

Table 1 . . . Thermodynamic Properties of MOIST AIR* (Standard Atmospheric Pressure, 29.921 in. Hg) (Concluded)

Fahr. Temp. (°F)	Humidity Ratio W _g	Volume cu ft/lb dry air			Enthalpy Btu/lb dry air			Entropy Btu per (°F) (lb dry air)			Condensed Water			Fahr. Temp. (°F)
		v _g	v _{sa}	v _s	h _g	h _{sa}	h _s	s _g	s _{sa}	s _s	Enthalpy Btu/lb h _g	Entropy Btu per (°F) (lb) s _g	Vap. Pres. in. Hg P _g	
132	0.1208	14.980	3.129	18.122	32.452	148.4	178.9	0.06189	0.2014	0.3233	103.00	0.1902	4.1676	132
133	0.1209	14.980	3.129	18.122	32.452	148.4	178.9	0.06189	0.2014	0.3233	103.00	0.1902	4.1676	133
134	0.1210	14.980	3.129	18.122	32.452	148.4	178.9	0.06189	0.2014	0.3233	103.00	0.1902	4.1676	134
135	0.1211	14.980	3.129	18.122	32.452	148.4	178.9	0.06189	0.2014	0.3233	103.00	0.1902	4.1676	135
136	0.1212	14.980	3.129	18.122	32.452	148.4	178.9	0.06189	0.2014	0.3233	103.00	0.1902	4.1676	136
137	0.1213	14.980	3.129	18.122	32.452	148.4	178.9	0.06189	0.2014	0.3233	103.00	0.1902	4.1676	137
138	0.1214	14.980	3.129	18.122	32.452	148.4	178.9	0.06189	0.2014	0.3233	103.00	0.1902	4.1676	138
139	0.1215	14.980	3.129	18.122	32.452	148.4	178.9	0.06189	0.2014	0.3233	103.00	0.1902	4.1676	139
140	0.1216	14.980	3.129	18.122	32.452	148.4	178.9	0.06189	0.2014	0.3233	103.00	0.1902	4.1676	140
141	0.1217	14.980	3.129	18.122	32.452	148.4	178.9	0.06189	0.2014	0.3233	103.00	0.1902	4.1676	141
142	0.1218	14.980	3.129	18.122	32.452	148.4	178.9	0.06189	0.2014	0.3233	103.00	0.1902	4.1676	142
143	0.1219	14.980	3.129	18.122	32.452	148.4	178.9	0.06189	0.2014	0.3233	103.00	0.1902	4.1676	143
144	0.1220	14.980	3.129	18.122	32.452	148.4	178.9	0.06189	0.2014	0.3233	103.00	0.1902	4.1676	144
145	0.1221	14.980	3.129	18.122	32.452	148.4	178.9	0.06189	0.2014	0.3233	103.00	0.1902	4.1676	145
146	0.1222	14.980	3.129	18.122	32.452	148.4	178.9	0.06189	0.2014	0.3233	103.00	0.1902	4.1676	146
147	0.1223	14.980	3.129	18.122	32.452	148.4	178.9	0.06189	0.2014	0.3233	103.00	0.1902	4.1676	147
148	0.1224	14.980	3.129	18.122	32.452	148.4	178.9	0.06189	0.2014	0.3233	103.00	0.1902	4.1676	148
149	0.1225	14.980	3.129	18.122	32.452	148.4	178.9	0.06189	0.2014	0.3233	103.00	0.1902	4.1676	149
150	0.1226	14.980	3.129	18.122	32.452	148.4	178.9	0.06189	0.2014	0.3233	103.00	0.1902	4.1676	150
151	0.1227	14.980	3.129	18.122	32.452	148.4	178.9	0.06189	0.2014	0.3233	103.00	0.1902	4.1676	151
152	0.1228	14.980	3.129	18.122	32.452	148.4	178.9	0.06189	0.2014	0.3233	103.00	0.1902	4.1676	152
