

Temp. (°F)	Pressure (psia)	Volume (ft ³ /lbm)		Density (lbm/ft ³)		Enthalpy (Btu/lbm)			Entropy (Btu/lbm-°R)		Int. Energy (Btu/lbm)		Cp/Cv		Sound Speed (ft/s)	
		Liquid	Vapor	Liquid	Vapor	Liquid	Latent	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
-80	7.178	0.02551	13.2010	39.19	0.0758	-20.89	195.59	174.70	-0.0521	0.4630	-20.92	157.16	1.5834	1.2085	4182.6	720.4
-79	7.392	0.02554	12.8470	39.15	0.0778	-20.38	195.35	174.97	-0.0508	0.4624	-20.41	157.38	1.5839	1.2085	4170.9	721.0
-78	7.610	0.02557	12.5050	39.11	0.0800	-19.86	195.09	175.23	-0.0494	0.4617	-19.90	157.61	1.5843	1.2085	4159.1	721.6
-77	7.834	0.02560	12.1740	39.07	0.0821	-19.35	194.85	175.50	-0.0481	0.4611	-19.39	157.84	1.5848	1.2086	4147.4	722.2
-76	8.063	0.02562	11.8530	39.03	0.0844	-18.83	194.59	175.76	-0.0468	0.4604	-18.87	158.06	1.5853	1.2086	4135.7	722.8
-75	8.297	0.02565	11.5430	38.99	0.0866	-18.32	194.34	176.02	-0.0454	0.4598	-18.36	158.29	1.5858	1.2087	4124.0	723.4
-74	8.537	0.02568	11.2420	38.94	0.0890	-17.80	194.09	176.29	-0.0441	0.4592	-17.84	158.52	1.5863	1.2087	4112.3	723.9
-73	8.782	0.02571	10.9510	38.90	0.0913	-17.29	193.84	176.55	-0.0428	0.4586	-17.33	158.74	1.5868	1.2088	4100.5	724.5
-72	9.033	0.02573	10.6690	38.86	0.0937	-16.77	193.58	176.81	-0.0414	0.4579	-16.81	158.97	1.5873	1.2089	4088.8	725.1
-71	9.289	0.02576	10.3960	38.82	0.0962	-16.25	193.33	177.08	-0.0401	0.4573	-16.30	159.19	1.5878	1.2089	4077.1	725.6
-70	9.551	0.02579	10.1320	38.78	0.0987	-15.74	193.08	177.34	-0.0388	0.4567	-15.78	159.42	1.5883	1.2090	4065.4	726.2
-69	9.818	0.02582	9.8757	38.73	0.1013	-15.22	192.82	177.60	-0.0374	0.4561	-15.27	159.65	1.5888	1.2091	4053.6	726.7
-68	10.092	0.02585	9.6273	38.69	0.1039	-14.70	192.56	177.86	-0.0361	0.4555	-14.75	159.87	1.5893	1.2092	4041.9	727.3
-67	10.371	0.02587	9.3865	38.65	0.1065	-14.18	192.31	178.13	-0.0348	0.4549	-14.23	160.10	1.5898	1.2093	4030.2	727.8
-66	10.657	0.02590	9.1530	38.61	0.1093	-13.66	192.05	178.39	-0.0335	0.4544	-13.71	160.33	1.5903	1.2094	4018.5	728.4
-65	10.949	0.02593	8.9266	38.57	0.1120	-13.14	191.79	178.65	-0.0322	0.4538	-13.20	160.55	1.5908	1.2095	4006.7	728.9
-64	11.247	0.02596	8.7071	38.52	0.1149	-12.62	191.53	178.91	-0.0309	0.4532	-12.68	160.78	1.5913	1.2097	3995.0	729.4
-63	11.551	0.02599	8.4941	38.48	0.1177	-12.10	191.27	179.17	-0.0295	0.4527	-12.16	161.01	1.5918	1.2098	3983.3	729.9
-62	11.862	0.02602	8.2875	38.44	0.1207	-11.58	191.02	179.44	-0.0282	0.4521	-11.64	161.23	1.5923	1.2099	3971.5	730.4
-61	12.179	0.02604	8.0870	38.40	0.1237	-11.06	190.76	179.70	-0.0269	0.4516	-11.12	161.46	1.5928	1.2100	3959.8	730.9
-60	12.503	0.02607	7.8924	38.35	0.1267	-10.54	190.50	179.96	-0.0256	0.4510	-10.60	161.69	1.5933	1.2102	3948.0	731.4
-59	12.833	0.02610	7.7035	38.31	0.1298	-10.02	190.24	180.22	-0.0243	0.4505	-10.08	161.91	1.5938	1.2103	3936.3	731.9
-58	13.171	0.02613	7.5202	38.27	0.1330	-9.49	189.97	180.48	-0.0230	0.4499	-9.56	162.14	1.5943	1.2105	3924.5	732.4
-57	13.515	0.02616	7.3422	38.23	0.1362	-8.97	189.71	180.74	-0.0217	0.4494	-9.04	162.37	1.5948	1.2107	3912.8	732.9
-56	13.866	0.02619	7.1693	38.18	0.1395	-8.45	189.45	181.00	-0.0204	0.4489	-8.51	162.59	1.5953	1.2108	3901.1	733.3
-55	14.225	0.02622	7.0014	38.14	0.1428	-7.92	189.18	181.26	-0.0191	0.4484	-7.99	162.82	1.5958	1.2110	3889.3	733.8
