

TABLE A - 1

Thermodynamic Properties of Saturated Water and Dry Saturated Steam (Pressure Basis)
(Datum for Enthalpy and Entropy 0°C)

p bar	t _s °C	v _f m ³ /kg	v _g m ³ /kg	h _f kJ/kg	h _{fg} kJ/kg	h _g kJ/kg	s _f kJ kg K	s _{fg} kJ kg K	s _g kJ kg K
0.00602	0	0.001002	206.2987	-0.0	2501.6	2501.6	-0.0	9.1578	9.1578
0.00611	0.01	0.0010002	206.1629	+0.0	2501.6	2501.6	0	9.1575	9.1575
0.010	6.98	0.001001	129.2107	29.3	2485.0	2514.4	0.1060	8.8706	8.9767
0.020	17.51	0.0010012	67.0116	73.5	2460.2	2533.6	0.2606	8.4640	8.7246
0.030	24.10	0.0010027	45.6700	101.0	2444.6	2545.6	0.3543	8.2342	8.5785
0.040	28.98	0.0010040	34.8033	121.4	2433.1	2554.5	0.4225	8.0530	8.4755
0.050	32.90	0.0010052	28.1945	137.8	2423.8	2561.6	0.4763	7.9197	8.3960
0.060	36.18	0.0010064	23.7406	151.5	2418.0	2567.5	0.5209	7.8103	8.3312
0.070	39.03	0.0010074	20.5304	163.4	2409.2	2572.6	0.5591	7.7176	8.2767
0.080	41.54	0.0010084	18.1038	173.9	2403.2	2577.1	0.5926	7.6370	8.2295
0.090	43.79	0.0010094	16.2034	183.3	2397.9	2581.1	0.6224	7.5657	8.1881
0.10	45.83	0.0010102	14.6737	191.8	2392.9	2584.8	0.6493	7.5018	8.1511
0.15	54.00	0.0010140	10.0221	226.0	2373.2	2599.2	0.7549	7.2544	8.0093
0.20	60.09	0.0010172	7.6492	251.5	2358.4	2609.9	0.8321	7.0773	7.9094
0.25	64.99	0.0010199	6.2040	272.0	2346.4	2618.3	0.8933	6.9390	7.8423
0.30	69.13	0.0010223	5.2290	289.3	2336.1	2625.4	0.9441	6.8254	7.7695
0.35	72.71	0.0010245	4.5255	304.3	2327.2	2631.5	0.9878	6.7288	7.7166
0.40	75.89	0.0010265	3.9932	317.7	2319.2	2636.9	1.0261	6.6448	7.6709
0.45	78.74	0.0010284	3.5761	329.6	2312.0	2641.7	1.0603	6.5703	7.6306
0.50	81.35	0.0010301	3.2401	340.6	2305.4	2646.0	1.0912	6.5035	7.5947
0.60	85.95	0.0010333	2.7317	359.9	2293.6	2653.6	1.1455	6.3872	7.5327
0.70	89.96	0.0010361	2.3647	376.8	2283.3	2660.1	1.1921	6.2883	7.4804
0.80	93.51	0.0010387	2.0869	391.7	2274.0	2665.8	1.2330	6.2022	7.4352
0.90	96.71	0.0010412	1.8691	405.2	2265.6	2670.9	1.2696	6.1258	7.3954
1.00	99.63	0.0010434	1.6937	417.5	2257.9	2675.4	1.3027	6.0571	7.3598
1.01325	100.00	0.0010437	1.6730	419.1	2256.9	2676.0	1.3069	6.0485	7.3554
1.20	104.81	0.0010476	1.4281	439.4	2241.1	2683.4	1.3609	5.9375	7.2984
1.40	109.32	0.0010513	1.2363	458.4	2231.9	2690.3	1.4109	5.8356	7.2465
1.60	113.32	0.0010547	1.0911	475.4	2220.9	2696.2	1.4550	5.7467	7.2017
1.80	116.93	0.0010579	0.9771	490.7	2210.8	2701.5	1.4944	5.6677	7.1622

TABLE A - 1 (Contd.)

p bar	t _s °C	v _f m ³ /kg	v _g m ³ /kg	h _f kJ/kg	h _{fg} kJ/kg	h _g kJ/kg	s _f kJ kg K	s _{fg} kJ kg K	s _g kJ kg K
2.00	120.23	0.0010608	0.88540	504.7	2201.6	2706.3	1.5301	5.5967	7.1268
2.50	127.43	0.0010676	0.71840	535.4	2281.0	2716.4	1.6072	5.4448	7.0520
3.00	135.54	0.0010735	0.60553	561.4	2163.2	2724.7	1.6717	5.3192	6.9909
3.50	138.88	0.0010789	0.52397	584.3	2147.3	2731.6	1.7273	5.2118	6.9392
4.00	143.63	0.0010839	0.46220	604.7	2132.9	2737.6	1.7764	5.1179	6.8943
4.50	147.92	0.0010885	0.41373	623.2	2119.7	2742.9	1.8204	5.0342	6.8547
5.00	151.85	0.0010928	0.37466	640.1	2107.4	2747.5	1.8604	4.9588	6.8192
6.00	158.84	0.0011009	0.31546	670.4	2085.0	2755.5	1.9308	4.8267	6.7575
7.00	164.96	0.0011082	0.27268	697.1	2064.9	2762.0	1.9918	4.7134	6.7052
8.00	170.41	0.0011150	0.24026	720.9	2046.5	2767.5	2.0457	4.6139	6.6596
9.00	175.36	0.0011213	0.21482	742.6	2029.5	2772.1	2.0941	4.5251	6.6192
10.00	179.88	0.0011274	0.19430	762.6	2013.6	2776.2	2.1382	4.4447	6.5828
11.00	184.06	0.0011331	0.17739	781.1	1998.6	2779.7	2.1786	4.3712	6.5498
12.00	187.96	0.0011386	0.16321	798.4	1984.3	2782.7	2.2160	4.3034	6.5194
13.00	191.60	0.0011438	0.15114	814.7	1970.7	2785.4	2.2509	4.2404	6.4913
14.00	195.04	0.0011489	0.14073	830.1	1957.7	2787.8	2.2836	4.1815	6.4651
15.00	198.28	0.0011538	0.13167	844.6	1945.3	2789.9	2.3144	4.1262	6.4406
16.00	201.37	0.0011586	0.12370	858.5	1933.2	2791.7	2.3436	4.0740	6.4176
17.00	204.30	0.0011633	0.11664	871.8	1921.6	2793.4	2.3712	4.0246	6.3958
18.00	207.11	0.0011678	0.11033	884.5	1910.3	2794.8	2.3976	3.9776	6.3751
19.00	209.79	0.0011723	0.10467	896.8	1899.3	2796.1	2.4227	3.9327	6.3555
20.00	212.37	0.0011766	0.099549	908.6	1888.7	2797.2	2.4468	3.8909	6.3377
25.00	223.94	0.0011972	0.079915	961.9	1839.0	2800.9	2.5542	3.6994	6.2537
30.00	233.84	0.0012163	0.066632	1008.3	1794.0	2802.3	2.6455	3.5383	6.1838
35.00	242.54	0.0012345	0.057028	1049.7	1752.2	2802.0	2.7252	3.3976	6.1229
40.00	250.33	0.0012521	0.049749	1087.4	1712.9	2800.3	2.7965	3.2720	6.0685
45.00	257.41	0.0012691	0.044035	1122.1	1675.6	2797.7	2.8612	3.1579	6.0191

