1.0180	1.0829	.9824	1.0828
3.0	.25761	.18904	1.3627	.9999	.9735	1.0180	1.0828	.9824	1.0827
4.0	.25761	.18904	1.3628	.9999	.9736	1.0180	1.0828	.9824	1.0827
5.0	.25762	.18904	1.3628	.9999	.9737	1.0180	1.0828	.9825	1.0826
6.0	.25762	.18904	1.3628	.9998	.9737	1.0180	1.0828	.9825	1.0826
7.0	.25763	.18904	1.3628	.9998	.9738	1.0180	1.0827	.9825	1.0825
8.0	.25763	.18904	1.3628	.9998	.9739	1.0180	1.0827	.9825	1.0825
9.0	.25763	.18904	1.3628	.9998	.9740	1.0180	1.0827	.9826	1.0824
10	.25764	.18904	1.3629	.9997	.9740	1.0180	1.0827	.9826	1.0824
15	.25765	.18904	1.3629	.9996	.9743	1.0180	1.0824	.9827	1.0820
20	.25767	.18904	1.3631	.9995	.9747	1.0181	1.0823	.9828	1.0817
25	.25769	.18904	1.3631	.9993	.9750	1.0181	1.0822	.9829	1.0815
30	.25770	.18904	1.3632	.9992	.9754	1.0181	1.0821	.9830	1.0812
40	.25774	.18904	1.3634	.9989	.9760	1.0181	1.0818	.9833	1.0806
50	.25777	.18904	1.3636	.9986	.9767	1.0181	1.0815	.9836	1.0800
60	.25781	.18904	1.3638	.9983	.9774	1.0181	1.0812	.9839	1.0794
70	.25784	.18904	1.3639	.9981	.9780	1.0181	1.0810	.9842	1.0789
80	.25788	.18904	1.3642	.9978	.9787	1.0181	1.0807	.9844	1.0783
90	.25792	.18904	1.3644	.9975	.9794	1.0181	1.0804	.9846	1.0777
100	.25796	.18905	1.3645	.9972	.9800	1.0181	1.0802	.9849	1.0772
150	.25813	.18905	1.3654	.9959	.9834	1.0181	1.0788	.9863	1.0743
200	.25830	.18905	1.3663	.9945	.9868	1.0182	1.0773	.9876	1.0714
250	.25847	.18905	1.3672	.9931	.9901	1.0182	1.0761	.9889	1.0687
300	.25867	.18906	1.3682	.9918	.9936	1.0182	1.0747	.9903	1.0658
400	.25898	.18906	1.3698	.9890	1.0003	1.0183	1.0721	.9930	1.0603
500	.25932	.18907	1.3716	.9863	1.0072	1.0184	1.0694	.9956	1.0547
600	.25965	.18907	1.3733	.9836	1.0142	1.0185	1.0668	.9982	1.0493
700	.25999	.18908	1.3750	.9809	1.0210	1.0186	1.0643	1.0009	1.0439
800	.26029	.18908	1.3766	.9781	1.0279	1.0187	1.0618	1.0036	1.0386
900	.26061	.18909	1.3782	.9755	1.0349	1.0189	1.0592	1.0061	1.0332
1000	.26092	.18909	1.3799	.9728	1.0420	1.0190	1.0567	1.0088	1.0279
1500	.26242	.18912	1.3876	.9595	1.0774	1.0197	1.0447	1.0221	1.0023
2000	.26381	.18915	1.3947	.9464	1.1134	1.0206	1.0333	1.0353	.9780
2500	.26510	.18918	1.4013	.9336	1.1498	1.0217	1.0224	1.0483	.9546
3000	.26630	.18920	1.4075	.9211	1.1869	1.0229	1.0121	1.0613	.9323
4000	.26849	.18925	1.4187	.8971	1.2620	1.0255	.9930	1.0870	.8908