-54	14.590	0.02625	6.8383	38.10	0.1462	-7.40	188.92	181.52	-0.0179	0.4478	-7.47	163.05	1.5964	1.2112	3877.6	734.3
-53	14.963	0.02628	6.6799	38.05	0.1497	-6.87	188.65	181.78	-0.0166	0.4473	-6.95	163.27	1.5969	1.2114	3865.8	734.7
-52	15.343	0.02631	6.5260	38.01	0.1532	-6.35	188.39	182.04	-0.0153	0.4468	-6.42	163.50	1.5974	1.2116	3854.0	735.2
-51	15.731	0.02634	6.3763	37.97	0.1568	-5.82	188.12	182.30	-0.0140	0.4463	-5.90	163.73	1.5979	1.2118	3842.3	735.6
-50	16.126	0.02637	6.2309	37.93	0.1605	-5.29	187.85	182.56	-0.0127	0.4458	-5.37	163.95	1.5984	1.2120	3830.5	736.0
-49	16.529	0.02640	6.0896	37.88	0.1642	-4.77	187.59	182.82	-0.0114	0.4453	-4.85	164.18	1.5989	1.2123	3818.8	736.4
-48	16.940	0.02643	5.9521	37.84	0.1680	-4.24	187.32	183.08	-0.0102	0.4449	-4.32	164.41	1.5995	1.2125	3807.0	736.9
-47	17.359	0.02646	5.8185	37.80	0.1719	-3.71	187.04	183.33	-0.0089	0.4444	-3.80	164.63	1.6000	1.2127	3795.2	737.3
-46	17.785	0.02649	5.6885	37.75	0.1758	-3.18	186.77	183.59	-0.0076	0.4439	-3.27	164.86	1.6005	1.2130	3783.5	737.7
-45	18.220	0.02652	5.5621	37.71	0.1798	-2.65	186.50	183.85	-0.0063	0.4434	-2.74	165.08	1.6010	1.2132	3771.7	738.1
-44	18.663	0.02655	5.4391	37.66	0.1839	-2.12	186.23	184.11	-0.0051	0.4430	-2.22	165.31	1.6016	1.2135	3759.9	738.5
-43	19.114	0.02658	5.3195	37.62	0.1880	-1.59	185.96	184.37	-0.0038	0.4425	-1.69	165.54	1.6021	1.2138	3748.1	738.8
-42	19.574	0.02661	5.2031	37.58	0.1922	-1.06	185.68	184.62	-0.0025	0.4421	-1.16	165.76	1.6026	1.2140	3736.4	739.2
-41	20.042	0.02664	5.0898	37.53	0.1965	-0.53	185.41	184.88	-0.0013	0.4416	-0.63	165.99	1.6032	1.2143	3724.6	739.6



Temp. (°F)	Pressure (psia)	Volume (ft³/lbm)		Density (lbm/ft³)		Enthalpy (Btu/lbm)			Entropy (Btu/lbm-°R)		Int. Energy (Btu/lbm)		Cp/Cv		Sound Speed (ft/s)	
		Liquid	Vapor	Liquid	Vapor	Liquid	Latent	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
-40	20.518	0.02667	4.9795	37.49	0.2008	0.00	185.14	185.14	0.000	0.441	-0.10	166.22	1.6037	1.2146	3712.8	739.9
-39	21.004	0.02671	4.8722	37.45	0.2053	0.53	184.86	185.39	0.001	0.441	0.43	166.44	1.6042	1.2149	3701.0	740.3
-38	21.498	0.02674	4.7676	37.40	0.2098	1.07	184.58	185.65	0.003	0.440	0.96	166.67	1.6048	1.2152	3689.2	740.6
-37	22.001	0.02677	4.6659	37.36	0.2143	1.60	184.30	185.90	0.004	0.440	1.49	166.89	1.6053	1.2155	3677.4	741.0
-36	22.513	0.02680	4.5668	37.31	0.2190	2.13	184.03	186.16	0.005	0.439	2.02	167.12	1.6059	1.2159	3665.6	741.3
-35	23.034	0.02683	4.4703	37.27	0.2237	2.67	183.74	186.41	0.006	0.439	2.55	167.35	1.6064	1.2162	3653.8	741.6
-34	23.565	0.02686	4.3762	37.23	0.2285	3.20	183.47	186.67	0.008	0.439	3.09	167.57	1.6070	1.2165	3642.1	742.0
-33	24.105	0.02690	4.2846	37.18	0.2334	3.74	183.18	186.92	0.009	0.438	3.62	167.80	1.6075	1.2169	3630.2	742.3
-32	24.654	0.02693	4.1954	37.14	0.2384	4.28	182.90	187.18	0.010	0.438	4.15	168.02	1.6081	1.2172	3618.4	742.6
-31	25.213	0.02696	4.1084	37.09	0.2434	4.81	182.62	187.43	0.011	0.437	4.69	168.25	1.6087	1.2176	3606.6	742.9
-30	25.781	0.02699	4.0237	37.05	0.2485	5.35	182.33	187.68	0.013	0.437	5.22	168.47	1.6092	1.2180	3594.8	743.2
-29	26.360	0.02703	3.9411	37.00	0.2537	5.89	182.04	187.93	0.014	0.436	5.76	168.70	1.6098	1.2184	3583.0	743.4
-28	26.948	0.02706	3.8605	36.96	0.2590	6.43	181.76	188.19	0.015	0.436	6.29	168.92	1.6104	1.2188	3571.2	743.7
-27	27.546	0.02709	3.7820	36.91	0.2644	6.97	181.47	188.44	0.016	0.436	6.83	169.15	1.6110	1.2192	3559.4	744.0
