

TABLE 1. THERMODYNAMIC PROPERTIES OF MOIST AIR^a (STANDARD ATMOSPHERIC PRESSURE, 29.921 IN. HG) (Concluded)

FAHR. TEMP. (F)	HUMIDITY RATIO W_a	VOLUME CU FT/LB DRY AIR			ENTHALPY BTU/LB DRY AIR			ENTROPY BTU PER (F) (LB DRY AIR)			CONDENSED WATER			FAHR. TEMP. (F)
		v_a	v_{sa}	v_g	h_a	h_{sa}	h_g	s_a	s_{sa}	s_g	Enthalpy Btu/Lb h_w	Entropy Btu/(Lb (F)) s_w	Vap. Press In. Hg p_g	
175	0.5292	16.001	13.475	29.476	42.087	601.1	643.2	0.07756	1.005	1.093	143.02	0.2553	13.675	175
176	0.5319	16.026	14.074	30.100	42.328	627.1	669.4	0.07757	1.006	1.125	144.02	0.2568	13.987	176
177	0.5346	16.051	14.710	30.761	42.569	654.7	697.3	0.07758	1.007	1.159	145.02	0.2584	14.304	177
178	0.5373	16.076	15.386	31.462	42.810	684.1	726.9	0.07759	1.008	1.196	146.03	0.2600	14.628	178
179	0.5398	16.102	16.104	32.206	43.051	715.2	758.3	0.07760	1.009	1.236	147.03	0.2616	14.958	179
180	0.5423	16.127	16.870	32.997	43.292	748.5	791.8	0.07761	1.010	1.276	148.03	0.2631	15.294	180
181	0.5448	16.152	17.689	33.841	43.534	783.9	826.7	0.07762	1.011	1.319	149.03	0.2647	15.636	181
182	0.5473	16.177	18.565	34.742	43.775	821.9	863.5	0.07763	1.012	1.367	150.04	0.2662	15.985	182
183	0.5497	16.203	19.504	35.707	44.016	862.5	903.5	0.07764	1.013	1.422	151.04	0.2678	16.340	183
184	0.5521	16.228	20.513	36.741	44.257	905.2	950.5	0.07765	1.014	1.480	152.04	0.2693	16.702	184
185	0.5545	16.253	21.601	37.854	44.498	953.2	997.7	0.07766	1.015	1.546	153.05	0.2709	17.071	185
186	0.5569	16.278	22.775	39.053	44.739	1008.8	1049.9	0.07767	1.016	1.622	154.05	0.2724	17.446	186
187	0.5592	16.304	24.047	40.351	44.981	1068.8	1108.4	0.07768	1.017	1.707	155.05	0.2740	17.828	187
188	0.5615	16.329	25.427	41.756	45.222	1129.9	1174.4	0.07769	1.018	1.801	156.06	0.2755	18.217	188
189	0.5637	16.354	26.934	43.288	45.463	1194.4	1249.9	0.07770	1.019	1.907	157.06	0.2771	18.614	189
190	0.5659	16.379	28.560	44.959	45.704	1263.9	1330.1	0.07771	1.020	2.039	158.07	0.2786	19.017	190
191	0.5681	16.405	30.308	46.708	45.945	1337.9	1418.1	0.07772	1.021	2.245	159.07	0.2802	19.437	191
192	0.5703	16.430	32.175	48.520	46.186	1418.1	1514.9	0.07773	1.022	2.466	160.07	0.2817	19.864	192
193	0.5725	16.455	34.158	50.405	46.427	1503.9	1621.9	0.07774	1.023	2.694	161.08	0.2833	20.311	193
194	0.5747	16.480	37.036	53.516	46.670	1603.9	1740.9	0.07775	1.024	2.976	162.08	0.2848	20.704	194
195	0.5769	16.506	39.783	56.291	46.911	1727.9	1874.9	0.07776	1.025	3.324	163.09	0.2864	21.145	195
196	0.5791	16.531	42.485	59.416	47.153	1871.9	2026.9	0.07777	1.026	3.697	164.09	0.2880	21.634	196
197	0.5813	16.556	45.148	62.905	47.394	2022.9	2203.9	0.07778	1.027	4.110	165.10	0.2896	22.175	197
198	0.5835	16.581	47.783	66.701	47.635	2189.9	2403.9	0.07779	1.028	4.576	166.10	0.2912	22.767	198
199	0.5857	16.607	50.436	70.801	47.877	2369.9	2637.9	0.07780	1.029	5.094	167.11	0.2928	23.403	199
200	0.5879	16.632	53.074	75.142	48.119	2569.9	2917.9	0.07781	1.030	5.676	168.11	0.2944	24.094	200