TABLE A - 1 (Contd.)

p bar	t_s °C	v_f m ³ /kg	v_g m ³ /kg	h_f kJ/kg	h_{fg} kJ/kg	h_g kJ/kg	s_f kJ kg K	s_{fg} kJ kg K	s_g kJ kg K
80.00	263.92	0.0012858	0.039425	1154.5	1639.7	2794.2	2.9207	3.0528	5.9736
85.00	269.94	0.0013023	0.035624	1184.9	1605.0	2789.9	2.9758	2.9551	5.9309
90.00	275.56	0.0013187	0.032433	1213.7	1571.3	2785.0	3.0274	2.8633	5.8907
95.00	280.83	0.0013350	0.029714	1241.2	1538.3	2779.5	3.0760	2.7766	5.8526
100.00	285.80	0.0013514	0.027368	1267.5	1506.0	2773.4	3.1220	2.6941	5.8161
105.00	290.51	0.0013678	0.025323	1292.7	1474.1	2766.9	3.1658	2.6152	5.7810
110.00	294.98	0.0013843	0.023521	1317.2	1442.7	2759.9	3.2077	2.5393	5.7470
115.00	299.24	0.0014010	0.021923	1340.8	1411.6	2752.4	3.2480	2.4661	5.7141
120.00	303.31	0.0014179	0.020493	1363.8	1380.8	2744.6	3.2867	2.3952	5.6820
125.00	307.22	0.0014351	0.019206	1386.2	1350.2	2736.3	3.3242	2.3264	5.6506
130.00	310.96	0.0014526	0.018041	1408.1	1319.7	2727.7	3.3606	2.2592	5.6198
135.00	318.04	0.0014887	0.016007	1450.6	1258.8	2709.3	3.4304	2.1292	5.5596
140.00	324.64	0.0015267	0.014285	1491.7	1197.5	2689.2	3.4971	2.0032	5.5003
145.00	330.81	0.0015671	0.012800	1531.1	1135.1	2667.0	3.5614	1.8795	5.4409
150.00	336.63	0.0016105	0.011498	1571.5	1070.9	2642.4	3.6241	1.7564	5.3804
155.00	342.12	0.0016578	0.010343	1610.9	1004.2	2615.1	3.6857	1.6323	5.3180
160.00	347.32	0.0017102	0.0093099	1650.4	934.5	2584.9	3.7470	1.5063	5.2533
170.00	352.26	0.0017695	0.0083721	1691.6	860.0	2551.6	3.8106	1.3749	5.1856
180.00	356.96	0.0018399	0.0074973	1734.8	779.0	2513.9	3.8766	1.2362	5.1127
190.00	361.44	0.0019262	0.0066759	1778.7	691.8	2470.5	3.9430	1.0900	5.0330
200.00	365.71	0.0020374	0.0058745	1826.6	591.6	2418.2	4.0151	0.9259	4.9410
210.00	369.79	0.0022018	0.0050225	1886.3	461.2	2347.5	4.1049	0.7172	4.8222
220.00	373.68	0.0026675	0.0037347	2010.3	186.3	2196.6	4.2934	0.2881	4.5115
221.20	374.15	0.0031700	0.0051700	2107.4	0	2107.4	4.4429	0	4.4429

TABLE A - 2

Thermodynamic Properties of Saturated Water and Dry Saturated Steam (Temperature Basis)
(Datum for Enthalpy and Entropy 0°C)

t_s °C	p bar	v_f m^3/kg	v_g m^3/kg	h_f kJ/kg	h_{fg} kJ/kg	h_g kJ/kg	s_f kJ/kg K	s_{fg} kJ/kg K	s_g kJ/kg K
0	0.006017	0.0010002	206.299	-0.0	2501.6	2501.6	-0.0	9.1578	9.1578
0.01	0.006112	0.001002	206.163	+0.0	2501.6	2501.6	0	9.1575	9.1575
2	0.007055	0.0010001	179.923	8.4	2496.8	2505.2	0.0306	9.0741	9.1047
4	0.008129	0.0010000	157.272	16.8	2492.1	2508.9	0.0611	8.9915	9.0526
6	0.009345	0.0010000	137.780	25.2	2487.4	2512.6	0.0913	8.9102	9.0015
8	0.010720	0.0010001	120.966	33.6	2482.6	2516.2	0.1213	8.8300	8.9513
10	0.012270	0.0010003	106.430	42.0	2477.9	2519.9	0.1510	8.7510	8.9020
12	0.014014	0.0010004	93.835	50.4	2473.2	2523.6	0.1805	8.6731	8.8536
14	0.015973	0.0010007	82.900	58.8	2468.5	2527.2	0.2098	8.5963	8.8060
15	0.017039	0.0010008	77.978	62.9	2466.1	2529.1	0.2248	8.5382	8.7826
16	0.018168	0.0010010	73.384	67.1	2463.8	2530.9	0.2388	8.5205	8.7593
18	0.020624	0.0010013	65.087	75.5	2459.0	2534.5	0.2677	8.4458	8.7135
20	0.023366	0.0010017	57.838	83.9	2454.3	2538.2	0.2963	8.3721	8.6684
25	0.031660	0.0010029	43.402	104.8	2442.5	2547.3	0.3670	8.1922	8.5592
30	0.042415	0.0010043	32.929	125.7	2430.7	2556.4	0.4365	8.0181	8.4546
35	0.056216	0.0010060	25.245	146.6	2418.8	2565.4	0.5049	7.8495	8.3543
40	0.073750	0.0010078	19.546	167.5	2406.9	2574.4	0.5721	7.6861	8.2583
45	0.095820	0.0010099	15.276	188.4	2394.9	2583.3	0.6383	7.5277	8.1661
50	0.12335	0.0010121	12.046	209.3	2382.9	2592.2	0.7035	7.3741	8.0776
55	0.15741	0.0010145	9.5789	230.2	2370.8	2601.0	0.7677	7.2248	7.9925
60	0.19920	0.0010171	7.6785	251.1	2358.6	2609.7	0.8310	7.0798	7.9108
65	0.25009	0.0010199	6.2023	272.0	2346.3	2618.4	0.8933	6.9388	7.8321
70	0.31162	0.0010228	5.0463	293.0	2334.0	2626.9	0.9548	6.8017	7.7565
75	0.38549	0.0010259	4.1341	313.9	2321.5	2635.4	1.0154	6.6681	7.6835
80	0.47360	0.0010292	3.4091	334.9	2308.8	2643.8	1.0753	6.5380	7.6133
85	0.57803	0.0010326	2.8288	355.9	2296.1	2652.0	1.1343	6.4111	7.5454
90	0.70109	0.0010361	2.3613	376.9	2283.2	2660.1	1.1925	6.2873	7.4798
95	0.84526	0.0010399	1.9822	398.0	2270.2	2668.1	1.2501	6.1665	7.4166

TABLE A - 2 (Contd.)