-26	28.154	0.02712	3.7055	36.87	0.2699	7.51	181.18	188.69	0.018	0.435	7.36	169.37	1.6115	1.2196	3547.6	744.3
-25	28.773	0.02716	3.6308	36.82	0.2754	8.05	180.89	188.94	0.019	0.435	7.90	169.60	1.6121	1.2200	3535.8	744.5
-24	29.402	0.02719	3.5580	36.78	0.2811	8.59	180.60	189.19	0.020	0.435	8.44	169.82	1.6127	1.2204	3523.9	744.7
-23	30.041	0.02722	3.4870	36.73	0.2868	9.13	180.31	189.44	0.021	0.434	8.98	170.05	1.6133	1.2209	3512.1	745.0
-22	30.691	0.02726	3.4177	36.69	0.2926	9.67	180.03	189.70	0.022	0.434	9.52	170.27	1.6139	1.2213	3500.3	745.2
-21	31.351	0.02729	3.3501	36.64	0.2985	10.22	179.73	189.94	0.024	0.433	10.06	170.50	1.6145	1.2218	3488.4	745.4
-20	32.023	0.02733	3.2841	36.60	0.3045	10.76	179.43	190.19	0.025	0.433	10.60	170.72	1.6151	1.2223	3476.6	745.7
-19	32.705	0.02736	3.2198	36.55	0.3106	11.30	179.14	190.44	0.026	0.433	11.14	170.94	1.6157	1.2227	3464.8	745.9
-18	33.398	0.02739	3.1570	36.51	0.3168	11.85	178.84	190.69	0.027	0.432	11.68	171.17	1.6163	1.2232	3452.9	746.1
-17	34.102	0.02743	3.0956	36.46	0.3230	12.39	178.55	190.94	0.029	0.432	12.22	171.39	1.6170	1.2237	3441.1	746.2
-16	34.818	0.02746	3.0358	36.41	0.3294	12.94	178.25	191.19	0.030	0.432	12.76	171.62	1.6176	1.2242	3429.2	746.4
-15	35.545	0.02750	2.9773	36.37	0.3359	13.49	177.95	191.44	0.031	0.431	13.31	171.84	1.6182	1.2248	3417.4	746.6
-14	36.283	0.02753	2.9203	36.32	0.3424	14.03	177.65	191.68	0.032	0.431	13.85	172.06	1.6188	1.2253	3405.5	746.8
-13	37.033	0.02757	2.8646	36.28	0.3491	14.58	177.35	191.93	0.033	0.431	14.39	172.29	1.6195	1.2258	3393.7	746.9
-12	37.795	0.02760	2.8101	36.23	0.3559	15.13	177.05	192.18	0.035	0.430	14.94	172.51	1.6201	1.2264	3381.8	747.1
-11	38.568	0.02764	2.7570	36.18	0.3627	15.68	176.74	192.42	0.036	0.430	15.48	172.73	1.6208	1.2269	3369.9	747.2
-10	39.354	0.02767	2.7051	36.14	0.3697	16.23	176.44	192.67	0.037	0.430	16.03	172.95	1.6214	1.2275	3358.1	747.4
-9	40.151	0.02771	2.6543	36.09	0.3767	16.78	176.13	192.91	0.038	0.429	16.58	173.18	1.6221	1.2281	3346.2	747.5
-8	40.961	0.02774	2.6048	36.05	0.3839	17.33	175.83	193.16	0.040	0.429	17.12	173.40	1.6228	1.2287	3334.3	747.6
-7	41.783	0.02778	2.5563	36.00	0.3912	17.89	175.52	193.40	0.041	0.429	17.67	173.62	1.6234	1.2293	3322.4	747.7
-6	42.617	0.02782	2.5090	35.95	0.3986	18.44	175.20	193.64	0.042	0.428	18.22	173.84	1.6241	1.2299	3310.6	747.8
-5	43.464	0.02785	2.4628	35.90	0.4061	18.99	174.90	193.89	0.043	0.428	18.77	174.07	1.6248	1.2306	3298.7	747.9
-4	44.323	0.02789	2.4176	35.86	0.4136	19.55	174.58	194.13	0.044	0.428	19.32	174.29	1.6255	1.2312	3286.8	748.0
-3	45.196	0.02793	2.3734	35.81	0.4213	20.10	174.27	194.37	0.046	0.427	19.87	174.51	1.6262	1.2319	3274.9	748.1
-2	46.081	0.02796	2.3301	35.76	0.4292	20.66	173.95	194.61	0.047	0.427	20.42	174.73	1.6269	1.2325	3263.0	748.1
-1	46.979	0.02800	2.2879	35.72	0.4371	21.21	173.64	194.85	0.048	0.427	20.97	174.95	1.6276	1.2332	3251.1	748.2



Temp. (°F)	Pressure (psia)	Volume (ft ³ /lbm)		Density (lbm/ft ³)		Enthalpy (Btu/lbm)			Entropy (Btu/lbm-°R)		Int. Energy (Btu/lbm)		Cp/Cv		Sound Speed (ft/s)	
		Liquid	Vapor	Liquid	Vapor	Liquid	Latent	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
0	47.890	0.02804	2.2466	35.67	0.4451	21.77	173.32	195.09	0.0492	0.4263	21.52	175.17	1.6284	1.2339	3239.2	748.3