Temperature 1400°R

p	C_p	C_v	γ	$p/_o p$	I	J	K	L	E/F
10	.26069	.19209	1.3571	.9997	.9698	1.0225	1.1052	.9783	1.1049
15	.26069	.19209	1.3571	.9996	.9701	1.0225	1.1052	.9784	1.1047
20	.26071	.19209	1.3572	.9995	.9705	1.0225	1.1050	.9786	1.1044
25	.26072	.19209	1.3573	.9993	.9709	1.0225	1.1050	.9787	1.1042
30	.26075	.19209	1.3574	.9992	.9711	1.0225	1.1047	.9788	1.1038
40	.26077	.19209	1.3575	.9989	.9718	1.0225	1.1045	.9790	1.1033
50	.26081	.19209	1.3577	.9986	.9724	1.0225	1.1042	.9793	1.1027
60	.26082	.19209	1.3578	.9984	.9731	1.0225	1.1040	.9796	1.1022
70	.26086	.19209	1.3580	.9981	.9737	1.0226	1.1037	.9798	1.1016
80	.26088	.19209	1.3581	.9978	.9743	1.0226	1.1036	.9800	1.1012
90	.26092	.19209	1.3583	.9975	.9750	1.0226	1.1034	.9803	1.1007
100	.26095	.19209	1.3585	.9973	.9757	1.0226	1.1031	.9806	1.1001
150	.26110	.19210	1.3592	.9959	.9788	1.0227	1.1019	.9818	1.0974
200	.26125	.19210	1.3600	.9946	.9821	1.0228	1.1007	.9831	1.0947
250	.26139	.19210	1.3607	.9932	.9853	1.0228	1.0995	.9844	1.0920
300	.26156	.19210	1.3616	.9918	.9886	1.0229	1.0984	.9856	1.0894
400	.26186	.19211	1.3631	.9891	.9952	1.0231	1.0959	.9881	1.0840
500	.26213	.19211	1.3645	.9865	1.0016	1.0233	1.0937	.9907	1.0789
600	.26241	.19211	1.3659	.9838	1.0081	1.0235	1.0913	.9931	1.0736
700	.26270	.19212	1.3674	.9811	1.0148	1.0236	1.0891	.9957	1.0685
800	.26298	.19212	1.3688	.9785	1.0214	1.0238	1.0868	.9983	1.0634
900	.26324	.19213	1.3701	.9758	1.0280	1.0240	1.0846	1.0008	1.0584
1000	.26352	.19213	1.3716	.9732	1.0347	1.0242	1.0824	1.0033	1.0534
1500	.26480	.19215	1.3781	.9602	1.0681	1.0253	1.0717	1.0158	1.0290
2000	.26602	.19217	1.3843	.9475	1.1021	1.0266	1.0615	1.0281	1.0057
2500	.26716	.19219	1.3901	.9351	1.1364	1.0279	1.0518	1.0404	.9835
3000	.26820	.19221	1.3953	.9230	1.1709	1.0293	1.0424	1.0526	.9621
4000	.27016	.19225	1.4053	.8997	1.2410	1.0324	1.0248	1.0766	.9220

Temperature 1500°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
1.0	.26362	.19506	1.3515	1.0000	.9654	1.0271	1.1305	.9736	1.1304
1.5	.26363	.19506	1.3515	1.0000	.9654	1.0271	1.1305	.9737	1.1304
2.0	.26363	.19506	1.3515	.9999	.9655	1.0271	1.1305	.9737	1.1304
2.5	.26363	.19506	1.3515	.9999	.9655	1.0271	1.1304	.9737	1.1304
3.0	.26363	.19506	1.3515	.9999	.9655	1.0271	1.1304	.9737	1.1303
4.0	.26363	.19506	1.3515	.9999	.9656	1.0271	1.1304	.9737	1.1303
5.0	.26363	.19506	1.3516	.9999	.9657	1.0271	1.1304	.9737	1.1302
6.0	.26364	.19506	1.3516	.9998	.9657	1.0271	1.1304	.9738	1.1302
7.0	.26364	.19506	1.3516	.9998	.9658	1.0271	1.1304	.9738	1.1301
8.0	.26364	.19506	1.3516	.9998	.9658	1.0271	1.1303	.9738	1.1301
9.0	.26364	.19506	1.3516	.9998	.9659	1.0271	1.1303	.9738	1.1300
10	.26365	.19506	1.3516	.9997	.9660	1.0271	1.1303	.9739	1.1300
15	.26366	.19506	1.3517	.9996	.9663	1.0271	1.1302	.9740	1.1297
20	.26367	.19506	1.3518	.9995	.9666	1.0271	1.1301	.9741	1.1295
25	.26369	.19506	1.3518	.9993	.9669	1.0271	1.1300	.9742	1.1292
30	.26370	.19506	1.3519	.9992	.9672	1.0272	1.1299	.9743	1.1289
40	.26373	.19506	1.3520	.9989	.9678	1.0272	1.1296	.9746	1.1284
50	.26375	.19506	1.3522	.9987	.9684	1.0272	1.1294	.9748	1.1279
60	.26378	.19506	1.3523	.9984	.9690	1.0272	1.1292	.9751	1.1274
70	.26381	.19506	1.3524	.9981	.9697	1.0272	1.1290	.9753	1.1269
80	.26383	.19506	1.3525	.9979	.9703	1.0273	1.1288	.9755	1.1264
90	.26386	.19506	1.3527	.9976	.9709	1.0273	1.1286	.9758	1.1258
100	.26389	.19506	1.3528	.9973	.9715	1.0273	1.1283	.9760	1.1253
150	.26402	.19506	1.3535	.9960	.9746	1.0274	1.1273	.9772	1.1227
200	.26415	.19507	1.3541	.9946	.9777	1.0275	1.1262	.9784	1.1202
250	.26428	.19507	1.3548	.9933	.9808	1.0277	1.1251	.9796	1.1176
300	.26440	.19507	1.3554	.9920	.9839	1.0278	1.1241	.9808	1.1151
400	.26466	.19507	1.3567	.9893	.9901	1.0280	1.1220	.9832	1.1100
500	.26491	.19508	1.3580	.9867	.9963	1.0283	1.1199	.9856	1.1050
600	.26516	.19508	1.3592	.9841	1.0026	1.0285	1.1179	.9880	1.1001
700	.26540	.19508	1.3605	.9815	1.0088	1.0287	1.1158	.9904	1.0952
800	.26564	.19508	1.3617	.9789	1.0151	1.0290	1.1138	.9928	1.0903
900	.26588	.19509	1.3629	.9763	1.0214	1.0293	1.1118	.9952	1.0855
1000	.26612	.19509	1.3641	.9737	1.0277	1.0295	1.1098	.9975	1.0807
1500	.26725	.19511	1.3698	.9610	1.0595	1.0309	1.1002	1.0094	1.0573
2000	.26831	.19512	1.3751	.9487	1.0915	1.0323	1.0910	1.0211	1.0350
2500	.26932	.19514	1.3802	.9366	1.1239	1.0339	1.0821	1.0327	1.0135
3000	.27026	.19515	1.3849	.9249	1.1564	1.0355	1.0736	1.0442	.9930
4000	.27199	.19518	1.3936	.9024	1.2221	1.0389	1.0575	1.0667	.9542

