



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
-80	5.497	0.02654	16.5000	37.68	0.0606	-21.14	191.78	170.64	-0.0528	0.4523	-21.17	153.84	1.5435	1.1812	4242.2	697.9
-79	5.665	0.02657	16.0470	37.64	0.0623	-20.62	191.55	170.93	-0.0514	0.4518	-20.65	154.09	1.5437	1.1812	4230.2	698.5
-78	5.836	0.02660	15.6100	37.60	0.0641	-20.10	191.31	171.21	-0.0501	0.4512	-20.13	154.34	1.5440	1.1812	4218.2	699.1
-77	6.012	0.02662	15.1860	37.56	0.0658	-19.58	191.08	171.50	-0.0487	0.4506	-19.61	154.59	1.5442	1.1812	4206.1	699.7
-76	6.192	0.02665	14.7770	37.52	0.0677	-19.06	190.85	171.79	-0.0474	0.4501	-19.09	154.85	1.5445	1.1812	4194.1	700.3
-75	6.376	0.02668	14.3810	37.49	0.0695	-18.54	190.62	172.08	-0.0460	0.4495	-18.58	155.10	1.5447	1.1811	4182.0	700.9
-74	6.565	0.02670	13.9980	37.45	0.0714	-18.02	190.38	172.36	-0.0447	0.4490	-18.06	155.35	1.5450	1.1811	4170.0	701.5
-73	6.758	0.02673	13.6270	37.41	0.0734	-17.50	190.15	172.65	-0.0433	0.4485	-17.54	155.60	1.5452	1.1811	4158.0	702.1
-72	6.956	0.02676	13.2680	37.37	0.0754	-16.98	189.92	172.94	-0.0420	0.4479	-17.02	155.85	1.5455	1.1811	4146.0	702.7
-71	7.158	0.02679	12.9210	37.33	0.0774	-16.46	189.69	173.23	-0.0406	0.4474	-16.49	156.10	1.5457	1.1811	4133.9	703.2
-70	7.364	0.02682	12.5840	37.29	0.0795	-15.94	189.46	173.52	-0.0393	0.4469	-15.97	156.35	1.5460	1.1812	4121.9	703.8
-69	7.576	0.02684	12.2590	37.25	0.0816	-15.41	189.21	173.80	-0.0379	0.4464	-15.45	156.61	1.5463	1.1812	4109.9	704.4
-68	7.792	0.02687	11.9430	37.22	0.0837	-14.89	188.98	174.09	-0.0366	0.4459	-14.93	156.86	1.5465	1.1812	4097.9	704.9
-67	8.013	0.02690	11.6380	37.18	0.0859	-14.37	188.75	174.38	-0.0353	0.4454	-14.41	157.11	1.5468	1.1812	4085.9	705.5
-66	8.239	0.02693	11.3410	37.14	0.0882	-13.84	188.51	174.67	-0.0339	0.4449	-13.88	157.36	1.5470	1.1813	4073.9	706.0
-65	8.470	0.02696	11.0540	37.10	0.0905	-13.32	188.28	174.96	-0.0326	0.4444	-13.36	157.62	1.5473	1.1813	4061.9	706.6
-64	8.707	0.02698	10.7760	37.06	0.0928	-12.79	188.03	175.24	-0.0313	0.4439	-12.83	157.87	1.5475	1.1813	4049.9	707.1
-63	8.948	0.02701	10.5060	37.02	0.0952	-12.26	187.79	175.53	-0.0300	0.4435	-12.31	158.12	1.5478	1.1814	4037.9	707.6
-62	9.195	0.02704	10.2450	36.98	0.0976	-11.74	187.56	175.82	-0.0286	0.4430	-11.78	158.38	1.5481	1.1814	4026.0	708.1
-61	9.446	0.02707	9.9914	36.94	0.1001	-11.21	187.32	176.11	-0.0273	0.4425	-11.26	158.63	1.5483	1.1815	4014.0	708.6
-60	9.704	0.02710	9.7455	36.90	0.1026	-10.68	187.07	176.39	-0.0260	0.4421	-10.73	158.88	1.5486	1.1816	4002.0	709.2
-59	9.967	0.02713	9.5070	36.87	0.1052	-10.15	186.83	176.68	-0.0247	0.4416	-10.20	159.14	1.5488	1.1816	3990.0	709.7
-58	10.235	0.02716	9.2755	36.83	0.1078	-9.62	186.59	176.97	-0.0234	0.4412	-9.68	159.39	1.5491	1.1817	3978.1	710.1