1	48.815	0.02807	2.2062	35.62	0.4533	22.33	173.00	195.33	0.0504	0.4260	22.08	175.39	1.6291	1.2346	3227.3	748.3
2	49.752	0.02811	2.1667	35.57	0.4615	22.89	172.68	195.57	0.0516	0.4257	22.63	175.61	1.6298	1.2353	3215.4	748.3
3	50.704	0.02815	2.1280	35.53	0.4699	23.45	172.36	195.81	0.0528	0.4254	23.18	175.83	1.6306	1.2360	3203.4	748.4
4	51.669	0.02819	2.0902	35.48	0.4784	24.01	172.04	196.05	0.0540	0.4251	23.74	176.05	1.6313	1.2368	3191.5	748.4
5	52.647	0.02822	2.0532	35.43	0.4870	24.57	171.72	196.29	0.0552	0.4248	24.29	176.27	1.6321	1.2375	3179.6	748.4
6	53.640	0.02826	2.0170	35.38	0.4958	25.13	171.40	196.53	0.0564	0.4245	24.85	176.49	1.6328	1.2383	3167.7	748.4
7	54.646	0.02830	1.9816	35.34	0.5046	25.69	171.07	196.76	0.0576	0.4242	25.41	176.71	1.6336	1.2391	3155.7	748.4
8	55.667	0.02834	1.9469	35.29	0.5136	26.26	170.74	197.00	0.0588	0.4239	25.96	176.93	1.6344	1.2399	3143.8	748.4
9	56.702	0.02838	1.9130	35.24	0.5227	26.82	170.42	197.24	0.0600	0.4236	26.52	177.15	1.6352	1.2407	3131.9	748.3
10	57.751	0.02842	1.8798	35.19	0.5320	27.39	170.09	197.47	0.0612	0.4233	27.08	177.37	1.6360	1.2415	3119.9	748.3
11	58.814	0.02846	1.8473	35.14	0.5413	27.95	169.75	197.70	0.0624	0.4231	27.64	177.59	1.6368	1.2423	3108.0	748.3
12	59.892	0.02850	1.8155	35.09	0.5508	28.52	169.42	197.94	0.0636	0.4228	28.20	177.80	1.6376	1.2432	3096.0	748.2
13	60.985	0.02854	1.7844	35.04	0.5604	29.08	169.09	198.17	0.0648	0.4225	28.76	178.02	1.6384	1.2441	3084.1	748.2
14	62.093	0.02858	1.7539	35.00	0.5702	29.65	168.75	198.40	0.0659	0.4222	29.32	178.24	1.6393	1.2449	3072.1	748.1
15	63.216	0.02862	1.7240	34.95	0.5801	30.22	168.42	198.64	0.0671	0.4219	29.89	178.46	1.6401	1.2458	3060.2	748.0
16	64.353	0.02866	1.6947	34.90	0.5901	30.79	168.08	198.87	0.0683	0.4217	30.45	178.67	1.6410	1.2468	3048.2	747.9
17	65.506	0.02870	1.6661	34.85	0.6002	31.36	167.74	199.10	0.0695	0.4214	31.01	178.89	1.6418	1.2477	3036.2	747.8
18	66.675	0.02874	1.6380	34.80	0.6105	31.93	167.40	199.33	0.0707	0.4211	31.58	179.11	1.6427	1.2486	3024.2	747.7
19	67.858	0.02878	1.6105	34.75	0.6209	32.51	167.06	199.56	0.0719	0.4209	32.14	179.32	1.6436	1.2496	3012.2	747.6
20	69.058	0.02882	1.5836	34.70	0.6315	33.08	166.71	199.79	0.0731	0.4206	32.71	179.54	1.6445	1.2506	3000.3	747.5
21	70.273	0.02886	1.5572	34.65	0.6422	33.65	166.37	200.02	0.0742	0.4204	33.28	179.75	1.6454	1.2516	2988.3	747.3
22	71.504	0.02890	1.5314	34.60	0.6530	34.23	166.01	200.24	0.0754	0.4201	33.84	179.97	1.6463	1.2526	2976.3	747.2
23	72.751	0.02894	1.5060	34.55	0.6640	34.80	165.67	200.47	0.0766	0.4198	34.41	180.18	1.6473	1.2536	2964.3	747.0
24	74.014	0.02899	1.4812	34.50	0.6751	35.38	165.32	200.70	0.0778	0.4196	34.98	180.40	1.6482	1.2546	2952.3	746.9
25	75.293	0.02903	1.4569	34.45	0.6864	35.96	164.96	200.92	0.0790	0.4193	35.55	180.61	1.6492	1.2557	2940.3	746.7
26	76.588	0.02907	1.4330	34.40	0.6978	36.53	164.62	201.15	0.0801	0.4191	36.12	180.82	1.6501	1.2568	2928.2	746.5
27	77.900	0.02911	1.4096	34.35	0.7094	37.11	164.26	201.37	0.0813	0.4188	36.69	181.04	1.6511	1.2579	2916.2	746.3
28	79.229	0.02916	1.3867	34.30	0.7211	37.69	163.91	201.60	0.0825	0.4186	37.27	181.25	1.6521	1.2590	2904.2	746.1
29	80.574	0.02920	1.3642	34.25	0.7330	38.27	163.55	201.82	0.0837	0.4183	37.84	181.46	1.6531	1.2601	2892.2	745.9
30	81.936	0.02924	1.3422	34.20	0.7450	38.86	163.18	202.04	0.0848	0.4181	38.41	181.68	1.6541	1.2613	2880.1	745.7