Temperature 1600°R

p	C_p	C_v	γ	$p/_o p$	I	J	K	L	E/F
1.0	.26645	.19789	1.3465	1.0000	.9618	1.0319	1.1574	.9691	1.1574
1.5	.26645	.19789	1.3465	1.0000	.9618	1.0319	1.1574	.9691	1.1573
2.0	.26646	.19789	1.3465	1.0000	.9619	1.0319	1.1574	.9692	1.1573
2.5	.26646	.19789	1.3465	.9999	.9619	1.0319	1.1574	.9692	1.1573
3.0	.26646	.19789	1.3465	.9999	.9619	1.0319	1.1574	.9692	1.1573
4.0	.26646	.19789	1.3465	.9999	.9620	1.0319	1.1573	.9692	1.1572
5.0	.26646	.19789	1.3465	.9999	.9621	1.0319	1.1573	.9692	1.1571
6.0	.26646	.19789	1.3465	.9998	.9621	1.0319	1.1573	.9693	1.1571
7.0	.26647	.19789	1.3465	.9998	.9622	1.0319	1.1573	.9693	1.1571
8.0	.26647	.19789	1.3466	.9998	.9622	1.0319	1.1572	.9693	1.1569
9.0	.26647	.19789	1.3466	.9998	.9623	1.0319	1.1572	.9693	1.1569
10	.26647	.19789	1.3466	.9997	.9624	1.0319	1.1572	.9694	1.1569
15	.26649	.19789	1.3466	.9996	.9626	1.0320	1.1570	.9694	1.1566
20	.26650	.19789	1.3467	.9995	.9629	1.0320	1.1570	.9695	1.1564
25	.26651	.19789	1.3467	.9993	.9632	1.0320	1.1569	.9696	1.1561
30	.26652	.19789	1.3468	.9992	.9635	1.0320	1.1568	.9697	1.1559
40	.26654	.19789	1.3469	.9990	.9641	1.0320	1.1566	.9700	1.1554
50	.26656	.19789	1.3470	.9987	.9646	1.0321	1.1564	.9702	1.1549
60	.26659	.19789	1.3472	.9984	.9654	1.0321	1.1562	.9704	1.1544
70	.26661	.19789	1.3473	.9982	.9659	1.0321	1.1560	.9707	1.1539
80	.26663	.19789	1.3474	.9979	.9665	1.0321	1.1558	.9710	1.1534
90	.26666	.19789	1.3475	.9976	.9670	1.0322	1.1556	.9711	1.1529
100	.26668	.19789	1.3476	.9974	.9677	1.0322	1.1554	.9713	1.1524
150	.26679	.19789	1.3482	.9961	.9706	1.0323	1.1544	.9726	1.1499
200	.26690	.19789	1.3487	.9948	.9736	1.0325	1.1535	.9736	1.1475
250	.26702	.19790	1.3493	.9935	.9765	1.0326	1.1525	.9748	1.1450
300	.26713	.19790	1.3498	.9922	.9795	1.0327	1.1517	.9760	1.1427
400	.26735	.19790	1.3509	.9896	.9854	1.0330	1.1497	.9783	1.1377
500	.26759	.19790	1.3521	.9870	.9914	1.0333	1.1478	.9805	1.1329
600	.26781	.19790	1.3533	.9844	.9975	1.0336	1.1460	.9828	1.1282
700	.26803	.19791	1.3543	.9819	1.0033	1.0339	1.1442	.9850	1.1235
800	.26823	.19791	1.3553	.9794	1.0093	1.0342	1.1424	.9873	1.1188
900	.26843	.19791	1.3563	.9768	1.0153	1.0345	1.1406	.9896	1.1142
1000	.26863	.19791	1.3573	.9743	1.0213	1.0348	1.1387	.9919	1.1095
1500	.26965	.19793	1.3624	.9620	1.0516	1.0363	1.1301	1.0031	1.0871
2000	.27059	.19794	1.3670	.9500	1.0819	1.0380	1.1216	1.0141	1.0655
2500	.27148	.19795	1.3715	.9383	1.1126	1.0397	1.1134	1.0251	1.0447
3000	.27231	.19796	1.3756	.9269	1.1432	1.0414	1.1056	1.0360	1.0248
4000	.27390	.19798	1.3835	.9050	1.2052	1.0450	1.0907	1.0573	.9871

