CHAPTER 4

THE THERMODYNAMIC PROPERTIES OF CARBON DIOXIDE

Several compilations of thermodynamic properties of carbon dioxide are to be found in the literature [1 - 11]. They differ considerably from the present series in range and in the list of properties tabulated. In the present work, an equation of state has been derived from experimental heat-capacity measurements and data of state and has been used to calculate tables of the compressibility factor and density of carbon dioxide gas from near-saturation conditions to 1500°K and 100 atmospheres. Over these same ranges, quantities derived from the equation of state have been combined with new thermodynamic functions for the ideal gas to obtain tables of heat capacity, enthalpy, entropy, heat-capacity ratio, and sound velocity at low frequency for the real gas. A full discussion of the method of fitting the data and of other details of the calculation of the derived thermodynamic properties is to be found in a report by Masi [12].

The Correlation of the Experimental Data

The PVT relationships of carbon dioxide have been investigated over rather extensive ranges in four different laboratories. The first measurements were made by Amagat [15] and published in 1891. Probably the most accurate data obtained to date are those of Michels and Michels [8], which covered the range 0° to 150°C and 16 to 3000 atmospheres. The work of MacCormack and Schneider [11] in 1950 covered the range 0° to 600°C and up to 50 atmospheres. The recent density measurements of Kennedy [16], from 0° to 1000°C and from 25 to 500 bars, became available too late for inclusion in the present correlation. Low-pressure measurements of the density of carbon dioxide gas have been made by several investigators, among whom are Maass and Mennie [17], Cooper and Maass [18], Cawood and Patterson [19], and Schäfer [20].

The heat capacity of carbon dioxide gas has been measured by a number of workers. The early work was reviewed by Partington and Shilling [21], and much of it need not be mentioned here. Swann [22] first adapted the flow calorimeter method to carbon dioxide gas and measured the heat capacity (C_p) at 1 atmosphere from 20° to 100°C. Scheel and Heuse [23], using a different flow calorimeter, made determinations at 1 atmosphere at -75° and 20°C. Michels and Strijland [24] reported measurments of C_v of the compressed gas and liquid from 20° to 40°C and from 60 to 190 atmospheres. Masi and Petkof [25] have made measurements with an accuracy of within 0.1 percent at several low pressures over the temperature range -30° to 90°C. Schrock [26] has reported measurements of C_p made with a flow calorimeter, from 100° to 1000°F and to a pressure of 1000 pounds per square inch. Among the indirect measurements of heat capacity, those for which the adiabatic expansion method was used may be mentioned here. Eucken and Von Lüde [27] have reported values at 1 atmosphere from 0° to 270°C, and Kistiakowsky and Rice [28] have made measurements at 1 atmosphere at 300.06°, 331.86°, and 367.72°K.

The velocity of sound in carbon dioxide has been measured a number of times; the early work has been reviewed by Partington and Shilling [21]. King and Partington [29] and Sherratt and Griffiths [30] made measurements at 1 atmosphere to 1000°C; and Hubbard and Hodge [31], using ultrasonic frequencies, measured the sound velocity at 27°C from 1 to 60 atmospheres. These workers, using one or another equation of state, converted their results to the heat-capacity ratio, $\gamma = C_p/C_v$. Measurements of γ have been made in two other ways. Katz, Leverton, and Woods [32] used the "resonance" method to obtain values from 1.2 to 8.2 atmospheres at 29.9°C. Koehler [33] used a method of self-sustained oscillations to obtain a value at 25°C and 1 atmosphere.

The Joule-Thomson coefficient of carbon dioxide has been measured by Kester [34], Jenkin and Pye [35], Jenkin and Shorthose [36], Burnett [37], and Roebuck, Murrell, and Miller [38]. The results of the last-named authors essentially supersede all of the earlier ones, since they are generally more precise and cover a larger range (-55° to 300°C and 1 to 200 atmospheres).

The values of the ideal-gas thermodynamic properties tabulated here and used for obtaining the real-gas properties are the newly calculated values of Woolley [13], which are based on improved spectroscopic data.

The tables of viscosity and thermal conductivity were computed from empirical equations (see summary tables 1-B and 1-C), whose coefficients were fitted to the existing experimental data.

The tabulated values of the vapor pressure were obtained by interpolation in the tables of Meyers and Van Dusen [14]. The critical constants of carbon dioxide have been reported by many investigators, among whom are Plank and Kuprianoff [1], Meyers and Van Dusen [14], and Michels, Blaisse, and Michels [7]. From Michel's data, $T_c = 304.20$°K and $P_c = 72.85$ atmospheres, Meyers and Van Dusen [14] observed the triple point temperature of carbon dioxide as 216.56°K and the pressure as 5.112 atmospheres. From the same source, the normal sublimation temperature is 194.65°K.

The dimensionless representation has been accomplished for certain properties by expressing them relative to the value at standard conditions (0°C and 1 atmosphere). Thus, for density, the property is expressed as ρ/ρ_0, for sound velocity as a/a_0, for thermal conductivity as k/k_0, and for viscosity as η/η_0. The reference values, ρ_0, a_0, k_0, and η_0 result, in general, from the correlating equations which were fitted to represent the experimental data over as wide a range as possible. Values for these quantities are given in various units in table 4-b. The value of ρ_0 for carbon dioxide as given, 1.9771 $g\ell^{-1}$, is within the range of the experimental determinations [17, 18, 19, 54-60] and quite close to that of Cawood and Patterson [19]. Comparisons of the adopted values of η_0 and k_0 with the experimental data at standard conditions can be made by examining figures 4d and 4e, respectively. The value of a_0 for carbon dioxide as given, 257.0 m/sec, is within the range of the experimental determinations at standard conditions [53, 61-67], though slightly below their mean of 259.3 m/sec.

The Reliability of the Tables

The reliability of the tables of thermodynamic functions of the real gas is affected by the accuracy of the available experimental data, the method of correlation, and the extrapolations. Some idea of the closeness of fit of experimental data can be gained from the deviation plots. Figure 4a gives a comparison of the modern experimental values of Z with those of table 4-1. It is seen that the discrepancy is usually within ±0.1 percent but that larger departures occur. It is believed that the tables of the compressibility factor and of density are reliable to within 0.2 percent in the least accurate region, which is above 10 atmospheres and below 500°K. In other regions, the tables are thought to be accurate to one in the next to last place tabulated. The tabulated densities (table 4-2) have corresponding uncertainties.

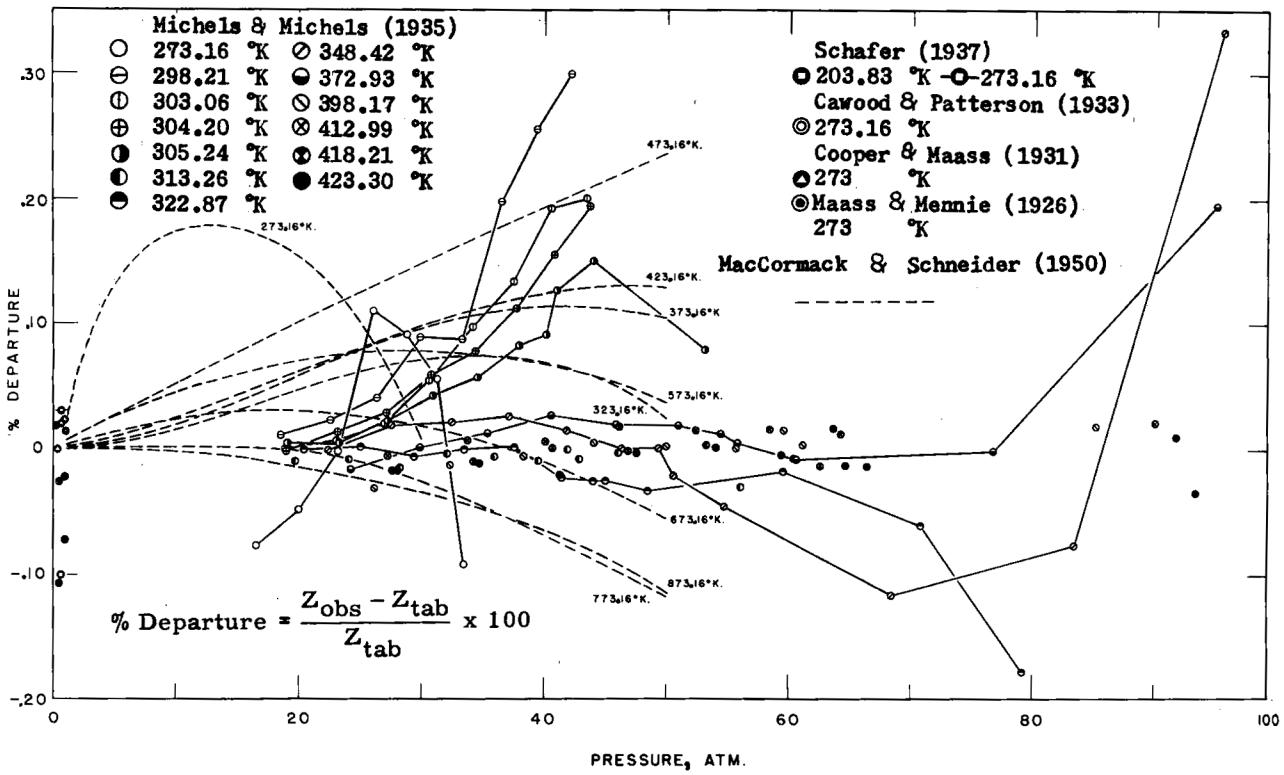

Figure 4a. Departures of experimental compressibility factors from the tabulated values for carbon dioxide (table 4-1)

Figure 4b shows the percent departures of direct measurements of heat capacity at 1 atmosphere from the values of table 4-3. Experimental values at higher pressures are generally too scattered to warrant a comparison curve; however, a comparison with the recent data of Shrock [26] showed an average deviation of about 1.5 percent.

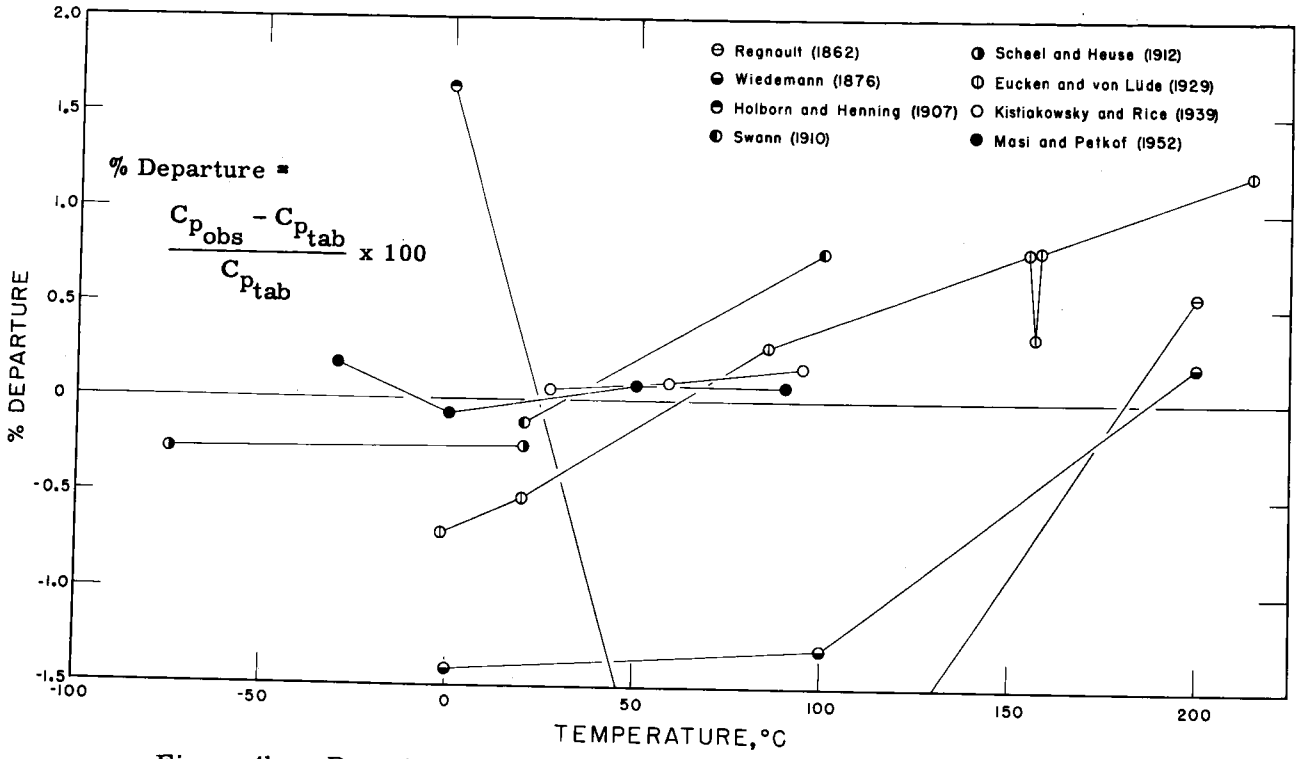

Figure 4b. Departures of the experimental C_p at one atmosphere from the tabulated values for carbon dioxide (table 4-3)

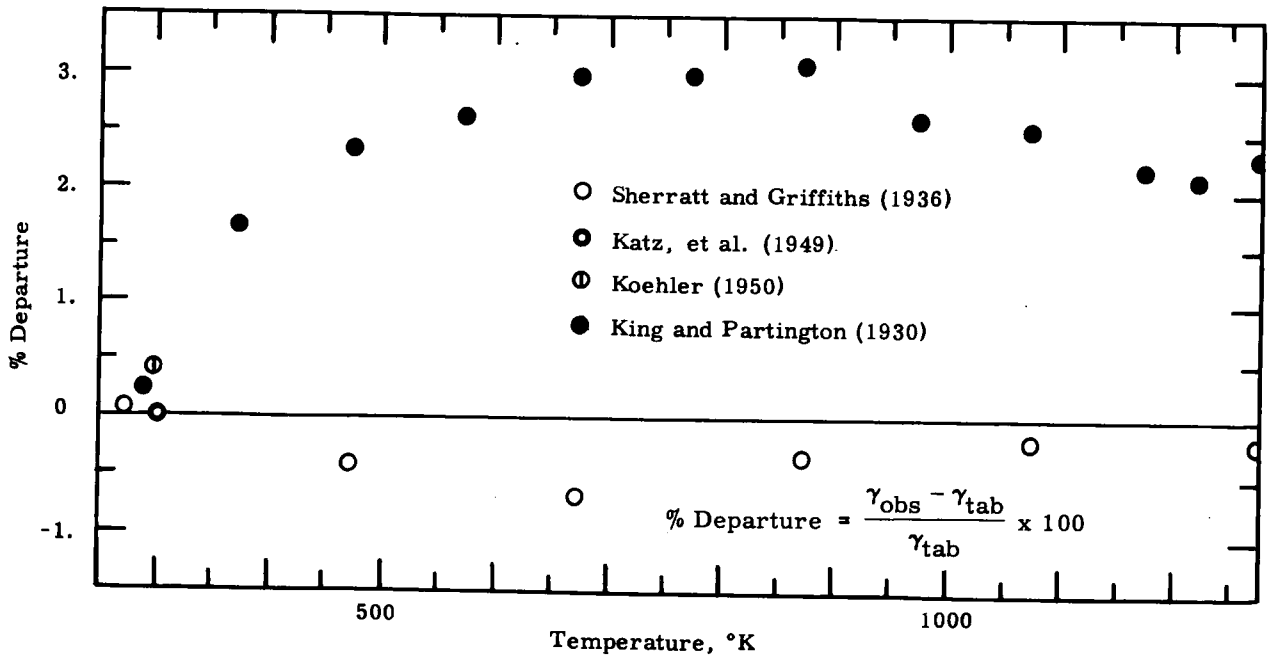

Figure 4c. Departures of experimental values of γ at 1 atmosphere from the tabulated values for carbon dioxide (table 4-6)

Figure 4c shows a comparison of experimental and tabulated values of the heat-capacity ratio, γ, at 1 atmosphere. The data of Partington, et al., show a similar deviation in the case of oxygen and nitrogen.

Figure 4d shows the departures of the experimental values of viscosity from those of table 4-8, in the region of 1 atmosphere. Figure 4e is a similar plot for thermal conductivity (table 4-9). The table of low-pressure viscosities is thought to be correct to about 2 percent; the thermal conductivity, and therefore also the Prandtl number (table 4-10), are not certain to better than 5 percent.

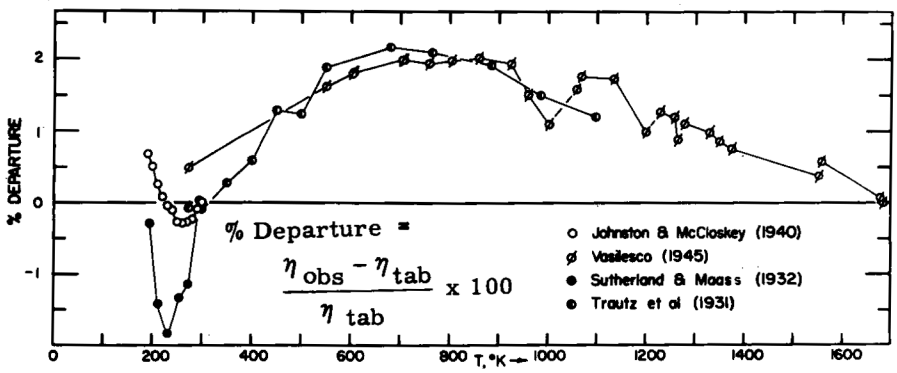

Figure 4d. Departures of experimental viscosities from the tabulated values for carbon dioxide (table 4-8)

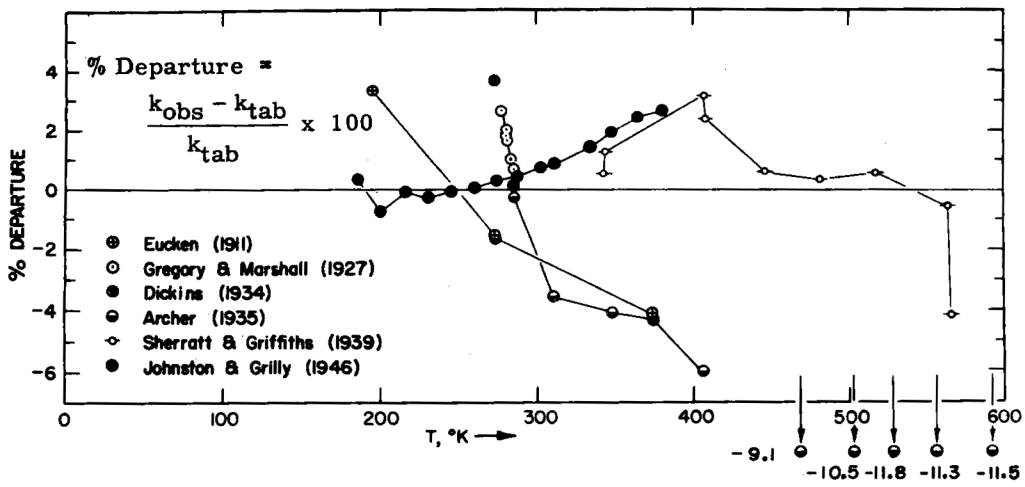

Figure 4e. Departures of experimental thermal conductivities from the tabulated values for carbon dioxide (table 4-9)

References

[1] R. Plank and J. Kuprianoff, Z. tech. Phys. 10, 93 (1929).

[2] E. L. Quinn and C. L. Jones, Carbon dioxide, (Reinhold Publishing Corp., New York, N.Y., 1936).

[3] R. L. Sweigert, P. Weber, and R. L. Allen, Ind. Eng. Chem. 38, 185 (1946).

[4] J. A. W. Huggill, D. M. Hewitt, and M. U. Pai, Mech. Eng. Research Organization (London), Heat Div. Report No. 9 (1950).

[5] S. R. DeGroot and A. Michels, Physica 14, 218 (1948).

[6] A. Michels and S. R. DeGroot, Appl. Sci. Research [A] 1, 94 and 103 (1948).

[7] A. Michels, B. Blaisse, and C. Michels, Proc. Roy. Soc. (London) [A] 160, 358 (1937).

[8] A. Michels and C. Michels, Proc. Roy. Soc. (London) [A] 153, 201 (1935); [A] 160, 348 (1937).

[9] A. Michels, C. Michels, and H. Wouters, Proc. Roy. Soc. (London) [A] 153, 214 (1935).

[10] K. E. MacCormack and W. G. Schneider, J. Chem. Phys. 18, 1273 (1950).

[11] K. E. MacCormack and W. G. Schneider, J. Chem. Phys. 18, 1269 (1950).

[12] J. F. Masi, Natl. Advisory Comm. Aeronaut. Tech. Note 3276.

[13] H. W. Woolley, J. Research Natl. Bur. Standards 52, 289 (1954) RP 2502.

[14] C. H. Meyers and M. S. Van Dusen, Bur. Standards J. Research 10, 381 (1933) RP 538.

[15] E. H. Amagat, Compt. rend. 113, 446 (1891); 114, 1093 (1892).

[16] G. C. Kennedy, Am. J. Sci. 252, 225 (1954).

[17] O. Maass and J. H. Mennie, Proc. Roy. Soc. (London) [A] 110, 198 (1926).

[18] D. Le B. Cooper and O. Maass, Can. J. Research 2, 388 (1930).

[19] W. Cawood and H. S. Patterson, J. Chem. Soc. 1933, 619.

[20] K. Schäfer, Z. physik. Chem [B] 36, 85 (1937).

[21] J. R. Partington and W. G. Shilling, The specific heats of gases, (Ernest Benn Ltd., London, 1924).

[22] W. F. G. Swann, Trans. Roy. Soc. (London) [A] 210, 199 (1910).

[23] K. Scheel and W. Heuse, Ann. Physik [4] 37, 79 (1912); [4] 40, 473 (1913); [4] 59, 86 (1919).

[24] A. Michels and J. C. Strijland, Physica 16, 813 (1950).

[25] J. F. Masi and B. Petkof, J. Research Natl. Bur. Standards 48, 179 (1952) RP 2303.

[26] V. E. Shrock, Natl. Advisory Comm. Aeronaut. Tech. Note 2838 (1952).

[27] A. Eucken and K. Von Lüde, Z. physik. Chem. [B] 5, 413 (1929).

[28] G. B. Kistiakowsky and W. W. Rice, J. Chem. Phys. 7, 281 (1939).

[29] F. E. King and J. R. Partington, Phil. Mag. [7] 9, 1020 (1930).

[30] C. G. Sherratt and E. Griffiths, Proc. Roy. Soc. (London) [A] 156, 504 (1936).

[31] J. C. Hubbard and A. H. Hodge, J. Chem. Phys. 5, 978 (1937).

[32] L. Katz, W. F. Leverton, and S. B. Woods, Can. J. Research [A] 27, 39 (1949).

[33] W. F. Koehler, J. Chem. Phys. 18, 465 (1950).

[34] F. E. Kester, Phys. Rev. [1] 21, 260 (1905).

[35] C. F. Jenkin and D. R. Pye, Trans. Roy. Soc. (London) [A] 213, 67 (1914); [A] 215, 353 (1915).

[36] C. F. Jenkin and D. N. Shorthose, Proc. Roy. Soc. (London) [A] 99, 352 (1921).

[37] E. S. Burnett, Phys. Rev. [2] 22, 590 (1923).