-57	10.509	0.02718	9.0510	36.79	0.1105	-9.09	186.35	177.26	-0.0221	0.4407	-9.15	159.64	1.5494	1.1818	3966.1	710.6
-56	10.789	0.02721	8.8330	36.75	0.1132	-8.56	186.10	177.54	-0.0207	0.4403	-8.62	159.90	1.5496	1.1819	3954.2	711.1
-55	11.075	0.02724	8.6214	36.71	0.1160	-8.03	185.86	177.83	-0.0194	0.4399	-8.09	160.15	1.5499	1.1820	3942.2	711.6
-54	11.366	0.02727	8.4161	36.67	0.1188	-7.50	185.62	178.12	-0.0181	0.4394	-7.56	160.40	1.5502	1.1820	3930.2	712.1
-53	11.664	0.02730	8.2166	36.63	0.1217	-6.97	185.38	178.41	-0.0168	0.4390	-7.03	160.66	1.5504	1.1821	3918.3	712.5
-52	11.968	0.02733	8.0230	36.59	0.1246	-6.44	185.13	178.69	-0.0155	0.4386	-6.50	160.91	1.5507	1.1822	3906.4	713.0
-51	12.277	0.02736	7.8349	36.55	0.1276	-5.90	184.88	178.98	-0.0142	0.4382	-5.97	161.17	1.5510	1.1824	3894.4	713.5
-50	12.593	0.02739	7.6522	36.51	0.1307	-5.37	184.64	179.27	-0.0129	0.4378	-5.43	161.42	1.5512	1.1825	3882.5	713.9
-49	12.916	0.02742	7.4747	36.47	0.1338	-4.84	184.39	179.55	-0.0116	0.4374	-4.90	161.68	1.5515	1.1826	3870.5	714.3
-48	13.245	0.02745	7.3022	36.43	0.1369	-4.30	184.14	179.84	-0.0103	0.4370	-4.37	161.93	1.5518	1.1827	3858.6	714.8
-47	13.580	0.02748	7.1346	36.39	0.1402	-3.77	183.90	180.13	-0.0090	0.4366	-3.84	162.19	1.5521	1.1829	3846.7	715.2
-46	13.922	0.02751	6.9717	36.35	0.1434	-3.23	183.64	180.41	-0.0077	0.4362	-3.30	162.44	1.5524	1.1830	3834.7	715.6
-45	14.270	0.02754	6.8133	36.31	0.1468	-2.69	183.39	180.70	-0.0064	0.4358	-2.77	162.70	1.5526	1.1831	3822.8	716.0
-44	14.626	0.02757	6.6593	36.27	0.1502	-2.16	183.15	180.99	-0.0051	0.4355	-2.23	162.95	1.5529	1.1833	3810.9	716.5
-43	14.988	0.02760	6.5096	36.23	0.1536	-1.62	182.89	181.27	-0.0039	0.4351	-1.69	163.21	1.5532	1.1835	3799.0	716.9
-42	15.357	0.02763	6.3640	36.19	0.1571	-1.08	182.64	181.56	-0.0026	0.4347	-1.16	163.46	1.5535	1.1836	3787.0	717.3
-41	15.733	0.02766	6.2224	36.15	0.1607	-0.54	182.39	181.85	-0.0013	0.4344	-0.62	163.72	1.5538	1.1838	3775.1	717.6



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	16.117	0.02769	6.0846	36.11	0.1644	0.00	182.13	182.13	0.0000	0.4340	-0.08	163.97	1.5541	1.1840	3763.2	718.0
-39	16.507	0.02772	5.9506	36.07	0.1681	0.54	181.88	182.42	0.0013	0.4336	0.46	164.23	1.5544	1.1841	3751.3	718.4
-38	16.905	0.02776	5.8201	36.03	0.1718	1.08	181.62	182.70	0.0026	0.4333	0.99	164.48	1.5547	1.1843	3739.4	718.8
-37	17.310	0.02779	5.6932	35.99	0.1757	1.62	181.37	182.99	0.0038	0.4329	1.53	164.74	1.5550	1.1845	3727.5	719.1
-36	17.723	0.02782	5.5697	35.95	0.1795	2.17	181.10	183.27	0.0051	0.4326	2.07	165.00	1.5553	1.1847	3715.6	719.5
-35	18.144	0.02785	5.4494	35.91	0.1835	2.71	180.85	183.56	0.0064	0.4323	2.62	165.25	1.5556	1.1849	3703.7	719.8