Temperature 1700°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
10	.26915	.20057	1.3419	.9997	.9590	1.0369	1.1861	.9647	1.1858
15	.26916	.20057	1.3420	.9996	.9593	1.0369	1.1861	.9648	1.1856
20	.26917	.20057	1.3420	.9995	.9595	1.0369	1.1860	.9649	1.1854
25	.26918	.20057	1.3421	.9994	.9599	1.0369	1.1859	.9651	1.1851
30	.26919	.20057	1.3421	.9992	.9601	1.0369	1.1858	.9652	1.1849
40	.26921	.20057	1.3422	.9990	.9607	1.0370	1.1856	.9653	1.1844
50	.26923	.20057	1.3423	.9987	.9613	1.0370	1.1854	.9655	1.1839
60	.26925	.20057	1.3424	.9985	.9618	1.0370	1.1853	.9658	1.1835
70	.26927	.20057	1.3425	.9982	.9624	1.0371	1.1851	.9660	1.1830
80	.26929	.20057	1.3426	.9980	.9629	1.0371	1.1849	.9662	1.1825
90	.26931	.20057	1.3427	.9977	.9635	1.0371	1.1846	.9665	1.1819
100	.26933	.20057	1.3428	.9974	.9640	1.0372	1.1845	.9667	1.1815
150	.26944	.20057	1.3434	.9962	.9670	1.0373	1.1836	.9678	1.1791
200	.26954	.20057	1.3439	.9949	.9698	1.0375	1.1828	.9688	1.1768
250	.26963	.20057	1.3443	.9936	.9726	1.0376	1.1819	.9699	1.1744
300	.26974	.20058	1.3448	.9924	.9755	1.0378	1.1810	.9710	1.1720
400	.26994	.20058	1.3458	.9898	.9812	1.0381	1.1794	.9732	1.1674
500	.27013	.20058	1.3467	.9873	.9867	1.0384	1.1776	.9754	1.1627
600	.27031	.20058	1.3476	.9848	.9924	1.0387	1.1760	.9776	1.1582
700	.27050	.20058	1.3486	.9823	.9983	1.0391	1.1742	.9797	1.1535
800	.27068	.20058	1.3495	.9799	1.0039	1.0394	1.1726	.9818	1.1490
900	.27088	.20059	1.3504	.9774	1.0096	1.0397	1.1709	.9840	1.1445
1000	.27107	.20059	1.3514	.9750	1.0154	1.0401	1.1693	.9861	1.1400
1500	.27195	.20060	1.3557	.9630	1.0441	1.0418	1.1613	.9968	1.1183
2000	.27280	.20061	1.3599	.9513	1.0732	1.0435	1.1535	1.0074	1.0973
2500	.27360	.20062	1.3638	.9399	1.1021	1.0453	1.1461	1.0178	1.0772
3000	.27432	.20062	1.3674	.9289	1.1311	1.0471	1.1388	1.0282	1.0578
4000	.27575	.20064	1.3744	.9077	1.1897	1.0509	1.1249	1.0483	1.0211