t_s °C	P bar	v_f m ³ /kg	v_g m ³ /kg	h_f kJ/kg	h_{fg} kJ/kg	h_g kJ/kg	s_f kJ/kg K	s_{fg} kJ/kg K	s_g kJ/kg K
0	1.01325	0.0010437	1.6730	419.1	2256.9	2676.0	1.3069	6.0485	7.3554
5	1.2030	0.0010477	1.4198	440.2	2243.6	2683.7	1.3630	5.9331	7.2962
10	1.4327	0.0010519	1.2099	461.3	2230.0	2691.3	1.4185	5.8203	7.2388
15	1.6906	0.0010562	1.0363	482.5	2216.2	2698.7	1.4733	5.7099	7.1832
20	1.9854	0.0010606	0.89152	503.7	2202.2	2706.0	1.5276	5.6017	7.1293
25	2.3210	0.0010652	0.77023	525.0	2188.0	2713.0	1.5813	5.4957	7.0769
30	2.7013	0.0010700	0.66814	548.3	2173.6	2719.9	1.6344	5.3917	7.0261
35	3.1308	0.0010750	0.58181	567.7	2158.9	2726.6	1.6869	5.2897	6.9766
40	3.6138	0.0010801	0.50849	589.1	2144.0	2733.1	1.7390	5.1894	6.9284
45	4.1552	0.0010853	0.44597	610.6	2128.7	2739.3	1.7906	5.0910	6.8815
50	4.7600	0.0010908	0.39245	632.1	2113.2	2745.4	1.8416	4.9941	6.8358
55	5.4333	0.0010964	0.34644	653.8	2097.4	2751.2	1.8923	4.8989	6.7911
60	6.1806	0.0011022	0.30676	675.5	2081.3	2756.7	1.9425	4.8050	6.7475
65	7.0077	0.0011082	0.27240	697.3	2064.8	2762.0	1.9923	4.7125	6.7048
70	7.9202	0.0011145	0.24255	719.1	2047.9	2767.1	2.0416	4.6214	6.6630
75	8.9244	0.0011209	0.21654	741.1	2030.7	2771.8	2.0906	4.5314	6.6221
80	10.027	0.0011275	0.19380	763.1	2013.2	2776.3	2.1393	4.4426	6.5819
85	11.233	0.0011344	0.17386	785.3	1995.2	2780.4	2.1876	4.3548	6.5424
90	12.551	0.0011415	0.15632	807.5	1976.7	2784.3	2.2356	4.2680	6.5036
95	13.987	0.0011489	0.14084	829.9	1957.9	2787.8	2.2833	4.1821	6.4654
100	15.549	0.0011565	0.12716	852.4	1938.6	2790.9	2.3307	4.0971	6.4278
105	17.213	0.0011644	0.11503	875.0	1918.8	2793.8	2.3778	4.0128	6.3906
110	19.077	0.0011726	0.10424	897.7	1898.5	2796.2	2.4247	3.9293	6.3539
115	21.060	0.0011811	0.094625	920.6	1877.6	2798.3	2.4713	3.8463	6.3176
120	23.198	0.0011900	0.086038	943.7	1856.2	2799.9	2.5178	3.7639	6.2817
125	25.501	0.0011992	0.078349	966.9	1834.3	2801.2	2.5641	3.6820	6.2461
130	27.976	0.0012087	0.071450	990.3	1811.7	2802.0	2.6102	3.6006	6.2107
135	30.632	0.0012187	0.065245	1013.8	1788.5	2802.3	2.6561	3.5194	6.1756
140	33.478	0.0012291	0.059645	1037.6	1764.6	2802.2	2.7020	3.4386	6.1406
145	36.523	0.0012399	0.054606	1061.6	1740.0	2801.6	2.7478	3.3579	6.1057

TABLE A - 2 (Contd.)

t_s °C	p bar	v_f m ³ /kg	v_g m ³ /kg	h_f kJ/kg	h_{fg} kJ/kg	h_g kJ/kg	s_f kJ/kg K	s_{fg} kJ/kg K	s_g kJ/kg K
250	39.776	0.0012513	0.050037	1085.9	1714.7	2800.4	2.7935	3.2773	6.0708
255	43.246	0.0012632	0.045896	1110.2	1688.5	2798.7	2.8392	3.1968	6.0359
260	46.943	0.0012756	0.042130	1134.9	1661.5	2796.4	2.884	3.1161	6.0010
265	50.877	0.0012887	0.038710	1159.9	1633.5	2793.5	2.9306	3.0353	5.9658
270	55.058	0.0013025	0.035588	1185.2	1604.6	2789.9	2.9763	2.9541	5.9304
275	59.496	0.0013170	0.032736	1210.9	1574.7	2785.5	3.0222	2.8725	5.8947
280	64.202	0.0013324	0.030126	1236.8	1543.6	2780.4	3.0683	2.7903	5.8586
285	69.186	0.0013487	0.027733	1263.2	1511.3	2774.5	3.1146	2.7074	5.8220
290	74.461	0.0013659	0.025535	1290.0	1477.6	2767.6	3.1611	2.6237	5.7848
295	80.037	0.0013844	0.023513	1317.3	1442.6	2759.8	3.2079	2.5389	5.7469
300	85.927	0.0014041	0.021649	1345.1	1406.0	2751.0	3.2552	2.4529	5.7081
305	92.144	0.0014252	0.019927	1373.1	1367.7	2741.1	3.3029	2.3656	5.6685
310	98.700	0.0014480	0.018334	1402.4	1327.6	2730.0	3.3512	2.2766	5.6278
315	105.61	0.0014726	0.016856	1432.1	1285.5	2717.6	3.4002	2.1856	5.5858
320	112.89	0.0014995	0.015480	1462.6	1241.1	2703.7	3.4500	2.0923	5.5423
325	120.56	0.0015289	0.014195	1494.0	1194.0	2688.0	3.5006	1.9961	5.4969
330	128.63	0.0015615	0.012989	1526.5	1143.6	2670.2	3.5528	1.8962	5.4490
335	137.12	0.0015978	0.011854	1560.3	1089.5	2649.7	3.6063	1.7916	5.3979
340	146.05	0.0016387	0.010780	1595.5	1030.7	2626.2	3.6616	1.6811	5.3427
345	155.45	0.0016858	0.0097631	1632.5	966.4	2598.9	3.7193	1.5636	5.2628
350	165.35	0.0017411	0.0087991	1671.9	895.7	2567.7	3.7800	1.4376	5.2177
355	175.77	0.0018085	0.0078592	1716.6	813.8	2530.4	3.8489	1.2953	5.1442
360	186.75	0.0018959	0.0069398	1764.2	721.3	2485.4	3.9210	1.1390	5.0600
365	198.33	0.0020160	0.0060116	1818.0	610.0	2428.0	4.0021	0.9558	4.9579
370	210.54	0.0022136	0.0049728	1890.2	452.6	2342.8	4.1108	0.7036	4.8144
374	220.81	0.0028427	0.0034659	2046.7	109.5	2156.2	4.3493	0.1692	4.5185
374.15	221.20	0.00317	0.00317	2107.4	0	2107.4	4.4429	0	4.4429

TABLE A - 3
Properties of Superheated Steam
 (Specific Volume, v , m^3/kg ; Enthalpy, h , kJ/kg ; Entropy, s , $kJ/kg\ K$)