[38] J. R. Roebuck, T. A. Murrell, and E. E. Miller, J. Am. Chem. Soc. 64, 400 (1942).

[39] H. V. Regnault, Acad. Sci. Paris, Mém. [2] 26, 1 (1862).

[40] E. Wiedemann, Ann. Physik. [2] 157, 1 (1876).

[41] L. Holborn and F. Henning, Ann. Physik [4] 23, 809 (1907).

[42] H. L. Johnston and K. E. McCloskey, J. Phys. Chem. 44, 1038 (1940).

[43] V. Vasilesco, Ann. phys. [11] 20, 137 and 292 (1945).

[44] B. P. Sutherland and O. Maass, Can. J. Research 6, 428 (1932).

[45] M. Trautz and F. Kurz, Ann. Physik [5] 9, 981 (1931).

[46] A. Eucken, Physik. Z. 12, 1101 (1911).

[47] H. Gregory and S. Marshall, Proc. Roy. Soc. (London) [A] 114, 354 (1927).

[48] B. G. Dickins, Proc. Roy. Soc. (London) [A] 143, 517 (1934).

[49] C. T. Archer, Phil. Mag. [7] 19, 901 (1935).

[50] G. G. Sherratt and E. Griffiths, Phil. Mag. [7] 27, 68 (1939).

[51] H. L. Johnston and E. R. Grilly, J. Chem. Phys. 14, 233 (1946).

[52] E. Wichers, J. Am. Chem. Soc. 76, 2033 (1954).

[53] O. Buckendahl, Dissertation, Heidelberg (1906).

[54] E. Moles, T. Toral, and A. Escribano, Trans. Faraday Soc. 35, 1439 (1939).

[55] Lord Rayleigh, Proc. Roy. Soc. (London) 62, 204 (1897).

[56] A. Leduc, Recherches sur les gaz (Gauthier-Villars et Fils, Paris ,1898).

[57] P. A. Guye and A. Pintza, Mem. Soc. Phys. Nat. (Geneva) 35, 556 (1908).

[58] Deshusses, Thesis, Geneva, No. 711, (1922).

[59] E. Moles and T. Toral, Anales soc. españ. fís. y quím. 35, 42 (1937); Monatsh. Chem. 69, 342 (1936).

[60] D. L. Cooper and O. Maass, Can. J. Research 4, 283 (1931).

[61] H. B. Dixon, C. Campbell, and A. Parker, Proc. Roy. Soc. (London) [A] 100, 1 (1921).

[62] P. L. Dulong, Ann. chim. et phys. 41, 113 (1829).

[63] W. Heuse, Ann. Physik [4] 59, 86 (1919).

[64] T. Martini, Atti reale ist. veneto sci. lettere ed arti 12, 566 (1888).

[65] A. P. Masson, Compt. rend. 44, 464 (1857).

[66] G. Schweikert, Ann. Physik [4] 48, 593 (1915).

[67] A. Wüllner, Ann. Physik [3] 4, 321 (1878).

Table 4-a. VALUES OF THE GAS CONSTANT, R, FOR CARBON DIOXIDE

Values of R for Carbon Dioxide for Temperatures in Degrees Kelvin

Pressure / Density	atm	kg/cm^2	mm Hg	lb/in^2
g/cm^3	1.86450	1.92645	1417.02	27.4007
$mole/cm^3$	82.0567	84.7832	62363.1	1205.91
mole/liter	0.0820544	0.0847809	62.3613	1.20587
lb/ft^3	0.0298662	0.0308586	22.6983	0.438914
lb $mole/ft^3$	1.31441	1.35808	998.952	19.3166

Values of R for Carbon Dioxide for Temperatures in Degrees Rankine

Pressure / Density	atm	kg/cm^2	mm Hg	lb/in^2
g/cm^3	1.03583	1.07025	787.233	15.2226
$mole/cm^3$	45.5871	47.1018	34646.2	669.950
mole/liter	0.0455858	0.0471005	34.6452	0.669928
lb/ft^3	0.0165923	0.0171437	12.6102	0.243841
lb $mole/ft^3$	0.730228	0.754489	554.973	10.7314

Table 4-b. CONVERSION FACTORS FOR THE CARBON DIOXIDE TABLES

Conversion Factors for Table 4-2

To Convert Tabulated Value of	To	Having the Dimensions Indicated Below	Multiply by
ρ/ρ_0	ρ	g cm^{-3}	1.9770×10^{-3}
		mole cm^{-3}	4.4922×10^{-5}
		g $liter^{-1}$	1.9771
		lb in^{-3}	7.1424×10^{-5}
		lb ft^{-3}	0.12342

Conversion Factors for Tables 4-4 and 4-12

To Convert Tabulated Value of	To	Having the Dimensions Indicated Below	Multiply by
$(H^o - E_0^o)/RT_0$,	$(H^o - E_0^o)$,	cal $mole^{-1}$	542.821
$(H - E_0^o)/RT_0$	$(H - E_0^o)$	cal g^{-1}	12.3340
		joules g^{-1}	51.6056
		Btu $(lb\ mole)^{-1}$	976.437
		Btu lb^{-1}	22.1867

Conversion Factors for Tables 4-3, 4-5, and 4-12

To Convert Tabulated Value of	To	Having the Dimensions Indicated Below	Multiply by
C_p^o/R, S^o/R,	C_p^o, S^o,	cal $mole^{-1}\ {}^oK^{-1}$ (or $^oC^{-1}$)	1.98719
C_p/R, S/R,	C_p, S,	cal $g^{-1}\ {}^oK^{-1}$ (or $^oC^{-1}$)	0.0451531
$-(F^o - E_0^o)/RT$	$-(F^o - E_0^o)/T$	joules $g^{-1}\ {}^oK^{-1}$ (or $^oC^{-1}$)	0.188921
		Btu $(lb\ mole)^{-1}\ {}^oR^{-1}$ (or $^oF^{-1}$)	1.98588
		Btu $lb^{-1}\ {}^oR^{-1}$ (or $^oF^{-1}$)	0.0451234

Molecular weight of carbon dioxide used in these calculations is 44.010 g $mole^{-1}$. The recent revision in the atomic weight of carbon [52] changes this value to 44.011. This will, in general, produce changes that are less than the stated uncertainties. Unless otherwise specified, the mole is the gram-mole; the calorie is the thermochemical calorie; and the joule is the absolute joule.

Table 4-b. CONVERSION FACTORS FOR THE CARBON DIOXIDE TABLES - Cont.

Conversion Factors for Table 4-7

To Convert Tabulated Value of	To	Having the Dimensions Indicated Below	Multiply by
a_0	a	$m\ sec^{-1}$	257.0
		$ft\ sec^{-1}$	843.2

Conversion Factors for Table 4-8

To Convert Tabulated Value of	To	Having the Dimensions Indicated Below	Multiply by
η/η_0	η	poise or $g\ sec^{-1}\ cm^{-1}$	1.3701×10^{-4}
		$kg\ hr^{-1}\ m^{-1}$	4.9324×10^{-2}
		$slug\ hr^{-1}\ ft^{-1}$	1.0302×10^{-3}
		$lb\ sec^{-1}\ ft^{-1}$	9.2067×10^{-6}
		$lb\ hr^{-1}\ ft^{-1}$	3.3144×10^{-2}

Conversion Factors for Table 4-9

To Convert Tabulated Value of	To	Having the Dimensions Indicated Below	Multiply by
k/k_0	k	$cal\ cm^{-1}\ sec^{-1}\ {}^{o}K^{-1}$	3.477×10^{-5}
		$Btu\ ft^{-1}\ hr^{-1}\ {}^{o}R^{-1}$	8.407×10^{-3}
		$watts\ cm^{-1}\ {}^{o}K^{-1}$	1.455×10^{-4}

Table 4-1. COMPRESSIBILITY FACTOR FOR CARBON DIOXIDE Z = PV/RT

°K	.01 atm		.1 atm		.4 atm		.7 atm		°R
200	.99980	3	.99805	30	.99222	120			360
210	.99983	3	.99835	24	.99342	96			378
220	.99986	1	.99859	20	.99438	79	.99015	139	396
230	.99987	2	.99879	16	.99517	64	.99154	112	414
240	.99989	1	.99895	13	.99581	53	.99266	94	432
250	.99990	2	.99908	11	.99634	45	.99360	78	450
260	.99992		.99919	10	.99679	38	.99438	66	468
270	.99992	1	.99929	8	.99717	32	.99504	56	486
280	.99993	1	.99937	7	.99749	27	.99560	49	504
290	.99994	1	.99944	6	.99776	24	.99609	42	522
300	.99995		.99950	5	.99800	21	.99651	36	540
310	.99995	1	.99955	5	.99821	18	.99687	32	558
320	.99996		.99960	4	.99839	16	.99719	28	576
330	.99996		.99964	3	.99855	14	.99747	24	594
340	.99996	1	.99967	3	.99869	13	.99771	22	612
350	.99997		.99970	3	.99882	11	.99793	20	630
360	.99997		.99973	2	.99893	10	.99813	17	648
370	.99997		.99975	3	.99903	9	.99830	15	666
380	.99997	1	.99978	2	.99912	7	.99845	14	684
390	.99998		.99980	1	.99919	8	.99859	13	702
400	.99998		.99981	2	.99927	6	.99872	11	720
410	.99998		.99983	1	.99933	6	.99883	10	738
420	.99998		.99984	2	.99939	5	.99893	10	756
430	.99998		.99986	1	.99944	5	.99903	8	774
440	.99998		.99987	1	.99949	5	.99911	8	792
450	.99998	1	.99988	1	.99954	4	.99919	7	810
460	.99999		.99989	1	.99958	3	.99926	7	828
470	.99999		.99990	1	.99961	4	.99933	5	846
480	.99999		.99991	1	.99965	3	.99938	6	864
490	.99999		.99992	.	.99968	3	.99944	5	882
500	.99999		.99992	1	.99971	2	.99949	5	900
510	.99999		.99993	1	.99973	3	.99954	4	918
520	.99999		.99994		.99976	2	.99958	4	936
530	.99999		.99994	1	.99978	2	.99962	3	954
540	.99999		.99995		.99980	2	.99965	4	972
550	.99999		.99995	1	.99982	2	.99969	3	990
560	.99999		.99996		.99984	1	.99972	3	1008
570	.99999		.99996		.99985	2	.99975	2	1026
580	.99999		.99996	1	.99987	1	.99977	3	1044
590	.99999		.99997		.99988	2	.99980	2	1062
600	.99999		.99997		.99990	1	.99982	3	1080
610	.99999		.99997	1	.99991	1	.99985	2	1098
620	.99999		.99998		.99992	1	.99987	1	1116
630	.99999		.99998		.99993	1	.99988	2	1134
640	.99999		.99998		.99994	1	.99990	2	1152
650	.99999		.99998	1	.99995	1	.99992	1	1170
660	.99999		.99999		.99996	1	.99993	2	1188
670	.99999	1	.99999		.99997	1	.99995	1	1206
680	1.00000		.99999		.99998		.99996	2	1224
690	1.00000		.99999		.99998	1	.99998	1	1242
700	1.00000		.99999	1	.99999	1	.99999	1	1260
710	1.00000		1.00000		1.00000		1.00000	1	1278
720	1.00000		1.00000		1.00000	1	1.00001	1	1296
730	1.00000		1.00000		1.00001		1.00002	1	1314
740	1.00000		1.00000		1.00001	1	1.00003	1	1332
750	1.00000		1.00000		1.00002		1.00004	1	1350
760	1.00000		1.00000		1.00002	1	1.00005		1368
770	1.00000		1.00000		1.00003		1.00005	1	1386
780	1.00000		1.00000	1	1.00003	1	1.00006	1	1404
790	1.00000		1.00001		1.00004		1.00007		1422
800	1.00000		1.00001		1.00004		1.00007		1440

Table 4-1. COMPRESSIBILITY FACTOR FOR CARBON DIOXIDE - Cont. $Z = PV/RT$

°K	.01 atm	.1 atm	.4 atm	.7 atm	°R
800	1.00000	1.00001	1.00004 2	1.00007 3	1440
850	1.00000	1.00001	1.00006 1	1.00010 2	1530
900	1.00000	1.00001 1	1.00007 1	1.00012 2	1620
950	1.00000	1.00002	1.00008	1.00014 1	1710
1000	1.00000	1.00002	1.00008 1	1.00015 1	1800
1050	1.00000	1.00002	1.00009	1.00016	1890
1100	1.00000	1.00002	1.00009	1.00016 1	1980
1150	1.00000	1.00002	1.00009	1.00017	2070
1200	1.00000	1.00002	1.00009 1	1.00017	2160
1250	1.00000	1.00002	1.00010	1.00017	2250
1300	1.00000	1.00002	1.00010	1.00017	2340
1350	1.00000	1.00002	1.00010	1.00017	2430
1400	1.00000	1.00002	1.00010	1.00017	2520
1450	1.00000	1.00002	1.00010	1.00017	2610
1500	1.00000	1.00002	1.00010	1.00017	2700

Table 4-1. COMPRESSIBILITY FACTOR FOR CARBON DIOXIDE - Cont. $Z = PV/RT$

°K	1 atm		4 atm		7 atm		10 atm		°R
220	.9859	20							396
230	.9879	16	.9495	77	.9032	187			414
240	.9895	14	.9572	57	.9219	118	.8813	209	432
250	.99085	112	.9629	46	.9337	86	.9022	136	450
260	.99197	94	.9675	38	.9423	69	.9158	104	468
270	.99291	81	.9713	33	.9492	58	.9262	86	486
280	.99372	69	.9746	28	.9550	50	.9348	74	504
290	.99441	60	.9774	24	.9600	44	.9422	64	522
300	.99501	52	.9798	21	.9644	37	.9486	55	540
310	.99553	45	.9819	19	.9681	33	.9541	47	558
320	.99598	40	.9838	16	.9714	29	.9588	42	576
330	.99638	35	.9854	14	.9743	25	.9630	37	594
340	.99673	32	.9868	13	.9768	22	.9667	32	612
350	.99705	27	.98812	113	.9790	20	.9699	29	630
360	.99732	25	.98925	100	.9810	18	.9728	25	648
370	.99757	22	.99025	89	.9828	16	.9753	23	666
380	.99779	20	.99114	80	.9844	14	.9776	21	684
390	.99799	18	.99194	73	.9858	13	.9797	18	702
400	.99817	16	.99267	66	.98714	116	.9815	17	720
410	.99833	15	.99333	59	.98830	104	.9832	15	738
420	.99848	13	.99392	54	.98934	95	.9847	14	756
430	.99861	12	.99446	49	.99029	86	.9861	12	774
440	.99873	12	.99495	44	.99115	78	.9873	12	792
450	.99885	10	.99539	41	.99193	72	.98848	103	810
460	.99895	9	.99580	37	.99265	65	.98951	93	828
470	.99904	8	.99617	34	.99330	60	.99044	86	846
480	.99912	8	.99651	31	.99390	55	.99130	79	864
490	.99920	7	.99682	29	.99445	51	.99209	72	882
500	.99927	7	.99711	26	.99496	46	.99281	67	900
510	.99934	6	.99737	25	.99542	43	.99348	62	918
520	.99940	6	.99762	22	.99585	40	.99410	57	936
530	.99946	5	.99784	21	.99625	36	.99467	52	954
540	.99951	5	.99805	20	.99661	34	.99519	49	972
550	.99956	4	.99825	18	.99695	32	.99568	45	990
560	.99960	4	.99843	16	.99727	29	.99613	42	1008
570	.99964	4	.99859	16	.99756	27	.99655	38	1026
580	.99968	4	.99875	14	.99783	25	.99693	36	1044
590	.99972	3	.99889	14	.99808	24	.99729	34	1062
600	.99975	3	.99903	12	.99832	22	.99763	31	1080
610	.99978	3	.99915	12	.99854	20	.99794	29	1098
620	.99981	3	.99927	10	.99874	19	.99823	27	1116
630	.99984	2	.99937	11	.99893	18	.99850	25	1134
640	.99986	3	.99948	9	.99911	16	.99875	24	1152
650	.99989	2	.99957	9	.99927	16	.99899	22	1170
660	.99991	2	.99966	8	.99943	14	.99921	21	1188
670	.99993	2	.99974	8	.99957	14	.99942	19	1206
680	.99995	2	.99982	7	.99971	13	.99961	18	1224
690	.99997	1	.99989	7	.99984	11	.99979	17	1242
700	.99998	2	.99996	7	.99995	12	.99996	16	1260
710	1.00000	2	1.00003	6	1.00007	10	1.00012	15	1278
720	1.00002	1	1.00009	5	1.00017	10	1.00027	14	1296
730	1.00003	1	1.00014	6	1.00027	9	1.00041	13	1314
740	1.00004	2	1.00020	5	1.00036	9	1.00054	13	1332
750	1.00006	1	1.00025	4	1.00045	8	1.00067	11	1350
760	1.00007	1	1.00029	5	1.00053	8	1.00078	11	1368
770	1.00008	1	1.00034	4	1.00061	7	1.00089	10	1386
780	1.00009	1	1.00038	4	1.00068	7	1.00099	10	1404
790	1.00010	1	1.00042	4	1.00075	6	1.00109	9	1422
800	1.00011		1.00046		1.00081		1.00118		1440

Table 4-1. COMPRESSIBILITY FACTOR FOR CARBON DIOXIDE - Cont. $Z = PV/RT$

°K	1 atm		4 atm		7 atm		10 atm		°R
800	1.0001		1.0004	2	1.0008	2	1.0012	3	1440
850	1.0001		1.0006	1	1.0010	2	1.0015	3	1530
900	1.0001	1	1.0007	1	1.0012	2	1.0018	2	1620
950	1.0002		1.0008		1.0014	1	1.0020	2	1710
1000	1.0002		1.0008	1	1.0015	1	1.0022	1	1800
1050	1.0002		1.0009		1.0016		1.0023	1	1890
1100	1.0002		1.0009		1.0016	1	1.0024		1980
1150	1.0002		1.0009		1.0017		1.0024		2070
1200	1.0002		1.0009	1	1.0017		1.0024	1	2160
1250	1.0002		1.0010		1.0017		1.0025		2250
1300	1.0002		1.0010		1.0017		1.0025		2340
1350	1.0002		1.0010		1.0017		1.0025		2430
1400	1.0002		1.0010		1.0017		1.0025		2520
1450	1.0002		1.0010		1.0017		1.0025		2610
1500	1.0002		1.0010		1.0017		1.0025		2700

Table 4-1. COMPRESSIBILITY FACTOR FOR CARBON DIOXIDE - Cont. $Z = PV/RT$

°K	10 atm		40 atm		70 atm		100 atm		°R
300	.9486	55	.7611	335					540
310	.9541	47	.7946	260					558
320	.9588	42	.8206	209	.6417	537	.3727	1234	576
330	.9630	37	.8415	176	.6954	427	.4961	944	594
340	.9667	32	.8591	149	.7381	321	.5905	602	612
350	.9699	29	.8740	130	.7702	263	.6507	461	630
360	.9728	25	.8870	113	.7965	224	.6968	378	648
370	.9753	23	.8983	101	.8189	194	.7346	316	666
380	.9776	21	.9084	85	.8383	155	.7662	238	684
390	.9797	18	.9169	83	.8538	159	.7900	255	702
400	.9815	17	.9252	71	.8697	130	.8155	197	720
410	.9832	15	.9323	63	.8827	115	.8352	172	738
420	.9847	14	.9386	58	.8942	103	.8524	153	756
430	.9861	12	.9444	52	.9045	93	.8677	137	774
440	.9873	11	.9496	46	.9138	84	.8814	123	792
450	.98848	103	.9542	43	.9222	76	.8937	112	810
460	.98951	93	.9585	38	.9298	66	.9049	91	828
470	.99044	86	.9623	35	.9364	60	.9140	79	846
480	.99130	79	.9658	33	.9424	56	.9219	75	864
490	.99209	72	.9691	30	.9480	51	.9294	71	882
500	.99281	67	.9721	27	.9531	49	.9365	68	900
510	.99348	62	.9748	25	.9580	44	.9433	63	918
520	.99410	57	.9773	23	.9624	41	.9496	58	936
530	.99467	52	.9796	22	.9665	38	.9554	53	954
540	.99519	49	.9818	20	.9703	35	.9607	50	972
550	.99568	45	.9838	18	.9738	32	.9657	45	990
560	.99613	42	.9856	17	.9770	29	.9702	42	1008
570	.99655	38	.9873	15	.9799	27	.9744	38	1026
580	.99693	36	.9888	15	.9826	25	.9782	35	1044
590	.99729	34	.9903	13	.9851	23	.9817	33	1062
600	.99763	31	.9916	12	.9874	22	.9850	30	1080
610	.99794	29	.9928	12	.9896	20	.9880	28	1098
620	.99823	27	.9940	11	.9916	18	.9908	26	1116
630	.99850	25	.9951	10	.9934	17	.9934	24	1134
640	.99875	24	.9961	9	.9951	16	.9958	22	1152
650	.99899	22	.9970	9	.9967	14	.9980	20	1170
660	.99921	21	.9979	8	.9981	14	1.0000	19	1188
670	.99942	19	.9987	7	.9995	13	1.0019	18	1206
680	.99961	18	.9994	7	1.0008	12	1.0037	16	1224
690	.99979	17	1.0001	7	1.0020	11	1.0053	15	1242
700	.99996	16	1.0008	6	1.0031	10	1.0068	15	1260
710	1.00012	15	1.0014	6	1.0041	10	1.0083	13	1278
720	1.00027	14	1.0020	5	1.0051	9	1.0096	12	1296
730	1.00041	13	1.0025	5	1.0060	8	1.0108	11	1314
740	1.00054	13	1.0030	5	1.0068	8	1.0119	11	1332
750	1.00067	11	1.0035	4	1.0076	7	1.0130	10	1350
760	1.00078	11	1.0039	4	1.0083	7	1.0140	9	1368
770	1.00089	10	1.0043	4	1.0090	6	1.0149	8	1386
780	1.00099	10	1.0047	4	1.0096	6	1.0157	8	1404
790	1.00109	10	1.0051	3	1.0102	6	1.0165	7	1422
800	1.0011	4	1.0054	14	1.0108	23	1.0172	30	1440
850	1.0015	3	1.0068	11	1.0131	16	1.0202	22	1530
900	1.0018	2	1.0079	7	1.0147	12	1.0224	14	1620
950	1.0020	2	1.0086	6	1.0159	8	1.0238	10	1710
1000	1.0022	1	1.0092	4	1.0167	6	1.0248	7	1800
1050	1.0023	1	1.0096	2	1.0173	4	1.0255	5	1890
1100	1.0024		1.0098	2	1.0177	2	1.0260	2	1980
1150	1.0024		1.0100	1	1.0179	2	1.0262	1	2070
1200	1.0024	1	1.0101	1	1.0181		1.0263		2160
1250	1.0025		1.0102		1.0181		1.0263	1	2250
1300	1.0025		1.0102		1.0181		1.0262		2340

Table 4-1. COMPRESSIBILITY FACTOR FOR CARBON DIOXIDE - Cont. $Z = PV/RT$

°K	10 atm	40 atm		70 atm		100 atm		°R
1300	1.0025	1.0102		1.0181	- 1	1.0262	- 2	2340
1350	1.0025	1.0102	- 1	1.0180	- 1	1.0260	- 2	2430
1400	1.0025	1.0101		1.0179	- 2	1.0258	- 3	2520
1450	1.0025	1.0101	- 1	1.0177	- 1	1.0255	- 2	2610
1500	1.0025	1.0100		1.0176		1.0253		2700

