Table 1 . . . . Thermodynamic Properties of *MOIST AIR*[a] (Standard Atmospheric Pressure, 29.921 in. Hg) (*Continued*)

Fahr. Temp. t(F)	Humidity Ratio $W_s \times 10^3$	Volume cu ft/lb dry air v_a	v_{aa}	v_s	Enthalpy Btu/lb dry air h_a	h_{aa}	h_s	Entropy Btu per (°F) (lb dry air) s_a	s_{aa}	s_s	Condensed Water Enthalpy Btu/Lb h_w	Entropy Btu per (°F)(Lb) s_w	Vap. Press in. Hg $p_s \times 10^3$	Fahr. Temp. t(F)
7	1.130	11.756	0.031	11.777	1.681	1.202	2.883	0.00364	0.00271	0.00635	−155.61	−0.3173	5.4223	7
8	1.159	11.781	0.022	11.803	1.922	1.356	3.188	0.00415	0.00265	0.00700	−156.12	−0.3163	5.6823	8
9	1.551	11.806	0.024	11.830	3.163	1.332	3.494	0.00457	0.00299	0.00756	−154.65	−0.3152	5.9778	9
10	1.315	11.831	0.025	11.856	2.403	1.401	3.803	0.00518	0.00314	0.00832	−154.17	−0.3141	6.2358	10
11	1.353	11.857	0.026	11.883	2.643	1.474	4.116	0.00560	0.00330	0.00899	−153.69	−0.3131	6.5085	11
12	1.454	11.883	0.028	11.910	2.882	1.550	4.433	0.00620	0.00346	0.00966	−153.21	−0.3121	6.8462	12
13	1.528	11.907	0.029	11.936	3.123	1.630	4.753	0.00671	0.00363	0.01034	−152.73	−0.3111	7.2297	13
14	1.606	11.933	0.030	11.963	3.363	1.713	5.076	0.00731	0.00380	0.01101	−152.24	−0.3100	7.6696	14
15	1.687	11.958	0.032	11.990	3.603	1.800	5.403	0.00772	0.00399	0.01171	−151.76	−0.3090	8.0565	15
16	1.773	11.983	0.034	12.017	3.843	1.892	5.735	0.00832	0.00418	0.01940	−151.27	−0.3080	8.4819	16
17	1.861	12.009	0.035	12.044	4.083	1.988	6.071	0.00873	0.00438	0.01311	−150.78	−0.3070	8.8343	17
18	1.953	12.034	0.038	12.072	4.324	2.088	6.413	0.00933	0.00459	0.01383	−150.29	−0.3059	9.3287	18
19	2.051	12.059	0.040	12.099	4.564	2.192	6.756	0.00973	0.00481	0.01454	−149.80	−0.3049	9.7839	19
20	2.152	12.084	0.043	12.126	4.804	2.302	7.106	0.01033	0.00504	0.01537	−149.31	−0.3039	10.272	20
21	2.258	12.110	0.044	12.154	5.044	2.416	7.460	0.01073	0.00528	0.01601	−148.82	−0.3029	10.777	21
22	2.369	12.135	0.046	12.181	5.284	2.536	7.820	0.01132	0.00553	0.01676	−148.33	−0.3018	11.305	22
23	2.485	12.160	0.049	12.209	5.525	2.661	8.185	0.01173	0.00579	0.01753	−147.84	−0.3008	11.856	23
24	2.606	12.186	0.051	12.237	5.765	2.792	8.557	0.01232	0.00607	0.01830	−147.34	−0.2998	12.431	24
25	2.733	12.211	0.054	12.265	6.005	2.929	8.934	0.01273	0.00635	0.01908	−146.85	−0.2988	13.032	25
26	2.865	12.238	0.057	12.293	6.245	3.073	9.317	0.01333	0.00665	0.01987	−146.35	−0.2977	13.658	26
27	3.003	12.262	0.059	12.321	6.485	3.221	9.706	0.01373	0.00696	0.02068	−145.85	−0.2967	14.313	27
28	3.147	12.287	0.062	12.349	6.726	3.377	10.103	0.01431	0.00728	0.02149	−145.36	−0.2957	14.996	28
29	3.297	12.313	0.065	12.377	6.966	3.540	10.506	0.01470	0.00761	0.02231	−144.86	−0.2947	15.709	29
30	3.454	12.338	0.068	12.406	7.206	3.709	10.915	0.01519	0.00796	0.02315	−144.36	−0.2936	16.453	30