Abs. Press. bar (Sat. Temp. °C)		Temperature - degrees Celsius											
		50	100	150	200	250	300	350	400	500	600	700	800
17	v	74.524	86.080	97.628	109.171	120.711	132.251	143.790	155.329	178.405	201.482	224.558	247.634
	0.02 h	2594.4	2688.5	2783.7	2880.0	2977.7	3076.8	3177.7	3279.7	3489.2	3705.6	3928.8	4158.7
	(17.5) s	8.9266	9.1934	9.4327	9.6479	9.8441	10.0251	10.1934	10.3512	10.6413	10.9044	11.1464	11.3712
	v	37.240	43.027	48.806	54.580	60.351	66.122	71.892	77.662	89.201	100.740	112.078	123.816
	0.04 h	2593.9	2688.3	2783.5	2879.9	2977.6	3076.8	3177.4	3279.7	3489.2	3705.6	3928.8	4158.7
	(29.0) s	8.6016	8.8730	9.1125	9.3279	9.5241	9.7051	9.8735	10.0313	10.3214	10.5845	10.8265	11.0513
	v	24.812	28.676	32.532	37.383	40.232	44.079	47.927	51.773	59.467	67.159	74.852	82.544
	0.06 h	2593.5	2688.0	2783.4	2879.8	2977.6	3076.7	3177.4	3279.6	3489.2	3705.6	3928.8	4158.7
	(36.2) s	8.4135	8.6854	8.9251	9.1406	9.3369	9.5179	9.6863	9.8441	10.1342	10.3973	10.6394	10.8642
	v	18.598	21.501	24.395	27.284	30.172	33.058	35.944	38.829	44.599	50.369	56.138	61.908
	0.08 h	2593.1	2687.8	2783.2	2879.7	2977.5	3076.7	3177.3	3279.6	3489.1	3705.5	3928.8	4158.7
	(41.5) s	8.2797	8.5521	8.7921	9.0077	9.2041	9.3851	9.5535	9.7113	10.0014	10.2646	10.5066	10.7314
	v	14.869	17.195	19.512	21.825	24.136	26.445	28.754	31.062	35.679	40.295	44.910	49.526
	0.10 h	2592.7	2687.5	2783.1	2879.6	2977.4	3076.6	3177.3	3279.6	3489.1	3705.5	3928.8	4158.7
	(45.8) s	8.1754	8.4486	8.6888	8.9045	9.1010	9.2820	9.4504	9.6083	9.8984	10.1616	10.4036	10.6284
	v	—	3.4181	3.8893	4.3560	4.8205	5.2839	5.7467	6.2091	7.1335	8.0574	8.9810	9.9044
	0.50 h	—	2682.6	2780.1	2877.7	2976.1	3075.7	3176.6	3279.0	3488.7	3785.2	3928.8	4158.5
	(81.3) s	—	7.6953	7.9406	8.1587	8.3564	8.5380	8.7068	8.8649	9.1552	9.4185	9.6606	9.8855
	v	—	1.6955	1.9363	2.1723	2.4061	2.6387	2.8708	3.1025	3.5653	4.0277	4.4898	4.9517
	1.00 h	—	2676.2	2776.3	2875.4	2974.5	3074.5	3175.6	3278.2	3488.1	3704.8	3928.2	4158.3
	(99.6) s	—	7.3618	7.6137	7.8349	8.0342	8.2166	8.3858	8.5442	8.8348	9.0982	9.3405	9.5654
	v	—	—	0.95954	1.0804	1.1989	1.3162	1.4328	1.5492	1.7812	2.0129	2.2442	2.4754
	2.00 h	—	—	2768.5	2870.5	2971.2	3072.1	3173.8	3276.7	3487.0	3704.0	3927.6	4157.8
	(120.2) s	—	—	7.2794	7.5072	7.7096	7.8937	8.0688	8.2226	8.5139	8.7776	9.0201	9.2452

TABLE A - 3 (Contd.)

Abs. Press. bar (Sat. Temp. °C)		Temperature - degrees Celsius											
		50	100	150	200	250	300	350	400	500	600	700	800
18	v	—	—	—	—	—	—	—	—	—	—	—	—
	3.00 h	—	—	0.63374	0.71635	0.79644	0.87529	0.95352	1.0314	1.1865	1.3412	1.4957	1.6499
	(133.5) s	—	—	2760.4	2865.5	2967.9	3069.7	3171.9	3275.2	3486.0	3703.2	3927.0	4157.3
	v	—	—	7.0771	7.3119	7.5176	7.7034	7.8744	7.0338	8.3257	8.5898	8.8325	9.0577
	4.00 h	—	—	0.47066	0.53426	0.59519	0.65485	0.71385	0.7725	0.88919	1.0054	1.1214	1.2372
	(143.6) s	—	—	2752.0	2860.4	2964.5	3067.2	3170.0	3273.6	3484.9	3702.3	3926.4	4156.9
	v	—	—	6.9285	7.1708	7.3800	7.5675	7.7395	7.8994	8.1919	8.4563	8.6992	8.9246
	5.00 h	—	—	—	0.47496	0.47443	0.52258	0.57005	0.61716	0.71078	0.80395	0.89685	0.98956
	(151.8) s	—	—	—	2855.1	2961.1	3064.8	3168.1	3272.1	3483.8	3701.5	3925.8	4156.4
	v	—	—	—	7.0592	7.2721	7.4614	7.6343	7.7948	8.0879	8.3626	8.5957	8.8213
19	6.00 h	—	—	—	0.35204	0.39391	0.43439	0.47419	0.51361	0.59184	0.66963	0.74714	0.82447
	(158.8) s	—	—	—	2849.7	2951.6	3062.3	3166.2	3270.6	3482.7	3700.7	3925.1	4155.9
	v	—	—	—	6.9662	7.1829	7.3740	7.5479	7.7090	8.0027	8.2678	8.5111	8.7368
	7.00 h	—	—	—	0.29992	0.33637	0.37139	0.40571	0.43964	0.50689	0.57368	0.64021	0.70655
	(165.0) s	—	—	—	2844.2	2954.0	3059.8	3164.3	3269.0	3481.6	36999	3924.5	4155.5
	v	—	—	—	6.8859	7.1066	7.2997	7.4745	7.6362	7.9305	8.1959	8.4395	8.6653
	8.00 h	—	—	—	0.26079	0.29321	0.32414	0.35434	0.38416	0.44317	0.50172	0.56001	0.61811
	(170.4) s	—	—	—	2838.6	2950.4	3057.3	3162.4	3267.5	3480.5	3699.1	3923.9	4155.0
	v	—	—	—	6.8148	7.0397	7.2348	7.4107	7.5729	7.8678	8.1336	8.3773	8.6033
	9.00 h	—	—	—	0.23032	0.25963	0.28739	0.31440	0.34101	0.39361	0.44576	0.49763	0.54933
20	(175.4) s	—	—	—	2832.7	2946.8	3054.7	3160.5	3266.0	3479.4	3698.2	3923.3	4154.5
	v	—	—	—	6.7508	6.9800	7.1771	7.3540	7.5169	7.8124	8.0785	8.2734	8.4997
	10.00 h	—	—	—	0.20592	0.23275	0.25798	0.28243	0.30649	0.35396	0.40098	0.44778	0.49430
	(179.9) s	—	—	—	2826.8	2943.0	3052.1	3158.5	3264.4	3478.3	3697.4	3922.7	4154.1
	v	—	—	—	6.6922	6.9259	7.1251	7.3031	7.4665	7.7627	8.0292	8.2734	8.4997

TABLE A - 3 (Contd.)