-34	18.572	0.02788	5.3323	35.87	0.1875	3.25	180.59	183.84	0.0077	0.4319	3.16	165.51	1.5559	1.1851	3691.8	720.2
-33	19.008	0.02791	5.2183	35.83	0.1916	3.80	180.33	184.13	0.0089	0.4316	3.70	165.76	1.5562	1.1854	3679.9	720.5
-32	19.451	0.02794	5.1073	35.79	0.1958	4.34	180.07	184.41	0.0102	0.4313	4.24	166.02	1.5566	1.1856	3668.0	720.8
-31	19.903	0.02798	4.9992	35.75	0.2000	4.89	179.81	184.70	0.0115	0.4309	4.79	166.28	1.5569	1.1858	3656.1	721.2
-30	20.363	0.02801	4.8938	35.70	0.2043	5.43	179.55	184.98	0.0127	0.4306	5.33	166.53	1.5572	1.1861	3644.2	721.5
-29	20.830	0.02804	4.7912	35.66	0.2087	5.98	179.29	185.27	0.0140	0.4303	5.87	166.79	1.5575	1.1863	3632.3	721.8
-28	21.307	0.02807	4.6913	35.62	0.2132	6.53	179.02	185.55	0.0153	0.4300	6.42	167.04	1.5578	1.1866	3620.4	722.1
-27	21.791	0.02811	4.5938	35.58	0.2177	7.08	178.76	185.84	0.0165	0.4297	6.96	167.30	1.5582	1.1868	3608.5	722.4
-26	22.284	0.02814	4.4989	35.54	0.2223	7.63	178.49	186.12	0.0178	0.4294	7.51	167.56	1.5585	1.1871	3596.6	722.7
-25	22.785	0.02817	4.4064	35.50	0.2269	8.18	178.22	186.40	0.0191	0.4291	8.06	167.81	1.5588	1.1874	3584.7	723.0
-24	23.296	0.02820	4.3162	35.46	0.2317	8.73	177.96	186.69	0.0203	0.4288	8.61	168.07	1.5592	1.1876	3572.8	723.2
-23	23.814	0.02824	4.2282	35.42	0.2365	9.28	177.69	186.97	0.0216	0.4285	9.15	168.33	1.5595	1.1879	3560.9	723.5
-22	24.342	0.02827	4.1425	35.37	0.2414	9.83	177.42	187.25	0.0228	0.4282	9.70	168.58	1.5599	1.1882	3549.0	723.8
-21	24.879	0.02830	4.0589	35.33	0.2464	10.38	177.16	187.54	0.0241	0.4279	10.25	168.84	1.5602	1.1885	3537.1	724.0
-20	25.424	0.02834	3.9773	35.29	0.2514	10.94	176.88	187.82	0.0253	0.4277	10.80	169.09	1.5606	1.1888	3525.2	724.3
-19	25.979	0.02837	3.8978	35.25	0.2566	11.49	176.61	188.10	0.0266	0.4274	11.36	169.35	1.5609	1.1892	3513.4	724.5
-18	26.543	0.02840	3.8202	35.21	0.2618	12.05	176.33	188.38	0.0278	0.4271	11.91	169.61	1.5613	1.1895	3501.5	724.7
-17	27.116	0.02844	3.7445	35.17	0.2671	12.60	176.07	188.67	0.0291	0.4268	12.46	169.86	1.5617	1.1898	3489.6	724.9
-16	27.699	0.02847	3.6706	35.12	0.2724	13.16	175.79	188.95	0.0303	0.4266	13.01	170.12	1.5620	1.1902	3477.7	725.2
-15	28.291	0.02851	3.5985	35.08	0.2779	13.72	175.52	189.23	0.0316	0.4263	13.57	170.38	1.5624	1.1905	3465.8	725.4
-14	28.893	0.02854	3.5282	35.04	0.2834	14.27	175.24	189.51	0.0328	0.4260	14.12	170.63	1.5628	1.1909	3453.9	725.6
-13	29.505	0.02857	3.4595	35.00	0.2891	14.83	174.96	189.79	0.0341	0.4258	14.68	170.89	1.5632	1.1912	3442.0	725.8
-12	30.126	0.02861	3.3925	34.96	0.2948	15.39	174.68	190.07	0.0353	0.4255	15.23	171.15	1.5636	1.1916	3430.1	725.9
-11	30.758	0.02864	3.3271	34.91	0.3006	15.95	174.40	190.35	0.0366	0.4253	15.79	171.40	1.5640	1.1920	3418.2	726.1
-10	31.399	0.02868	3.2632	34.87	0.3065	16.51	174.12	190.63	0.0378	0.4250	16.35	171.66	1.5643	1.1924	3406.3	726.3