31	83.316	0.02929	1.3206	34.15	0.7572	39.44	162.82	202.26	0.0860	0.4179	38.99	181.89	1.6552	1.2624	2868.1	745.5
32	84.712	0.02933	1.2994	34.09	0.7696	40.02	162.46	202.48	0.0872	0.4176	39.56	182.10	1.6562	1.2636	2856.0	745.2
33	86.126	0.02938	1.2786	34.04	0.7821	40.61	162.09	202.70	0.0884	0.4174	40.14	182.31	1.6573	1.2648	2844.0	745.0
34	87.557	0.02942	1.2582	33.99	0.7948	41.19	161.73	202.92	0.0895	0.4171	40.72	182.52	1.6584	1.2661	2831.9	744.7
35	89.005	0.02946	1.2382	33.94	0.8076	41.78	161.36	203.14	0.0907	0.4169	41.29	182.73	1.6594	1.2673	2819.9	744.5
36	90.471	0.02951	1.2186	33.89	0.8206	42.37	160.99	203.36	0.0919	0.4167	41.87	182.94	1.6606	1.2686	2807.8	744.2
37	91.955	0.02956	1.1994	33.84	0.8338	42.96	160.62	203.57	0.0930	0.4164	42.45	183.15	1.6617	1.2699	2795.7	743.9
38	93.457	0.02960	1.1805	33.78	0.8471	43.54	160.25	203.79	0.0942	0.4162	43.03	183.36	1.6628	1.2712	2783.6	743.6
39	94.977	0.02965	1.1620	33.73	0.8606	44.14	159.88	204.01	0.0954	0.4160	43.61	183.57	1.6640	1.2725	2771.5	743.3



Temp. (°F)	Pressure (psia)	Volume (ft ³ /lbm)		Density (lbm/ft ³)		Enthalpy (Btu/lbm)			Entropy (Btu/lbm-°R)		Int. Energy (Btu/lbm)		Cp/Cv		Sound Speed (ft/s)	
		Liquid	Vapor	Liquid	Vapor	Liquid	Latent	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
40	96.515	0.02969	1.1438	33.68	0.8743	44.73	159.49	204.22	0.0965	0.4157	44.20	183.78	1.6651	1.2739	2759.5	742.9
41	98.072	0.02974	1.1260	33.63	0.8881	45.32	159.11	204.43	0.0977	0.4155	44.78	183.99	1.6663	1.2753	2747.4	742.6
42	99.646	0.02979	1.1085	33.57	0.9022	45.91	158.74	204.65	0.0989	0.4153	45.36	184.19	1.6675	1.2767	2735.2	742.3
43	101.240	0.02983	1.0913	33.52	0.9164	46.51	158.35	204.86	0.1000	0.4151	45.95	184.40	1.6687	1.2781	2723.1	741.9
44	102.850	0.02988	1.0744	33.47	0.9307	47.10	157.97	205.07	0.1012	0.4148	46.53	184.61	1.6700	1.2795	2711.0	741.5
45	104.480	0.02993	1.0579	33.41	0.9453	47.70	157.58	205.28	0.1024	0.4146	47.12	184.81	1.6712	1.2810	2698.9	741.2
46	106.130	0.02998	1.0416	33.36	0.9601	48.30	157.20	205.49	0.1035	0.4144	47.71	185.02	1.6725	1.2825	2686.8	740.8
47	107.800	0.03002	1.0256	33.31	0.9750	48.89	156.81	205.70	0.1047	0.4142	48.29	185.22	1.6738	1.2840	2674.6	740.4
48	109.490	0.03007	1.0100	33.25	0.9901	49.49	156.42	205.91	0.1059	0.4140	48.88	185.43	1.6751	1.2856	2662.5	740.0
49	111.200	0.03012	0.9946	33.20	1.0055	50.09	156.02	206.11	0.1070	0.4138	49.47	185.63	1.6765	1.2872	2650.3	739.6
50	112.930	0.03017	0.9795	33.15	1.0210	50.70	155.63	206.32	0.1082	0.4135	50.06	185.84	1.6778	1.2888	2638.2	739.1
51	114.670	0.03022	0.9646	33.09	1.0367	51.30	155.22	206.52	0.1094	0.4133	50.66	186.04	1.6792	1.2904	2626.0	738.7
52	116.440	0.03027	0.9501	33.04	1.0526	51.90	154.83	206.73	0.1105	0.4131	51.25	186.24	1.6806	1.2921	2613.8	738.2
53	118.230	0.03032	0.9357	32.98	1.0687	52.51	154.42	206.93	0.1117	0.4129	51.84	186.45	1.6820	1.2938	2601.7	737.8
54	120.030	0.03037	0.9217	32.93	1.0850	53.11	154.02	207.13	0.1128	0.4127	52.44	186.65	1.6835	1.2955	2589.5	737.3
55	121.860	0.03042	0.9079	32.87	1.1015	53.72	153.61	207.33	0.1140	0.4125	53.03	186.85	1.6849	1.2972	2577.3	736.8
56	123.710	0.03047	0.8943	32.82	1.1182	54.33	153.20	207.53	0.1152	0.4123	53.63	187.05	1.6864	1.2990	2565.1	736.3
57	125.570	0.03053	0.8809	32.76	1.1352	54.94	152.79	207.73	0.1163	0.4121	54.23	187.25	1.6879	1.3009	2552.9	735.8