31	3.617	12.363	0.071	12.434	7.446	3.887	11.333	0.01568	0.00833	0.02400	−143.86	−0.2926	17.227	31
32	3.788	12.388	0.075	12.463	7.686	4.073	11.758	0.01617	0.00870	0.02487	−143.36	−0.2916	18.035	32
32*	3.788	12.388	0.075	12.463	7.686	4.073	11.758	0.01617	0.00870	0.02487	0.04	0.0000	18.037	32*
33	3.944	12.413	0.079	12.492	7.927	4.243	12.169	0.01666	0.00904	0.02570	1.05	0.0020	18.778	33
34	4.107	12.438	0.083	12.520	8.167	4.418	12.585	0.01715	0.00940	0.02655	3.06	0.0041	19.545	34
35	4.275	12.464	0.085	12.549	8.407	4.601	13.008	0.01764	0.00977	0.02741	5.06	0.0061	20.343	35
36	4.450	12.489	0.089	12.578	8.647	4.791	13.438	0.01813	0.01016	0.02828	7.07	0.0081	21.166	36
37	4.631	12.514	0.093	12.607	8.887	4.987	13.874	0.01861	0.01056	0.02917	9.07	0.0102	22.020	37

Fahr. Temp. t(F)	Humidity Ratio $W_s \times 10^3$	Volume cu ft/lb dry air v_a	v_{aa}	v_s	Enthalpy Btu/lb dry air h_a	h_{aa}	h_s	Entropy Btu per (°F) (lb dry air) s_a	s_{aa}	s_s	Condensed Water Enthalpy Btu/Lb h_w	Entropy Btu per (°F)(Lb) s_w	Vap. Press in. Hg p_s	Fahr. Temp. t(F)
38	4.818	12.540	0.097	12.637	9.128	5.191	14.319	0.01909	0.01097	0.03006	9.08	0.0122	0.22904	38
39	5.013	12.565	0.101	12.666	9.368	5.403	14.771	0.01957	0.01139	0.03096	7.08	0.0142	0.23819	39
40	5.213	12.590	0.105	12.695	9.608	5.622	15.230	0.02005	0.01183	0.03188	9.09	0.0163	0.24797	40
41	5.421	12.616	0.109	12.725	9.848	5.849	15.697	0.02053	0.01228	0.03281	9.09	0.0182	0.25748	41
42	5.635	12.641	0.114	12.755	10.088	6.084	16.173	0.02101	0.01275	0.03376	10.09	0.0202	0.26763	42
43	5.860	12.666	0.119	12.785	10.329	6.328	16.657	0.02149	0.01322	0.03472	11.10	0.0223	0.27813	43
44	6.091	12.691	0.124	12.815	10.569	6.580	17.149	0.02197	0.01373	0.03570	12.10	0.0243	0.28899	44
45	6.331	12.717	0.129	12.846	10.809	6.841	17.650	0.02245	0.01425	0.03670	13.10	0.0262	0.30023	45
46	6.578	12.742	0.134	12.876	11.049	7.112	18.161	0.02293	0.01478	0.03771	14.10	0.0282	0.31185	46
47	6.835	12.767	0.140	12.907	11.289	7.391	18.680	0.02340	0.01534	0.03874	15.11	0.0302	0.32388	47
48	7.100	12.792	0.146	12.938	11.530	7.681	19.211	0.02387	0.01591	0.03978	16.11	0.0321	0.33628	48
49	7.374	12.818	0.151	12.969	11.770	7.981	19.751	0.02434	0.01650	0.04084	17.11	0.0341	0.34913	49
50	7.658	12.843	0.158	13.001	12.010	8.291	20.301	0.02481	0.01711	0.04192	18.11	0.0361	0.36240	50
51	7.952	12.868	0.164	13.032	12.250	8.612	20.863	0.02528	0.01774	0.04302	19.11	0.0381	0.37611	51
52	8.256	12.894	0.170	13.064	12.491	8.945	21.436	0.02575	0.01839	0.04414	20.11	0.0400	0.39028	52
53	8.569	12.919	0.178	13.097	12.731	9.290	22.020	0.02622	0.01906	0.04529	21.12	0.0420	0.40492	53
54	8.894	12.944	0.185	13.129	12.971	9.644	22.615	0.02669	0.01978	0.04645	22.13	0.0439	0.42004	54
55	9.229	12.970	0.192	13.163	13.211	10.01	23.22	0.02716	0.02052	0.04765	23.13	0.0459	0.43565	55
56	9.575	12.995	0.200	13.195	13.452	10.39	23.84	0.02763	0.02131	0.04893	24.13	0.0478	0.45176	56