153	0.1229	14.980	3.129	18.122	32.452	148.4	178.9	0.06189	0.2014	0.3233	103.00	0.1902	4.1676	153
154	0.1230	14.980	3.129	18.122	32.452	148.4	178.9	0.06189	0.2014	0.3233	103.00	0.1902	4.1676	154
155	0.1231	14.980	3.129	18.122	32.452	148.4	178.9	0.06189	0.2014	0.3233	103.00	0.1902	4.1676	155
156	0.1232	14.980	3.129	18.122	32.452	148.4	178.9	0.06189	0.2014	0.3233	103.00	0.1902	4.1676	156
157	0.1233	14.980	3.129	18.122	32.452	148.4	178.9	0.06189	0.2014	0.3233	103.00	0.1902	4.1676	157
158	0.1234	14.980	3.129	18.122	32.452	148.4	178.9	0.06189	0.2014	0.3233	103.00	0.1902	4.1676	158
159	0.1235	14.980	3.129	18.122	32.452	148.4	178.9	0.06189	0.2014	0.3233	103.00	0.1902	4.1676	159
160	0.1236	14.980	3.129	18.122	32.452	148.4	178.9	0.06189	0.2014	0.3233	103.00	0.1902	4.1676	160

Fahr. Temp. (°F)	Humidity Ratio W _g	Volume cu ft/lb dry air			Enthalpy Btu/lb dry air			Entropy Btu per (°F) (lb dry air)			Condensed Water			Fahr. Temp. (°F)
		v _g	v _{sa}	v _s	h _g	h _{sa}	h _s	s _g	s _{sa}	s _s	Enthalpy Btu/lb h _g	Entropy Btu per (°F) (lb) s _g	Vap. Pres. in. Hg P _g	
170	0.4327	15.874	10.833	26.812	40.882	490.6	531.5	0.07565	0.2273	0.3030	133.01	0.2478	12.303	170
171	0.4328	15.874	10.833	26.812	40.882	490.6	531.5	0.07565	0.2273	0.3030	133.01	0.2478	12.303	171
172	0.4329	15.874	10.833	26.812	40.882	490.6	531.5	0.07565	0.2273	0.3030	133.01	0.2478	12.303	172
173	0.4330	15.874	10.833	26.812	40.882	490.6	531.5	0.07565	0.2273	0.3030	133.01	0.2478	12.303	173
174	0.4331	15.874	10.833	26.812	40.882	490.6	531.5	0.07565	0.2273	0.3030	133.01	0.2478	12.303	174
175	0.4332	15.874	10.833	26.812	40.882	490.6	531.5	0.07565	0.2273	0.3030	133.01	0.2478	12.303	175
176	0.4333	15.874	10.833	26.812	40.882	490.6	531.5	0.07565	0.2273	0.3030	133.01	0.2478	12.303	176
177	0.4334	15.874	10.833	26.812	40.882	490.6	531.5	0.07565	0.2273	0.3030	133.01	0.2478	12.303	177
178	0.4335	15.874	10.833	26.812	40.882	490.6	531.5	0.07565	0.2273	0.3030	133.01	0.2478	12.303	178
179	0.4336	15.874	10.833	26.812	40.882	490.6	531.5	0.07565	0.2273	0.3030	133.01	0.2478	12.303	179
180	0.4337	15.874	10.833	26.812	40.882	490.6	531.5	0.07565	0.2273	0.3030	133.01	0.2478	12.303	180
181	0.4338	15.874	10.833	26.812	40.882	490.6	531.5	0.07565	0.2273	0.3030	133.01	0.2478	12.303	181
182	0.4339	15.874	10.833	26.812	40.882	490.6	531.5	0.07565	0.2273	0.3030	133.01	0.2478	12.303	182
183	0.4340	15.874	10.833	26.812	40.882	490.6	531.5	0.07565	0.2273	0.3030	133.01	0.2478	12.303	183