Temperature 1800°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
1.0	.27164	.20308	1.3376	1.0000	.9555	1.0418	1.2167	.9599	1.2167
1.5	.27164	.20308	1.3376	1.0000	.9555	1.0418	1.2167	.9599	1.2166
2.0	.27165	.20308	1.3376	1.0000	.9555	1.0418	1.2167	.9599	1.2166
2.5	.27165	.20308	1.3376	.9999	.9556	1.0418	1.2167	.9599	1.2166
3.0	.27165	.20308	1.3376	.9999	.9556	1.0418	1.2167	.9600	1.2166
4.0	.27165	.20308	1.3376	.9999	.9556	1.0418	1.2166	.9600	1.2165
5.0	.27165	.20308	1.3377	.9999	.9557	1.0418	1.2166	.9600	1.2165
6.0	.27165	.20308	1.3377	.9999	.9558	1.0418	1.2166	.9600	1.2164
7.0	.27165	.20308	1.3377	.9998	.9558	1.0418	1.2166	.9600	1.2164
8.0	.27166	.20308	1.3377	.9998	.9559	1.0419	1.2166	.9600	1.2163
9.0	.27166	.20308	1.3377	.9998	.9559	1.0419	1.2166	.9600	1.2163
10	.27166	.20308	1.3377	.9998	.9560	1.0419	1.2165	.9601	1.2162
15	.27167	.20308	1.3377	.9996	.9562	1.0419	1.2165	.9602	1.2160
20	.27168	.20308	1.3378	.9995	.9565	1.0419	1.2164	.9602	1.2158
25	.27169	.20308	1.3378	.9994	.9568	1.0419	1.2163	.9604	1.2155
30	.27170	.20308	1.3379	.9993	.9571	1.0419	1.2161	.9605	1.2152
40	.27171	.20308	1.3379	.9990	.9576	1.0420	1.2161	.9606	1.2149
50	.27173	.20308	1.3380	.9988	.9581	1.0420	1.2159	.9609	1.2144
60	.27175	.20308	1.3381	.9985	.9587	1.0420	1.2157	.9612	1.2139
70	.27177	.20308	1.3382	.9983	.9592	1.0421	1.2155	.9613	1.2134
80	.27179	.20308	1.3383	.9980	.9598	1.0421	1.2153	.9615	1.2129
90	.27180	.20308	1.3384	.9978	.9603	1.0421	1.2153	.9617	1.2126
100	.27182	.20308	1.3385	.9975	.9609	1.0422	1.2151	.9619	1.2121
150	.27191	.20308	1.3389	.9963	.9635	1.0423	1.2143	.9630	1.2098
200	.27200	.20308	1.3394	.9950	.9663	1.0425	1.2134	.9640	1.2074
250	.27208	.20308	1.3398	.9938	.9691	1.0427	1.2126	.9651	1.2051
300	.27217	.20308	1.3402	.9926	.9717	1.0428	1.2119	.9662	1.2029
400	.27235	.20309	1.3410	.9901	.9771	1.0432	1.2104	.9681	1.1984
500	.27253	.20309	1.3419	.9876	.9827	1.0435	1.2087	.9703	1.1938
600	.27268	.20309	1.3427	.9852	.9880	1.0439	1.2071	.9723	1.1893
700	.27286	.20309	1.3435	.9828	.9935	1.0442	1.2056	.9745	1.1849
800	.27304	.20309	1.3444	.9804	.9990	1.0446	1.2042	.9765	1.1806
900	.27322	.20309	1.3453	.9780	1.0046	1.0449	1.2026	.9786	1.1762
1000	.27336	.20309	1.3460	.9756	1.0100	1.0453	1.2011	.9806	1.1718
1500	.27414	.20310	1.3498	.9640	1.0374	1.0471	1.1937	.9907	1.1507
2000	.27492	.20311	1.3536	.9526	1.0650	1.0489	1.1865	1.0008	1.1303
2500	.27562	.20312	1.3569	.9416	1.0925	1.0508	1.1795	1.0107	1.1106
3000	.27630	.20312	1.3603	.9308	1.1203	1.0527	1.1728	1.0205	1.0917
4000	.27759	.20314	1.3665	.9103	1.1758	1.0566	1.1599	1.0397	1.0558