Table 4-2. DENSITY OF CARBON DIOXIDE

ρ / ρ_0

°K	.01 atm		.1 atm		.4 atm		.7 atm		°R
200	.013567	-646	.13591	-651	.54684	-2667			360
210	.012921	-588	.12940	-591	.52017	-2412			378
220	.012333	-536	.12349	-540	.49605	-2194	.8718	-391	396
230	.011797	-492	.11809	-494	.47411	-2005	.8327	-356	414
240	.011305	-452	.11315	-454	.45406	-1840	.7971	-326	432
250	.010853	-418	.10861	-419	.43566	-1694	.76452	-2999	450
260	.010435	-386	.10442	-387	.41872	-1566	.73453	-2766	468
270	.010049	-359	.10055	-360	.40306	-1452	.70687	-2564	486
280	.0096898	-3342	.09695	-335	.38854	-1351	.68123	-2382	504
290	.0093556	-3119	.09360	-313	.37503	-1258	.65741	-2217	522
300	.0090437	-2918	.09047	-292	.36245	-1177	.63524	-2072	540
310	.0087519	-2735	.08755	-274	.35068	-1102	.61452	-1939	558
320	.0084784	-2570	.08481	-257	.33966	-1034	.59513	-1820	576
330	.0082214	-2418	.08224	-243	.32932	- 974	.57693	-1710	594
340	.0079796	-2280	.07981	-228	.31958	- 917	.55983	-1612	612
350	.0077516	-2154	.07753	-215	.31041	- 865	.54371	-1521	630
360	.0075362	-2037	.07538	-204	.30176	- 819	.52850	-1437	648
370	.0073325	-1930	.07334	-193	.29357	- 775	.51413	-1361	666
380	.0071395	-1830	.07141	-184	.28582	- 735	.50052	-1290	684
390	.0069565	-1740	.06957	-174	.27847	- 698	.48762	-1225	702
400	.0067825	-1654	.06783	-165	.27149	- 664	.47537	-1165	720
410	.0066171	-1576	.06618	-158	.26485	- 632	.46372	-1108	738
420	.0064595	-1502	.06460	-150	.25853	- 603	.45264	-1057	756
430	.0063093	-1434	.06310	-144	.25250	- 575	.44207	-1009	774
440	.0061659	-1370	.06166	-137	.24675	- 549	.43198	- 963	792
450	.0060289	-1311	.06029	-131	.24126	- 526	.42235	- 921	810
460	.0058978	-1255	.05898	-126	.23600	- 503	.41314	- 881	828
470	.0057723	-1202	.05772	-120	.23097	- 481	.40433	- 845	846
480	.0056521	-1154	.05652	-115	.22616	- 463	.39588	- 810	864
490	.0055367	-1107	.05537	-111	.22153	- 443	.38778	- 778	882
500	.0054260	-1064	.05426	-107	.21710	- 427	.38000	- 746	900
510	.0053196	-1023	.05319	-102	.21283	- 409	.37254	- 718	918
520	.0052173	- 985	.05217	- 98	.20874	- 395	.36536	- 691	936
530	.0051188	- 948	.05119	- 95	.20479	- 379	.35845	- 665	954
540	.0050240	- 913	.05024	- 91	.20100	- 366	.35180	- 641	972
550	.0049327	- 881	.049329	- 881	.19734	- 353	.34539	- 618	990
560	.0048446	- 850	.048448	- 850	.19381	- 340	.33921	- 596	1008
570	.0047596	- 821	.047598	- 821	.19041	- 329	.33325	- 576	1026
580	.0046775	- 792	.046777	- 793	.18712	- 317	.32749	- 555	1044
590	.0045983	- 767	.045984	- 767	.18395	- 307	.32194	- 538	1062
600	.0045216	- 741	.045217	- 741	.18088	- 297	.31656	- 519	1080
610	.0044475	- 717	.044476	- 718	.17791	- 287	.31137	- 503	1098
620	.0043758	- 695	.043758	- 694	.17504	- 278	.30634	- 487	1116
630	.0043063	- 673	.043064	- 673	.17226	- 270	.30147	- 472	1134
640	.0042390	- 652	.042391	- 653	.16956	- 261	.29675	- 457	1152
650	.0041738	- 632	.041738	- 632	.16695	- 253	.29218	- 443	1170
660	.0041106	- 614	.041106	- 614	.16442	- 245	.28775	- 430	1188
670	.0040492	- 595	.040492	- 595	.16197	- 239	.28345	- 417	1206
680	.0039897	- 579	.039897	- 579	.15958	- 231	.27928	- 405	1224
690	.0039318	- 561	.039318	- 561	.15727	- 225	.27523	- 394	1242
700	.0038757	- 546	.038757	- 546	.15502	- 218	.27129	- 382	1260
710	.0038211	- 531	.038211	- 531	.15284	- 213	.26747	- 372	1278
720	.0037680	- 516	.037680	- 516	.15071	- 206	.26375	- 361	1296
730	.0037164	- 502	.037164	- 502	.14865	- 201	.26014	- 352	1314
740	.0036662	- 489	.036662	- 489	.14664	- 196	.25662	- 343	1332
750	.0036173	- 476	.036173	- 476	.14468	- 190	.25319	- 333	1350
760	.0035697	- 464	.035697	- 464	.14278	- 186	.24986	- 325	1368
770	.0035233	- 451	.035233	- 452	.14092	- 180	.24661	- 316	1386
780	.0034782	- 441	.034781	- 440	.13912	- 176	.24345	- 308	1404
790	.0034341	- 429	.034341	- 429	.13736	- 172	.24037	- 301	1422
800	.0033912		.033912		.13564		.23736		1440

Table 4-2. DENSITY OF CARBON DIOXIDE - Cont.

ρ/ρ_0

°K	.01 atm		.1 atm		.4 atm		.7 atm		°R
800	.0033912	-1995	.033912	-1995	.13564	- 798	.23736	-1397	1440
850	.0031917	-1773	.031917	-1773	.12766	- 710	.22339	-1241	1530
900	.0030144	-1587	.030144	-1587	.12056	- 634	.21098	-1111	1620
950	.0028557	-1428	.028557	-1428	.11422	- 572	.19987	-1000	1710
1000	.0027129	-1291	.027129	-1292	.10850	- 516	.18987	- 904	1800
1050	.0025838	-1175	.025837	-1174	.10334	- 470	.18083	- 822	1890
1100	.0024663	-1072	.024663	-1073	.09864	- 429	.17261	- 751	1980
1150	.0023591	- 983	.023590	- 983	.09435	- 393	.16510	- 688	2070
1200	.0022608	- 904	.022607	- 904	.09042	- 362	.15822	- 633	2160
1250	.0021704	- 835	.021703	- 835	.08680	- 334	.15189	- 584	2250
1300	.0020869	- 773	.020868	- 772	.08346	- 309	.14605	- 541	2340
1350	.0020096	- 718	.020096	- 718	.08037	- 287	.14064	- 502	2430
1400	.0019378	- 668	.019378	- 668	.07750	- 267	.13562	- 468	2520
1450	.0018710	- 624	.018710	- 624	.07483	- 250	.13094	- 436	2610
1500	.0018086		.018086		.07233		.12658		2700

Table 4-2. DENSITY OF CARBON DIOXIDE - Cont.

ρ/ρ_0

°K	1 atm		4 atm		7 atm		10 atm		°R
220	1.2508	-568							396
230	1.1940	-516	4.9693	-2456	9.1418	-5586			414
240	1.1424	-472	4.7237	-2156	8.5832	-4475	12.827	-799	432
250	1.0952	-433	4.5081	-1941	8.1357	-3844	12.028	-634	450
260	1.0519	-399	4.3140	-1763	7.7513	-3413	11.394	-546	468
270	1.0120	-370	4.1377	-1612	7.4100	-3084	10.848	-484	486
280	.9750	-343	3.9765	-1481	7.1016	-2807	10.364	-436	504
290	.9407	-319	3.8284	-1368	6.8209	-2572	9.928	-396	522
300	.9088	-298	3.6916	-1267	6.5637	-2360	9.532	-360	540
310	.8790	-278	3.5649	-1179	6.3277	-2186	9.172	-331	558
320	.8512	-262	3.4470	-1100	6.1091	-2027	8.841	-305	576
330	.8250	-245	3.3370	-1028	5.9064	-1885	8.536	-282	594
340	.8005	-231	3.2342	- 964	5.7179	-1761	8.254	-263	612
350	.7774	-218	3.1378	- 906	5.5418	-1649	7.991	-245	630
360	.7556	-206	3.0472	- 854	5.3769	-1546	7.746	-229	648
370	.7350	-195	2.9618	- 806	5.2223	-1458	7.517	-215	666
380	.7155	-185	2.8812	- 761	5.0765	-1372	7.302	-202	684
390	.6970	-176	2.8051	- 722	4.9393	-1298	7.100	-191	702
400	.6794	-166	2.7329	- 684	4.8095	-1227	6.909	-180	720
410	.6628	-159	2.6645	- 650	4.6868	-1164	6.729	-170	738
420	.6469	-152	2.5995	- 618	4.5704	-1107	6.559	-161	756
430	.6317	-144	2.5377	- 589	4.4597	-1051	6.398	-154	774
440	.6173	-138	2.4788	- 562	4.3546	-1002	6.244	-145	792
450	.6035	-132	2.4226	- 536	4.2544	- 955	6.099	-139	810
460	.5903	-126	2.3690	- 513	4.1589	- 911	5.960	-133	828
470	.5777	-121	2.3177	- 490	4.0678	- 872	5.827	-126	846
480	.5656	-115	2.2687	- 470	3.9806	- 834	5.701	-121	864
490	.5541	-112	2.2217	- 451	3.8972	- 799	5.580	-115	882
500	.5429	-106	2.1766	- 432	3.8173	- 766	5.465	-111	900
510	.5323	-103	2.1334	- 416	3.7407	- 735	5.354	-106	918
520	.5220	- 99	2.0918	- 399	3.6672	- 706	5.248	-102	936
530	.5121	- 95	2.0519	- 384	3.5966	- 679	5.146	- 98	954
540	.5026	- 91	2.0135	- 370	3.5287	- 653	5.048	- 94	972
550	.49348	- 883	1.9765	- 357	3.4634	- 630	4.9540	- 906	990
560	.48465	- 853	1.9408	- 343	3.4004	- 606	4.8634	- 874	1008
570	.47612	- 822	1.9065	- 332	3.3398	- 585	4.7760	- 841	1026
580	.46790	- 795	1.8733	- 320	3.2813	- 564	4.6919	- 812	1044
590	.45995	- 768	1.8413	- 309	3.2249	- 545	4.6107	- 784	1062
600	.45227	- 743	1.8104	- 299	3.1704	- 527	4.5323	- 757	1080
610	.44484	- 719	1.7805	- 290	3.1177	- 509	4.4566	- 731	1098
620	.43765	- 696	1.7515	- 280	3.0668	- 492	4.3835	- 708	1116
630	.43069	- 674	1.7235	- 271	3.0176	- 477	4.3127	- 685	1134
640	.42395	- 653	1.6964	- 262	2.9699	- 462	4.2442	- 662	1152
650	.41742	- 633	1.6702	- 255	2.9237	- 447	4.1780	- 643	1170
660	.41109	- 615	1.6447	- 247	2.8790	- 434	4.1137	- 622	1188
670	.40494	- 596	1.6200	- 239	2.8356	- 421	4.0515	- 603	1206
680	.39898	- 579	1.5961	- 233	2.7935	- 408	3.9912	- 586	1224
690	.39319	- 562	1.5728	- 225	2.7527	- 397	3.9326	- 568	1242
700	.38757	- 547	1.5503	- 220	2.7130	- 385	3.8758	- 552	1260
710	.38210	- 531	1.5283	- 213	2.6745	- 374	3.8206	- 537	1278
720	.37679	- 517	1.5070	- 207	2.6371	- 364	3.7669	- 521	1296
730	.37162	- 503	1.4863	- 202	2.6007	- 354	3.7148	- 507	1314
740	.36659	- 489	1.4661	- 196	2.5653	- 344	3.6641	- 493	1332
750	.36170	- 476	1.4465	- 191	2.5309	- 335	3.6148	- 480	1350
760	.35694	- 464	1.4274	- 186	2.4974	- 326	3.5668	- 467	1368
770	.35230	- 452	1.4088	- 181	2.4648	- 318	3.5201	- 455	1386
780	.34778	- 441	1.3907	- 177	2.4330	- 310	3.4746	- 443	1404
790	.34337	- 429	1.3730	- 172	2.4020	- 301	3.4303	- 432	1422
800	.33908		1.3558		2.3719		3.3871		1440

Table 4-2. DENSITY OF CARBON DIOXIDE - Cont. ρ/ρ_0

°K	1 atm		4 atm		7 atm		10 atm		°R
800	.33908	-1996	1.3558	- 799	2.3719	-1402	3.3871	-2004	1440
850	.31912	-1774	1.2759	- 711	2.2317	-1244	3.1867	-1779	1530
900	.30138	-1587	1.2048	- 635	2.1073	-1112	3.0088	-1590	1620
950	.28551	-1428	1.1413	- 571	1.9961	-1000	2.8498	-1429	1710
1000	.27123	-1292	1.0842	- 517	1.8961	- 904	2.7069	-1292	1800
1050	.25831	-1174	1.0325	- 470	1.8057	- 822	2.5777	-1173	1890
1100	.24657	-1072	.9855	- 428	1.7235	- 750	2.4604	-1071	1980
1150	.23585	-1000	.9427	- 393	1.6485	- 687	2.3533	- 982	2070
1200	.22585	- 887	.9034	- 362	1.5798	- 633	2.2551	- 902	2160
1250	.21698	- 835	.8672	- 333	1.5165	- 583	2.1649	- 833	2250
1300	.20863	- 772	.8339	- 309	1.4582	- 540	2.0816	- 771	2340
1350	.20091	- 718	.8030	- 287	1.4042	- 501	2.0045	- 716	2430
1400	.19373	- 668	.7743	- 267	1.3541	- 468	1.9329	- 666	2520
1450	.18705	- 624	.7476	- 249	1.3073	- 435	1.8663	- 622	2610
1500	.18081		.7227		1.2638		1.8041		2700

Table 4-2. DENSITY OF CARBON DIOXIDE - Cont.

ρ / ρ_0

°K	10 atm		40 atm		70 atm		100 atm		°R
240	12.827	-799							432
250	12.028	-634							450
260	11.394	-546							468
270	10.848	-484							486
280	10.364	-436							504
290	9.928	-396							522
300	9.532	-360	47.52	-347					540
310	9.172	-331	44.05	-273					558
320	8.841	-305	41.32	-225	92.48	-972	227.48	-6177	576
330	8.536	-282	39.07	-192	82.76	-709	165.71	-3058	594
340	8.254	-263	37.15	-167	75.67	-522	135.13	-1601	612
350	7.991	-245	35.475	-1491	70.448	-4218	119.12	-1097	630
360	7.746	-229	33.984	-1337	66.230	-3553	108.15	- 834	648
370	7.517	-215	32.647	-1211	62.677	-3061	99.81	- 663	666
380	7.302	-202	31.436	-1089	59.616	-2584	93.18	- 512	684
390	7.100	-191	30.347	-1026	57.032	-2432	88.06	- 489	702
400	6.909	-180	29.321	- 932	54.600	-2126	83.17	- 394	720
410	6.729	-170	28.389	- 864	52.474	-1908	79.23	- 345	738
420	6.559	-161	27.525	- 803	50.566	-1742	75.78	- 307	756
430	6.398	-154	26.722	- 749	48.824	-1594	72.71	- 275	774
440	6.244	-145	25.973	- 703	47.230	-1469	69.96	- 250	792
450	6.099	-139	25.270	- 658	45.761	-1360	67.457	- 2284	810
460	5.960	-133	24.612	- 620	44.401	-1253	65.173	- 2019	828
470	5.827	-126	23.992	- 585	43.148	-1167	63.154	- 1846	846
480	5.701	-121	23.407	- 555	41.981	-1098	61.308	- 1737	864
490	5.580	-115	22.852	- 525	40.883	-1035	59.571	- 1634	882
500	5.465	-111	22.327	- 500	39.848	- 978	57.937	- 1544	900
510	5.354	-106	21.827	- 475	38.870	- 924	56.393	- 1451	918
520	5.248	-102	21.352	- 452	37.946	- 874	54.942	- 1365	936
530	5.146	- 98	20.900	- 433	37.072	- 828	53.577	- 1285	954
540	5.048	- 94	20.467	- 411	36.244	- 785	52.292	- 1212	972
550	4.9540	- 906	20.056	- 395	35.459	- 747	51.080	- 1146	990
560	4.8634	- 874	19.661	- 378	34.712	- 712	49.934	- 1086	1008
570	4.7760	- 841	19.283	- 362	34.000	- 678	48.848	- 1030	1026
580	4.6919	- 812	18.921	- 348	33.322	- 648	47.818	- 981	1044
590	4.6107	- 784	18.573	- 335	32.674	- 620	46.837	- 933	1062
600	4.5323	- 757	18.238	- 321	32.054	- 594	45.904	- 890	1080
610	4.4566	- 731	17.917	- 310	31.460	- 569	45.014	- 851	1098
620	4.3835	- 708	17.607	- 298	30.891	- 547	44.163	- 814	1116
630	4.3127	- 685	17.309	- 287	30.344	- 525	43.349	- 780	1134
640	4.2442	- 662	17.022	- 278	29.819	- 506	42.569	- 748	1152
650	4.1780	- 643	16.744	- 268	29.313	- 487	41.821	- 717	1170
660	4.1137	- 622	16.476	- 259	28.826	- 470	41.104	- 691	1188
670	4.0515	- 603	16.217	- 250	28.356	- 452	40.413	- 665	1206
680	3.9912	- 586	15.967	- 243	27.904	- 437	39.748	- 640	1224
690	3.9326	- 568	15.724	- 235	27.467	- 423	39.108	- 617	1242
700	3.8758	- 552	15.489	- 227	27.044	- 408	38.491	- 595	1260
710	3.8206	- 537	15.262	- 221	26.636	- 395	37.896	- 575	1278
720	3.7669	- 521	15.041	- 214	26.241	- 382	37.321	- 556	1296
730	3.7148	- 507	14.827	- 207	25.859	- 371	36.765	- 537	1314
740	3.6641	- 493	14.620	- 202	25.488	- 359	36.228	- 521	1332
750	3.6148	- 480	14.418	- 195	25.129	- 349	35.707	- 503	1350
760	3.5668	- 467	14.223	- 192	24.780	- 338	35.204	- 489	1368
770	3.5201	- 455	14.031	- 185	24.442	- 329	34.715	- 474	1386
780	3.4746	- 443	13.846	- 180	24.113	- 319	34.241	- 459	1404
790	3.4303	- 432	13.666	- 175	23.794	- 311	33.782	- 447	1422
800	3.3871		13.491		23.483		33.335		1440

Table 4-2. DENSITY OF CARBON DIOXIDE - Cont.

ρ/ρ_0

°K	10 atm		40 atm		70 atm		100 atm		°R
800	3.3871	-2004	13.491	- 812	23.483	-1431	33.335	- 2053	1440
850	3.1867	-1779	12.679	- 717	22.052	-1259	31.282	- 1799	1530
900	3.0088	-1590	11.962	- 638	20.793	-1117	29.483	- 1591	1620
950	2.8498	-1429	11.324	- 572	19.676	- 999	27.892	- 1422	1710
1000	2.7069	-1292	10.752	- 516	18.677	- 900	26.470	- 1277	1800
1050	2.5777	-1173	10.236	- 468	17.777	- 814	25.193	- 1155	1890
1100	2.4604	-1071	9.768	- 426	16.963	- 742	24.038	- 1051	1980
1150	2.3533	- 982	9.342	- 390	16.221	- 677	22.987	- 959	2070
1200	2.2551	- 902	8.952	- 359	15.544	- 623	22.028	- 881	2160
1250	2.1649	- 833	8.593	- 331	14.921	- 573	21.147	- 812	2250
1300	2.0816	- 771	8.262	- 305	14.348	- 531	20.335	- 750	2340
1350	2.0045	- 716	7.957	- 284	13.817	- 492	19.585	- 695	2430
1400	1.9329	- 666	7.673	- 264	13.325	- 457	18.890	- 647	2520
1450	1.8663	- 622	7.409	- 247	12.868	- 427	18.243	- 604	2610
1500	1.8041		7.162		12.441		17.639		2700

Table 4-3. SPECIFIC HEAT OF CARBON DIOXIDE C_p/R

°K	.01 atm		.1 atm		.4 atm		.7 atm		°R
200	3.8935	583	3.9108	548	3.9708	421			360
210	3.9518	592	3.9656	567	4.0129	472			378
220	4.0110	595	4.0223	576	4.0601	509	4.1002	427	396
230	4.0705	600	4.0799	584	4.1110	533	4.1429	477	414
240	4.1305	594	4.1383	583	4.1643	543	4.1906	500	432
250	4.1899	591	4.1966	581	4.2186	550	4.2406	519	450
260	4.2490	584	4.2547	576	4.2736	550	4.2925	524	468
270	4.3074	574	4.3123	568	4.3286	547	4.3449	526	486
280	4.3648	564	4.3691	559	4.3833	542	4.3975	525	504
290	4.4212	555	4.4250	550	4.4375	536	4.4500	519	522
300	4.4767	543	4.4800	540	4.4911	527	4.5019	518	540
310	4.5310	533	4.5340	529	4.5438	520	4.5537	509	558
320	4.5843	521	4.5869	518	4.5958	509	4.6046	500	576
330	4.6364	509	4.6387	508	4.6467	499	4.6546	492	594
340	4.6873	500	4.6895	498	4.6966	491	4.7038	485	612
350	4.7373	488	4.7393	486	4.7457	481	4.7523	474	630
360	4.7861	476	4.7879	474	4.7938	469	4.7997	464	648
370	4.8337	466	4.8353	464	4.8407	460	4.8461	456	666
380	4.8803	456	4.8817	455	4.8867	451	4.8917	446	684
390	4.9259	446	4.9272	446	4.9318	442	4.9363	439	702
400	4.9705	436	4.9718	435	4.9760	432	4.9802	429	720
410	5.0141	426	5.0153	425	5.0192	422	5.0231	419	738
420	5.0567	417	5.0578	416	5.0614	414	5.0650	411	756
430	5.0984	409	5.0994	408	5.1028	406	5.1061	404	774
440	5.1393	400	5.1402	400	5.1434	397	5.1465	395	792
450	5.1793	391	5.1802	390	5.1831	388	5.1860	387	810
460	5.2184	383	5.2192	383	5.2219	381	5.2247	379	828
470	5.2567	376	5.2575	375	5.2600	374	5.2626	372	846
480	5.2943	368	5.2950	368	5.2974	366	5.2998	365	864
490	5.3311	361	5.3318	360	5.3340	359	5.3363	358	882
500	5.3672	353	5.3678	353	5.3699	352	5.3721	350	900
510	5.4025	347	5.4031	346	5.4051	346	5.4071	345	918
520	5.4372	340	5.4377	340	5.4397	338	5.4416	337	936
530	5.4712	333	5.4717	333	5.4735	332	5.4753	331	954
540	5.5045	327	5.5050	326	5.5067	326	5.5084	325	972
550	5.5372	320	5.5376	320	5.5393	319	5.5409	318	990
560	5.5692	315	5.5696	315	5.5712	314	5.5727	313	1008
570	5.6007	308	5.6011	309	5.6026	308	5.6040	308	1026
580	5.6315	303	5.6320	302	5.6334	302	5.6348	301	1044
590	5.6618	297	5.6622	297	5.6636	296	5.6649	296	1062
600	5.6915	292	5.6919	292	5.6932	291	5.6945	291	1080
610	5.7207	287	5.7211	287	5.7223	287	5.7236	285	1098
620	5.7494	281	5.7498	281	5.7510	280	5.7521	280	1116
630	5.7775	277	5.7779	277	5.7790	276	5.7801	276	1134
640	5.8052	272	5.8056	271	5.8066	272	5.8077	271	1152
650	5.8324	267	5.8327	267	5.8338	266	5.8348	266	1170
660	5.8591	262	5.8594	262	5.8604	262	5.8614	261	1188
670	5.8853	257	5.8856	257	5.8866	256	5.8875	256	1206
680	5.9110	253	5.9113	253	5.9122	253	5.9131	253	1224
690	5.9363	248	5.9366	248	5.9375	247	5.9384	247	1242
700	5.9611	244	5.9614	244	5.9622	244	5.9631	243	1260
710	5.9855	239	5.9858	239	5.9866	238	5.9874	238	1278
720	6.0094	235	6.0097	235	6.0104	235	6.0112	235	1296
730	6.0329	230	6.0332	229	6.0339	230	6.0347	229	1314
740	6.0559	227	6.0561	227	6.0569	226	6.0576	226	1332
750	6.0786	223	6.0788	223	6.0795	223	6.0802	223	1350
760	6.1009	219	6.1011	219	6.1018	219	6.1025	219	1368
770	6.1228	214	6.1230	214	6.1237	213	6.1244	213	1386
780	6.1442	211	6.1444	211	6.1450	211	6.1457	210	1404
790	6.1653	207	6.1655	207	6.1661	207	6.1667	207	1422
800	6.1860		6.1862		6.1868		6.1874		1440