58	127.460	0.03058	0.8678	32.71	1.1523	55.55	152.38	207.93	0.1175	0.4118	54.83	187.45	1.6895	1.3027	2540.7	735.3
59	129.370	0.03063	0.8550	32.65	1.1697	56.16	151.97	208.13	0.1186	0.4116	55.43	187.65	1.6910	1.3046	2528.4	734.8
60	131.300	0.03068	0.8423	32.59	1.1872	56.77	151.55	208.32	0.1198	0.4114	56.03	187.84	1.6926	1.3066	2516.2	734.2
61	133.250	0.03073	0.8299	32.54	1.2050	57.39	151.13	208.52	0.1210	0.4112	56.63	188.04	1.6942	1.3085	2504.0	733.7
62	135.220	0.03079	0.8176	32.48	1.2231	58.00	150.71	208.71	0.1221	0.4110	57.23	188.24	1.6959	1.3106	2491.7	733.1
63	137.220	0.03084	0.8056	32.42	1.2413	58.62	150.28	208.90	0.1233	0.4108	57.83	188.43	1.6976	1.3126	2479.4	732.6
64	139.230	0.03090	0.7938	32.37	1.2598	59.24	149.87	209.10	0.1244	0.4106	58.44	188.63	1.6993	1.3147	2467.2	732.0
65	141.270	0.03095	0.7822	32.31	1.2785	59.85	149.44	209.29	0.1256	0.4104	59.05	188.82	1.7010	1.3169	2454.9	731.4
66	143.330	0.03101	0.7708	32.25	1.2974	60.47	149.00	209.47	0.1268	0.4102	59.65	189.02	1.7028	1.3191	2442.6	730.8
67	145.410	0.03106	0.7595	32.20	1.3166	61.10	148.56	209.66	0.1279	0.4100	60.26	189.21	1.7045	1.3213	2430.3	730.2
68	147.510	0.03112	0.7485	32.14	1.3360	61.72	148.13	209.85	0.1291	0.4098	60.87	189.40	1.7064	1.3236	2418.0	729.6
69	149.630	0.03117	0.7376	32.08	1.3557	62.34	147.69	210.03	0.1302	0.4096	61.48	189.60	1.7082	1.3259	2405.7	728.9
70	151.780	0.03123	0.7270	32.02	1.3756	62.97	147.25	210.22	0.1314	0.4094	62.09	189.79	1.7101	1.3283	2393.4	728.3
71	153.950	0.03129	0.7165	31.96	1.3957	63.59	146.81	210.40	0.1325	0.4092	62.70	189.98	1.7121	1.3307	2381.0	727.6
72	156.140	0.03134	0.7061	31.90	1.4162	64.22	146.36	210.58	0.1337	0.4090	63.32	190.17	1.7140	1.3332	2368.7	727.0
73	158.360	0.03140	0.6960	31.85	1.4368	64.85	145.91	210.76	0.1349	0.4088	63.93	190.35	1.7160	1.3358	2356.3	726.3
74	160.590	0.03146	0.6860	31.79	1.4578	65.48	145.46	210.94	0.1360	0.4086	64.55	190.54	1.7180	1.3384	2343.9	725.6
75	162.850	0.03152	0.6762	31.73	1.4789	66.11	145.01	211.12	0.1372	0.4084	65.16	190.73	1.7201	1.3410	2331.6	724.9
76	165.140	0.03158	0.6665	31.67	1.5004	66.75	144.56	211.30	0.1383	0.4082	65.78	190.91	1.7222	1.3437	2319.2	724.2
77	167.440	0.03164	0.6570	31.61	1.5221	67.38	144.09	211.47	0.1395	0.4080	66.40	191.10	1.7244	1.3465	2306.7	723.5
78	169.780	0.03170	0.6476	31.55	1.5441	68.02	143.62	211.64	0.1406	0.4078	67.02	191.28	1.7266	1.3493	2294.3	722.7
79	172.130	0.03176	0.6384	31.49	1.5664	68.65	143.16	211.81	0.1418	0.4076	67.64	191.47	1.7288	1.3522	2281.9	722.0



Temp. (°F)	Pressure (psia)	Volume (ft ³ /lbm)		Density (lbm/ft ³)		Enthalpy (Btu/lbm)			Entropy (Btu/lbm-°R)		Int. Energy (Btu/lbm)		Cp/Cv		Sound Speed (ft/s)	
		Liquid	Vapor	Liquid	Vapor	Liquid	Latent	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
80	174.510	0.03182	0.6293	31.43	1.5890	69.29	142.69	211.98	0.1430	0.4074	68.26	191.65	1.7311	1.3551	2269.4	721.2
81	176.910	0.03188	0.6204	31.37	1.6118	69.93	142.22	212.15	0.1441	0.4072	68.89	191.83	1.7334	1.3581	2256.9	720.5
82	179.330	0.03195	0.6116	31.30	1.6350	70.57	141.75	212.32	0.1453	0.4070	69.51	192.01	1.7358	1.3611	2244.4	719.7
83	181.780	0.03201	0.6030	31.24	1.6584	71.22	141.27	212.49	0.1464	0.4068	70.14	192.19	1.7382	1.3643	2231.9	718.9
84	184.260	0.03207	0.5945	31.18	1.6821	71.86	140.79	212.65	0.1476	0.4066	70.77	192.37	1.7406	1.3674	2219.4	718.1