Temperature 1900°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
1.0	.27398	.20542	1.3338	1.0000	.9527	1.0468	1.2486	.9553	1.2486
1.5	.27398	.20542	1.3338	1.0000	.9528	1.0468	1.2486	.9553	1.2485
2.0	.27398	.20542	1.3338	1.0000	.9528	1.0468	1.2486	.9554	1.2485
2.5	.27399	.20542	1.3338	.9999	.9528	1.0468	1.2486	.9554	1.2485
3.0	.27399	.20542	1.3338	.9999	.9528	1.0468	1.2485	.9554	1.2485
4.0	.27399	.20542	1.3338	.9999	.9529	1.0468	1.2485	.9554	1.2484
5.0	.27399	.20542	1.3338	.9999	.9529	1.0468	1.2485	.9554	1.2484
6.0	.27399	.20542	1.3338	.9999	.9530	1.0468	1.2485	.9555	1.2483
7.0	.27399	.20542	1.3338	.9998	.9530	1.0468	1.2485	.9555	1.2483
8.0	.27399	.20542	1.3338	.9998	.9531	1.0468	1.2485	.9555	1.2482
9.0	.27400	.20542	1.3338	.9998	.9532	1.0468	1.2485	.9555	1.2482
10	.27400	.20542	1.3338	.9998	.9532	1.0469	1.2484	.9555	1.2482
15	.27401	.20542	1.3339	.9996	.9535	1.0469	1.2484	.9556	1.2479
20	.27401	.20542	1.3339	.9995	.9537	1.0469	1.2483	.9557	1.2477
25	.27402	.20542	1.3339	.9994	.9539	1.0469	1.2482	.9557	1.2475
30	.27403	.20542	1.3340	.9993	.9543	1.0469	1.2481	.9559	1.2472
40	.27404	.20542	1.3340	.9990	.9548	1.0470	1.2479	.9560	1.2467
50	.27406	.20542	1.3341	.9988	.9552	1.0470	1.2479	.9563	1.2464
60	.27408	.20542	1.3342	.9985	.9558	1.0470	1.2477	.9565	1.2459
70	.27409	.20542	1.3343	.9983	.9563	1.0471	1.2476	.9567	1.2455
80	.27411	.20542	1.3344	.9981	.9569	1.0471	1.2474	.9568	1.2450
90	.27413	.20542	1.3345	.9978	.9574	1.0471	1.2472	.9571	1.2445
100	.27414	.20542	1.3345	.9976	.9579	1.0472	1.2471	.9572	1.2441
150	.27422	.20542	1.3349	.9964	.9605	1.0474	1.2464	.9582	1.2419
200	.27430	.20542	1.3353	.9952	.9631	1.0475	1.2456	.9593	1.2396
250	.27438	.20542	1.3357	.9939	.9657	1.0477	1.2448	.9602	1.2373
300	.27445	.20542	1.3360	.9927	.9683	1.0479	1.2441	.9613	1.2351
400	.27461	.20542	1.3368	.9904	.9736	1.0483	1.2428	.9632	1.2308
500	.27478	.20543	1.3376	.9880	.9788	1.0486	1.2413	.9653	1.2264
600	.27493	.20543	1.3383	.9856	.9840	1.0490	1.2398	.9672	1.2220
700	.27507	.20543	1.3390	.9833	.9892	1.0493	1.2384	.9693	1.2177
800	.27523	.20543	1.3398	.9809	.9945	1.0497	1.2370	.9712	1.2134
900	.27539	.20543	1.3406	.9786	.9998	1.0501	1.2356	.9731	1.2092
1000	.27555	.20543	1.3413	.9763	1.0050	1.0505	1.2343	.9750	1.2050
1500	.27627	.20544	1.3448	.9649	1.0314	1.0523	1.2273	.9848	1.1843
2000	.27694	.20544	1.3480	.9539	1.0577	1.0542	1.2207	.9944	1.1644
2500	.27760	.20545	1.3512	.9432	1.0840	1.0561	1.2142	1.0039	1.1452
3000	.27826	.20546	1.3543	.9327	1.1106	1.0581	1.2078	1.0132	1.1266
4000	.27943	.20547	1.3600	.9127	1.1636	1.0620	1.1956	1.0316	1.0913