Table 4-3. SPECIFIC HEAT OF CARBON DIOXIDE - Cont. C_p/R

°K	.01 atm		.1 atm		.4 atm		.7 atm		°R
800	6.1860	983	6.1862	983	6.1868	982	6.1874	981	1440
850	6.2843	899	6.2845	899	6.2850	898	6.2855	897	1530
900	6.3742	823	6.3744	822	6.3748	822	6.3752	822	1620
950	6.4565	753	6.4566	753	6.4570	753	6.4574	752	1710
1000	6.5318	69	6.5319	69	6.5323	69	6.5326	68	1800
1050	6.601	63	6.601	63	6.601	63	6.601	63	1890
1100	6.664	59	6.664	59	6.664	59	6.664	59	1980
1150	6.723	53	6.723	53	6.723	53	6.723	53	2070
1200	6.776	50	6.776	50	6.776	50	6.776	50	2160
1250	6.826	46	6.826	46	6.826	46	6.826	46	2250
1300	6.872	41	6.872	41	6.872	41	6.872	41	2340
1350	6.913	39	6.913	39	6.913	39	6.913	39	2430
1400	6.952	36	6.952	36	6.952	36	6.952	36	2520
1450	6.988	33	6.988	33	6.988	33	6.988	33	2610
1500	7.021		7.021		7.021		7.021		2700

Table 4-3. SPECIFIC HEAT OF CARBON DIOXIDE - Cont. C_p/R

°K	1 atm		4 atm		7 atm		10 atm		°R
220	4.145	31							396
230	4.176	41	4.822	− 214	6.720	−1204			414
240	4.217	45	4.608	− 84	5.516	− 543	7.355	−1586	432
250	4.262	49	4.524	− 15	4.973	− 210	5.769	− 640	450
260	4.311	50	4.509	10	4.763	− 86	5.129	− 287	468
270	4.361	50	4.519	33	4.677	17	4.842	2	486
280	4.411	51	4.552	35	4.694	21	4.844	8	504
290	4.462	51	4.587	37	4.715	24	4.852	10	522
300	4.513	50	4.624	37	4.739	26	4.862	12	540
310	4.563	50	4.661	41	4.765	28	4.874	15	558
320	4.613	49	4.702	40	4.793	30	4.889	16	576
330	4.662	49	4.742	41	4.823	33	4.905	26	594
340	4.711	47	4.783	41	4.856	35	4.931	28	612
350	4.758	47	4.824	41	4.891	35	4.959	30	630
360	4.805	46	4.865	41	4.926	36	4.989	30	648
370	4.851	45	4.906	41	4.962	36	5.019	32	666
380	4.896	45	4.947	40	4.998	36	5.051	31	684
390	4.941	43	4.987	40	5.034	36	5.082	33	702
400	4.984	43	5.027	39	5.070	37	5.115	33	720
410	5.027	41	5.066	39	5.107	35	5.148	32	738
420	5.068	41	5.105	38	5.142	36	5.180	34	756
430	5.109	40	5.143	38	5.178	36	5.214	33	774
440	5.149	40	5.181	37	5.214	35	5.247	33	792
450	5.189	38	5.218	37	5.249	34	5.280	32	810
460	5.227	38	5.255	36	5.283	34	5.312	32	828
470	5.265	37	5.291	35	5.317	34	5.344	33	846
480	5.302	36	5.326	35	5.351	34	5.377	32	864
490	5.338	36	5.361	35	5.385	33	5.409	31	882
500	5.374	35	5.396	33	5.418	32	5.440	31	900
510	5.409	34	5.429	34	5.450	32	5.471	31	918
520	5.443	34	5.463	32	5.482	32	5.502	31	936
530	5.477	33	5.495	32	5.514	31	5.533	30	954
540	5.510	32	5.527	32	5.545	30	5.563	30	972
550	5.542	32	5.559	31	5.575	31	5.593	29	990
560	5.574	31	5.590	30	5.606	29	5.622	28	1008
570	5.605	31	5.620	30	5.635	29	5.650	29	1026
580	5.636	30	5.650	30	5.664	29	5.679	29	1044
590	5.666	30	5.680	28	5.693	28	5.708	26	1062
600	5.696	29	5.708	29	5.721	28	5.734	28	1080
610	5.725	28	5.737	28	5.749	28	5.762	27	1098
620	5.753	28	5.765	27	5.777	27	5.789	26	1116
630	5.781	28	5.792	27	5.804	26	5.815	26	1134
640	5.809	27	5.819	27	5.830	26	5.841	26	1152
650	5.836	26	5.846	26	5.856	26	5.867	25	1170
660	5.862	26	5.872	26	5.882	25	5.892	25	1188
670	5.888	26	5.898	25	5.907	25	5.917	25	1206
680	5.914	25	5.923	25	5.932	25	5.942	24	1224
690	5.939	25	5.948	24	5.957	24	5.966	23	1242
700	5.964	24	5.972	24	5.981	23	5.989	23	1260
710	5.988	24	5.996	24	6.004	24	6.012	23	1278
720	6.012	23	6.020	23	6.028	22	6.035	23	1296
730	6.035	23	6.043	22	6.050	23	6.058	22	1314
740	6.058	23	6.065	23	6.073	22	6.080	21	1332
750	6.081	22	6.088	22	6.095	22	6.101	23	1350
760	6.103	22	6.110	21	6.117	21	6.124	21	1368
770	6.125	21	6.131	22	6.138	21	6.145	20	1386
780	6.146	21	6.153	20	6.159	21	6.165	21	1404
790	6.167	21	6.173	21	6.180	20	6.186	20	1422
800	6.188		6.194		6.200		6.206		1440

Table 4-3. SPECIFIC HEAT OF CARBON DIOXIDE - Cont. C_p/R

°K	1 atm		4 atm		7 atm		10 atm		°R
800	6.188	98	6.194	97	6.200	96	6.206	95	1440
850	6.286	90	6.291	89	6.296	88	6.301	88	1530
900	6.376	82	6.380	82	6.384	81	6.389	80	1620
950	6.458	75	6.462	74	6.465	75	6.469	74	1710
1000	6.533	69	6.536	69	6.540	68	6.543	68	1800
1050	6.602	63	6.605	63	6.608	63	6.611	63	1890
1100	6.665	58	6.668	58	6.671	57	6.674	57	1980
1150	6.723	53	6.726	53	6.728	53	6.731	52	2070
1200	6.776	50	6.779	49	6.781	49	6.783	50	2160
1250	6.826	46	6.828	46	6.830	46	6.833	45	2250
1300	6.872	41	6.874	41	6.876	40	6.878	41	2340
1350	6.913	39	6.915	39	6.916	39	6.919	38	2430
1400	6.952	36	6.954	35	6.955	36	6.957	36	2520
1450	6.988	33	6.989	33	6.991	33	6.993	32	2610
1500	7.021		7.022		7.024		7.025		2700

Table 4-3. SPECIFIC HEAT OF CARBON DIOXIDE - Cont. C_p/R

°K	10 atm		40 atm		70 atm		100 atm		°R
240	7.355	-1586							432
250	5.769	- 640							450
260	5.129	- 287							468
270	4.842	2							486
280	4.844	8							504
290	4.852	10							522
300	4.862	12	7.45	-40					540
310	4.874	16	7.05	-47					558
320	4.889	16	6.58	-61	11.12	-319	20.68	-923	576
330	4.905	26	5.97	-17	7.93	- 81	11.45	-228	594
340	4.931	28	5.80	- 4	7.12	- 19	9.17	- 50	612
350	4.959	30	5.76	- 4	6.93	- 18	8.67	- 42	630
360	4.989	30	5.72	- 4	6.75	- 17	8.25	- 43	648
370	5.019	32	5.68	- 3	6.58	- 15	7.82	- 36	666
380	5.051	31	5.65	- 2	6.43	- 12	7.46	- 28	684
390	5.082	33	5.63	- 1	6.31	- 8	7.18	- 22	702
400	5.115	33	5.615	- 7	6.225	- 75	6.960	- 183	720
410	5.148	32	5.608	- 8	6.150	- 74	6.777	- 185	738
420	5.180	34	5.600	2	6.076	- 39	6.592	- 92	756
430	5.214	33	5.602	3	6.037	- 41	6.500	- 106	774
440	5.247	33	5.605	4	5.996	- 43	6.394	- 118	792
450	5.280	32	5.609	4	5.953	- 51	6.276	- 148	810
460	5.312	32	5.613	8	5.902	- 30	6.128	- 90	828
470	5.344	33	5.621	12	5.872	- 20	6.038	- 66	846
480	5.377	32	5.633	16	5.852	3	5.972	- 4	864
490	5.409	31	5.649	20	5.855	20	5.968	46	882
500	5.440	31	5.669	22	5.875	31	6.014	72	900
510	5.471	31	5.691	23	5.906	29	6.086	64	918
520	5.502	31	5.714	20	5.935	14	6.150	17	936
530	5.533	30	5.734	19	5.949	8	6.167	1	954
540	5.563	30	5.753	20	5.957	10	6.168	- 1	972
550	5.593	29	5.773	19	5.967	9	6.167		990
560	5.622	28	5.792	20	5.976	10	6.167	- 1	1008
570	5.650	29	5.812	20	5.986	11	6.166	2	1026
580	5.679	29	5.832	21	5.997	12	6.168	3	1044
590	5.708	26	5.853	20	6.009	11	6.171	2	1062
600	5.734	28	5.873	21	6.020	14	6.173	7	1080
610	5.762	27	5.894	21	6.034	14	6.180	7	1098
620	5.789	26	5.915	20	6.048	14	6.187	8	1116
630	5.815	26	5.935	21	6.062	15	6.195	9	1134
640	5.841	26	5.956	20	6.077	15	6.204	9	1152
650	5.867	25	5.976	21	6.092	16	6.213	11	1170
660	5.892	25	5.997	20	6.108	15	6.224	11	1188
670	5.917	25	6.017	21	6.123	16	6.235	11	1206
680	5.942	24	6.038	20	6.139	16	6.246	10	1224
690	5.966	23	6.058	20	6.155	16	6.256	11	1242
700	5.989	23	6.078	19	6.171	15	6.267	11	1260
710	6.012	23	6.097	20	6.186	16	6.278	12	1278
720	6.035	23	6.117	20	6.202	16	6.290	12	1296
730	6.058	22	6.137	19	6.218	16	6.302	12	1314
740	6.080	21	6.156	18	6.234	15	6.314	12	1332
750	6.101	23	6.174	20	6.249	16	6.326	12	1350
760	6.124	21	6.194	18	6.265	16	6.338	12	1368
770	6.145	20	6.212	18	6.281	15	6.350	12	1386
780	6.165	21	6.230	18	6.296	15	6.362	12	1404
790	6.186	20	6.248	18	6.311	15	6.374	13	1422
800	6.206		6.266		6.326		6.387		1440

Table 4-3. SPECIFIC HEAT OF CARBON DIOXIDE - Cont. C_p/R

°K	10 atm		40 atm		70 atm		100 atm		°R
800	6.206	95	6.266	87	6.326	78	6.387	67	1440
850	6.301	88	6.353	80	6.404	72	6.454	64	1530
900	6.389	80	6.433	74	6.476	68	6.518	62	1620
950	6.469	74	6.507	70	6.544	65	6.580	60	1710
1000	6.543	68	6.577	64	6.609	60	6.640	56	1800
1050	6.611	63	6.641	59	6.669	56	6.696	53	1890
1100	6.674	57	6.700	55	6.725	52	6.749	49	1980
1150	6.731	52	6.755	50	6.777	48	6.798	46	2070
1200	6.783	50	6.805	47	6.825	45	6.844	43	2160
1250	6.833	45	6.852	44	6.870	42	6.887	41	2250
1300	6.878	41	6.896	39	6.912	38	6.928	36	2340
1350	6.919	38	6.935	37	6.950	36	6.964	35	2430
1400	6.957	36	6.972	34	6.986	33	6.999	32	2520
1450	6.993	32	7.006	32	7.019	31	7.031	30	2610
1500	7.025		7.038		7.050		7.061		2700

Table 4-4. ENTHALPY OF CARBON DIOXIDE * $(H-E_0^o)/RT_0$

°K	.01 atm		.1 atm		.4 atm		.7 atm		°R
200	2.6203	1436	2.6159	1441	2.6008	1461			360
210	2.7639	1458	2.7600	1462	2.7469	1477	2.7337	1494	378
220	2.9097	1479	2.9062	1483	2.8946	1496	2.8831	1509	396
230	3.0576	1501	3.0545	1505	3.0442	1515	3.0340	1526	414
240	3.2077	1524	3.2050	1526	3.1957	1535	3.1866	1543	432
250	3.3601	1544	3.3576	1546	3.3492	1554	3.3409	1561	450
260	3.5145	1566	3.5122	1568	3.5046	1574	3.4970	1581	468
270	3.6711	1587	3.6690	1589	3.6620	1595	3.6551	1600	486
280	3.8298	1608	3.8279	1610	3.8215	1614	3.8151	1620	504
290	3.9906	1630	3.9889	1630	3.9829	1635	3.9771	1639	522
300	4.1536	1649	4.1519	1650	4.1464	1654	4.1410	1658	540
310	4.3185	1668	4.3169	1670	4.3118	1673	4.3068	1676	558
320	4.4853	1688	4.4839	1689	4.4791	1692	4.4744	1695	576
330	4.6541	1706	4.6528	1706	4.6483	1709	4.6439	1712	594
340	4.8247	1725	4.8234	1726	4.8192	1729	4.8151	1731	612
350	4.9972	1744	4.9960	1745	4.9921	1747	4.9882	1749	630
360	5.1716	1760	5.1705	1761	5.1668	1763	5.1631	1765	648
370	5.3476	1778	5.3466	1778	5.3431	1780	5.3396	1783	666
380	5.5254	1795	5.5244	1796	5.5211	1797	5.5179	1799	684
390	5.7049	1812	5.7040	1812	5.7008	1814	5.6978	1815	702
400	5.8861	1828	5.8852	1828	5.8822	1829	5.8793	1831	720
410	6.0689	1844	6.0680	1844	6.0651	1846	6.0624	1847	738
420	6.2533	1859	6.2524	1860	6.2497	1861	6.2471	1862	756
430	6.4392	1874	6.4384	1874	6.4358	1876	6.4333	1877	774
440	6.6266	1888	6.6258	1889	6.6234	1889	6.6210	1890	792
450	6.8154	1903	6.8147	1903	6.8123	1904	6.8100	1906	810
460	7.0057	1918	7.0050	1918	7.0027	1920	7.0006	1920	828
470	7.1975	1931	7.1968	1932	7.1947	1932	7.1926	1933	846
480	7.3906	1945	7.3900	1945	7.3879	1946	7.3859	1947	864
490	7.5851	1958	7.5845	1958	7.5825	1959	7.5806	1960	882
500	7.7809	1972	7.7803	1972	7.7784	1973	7.7766	1974	900
510	7.9781	1984	7.9775	1985	7.9757	1985	7.9740	1986	918
520	8.1765	1996	8.1760	1996	8.1742	1997	8.1726	1997	936
530	8.3761	2009	8.3756	2009	8.3739	2010	8.3723	2011	954
540	8.5770	2021	8.5765	2021	8.5749	2022	8.5734	2022	972
550	8.7791	2033	8.7786	2033	8.7771	2033	8.7756	2034	990
560	8.9824	2045	8.9819	2046	8.9804	2046	8.9790	2047	1008
570	9.1869	2056	9.1865	2056	9.1850	2057	9.1837	2057	1026
580	9.3925	2067	9.3921	2067	9.3907	2068	9.3894	2068	1044
590	9.5992	2078	9.5988	2078	9.5975	2078	9.5962	2079	1062
600	9.8070	2089	9.8066	2089	9.8053	2090	9.8041	2090	1080
610	10.0159	2100	10.0155	2100	10.0143	2100	10.0131	2101	1098
620	10.2259	2110	10.2255	2111	10.2243	2111	10.2232	2111	1116
630	10.4369	2120	10.4366	2120	10.4354	2121	10.4343	2121	1134
640	10.6489	2130	10.6486	2130	10.6475	2130	10.6464	2131	1152
650	10.8619	2140	10.8616	2140	10.8605	2141	10.8595	2141	1170
660	11.0759	2150	11.0756	2150	11.0746	2150	11.0736	2151	1188
670	11.2909	2159	11.2906	2159	11.2896	2159	11.2887	2160	1206
680	11.5068	2169	11.5065	2169	11.5055	2170	11.5047	2169	1224
690	11.7237	2177	11.7234	2177	11.7225	2177	11.7216	2178	1242
700	11.9414	2187	11.9411	2188	11.9402	2188	11.9394	2188	1260
710	12.1601	2196	12.1599	2196	12.1590	2196	12.1582	2197	1278
720	12.3797	2204	12.3795	2204	12.3786	2204	12.3779	2204	1296
730	12.6001	2213	12.5999	2213	12.5990	2214	12.5983	2214	1314
740	12.8214	2221	12.8212	2221	12.8204	2221	12.8197	2221	1332
750	13.0435	2229	13.0433	2229	13.0425	2230	13.0418	2230	1350
760	13.2664	2238	13.2662	2238	13.2655	2238	13.2648	2239	1368
770	13.4902	2245	13.4900	2245	13.4893	2245	13.4887	2245	1386
780	13.7147	2253	13.7145	2253	13.7138	2253	13.7132	2254	1404
790	13.9400	2261	13.9398	2262	13.9391	2262	13.9386	2261	1422
800	14.1661		14.1660		14.1653		14.1647		1440

* The enthalpy function is divided here by a constant RT_0 where $T_0 = 273.16°K$ (491.688°R).

Table 4-4. ENTHALPY OF CARBON DIOXIDE - Cont.* $(H-E_0^o)/RT_0$

°K	.01 atm		.1 atm		.4 atm		.7 atm		°R
800	14.166	1141	14.166	1141	14.165	1141	14.165	1141	1440
850	15.307	1159	15.307	1159	15.306	1159	15.306	1159	1530
900	16.466	1174	16.466	1174	16.465	1175	16.465	1174	1620
950	17.640	1189	17.640	1189	17.640	1189	17.639	1189	1710
1000	18.829	1202	18.829	1202	18.829	1202	18.828	1202	1800
1050	20.031	1214	20.031	1214	20.031	1214	20.030	1215	1890
1100	21.245	1225	21.245	1225	21.245	1225	21.245	1225	1980
1150	22.470	1236	22.470	1236	22.470	1236	22.470	1236	2070
1200	23.706	1245	23.706	1245	23.706	1245	23.706	1245	2160
1250	24.951	1254	24.951	1254	24.951	1254	24.951	1254	2250
1300	26.205	1261	26.205	1261	26.205	1261	26.205	1261	2340
1350	27.466	1269	27.466	1269	27.466	1269	27.466	1269	2430
1400	28.735	1276	28.735	1276	28.735	1276	28.735	1276	2520
1450	30.011	1282	30.011	1282	30.011	1282	30.011	1282	2610
1500	31.293		31.293		31.293		31.293		2700

* The enthalpy function is divided here by a constant RT_0 where $T_0 = 273.16^oK$ (491.688°R).

Table 4-4. ENTHALPY OF CARBON DIOXIDE - Cont. *

$(H-E_0)/RT_0$

°K	1 atm		4 atm		7 atm		10 atm		°R
220	2.871	152							396
230	3.023	154	2.908	172	2.745	221			414
240	3.177	155	3.080	167	2.966	190	2.818	236	432
250	3.332	157	3.247	165	3.156	178	3.054	198	450
260	3.489	158	3.412	165	3.334	172	3.252	181	468
270	3.647	161	3.577	166	3.506	172	3.433	177	486
280	3.808	162	3.743	167	3.678	172	3.610	178	504
290	3.970	165	3.910	169	3.850	173	3.788	177	522
300	4.135	166	4.079	170	4.023	174	3.965	179	540
310	4.301	168	4.249	171	4.197	175	4.144	178	558
320	4.469	169	4.420	173	4.372	176	4.322	179	576
330	4.638	172	4.593	174	4.548	177	4.501	180	594
340	4.810	174	4.767	177	4.725	179	4.681	182	612
350	4.984	175	4.944	178	4.904	180	4.863	183	630
360	5.159	177	5.122	178	5.084	181	5.046	183	648
370	5.336	178	5.300	181	5.265	182	5.229	184	666
380	5.514	180	5.481	181	5.447	184	5.413	185	684
390	5.694	182	5.662	184	5.631	185	5.598	187	702
400	5.876	183	5.846	185	5.816	186	5.785	188	720
410	6.059	185	6.031	186	6.002	188	5.973	189	738
420	6.244	186	6.217	187	6.190	189	6.162	190	756
430	6.430	188	6.404	189	6.379	190	6.352	192	774
440	6.618	189	6.593	190	6.569	191	6.544	192	792
450	6.807	191	6.783	192	6.760	193	6.736	194	810
460	6.998	192	6.975	193	6.953	194	6.930	195	828
470	7.190	193	7.168	195	7.147	195	7.125	196	846
480	7.383	195	7.363	195	7.342	197	7.321	198	864
490	7.578	196	7.558	197	7.539	198	7.519	198	882
500	7.774	198	7.755	198	7.737	198	7.717	200	900
510	7.972	198	7.953	200	7.935	201	7.917	201	918
520	8.170	200	8.153	200	8.136	201	8.118	202	936
530	8.370	201	8.353	202	8.337	202	8.320	203	954
540	8.571	203	8.555	203	8.539	204	8.523	204	972
550	8.774	203	8.758	204	8.743	204	8.727	205	990
560	8.977	205	8.962	205	8.947	206	8.932	207	1008
570	9.182	205	9.167	206	9.153	207	9.139	207	1026
580	9.387	207	9.373	208	9.360	208	9.346	208	1044
590	9.594	208	9.581	208	9.568	209	9.554	210	1062
600	9.802	209	9.789	210	9.777	210	9.764	210	1080
610	10.011	210	9.999	210	9.987	211	9.974	212	1098
620	10.221	211	10.209	211	10.198	212	10.186	212	1116
630	10.432	212	10.420	213	10.410	212	10.398	213	1134
640	10.644	215	10.633	215	10.622	215	10.611	216	1152
650	10.859	214	10.848	214	10.837	215	10.827	215	1170
660	11.073	215	11.062	215	11.052	216	11.042	216	1188
670	11.288	216	11.277	217	11.268	217	11.258	217	1206
680	11.504	217	11.494	217	11.485	217	11.475	218	1224
690	11.721	217	11.711	218	11.702	219	11.693	219	1242
700	11.938	219	11.929	219	11.921	219	11.912	220	1260
710	12.157	220	12.148	220	12.140	220	12.132	220	1278
720	12.377	220	12.368	221	12.360	221	12.352	221	1296
730	12.597	222	12.589	222	12.581	222	12.573	222	1314
740	12.819	222	12.811	222	12.803	223	12.795	223	1332
750	13.041	223	13.033	223	13.026	224	13.018	224	1350
760	13.264	224	13.256	224	13.250	224	13.242	225	1368
770	13.488	224	13.480	225	13.474	225	13.467	225	1386
780	13.712	226	13.705	226	13.699	226	13.692	226	1404
790	13.938	226	13.931	226	13.925	226	13.918	227	1422
800	14.164		14.157		14.151		14.145		1440

*The enthalpy function is divided here by a constant RT_0 where $T_0 = 273.16°K$ (491.688°R).