-9	32.051	0.02871	3.2008	34.83	0.3124	17.07	173.84	190.91	0.0391	0.4248	16.90	171.92	1.5647	1.1928	3394.4	726.5
-8	32.712	0.02875	3.1399	34.79	0.3185	17.64	173.55	191.19	0.0403	0.4245	17.46	172.17	1.5651	1.1932	3382.5	726.6
-7	33.385	0.02878	3.0804	34.74	0.3246	18.20	173.27	191.47	0.0415	0.4243	18.02	172.43	1.5656	1.1936	3370.6	726.8
-6	34.067	0.02882	3.0223	34.70	0.3309	18.76	172.99	191.75	0.0428	0.4241	18.58	172.68	1.5660	1.1940	3358.7	726.9
-5	34.761	0.02886	2.9655	34.66	0.3372	19.33	172.70	192.03	0.0440	0.4238	19.14	172.94	1.5664	1.1945	3346.8	727.0
-4	35.464	0.02889	2.9100	34.61	0.3436	19.89	172.42	192.31	0.0452	0.4236	19.70	173.20	1.5668	1.1949	3334.9	727.2
-3	36.179	0.02893	2.8558	34.57	0.3502	20.46	172.13	192.59	0.0465	0.4234	20.27	173.45	1.5672	1.1954	3323.0	727.3
-2	36.905	0.02896	2.8028	34.53	0.3568	21.03	171.83	192.86	0.0477	0.4232	20.83	173.71	1.5677	1.1958	3311.1	727.4
-1	37.641	0.02900	2.7511	34.48	0.3635	21.59	171.55	193.14	0.0489	0.4229	21.39	173.97	1.5681	1.1963	3299.2	727.5



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
0	38.389	0.02904	2.7004	34.44	0.3703	22.16	171.26	193.42	0.0502	0.4227	21.96	174.22	1.5685	1.1968	3287.3	727.6
1	39.147	0.02907	2.6510	34.40	0.3772	22.73	170.97	193.70	0.0514	0.4225	22.52	174.48	1.5690	1.1973	3275.4	727.7
2	39.917	0.02911	2.6026	34.35	0.3842	23.30	170.67	193.97	0.0526	0.4223	23.09	174.73	1.5694	1.1978	3263.5	727.7
3	40.699	0.02915	2.5554	34.31	0.3913	23.87	170.38	194.25	0.0538	0.4221	23.65	174.99	1.5699	1.1983	3251.6	727.8
4	41.492	0.02918	2.5091	34.27	0.3986	24.45	170.08	194.52	0.0551	0.4219	24.22	175.25	1.5704	1.1988	3239.7	727.9
5	42.296	0.02922	2.4639	34.22	0.4059	25.02	169.78	194.80	0.0563	0.4217	24.79	175.50	1.5708	1.1993	3227.8	727.9
6	43.113	0.02926	2.4197	34.18	0.4133	25.59	169.49	195.08	0.0575	0.4215	25.36	175.76	1.5713	1.1999	3215.9	728.0
7	43.941	0.02930	2.3765	34.13	0.4208	26.17	169.18	195.35	0.0587	0.4213	25.93	176.01	1.5718	1.2004	3203.9	728.0
8	44.781	0.02933	2.3342	34.09	0.4284	26.74	168.88	195.62	0.0600	0.4211	26.50	176.27	1.5723	1.2010	3192.0	728.0
9	45.633	0.02937	2.2928	34.05	0.4362	27.32	168.58	195.90	0.0612	0.4209	27.07	176.53	1.5728	1.2016	3180.1	728.0
10	46.498	0.02941	2.2523	34.00	0.4440	27.90	168.28	196.17	0.0624	0.4207	27.64	176.78	1.5733	1.2021	3168.2	728.0
11	47.374	0.02945	2.2127	33.96	0.4519	28.47	167.98	196.45	0.0636	0.4205	28.21	177.04	1.5738	1.2027	3156.2	728.0
12	48.263	0.02949	2.1739	33.91	0.4600	29.05	167.67	196.72	0.0648	0.4203	28.79	177.29	1.5743	1.2033	3144.3	728.0
13	49.165	0.02953	2.1360	33.87	0.4682	29.63	167.36	196.99	0.0661	0.4201	29.36	177.55	1.5748	1.2040	3132.4	728.0
14	50.079	0.02957	2.0988	33.82	0.4765	30.21	167.05	197.26	0.0673	0.4200	29.94	177.80	1.5753	1.2046	3120.4	728.0