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

In Table 1 there are 15 columns of figures, each column being headed by a suitable symbol. In the following sub-paragraphs are given brief explanations of the data in Table 1 under the appropriate column headings.

$t(F)$ = Fahrenheit temperature defined in terms of absolute temperature T by the relation,

$$T = t + 459.69 \quad (1)$$

This particular Fahrenheit scale differs slightly from that derived from the International Centigrade Scale $t(C)$ by the definition,

$$t(F) = 1.8t(C) + 32 \quad (2)$$

However, the maximum difference between the two Fahrenheit scales appears not to exceed 0.01 Fahrenheit deg in the range 32 to 212 F.

W_a = humidity ratio at saturation. By humidity ratio is meant the ratio, by weight, of water vapor to dry air, pounds of water vapor per pound of dry air. By saturation is meant the point where coexistence of the vapor phase (moist air) with a condensed phase (liquid or solid) is possible at the given temperature and pressure (standard atmospheric pressure in the case of Table 1). At given values of temperature and pressure the humidity ratio W can have any value from zero to W_a .

v_a = specific volume of dry air, cubic feet per pound.

$v_{sa} = v_a - v_a$, the difference between the volume of moist air at saturation, per pound of dry air, and the specific volume of the dry air itself, cubic feet per pound of dry air.

v_g = volume of moist air at saturation per pound of dry air, cubic feet per pound of dry air.

h_a = specific enthalpy of dry air, Btu per pound. It will be noticed that the specific enthalpy of dry air has been assigned the value zero at 0 F, standard atmospheric pressure. The energy unit Btu is related to the foot-pound, though not exactly, by definition, as follows: 1 Btu = 778.18 ft-lb.

$h_{sa} = h_a - h_a$, the difference between the enthalpy of moist air at saturation, per pound of dry air, and the specific enthalpy of the dry air itself, Btu per pound of dry air.

h_g = enthalpy of moist air at saturation per pound of dry air, Btu per pound of dry air.

s_a = specific entropy of dry air, Btu per (pound) (F). It will be noticed that the specific entropy of dry air has been assigned the value zero at 0 F and standard atmospheric pressure.

$s_{sa} = s_a - s_a$, the difference between the entropy of moist air at saturation, per pound of dry air, and the specific entropy of the dry air itself, Btu per (pound of dry air) (F).

s_g = entropy of moist air at saturation per pound of dry air, Btu per (pound of dry air) (F).

h_w = specific enthalpy of condensed water (liquid or solid) at standard atmospheric pressure, Btu per pound of water. The specific enthalpy of liquid water has been assigned the value zero at 32 F, saturation pressure. It will be noticed that, under this assignment, the specific enthalpy of liquid water at 32 F, standard atmospheric pressure, assumes the value 0.04 Btu/lb_w.

s_w = specific entropy of condensed water (liquid or solid) at standard atmospheric pressure, Btu per (pound of water) (F). The specific entropy of liquid water has been assigned the value zero at 32 F, saturation pressure. It will be noticed that, under this assignment, the specific entropy of liquid water at 32 F, standard atmospheric pressure, is also zero, though not exactly.