Temperature 2000°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
10	.27616	.20759	1.3303	.9998	.9507	1.0518	1.2817	.9510	1.2814
15	.27617	.20759	1.3304	.9996	.9510	1.0518	1.2817	.9511	1.2812
20	.27618	.20759	1.3305	.9995	.9512	1.0518	1.2815	.9512	1.2809
25	.27619	.20759	1.3305	.9994	.9515	1.0519	1.2814	.9513	1.2806
30	.27619	.20759	1.3305	.9993	.9517	1.0519	1.2814	.9514	1.2805
40	.27621	.20759	1.3306	.9991	.9522	1.0519	1.2812	.9515	1.2800
50	.27622	.20759	1.3306	.9988	.9527	1.0520	1.2811	.9517	1.2796
60	.27624	.20759	1.3307	.9986	.9532	1.0520	1.2809	.9519	1.2791
70	.27625	.20759	1.3307	.9983	.9536	1.0520	1.2808	.9521	1.2787
80	.27626	.20759	1.3308	.9981	.9542	1.0521	1.2806	.9523	1.2782
90	.27628	.20759	1.3309	.9979	.9547	1.0521	1.2805	.9525	1.2778
100	.27629	.20759	1.3309	.9976	.9552	1.0521	1.2805	.9527	1.2775
150	.27636	.20759	1.3313	.9965	.9577	1.0523	1.2797	.9537	1.2752
200	.27645	.20759	1.3317	.9953	.9602	1.0525	1.2790	.9547	1.2730
250	.27651	.20759	1.3320	.9941	.9628	1.0527	1.2784	.9556	1.2709
300	.27658	.20759	1.3323	.9929	.9652	1.0529	1.2777	.9565	1.2687
400	.27671	.20759	1.3330	.9906	.9702	1.0533	1.2764	.9584	1.2644
500	.27687	.20759	1.3337	.9883	.9753	1.0536	1.2750	.9603	1.2601
600	.27702	.20760	1.3344	.9860	.9801	1.0540	1.2736	.9623	1.2558
700	.27714	.20760	1.3350	.9837	.9853	1.0544	1.2723	.9641	1.2516
800	.27728	.20760	1.3356	.9814	.9903	1.0548	1.2711	.9660	1.2475
900	.27740	.20760	1.3363	.9792	.9954	1.0552	1.2697	.9679	1.2433
1000	.27754	.20760	1.3369	.9769	1.0004	1.0555	1.2685	.9697	1.2392
1500	.27822	.20760	1.3402	.9659	1.0257	1.0575	1.2620	.9790	1.2190
2000	.27883	.20761	1.3430	.9552	1.0509	1.0594	1.2558	.9882	1.1995
2500	.27943	.20761	1.3459	.9447	1.0761	1.0613	1.2497	.9974	1.1806
3000	.27999	.20762	1.3486	.9346	1.1014	1.0633	1.2438	1.0063	1.1624
4000	.28108	.20763	1.3538	.9151	1.1520	1.0673	1.2323	1.0238	1.1277

Temperature 2100°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
1.0	.27817	.20961	1.3271	1.0000	.9480	1.0567	1.3162	.9464	1.3162
1.5	.27817	.20961	1.3271	1.0000	.9480	1.0567	1.3162	.9464	1.3161
2.0	.27817	.20961	1.3271	1.0000	.9480	1.0567	1.3162	.9464	1.3161
2.5	.27817	.20961	1.3271	.9999	.9480	1.0567	1.3162	.9464	1.3161
3.0	.27818	.20961	1.3271	.9999	.9481	1.0567	1.3162	.9464	1.3161
4.0	.27818	.20961	1.3271	.9999	.9481	1.0567	1.3162	.9464	1.3161
5.0	.27818	.20961	1.3271	.9999	.9482	1.0567	1.3161	.9465	1.3159
6.0	.27818	.20961	1.3271	.9999	.9482	1.0567	1.3161	.9465	1.3159
7.0	.27818	.20961	1.3271	.9998	.9483	1.0567	1.3161	.9465	1.3159
8.0	.27818	.20961	1.3271	.9998	.9483	1.0567	1.3161	.9465	1.3159
9.0	.27818	.20961	1.3271	.9998	.9484	1.0567	1.3161	.9465	1.3158
10	.27818	.20961	1.3272	.9998	.9484	1.0567	1.3161	.9465	1.3158
15	.27819	.20961	1.3272	.9997	.9486	1.0567	1.3160	.9466	1.3156
20	.27820	.20961	1.3272	.9995	.9489	1.0568	1.3159	.9467	1.3153
25	.27820	.20961	1.3272	.9994	.9491	1.0568	1.3159	.9468	1.3151
30	.27821	.20961	1.3273	.9993	.9494	1.0568	1.3158	.9469	1.3149
40	.27822	.20961	1.3273	.9991	.9499	1.0568	1.3157	.9471	1.3145
50	.27824	.20961	1.3274	.9989	.9503	1.0569	1.3156	.9473	1.3141
60	.27825	.20961	1.3275	.9986	.9508	1.0569	1.3154	.9475	1.3136
70	.27827	.20961	1.3275	.9984	.9513	1.0569	1.3153	.9477	1.3132
80	.27828	.20961	1.3276	.9982	.9518	1.0570	1.3152	.9478	1.3128
90	.27829	.20961	1.3276	.9979	.9523	1.0570	1.3150	.9480	1.3123
100	.27830	.20961	1.3277	.9977	.9528	1.0571	1.3149	.9481	1.3119
150	.27837	.20961	1.3280	.9966	.9552	1.0572	1.3143	.9491	1.3098
200	.27844	.20961	1.3283	.9954	.9576	1.0574	1.3136	.9501	1.3076
250	.27851	.20961	1.3287	.9943	.9600	1.0576	1.3130	.9510	1.3055
300	.27857	.20961	1.3290	.9931	.9624	1.0578	1.3124	.9519	1.3034
400	.27870	.20961	1.3296	.9909	.9673	1.0582	1.3112	.9537	1.2992
500	.27883	.20961	1.3302	.9886	.9721	1.0586	1.3099	.9555	1.2950
600	.27895	.20961	1.3308	.9864	.9769	1.0590	1.3086	.9573	1.2908
700	.27908	.20962	1.3314	.9842	.9818	1.0594	1.3074	.9591	1.2867
800	.27920	.20962	1.3320	.9819	.9866	1.0598	1.3062	.9609	1.2826
900	.27933	.20962	1.3326	.9798	.9915	1.0601	1.3049	.9628	1.2785
1000	.27945	.20962	1.3332	.9776	.9963	1.0605	1.3038	.9646	1.2745
1500	.28005	.20962	1.3360	.9668	1.0205	1.0625	1.2978	.9735	1.2547
2000	.28063	.20963	1.3387	.9564	1.0448	1.0644	1.2918	.9823	1.2355
2500	.28120	.20963	1.3414	.9462	1.0688	1.0664	1.2861	.9910	1.2170
3000	.28171	.20963	1.3438	.9364	1.0933	1.0684	1.2806	.9996	1.1991
4000	.28271	.20964	1.3486	.9174	1.1414	1.0724	1.2696	1.0164	1.1648