184	0.4341	15.874	10.833	26.812	40.882	490.6	531.5	0.07565	0.2273	0.3030	133.01	0.2478	12.303	184
185	0.4342	15.874	10.833	26.812	40.882	490.6	531.5	0.07565	0.2273	0.3030	133.01	0.2478	12.303	185
186	0.4343	15.874	10.833	26.812	40.882	490.6	531.5	0.07565	0.2273	0.3030	133.01	0.2478	12.303	186
187	0.4344	15.874	10.833	26.812	40.882	490.6	531.5	0.07565	0.2273	0.3030	133.01	0.2478	12.303	187
188	0.4345	15.874	10.833	26.812	40.882	490.6	531.5	0.07565	0.2273	0.3030	133.01	0.2478	12.303	188
189	0.4346	15.874	10.833	26.812	40.882	490.6	531.5	0.07565	0.2273	0.3030	133.01	0.2478	12.303	189
190	0.4347	15.874	10.833	26.812	40.882	490.6	531.5	0.07565	0.2273	0.3030	133.01	0.2478	12.303	190
191	0.4348	15.874	10.833	26.812	40.882	490.6	531.5	0.07565	0.2273	0.3030	133.01	0.2478	12.303	191
192	0.4349	15.874	10.833	26.812	40.882	490.6	531.5	0.07565	0.2273	0.3030	133.01	0.2478	12.303	192
193	0.4350	15.874	10.833	26.812	40.882	490.6	531.5	0.07565	0.2273	0.3030	133.01	0.2478	12.303	193
194	0.4351	15.874	10.833	26.812	40.882	490.6	531.5	0.07565	0.2273	0.3030	133.01	0.2478	12.303	194
195	0.4352	15.874	10.833	26.812	40.882	490.6	531.5	0.07565	0.2273	0.3030	133.01	0.2478	12.303	195
196	0.4353	15.874	10.833	26.812	40.882	490.6	531.5	0.07565	0.2273	0.3030	133.01	0.2478	12.303	196
197	0.4354	15.874	10.833	26.812	40.882	490.6	531.5	0.07565	0.2273	0.3030	133.01	0.2478	12.303	197
198	0.4355	15.874	10.833	26.812	40.882	490.6	531.5	0.07565	0.2273	0.3030	133.01	0.2478	12.303	198
199	0.4356	15.874	10.833	26.812	40.882	490.6	531.5	0.07565	0.2273	0.3030	133.01	0.2478	12.303	199
200	0.4357	15.874	10.833	26.812	40.882	490.6	531.5	0.07565	0.2273	0.3030	133.01	0.2478	12.303	200

* Compiled by John A. Goff and S. Gratch.

Psychrometrics

Table 2 . . . Thermodynamic Properties of WATER at Saturation*

Fahr. Temp. (°F)	Absolute Pressure p × 10 ³		Specific Volume, cu ft per lb			Enthalpy, Btu per lb			Entropy, Btu per (lb) (°F)			Fahr. Temp. (°F)
	Lb/Sq. In.	In. Hg	Sat. Solid v _g	Evap. v _{fg} × 10 ⁻⁴	Sat. Vapor v _g × 10 ⁻⁴	h _g	Evap. h _{fg}	Sat. Vapor h _g	Sat. Solid s _g	Evap. s _{fg}	Sat. Vapor s _g	
-190	0.004949	0.01008	0.01722	30070	30070	-223.05	1319.43	-990.38	-0.4907	0.4050	3.6549	-190
-155	0.005940	0.01260	0.01722	30080	30080	-220.44	1313.03	-992.58	-0.4854	0.4013	3.6587	-155
-150	0.01020	0.02329	0.01723	11390	11390	-218.82	1313.62	-994.80	-0.4801	0.4188	3.6587	-150
-145	0.02350	0.05050	0.01724	6377	6377	-217.17	1314.17	-997.00	-0.4748	0.4353	3.6587	-145