15	51.005	0.02961	2.0625	33.78	0.4849	30.79	166.75	197.54	0.0685	0.4198	30.51	178.06	1.5759	1.2052	3108.5	728.0
16	51.945	0.02964	2.0269	33.73	0.4934	31.38	166.44	197.81	0.0697	0.4196	31.09	178.31	1.5764	1.2059	3096.6	727.9
17	52.898	0.02968	1.9921	33.69	0.5020	31.96	166.12	198.08	0.0709	0.4194	31.67	178.57	1.5770	1.2065	3084.6	727.9
18	53.863	0.02972	1.9580	33.64	0.5107	32.54	165.81	198.35	0.0721	0.4192	32.25	178.82	1.5775	1.2072	3072.7	727.8
19	54.842	0.02976	1.9246	33.60	0.5196	33.13	165.49	198.62	0.0733	0.4191	32.83	179.07	1.5781	1.2079	3060.7	727.7
20	55.834	0.02980	1.8919	33.55	0.5286	33.71	165.18	198.89	0.0745	0.4189	33.41	179.33	1.5787	1.2086	3048.8	727.7
21	56.839	0.02984	1.8598	33.51	0.5377	34.30	164.86	199.16	0.0758	0.4187	33.99	179.58	1.5792	1.2093	3036.8	727.6
22	57.858	0.02989	1.8285	33.46	0.5469	34.89	164.54	199.43	0.0770	0.4186	34.57	179.84	1.5798	1.2101	3024.9	727.5
23	58.891	0.02993	1.7977	33.42	0.5563	35.48	164.22	199.70	0.0782	0.4184	35.15	180.09	1.5804	1.2108	3012.9	727.4
24	59.937	0.02997	1.7676	33.37	0.5657	36.07	163.89	199.96	0.0794	0.4183	35.73	180.34	1.5810	1.2115	3000.9	727.3
25	60.997	0.03001	1.7381	33.32	0.5753	36.66	163.57	200.23	0.0806	0.4181	36.32	180.60	1.5816	1.2123	2989.0	727.2
26	62.071	0.03005	1.7092	33.28	0.5851	37.25	163.25	200.50	0.0818	0.4179	36.90	180.85	1.5822	1.2131	2977.0	727.0
27	63.159	0.03009	1.6809	33.23	0.5949	37.84	162.92	200.76	0.0830	0.4178	37.49	181.10	1.5829	1.2139	2965.0	726.9
28	64.261	0.03013	1.6532	33.19	0.6049	38.43	162.60	201.03	0.0842	0.4176	38.08	181.36	1.5835	1.2147	2953.0	726.7
29	65.378	0.03018	1.6260	33.14	0.6150	39.03	162.27	201.30	0.0854	0.4175	38.66	181.61	1.5842	1.2155	2941.1	726.6
30	66.509	0.03022	1.5993	33.09	0.6253	39.62	161.94	201.56	0.0866	0.4173	39.25	181.86	1.5848	1.2164	2929.1	726.4
31	67.654	0.03026	1.5732	33.05	0.6356	40.22	161.60	201.82	0.0878	0.4172	39.84	182.12	1.5855	1.2172	2917.1	726.2
32	68.814	0.03030	1.5476	33.00	0.6462	40.82	161.27	202.09	0.0890	0.4170	40.43	182.37	1.5862	1.2181	2905.1	726.0
33	69.989	0.03035	1.5225	32.95	0.6568	41.42	160.94	202.35	0.0902	0.4169	41.02	182.62	1.5868	1.2190	2893.1	725.8
34	71.179	0.03039	1.4979	32.91	0.6676	42.01	160.60	202.61	0.0914	0.4168	41.61	182.87	1.5875	1.2199	2881.1	725.6
35	72.383	0.03043	1.4737	32.86	0.6786	42.62	160.27	202.88	0.0926	0.4166	42.21	183.12	1.5882	1.2208	2869.1	725.4
36	73.603	0.03048	1.4501	32.81	0.6896	43.22	159.92	203.14	0.0938	0.4165	42.80	183.37	1.5890	1.2217	2857.1	725.2
37	74.838	0.03052	1.4269	32.76	0.7008	43.82	159.58	203.40	0.0950	0.4163	43.40	183.63	1.5897	1.2227	2845.1	725.0
38	76.089	0.03057	1.4041	32.72	0.7122	44.42	159.24	203.66	0.0962	0.4162	43.99	183.88	1.5904	1.2236	2833.0	724.7
