

TABLE 1. PROPERTIES OF SATURATED STEAM^a (Continued)

ABSOLUTE PRESSURE, LB. PER SQ. IN.	TEMP- ERATURE, DEG. FAHR.	VOLUME, CU. FT. PER LB.	WEIGHT, LB. PER CU. FT.	HEAT CONTENT IN B.T.U.		LATENT HEAT IN B.T.U.		ENTROPY		
				of Liquid	of Vapor	of Vapor- ization	In- ternal	of Liquid	of Vapor- ization	of Vapor
p	t	v'	1/v'	i'	i''	r	p	i'	r/T	i''
120	341.3	3.735	0.2678	311.9	1191.4	879.5	796.9	0.4911	1.0982	1.5893
122	342.5	3.676	0.2720	313.2	1191.6	878.5	795.8	0.4927	1.0952	1.5879
124	343.7	3.620	0.2762	314.4	1191.9	877.5	794.8	0.4943	1.0922	1.5865
126	345.0	3.566	0.2805	315.7	1192.1	876.4	793.7	0.4958	1.0894	1.5852
128	346.2	3.513	0.2847	316.9	1192.4	875.4	792.6	0.4974	1.0865	1.5838
130	347.4	3.461	0.2889	318.2	1192.6	874.4	791.6	0.4989	1.0836	1.5825
132	348.5	3.412	0.2931	319.4	1192.9	873.5	790.5	0.5004	1.0808	1.5812
134	349.7	3.363	0.2973	320.6	1193.1	872.5	789.5	0.5019	1.0781	1.5800
136	350.8	3.316	0.3016	321.8	1193.3	871.5	788.5	0.5033	1.0754	1.5787
138	352.0	3.270	0.3058	323.0	1193.5	870.5	787.4	0.5048	1.0727	1.5775
140	353.1	3.226	0.3100	324.2	1193.7	869.6	786.4	0.5062	1.0700	1.5762
142	354.2	3.182	0.3142	325.3	1193.9	868.6	785.4	0.5076	1.0674	1.5750
144	355.3	3.140	0.3184	326.5	1194.1	867.7	784.5	0.5090	1.0648	1.5738
146	356.3	3.099	0.3227	327.7	1194.3	866.8	783.5	0.5104	1.0623	1.5727
148	357.4	3.059	0.3269	328.7	1194.5	865.9	782.5	0.5117	1.0598	1.5715
150	358.5	3.020	0.3311	329.8	1194.7	864.9	781.6	0.5131	1.0573	1.5704
152	359.5	2.982	0.3353	330.9	1194.9	864.0	780.6	0.5144	1.0548	1.5692
154	360.5	2.945	0.3396	332.0	1195.1	863.1	779.7	0.5157	1.0524	1.5681
156	361.6	2.909	0.3438	333.1	1195.3	862.3	778.7	0.5170	1.0500	1.5670
158	362.6	2.874	0.3480	334.1	1195.5	861.4	777.8	0.5183	1.0476	1.5659
160	363.6	2.839	0.3522	335.2	1195.7	860.5	776.9	0.5196	1.0453	1.5649
162	364.6	2.806	0.3564	336.2	1195.8	859.6	776.0	0.5209	1.0429	1.5638
164	365.6	2.773	0.3606	337.3	1196.0	858.7	775.1	0.5221	1.0406	1.5627