Table 4-4. ENTHALPY OF CARBON DIOXIDE - Cont. * $(H-E_0^o)/RT_0$

°K	1 atm		4 atm		7 atm		10 atm		°R
800	14.164	1141	14.157	1143	14.151	1144	14.145	1145	1440
850	15.305	1159	15.300	1159	15.295	1161	15.290	1161	1530
900	16.464	1175	16.459	1176	16.456	1176	16.451	1177	1620
950	17.639	1189	17.635	1189	17.632	1190	17.628	1191	1710
1000	18.828	1203	18.824	1204	18.822	1204	18.819	1204	1800
1050	20.031	1214	20.028	1215	20.026	1215	20.023	1216	1890
1100	21.245	1225	21.243	1225	21.241	1227	21.239	1227	1980
1150	22.470	1236	22.468	1236	22.468	1236	22.466	1237	2070
1200	23.706	1245	23.704	1246	23.704	1246	23.703	1246	2160
1250	24.951	1253	24.950	1254	24.950	1254	24.949	1254	2250
1300	26.204	1262	26.204	1262	26.204	1262	26.203	1263	2340
1350	27.466	1269	27.466	1269	27.466	1270	27.466	1270	2430
1400	28.735	1276	28.735	1276	28.736	1276	28.736	1277	2520
1450	30.011	1282	30.011	1283	30.012	1283	30.013	1283	2610
1500	31.293		31.294		31.295		31.296		2700

*The enthalpy function is divided here by a constant RT_0 where T_0 = 273.16°K (491.688°R).

Table 4-4. ENTHALPY OF CARBON DIOXIDE - Cont. *

$(H-E_0^o)/RT_0$

°K	10 atm		40 atm		70 atm		100 atm		°R
240	2.818	236							432
250	3.054	198							450
260	3.252	181							468
270	3.433	177							486
280	3.610	178							504
290	3.788	177							522
300	3.965	179	3.25	26					540
310	4.144	178	3.51	25					558
320	4.322	179	3.76	23	3.05	35	2.09	57	576
330	4.501	180	3.99	21	3.40	27	2.66	37	594
340	4.681	182	4.20	22	3.67	25	3.03	32	612
350	4.863	183	4.42	21	3.92	26	3.35	31	630
360	5.046	183	4.63	21	4.18	24	3.66	30	648
370	5.229	184	4.84	20	4.42	24	3.96	28	666
380	5.413	185	5.04	21	4.66	23	4.24	26	684
390	5.598	187	5.25	22	4.89	24	4.50	27	702
400	5.785	188	5.466	205	5.128	227	4.771	251	720
410	5.973	189	5.671	206	5.355	223	5.022	245	738
420	6.162	190	5.877	205	5.578	222	5.267	239	756
430	6.352	192	6.082	205	5.800	220	5.506	237	774
440	6.544	192	6.287	205	6.020	219	5.743	231	792
450	6.736	194	6.492	205	6.239	217	5.974	227	810
460	6.930	195	6.697	206	6.456	215	6.201	223	828
470	7.125	196	6.903	206	6.671	215	6.424	220	846
480	7.321	198	7.109	206	6.886	214	6.644	218	864
490	7.519	198	7.315	207	7.100	215	6.862	219	882
500	7.717	200	7.522	208	7.315	215	7.081	222	900
510	7.917	201	7.730	209	7.530	217	7.303	224	918
520	8.118	202	7.939	210	7.747	217	7.527	225	936
530	8.320	203	8.149	210	7.964	218	7.752	226	954
540	8.523	204	8.359	211	8.182	219	7.978	226	972
550	8.727	205	8.570	211	8.401	218	8.204	225	990
560	8.932	207	8.781	213	8.619	219	8.429	226	1008
570	9.139	207	8.994	213	8.838	219	8.655	226	1026
580	9.346	208	9.207	214	9.057	220	8.881	226	1044
590	9.554	210	9.421	214	9.277	220	9.107	226	1062
600	9.764	210	9.635	216	9.497	221	9.333	226	1080
610	9.974	212	9.851	216	9.718	221	9.559	226	1098
620	10.186	212	10.067	217	9.939	222	9.785	227	1116
630	10.398	213	10.284	218	10.161	222	10.012	227	1134
640	10.611	216	10.502	219	10.383	224	10.239	228	1152
650	10.827	215	10.721	219	10.607	223	10.467	228	1170
660	11.042	216	10.940	220	10.830	224	10.695	228	1188
670	11.258	217	11.160	221	11.054	224	10.923	228	1206
680	11.475	218	11.381	221	11.278	225	11.151	229	1224
690	11.693	219	11.602	222	11.503	226	11.380	229	1242
700	11.912	220	11.824	223	11.729	226	11.609	230	1260
710	12.132	220	12.047	224	11.955	227	11.839	230	1278
720	12.352	221	12.271	224	12.182	227	12.069	230	1296
730	12.573	222	12.495	225	12.409	228	12.299	231	1314
740	12.795	223	12.720	225	12.637	228	12.530	231	1332
750	13.018	224	12.945	227	12.865	229	12.761	232	1350
760	13.242	225	13.172	227	13.094	230	12.993	232	1368
770	13.467	225	13.399	228	13.324	230	13.225	233	1386
780	13.692	226	13.627	228	13.554	231	13.458	233	1404
790	13.918	227	13.855	229	13.785	231	13.691	234	1422
800	14.145		14.084		14.016		13.925		1440

*The enthalpy function is divided here by a constant RT_0 where T_0 = 273.16°K (491.688°R).

Table 4-4. ENTHALPY OF CARBON DIOXIDE - Cont. *

$(H-E_0^o)RT_0$

°K	10 atm		40 atm		70 atm		100 atm		°R
800	14.145	1145	14.084	1155	14.016	1165	13.925	1175	1440
850	15.290	1161	15.239	1170	15.181	1179	15.100	1187	1530
900	16.451	1177	16.409	1184	16.360	1192	16.287	1199	1620
950	17.628	1191	17.593	1198	17.552	1203	17.486	1210	1710
1000	18.819	1204	18.791	1210	18.755	1216	18.696	1221	1800
1050	20.023	1216	20.001	1221	19.971	1226	19.917	1230	1890
1100	21.239	1227	21.222	1232	21.197	1236	21.147	1240	1980
1150	22.466	1237	22.454	1241	22.433	1244	22.387	1248	2070
1200	23.703	1246	23.695	1249	23.677	1254	23.635	1257	2160
1250	24.949	1254	24.944	1258	24.931	1261	24.892	1264	2250
1300	26.203	1263	26.202	1266	26.192	1268	26.156	1272	2340
1350	27.466	1270	27.468	1273	27.460	1276	27.428	1277	2430
1400	28.736	1277	28.741	1279	28.736	1282	28.705	1285	2520
1450	30.013	1283	30.020	1286	30.018	1287	29.990	1289	2610
1500	31.296		31.306		31.305		31.279		2700

*The enthalpy function is divided here by a constant RT_0 where T_0 = 273.16°K (491.688°R).

Table 4-5. ENTROPY OF CARBON DIOXIDE S/R

°K	.01 atm		.1 atm		.4 atm		.7 atm		°R
200	28.6423	1913	26.3354	1920	24.9344	1946			360
210	28.8336	1853	26.5274	1859	25.1290	1878	24.5571	1899	378
220	29.0189	1795	26.7133	1800	25.3168	1816	24.7470	1832	396
230	29.1984	1746	26.8933	1749	25.4984	1761	24.9302	1773	414
240	29.3730	1698	27.0682	1701	25.6745	1711	25.1075	1721	432
250	29.5428	1654	27.2383	1657	25.8456	1665	25.2796	1673	450
260	29.7082	1615	27.4040	1617	26.0121	1624	25.4469	1630	468
270	29.8697	1578	27.5657	1579	26.1745	1584	25.6099	1590	486
280	30.0275	1541	27.7236	1542	26.3329	1547	25.7689	1552	504
290	30.1816	1508	27.8778	1510	26.4876	1514	25.9241	1517	522
300	30.3324	1477	28.0288	1478	26.6390	1481	26.0758	1485	540
310	30.4801	1447	28.1766	1448	26.7871	1451	26.2243	1454	558
320	30.6248	1418	28.3214	1419	26.9322	1422	26.3697	1424	576
330	30.7666	1391	28.4633	1392	27.0744	1394	26.5121	1396	594
340	30.9057	1366	28.6025	1366	27.2138	1368	26.6517	1371	612
350	31.0423	1341	28.7391	1342	27.3506	1343	26.7888	1345	630
360	31.1764	1319	28.8733	1319	27.4849	1322	26.9233	1323	648
370	31.3083	1295	29.0052	1296	27.6171	1296	27.0556	1298	666
380	31.4378	1274	29.1348	1274	27.7467	1276	27.1854	1277	684
390	31.5652	1253	29.2622	1253	27.8743	1254	27.3131	1255	702
400	31.6905	1233	29.3875	1233	27.9997	1234	27.4386	1235	720
410	31.8138	1213	29.5108	1213	28.1231	1214	27.5621	1215	738
420	31.9351	1195	29.6321	1195	28.2445	1196	27.6836	1197	756
430	32.0546	1177	29.7516	1178	28.3641	1178	27.8033	1179	774
440	32.1723	1159	29.8694	1159	28.4819	1160	27.9212	1160	792
450	32.2882	1143	29.9853	1143	28.5979	1144	28.0372	1145	810
460	32.4025	1126	30.0996	1126	28.7123	1127	28.1517	1127	828
470	32.5151	1111	30.2122	1111	28.8250	1111	28.2644	1112	846
480	32.6262	1096	30.3233	1097	28.9361	1097	28.3756	1097	864
490	32.7358	1080	30.4330	1080	29.0458	1081	28.4853	1081	882
500	32.8438	1066	30.5410	1066	29.1539	1066	28.5934	1067	900
510	32.9504	1053	30.6476	1053	29.2605	1054	28.7001	1054	918
520	33.0557	1038	30.7529	1038	29.3659	1038	28.8055	1039	936
530	33.1595	1026	30.8567	1026	29.4697	1027	28.9094	1027	954
540	33.2621	1013	30.9593	1013	29.5724	1013	29.0121	1013	972
550	33.3634	1001	31.0606	1001	29.6737	1001	29.1134	1002	990
560	33.4635	988	31.1607	989	29.7738	989	29.2136	989	1008
570	33.5623	977	31.2596	977	29.8727	977	29.3125	977	1026
580	33.6600	966	31.3573	966	29.9704	966	29.4102	967	1044
590	33.7566	953	31.4539	953	30.0670	954	29.5069	953	1062
600	33.8519	944	31.5492	944	30.1624	944	29.6022	945	1080
610	33.9463	932	31.6436	932	30.2568	932	29.6967	932	1098
620	34.0395	922	31.7368	922	30.3500	922	29.7899	923	1116
630	34.1317	913	31.8290	913	30.4422	914	29.8822	913	1134
640	34.2230	902	31.9203	902	30.5336	902	29.9735	903	1152
650	34.3132	892	32.0105	892	30.6238	892	30.0638	892	1170
660	34.4024	883	32.0997	883	30.7130	883	30.1530	883	1188
670	34.4907	873	32.1880	873	30.8013	873	30.2413	874	1206
680	34.5780	866	32.2753	866	30.8886	867	30.3287	866	1224
690	34.6646	856	32.3619	856	30.9753	856	30.4153	856	1242
700	34.7502	847	32.4475	847	31.0609	847	30.5009	847	1260
710	34.8349	839	32.5322	839	31.1456	839	30.5856	840	1278
720	34.9188	831	32.6161	831	31.2295	831	30.6696	831	1296
730	35.0019	821	32.6992	821	31.3126	821	30.7527	821	1314
740	35.0840	815	32.7813	815	31.3947	815	30.8348	815	1332
750	35.1655	806	32.8628	807	31.4762	807	30.9163	807	1350
760	35.2461	800	32.9435	800	31.5569	800	30.9970	800	1368
770	35.3261	791	33.0235	791	31.6369	791	31.0770	791	1386
780	35.4052	784	33.1026	784	31.7160	784	31.1561	784	1404
790	35.4836	777	33.1810	776	31.7944	776	31.2345	776	1422
800	35.5613		33.2586		31.8720		31.3121		1440

Table 4-5. ENTROPY OF CARBON DIOXIDE - Cont.

°K	.01 atm		.1 atm		.4 atm		.7 atm		°R
800	35.5613	3780	33.2586	3780	31.8720	3781	31.3121	3781	1440
850	35.9393	3618	33.6366	3618	32.2501	3618	31.6902	3619	1530
900	36.3011	3468	33.9984	3468	32.6119	3468	32.0521	3468	1620
950	36.6479	3331	34.3452	3331	32.9587	3331	32.3989	3332	1710
1000	36.9810	320	34.6783	320	33.2918	320	32.7321	320	1800
1050	37.301	309	34.998	309	33.612	309	33.052	309	1890
1100	37.610	297	35.307	297	33.921	297	33.361	297	1980
1150	37.907	287	35.604	287	34.218	287	33.658	287	2070
1200	38.194	279	35.891	279	34.505	279	33.945	279	2160
1250	38.473	268	36.170	268	34.784	268	34.224	268	2250
1300	38.741	261	36.438	261	35.052	261	34.492	261	2340
1350	39.002	252	36.699	252	35.313	252	34.753	252	2430
1400	39.254	244	36.951	244	35.565	244	35.005	244	2520
1450	39.498	238	37.195	238	35.809	238	35.249	238	2610
1500	39.736		37.433		36.047		35.487		2700

Table 4-5. ENTROPY OF CARBON DIOXIDE - Cont.

S/R

°K	1 atm		4 atm		7 atm		10 atm		°R
220	24.380	185							396
230	24.565	178	23.079	200	22.365	256			414
240	24.743	174	23.279	186	22.621	213	22.132	263	432
250	24.917	168	23.465	177	22.834	190	22.395	212	450
260	25.085	163	23.642	170	23.024	178	22.607	187	468
270	25.248	160	23.812	165	23.202	170	22.794	176	486
280	25.408	155	23.977	160	23.372	165	22.970	170	504
290	25.563	152	24.137	156	23.537	161	23.140	165	522
300	25.715	149	24.293	152	23.698	155	23.305	159	540
310	25.864	146	24.445	149	23.853	152	23.464	155	558
320	26.010	143	24.594	145	24.005	148	23.619	151	576
330	26.153	140	24.739	143	24.153	144	23.770	147	594
340	26.293	137	24.882	139	24.297	142	23.917	143	612
350	26.430	134	25.021	136	24.439	138	24.060	140	630
360	26.564	133	25.157	134	24.577	135	24.200	137	648
370	26.697	130	25.291	131	24.712	133	24.337	134	666
380	26.827	127	25.422	129	24.845	130	24.471	132	684
390	26.954	126	25.551	127	24.975	128	24.603	129	702
400	27.080	124	25.678	125	25.103	126	24.732	127	720
410	27.204	121	25.803	122	25.229	123	24.859	124	738
420	27.325	120	25.925	121	25.352	122	24.983	122	756
430	27.445	118	26.046	119	25.474	119	25.105	121	774
440	27.563	116	26.165	116	25.593	118	25.226	118	792
450	27.679	114	26.281	116	25.711	116	25.344	116	810
460	27.793	113	26.397	113	25.827	114	25.460	115	828
470	27.906	111	26.510	112	25.941	112	25.575	113	846
480	28.017	110	26.622	110	26.053	111	25.688	111	864
490	28.127	108	26.732	108	26.164	109	25.799	109	882
500	28.235	107	26.840	108	26.273	107	25.908	108	900
510	28.342	105	26.948	105	26.380	106	26.016	107	918
520	28.447	104	27.053	105	26.486	105	26.123	105	936
530	28.551	103	27.158	103	26.591	103	26.228	104	954
540	28.654	101	27.261	101	26.694	102	26.332	102	972
550	28.755	101	27.362	101	26.796	101	26.434	101	990
560	28.856	99	27.463	99	26.897	100	26.535	100	1008
570	28.955	97	27.562	98	26.997	98	26.635	98	1026
580	29.052	97	27.660	97	27.095	97	26.733	98	1044
590	29.149	95	27.757	96	27.192	96	26.831	96	1062
600	29.244	95	27.853	94	27.288	95	26.927	95	1080
610	29.339	93	27.947	94	27.383	93	27.022	94	1098
620	29.432	92	28.041	92	27.476	93	27.116	93	1116
630	29.524	92	28.133	92	27.569	92	27.209	91	1134
640	29.616	90	28.225	90	27.661	90	27.300	91	1152
650	29.706	89	28.315	89	27.751	90	27.391	90	1170
660	29.795	89	28.404	89	27.841	88	27.481	89	1188
670	29.884	87	28.493	87	27.929	88	27.570	88	1206
680	29.971	86	28.580	87	28.017	87	27.658	86	1224
690	30.057	86	28.667	86	28.104	86	27.744	86	1242
700	30.143	85	28.753	85	28.190	85	27.830	86	1260
710	30.228	84	28.838	84	28.275	84	27.916	84	1278
720	30.312	83	28.922	83	28.359	83	28.000	83	1296
730	30.395	82	29.005	82	28.442	83	28.083	83	1314
740	30.477	82	29.087	82	28.525	81	28.166	81	1332
750	30.559	80	29.169	81	28.606	81	28.247	81	1350
760	30.639	80	29.250	80	28.687	80	28.328	81	1368
770	30.719	79	29.330	79	28.767	80	28.409	79	1386
780	30.798	79	29.409	78	28.847	78	28.488	79	1404
790	30.877	77	29.487	78	28.925	78	28.567	78	1422
800	30.954		29.565		29.003		28.645		1440

Table 4-5. ENTROPY OF CARBON DIOXIDE - Cont. S/R

°K	1 atm		4 atm		7 atm		10 atm		°R
800	30.954	380	29.565	380	29.003	380	28.645	380	1440
850	31.334	361	29.945	362	29.383	362	29.025	362	1530
900	31.695	347	30.307	347	29.745	348	29.387	348	1620
950	32.042	333	30.654	333	30.093	333	29.735	334	1710
1000	32.375	321	30.987	321	30.426	321	30.069	321	1800
1050	32.696	308	31.308	308	30.747	308	30.390	308	1890
1100	33.004	298	31.616	298	31.055	299	30.698	299	1980
1150	33.302	287	31.914	288	31.354	287	30.997	287	2070
1200	33.589	278	32.202	278	31.641	278	31.284	278	2160
1250	33.867	268	32.480	268	31.919	268	31.562	269	2250
1300	34.135	260	32.748	260	32.187	260	31.831	260	2340
1350	34.395	252	33.008	252	32.447	253	32.091	252	2430
1400	34.647	245	33.260	245	32.700	245	32.343	245	2520
1450	34.892	237	33.505	237	32.945	237	32.588	237	2610
1500	35.129		33.742		33.182		32.825		2700

Table 4-5. ENTROPY OF CARBON DIOXIDE - Cont. S/R

°K	10 atm		40 atm		70 atm		100 atm		°R
240	22.132	263							432
250	22.395	212							450
260	22.607	187							468
270	22.794	176							486
280	22.970	170							504
290	23.140	165							522
300	23.305	159	21.43	24					540
310	23.464	155	21.67	22					558
320	23.619	151	21.89	19	20.85	29	19.83	48	576
330	23.770	147	22.08	17	21.14	23	20.31	30	594
340	23.917	143	22.25	17	21.37	20	20.61	26	612
350	24.060	140	22.42	16	21.57	19	20.87	24	630
360	24.200	137	22.58	16	21.76	18	21.11	22	648
370	24.337	134	22.74	15	21.94	18	21.33	20	666
380	24.471	132	22.89	15	22.12	16	21.53	19	684
390	24.603	129	23.04	14	22.28	17	21.72	18	702
400	24.732	127	23.183	139	22.449	153	21.904	170	720
410	24.859	124	23.322	135	22.602	147	22.074	161	738
420	24.983	122	23.457	131	22.749	142	22.235	153	756
430	25.105	121	23.588	129	22.891	139	22.388	149	774
440	25.226	118	23.717	126	23.030	134	22.537	142	792
450	25.344	116	23.843	123	23.164	130	22.679	136	810
460	25.460	115	23.966	121	23.294	127	22.815	131	828
470	25.575	113	24.087	119	23.421	123	22.946	126	846
480	25.688	111	24.206	116	23.544	121	23.072	124	864
490	25.799	109	24.322	114	23.665	118	23.196	120	882
500	25.908	108	24.436	113	23.783	117	23.316	120	900
510	26.016	107	24.549	110	23.900	115	23.436	119	918
520	26.123	105	24.659	109	24.015	113	23.555	117	936
530	26.228	104	24.768	108	24.128	111	23.672	116	954
540	26.332	102	24.876	105	24.239	110	23.788	113	972
550	26.434	101	24.981	105	24.349	107	23.901	111	990
560	26.535	100	25.086	102	24.456	106	24.012	109	1008
570	26.635	98	25.188	102	24.562	104	24.121	107	1026
580	26.733	98	25.290	100	24.666	103	24.228	106	1044
590	26.831	96	25.390	98	24.769	101	24.334	103	1062
600	26.927	95	25.488	97	24.870	100	24.437	103	1080
610	27.022	94	25.585	96	24.970	98	24.540	100	1098
620	27.116	93	25.681	95	25.068	97	24.640	99	1116
630	27.209	91	25.776	94	25.165	95	24.739	98	1134
640	27.300	91	25.870	92	25.260	95	24.837	96	1152
650	27.391	90	25.962	92	25.355	93	24.933	95	1170
660	27.481	89	26.054	90	25.448	92	25.028	94	1188
670	27.570	88	26.144	89	25.540	91	25.122	92	1206
680	27.658	86	26.233	88	25.631	89	25.214	91	1224
690	27.744	86	26.321	88	25.720	89	25.305	90	1242
700	27.830	86	26.409	86	25.809	88	25.395	89	1260
710	27.916	84	26.495	86	25.897	86	25.484	88	1278
720	28.000	83	26.581	84	25.983	86	25.572	87	1296
730	28.083	83	26.665	84	26.069	85	25.659	86	1314
740	28.166	81	26.749	82	26.154	83	25.745	85	1332
750	28.247	81	26.831	82	26.237	83	25.830	84	1350
760	28.328	81	26.913	81	26.320	82	25.914	82	1368
770	28.409	79	26.994	81	26.402	81	25.996	83	1386
780	28.488	79	27.075	79	26.483	81	26.079	81	1404
790	28.567	78	27.154	79	26.564	79	26.160	80	1422
800	28.645		27.233		26.643		26.240		1440

Table 4-5. ENTROPY OF CARBON DIOXIDE - Cont.