85	186.760	0.03214	0.5861	31.12	1.7062	72.51	140.30	212.81	0.1488	0.4064	71.40	192.54	1.7431	1.3707	2206.9	717.2
86	189.280	0.03220	0.5779	31.06	1.7305	73.15	139.82	212.97	0.1499	0.4062	72.03	192.72	1.7457	1.3740	2194.3	716.4
87	191.830	0.03227	0.5698	30.99	1.7551	73.80	139.33	213.13	0.1511	0.4060	72.66	192.89	1.7483	1.3774	2181.7	715.5
88	194.400	0.03233	0.5618	30.93	1.7801	74.45	138.84	213.29	0.1522	0.4057	73.29	193.07	1.7509	1.3808	2169.1	714.7
89	197.000	0.03240	0.5539	30.87	1.8054	75.11	138.34	213.45	0.1534	0.4055	73.92	193.24	1.7536	1.3843	2156.5	713.8
90	199.620	0.03246	0.5462	30.80	1.8310	75.76	137.84	213.60	0.1546	0.4053	74.56	193.41	1.7564	1.3879	2143.8	712.9
91	202.270	0.03253	0.5385	30.74	1.8569	76.42	137.34	213.75	0.1557	0.4051	75.20	193.58	1.7592	1.3916	2131.2	712.0
92	204.950	0.03260	0.5310	30.68	1.8832	77.07	136.83	213.90	0.1569	0.4049	75.83	193.75	1.7621	1.3953	2118.5	711.0
93	207.650	0.03267	0.5236	30.61	1.9098	77.73	136.32	214.05	0.1581	0.4047	76.47	193.92	1.7650	1.3991	2105.8	710.1
94	210.380	0.03274	0.5163	30.55	1.9368	78.39	135.81	214.20	0.1592	0.4045	77.12	194.09	1.7679	1.4030	2093.0	709.1
95	213.130	0.03281	0.5091	30.48	1.9641	79.05	135.30	214.35	0.1604	0.4043	77.76	194.25	1.7710	1.4069	2080.3	708.2
96	215.910	0.03288	0.5021	30.42	1.9918	79.72	134.77	214.49	0.1615	0.4041	78.40	194.42	1.7741	1.4110	2067.5	707.2
97	218.710	0.03295	0.4951	30.35	2.0198	80.38	134.25	214.63	0.1627	0.4039	79.05	194.58	1.7772	1.4151	2054.7	706.2
98	221.540	0.03302	0.4882	30.28	2.0482	81.05	133.72	214.77	0.1639	0.4037	79.69	194.74	1.7804	1.4193	2041.8	705.2
99	224.400	0.03310	0.4815	30.22	2.0769	81.72	133.19	214.91	0.1650	0.4035	80.34	194.90	1.7837	1.4236	2028.9	704.1
100	227.290	0.03317	0.4748	30.15	2.1061	82.39	132.66	215.05	0.1662	0.4032	80.99	195.06	1.7870	1.4280	2016.0	703.1
101	230.200	0.03324	0.4683	30.08	2.1356	83.06	132.12	215.18	0.1674	0.4030	81.64	195.22	1.7904	1.4324	2003.1	702.0
102	233.140	0.03332	0.4618	30.01	2.1655	83.73	131.58	215.31	0.1685	0.4028	82.30	195.38	1.7939	1.4370	1990.2	700.9
103	236.100	0.03339	0.4554	29.95	2.1958	84.41	131.03	215.44	0.1697	0.4026	82.95	195.53	1.7974	1.4417	1977.2	699.8
104	239.100	0.03347	0.4491	29.88	2.2266	85.09	130.48	215.57	0.1709	0.4024	83.61	195.69	1.8010	1.4465	1964.2	698.7
105	242.120	0.03355	0.4429	29.81	2.2577	85.77	129.93	215.70	0.1721	0.4022	84.26	195.84	1.8047	1.4514	1951.1	697.6
106	245.170	0.03363	0.4368	29.74	2.2893	86.45	129.37	215.82	0.1732	0.4019	84.92	195.99	1.8085	1.4564	1938.1	696.4
107	248.240	0.03370	0.4308	29.67	2.3212	87.13	128.82	215.95	0.1744	0.4017	85.58	196.14	1.8123	1.4615	1925.0	695.2
108	251.350	0.03378	0.4249	29.60	2.3537	87.82	128.25	216.07	0.1756	0.4015	86.25	196.29	1.8162	1.4668	1911.8	694.1
109	254.480	0.03386	0.4190	29.53	2.3865	88.51	127.67	216.18	0.1768	0.4013	86.91	196.44	1.8202	1.4721	1898.7	692.9
110	257.650	0.03395	0.4133	29.46	2.4198	89.20	127.10	216.30	0.1779	0.4011	87.58	196.58	1.8243	1.4776	1885.5	691.6
111	260.840	0.03403	0.4076	29.39	2.4536	89.89	126.52	216.41	0.1791	0.4008	88.25	196.73	1.8285	1.4833	1872.3	690.4
112	264.060	0.03411	0.4020	29.32	2.4878	90.58	125.94	216.52	0.1803	0.4006	88.91	196.87	1.8327	1.4891	1859.0	689.2
113	267.310	0.03420	0.3964	29.24	2.5225	91.28	125.35	216.63	0.1815	0.4004	89.59	197.01	1.8371	1.4950	1845.7	687.9