57	9.934	13.020	0.208	13.228	13.692	10.79	24.48	0.02809	0.02197	0.05006	25.13	0.0497	0.46840	57
58	10.30	13.045	0.216	13.261	13.932	11.19	25.12	0.02855	0.02276	0.05131	26.13	0.0517	0.48558	58
59	10.69	13.071	0.224	13.295	14.172	11.61	25.78	0.02902	0.02357	0.05259	27.13	0.0536	0.50330	59
60	11.08	13.096	0.233	13.329	14.413	12.05	26.46	0.02948	0.02441	0.05389	28.13	0.0555	0.52158	60
61	11.49	13.121	0.242	13.363	14.653	12.50	27.15	0.02994	0.02527	0.05521	29.13	0.0574	0.54047	61
62	11.91	13.147	0.251	13.398	14.893	12.96	27.85	0.03040	0.02616	0.05656	30.13	0.0594	0.55994	62
63	12.35	13.173	0.261	13.433	15.134	13.44	28.57	0.03086	0.02708	0.05794	31.13	0.0613	0.58002	63
64	12.80	13.197	0.271	13.468	15.374	13.94	29.31	0.03132	0.02803	0.05935	32.13	0.0632	0.60073	64
65	13.26	13.223	0.282	13.504	15.614	14.45	30.06	0.03177	0.02901	0.06078	33.11	0.0651	0.62209	65
66	13.74	13.247	0.292	13.539	15.855	14.98	30.83	0.03223	0.03002	0.06225	34.11	0.0670	0.64411	66
67	14.24	13.273	0.303	13.576	16.095	15.53	31.63	0.03269	0.03106	0.06375	35.11	0.0689	0.66681	67
68	14.75	13.298	0.315	13.613	16.335	16.09	32.43	0.03314	0.03213	0.06527	36.11	0.0708	0.69019	68
69	15.28	13.323	0.327	13.650	16.576	16.67	33.25	0.03360	0.03323	0.06683	37.11	0.0727	0.71430	69

[a] Compiled by John A. Goff and S. Gratch.

* Extrapolated to represent metastable equilibrium with undercooled liquid.

Table 1 . . . . Thermodynamic Properties of *MOIST AIR*[a] (Standard Atmospheric Pressure, 29.921 in. Hg) (*Continued*)

Fahr. Temp. t(F)	Humidity Ratio $W_s \times 10^3$	Volume cu ft/lb dry air v_a	v_{aa}	v_s	Enthalpy Btu/lb dry air h_a	h_{aa}	h_s	Entropy Btu per (°F) (lb dry air) s_a	s_{aa}	s_s	Condensed Water Enthalpy Btu/Lb h_w	Entropy Btu per (°F)(Lb) s_w	Vap. Press in. Hg p_s	Fahr. Temp. t(F)
70	1.583	13.345	0.339	13.687	16.816	17.27	34.09	0.03405	0.03437	0.06842	38.11	0.0746	0.73915	70
71	1.629	13.373	0.351	13.724	17.056	17.89	34.95	0.03450	0.03554	0.07004	39.11	0.0765	0.76475	71
72	1.697	13.398	0.364	13.762	17.297	18.53	35.83	0.03495	0.03675	0.07170	40.11	0.0784	0.79112	72
73	1.767	13.424	0.377	13.801	17.537	19.20	36.74	0.03540	0.03800	0.07340	41.11	0.0803	0.81828	73
74	1.839	13.449	0.392	13.841	17.778	19.88	37.66	0.03585	0.03928	0.07513	42.10	0.0821	0.84624	74
75	1.883	13.474	0.407	13.881	18.018	20.59	38.61	0.03630	0.04060	0.07690	43.10	0.0840	0.87504	75
76	1.943	13.499	0.423	13.921	18.259	21.31	39.57	0.03675	0.04197	0.07872	44.10	0.0859	0.90470	76
77	2.016	13.525	0.437	13.962	18.499	22.07	40.57	0.03720	0.04337	0.08057	45.10	0.0877	0.93523	77
78	2.088	13.550	0.453	14.003	18.740	22.84	41.58	0.03765	0.04483	0.08247	46.10	0.0896	0.96665	78
79	2.158	13.575	0.470	14.045	18.980	23.64	42.62	0.03810	0.04631	0.08441	47.10	0.0914	0.99899	79