166	366.5	2.741	0.3648	338.3	1196.2	857.9	774.2	0.5233	1.0384	1.5617
168	367.5	2.710	0.3691	339.3	1196.3	857.0	773.3	0.5245	1.0361	1.5607
170	368.5	2.679	0.3733	340.3	1196.5	856.2	772.4	0.5258	1.0339	1.5597
172	369.4	2.649	0.3775	341.3	1196.6	855.3	771.5	0.5270	1.0317	1.5587
174	370.4	2.620	0.3817	342.3	1196.8	854.5	770.6	0.5281	1.0295	1.5577
176	371.3	2.591	0.3859	343.3	1196.9	853.6	769.8	0.5293	1.0274	1.5567
178	372.2	2.563	0.3901	344.3	1197.1	852.8	768.9	0.5305	1.0252	1.5557
180	373.1	2.536	0.3943	345.2	1197.2	852.0	768.0	0.5316	1.0231	1.5547
182	374.0	2.509	0.3985	346.2	1197.4	851.2	767.2	0.5328	1.0210	1.5538
184	374.9	2.483	0.4027	347.1	1197.5	850.4	766.4	0.5339	1.0189	1.5528
186	375.8	2.457	0.4069	348.1	1197.6	849.5	765.5	0.5350	1.0169	1.5519
188	376.7	2.432	0.4111	349.0	1197.8	848.7	764.7	0.5361	1.0148	1.5509
190	377.6	2.408	0.4154	350.0	1197.9	847.9	763.9	0.5372	1.0128	1.5500
192	378.5	2.383	0.4196	350.9	1198.0	847.1	763.0	0.5383	1.0108	1.5491
194	379.3	2.360	0.4238	351.8	1198.1	846.3	762.2	0.5394	1.0089	1.5482
196	380.2	2.337	0.4280	352.7	1198.2	845.6	761.4	0.5404	1.0069	1.5473
198	381.0	2.314	0.4322	353.6	1198.4	844.8	760.6	0.5415	1.0049	1.5464
200	381.9	2.292	0.4364	354.5	1198.5	844.0	759.8	0.5426	1.0030	1.5456
202	382.7	2.270	0.4406	355.4	1198.6	843.2	759.0	0.5436	1.0011	1.5447
204	383.5	2.248	0.4448	356.2	1198.7	842.5	758.2	0.5446	0.9992	1.5438
206	384.4	2.227	0.4490	357.1	1198.8	841.7	757.4	0.5457	0.9973	1.5430
208	385.2	2.206	0.4532	358.0	1198.9	840.9	756.7	0.5467	0.9954	1.5421
210	386.0	2.186	0.4574	358.8	1199.0	840.2	755.9	0.5477	0.9936	1.5413
212	386.8	2.166	0.4616	359.7	1199.1	839.4	755.1	0.5487	0.9918	1.5405
214	387.6	2.147	0.4658	360.5	1199.2	838.7	754.3	0.5497	0.9900	1.5396
216	388.4	2.128	0.4700	361.4	1199.3	837.9	753.6	0.5507	0.9881	1.5388
218	389.2	2.109	0.4742	362.2	1199.4	837.2	752.8	0.5516	0.9864	1.5380
220	390.0	2.090	0.4784	363.0	1199.5	836.5	752.1	0.5526	0.9846	1.5372