Abs. Press. bar (Sat. Temp. °C)		Temperature - degrees Celsius											
		50	100	150	200	250	300	350	400	500	600	700	800
19	v	—	—	—	0.13238	0.15199	0.16970	0.18653	0.20292	0.23503	0.26666	0.29803	0.32921
	15.00 h	—	—	—	2794.7	2923.5	3038.9	3148.7	3256.6	3472.8	3693.8	3919.6	4151.7
	(198.3) s	—	—	—	6.4508	6.7099	6.9207	7.1044	7.2709	7.5703	7.8385	8.0838	8.3108
	v	—	—	—	—	0.11145	0.12550	0.13866	0.15113	0.17555	0.19950	0.22317	0.24666
	20.00 h	—	—	—	—	2902.4	3025.0	3138.6	3248.7	3467.3	3689.2	3916.5	4149.4
	(212.4) s	—	—	—	—	6.5454	6.7696	6.9596	7.1296	7.4323	7.7022	7.9485	8.1763
	v	—	—	—	—	0.086985	0.098925	0.10975	0.12004	0.13987	0.15921	0.17826	0.19714
	25.00 h	—	—	—	—	2879.5	3010.4	3128.2	3240.7	3461.7	3685.1	3913.4	4147.0
	(223.9) s	—	—	—	—	6.4077	6.6470	6.8442	7.0178	7.3240	7.5956	7.8431	8.0716
	v	—	—	—	—	0.070551	0.081159	0.090526	0.099310	0.11608	0.13234	0.14832	0.16412
	30.00 h	—	—	—	—	2854.8	2995.1	3117.5	3232.5	3456.5	3681.0	3910.3	4144.7
	(233.8) s	—	—	—	—	6.2857	6.5422	6.7471	6.9246	7.2345	7.5079	7.7564	7.9857
	v	—	—	—	—	0.058693	0.068424	0.076776	0.084494	0.099088	0.11315	0.12694	0.14054
	35.00 h	—	—	—	—	2828.1	2979.0	3106.5	3224.2	3450.6	3676.9	3907.2	4142.4
	(242.5) s	—	—	—	—	6.1732	6.4491	6.6626	6.8443	7.1580	7.4332	7.6828	7.9128
	v	—	—	—	—	—	0.058833	0.066446	0.073376	0.086341	0.098763	0.11090	0.12285
	40.00 h	—	—	—	—	—	2962.0	3095.1	3215.7	3445.0	3672.8	3904.1	4140.0
	(250.3) s	—	—	—	—	—	6.3642	6.5870	6.7733	7.0909	7.3680	7.6187	7.8495
	v	—	—	—	—	—	0.051336	0.058696	0.064721	0.076427	0.087570	0.098425	0.10910
	45.00 h	—	—	—	—	—	2944.2	3083.3	3207.1	3439.3	3668.6	3901.0	4137.7
	(257.4) s	—	—	—	—	—	6.2852	6.5182	6.7093	7.0311	7.3100	7.5619	7.7934

TABLE A - 3 (Contd.)

Abs. Press. bar (Sat. Temp. °C)		50	100	150	200	250	Temperature - degrees Celsius						
							300	350	400	500	600	700	800
20	v	—	—	—	—	—	—	—	—	—	—	—	—
	50.00 h	—	—	—	—	—	0.045301	0.057941	0.057791	0.068494	0.078616	0.088446	0.098093
	(263.9) s	—	—	—	—	—	2925.5	3071.2	3198.3	3433.7	3664.5	3897.9	4135.3
	v	—	—	—	—	—	6.2105	6.4545	6.6508	6.9770	7.2578	7.5108	7.7431
	60.00 h	—	—	—	—	—	0.036145	0.042222	0.047379	0.056592	0.065184	0.073478	0.081587
	(275.6) s	—	—	—	—	—	2885.0	3045.8	3180.1	3422.2	3656.2	3891.7	4130.7
	v	—	—	—	—	—	6.0692	6.3386	6.5462	6.8818	7.1664	7.4217	7.6554
	70.00 h	—	—	—	—	—	0.029457	0.035233	0.039922	0.048086	0.055590	0.062787	0.069798
	(285.8) s	—	—	—	—	—	2839.4	3018.7	3161.2	3410.6	3647.9	3885.4	4126.0
	v	—	—	—	—	—	5.9327	6.2333	6.4536	6.7993	7.0880	7.3456	7.5808
	80.00 h	—	—	—	—	—	0.024264	0.029948	0.034310	0.041704	0.048394	0.054770	0.060956
	(295.0) s	—	—	—	—	—	2786.8	2989.9	3141.6	3398.8	3639.5	3879.2	4121.5
30	v	—	—	—	—	—	5.7942	6.1349	6.3694	6.7262	7.0191	7.2790	7.5158
	90.00 h	—	—	—	—	—	—	0.025792	0.02929	0.036737	0.042798	0.048534	0.054080
	(303.3) s	—	—	—	—	—	—	2959.0	3121.2	3386.8	3631.1	3873.0	4116.7
	v	—	—	—	—	—	—	6.0408	6.2915	6.6600	6.9574	7.2196	7.4579
	100.00 h	—	—	—	—	—	—	0.022421	0.026408	0.032760	0.038320	0.043546	0.048580
	(311.0) s	—	—	—	—	—	—	2925.8	3099.9	3374.6	3622.7	3866.8	4112.0
	v	—	—	—	—	—	—	5.9489	6.2182	6.5994	6.9013	7.1660	7.4058
	125.00 h	—	—	—	—	—	—	0.016122	0.022001	0.025590	0.030259	0.034510	0.038682
	(327.8) s	—	—	—	—	—	—	2828.0	3042.9	3343.3	3601.4	3851.1	4100.3
	v	—	—	—	—	—	—	5.7155	6.0481	6.4654	6.7796	7.0504	7.2942
	150.00 h	—	—	—	—	—	—	0.011462	0.015661	0.020795	0.024884	0.028587	0.032086
	(342.1) s	—	—	—	—	—	—	2694.8	2979.1	3310.6	3579.8	3835.4	4088.6
								5.4467	5.8876	6.3487	6.6764	6.9536	7.2013

TABLE A - 3 (Contd.)

Abs. Press. bar (Sat. Temp. °C)		Temperature - degrees Celsius											
		50	100	150	200	250	300	350	400	500	600	700	800
v		—	—	—	—	—	—	—	0.012460	0.017359	0.021043	0.024314	0.027376
175.00 h		—	—	—	—	—	—	—	2906.3	3276.5	3557.6	3819.7	4077.0
(354.6) s		—	—	—	—	—	—	—	5.7274	6.2432	6.5858	6.8698	7.1215
v		—	—	—	—	—	—	—	0.0099470	0.014771	0.018161	0.021111	0.023845
200.00 h		—	—	—	—	—	—	—	2820.5	3241.1	3535.5	3803.8	4065.3
(365.7) s		—	—	—	—	—	—	—	5.5585	6.1456	6.5043	6.7953	7.0511
v		—	—	—	—	—	—	—	0.0028306	0.0086808	0.011436	0.013647	0.015619
300.00 h		—	—	—	—	—	—	—	2161.8	3085.0	3443.0	3739.7	4018.5
s		—	—	—	—	—	—	—	4.4896	5.7972	6.2340	6.5560	6.8288
v		—	—	—	—	—	—	—	0.0019091	0.0056156	0.0080884	0.0099302	0.011521
400.00 h		—	—	—	—	—	—	—	1934.1	2906.8	3346.4	3674.8	3971.7
s		—	—	—	—	—	—	—	4.1190	5.4762	6.0135	6.3701	6.6606
v		—	—	—	—	—	—	—	0.0017291	0.0038822	0.0061113	0.0077197	0.0090759
500.00 h		—	—	—	—	—	—	—	1877.7	2723.0	3248.3	3610.2	3925.3
s		—	—	—	—	—	—	—	4.0083	5.1782	5.8207	6.2138	6.5222
v		—	—	—	—	—	—	—	0.0016324	0.0029515	0.0048350	0.0062690	0.0074603
600.00 h		—	—	—	—	—	—	—	1847.3	2570.6	3151.6	3547.0	3879.6
s		—	—	—	—	—	—	—	3.9383	4.9374	5.6477	6.0775	6.4031
v		—	—	—	—	—	—	—	0.0015671	0.0024668	0.0039719	0.0052566	0.0063208
700.00 h		—	—	—	—	—	—	—	1827.8	2467.1	3060.4	3486.3	3835.3
s		—	—	—	—	—	—	—	3.8855	4.7688	5.4931	5.9562	6.2979