S/R

°K	10 atm		40 atm		70 atm		100 atm		°R
800	28.645	380	27.233	383	26.643	387	26.240	390	1440
850	29.025	362	27.616	366	27.030	368	26.630	371	1530
900	29.387	348	27.982	350	27.398	352	27.001	354	1620
950	29.735	334	28.332	335	27.750	337	27.355	339	1710
1000	30.069	321	28.667	323	28.087	325	27.694	326	1800
1050	30.390	308	28.990	310	28.412	311	28.020	312	1890
1100	30.698	299	29.300	299	28.723	300	28.332	301	1980
1150	30.997	287	29.599	288	29.023	289	28.633	290	2070
1200	31.284	278	29.887	280	29.312	280	28.923	281	2160
1250	31.562	269	30.167	269	29.592	270	29.204	270	2250
1300	31.831	260	30.436	260	29.862	261	29.474	262	2340
1350	32.091	252	30.696	253	30.123	254	29.736	254	2430
1400	32.343	245	30.949	246	30.377	246	29.990	247	2520
1450	32.588	237	31.195	236	30.623	235	30.237	238	2610
1500	32.825		31.431		30.858		30.475		2700

Table 4-6. SPECIFIC-HEAT RATIO OF CARBON DIOXIDE $\gamma = C_p / C_v$

°K	.01 atm		.1 atm		.4 atm		.7 atm		°R
200	1.3462	-70	1.3481	-71	1.3555	-89			360
210	1.3392	-67	1.3410	-70	1.3466	-78			378
220	1.3325	-65	1.3340	-68	1.3388	-74	1.3436	-81	396
230	1.3260	-63	1.3272	-64	1.3314	-70	1.3355	-75	414
240	1.3197	-60	1.3208	-61	1.3244	-66	1.3280	-71	432
250	1.3137	-57	1.3147	-59	1.3178	-62	1.3209	-66	450
260	1.3080	-54	1.3088	-55	1.3116	-60	1.3143	-62	468
270	1.3026	-52	1.3033	-53	1.3056	-54	1.3081	-58	486
280	1.2974	-49	1.2980	-50	1.3002	-53	1.3023	-55	504
290	1.2925	-47	1.2930	-47	1.2949	-49	1.2968	-51	522
300	1.2878	-44	1.2883	-45	1.2900	-47	1.2917	-48	540
310	1.2834	-43	1.2838	-43	1.2853	-44	1.2869	-46	558
320	1.2791	-40	1.2795	-40	1.2809	-42	1.2823	-43	576
330	1.2751	-38	1.2755	-38	1.2767	-39	1.2780	-41	594
340	1.2713	-36	1.2717	-37	1.2728	-38	1.2739	-38	612
350	1.2677	-35	1.2680	-35	1.2690	-35	1.2701	-37	630
360	1.2642	-33	1.2645	-33	1.2655	-34	1.2664	-35	648
370	1.2609	-31	1.2612	-31	1.2621	-33	1.2629	-33	666
380	1.2578	-30	1.2581	-31	1.2588	-30	1.2596	-31	684
390	1.2548	-29	1.2550	-29	1.2558	-30	1.2565	-30	702
400	1.2519	-27	1.2521	-27	1.2528	-28	1.2535	-29	720
410	1.2492	-26	1.2494	-26	1.2500	-26	1.2506	-27	738
420	1.2466	-25	1.2468	-26	1.2474	-26	1.2479	-26	756
430	1.2441	-24	1.2442	-24	1.2448	-25	1.2453	-25	774
440	1.2417	-23	1.2418	-23	1.2423	-23	1.2428	-24	792
450	1.2394	-23	1.2395	-22	1.2400	-23	1.2404	-23	810
460	1.2371	-21	1.2373	-22	1.2377	-22	1.2381	-22	828
470	1.2350	-21	1.2351	-21	1.2355	-21	1.2359	-21	846
480	1.2329	-19	1.2330	-20	1.2334	-20	1.2338	-20	864
490	1.2310	-20	1.2310	-19	1.2314	-19	1.2318	-20	882
500	1.2290	-18	1.2291	-18	1.2295	-19	1.2298	-19	900
510	1.2272	-18	1.2273	-18	1.2276	-18	1.2279	-18	918
520	1.2254	-17	1.2255	-17	1.2258	-17	1.2261	-17	936
530	1.2237	-17	1.2238	-17	1.2241	-17	1.2244	-17	954
540	1.2220	-16	1.2221	-16	1.2224	-16	1.2227	-16	972
550	1.2204	-15	1.2205	-15	1.2208	-16	1.2211	-16	990
560	1.2189	-15	1.2190	-15	1.2192	-15	1.2195	-15	1008
570	1.2174	-14	1.2175	-15	1.2177	-15	1.2180	-15	1026
580	1.2160	-15	1.2160	-14	1.2162	-14	1.2165	-14	1044
590	1.2145	-13	1.2146	-14	1.2148	-13	1.2151	-14	1062
600	1.2132	-13	1.2132	-13	1.2135	-14	1.2137	-14	1080
610	1.2119	-13	1.2119	-13	1.2121	-13	1.2123	-13	1098
620	1.2106	-13	1.2106	-12	1.2108	-12	1.2110	-12	1116
630	1.2093	-12	1.2094	-12	1.2096	-12	1.2098	-13	1134
640	1.2081	-11	1.2082	-12	1.2084	-12	1.2085	-12	1152
650	1.2070	-12	1.2070	-11	1.2072	-12	1.2073	-11	1170
660	1.2058	-11	1.2059	-11	1.2060	-11	1.2062	-11	1188
670	1.2047	-10	1.2048	-11	1.2049	-10	1.2051	-11	1206
680	1.2037	-11	1.2037	-10	1.2039	-11	1.2040	-11	1224
690	1.2026	-10	1.2027	-11	1.2028	-10	1.2029	-10	1242
700	1.2016	-10	1.2016	-10	1.2018	-10	1.2019	-10	1260
710	1.2006	- 9	1.2006	- 9	1.2008	-10	1.2009	-10	1278
720	1.1997	-10	1.1997	- 9	1.1998	- 9	1.1999	- 9	1296
730	1.1987	- 9	1.1988	- 9	1.1989	- 9	1.1990	- 9	1314
740	1.1978	- 9	1.1979	- 9	1.1980	- 9	1.1981	- 9	1332
750	1.1969	- 8	1.1970	- 9	1.1971	- 9	1.1972	- 9	1350
760	1.1961	- 9	1.1961	- 8	1.1962	- 8	1.1963	- 8	1368
770	1.1952	- 8	1.1953	- 8	1.1954	- 8	1.1955	- 8	1386
780	1.1944	- 8	1.1945	- 8	1.1946	- 8	1.1947	- 8	1404
790	1.1936	- 7	1.1937	- 8	1.1938	- 8	1.1939	- 8	1422
800	1.1929		1.1929		1.1930		1.1931		1440

Table 4-6. SPECIFIC-HEAT RATIO OF CARBON DIOXIDE - Cont. $\gamma = C_p/C_v$

°K	.01 atm		.1 atm		.4 atm		.7 atm		°R
800	1.1929	-36	1.1929	-36	1.1930	-36	1.1931	-36	1440
850	1.1893	-32	1.1893	-32	1.1894	-32	1.1895	-32	1530
900	1.1861	-28	1.1861	-28	1.1862	-28	1.1863	-29	1620
950	1.1833	-25	1.1833	-25	1.1834	-25	1.1834	-25	1710
1000	1.1808	-22	1.1808	-22	1.1809	-23	1.1809	-22	1800
1050	1.1786	-20	1.1786	-20	1.1786	-20	1.1787	-20	1890
1100	1.1766	-18	1.1766	-18	1.1766	-18	1.1767	-19	1980
1150	1.1748	-16	1.1748	-16	1.1748	-16	1.1748	-16	2070
1200	1.1732	-15	1.1732	-15	1.1732	-15	1.1732	-14	2160
1250	1.1717	-14	1.1717	-14	1.1717	-13	1.1718	-14	2250
1300	1.1703	-12	1.1703	-12	1.1704	-12	1.1704	-12	2340
1350	1.1691	-11	1.1691	-11	1.1692	-12	1.1692	-11	2430
1400	1.1680	-10	1.1680	-10	1.1680	-10	1.1681	-10	2520
1450	1.1670	- 9	1.1670	- 9	1.1670	- 9	1.1671	-10	2610
1500	1.1661		1.1661		1.1661		1.1661		2700

Table 4-6. SPECIFIC-HEAT RATIO OF CARBON DIOXIDE - Cont. $\gamma = C_p/C_v$

°K	1 atm		4 atm		7 atm		10 atm		°R
220	1.349	-9							396
230	1.340	-8	1.385	-18	1.451	-48			414
240	1.332	-8	1.367	-11	1.403	-16	1.448	-32	432
250	1.324	-7	1.356	-11	1.387	-13	1.416	-15	450
260	1.317	-6	1.345	- 9	1.374	- 9	1.401	- 2	468
270	1.311	-7	1.336	- 9	1.365	-13	1.399	-17	486
280	1.304	-5	1.327	- 8	1.352	-11	1.382	-16	504
290	1.299	-6	1.319	- 8	1.341	-10	1.366	-14	522
300	1.293	-5	1.311	- 7	1.331	-10	1.352	-12	540
310	1.288	-4	1.304	- 6	1.321	- 8	1.340	-11	558
320	1.284	-5	1.298	- 6	1.313	- 7	1.329	- 9	576
330	1.279	-4	1.292	- 5	1.306	- 7	1.320	- 8	594
340	1.275	-4	1.287	- 5	1.299	- 6	1.312	- 7	612
350	1.271	-4	1.282	- 5	1.293	- 6	1.305	- 7	630
360	1.267	-3	1.277	- 4	1.287	- 5	1.298	- 6	648
370	1.264	-4	1.273	- 4	1.282	- 5	1.292	- 6	666
380	1.260	-3	1.269	- 4	1.277	- 4	1.286	- 5	684
390	1.257	-3	1.265	- 4	1.273	- 5	1.281	- 5	702
400	1.254	-3	1.261	- 3	1.268	- 3	1.276	- 5	720
410	1.251	-3	1.258	- 4	1.265	- 4	1.271	- 4	738
420	1.248	-2	1.254	- 3	1.261	- 4	1.267	- 4	756
430	1.246	-3	1.251	- 3	1.257	- 3	1.263	- 4	774
440	1.243	-2	1.248	- 2	1.254	- 3	1.259	- 3	792
450	1.241	-2	1.246	- 3	1.251	- 3	1.256	- 4	810
460	1.239	-3	1.243	- 2	1.248	- 3	1.252	- 3	828
470	1.236	-2	1.241	- 3	1.245	- 3	1.249	- 3	846
480	1.234	-2	1.238	- 2	1.242	- 2	1.246	- 3	864
490	1.232	-2	1.236	- 2	1.240	- 3	1.243	- 2	882
500	1.230	-2	1.234	- 2	1.237	- 2	1.241	- 3	900
510	1.228	-2	1.232	- 2	1.235	- 2	1.238	- 2	918
520	1.226	-1	1.230	- 2	1.233	- 2	1.236	- 2	936
530	1.225	-2	1.228	- 2	1.231	- 2	1.234	- 2	954
540	1.223	-2	1.226	- 2	1.229	- 2	1.232	- 3	972
550	1.221	-1	1.224	- 2	1.227	- 2	1.229	- 2	990
560	1.220	-2	1.222	- 1	1.225	- 2	1.227	- 2	1008
570	1.218	-1	1.221	- 2	1.223	- 2	1.225	- 2	1026
580	1.217	-2	1.219	- 2	1.221	- 1	1.223	- 1	1044
590	1.215	-1	1.217	- 1	1.220	- 2	1.222	- 2	1062
600	1.214	-1	1.216	- 2	1.218	- 2	1.220	- 2	1080
610	1.213	-2	1.214	- 1	1.216	- 1	1.218	- 1	1098
620	1.211	-1	1.213	- 1	1.215	- 1	1.217	- 2	1116
630	1.210	-1	1.212	- 2	1.214	- 2	1.215	- 1	1134
640	1.209	-1	1.210	- 1	1.212	- 1	1.214	- 2	1152
650	1.208	-2	1.209	- 1	1.211	- 1	1.212	- 1	1170
660	1.206	-1	1.208	- 1	1.210	- 2	1.211	- 1	1188
670	1.205	-1	1.207	- 1	1.208	- 1	1.210	- 2	1206
680	1.204	-1	1.206	- 1	1.207	- 1	1.208	- 1	1224
690	1.203	-1	1.205	- 2	1.206	- 1	1.207	- 1	1242
700	1.202	-1	1.203	- 1	1.205	- 1	1.206	- 1	1260
710	1.201	-1	1.202	- 1	1.204	- 1	1.205	- 1	1278
720	1.200	-1	1.201	- 1	1.203	- 1	1.204	- 1	1296
730	1.199	-1	1.200	- 1	1.202	- 1	1.203	- 1	1314
740	1.198	-1	1.199	- 1	1.201	- 1	1.202	- 1	1332
750	1.197	-1	1.198	- 1	1.200	- 1	1.201	- 1	1350
760	1.196		1.197		1.199	- 1	1.200	- 1	1368
770	1.196	-1	1.197	- 1	1.198	- 1	1.199	- 1	1386
780	1.195	-1	1.196	- 1	1.197	- 1	1.198	- 1	1404
790	1.194	-1	1.195	- 1	1.196	- 1	1.197	- 1	1422
800	1.193		1.194		1.195		1.196		1440

Table 4-6. SPECIFIC-HEAT RATIO OF CARBON DIOXIDE - Cont. $\gamma = C_p/C_v$

°K	1 atm		4 atm		7 atm		10 atm		°R
800	1.193	-3	1.194	- 4	1.195	- 4	1.196	- 4	1440
850	1.190	-4	1.190	- 3	1.191	- 3	1.192	- 4	1530
900	1.186	-3	1.187	- 3	1.188	- 3	1.188	- 3	1620
950	1.183	-2	1.184	- 2	1.185	- 3	1.185	- 2	1710
1000	1.181	-2	1.182	- 3	1.182	- 2	1.183	- 3	1800
1050	1.179	-2	1.179	- 2	1.180	- 2	1.180	- 2	1890
1100	1.177	-2	1.177	- 2	1.178	- 2	1.178	- 2	1980
1150	1.175	-2	1.175	- 1	1.176	- 2	1.176	- 2	2070
1200	1.173	-1	1.174	- 2	1.174	- 2	1.174	- 1	2160
1250	1.172	-2	1.172	- 1	1.172	- 1	1.173	- 2	2250
1300	1.170	-1	1.171	- 1	1.171	- 1	1.171	- 1	2340
1350	1.169	-1	1.170	- 2	1.170	- 1	1.170	- 1	2430
1400	1.168	-1	1.168	- 1	1.169	- 1	1.169	- 1	2520
1450	1.167	-1	1.167	- 1	1.168	- 1	1.168	- 1	2610
1500	1.166		1.166		1.167		1.167		2700

Table 4-6. SPECIFIC-HEAT RATIO OF CARBON DIOXIDE - Cont. $\gamma = C_p/C_v$

°K	10 atm		40 atm		70 atm		100 atm		°R
240	1.448	-32							432
250	1.416	-15							450
260	1.401	- 2							468
270	1.399	-17							486
280	1.382	-16							504
290	1.366	-14							522
300	1.352	-12	1.72	-7					540
310	1.340	-11	1.65	-5					558
320	1.329	- 9	1.60	-5	2.23	-17	5.13	-128	576
330	1.320	- 8	1.55	-4	2.06	-13	3.85	- 90	594
340	1.312	- 7	1.51	-4	1.93	-11	2.95	- 55	612
350	1.305	- 7	1.47	-3	1.82	-10	2.40	- 34	630
360	1.298	- 6	1.44	-2	1.72	- 7	2.06	- 16	648
370	1.292	- 6	1.42	-2	1.65	- 6	1.90	- 11	666
380	1.286	- 5	1.40	-2	1.59	- 6	1.79	- 9	684
390	1.281	- 5	1.38	-2	1.53	- 5	1.70	- 7	702
400	1.276	- 5	1.364	-13	1.483	- 29	1.630	- 45	720
410	1.271	- 4	1.351	-11	1.454	- 22	1.585	- 35	738
420	1.267	- 4	1.340	-10	1.432	- 20	1.550	- 30	756
430	1.263	- 4	1.330	- 9	1.412	- 18	1.520	- 30	774
440	1.259	- 3	1.321	- 9	1.394	- 16	1.490	- 27	792
450	1.256	- 4	1.312	- 7	1.378	- 13	1.463	- 24	810
460	1.252	- 3	1.305	- 7	1.365	- 11	1.439	- 20	828
470	1.249	- 3	1.298	- 6	1.354	- 8	1.419	- 10	846
480	1.246	- 3	1.292	- 5	1.346	- 8	1.409	- 11	864
490	1.243	- 2	1.287	- 6	1.338	- 8	1.398	- 11	882
500	1.241	- 3	1.281	- 5	1.330	- 10	1.387	- 15	900
510	1.238	- 2	1.276	- 5	1.320	- 8	1.372	- 15	918
520	1.236	- 2	1.271	- 4	1.312	- 8	1.357	- 12	936
530	1.234	- 2	1.267	- 5	1.304	- 7	1.345	- 10	954
540	1.232	- 3	1.262	- 4	1.297	- 6	1.335	- 9	972
550	1.229	- 2	1.258	- 3	1.291	- 6	1.326	- 8	990
560	1.227	- 2	1.255	- 4	1.285	- 5	1.318	- 8	1008
570	1.225	- 2	1.251	- 3	1.280	- 5	1.310	- 7	1026
580	1.223	- 1	1.248	- 3	1.275	- 5	1.303	- 6	1044
590	1.222	- 2	1.245	- 3	1.270	- 5	1.297	- 6	1062
600	1.220	- 2	1.242	- 3	1.265	- 4	1.291	- 6	1080
610	1.218	- 1	1.239	- 3	1.261	- 3	1.285	- 5	1098
620	1.217	- 2	1.236	- 2	1.258	- 4	1.280	- 5	1116
630	1.215	- 1	1.234	- 2	1.254	- 4	1.275	- 5	1134
640	1.214	- 2	1.232	- 3	1.250	- 3	1.270	- 4	1152
650	1.212	- 1	1.229	- 2	1.247	- 3	1.266	- 5	1170
660	1.211	- 1	1.227	- 2	1.244	- 3	1.261	- 4	1188
670	1.210	- 2	1.225	- 2	1.241	- 3	1.257	- 4	1206
680	1.208	- 1	1.223	- 2	1.238	- 2	1.253	- 3	1224
690	1.207	- 1	1.221	- 1	1.236	- 3	1.250	- 3	1242
700	1.206	- 1	1.220	- 2	1.233	- 2	1.247	- 3	1260
710	1.205	- 1	1.218	- 2	1.231	- 3	1.244	- 3	1278
720	1.204	- 1	1.216	- 2	1.228	- 2	1.241	- 3	1296
730	1.203	- 1	1.214	- 1	1.226	- 2	1.238	- 3	1314
740	1.202	- 1	1.213	- 1	1.224	- 2	1.235	- 2	1332
750	1.201	- 1	1.212	- 2	1.222	- 2	1.233	- 3	1350
760	1.200	- 1	1.210	- 1	1.220	- 1	1.230	- 2	1368
770	1.199	- 1	1.209	- 1	1.219	- 2	1.228	- 2	1386
780	1.198	- 1	1.208	- 2	1.217	- 2	1.226	- 2	1404
790	1.197	- 1	1.206	- 1	1.215	- 1	1.224	- 2	1422
800	1.196		1.205		1.214		1.222		1440

Table 4-6. SPECIFIC-HEAT RATIO OF CARBON DIOXIDE - Cont. $\gamma = C_p/C_v$

°K	10 atm		40 atm		70 atm		100 atm		°R
800	1.196	- 4	1.205	- 6	1.214	- 7	1.222	- 9	1440
850	1.192	- 4	1.199	- 4	1.207	- 6	1.213	- 7	1530
900	1.188	- 3	1.195	- 4	1.201	- 5	1.206	- 5	1620
950	1.185	- 2	1.191	- 4	1.196	- 4	1.201	- 5	1710
1000	1.183	- 3	1.187	- 3	1.192	- 4	1.196	- 4	1800
1050	1.180	- 2	1.184	- 2	1.188	- 3	1.192	- 4	1890
1100	1.178	- 2	1.182	- 3	1.185	- 3	1.188	- 3	1980
1150	1.176	- 2	1.179	- 2	1.182	- 2	1.185	- 2	2070
1200	1.174	- 1	1.177	- 2	1.180	- 2	1.183	- 3	2160
1250	1.173	- 2	1.175	- 1	1.178	- 2	1.180	- 2	2250
1300	1.171	- 1	1.174	- 2	1.176	- 2	1.178	- 2	2340
1350	1.170	- 1	1.172	- 1	1.174	- 1	1.176	- 2	2430
1400	1.169	- 1	1.171	- 1	1.173	- 2	1.174	- 1	2520
1450	1.168	- 1	1.170	- 1	1.171	- 1	1.173	- 1	2610
1500	1.167		1.169		1.170		1.172		2700