39	77.354	0.03061	1.3818	32.67	0.7237	45.03	158.89	203.92	0.0974	0.4161	44.59	184.13	1.5912	1.2246	2821.0	724.5



Temp. (°F)	Pressure (psia)	Volume (ft <sup>3</sup> /lbm)		Density (lbm/ft <sup>3</sup> )		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	78.636	0.03066	1.3599	32.62	0.7354	45.63	158.55	204.18	0.0986	0.4159	45.19	184.38	1.5919	1.2256	2809.0	724.2
41	79.933	0.03070	1.3384	32.57	0.7472	46.24	158.20	204.44	0.0998	0.4158	45.78	184.63	1.5927	1.2266	2797.0	723.9
42	81.246	0.03075	1.3173	32.52	0.7591	46.85	157.86	204.70	0.1010	0.4157	46.38	184.88	1.5935	1.2277	2784.9	723.7
43	82.574	0.03079	1.2966	32.48	0.7713	47.45	157.50	204.95	0.1022	0.4156	46.98	185.13	1.5943	1.2287	2772.9	723.4
44	83.919	0.03084	1.2763	32.43	0.7835	48.06	157.15	205.21	0.1034	0.4154	47.58	185.38	1.5951	1.2298	2760.8	723.1
45	85.280	0.03089	1.2564	32.38	0.7959	48.67	156.80	205.47	0.1046	0.4153	48.19	185.63	1.5959	1.2309	2748.8	722.7
46	86.657	0.03093	1.2368	32.33	0.8085	49.29	156.44	205.72	0.1058	0.4152	48.79	185.87	1.5968	1.2320	2736.7	722.4
47	88.051	0.03098	1.2177	32.28	0.8212	49.90	156.08	205.98	0.1070	0.4151	49.39	186.12	1.5976	1.2331	2724.7	722.1
48	89.461	0.03103	1.1988	32.23	0.8341	50.51	155.72	206.23	0.1082	0.4149	50.00	186.37	1.5985	1.2343	2712.6	721.8
49	90.888	0.03107	1.1804	32.18	0.8472	51.13	155.35	206.48	0.1094	0.4148	50.60	186.62	1.5993	1.2355	2700.5	721.4
50	92.331	0.03112	1.1622	32.13	0.8604	51.74	155.00	206.74	0.1106	0.4147	51.21	186.87	1.6002	1.2367	2688.5	721.0
51	93.792	0.03117	1.1444	32.08	0.8738	52.36	154.63	206.99	0.1118	0.4146	51.82	187.11	1.6011	1.2379	2676.4	720.7
52	95.269	0.03122	1.1269	32.03	0.8874	52.98	154.26	207.24	0.1130	0.4145	52.43	187.36	1.6021	1.2391	2664.3	720.3
53	96.764	0.03127	1.1097	31.99	0.9011	53.60	153.89	207.49	0.1142	0.4143	53.04	187.61	1.6030	1.2404	2652.2	719.9
54	98.275	0.03131	1.0929	31.94	0.9150	54.22	153.52	207.74	0.1154	0.4142	53.65	187.85	1.6039	1.2416	2640.1	719.5
55	99.804	0.03136	1.0763	31.88	0.9291	54.84	153.15	207.99	0.1166	0.4141	54.26	188.10	1.6049	1.2429	2628.0	719.1
56	101.350	0.03141	1.0601	31.83	0.9433	55.46	152.78	208.24	0.1177	0.4140	54.87	188.34	1.6059	1.2443	2615.9	718.6
57	102.920	0.03146	1.0441	31.78	0.9578	56.09	152.40	208.49	0.1189	0.4139	55.49	188.59	1.6069	1.2456	2603.8	718.2
58	104.500	0.03151	1.0284	31.73	0.9724	56.71	152.02	208.73	0.1201	0.4138	56.10	188.83	1.6079	1.2470	2591.6	717.7
59	106.100	0.03156	1.0130	31.68	0.9872	57.34	151.64	208.98	0.1213	0.4137	56.72	189.08	1.6089	1.2484	2579.5	717.3
60	107.710	0.03161	0.9979	31.63	1.0021	57.97	151.26	209.23	0.1225	0.4136	57.34	189.32	1.6100	1.2498	2567.4	716.8
61	109.350	0.03167	0.9830	31.58	1.0173	58.60	150.88	209.47	0.1237	0.4135	57.95	189.57	1.6110	1.2513	2555.2	716.3