80	2.223	13.601	0.486	14.087	19.221	24.47	43.69	0.03854	0.04784	0.08638	48.10	0.0933	1.0323	80
81	2.310	13.626	0.504	14.130	19.461	25.32	44.78	0.03899	0.04942	0.08841	49.09	0.0952	1.0665	81
82	2.389	13.651	0.522	14.174	19.702	26.20	45.90	0.03943	0.05105	0.09048	50.09	0.0970	1.1017	82
83	2.471	13.676	0.543	14.218	19.942	27.10	47.04	0.03987	0.05272	0.09259	51.09	0.0989	1.1379	83
84	2.565	13.702	0.560	14.263	20.183	28.04	48.22	0.04031	0.05445	0.09477	52.08	0.1007	1.1752	84
85	2.643	13.727	0.581	14.308	20.423	29.01	49.43	0.04075	0.05624	0.09699	53.08	0.1025	1.2135	85
86	2.731	13.753	0.602	14.354	20.663	30.00	50.66	0.04119	0.05807	0.09926	54.08	0.1043	1.2529	86
87	2.824	13.777	0.624	14.401	20.904	31.03	51.93	0.04163	0.05995	0.10158	55.08	0.1062	1.2934	87
88	2.919	13.803	0.645	14.448	21.144	32.09	53.23	0.04207	0.06189	0.10396	56.08	0.1080	1.3351	88
89	3.017	13.828	0.668	14.496	21.385	33.18	54.56	0.04251	0.06389	0.10640	57.08	0.1098	1.3779	89
90	3.118	13.853	0.692	14.545	21.625	34.31	55.93	0.04295	0.06596	0.10890	58.08	0.1116	1.4219	90
91	3.223	13.879	0.716	14.595	21.866	35.47	57.33	0.04339	0.06807	0.11146	59.07	0.1135	1.4671	91
92	3.330	13.904	0.741	14.645	22.106	36.67	58.78	0.04383	0.07025	0.11407	60.07	0.1153	1.5135	92
93	3.441	13.929	0.768	14.697	22.346	37.90	60.25	0.04426	0.07249	0.11675	61.07	0.1171	1.5612	93
94	3.556	13.954	0.795	14.749	22.587	39.18	61.77	0.04469	0.07480	0.11949	62.07	0.1188	1.6103	94
95	3.673	13.980	0.823	14.802	22.827	40.49	63.32	0.04513	0.07718	0.12231	63.07	0.1206	1.6606	95
96	3.795	14.005	0.851	14.856	23.068	41.85	64.92	0.04556	0.07963	0.12519	64.06	0.1224	1.7123	96
97	3.920	14.030	0.881	14.911	23.308	43.24	66.55	0.04600	0.08215	0.12815	65.06	0.1243	1.7654	97
98	4.049	14.056	0.911	14.967	23.548	44.68	68.23	0.04643	0.08474	0.13117	66.06	0.1260	1.8199	98
99	4.182	14.081	0.942	15.023	23.789	46.17	69.96	0.04686	0.08741	0.13427	67.06	0.1278	1.8759	99
100	4.319	14.106	0.975	15.081	24.029	47.70	71.73	0.04729	0.09016	0.13745	68.06	0.1296	1.9333	100
101	4.460	14.131	1.009	15.140	24.270	49.28	73.55	0.04773	0.09298	0.14071	69.05	0.1314	1.9923	101
102	4.606	14.157	1.043	15.200	24.510	50.91	75.43	0.04815	0.09591	0.14406	70.05	0.1333	2.0528	102
103	4.756	14.182	1.079	15.261	24.751	52.59	77.34	0.04858	0.09891	0.14749	71.05	0.1350	2.1149	103
104	4.911	14.207	1.117	15.324	24.991	54.33	79.31	0.04900	0.1020	0.1510	72.05	0.1367	2.1786	104

Fahr. Temp. t(F)	Humidity Ratio $W_s \times 10$	Volume cu ft/lb dry air v_a	v_{aa}	v_s	Enthalpy Btu/lb dry air h_a	h_{aa}	h_s	Entropy Btu per (°F) (lb dry air) s_a	s_{aa}	s_s	Condensed Water Enthalpy Btu/Lb h_w	Entropy Btu per (°F)(Lb) s_w	Vap. Press in. Hg p_s	Fahr. Temp. t(F)
105	0.5070	14.233	1.155	15.387	25.233	56.11	81.34	0.04943	0.1053	0.1546	73.04	0.1385	2.2439	105