TABLE B - 3
Thermodynamic Properties of Saturated Freon - 12 (Dichlorodifluoromethane)
(Datum: $h_f = 0.0$ and $s_f = 0.0$ at -40°C)

Temp. $^\circ\text{C}$	Abs. Press. bar P	Specific Volume m^3/kg			Enthalpy kJ/kg			Entropy kJ/kg K		
		Sat. Liquid V_f	Evap. V_{fg}	Sat. Vapor V_g	Sat. Liquid h_f	Evap. h_{fg}	Sat. Vapor h_g	Sat. Liquid s_f	Evap. s_{fg}	Sat Vapor s_g
1	2	3	4	5	6	7	8	9	10	11
-90	0.028	0.000 608	4.414 937	4.415 545	-43.243	189.618	146.375	-0.2084	1.0352	0.8268
-85	0.042	0.000 612	3.036 704	3.037 316	-38.968	187.608	148.640	-0.1854	0.9970	0.8116
-80	0.062	0.000 617	2.137 728	2.138 345	-34.688	185.612	150.924	-0.1630	0.9609	0.7979
-75	0.088	0.000 622	1.537 030	1.537 651	-30.401	183.625	153.224	-0.1411	0.9266	0.7855
-70	0.123	0.000 627	1.126 654	1.127 280	-26.103	181.640	155.536	-0.1197	0.8940	0.7744
-65	0.168	0.000 632	0.840 534	0.841 166	-21.793	179.651	157.857	-0.0987	0.8630	0.7643
-60	0.226	0.000 637	0.637 274	0.637 910	-17.469	177.653	160.184	-0.0782	0.8334	0.7552
-55	0.300	0.000 642	0.490 358	0.491 000	-13.129	175.641	162.512	-0.0581	0.8051	0.7470
-50	0.391	0.000 648	0.382 457	0.383 105	- 8.772	173.611	164.840	-0.0384	0.7779	0.7396
-45	0.504	0.000 654	0.302 029	0.302 682	- 4.396	171.558	167.163	-0.0190	0.7519	0.7329
-40	0.642	0.000 659	0.241 252	0.241 910	- 0.000	169.479	169.479	-0.0000	0.7269	0.7269
-35	0.807	0.000 666	0.194 732	0.195 398	- 4.416	167.368	171.784	0.0187	0.7027	0.7214
-30	1.004	0.000 672	0.158 703	0.159 375	8.854	165.222	174.076	0.0371	0.6795	0.7165
-25	1.237	0.000 679	0.130 487	0.131 166	13.315	163.037	176.352	0.0552	0.6570	0.7121
-20	1.509	0.000 685	0.108 162	0.108 847	17.800	160.810	178.610	0.0730	0.6352	0.7082
-15	1.826	0.000 693	0.090 326	0.091 018	22.312	158.534	180.946	0.0906	0.6141	0.7046
-10	2.191	0.000 700	0.075 946	0.076 646	26.851	156.207	183.058	0.1079	0.5936	0.7014
- 5	2.610	0.000 708	0.064 255	0.064 963	31.420	153.823	185.243	0.1250	0.5736	0.6986
0	3.086	0.000 716	0.054 673	0.055 389	36.022	151.376	187.397	0.1418	0.5542	0.6960
5	3.626	0.000 724	0.046 761	0.047 485	40.659	148.859	189.518	0.1585	0.5351	0.6937
10	4.233	0.000 733	0.040 180	0.040 914	45.337	146.265	191.602	0.1750	0.5165	0.6916
15	4.914	0.000 743	0.034 671	0.035 413	50.058	143.586	193.644	0.1914	0.4983	0.6916
20	5.673	0.000 752	0.030 028	0.030 780	54.828	140.812	195.641	0.2076	0.4803	0.6879

TABLE B - 3 (Continued)

1	2	3	4	5	6	7	8	9	10	11
25	6.516	0.000 763	0.026 091	0.026 854	59.653	137.933	197.586	0.2237	0.4626	0.6863
30	7.449	0.000 774	0.022 734	0.023 508	64.539	134.936	199.475	0.2397	0.4451	0.6848
35	8.477	0.000 786	0.019 855	0.020 641	69.494	131.805	201.299	0.2557	0.4277	0.6834
40	9.607	0.000 798	0.017 373	0.018 171	74.527	128.525	203.051	0.2716	0.4104	0.6820
45	10.843	0.000 811	0.015 220	0.016 032	79.647	125.074	204.722	0.2875	0.3931	0.6806
50	12.193	0.000 826	0.013 344	0.014 170	84.868	121.430	206.298	0.3034	0.3758	0.6792
55	13.663	0.000 841	0.011 701	0.012 542	90.201	117.565	207.766	0.3194	0.3582	0.6777
60	15.259	0.000 858	0.010 253	0.011 111	95.665	113.443	209.109	0.3355	0.3405	0.6760
65	16.988	0.000 877	0.008 971	0.009 847	101.279	109.024	210.303	0.3518	0.3224	0.6742
70	18.858	0.000 897	0.007 828	0.008 725	107.067	104.255	211.321	0.3683	0.3038	0.6721
75	20.874	0.000 920	0.006 802	0.007 723	113.058	99.068	212.126	0.3851	0.2845	0.6697
80	23.046	0.000 946	0.005 875	0.006 821	119.291	93.373	212.665	0.4023	0.2644	0.6667
85	25.380	0.000 976	0.005 029	0.006 005	125.818	87.047	212.865	0.4201	0.2430	0.6631
90	27.885	0.001 012	0.004 246	0.005 258	132.708	79.907	212.614	0.4385	0.2200	0.6585
95	30.569	0.001 056	0.003 508	0.004 563	140.068	71.658	211.726	0.4579	0.1946	0.6526
100	33.440	0.001 113	0.002 790	0.003 903	148.076	61.768	209.843	0.4788	0.1655	0.6444
105	36.509	0.001 197	0.002 045	0.003 242	157.085	49.014	206.099	0.5023	0.1296	0.6319
110	39.784	0.001 364	0.001 098	0.002 462	168.059	28.425	196.484	0.5322	0.0742	0.6064
112	41.155	0.001 792	0.000 005	0.001 797	174.920	0.151	175.071	0.5651	0.0004	0.5655

TABLE B - 4
Thermodynamic Properties of Saturated Freon-11
(Datum: $h_f = s_f = 0.0$ at -40°C)