-140	0.04222	0.1003	0.01724	3864	3864	-215.49	1314.70	-999.21	-0.4695	0.4519	3.6587	-140
-135	0.06530	0.1708	0.01725	2308	2308	-213.83	1315.23	-1001.42	-0.4643	0.4675	3.6587	-135
-130	0.1020	0.2769	0.01725	1400	1400	-212.08	1315.71	-1003.63	-0.4590	0.4874	3.6587	-130
-125	0.1623	0.4208	0.01726	863.3	863.3	-210.34	1316.18	-1005.84	-0.4538	0.5038	3.6587	-125
-120	0.2375	0.7649	0.01729	538.6	538.6	-208.58	1316.63	-1008.05	-0.4485	0.5201	3.6587	-120
-115	0.3401	1.229	0.01727	341.1	341.1	-206.93	1317.07	-1010.26	-0.4432	0.5364	3.6587	-115
-110	0.4820	1.833	0.01727	210.5	210.5	-205.28	1317.51	-1012.47	-0.4381	0.5526	3.6587	-110
-105	0.6723	2.623	0.01728	142.3	142.3	-203.64	1317.93	-1014.63	-0.4329	0.5688	3.6587	-105
-100	9.201	4.664	0.01729	93.83	93.83	-202.03	1318.37	-1016.89	-0.4277	0.5850	3.6591	-100
-95	3.401	7.108	0.01729	62.3	62.3	-199.40	1318.50	-1019.10	-0.4225	0.5913	3.6587	-95
-90	2.300	10.71	0.01730	41.86	41.86	-197.69	1318.80	-1021.31	-0.4173	0.5976	3.6590	-90
-85	7.841	18.96	0.01720	28.46	28.46	-195.96	1319.05	-1023.53	-0.4121	0.6038	3.6591	-85
-80	11.87	28.55	0.01731	19.55	19.55	-193.80	1319.33	-1025.73	-0.4069	0.6104	3.6595	-80
-75	18.79	44.33	0.01723	13.56	13.56	-191.63	1319.56	-1027.94	-0.4017	0.6172	3.6598	-75
-70	28.43	71.74	0.01723	9.501	9.501	-189.61	1319.76	-1030.13	-0.3964	0.6240	3.6600	-70
-65	45.01	115.96	0.01723	6.718	6.718	-187.58	1319.94	-1032.35	-0.3914	0.6308	3.6605	-65
-60	69.73	170.2	0.01724	4.788	4.788	-185.63	1320.10	-1034.58	-0.3862	0.6376	3.6610	-60
-55	102.61	258.5	0.01724	3.406	3.406	-183.44	1320.23	-1036.79	-0.3810	0.6444	3.6615	-55
-50	157.78	399.0	0.01725	2.498	2.498	-181.94	1320.34	-1038.99	-0.3758	0.6512	3.6620	-50
-45	242.0	597.0	0.01726	1.820	1.820	-180.69	1320.47	-1041.18	-0.3706	0.6580	3.6625	-45
-40	377.0	899.0	0.01728	1.343	1.343	-179.64	1320.60	-1043.37	-0.3654	0.6648	3.6630	-40
-35	562.0	1344.0	0.01728	1.001	1.001	-178.69	1320.69	-1045.56	-0.3602	0.6716	3.6635	-35
-30	817.0	1990.0	0.01728	0.744	0.744	-177.86	1320.83	-1047.74	-0.3550	0.6784	3.6640	-30
-25	1187.0	2940.0	0.01728	0.544	0.544	-177.10	1320.93	-1049.93	-0.3500	0.6852	3.6645	-25
-20	1740.0	4380.0	0.01728	0.399	0.399	-176.41	1321.00	-1052.10	-0.3450	0.6920	3.6650	-20
-15	2550.0	6480.0	0.01728	0.285	0.285	-175.79	1321.03	-1054.25	-0.3400	0.6988	3.6655	-15
-10	3700.0	9480.0	0.01728	0.205	0.205	-175.23	1321.03	-1056.38	-0.3350	0.7056	3.6660	-10
-5	5250.0	13480.0	0.01728	0.148	0.148	-174.73	1321.03	-1058.49	-0.3300	0.7124	3.6665	-5