Table 4-7. SOUND VELOCITY AT LOW FREQUENCY IN CARBON DIOXIDE a/a_0

°K	.01 atm		.1 atm		.4 atm		.7 atm		°R
200	.8736	193	.8727	195	.8700	196			360
210	.8929	188	.8922	188	.8896	192			378
220	.9117	182	.9110	183	.9088	186	.9065	189	396
230	.9299	177	.9293	179	.9274	181	.9254	183	414
240	.9476	174	.9472	174	.9455	176	.9437	178	432
250	.9650	170	.9646	170	.9631	172	.9615	174	450
260	.9820	166	.9816	167	.9803	167	.9789	169	468
270	.9986	163	.9983	163	.9970	166	.9958	166	486
280	1.0149	161	1.0146	160	1.0136	161	1.0124	163	504
290	1.0310	157	1.0306	158	1.0297	158	1.0287	160	522
300	1.0467	155	1.0464	155	1.0455	156	1.0447	156	540
310	1.0622	152	1.0619	152	1.0611	153	1.0603	154	558
320	1.0774	150	1.0771	151	1.0764	152	1.0757	152	576
330	1.0924	147	1.0922	148	1.0916	148	1.0909	149	594
340	1.1071	146	1.1070	145	1.1064	146	1.1058	147	612
350	1.1217	143	1.1215	144	1.1210	145	1.1205	144	630
360	1.1360	142	1.1359	142	1.1355	142	1.1349	143	648
370	1.1502	140	1.1501	140	1.1497	140	1.1492	141	666
380	1.1642	138	1.1641	138	1.1637	139	1.1633	139	684
390	1.1780	137	1.1779	137	1.1776	137	1.1772	137	702
400	1.1917	135	1.1916	135	1.1913	135	1.1909	136	720
410	1.2052	133	1.2051	133	1.2048	134	1.2045	134	738
420	1.2185	132	1.2184	132	1.2182	132	1.2179	132	756
430	1.2317	130	1.2316	131	1.2314	130	1.2311	131	774
440	1.2447	129	1.2447	129	1.2444	130	1.2442	130	792
450	1.2576	128	1.2576	127	1.2574	128	1.2572	128	810
460	1.2704	126	1.2703	127	1.2702	126	1.2700	126	828
470	1.2830	125	1.2830	124	1.2828	125	1.2826	126	846
480	1.2955	124	1.2954	124	1.2953	124	1.2952	124	864
490	1.3079	122	1.3078	123	1.3077	123	1.3076	123	882
500	1.3201	122	1.3201	121	1.3200	121	1.3199	121	900
510	1.3323	120	1.3322	121	1.3321	121	1.3320	121	918
520	1.3443	119	1.3443	119	1.3442	119	1.3441	120	936
530	1.3562	118	1.3562	118	1.3561	118	1.3561	118	954
540	1.3680	117	1.3680	117	1.3679	118	1.3679	118	972
550	1.3797	116	1.3797	116	1.3797	116	1.3797	116	990
560	1.3913	115	1.3913	115	1.3913	115	1.3913	115	1008
570	1.4028	115	1.4028	114	1.4028	114	1.4028	114	1026
580	1.4143	113	1.4142	113	1.4142	113	1.4142	114	1044
590	1.4256	112	1.4255	113	1.4255	113	1.4256	112	1062
600	1.4368	111	1.4368	111	1.4368	111	1.4368	112	1080
610	1.4479	111	1.4479	110	1.4479	111	1.4480	110	1098
620	1.4590	109	1.4589	110	1.4590	110	1.4590	110	1116
630	1.4699	109	1.4699	109	1.4700	109	1.4700	109	1134
640	1.4808	108	1.4808	108	1.4809	108	1.4809	108	1152
650	1.4916	107	1.4916	108	1.4917	107	1.4917	108	1170
660	1.5023	107	1.5024	106	1.5024	107	1.5025	107	1188
670	1.5130	106	1.5130	106	1.5131	106	1.5132	106	1206
680	1.5236	104	1.5236	105	1.2537	105	1.5238	105	1224
690	1.5340	104	1.5341	104	1.5342	104	1.5343	104	1242
700	1.5444	104	1.5445	103	1.5446	103	1.5447	103	1260
710	1.5548	103	1.5548	103	1.5549	103	1.5550	103	1278
720	1.5651	102	1.5651	103	1.5652	103	1.5653	103	1296
730	1.5753	102	1.5754	102	1.5755	101	1.5756	101	1314
740	1.5855	101	1.5856	100	1.5856	101	1.5857	101	1332
750	1.5956	100	1.5956	100	1.5957	100	1.5958	100	1350
760	1.6056	99	1.6056	100	1.6057	100	1.6058	100	1368
770	1.6155	99	1.6156	99	1.6157	99	1.6158	100	1386
780	1.6254	99	1.6255	99	1.6256	99	1.6258	98	1404
790	1.6353	98	1.6354	98	1.6355	98	1.6356	98	1422
800	1.6451		1.6452		1.6453		1.6454		1440

Table 4-7. SOUND VELOCITY AT LOW FREQUENCY IN CARBON DIOXIDE - Cont. a/a_0

°K	.01 atm		.1 atm		.4 atm		.7 atm		°R
800	1.6451	481	1.6452	480	1.6453	481	1.6454	481	1440
850	1.6932	467	1.6932	468	1.6934	467	1.6935	468	1530
900	1.7399	456	1.7400	455	1.7401	456	1.7403	455	1620
950	1.7855	445	1.7855	445	1.7857	445	1.7858	445	1710
1000	1.8300	434	1.8300	434	1.8302	434	1.8303	435	1800
1050	1.8734	425	1.8734	425	1.8736	424	1.8738	425	1890
1100	1.9159	415	1.9159	416	1.9160	416	1.9163	415	1980
1150	1.9574	408	1.9575	407	1.9576	407	1.9578	408	2070
1200	1.9982	399	1.9982	399	1.9983	400	1.9986	399	2160
1250	2.0381	391	2.0381	391	2.0383	392	2.0385	391	2250
1300	2.0772	385	2.0772	385	2.0775	384	2.0776	385	2340
1350	2.1157	378	2.1157	378	2.1159	378	2.1161	378	2430
1400	2.1535	371	2.1535	372	2.1537	372	2.1539	372	2520
1450	2.1906	366	2.1907	366	2.1909	366	2.1911	365	2610
1500	2.2272		2.2273		2.2275		2.2276		2700

Table 4-7. SOUND VELOCITY AT LOW FREQUENCY IN CARBON DIOXIDE - Cont. a/a_0

°K	1 atm		4 atm		7 atm		10 atm		°R
220	.904	19							396
230	.923	19	.900	23	.868	29			414
240	.942	18	.923	21	.897	27	.863	36	432
250	.960	18	.944	19	.924	23	.899	29	450
260	.978	17	.963	19	.947	23	.928	29	468
270	.995	16	.982	18	.970	19	.957	21	486
280	1.011	17	1.000	18	.989	19	.978	19	504
290	1.028	16	1.018	17	1.008	18	.997	19	522
300	1.044	16	1.035	17	1.026	17	1.016	18	540
310	1.060	15	1.052	16	1.043	17	1.034	18	558
320	1.075	15	1.068	16	1.060	17	1.052	18	576
330	1.090	15	1.084	16	1.077	16	1.070	17	594
340	1.105	15	1.100	15	1.093	16	1.087	17	612
350	1.120	14	1.115	15	1.109	15	1.104	16	630
360	1.134	15	1.130	14	1.124	15	1.120	15	648
370	1.149	14	1.144	15	1.139	15	1.135	16	666
380	1.163	14	1.159	14	1.154	15	1.151	15	684
390	1.177	14	1.173	14	1.169	15	1.166	15	702
400	1.191	13	1.187	14	1.184	14	1.181	14	720
410	1.204	14	1.201	14	1.198	14	1.195	15	738
420	1.218	13	1.215	13	1.212	14	1.210	14	756
430	1.231	13	1.228	14	1.226	14	1.224	14	774
440	1.244	13	1.242	13	1.240	13	1.238	13	792
450	1.257	13	1.255	13	1.253	13	1.251	14	810
460	1.270	13	1.268	13	1.266	13	1.265	13	828
470	1.283	12	1.281	13	1.279	13	1.278	13	846
480	1.295	13	1.294	12	1.292	13	1.291	13	864
490	1.308	12	1.306	13	1.305	13	1.304	13	882
500	1.320	12	1.319	12	1.318	12	1.317	13	900
510	1.332	12	1.331	12	1.330	13	1.330	12	918
520	1.344	12	1.343	12	1.343	12	1.342	13	936
530	1.356	12	1.355	12	1.355	12	1.355	12	954
540	1.368	12	1.367	12	1.367	12	1.367	12	972
550	1.380	11	1.379	12	1.379	12	1.379	12	990
560	1.391	12	1.391	12	1.391	12	1.391	12	1008
570	1.403	11	1.403	11	1.403	11	1.403	11	1026
580	1.414	12	1.414	12	1.414	12	1.414	12	1044
590	1.426	11	1.426	11	1.426	11	1.426	12	1062
600	1.437	11	1.437	11	1.437	12	1.438	11	1080
610	1.448	11	1.448	11	1.449	11	1.449	11	1098
620	1.459	11	1.459	11	1.460	11	1.460	12	1116
630	1.470	11	1.470	11	1.471	11	1.472	11	1134
640	1.481	11	1.481	11	1.482	11	1.483	11	1152
650	1.492	11	1.492	11	1.493	11	1.494	10	1170
660	1.503	10	1.503	11	1.504	11	1.504	11	1188
670	1.513	11	1.514	11	1.515	10	1.515	11	1206
680	1.524	10	1.525	10	1.525	11	1.526	11	1224
690	1.534	11	1.535	11	1.536	10	1.537	10	1242
700	1.545	10	1.546	10	1.546	11	1.547	11	1260
710	1.555	10	1.556	10	1.557	10	1.558	10	1278
720	1.565	11	1.566	11	1.567	11	1.568	11	1296
730	1.576	10	1.577	10	1.578	10	1.579	10	1314
740	1.586	10	1.587	10	1.588	10	1.589	10	1332
750	1.596	10	1.597	10	1.598	10	1.599	10	1350
760	1.606	10	1.607	10	1.608	10	1.609	10	1368
770	1.616	10	1.617	10	1.618	10	1.619	10	1386
780	1.626	10	1.627	10	1.628	10	1.629	10	1404
790	1.636	10	1.637	10	1.638	10	1.639	10	1422
800	1.646		1.647		1.648		1.649		1440

Table 4-7. SOUND VELOCITY AT LOW FREQUENCY IN CARBON DIOXIDE - Cont. a/a_0

°K	1 atm		4 atm		7 atm		10 atm		°R
800	1.646	48	1.647	48	1.648	48	1.649	49	1440
850	1.694	46	1.695	47	1.696	47	1.698	47	1530
900	1.740	46	1.742	46	1.743	46	1.745	46	1620
950	1.786	45	1.788	44	1.789	45	1.791	44	1710
1000	1.831	43	1.832	44	1.834	43	1.835	44	1800
1050	1.874	42	1.876	42	1.877	43	1.879	43	1890
1100	1.916	42	1.918	42	1.920	41	1.922	41	1980
1150	1.958	41	1.960	40	1.961	41	1.963	41	2070
1200	1.999	40	2.000	40	2.002	40	2.004	40	2160
1250	2.039	39	2.040	40	2.042	39	2.044	39	2250
1300	2.078	38	2.080	38	2.081	39	2.083	39	2340
1350	2.116	38	2.118	38	2.120	38	2.122	38	2430
1400	2.154	37	2.156	37	2.158	37	2.160	37	2520
1450	2.191	37	2.193	37	2.195	36	2.197	36	2610
1500	2.228		2.230		2.231		2.233		2700

Table 4-7. SOUND VELOCITY AT LOW FREQUENCY IN CARBON DIOXIDE - Cont. a/a_0

°K	10 atm		40 atm		70 atm		100 atm		°R
240	.863	36							432
250	.899	29							450
260	.928	29							468
270	.957	21							486
280	.978	19							504
290	.997	19							522
300	1.016	18	.889	47					540
310	1.034	18	.936	39					558
320	1.052	18	.975	33	.853	71	.657	167	576
330	1.070	17	1.008	21	.924	57	.824	104	594
340	1.087	17	1.029	27	.981	43	.928	35	612
350	1.104	16	1.056	16	1.024	27	.963	19	630
360	1.120	15	1.072	22	1.051	21	.982	39	648
370	1.135	16	1.094	22	1.072	25	1.021	36	666
380	1.151	15	1.116	20	1.097	12	1.057	25	684
390	1.166	15	1.136	15	1.109	21	1.082	29	702
400	1.181	14	1.151	18	1.130	20	1.111	28	720
410	1.195	15	1.169	17	1.150	21	1.139	26	738
420	1.210	14	1.186	17	1.171	19	1.165	25	756
430	1.224	14	1.203	17	1.190	19	1.190	22	774
440	1.238	13	1.220	16	1.209	18	1.212	20	792
450	1.251	14	1.236	15	1.227	18	1.232	18	810
460	1.265	13	1.251	16	1.245	17	1.250	18	828
470	1.278	13	1.267	15	1.262	17	1.268	18	846
480	1.291	13	1.282	15	1.279	17	1.286	18	864
490	1.304	13	1.297	14	1.296	16	1.304	18	882
500	1.317	13	1.311	14	1.312	15	1.322	15	900
510	1.330	12	1.325	14	1.327	15	1.337	14	918
520	1.342	13	1.339	14	1.342	14	1.351	15	936
530	1.355	12	1.353	13	1.356	15	1.366	15	954
540	1.367	12	1.366	13	1.371	14	1.381	15	972
550	1.379	12	1.379	13	1.385	14	1.396	15	990
560	1.391	12	1.392	13	1.399	14	1.411	15	1008
570	1.403	11	1.405	13	1.413	13	1.426	14	1026
580	1.414	12	1.418	12	1.426	13	1.440	14	1044
590	1.426	12	1.430	13	1.439	13	1.454	13	1062
600	1.438	11	1.443	12	1.452	13	1.467	13	1080
610	1.449	11	1.455	12	1.465	13	1.480	13	1098
620	1.460	12	1.467	12	1.478	12	1.493	13	1116
630	1.472	11	1.479	11	1.490	13	1.506	13	1134
640	1.483	11	1.490	12	1.503	12	1.519	12	1152
650	1.494	10	1.502	11	1.515	11	1.531	12	1170
660	1.504	11	1.513	12	1.526	12	1.543	12	1188
670	1.515	11	1.525	11	1.538	12	1.555	12	1206
680	1.526	11	1.536	11	1.550	11	1.567	12	1224
690	1.537	10	1.547	11	1.561	12	1.579	11	1242
700	1.547	11	1.558	11	1.573	11	1.590	12	1260
710	1.558	10	1.569	11	1.584	11	1.602	11	1278
720	1.568	11	1.580	11	1.595	11	1.613	11	1296
730	1.579	10	1.591	10	1.606	11	1.624	11	1314
740	1.589	10	1.601	11	1.617	11	1.635	11	1332
750	1.599	10	1.612	10	1.628	10	1.646	11	1350
760	1.609	10	1.622	11	1.638	11	1.657	11	1368
770	1.619	10	1.633	10	1.649	10	1.668	11	1386
780	1.629	10	1.643	10	1.659	11	1.679	10	1404
790	1.639	10	1.653	10	1.670	10	1.689	10	1422
800	1.649		1.663		1.680		1.699		1440

Table 4-7. SOUND VELOCITY AT LOW FREQUENCY IN CARBON DIOXIDE - Cont. a/a_0

°K	10 atm		40 atm		70 atm		100 atm		°R
800	1.649	49	1.663	50	1.680	50	1.699	50	1440
850	1.698	47	1.713	48	1.730	48	1.749	49	1530
900	1.745	46	1.761	46	1.778	47	1.798	47	1620
950	1.791	44	1.807	45	1.825	46	1.845	45	1710
1000	1.835	44	1.852	44	1.871	44	1.890	45	1800
1050	1.879	43	1.896	43	1.915	43	1.935	43	1890
1100	1.922	41	1.939	42	1.958	42	1.978	42	1980
1150	1.963	41	1.981	41	2.000	41	2.020	40	2070
1200	2.004	40	2.022	40	2.041	40	2.060	40	2160
1250	2.044	39	2.062	39	2.081	39	2.100	40	2250
1300	2.083	39	2.101	39	2.120	39	2.140	38	2340
1350	2.122	38	2.140	38	2.159	38	2.178	38	2430
1400	2.160	37	2.178	37	2.197	37	2.216	37	2520
1450	2.197	36	2.215	37	2.234	37	2.253	37	2610
1500	2.233		2.252		2.271		2.290		2700

Table 4-8. VISCOSITY OF CARBON DIOXIDE AT ATMOSPHERIC PRESSURE

°K	η/η_0		°R	°K	η/η_0		°R	°K	η/η_0		°R
190	.7002	373	342								
200	.7375	370	360	700	2.199	23	1260	1200	3.218	18	2160
210	.7745	366	378	710	2.222	23	1278	1210	3.236	18	2178
220	.8111	363	396	720	2.245	23	1296	1220	3.254	18	2196
230	.8474	359	414	730	2.268	23	1314	1230	3.272	17	2214
240	.8833	356	432	740	2.291	23	1332	1240	3.289	17	2232
250	.9189	353	450	750	2.314	22	1350	1250	3.306	18	2250
260	.9542	349	468	760	2.336	22	1368	1260	3.324	18	2268
270	.9891	35	486	770	2.358	22	1386	1270	3.342	17	2286
280	1.024	34	504	780	2.380	23	1404	1280	3.359	18	2304
290	1.058	33	522	790	2.403	22	1422	1290	3.377	17	2322
300	1.091	34	540	800	2.425	21	1440	1300	3.394	18	2340
310	1.125	33	558	810	2.446	22	1458	1310	3.412	18	2358
320	1.158	33	576	820	2.468	22	1476	1320	3.430	17	2376
330	1.191	33	594	830	2.490	21	1494	1330	3.447	18	2394
340	1.224	32	612	840	2.511	21	1512	1340	3.465	18	2412
350	1.256	31	630	850	2.532	22	1530	1350	3.483	17	2430
360	1.287	31	648	860	2.554	21	1548	1360	3.500	18	2448
370	1.318	31	666	870	2.575	21	1566	1370	3.518	17	2466
380	1.349	31	684	880	2.596	21	1584	1380	3.535	18	2484
390	1.380	30	702	890	2.617	20	1602	1390	3.553	17	2502
400	1.410	30	720	900	2.637	21	1620	1400	3.570	17	2520
410	1.440	30	738	910	2.658	20	1638	1410	3.587	17	2538
420	1.470	29	756	920	2.678	21	1656	1420	3.604	17	2556
430	1.499	29	774	930	2.699	20	1674	1430	3.621	17	2574
440	1.528	29	792	940	2.719	21	1692	1440	3.638	16	2592
450	1.557	28	810	950	2.740	20	1710	1450	3.654	17	2610
460	1.585	28	828	960	2.760	20	1728	1460	3.671	17	2628
470	1.613	28	846	970	2.780	20	1746	1470	3.688	16	2646
480	1.641	28	864	980	2.800	20	1764	1480	3.704	17	2664
490	1.669	28	882	990	2.820	20	1782	1490	3.721	16	2682
500	1.697	27	900	1000	2.840	19	1800	1500	3.737	17	2700
510	1.724	26	918	1010	2.859	19	1818	1510	3.754	16	2718
520	1.750	27	936	1020	2.878	19	1836	1520	3.770	17	2736
530	1.777	27	954	1030	2.897	18	1854	1530	3.787	17	2754
540	1.804	26	972	1040	2.915	19	1872	1540	3.804	16	2772
550	1.830	26	990	1050	2.934	19	1890	1550	3.820	17	2790
560	1.856	26	1008	1060	2.953	19	1908	1560	3.837	17	2808
570	1.882	26	1026	1070	2.972	19	1926	1570	3.854	16	2826
580	1.908	25	1044	1080	2.991	19	1944	1580	3.870	17	2844
590	1.933	25	1062	1090	3.010	19	1962	1590	3.887	16	2862
600	1.958	25	1080	1100	3.029	19	1980	1600	3.903	16	2880
610	1.983	25	1098	1110	3.048	19	1998	1610	3.919	16	2898
620	2.008	24	1116	1120	3.067	18	2016	1620	3.935	16	2916
630	2.032	24	1134	1130	3.085	19	2034	1630	3.951	16	2934
640	2.056	24	1152	1140	3.104	19	2052	1640	3.967	16	2952
650	2.080	25	1170	1150	3.123	19	2070	1650	3.983	16	2970
660	2.105	24	1188	1160	3.142	19	2088	1660	3.999	15	2988
670	2.129	24	1206	1170	3.161	19	2106	1670	4.014	16	3006
680	2.153	23	1224	1180	3.180	19	2124	1680	4.030	16	3024
690	2.176	23	1242	1190	3.199	19	2142	1690	4.046	16	3042
700	2.199		1260	1200	3.218		2160	1700	4.062		3060

Table 4-9. THERMAL CONDUCTIVITY OF CARBON DIOXIDE AT ATMOSPHERIC PRESSURE

°K	k/k_0		°R
180	.567	43	324
190	.610	49	342
200	.659	40	360
210	.699	44	378
220	.743	48	396
230	.791	46	414
240	.837	49	432
250	.886	49	450
260	.935	49	468
270	.984	51	486
280	1.035	52	504
290	1.087	52	522
300	1.139	52	540
310	1.191	51	558
320	1.242	55	576
330	1.297	55	594
340	1.352	54	612
350	1.406	58	630
360	1.464	54	648
370	1.518	58	666
380	1.576	58	684
390	1.634	57	702
400	1.691		720

°K	k/k_0		°R
400	1.691	61	720
410	1.752	60	738
420	1.812	57	756
430	1.869	61	774
440	1.930	60	792
450	1.990	63	810
460	2.053	61	828
470	2.114	63	846
480	2.177	63	864
490	2.240	64	882
500	2.304	63	900
510	2.367	63	918
520	2.430	66	936
530	2.496	66	954
540	2.562	64	972
550	2.626	66	990
560	2.692	69	1008
570	2.761	66	1026
580	2.827	66	1044
590	2.893	69	1062
600	2.962		1080

Table 4-10. PRANDTL NUMBER OF CARBON DIOXIDE AT ATMOSPHERIC PRESSURE $\eta C_p/k$

°K	(N_{Pr})		$(N_{Pr})^{2/3}$		$(N_{Pr})^{1/3}$		$(N_{Pr})^{1/2}$		°R
220	.818	-11	.875	-8	.935	-4	.905	-6	396
230	.807	- 7	.867	-5	.931	-3	.899	-5	414
240	.800	- 7	.862	-5	.928	-3	.894	-4	432
250	.793	- 5	.857	-4	.925	-1	.890	-2	450
260	.788	- 4	.853	-3	.924	-2	.888	-2	468
270	.784	- 5	.850	-3	.922	-2	.886	-3	486
280	.779	- 4	.847	-3	.920	-1	.883	-3	504
290	.775	- 5	.844	-4	.919	-2	.880	-2	522
300	.770	- 2	.840	-1	.917	-2	.878	-3	540
310	.768	- 3	.839	-2	.915	-1	.875	-1	558
320	.765	- 4	.837	-3	.914	-1	.874	-2	576
330	.761	- 3	.834	-3	.913	-1	.872	-1	594
340	.758	- 3	.831	-2	.912	-1	.871	-2	612
350	.755	- 4	.829	-3	.911	-2	.869	-2	630
360	.751	- 3	.826	-2	.909	-1	.867	-2	648
370	.748	- 4	.824	-3	.908	-2	.865	-2	666
380	.744	- 3	.821	-2	.906	-1	.863	-2	684
390	.741	- 3	.819	-2	.905	-1	.861	-2	702
400	.738	- 4	.817	-3	.904	-2	.859	-2	720
410	.734	- 4	.814	-3	.902	-2	.857	-2	738
420	.730	- 3	.811	-2	.900	-1	.855	-2	756
430	.727	- 3	.809	-3	.899	-1	.853	-2	774
440	.724	- 3	.806	-3	.898	-1	.851	-2	792
450	.721	- 4	.803	-2	.897	-2	.849	-2	810
460	.717	- 4	.801	-3	.895	-2	.847	-3	828
470	.713	- 4	.798	-3	.893	-1	.844	-2	846
480	.709	- 3	.795	-3	.892	-2	.842	-2	864
490	.706	- 4	.792	-2	.890	-1	.840	-2	882
500	.702	- 3	.790	-3	.889	-2	.838	-2	900
510	.699	- 3	.787	-2	.887	-1	.836	-2	918
520	.696	- 4	.785	-3	.886	-1	.834	-1	936
530	.692	- 4	.782	-2	.885	-2	.833	-3	954
540	.688	- 3	.780	-3	.883	-1	.830	-2	972
550	.685	- 3	.777	-2	.882	-2	.828	-2	990
560	.682	- 4	.775	-3	.880	-1	.826	-3	1008
570	.678	- 3	.772	-3	.879	-2	.823	-2	1026
580	.675	- 3	.769	-2	.877	-1	.821	-2	1044
590	.672	- 4	.767	-3	.876	-2	.819	-2	1062
600	.668		.764		.874		.817		1080

Table 4-11. VAPOR PRESSURE OF LIQUID CARBON DIOXIDE

T	$Log_{10}P$ (mmHg)*		P	P	T
°K			mm Hg	atm	°R
216	(3.5788) **	189	(3791.)	(4.988)	388.8
217	3.5977	187	3960.	5.210	390.6
218	3.6164	185	4134.	5.440	392.4
219	3.6349	183	4314.	5.677	394.2
220	3.6532	182	4500.	5.922	396.0
221	3.6714	179	4692.	6.174	397.8
222	3.6893	178	4890.	6.434	399.6
223	3.7071	176	5094.	6.703	401.4
224	3.7247	174	5304.	6.979	403.2
225	3.7421	172	5521.	7.264	405.0
226	3.7593	170	5744.	7.558	406.8
227	3.7763	169	5974.	7.861	408.6
228	3.7932	167	6211.	8.172	410.4
229	3.8099	165	6454.	8.492	412.2
230	3.8264	164	6705.	8.822	414.0
231	3.8428	162	6963.	9.162	415.8
232	3.8590	161	7227.	9.509	417.6
233	3.8751	159	7500.	9.868	419.4
234	3.8910	158	7780.	10.237	421.2
235	3.9068	156	8068.	10.616	423.0
236	3.9224	155	8363.	11.004	424.8
237	3.9379	153	8666.	11.403	426.6
238	3.9532	152	8978.	11.813	428.4
239	3.9684	150	9298.	12.234	430.2
240	3.9834	150	9625.	12.664	432.0
241	3.99836	1478	9962.	13.108	433.8
242	4.01314	1464	10307.	13.562	435.6
243	4.02778	1453	10661.	14.028	437.4
244	4.04231	1440	11023.	14.504	439.2
245	4.05671	1429	11395.	14.993	441.0
246	4.07100	1414	11776.	15.495	442.8
247	4.08514	1403	12166.	16.008	444.6
248	4.09917	1390	12565.	16.533	446.4
249	4.11307	1381	12974.	17.071	448.2
250	4.12688	1367	13393.	17.622	450.0
251	4.14055	1357	13821.	18.186	451.8
252	4.15412	1344	14260.	18.763	453.6
253	4.16756	1333	14708.	19.353	455.4
254	4.18089	1323	15167.	19.957	457.2
255	4.19412	1314	15636.	20.574	459.0
256	4.20726	1302	16116.	21.205	460.8
257	4.22028	1291	16607.	21.851	462.6
258	4.23319	1282	17108.	22.511	464.4
259	4.24601	1271	17620.	23.184	466.2
260	4.25872	1260	18143.	23.872	468.0
261	4.27132	1252	18678.	24.576	469.8
262	4.28384	1242	19224.	25.295	471.6
263	4.29626	1232	19782.	26.029	473.4
264	4.30858	1223	20351.	26.778	475.2

* Tabulated values in this column are for interpolation.