62	111.000	0.03172	0.9684	31.53	1.0327	59.23	150.49	209.71	0.1249	0.4134	58.57	189.81	1.6121	1.2528	2543.1	715.8
63	112.680	0.03177	0.9540	31.48	1.0482	59.86	150.10	209.96	0.1261	0.4133	59.19	190.05	1.6132	1.2543	2530.9	715.3
64	114.370	0.03182	0.9399	31.43	1.0639	60.49	149.71	210.20	0.1273	0.4132	59.82	190.29	1.6144	1.2558	2518.7	714.8
65	116.080	0.03187	0.9261	31.37	1.0799	61.12	149.32	210.44	0.1285	0.4131	60.44	190.54	1.6155	1.2573	2506.6	714.3
66	117.810	0.03193	0.9124	31.32	1.0960	61.76	148.92	210.68	0.1296	0.4129	61.06	190.78	1.6167	1.2589	2494.4	713.8
67	119.550	0.03198	0.8990	31.27	1.1123	62.39	148.53	210.92	0.1308	0.4128	61.69	191.02	1.6178	1.2606	2482.2	713.2
68	121.320	0.03203	0.8859	31.22	1.1288	63.03	148.13	211.16	0.1320	0.4127	62.31	191.26	1.6191	1.2622	2470.0	712.7
69	123.100	0.03209	0.8729	31.17	1.1456	63.67	147.73	211.40	0.1332	0.4126	62.94	191.50	1.6203	1.2639	2457.8	712.1
70	124.910	0.03214	0.8602	31.11	1.1625	64.31	147.32	211.63	0.1344	0.4125	63.57	191.74	1.6215	1.2656	2445.6	711.5
71	126.730	0.03220	0.8477	31.06	1.1797	64.95	146.92	211.87	0.1356	0.4124	64.20	191.98	1.6228	1.2673	2433.4	710.9
72	128.570	0.03225	0.8354	31.01	1.1970	65.59	146.51	212.10	0.1368	0.4123	64.83	192.21	1.6241	1.2691	2421.1	710.3
73	130.440	0.03231	0.8233	30.95	1.2146	66.24	146.10	212.34	0.1380	0.4122	65.46	192.45	1.6254	1.2709	2408.9	709.7
74	132.320	0.03236	0.8114	30.90	1.2324	66.88	145.69	212.57	0.1392	0.4122	66.09	192.69	1.6267	1.2728	2396.7	709.1
75	134.220	0.03242	0.7997	30.85	1.2504	67.53	145.27	212.80	0.1403	0.4121	66.72	192.93	1.6281	1.2746	2384.4	708.4
76	136.140	0.03248	0.7882	30.79	1.2687	68.18	144.85	213.03	0.1415	0.4120	67.36	193.16	1.6295	1.2765	2372.1	707.8
77	138.090	0.03253	0.7769	30.74	1.2871	68.83	144.43	213.26	0.1427	0.4119	67.99	193.40	1.6309	1.2785	2359.9	707.1
78	140.050	0.03259	0.7658	30.68	1.3058	69.48	144.01	213.49	0.1439	0.4118	68.63	193.63	1.6324	1.2805	2347.6	706.4
79	142.030	0.03265	0.7549	30.63	1.3248	70.13	143.59	213.72	0.1451	0.4117	69.27	193.87	1.6338	1.2825	2335.3	705.7



Temp. (°F)	Pressure (psia)	Volume (ft <sup>3</sup> /lbm)		Density (lbm/ft <sup>3</sup> )		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	144.040	0.03271	0.7441	30.57	1.3439	70.78	143.17	213.95	0.1463	0.4116	69.91	194.10	1.6353	1.2846	2323.0	705.0
81	146.060	0.03277	0.7335	30.52	1.3633	71.44	142.73	214.17	0.1475	0.4115	70.55	194.33	1.6368	1.2867	2310.7	704.3
82	148.110	0.03283	0.7231	30.46	1.3830	72.09	142.31	214.40	0.1487	0.4114	71.19	194.57	1.6384	1.2888	2298.3	703.6
83	150.170	0.03289	0.7128	30.41	1.4028	72.75	141.87	214.62	0.1499	0.4113	71.84	194.80	1.6400	1.2910	2286.0	702.9