Temp. $^\circ\text{C}$	Abs. Press. bar P	Specific Volume m^3/kg		Enthalpy kJ/kg		Entropy kJ/kg K	
		Sat. liquid $v_f \times 10^3$	Sat. vapor v_g	Sat. liquid h_f	Sat. vapor h_g	Sat. liquid s_f	Sat. vapor s_g
-60	0.01279	0.6006	10.070	-16.56	194.16	-0.0743	0.9143
-50	0.02647	0.6084	5.094	- 8.33	199.07	-0.0366	0.8928
-40	0.050933	0.6164	2.763	0.00	204.06	0.0000	0.8752
-30	0.09206	0.6247	1.591	8.45	209.14	0.0355	0.8608
-28	0.1029	0.6264	1.434	10.15	210.16	0.0424	0.8583
-26	0.1149	0.6281	1.295	11.85	211.19	0.0494	0.8559
-24	0.1279	0.6298	1.172	13.56	212.22	0.0562	0.853
-22	0.1421	0.6316	1.062	15.28	213.25	0.0631	0.8514
-20	0.1576	0.6333	0.9647	16.99	213.64	0.0699	0.8492
-18	0.1745	0.6351	0.8778	18.71	215.31	0.0767	0.8472
-16	0.1928	0.6369	0.8001	20.44	216.25	0.0834	0.8453
-14	0.2126	0.6387	0.7305	22.16	217.39	0.0901	0.8433
-12	0.2341	0.6405	0.6681	23.68	218.43	0.0967	0.8416
-10	0.2573	0.6423	0.6120	25.63	219.47	0.1033	0.8399
- 8	0.2824	0.6441	0.5614	27.37	220.51	0.1099	0.8383
- 6	0.3093	0.6460	0.5159	29.11	221.55	0.1164	0.8368
- 4	0.3384	0.6480	0.4747	30.85	222.60	0.1229	0.8353
- 2	0.3695	0.6498	0.4374	32.60	223.64	0.1344	0.8339
0	0.4030	0.6517	0.4037	34.35	224.69	0.1358	0.832
2	0.4388	0.6536	0.3730	36.10	225.73	0.1472	0.8314
4	0.4771	0.6556	0.4351	37.85	226.78	0.1485	0.8302
6	0.5181	0.6576	0.3197	39.61	227.82	0.1548	0.8290
8	0.5687	0.6596	0.2966	41.57	228.87	0.1611	0.8280
10	0.6083	0.6616	0.2755	43.12	229.97	0.1673	0.8270
12	0.6579	0.6637	0.2661	44.89	230.95	0.1735	0.8260
14	0.7106	0.6657	0.2384	46.65	232.02	0.1796	0.8251
16	0.7666	0.6678	0.2222	48.42	234.12	0.1857	0.8243
18	0.8261	0.6700	0.2073	50.19	239.12	0.1918	0.8235
20	0.8891	0.6721	0.1936	51.96	235.12	0.1929	0.8227
30	1.263	0.6832	0.1397	60.87	240.32	0.2276	0.8196
40	1.748	0.6949	0.1030	69.85	245.45	0.2566	0.8174
50	2.366	0.7073	0.07752	78.99	250.95	0.2810	0.8160
60	3.138	0.7205	0.05932	88.81	255.95	0.3128	0.8151

TABLE B - 5
Thermodynamic Properties of Saturated Freon-21
(Datum: $h_f = s_f = 0.0$ at -40°C)

Temp. $^\circ\text{C}$	Abs. Press. bar P	Specific Volume m^3/kg		Enthalpy kJ/kg		Entropy kJ/kg K	
		Sat. liquid $v_f \times 10^3$	Sat. vapor v_g	Sat. liquid h_f	Sat. vapor h_g	Sat. liquid s_f	Sat. vapor s_g
-40	0.0954	0.6609	1.9607	0.00	261.59	0.000	1.1224
-30	0.1691	0.6702	1.1496	9.1	266.75	0.0382	1.0978
-28	0.1884	0.6721	1.0394	10.95	267.76	0.0452	1.0933
-26	0.2095	0.6741	0.9415	12.95	268.77	0.0533	1.089
-24	0.2324	0.6760	0.8544	14.67	269.77	0.0609	1.0847
-22	0.2575	0.6780	0.7768	16.57	270.79	0.0684	1.0806
-20	0.2847	0.6800	0.7074	18.46	271.8	0.0759	1.0766
-18	0.3142	0.6820	0.6458	20.37	272.8	0.0834	1.0728
-16	0.3451	0.6841	0.5896	22.29	273.81	0.0909	1.069
-14	0.3806	0.6861	0.5396	24.22	274.82	0.0983	1.0653
-12	0.4179	0.6882	0.4945	26.16	275.82	0.1058	1.0618
-10	0.4581	0.6903	0.4540	28.1	276.81	0.1132	1.0583
-8	0.5014	0.6924	0.4173	30.07	277.81	0.1207	1.055
-6	0.5479	0.6946	0.3842	32.05	278.81	0.1272	1.0517
-4	0.5978	0.6967	0.3542	34.03	279.8	0.1355	1.0486
-2	0.6513	0.6989	0.3269	36.03	280.79	0.1428	1.0425
0	0.7085	0.7012	0.3022	38.04	281.78	0.1502	1.0425
2	0.7697	0.7034	0.2797	40.06	282.76	0.1575	1.0396
4	0.8351	0.7057	0.2592	42.09	283.74	0.1644	1.0368
6	0.9047	0.7080	0.2405	44.13	284.71	0.1722	1.0341
8	0.9789	0.7103	0.2234	46.18	285.69	0.1795	1.0314
10	1.0578	0.7127	0.2077	48.24	286.65	0.1868	1.0288
12	1.1417	0.7151	0.1934	50.31	287.61	0.1941	1.0263
14	1.2306	0.7175	0.1803	52.39	288.54	0.2013	1.0238
16	1.3250	0.7199	0.1682	54.49	289.53	0.2085	1.0214
18	1.4248	0.7224	0.1571	56.58	290.47	0.2157	1.0191
20	1.5305	0.7249	0.1469	58.71	291.41	0.2229	1.0168
22	1.6422	0.7274	0.1375	60.81	292.35	0.2301	1.0146
24	1.7601	0.7300	0.1288	62.94	293.29	0.2373	1.0125
26	1.8844	0.7326	0.1207	65.08	294.21	0.2444	1.0104
28	2.0154	0.7352	0.1133	67.22	295.13	0.2515	1.0083
30	2.1534	0.7379	0.1066	69.37	296.04	0.2585	1.0044
40	2.9550	0.7518	0.0788	80.25	300.51	0.2947	1.9971
50	3.9655	0.7667	0.0595	91.3	304.8	0.3282	0.9889

Thermodynamic Properties of Saturated Carbon Dioxide

(Datum: $h_f = 0.0$ and $s_f = 0.0$ at -40°C)