114	270.580	0.03428	0.3910	29.17	2.5577	91.98	124.76	216.74	0.1827	0.4001	90.26	197.15	1.8415	1.5011	1832.4	686.6
115	273.890	0.03437	0.3856	29.10	2.5934	92.68	124.16	216.84	0.1838	0.3999	90.93	197.29	1.8461	1.5073	1819.1	685.3
116	277.230	0.03446	0.3803	29.02	2.6296	93.38	123.56	216.94	0.1850	0.3997	91.61	197.42	1.8508	1.5138	1805.7	684.0
117	280.590	0.03454	0.3751	28.95	2.6663	94.09	122.96	217.04	0.1862	0.3994	92.29	197.55	1.8556	1.5204	1792.3	682.7
118	283.990	0.03463	0.3699	28.87	2.7035	94.79	122.35	217.14	0.1874	0.3992	92.97	197.69	1.8605	1.5272	1778.9	681.3
119	287.420	0.03472	0.3648	28.80	2.7413	95.50	121.73	217.23	0.1886	0.3989	93.65	197.82	1.8655	1.5341	1765.5	679.9



Temp. (°F)	Pressure (psia)	Volume (ft ³ /lbm)		Density (lbm/ft ³)		Enthalpy (Btu/lbm)			Entropy (Btu/lbm-°R)		Int. Energy (Btu/lbm)		Cp/Cv		Sound Speed (ft/s)	
		Liquid	Vapor	Liquid	Vapor	Liquid	Latent	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
120	290.870	0.03482	0.3598	28.72	2.7796	96.21	121.11	217.32	0.1898	0.3987	94.34	197.94	1.8706	1.5413	1752.0	678.6
121	294.360	0.03491	0.3548	28.65	2.8185	96.93	120.48	217.41	0.1910	0.3985	95.03	198.07	1.8759	1.5487	1738.5	677.2
122	297.880	0.03500	0.3499	28.57	2.8579	97.65	119.85	217.49	0.1922	0.3982	95.71	198.19	1.8813	1.5563	1725.0	675.8
123	301.430	0.03510	0.3451	28.49	2.8979	98.36	119.22	217.58	0.1934	0.3980	96.41	198.32	1.8869	1.5642	1711.4	674.3
124	305.010	0.03519	0.3403	28.42	2.9386	99.09	118.56	217.65	0.1946	0.3977	97.10	198.43	1.8927	1.5723	1697.8	672.9
125	308.620	0.03529	0.3356	28.34	2.9798	99.81	117.92	217.73	0.1958	0.3974	97.79	198.55	1.8986	1.5806	1684.2	671.4
126	312.260	0.03539	0.3310	28.26	3.0216	100.54	117.26	217.80	0.1970	0.3972	98.49	198.67	1.9046	1.5892	1670.6	669.9
127	315.940	0.03549	0.3264	28.18	3.0641	101.27	116.60	217.87	0.1982	0.3969	99.19	198.78	1.9109	1.5981	1656.9	668.4
128	319.640	0.03559	0.3218	28.10	3.1073	102.00	115.94	217.94	0.1994	0.3967	99.90	198.89	1.9173	1.6073	1643.2	666.9
129	323.380	0.03569	0.3174	28.02	3.1511	102.74	115.26	218.00	0.2006	0.3964	100.60	199.00	1.9240	1.6167	1629.5	665.4
130	327.150	0.03580	0.3129	27.93	3.1956	103.48	114.58	218.06	0.2018	0.3961	101.31	199.10	1.9308	1.6265	1615.8	663.8
131	330.950	0.03591	0.3086	27.85	3.2408	104.22	113.89	218.11	0.2030	0.3958	102.02	199.20	1.9379	1.6366	1602.0	662.3
132	334.790	0.03601	0.3043	27.77	3.2867	104.96	113.20	218.16	0.2042	0.3956	102.73	199.30	1.9452	1.6471	1588.2	660.7
133	338.660	0.03612	0.3000	27.69	3.3333	105.71	112.50	218.21	0.2054	0.3953	103.44	199.40	1.9528	1.6579	1574.3	659.1
134	342.560	0.03623	0.2958	27.60	3.3807	106.46	111.80	218.26	0.2067	0.3950	104.16	199.49	1.9606	1.6691	1560.5	657.5
135	346.490	0.03634	0.2916	27.52	3.4289	107.21	111.09	218.30	0.2079	0.3947	104.88	199.58	1.9686	1.6807	1546.6	655.8
136	350.460	0.03646	0.2875	27.43	3.4778	107.97	110.36	218.33	0.2091	0.3944	105.60	199.67	1.9770	1.6928	1532.7	654.2
137	354.460	0.03657	0.2835	27.34	3.5276	108.73	109.63	218.36	0.2103	0.3941	106.33	199.75	1.9857	1.7052	1518.7	652.5
138	358.500	0.03669	0.2795	27.25	3.5782	109.49	108.90	218.39	0.2116	0.3938	107.06	199.84	1.9946	1.7182	1504.7	650.8
139	362.570	0.03681	0.2755	27.17	3.6297	110.26	108.15	218.41	0.2128	0.3935	107.79	199.91	2.0039	1.7316	1490.7	649.1
140	366.670	0.03693	0.2716	27.08	3.6821	111.03	107.40	218.43	0.2141	0.3931	108.53	199.99	2.0136	1.7456	1476.6	647.4