0	7400.0	19480.0	0.01728	0.108	0.108	-174.28	1321.03	-1060.58	-0.3250	0.7192	3.6670	0
5	10450.0	27980.0	0.01728	0.078	0.078	-173.87	1321.03	-1062.65	-0.3200	0.7260	3.6675	5
10	14550.0	39480.0	0.01728	0.058	0.058	-173.50	1321.03	-1064.70	-0.3150	0.7328	3.6680	10
15	20150.0	55980.0	0.01728	0.042	0.042	-173.17	1321.03	-1066.73	-0.3100	0.7396	3.6685	15
20	27850.0	79480.0	0.01728	0.030	0.030	-172.88	1321.03	-1068.74	-0.3050	0.7464	3.6690	20
25	38550.0	111980.0	0.01728	0.021	0.021	-172.63	1321.03	-1070.73	-0.3000	0.7532	3.6695	25
30	52850.0	159480.0	0.01728	0.015	0.015	-172.41	1321.03	-1072.70	-0.2950	0.7600	3.6700	30
35	72150.0	224980.0	0.01728	0.010	0.010	-172.21	1321.03	-1074.65	-0.2900	0.7668	3.6705	35
40	98850.0	314980.0	0.01728	0.007	0.007	-172.03	1321.03	-1076.58	-0.2850	0.7736	3.6710	40
45	135850.0	439980.0	0.01728	0.005	0.005	-171.87	1321.03	-1078.49	-0.2800	0.7804	3.6715	45
50	186850.0	614980.0	0.01728	0.003	0.003	-171.73	1321.03	-1080.38	-0.2750	0.7872	3.6720	50
55	257850.0	859980.0	0.01728	0.002	0.002	-171.61	1321.03	-1082.25	-0.2700	0.7940	3.6725	55
60	354850.0	1214980.0	0.01728	0.001	0.001	-171.51	1321.03	-1084.10	-0.2650	0.8008	3.6730	60
65	485850.0	1679980.0	0.01728	0.001	0.001	-171.43	1321.03	-1085.93	-0.2600	0.8076	3.6735	65
70	660850.0	2334980.0	0.01728	0.000	0.000	-171.37	1321.03	-1087.74	-0.2550	0.8144	3.6740	70
75	895850.0	3239980.0	0.01728	0.000	0.000	-171.32	1321.03	-1089.53	-0.2500	0.8212	3.6745	75
80	1215850.0	4439980.0	0.01728	0.000	0.000	-171.28	1321.03	-1091.30	-0.2450	0.8280	3.6750	80
85	1645850.0	6149980.0	0.01728	0.000	0.000	-171.25	1321.03	-1093.05	-0.2400	0.8348	3.6755	85
90	2225850.0	8599980.0	0.01728	0.000	0.000	-171.23	1321.03	-1094.78	-0.2350	0.8416	3.6760	90
95	3005850.0	12149980.0	0.01728	0.000	0.000	-171.21	1321.03	-1096.49	-0.2300	0.8484	3.6765	95
100	4045850.0	16799980.0	0.01728	0.000	0.000	-171.20	1321.03	-1098.18	-0.2250	0.8552	3.6770	100
105	5405850.0	23349980.0	0.01728	0.000	0.000	-171.19	1321.03	-1099.85	-0.2200	0.8620	3.6775	105
110	7205850.0	32399980.0	0.01728	0.000	0.000	-171.18	1321.03	-1101.50	-0.2150	0.8688	3.6780	110
115	9605850.0	44399980.0	0.01728	0.000	0.000	-171.17	1321.03	-1103.13	-0.2100	0.8756	3.6785	115
120	12805850.0	61499980.0	0.01728	0.000	0.000	-171.16	1321.03	-1104.74	-0.2050	0.8824	3.6790	120
125	17005850.0	85999980.0	0.01728	0.000	0.000	-171.15	1321.03	-1106.33	-0.2000	0.8892	3.6795	125
130	22505850.0	121499980.0	0.01728	0.000	0.000	-171.14	1321.03	-1107.90	-0.1950	0.8960	3.6800	130