Temperature 2200°R

p	C_p	C_v	γ	$\rho/_o\rho$	I	J	K	L	E/F
10	.28004	.21147	1.3243	.9998	.9463	1.0615	1.3516	.9422	1.3513
15	.28005	.21147	1.3243	.9997	.9466	1.0616	1.3515	.9423	1.3510
20	.28006	.21147	1.3243	.9996	.9468	1.0616	1.3515	.9424	1.3509
25	.28006	.21147	1.3244	.9994	.9470	1.0616	1.3514	.9425	1.3506
30	.28007	.21147	1.3244	.9993	.9473	1.0616	1.3514	.9426	1.3505
40	.28008	.21147	1.3244	.9991	.9477	1.0617	1.3511	.9428	1.3499
50	.28009	.21147	1.3245	.9989	.9482	1.0617	1.3510	.9430	1.3495
60	.28010	.21147	1.3245	.9987	.9487	1.0617	1.3509	.9431	1.3491
70	.28012	.21147	1.3246	.9984	.9491	1.0618	1.3508	.9433	1.3487
80	.28013	.21147	1.3247	.9982	.9496	1.0618	1.3507	.9435	1.3483
90	.28014	.21147	1.3247	.9980	.9500	1.0618	1.3506	.9437	1.3479
100	.28015	.21147	1.3248	.9978	.9505	1.0619	1.3505	.9438	1.3475
150	.28022	.21147	1.3251	.9966	.9528	1.0621	1.3499	.9447	1.3454
200	.28026	.21147	1.3253	.9955	.9552	1.0623	1.3492	.9455	1.3432
250	.28034	.21147	1.3257	.9944	.9575	1.0625	1.3487	.9464	1.3412
300	.28038	.21147	1.3259	.9933	.9599	1.0627	1.3481	.9473	1.3391
400	.28050	.21147	1.3264	.9911	.9645	1.0631	1.3470	.9490	1.3350
500	.28063	.21147	1.3270	.9889	.9692	1.0634	1.3458	.9509	1.3309
600	.28073	.21147	1.3275	.9868	.9738	1.0638	1.3446	.9527	1.3268
700	.28087	.21147	1.3282	.9846	.9784	1.0642	1.3434	.9544	1.3227
800	.28097	.21148	1.3286	.9824	.9832	1.0646	1.3423	.9561	1.3187
900	.28109	.21148	1.3292	.9803	.9879	1.0650	1.3412	.9579	1.3148
1000	.28119	.21148	1.3296	.9782	.9924	1.0654	1.3401	.9596	1.3108
1500	.28174	.21148	1.3324	.9677	1.0157	1.0674	1.3344	.9681	1.2913
2000	.28228	.21148	1.3348	.9576	1.0391	1.0694	1.3288	.9766	1.2724
2500	.28279	.21149	1.3371	.9477	1.0623	1.0713	1.3233	.9849	1.2541
3000	.28328	.21149	1.3394	.9381	1.0857	1.0733	1.3181	.9931	1.2365
4000	.28420	.21150	1.3437	.9197	1.1321	1.0773	1.3078	1.0093	1.2027

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2 references

The Beattie-Bridgeman equation of state was used to calculate several of the thermodynamic properties and flow process correction factors for air. The increase in the specific heats due to the vibration of diatomic molecules was included by assuming the molecules to be perfect harmonic oscillators. This report contains the equations used and the tabulated results of these calculations. Graphs are included to provide a general

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