106	0.5234	14.258	1.194	15.452	25.473	57.95	83.42	0.04985	0.1085	0.1584	74.04	0.1403	2.3109	106
107	0.5404	14.283	1.235	15.518	25.713	59.85	85.56	0.05028	0.1118	0.1621	75.04	0.1421	2.3797	107
108	0.5578	14.308	1.278	15.585	25.953	61.80	87.75	0.05070	0.1153	0.1660	76.04	0.1438	2.4502	108
109	0.5758	14.333	1.321	15.654	26.194	63.82	90.03	0.05113	0.1189	0.1700	77.04	0.1456	2.5225	109
110	0.5944	14.359	1.365	15.724	26.434	65.91	93.34	0.05155	0.1226	0.1743	78.03	0.1473	2.5968	110
111	0.6135	14.384	1.412	15.796	26.675	68.05	94.73	0.05197	0.1264	0.1784	79.03	0.1491	2.6728	111
112	0.6333	14.409	1.460	15.869	26.915	70.27	97.18	0.05239	0.1302	0.1826	80.03	0.1508	2.7505	112
113	0.6536	14.436	1.509	15.944	27.156	72.56	99.71	0.05281	0.1343	0.1870	81.03	0.1525	2.8304	113
114	0.6746	14.460	1.560	16.020	27.397	74.91	102.31	0.05323	0.1384	0.1916	82.03	0.1543	2.9125	114
115	0.6963	14.485	1.613	16.098	27.637	77.34	104.98	0.05365	0.1426	0.1963	83.03	0.1560	2.9963	115
116	0.7185	14.510	1.668	16.178	27.878	79.85	107.73	0.05407	0.1470	0.2011	84.02	0.1577	3.0821	116
117	0.7416	14.536	1.725	16.259	28.119	82.43	110.56	0.05449	0.1515	0.2060	85.02	0.1595	3.1701	117
118	0.7653	14.561	1.783	16.343	28.359	85.10	113.46	0.05490	0.1563	0.2111	86.02	0.1612	3.2602	118
119	0.7897	14.586	1.843	16.428	28.600	87.86	116.46	0.05532	0.1610	0.2163	87.02	0.1629	3.3527	119
120	0.8149	14.611	1.905	16.516	28.841	90.70	119.54	0.05573	0.1659	0.2216	88.01	0.1646	3.4474	120
121	0.8410	14.637	1.968	16.605	29.082	93.64	122.72	0.05615	0.1709	0.2270	89.01	0.1664	3.5443	121
122	0.8678	14.663	2.034	16.696	29.323	96.66	125.98	0.05656	0.1763	0.2329	90.01	0.1681	3.6438	122
123	0.8955	14.687	2.103	16.790	29.563	99.79	129.35	0.05698	0.1817	0.2387	91.01	0.1698	3.7453	123
124	0.9243	14.713	2.174	16.886	29.804	103.0	132.8	0.05739	0.1872	0.2446	92.01	0.1715	3.8493	124
125	0.9537	14.738	2.247	16.985	30.044	106.4	136.4	0.05780	0.1930	0.2508	93.01	0.1733	3.9558	125
126	0.9841	14.763	2.323	17.086	30.285	109.8	140.1	0.05821	0.1989	0.2571	94.01	0.1749	4.0649	126
127	1.016	14.788	2.401	17.189	30.526	113.4	143.9	0.05863	0.2050	0.2636	95.00	0.1766	4.1765	127
128	1.048	14.813	2.482	17.295	30.766	117.0	147.8	0.05903	0.2113	0.2703	96.00	0.1783	4.2907	128
129	1.083	14.839	2.565	17.404	31.007	120.8	151.8	0.05944	0.2178	0.2772	97.00	0.1800	4.4076	129
130	1.118	14.864	2.653	17.518	31.248	124.7	155.9	0.05985	0.2245	0.2844	98.00	0.1817	4.5273	130
131	1.153	14.889	2.743	17.631	31.489	128.6	160.3	0.06026	0.2314	0.2917	99.00	0.1834	4.6495	131
132	1.189	14.915	2.834	17.749	31.729	133.0	164.7	0.06067	0.2386	0.2993	100.00	0.1851	4.7747	132
133	1.227	14.940	2.930	17.870	31.970	137.3	169.3	0.06108	0.2459	0.3070	101.00	0.1868	4.9028	133
134	1.267	14.965	3.029	17.994	32.211	141.8	174.0	0.06148	0.2535	0.3151	102.00	0.1885	5.0337	134

[a] Compiled by John A. Goff and S. Gratch.