135	30005850.0	167999980.0	0.01728	0.000	0.000	-171.13	1321.03	-1109.45	-0.1900	0.9028	3.6805	135
140	39805850.0	233499980.0	0.01728	0.000	0.000	-171.12	1321.03	-1111.00	-0.1850	0.9096	3.6810	140
145	53005850.0	323999980.0	0.01728	0.000	0.000	-171.11	1321.03	-1112.53	-0.1800	0.9164	3.6815	145
150	70005850.0	443999980.0	0.01728	0.000	0.000	-171.10	1321.03	-1114.05	-0.1750	0.9232	3.6820	150
155	92005850.0	614999980.0	0.01728	0.000	0.000	-171.09	1321.03	-1115.56	-0.1700	0.9300	3.6825	155
160	120005850.0	859999980.0	0.01728	0.000	0.000	-171.08	1321.03	-1117.06	-0.1650	0.9368	3.6830	160
165	156005850.0	1214999980.0	0.01728	0.000	0.000	-171.07	1321.03	-1118.55	-0.1600	0.9436	3.6835	165
170	202005850.0	1679999980.0	0.01728	0.000	0.000	-171.06	1321.03	-1120.03	-0.1550	0.9504	3.6840	170
175	262005850.0	2334999980.0	0.01728	0.000	0.000	-171.05	1321.03	-1121.50	-0.1500	0.9572	3.6845	175
180	340005850.0	3239999980.0	0.01728	0.000	0.000	-171.04	1321.03	-1122.96	-0.1450	0.9640	3.6850	180
185	440005850.0	4439999980.0	0.01728	0.000	0.000	-171.03	1321.03	-1124.41	-0.1400	0.9708	3.6855	185
190	576005850.0	6149999980.0	0.01728	0.000	0.000	-171.02	1321.03	-1125.84	-0.1350	0.9776	3.6860	190
195	752005850.0	8599999980.0	0.01728	0.000	0.000	-171.01	1321.03	-1127.26	-0.1300	0.9844	3.6865	195
200	976005850.0	12149999980.0	0.01728	0.000	0.000	-171.00	1321.03	-1128.67	-0.1250	0.9912	3.6870	200
205	1256005850.0	16799999980.0	0.01728	0.000	0.000	-170.99	1321.03	-1130.07	-0.1200	0.9980	3.6875	205
210	1608005850.0	23349999980.0	0.01728	0.000	0.000	-170.98	1321.03	-1131.46	-0.1150	1.0048	3.6880	210
215	2048005850.0	32399999980.0	0.01728	0.000	0.000	-170.97	1321.03	-1132.84	-0.1100	1.0116	3.6885	215
220	2600005850.0	44399999980.0	0.01728	0.000	0.000	-170.96	1321.03	-1134.21	-0.1050	1.0184	3.6890	220
225	3280005850.0	61499999980.0	0.01728	0.000	0.000	-170.95	1321.03	-1135.57	-0.1000	1.0252	3.6895	225
230	4100005850.0	85999999980.0	0.01728	0.000	0.000	-170.94	1321.03	-1136.92	-0.0950	1.0320	3.6900	230
235	5080005850.0	121499999980.0	0.01728	0.000	0.000	-170.93	1321.03	-1138.26	-0.0900	1.0388	3.6905	235
240	6320005850.0	167999999980.0	0.01728	0.000	0.000	-170.92	1321.03	-1139.59	-0.0850	1.0456	3.6910	240
245	7840005850.0	233499999980.0	0.01728	0.000	0.000	-170.91	1321.03	-1140.91	-0.0800	1.0524	3.6915	245
250	9640005850.0	323999999980.0	0.01728	0.000	0.000	-170.90	1321.03	-1142.22	-0.0750	1.0592	3.6920	25