** Figures in parentheses are extrapolated to permit interpolation to the triple point.

Table 4-11. VAPOR PRESSURE OF LIQUID CARBON DIOXIDE - Cont.

T	$Log_{10}P$ (mmHg)*		P	P	T
°K			mm Hg	atm	°R
265	4.32081	1215	20932.	27.542	477.0
266	4.33296	1204	21526.	28.324	478.8
267	4.34500	1196	22131.	29.120	480.6
268	4.35696	1189	22749.	29.933	482.4
269	4.36885	1177	23380.	30.763	484.2
270	4.38062	1172	24023.	31.609	486.0
271	4.39234	1162	24680.	32.474	487.8
272	4.40396	1154	25349.	33.354	489.6
273	4.41550	1145	26032.	34.253	491.4
274	4.42695	1139	26727.	35.167	493.2
275	4.43834	1129	27437.	36.101	495.0
276	4.44963	1123	28160.	37.053	496.8
277	4.46086	1115	28897.	38.022	498.6
278	4.47201	1107	29649.	39.012	500.4
279	4.48308	1102	30414.	40.018	502.2
280	4.49410	1095	31196.	41.047	504.0
281	4.50505	1086	31993.	42.096	505.8
282	4.51591	1081	32803.	43.162	507.6
283	4.52672	1073	33629.	44.249	509.4
284	4.53745	1067	34471.	45.357	511.2
285	4.54812	1061	35328.	46.484	513.0
286	4.55873	1055	36202.	47.634	514.8
287	4.56928	1050	37092.	48.805	516.6
288	4.57978	1044	38000.	50.000	518.4
289	4.59022	1037	38924.	51.216	520.2
290	4.60059	1033	39865.	52.454	522.0
291	4.61092	1028	40824.	53.716	523.8
292	4.62120	1022	41802.	55.003	525.6
293	4.63142	1018	42798.	56.313	527.4
294	4.64160	1013	43813.	57.649	529.2
295	4.65173	1010	44847.	59.009	531.0
296	4.66183	1005	45902.	60.397	532.8
297	4.67188	1002	46976.	61.811	534.6
298	4.68190	997	48073.	63.254	536.4
299	4.69187	995	49189.	64.722	538.2
300	4.70182	992	50329.	66.222	540.0
301	4.71174	989	51492.	67.753	541.8
302	4.72163	987	52678.	69.313	543.6
303	4.73150	986	53889.	70.907	545.4
304	4.74136		55126.	72.534	547.2

* Tabulated values in this column are for interpolation.

Table 4-11/a. VAPOR PRESSURE OF SOLID CARBON DIOXIDE

T	$Log_{10}P$ (mmHg)*		P	P	T
°K			mm Hg	atm	°R
135	9.77-10	8	.59	.00078	243.0
136	9.85-10	8	.70	.00092	244.8
137	9.93-10	7	.84	.00111	246.6
138	.00	7	1.00	.00132	248.4
139	.075	69	1.18	.00155	250.2
140	.144	70	1.39	.00183	252.0
141	.214	69	1.63	.00214	253.8
142	.283	70	1.92	.00253	255.6
143	.353	66	2.25	.00296	257.4
144	.419	66	2.62	.00345	259.2
145	.485	66	3.05	.00401	261.0
146	.551	64	3.55	.00467	262.8
147	.615	63	4.12	.00542	264.6
148	.678	63	4.76	.00626	266.4
149	.741	61	5.50	.00724	268.2
150	.802	61	6.34	.00834	270.0
151	.863	60	7.29	.00959	271.8
152	.923	59	8.38	.01103	273.6
153	.982	59	9.60	.01263	275.4
154	1.0407	574	10.98	.01445	277.2
155	1.0981	567	12.53	.01649	279.0
156	1.1548	559	14.28	.01879	280.8
157	1.2107	554	16.24	.02137	282.6
158	1.2661	545	18.45	.02428	284.4
159	1.3206	536	20.91	.02751	286.2
160	1.3742	531	23.67	.03114	288.0
161	1.4273	524	26.74	.03518	289.8
162	1.4797	516	30.17	.03970	291.6
163	1.5313	510	33.98	.04471	293.4
164	1.5823	503	38.21	.05028	295.2
165	1.6326	496	42.91	.05646	297.0
166	1.6822	491	48.10	.06329	298.8
167	1.7313	485	53.86	.07087	300.6
168	1.7798	478	60.22	.07924	302.4
169	1.8276	473	67.24	.08847	304.2
170	1.8749	466	74.96	.09863	306.0
171	1.9215	461	83.46	.10982	307.8
172	1.9676	456	92.81	.12212	309.6
173	2.01317	4490	103.08	.13563	311.4
174	2.05807	4444	114.31	.15041	313.2
175	2.10251	4401	126.62	.16661	315.0
176	2.14652	4332	140.13	.18438	316.8
177	2.18984	4288	154.82	.20371	318.6
178	2.23272	4246	170.89	.22486	320.4
179	2.27518	4202	188.44	.24795	322.2
180	2.31720	4134	207.59	.27314	324.0
181	2.35854	4097	228.32	.30042	325.8
182	2.39951	4044	250.91	.33014	327.6
183	2.43995	4010	275.39	.36236	329.4
184	2.48005	3960	302.03	.39741	331.2

* Tabulated values in this column are for interpolation.

Table 4-11/a. VAPOR PRESSURE OF SOLID CARBON DIOXIDE - Cont.

T	$Log_{10}P$ (mmHg)*		P	P	T
°K			mm Hg	atm	°R
185	2.51965	3925	330.8	.4353	333.0
186	2.55890	3873	362.1	.4764	334.8
187	2.59763	3834	395.9	.5209	336.6
188	2.63597	3788	432.4	.5689	338.4
189	2.67385	3758	471.9	.6209	340.2
190	2.71143	3716	514.5	.6770	342.0
191	2.74859	3676	560.5	.7375	343.8
192	2.78535	3636	610.0	.8026	345.6
193	2.82171	3605	663.3	.8728	347.4
194	2.85776	3568	720.7	.9483	349.2
195	2.89344	3529	782.4	1.0295	351.0
196	2.92873	3498	848.6	1.1166	352.8
197	2.96371	3463	919.8	1.2103	354.6
198	2.99834	3430	996.1	1.3107	356.4
199	3.03264	3402	1078.0	1.4184	358.2
200	3.06666	3369	1165.8	1.5339	360.0
201	3.10035	3337	1259.9	1.6578	361.8
202	3.13372	3307	1360.5	1.7901	363.6
203	3.16679	3279	1468.2	1.9318	365.4
204	3.19958	3251	1583.3	2.0833	367.2
205	3.23209	3222	1706.4	2.2453	369.0
206	3.26431	3196	1837.8	2.4182	370.8
207	3.29627	3168	1978.1	2.6028	372.6
208	3.32795	3144	2127.8	2.7997	374.4
209	3.35939	3119	2287.6	3.0100	376.2
210	3.39058	3095	2457.9	3.2341	378.0
211	3.42153	3072	2639.5	3.4730	379.8
212	3.45225	3047	2833.0	3.7276	381.6
213	3.48272	3026	3038.9	3.9986	383.4
214	3.51298	3003	3258.2	4.2871	385.2
215	3.54301	2983	3491.4	4.5939	387.0
216	3.57284		3739.7	4.9207	388.8

* Tabulated values in this column are for interpolation.

Table 4-12. IDEAL-GAS THERMODYNAMIC FUNCTIONS FOR CARBON DIOXIDE

°K	$\frac{C_p^\circ}{R}$		$\frac{(H^\circ - E_0^\circ)^*}{RT_0}$		$\frac{S^\circ}{R}$		$\frac{-(F^\circ - E_0^\circ)}{RT}$		°R
50	3.5001	1	.6400	1281	19.0885	6381	15.5922	6375	90
60	3.5002	4	.7681	1281	19.7266	5396	16.2297	5391	108
70	3.5006	14	.8962	1282	20.2662	4675	16.7688	4670	126
80	3.5020	35	1.0244	1283	20.7337	4127	17.2358	4121	144
90	3.5055	73	1.1527	1284	21.1464	3696	17.6479	3686	162
100	3.5128	121	1.2811	1288	21.5160	3354	18.0165	3336	180
110	3.5249	183	1.4099	1294	21.8514	3074	18.3501	3048	198
120	3.5432	248	1.5393	1301	22.1588	2846	18.6549	2806	216
130	3.5680	315	1.6694	1312	22.4434	2656	18.9355	2602	234
140	3.5995	377	1.8006	1325	22.7090	2495	19.1957	2426	252
150	3.6372	432	1.9331	1339	22.9585	2361	19.4383	2274	270
160	3.6804	478	2.0670	1356	23.1946	2246	19.6657	2143	288
170	3.7282	518	2.2026	1374	23.4192	2145	19.8800	2026	306
180	3.7800	547	2.3400	1394	23.6337	2059	20.0826	1924	324
190	3.8347	569	2.4794	1414	23.8396	1981	20.2750	1832	342
200	3.8916	586	2.6208	1435	24.0377	1912	20.4582	1750	360
210	3.9502	595	2.7643	1457	24.2289	1852	20.6332	1677	378
220	4.0097	598	2.9100	1479	24.4141	1795	20.8009	1610	396
230	4.0695	601	3.0579	1501	24.5936	1745	20.9619	1550	414
240	4.1296	596	3.2080	1523	24.7681	1698	21.1169	1494	432
250	4.1892	592	3.3603	1544	24.9379	1654	21.2663	1444	450
260	4.2484	584	3.5147	1566	25.1033	1615	21.4107	1398	468
270	4.3068	575	3.6713	1587	25.2648	1577	21.5505	1355	486
280	4.3643	565	3.8300	1608	25.4225	1541	21.6860	1315	504
290	4.4208	555	3.9908	1629	25.5766	1508	21.8175	1278	522
300	4.4763	544	4.1537	1649	25.7274	1477	21.9453	1244	540
310	4.5307	533	4.3186	1668	25.8751	1447	22.0697	1212	558
320	4.5840	521	4.4854	1688	26.0198	1418	22.1909	1182	576
330	4.6361	510	4.6542	1706	26.1616	1391	22.3091	1153	594
340	4.6871	500	4.8248	1725	26.3007	1366	22.4244	1127	612
350	4.7371	488	4.9973	1744	26.4373	1341	22.5371	1102	630
360	4.7859	476	5.1717	1760	26.5714	1319	22.6473	1079	648
370	4.8335	466	5.3477	1778	26.7033	1295	22.7552	1056	666
380	4.8801	456	5.5255	1795	26.8328	1274	22.8608	1035	684
390	4.9257	447	5.7050	1812	26.9602	1252	22.9643	1014	702
400	4.9704	436	5.8862	1827	27.0854	1233	23.0657	996	720
410	5.0140	426	6.0689	1844	27.2087	1213	23.1653	977	738
420	5.0566	417	6.2533	1859	27.3300	1195	23.2630	960	756
430	5.0983	409	6.4392	1874	27.4495	1177	23.3590	943	774
440	5.1392	400	6.6266	1888	27.5672	1159	23.4533	927	792
450	5.1792	391	6.8154	1903	27.6831	1143	23.5460	912	810
460	5.2183	383	7.0057	1918	27.7974	1126	23.6372	897	828
470	5.2566	376	7.1975	1931	27.9100	1111	23.7269	883	846
480	5.2942	368	7.3906	1945	28.0211	1096	23.8152	870	864
490	5.3310	361	7.5851	1958	28.1307	1080	23.9022	856	882
500	5.3671	353	7.7809	1972	28.2387	1066	23.9878	844	900
510	5.4024	347	7.9781	1984	28.3453	1053	24.0722	832	918
520	5.4371	340	8.1765	1996	28.4506	1038	24.1554	820	936
530	5.4711	333	8.3761	2009	28.5544	1026	24.2374	809	954
540	5.5044	327	8.5770	2021	28.6570	1013	24.3183	798	972
550	5.5371	320	8.7791	2033	28.7583	1001	24.3981	788	990
560	5.5691	315	8.9824	2045	28.8584	988	24.4769	777	1008
570	5.6006	309	9.1869	2056	28.9572	977	24.5546	768	1026
580	5.6315	303	9.3925	2067	29.0549	966	24.6314	758	1044
590	5.6618	297	9.5992	2078	29.1515	953	24.7072	748	1062
600	5.6915		9.8070		29.2468		24.7820		1080

*The enthalpy function is divided here by a constant RT_0 where T_0 = 273.16°K (491.688°R).

Table 4-12. IDEAL-GAS THERMODYNAMIC FUNCTIONS FOR CARBON DIOXIDE - Cont.

°K	$\frac{C_p^\circ}{R}$		$\frac{(H^\circ - E_0^\circ)^*}{RT_0}$		$\frac{S^\circ}{R}$		$\frac{-(F^\circ - E_0^\circ)}{RT}$		°R
600	5.6915	292	9.8070	2089	29.2468	944	24.7820	740	1080
610	5.7207	287	10.0159	2100	29.3412	932	24.8560	731	1098
620	5.7494	281	10.2259	2110	29.4344	922	24.9291	722	1116
630	5.7775	277	10.4369	2120	29.5266	913	25.0013	715	1134
640	5.8052	272	10.6489	2130	29.6179	902	25.0728	706	1152
650	5.8324	267	10.8619	2140	29.7081	892	25.1434	698	1170
660	5.8591	262	11.0759	2150	29.7973	883	25.2132	691	1188
670	5.8853	257	11.2909	2159	29.8856	873	25.2823	683	1206
680	5.9110	253	11.5068	2169	29.9729	866	25.3506	677	1224
690	5.9363	248	11.7237	2177	30.0595	856	25.4183	669	1242
700	5.9611	244	11.9414	2187	30.1451	847	25.4852	662	1260
710	5.9855	239	12.1601	2196	30.2298	839	25.5514	656	1278
720	6.0094	235	12.3797	2204	30.3137	831	25.6170	649	1296
730	6.0329	230	12.6001	2213	30.3968	821	25.6819	642	1314
740	6.0559	227	12.8214	2221	30.4789	815	25.7461	637	1332
750	6.0786	223	13.0435	2229	30.5604	806	25.8098	630	1350
760	6.1009	219	13.2664	2238	30.6410	800	25.8728	625	1368
770	6.1228	214	13.4902	2245	30.7210	791	25.9353	618	1386
780	6.1442	211	13.7147	2253	30.8001	784	25.9971	613	1404
790	6.1653	207	13.9400	2261	30.8785	777	26.0584	608	1422
800	6.1860	204	14.1661	2268	30.9562	770	26.1192	602	1440
810	6.2064	200	14.3929	2276	31.0332	762	26.1794	596	1458
820	6.2264	196	14.6205	2283	31.1094	757	26.2390	592	1476
830	6.2460	193	14.8488	2290	31.1851	749	26.2982	586	1494
840	6.2653	190	15.0778	2297	31.2600	742	26.3568	581	1512
850	6.2843	186	15.3075	2304	31.3342	736	26.4149	576	1530
860	6.3029	183	15.5379	2311	31.4078	730	26.4725	572	1548
870	6.3212	180	15.7690	2318	31.4808	723	26.5297	566	1566
880	6.3392	177	16.0008	2324	31.5531	718	26.5863	563	1584
890	6.3569	173	16.2332	2330	31.6249	711	26.6426	557	1602
900	6.3742	171	16.4662	2337	31.6960	705	26.6983	553	1620
910	6.3913	167	16.6999	2342	31.7665	700	26.7536	549	1638
920	6.4080	164	16.9341	2349	31.8365	693	26.8085	544	1656
930	6.4244	162	17.1690	2355	31.9058	688	26.8629	540	1674
940	6.4406	159	17.4045	2361	31.9746	682	26.9169	536	1692
950	6.4565	156	17.6406	2366	32.0428	677	26.9705	532	1710
960	6.4721	153	17.8772	2373	32.1105	672	27.0237	528	1728
970	6.4874	151	18.1145	2377	32.1777	666	27.0765	524	1746
980	6.5025	148	18.3522	2383	32.2443	661	27.1289	520	1764
990	6.5173	145	18.5905	2389	32.3104	655	27.1809	516	1782
1000	6.5318	69	18.8294	1202	32.3759	320	27.2325	252	1800
1050	6.601	63	20.031	1214	32.696	309	27.485	244	1890
1100	6.664	59	21.245	1225	33.005	297	27.729	236	1980
1150	6.723	53	22.470	1236	33.302	287	27.965	228	2070
1200	6.776	50	23.706	1245	33.589	279	28.193	222	2160
1250	6.826	46	24.951	1254	33.868	268	28.415	215	2250
1300	6.872	41	26.205	1261	34.136	261	28.630	209	2340
1350	6.913	39	27.466	1269	34.397	252	28.839	203	2430
1400	6.952	36	28.735	1276	34.649	244	29.042	197	2520
1450	6.988	33	30.011	1282	34.893	238	29.239	193	2610
1500	7.021	61	31.293	2581	35.131	454	29.432	370	2700
1600	7.082	52	33.875	2603	35.585	431	29.802	353	2880
1700	7.134	46	36.478	2620	36.016	409	30.155	337	3060
1800	7.180	42	39.098	2636	36.425	390	30.492	323	3240
1900	7.222	36	41.734	2651	36.815	371	30.815	309	3420
2000	7.258		44.385		37.186		31.124		3600

* The enthalpy function is divided here by a constant RT_0 where $T_0 = 273.16°K$ (491.688°R).

Table 4-12. IDEAL-GAS THERMODYNAMIC FUNCTIONS FOR CARBON DIOXIDE - Cont.

°K	$\frac{C_p^\circ}{R}$		$\frac{(H^\circ - E_0^\circ)^*}{RT_0}$		$\frac{S^\circ}{R}$		$\frac{-(F^\circ - E_0^\circ)}{RT}$		°R
2000	7.258	33	44.385	2663	37.186	355	31.124	297	3600
2100	7.291	29	47.048	2675	37.541	340	31.421	286	3780
2200	7.320	27	49.723	2684	37.881	326	31.707	276	3960
2300	7.347	24	52.407	2694	38.207	313	31.983	266	4140
2400	7.371	22	55.101	2703	38.520	302	32.249	257	4320
2500	7.393	21	57.804	2710	38.822	290	32.506	248	4500
2600	7.414	19	60.514	2718	39.112	280	32.754	241	4680
2700	7.433	18	63.232	2724	39.392	271	32.995	233	4860
2800	7.451	17	65.956	2731	39.663	262	33.228	227	5040
2900	7.468	16	68.687	2737	39.925	253	33.455	220	5220
3000	7.484	15	71.424	2743	40.178	245	33.675	213	5400
3100	7.499	14	74.167	2748	40.423	239	33.888	208	5580
3200	7.513	13	76.915	2752	40.662	232	34.096	203	5760
3300	7.526	13	79.667	2758	40.894	224	34.299	197	5940
3400	7.539	12	82.425	2762	41.118	219	34.496	192	6120
3500	7.551	12	85.187	2767	41.337	213	34.688	188	6300
3600	7.563	12	87.954	2770	41.550	207	34.876	183	6480
3700	7.575	11	90.724	2776	41.757	202	35.059	179	6660
3800	7.586	11	93.500	2779	41.959	197	35.238	175	6840
3900	7.597	11	96.279	2783	42.156	193	35.413	171	7020
4000	7.608	10	99.062	2787	42.349	188	35.584	167	7200
4100	7.618	10	101.849	2791	42.537	184	35.751	164	7380
4200	7.628	10	104.640	2794	42.721	179	35.915	160	7560
4300	7.638	9	107.434	2798	42.900	176	36.075	158	7740
4400	7.647	10	110.232	2801	43.076	172	36.233	154	7920
4500	7.657	9	113.033	2805	43.248	169	36.387	151	8100
4600	7.666	10	115.838	2808	43.417	165	36.538	148	8280
4700	7.676	9	118.646	2812	43.582	161	36.686	145	8460
4800	7.685	9	121.458	2815	43.743	159	36.831	143	8640
4900	7.694	8	124.273	2818	43.902	155	36.974	140	8820
5000	7.702		127.091		44.057		37.114		9000

* The enthalpy function is divided here by a constant RT_0 where $T_0 = 273.16^\circ K$ (491.688°R).