^aThis table is abstracted from *Properties of Steam and Ammonia* by Prof. G. A. Goodenough.

491.6 cu. ft. of gas measured at 32 deg. fahr. is cooled 20 deg. fahr., at constant pressure the new volume will be 471.6 cu. ft.

It is only necessary to add (491.6 - 32) or 459.6 to the actual thermometer reading to get the absolute temperature, that is, $T = t + 459.6$, where T = absolute temperature, and t = actual thermometer reading on the Fahrenheit scale. For engineering work 460 deg. is used rather than 459.6 deg. For the Centigrade scale the relation is $T = t + 273.1$.

TABLE 2. VELOCITIES OF DRY AIR (AT VARIOUS TEMPERATURES) CORRESPONDING TO VARIOUS VELOCITY PRESSURES IN OUNCES PER SQUARE INCH^a

PRESSURE		TEMPERATURE, DEG. FAHR.									
Ounces	Inches	50°	60°	70°	80°	100°	150°	200°	300°	500°	550°
0.1	0.1734	1635	1653	1667	1683	1714	1788	1860	1996	2244	2410
0.2	0.3468	2313	2338	2358	2380	2424	2530	2632	2824	3174	3405
0.3	0.5202	2833	2864	2888	2915	2969	3098	3223	3458	3887	4175
0.4	0.6936	3272	3307	3335	3367	3428	3578	3722	3994	4489	4850
0.5	0.8670	3658	3698	3729	3765	3833	4000	4162	4466	5019	5395
0.6	1.0400	4007	4051	4085	4124	4199	4382	4559	4892	5498	5900
0.7	1.2140	4329	4375	4412	4454	4535	4733	4924	5283	5938	6380
0.8	1.3870	4626	4677	4716	4761	4848	5059	5263	5647	6373	7250
0.9	1.5605	4907	4960	5002	5050	5142	5366	5582	5990	6798	7625
1.0	1.7340	5172	5229	5273	5323	5420	5656	5884	6314	7098	8000
1.1	1.9073	5426	5485	5531	5584	5685	5933	6172	6623	7444	8350
1.2	2.0808	5664	5725	5774	5828	5935	6194	6443	6914	7772	8700
1.3	2.2540	5896	5960	6011	6068	6179	6448	6708	7198	8090	9020
1.4	2.4275	6120	6186	6238	6297	6412	6692	6962	7470	8396	9345
1.5	2.6010	6335	6404	6457	6520	6638	6928	7207	7733	8692	9650
1.6	2.7742	6543	6614	6670	6734	6856	7155	7444	7987	8977	9950
1.8	3.1210	6942	7017	7076	7143	7274	7591	7897	8473	9524	10520
2.0	3.4680	7315	7395	7457	7528	7665	8000	8322	8930	10037	11070
2.2	3.8145	7672	7755	7820	7894	8038	8462	8777	9364	10525	11580
2.4	4.1615	8012	8099	8168	8245	8396	8822	9115	9781	10995	11800
2.6	4.5080	8338	8429	8500	8581	8737	9168	9486	10179	11440	12280
2.8	4.8550	8654	8748	8822	8906	9068	9494	9815	10564	11873	12750
3.0	5.2020	8960	9057	9134	9220	9388	9815	10133	10938	12293	13200

^aFrom *Fan Engineering*, published by The Buffalo Forge Company.

TABLE 3. WEIGHTS OF MATERIALS

	Pounds per Cubic Foot		Pounds per Cubic Foot
Ashes.....	45 - 50	Lignite.....	31 - 47
Barley.....	37 - 40	Lime.....	50 - 80
Cement.....	90 - 118	Limestone.....	90 - 110
Charcoal.....	17 - 27	Oats.....	28 - 31
Clay.....	95 - 169	Ore.....	105 - 215
Coal (lump).....	50 - 54	Rye.....	44 - 50
Coal (screenings).....	53 - 60	Sand.....	75 - 120
Nut and screenings.....	26 - 30	Slag (blast-furnace).....	37 - 63
Coke.....	75 - 115	Stone.....	90 - 120
Earth.....	90 - 135	Wheat.....	44 - 50
Gravel.....			

TABLE 4. LINEAL EXPANSION OF SOLIDS AT ORDINARY TEMPERATURES^a
(Tabular values represent increase per foot per 100 deg. increase in temperature, Fahrenheit)

SUBSTANCE	TEMP. CONDITIONS ^b DEG. FAHR.	COEFFICIENT PER 100 DEG. FAHR.	SUBSTANCE	TEMP. CONDITIONS ^b DEG. FAHR.	COEFFICIENT PER 100 DEG. FAHR.
Brass (cast).....	32 to 212	0.001042	Lead.....	32 to 212	0.001505
Brass (wire).....	32 to 212	0.001072	Mercury.....	32 to 212	0.009984
Copper.....	32 to 212	0.000926	Limestone.....	32 to 212	0.000139
Glass (English flint).....	32 to 212	0.000451	Steel (Bessemer rolled, hard).....	0 to 212	0.00056
Granite (average).....	32 to 212	0.000482	Steel (Bessemer rolled, soft).....	0 to 212	0.00063
Iron (cast).....	104	0.000589	Steel (cast, French).....	104	0.000734
Iron (soft forged).....	0 to 212	0.000634	Steel (cast annealed, English).....	104	0.000608
Iron (wire).....	32 to 212	0.000800			

^aFrom *Mechanical Equipment of Buildings*, Vol. 1, by Harding and Willard, revised edition, 1929.^bWhere range of temperature is given, coefficient is mean over range.^cCoefficient of cubical expansion.