Temp. $^\circ\text{C}$	Abs. Press. bar P	Specific Volume m^3/kg		Enthalpy kJ/kg			Entropy kJ/kg K		
		Sat. Liquid $v_f \times 10^3$	Sat. Vapor v_g	Sat. Liquid h_f	Evap. h_{fg}	Sat. Vapor h_g	Sat. Liquid s_f	Evap. s_{fg}	Sat. Vapor s_g
1	2	3	4	5	6	7	8	9	10
-100	.143	.6271	2.462	-286.83	585.14	298.31	-1.3349	3.3776	2.0427
-98	.178	.6278	2.034	-284.74	584.06	299.32	-1.3278	3.3345	2.0067
-96	.212	.6285	1.606	-282.65	582.97	300.32	-1.3207	3.2915	1.9707
-94	.263	.6295	1.345	-280.52	581.88	301.46	-1.3092	3.2496	1.9403
-92	.318	.6306	1.131	-278.17	580.79	302.63	-1.2964	3.2080	1.9115
-90	.373	.6317	.917	-275.91	579.71	303.80	-1.2836	3.1664	1.8828
-88	.469	.6331	.794	-273.65	578.62	304.97	-1.2713	3.1266	1.8553
-86	.566	.6344	.672	-271.39	577.53	306.14	-1.2589	3.0869	1.8279
-84	.669	.6358	.560	-269.09	576.37	307.28	-1.2466	3.0474	1.8008
-82	.796	.6371	.485	-266.66	574.94	308.28	-1.2342	3.0090	1.7748
-80	.923	.6385	.410	-264.24	573.52	309.28	-1.2219	2.9706	1.7487
-78.6	1.013	.6399	.358	-262.42	572.5	310.07	-1.2125	2.9421	1.7296
-78	1.068	.6400	.346	-261.70	571.99	310.29	-1.2091	2.9323	1.7231
-76	1.239	.6418	.295	-259.03	570.31	311.28	-1.1958	2.8940	1.6981
-74	1.447	.6436	.253	-256.52	568.64	312.12	-1.1823	2.8561	1.6737
-72	1.702	.6451	.217	-253.79	566.74	312.96	-1.1683	2.8181	1.6494
-70	2.001	.6466	.186	-250.90	564.64	313.75	-1.1541	2.7800	1.6259
-68	2.353	.6484	.159	-247.88	562.30	314.42	-1.1396	2.7414	1.6018
-66	2.732	.6498	.139	-244.57	559.51	314.94	-1.1238	2.7015	1.5777
-64	3.137	.6516	.121	-241.06	556.41	315.36	-1.1072	2.6613	1.5540
-62	3.572	.6538	.104	-237.38	553.05	315.67	-1.0900	2.6208	1.5307

TABLE B - 6 (Continued)

1	2	3	4	5	6	7	8	9	10
-60	4.068	.6561	.091	-233.70	549.53	315.84	-1.0722	2.5789	1.5066
-59	4.362	.6573	.085	-231.89	547.81	315.92	-1.0635	2.5583	1.4948
-58	4.713	.6587	.079	-230.13	546.14	316.01	-1.0549	2.5381	1.4832
-57	5.064	.6600	.074	-228.38	544.47	316.09	-1.0463	2.5179	1.4716
-56.6	5.181	.6611	.0722	-227.33	543.45	316.12	-1.0430	2.5099	1.4669
-56.0	5.181	.8490	.0722	- 31.84	347.96	316.12	- .1393	1.6062	1.4669
-55	5.551	.8527	.068	- 28.71	345.41	316.70	- .1259	1.5832	1.4572
-54	5.792	.8556	.065	- 26.73	343.64	316.91	- .1173	1.5687	1.4514
-53	6.041	.8581	.062	- 24.78	341.97	317.19	- .1084	1.5540	1.4456
-52	6.298	.8610	.060	- 23.01	340.57	317.56	- .0998	1.5395	1.4397
-51	6.563	.8643	.058	- 20.94	338.71	317.77	- .0915	1.5255	1.4340
-50	6.836	.8671	.055	- 19.06	337.04	317.98	- .0828	1.5108	1.4280
-49	7.118	.8694	.053	- 17.18	335.57	318.40	- .0748	1.4965	1.4223
-48	7.409	.8721	.051	- 15.29	333.92	318.63	- .0658	1.4825	1.4167
-47	7.708	.8749	.050	- 13.41	332.25	318.84	- .0575	1.4686	1.4110
-46	8.016	.8781	.048	- 11.53	330.58	319.05	- .0492	1.4549	1.4056
-45	8.333	.8812	.046	- 9.53	328.90	319.37	- .0410	1.4411	1.4001
-44	8.659	.8840	.044	- 7.53	327.23	319.70	- .0327	1.4274	1.3946
-43	8.994	.8870	.043	- 5.65	325.56	319.91	- .0250	1.4144	1.3894
-42	9.339	.8902	.041	- 3.77	323.88	320.12	- .0178	1.4019	1.3841
-41	9.693	.8931	.040	- 1.88	322.21	320.33	- .0079	1.3868	1.3789
-40	10.057	.8971	.038	0.00	320.53	320.53	0.0000	1.3744	1.3744
-38	10.819	.9027	.036	3.97	316.98	320.95	.0161	1.3480	1.3642
-36	11.622	.9088	.033	7.95	313.42	321.37	.0320	1.3224	1.3544
-34	12.432	.9163	.031	11.76	309.87	321.63	.0475	1.2967	1.3443
-32	13.364	.9238	.029	15.53	306.45	321.98	.0632	1.2714	1.3347
-30	14.293	.9311	.027	19.29	302.99	322.28	.0790	1.2462	1.3252
-28	15.275	.9384	.025	23.24	299.24	322.49	.0948	1.2209	1.3158

TABLE B - 6 (Continued)

	1	2	3	4	5	6	7	8	9	10
-26		16.305	.9459	.024	27.22	295.41	322.63	.1105	1.1957	1.3063
-24		17.385	.9539	.022	30.96	291.71	322.67	.1261	1.1705	1.2966
-22		18.515	.9623	.021	35.31	287.55	322.86	.1418	1.1453	1.2872
-20		19.698	.9707	.019	39.28	283.58	322.86	.1573	1.1204	1.2777
-18		20.943	.9797	.018	43.26	279.60	322.86	.1735	1.0952	1.2687
-16		22.242	.9887	.017	47.42	275.44	322.86	.1897	1.0700	1.2597
-14		23.599	.9986	.016	51.76	270.93	322.70	.2053	1.0453	1.2506
-12		25.016	1.0087	.015	56.16	266.33	322.49	.2215	1.0201	1.2416
-10		26.493	1.0191	.014	60.78	261.50	322.28	.2380	.9943	1.2324
-8		28.031	1.0301	.013	65.59	256.47	322.07	.2548	.9683	1.2231
-6		29.632	1.0417	.013	70.34	251.45	321.79	.2621	.9419	1.2141
-4		31.301	1.0541	.012	75.08	246.25	321.33	.2900	.9150	1.2050
-2		33.040	1.0671	.011	80.31	240.39	320.70	.3074	.8886	1.1960
0		34.839	1.0806	.010	85.54	234.53	320.07	.3255	.8614	1.1870
2		36.726	1.0952	.010	90.77	228.47	319.23	.3424	.8322	1.1757
4		38.678	1.1113	.009	94.51	223.70	318.21	.3607	.8029	1.1637
6		40.712	1.1825	.009	100.83	216.17	317.00	.3794	.7727	1.1522
8		42.824	1.1474	.008	106.97	208.64	315.61	.3983	.7426	1.1409
10		45.013	1.1671	.008	112.73	201.18	313.91	.4179	.7108	1.1288
12		47.285	1.1877	.007	118.68	193.06	311.75	.4383	.6773	1.1157
14		49.645	1.2106	.007	124.75	184.49	309.24	.4589	.6428	1.1017
16		52.093	1.2363	.006	130.91	175.68	306.59	.4799	.6067	1.0867
18		54.631	1.2658	.006	137.42	165.96	303.38	.5011	.5692	1.0703
20		57.268	1.2979	.005	144.11	155.50	299.62	.5230	.5296	1.0526
22		60.017	1.3355	.005	151.64	142.95	294.59	.5478	.4818	1.0297
24		62.871	1.3867	.004	159.92	127.42	287.34	.5753	.4286	1.0040
26		65.834	1.4552	.004	168.94	110.39	279.32	.6047	.3698	.9745
31.0		73.919	2.1557	.0022	225.70	0.00	225.70	.7865	0.0000	.7865

CHART-6
PSYCHROMETRIC CHART
NORMAL TEMPERATURES BAROMETRIC
PRESSURE 76 cm Hg