84	152.260	0.03295	0.7028	30.35	1.4230	73.41	141.43	214.84	0.1511	0.4112	72.48	195.03	1.6416	1.2932	2273.7	702.1
85	154.370	0.03301	0.6928	30.30	1.4433	74.07	140.99	215.06	0.1522	0.4111	73.13	195.26	1.6432	1.2955	2261.3	701.3
86	156.500	0.03307	0.6831	30.24	1.4640	74.73	140.55	215.28	0.1534	0.4110	73.77	195.49	1.6449	1.2978	2248.9	700.6
87	158.650	0.03313	0.6735	30.18	1.4849	75.40	140.11	215.50	0.1546	0.4109	74.42	195.72	1.6466	1.3002	2236.6	699.8
88	160.820	0.03319	0.6640	30.13	1.5060	76.06	139.66	215.72	0.1558	0.4108	75.07	195.95	1.6484	1.3026	2224.2	699.0
89	163.010	0.03326	0.6547	30.07	1.5274	76.73	139.21	215.94	0.1570	0.4107	75.72	196.17	1.6501	1.3051	2211.8	698.2
90	165.230	0.03332	0.6455	30.01	1.5491	77.39	138.76	216.15	0.1582	0.4106	76.38	196.40	1.6519	1.3076	2199.4	697.3
91	167.470	0.03338	0.6365	29.96	1.5711	78.06	138.30	216.36	0.1594	0.4105	77.03	196.63	1.6538	1.3101	2186.9	696.5
92	169.730	0.03345	0.6276	29.90	1.5933	78.74	137.85	216.58	0.1606	0.4104	77.68	196.85	1.6557	1.3128	2174.5	695.6
93	172.010	0.03351	0.6189	29.84	1.6158	79.41	137.38	216.79	0.1618	0.4103	78.34	197.08	1.6576	1.3154	2162.1	694.8
94	174.310	0.03358	0.6103	29.78	1.6386	80.08	136.92	217.00	0.1630	0.4103	79.00	197.30	1.6595	1.3182	2149.6	693.9
95	176.640	0.03365	0.6018	29.72	1.6617	80.76	136.45	217.21	0.1642	0.4102	79.66	197.52	1.6615	1.3209	2137.1	693.0
96	178.990	0.03371	0.5934	29.66	1.6851	81.44	135.98	217.41	0.1654	0.4101	80.32	197.74	1.6636	1.3238	2124.6	692.1
97	181.360	0.03378	0.5852	29.60	1.7088	82.11	135.51	217.62	0.1665	0.4100	80.98	197.96	1.6657	1.3267	2112.1	691.2
98	183.760	0.03385	0.5771	29.55	1.7327	82.79	135.03	217.82	0.1677	0.4099	81.64	198.19	1.6678	1.3296	2099.6	690.2
99	186.170	0.03392	0.5692	29.49	1.7570	83.48	134.55	218.03	0.1689	0.4098	82.31	198.40	1.6700	1.3327	2087.1	689.3
100	188.620	0.03398	0.5613	29.43	1.7816	84.16	134.07	218.23	0.1701	0.4097	82.97	198.62	1.6722	1.3358	2074.5	688.3
101	191.080	0.03405	0.5536	29.37	1.8065	84.85	133.58	218.43	0.1713	0.4096	83.64	198.84	1.6744	1.3389	2061.9	687.3
102	193.570	0.03412	0.5459	29.31	1.8317	85.53	133.09	218.62	0.1725	0.4095	84.31	199.06	1.6768	1.3421	2049.4	686.3
103	196.080	0.03420	0.5384	29.24	1.8572	86.22	132.60	218.82	0.1737	0.4094	84.98	199.27	1.6791	1.3454	2036.8	685.3
104	198.620	0.03427	0.5310	29.18	1.8831	86.91	132.11	219.02	0.1749	0.4093	85.65	199.49	1.6815	1.3488	2024.2	684.3
105	201.180	0.03434	0.5238	29.12	1.9093	87.61	131.60	219.21	0.1761	0.4092	86.33	199.70	1.6840	1.3523	2011.5	683.3
106	203.760	0.03441	0.5166	29.06	1.9359	88.30	131.10	219.40	0.1773	0.4091	87.00	199.91	1.6865	1.3558	1998.9	682.2
107	206.370	0.03449	0.5095	29.00	1.9628	89.00	130.59	219.59	0.1785	0.4090	87.68	200.12	1.6891	1.3594	1986.2	681.1
108	209.000	0.03456	0.5025	28.94	1.9900	89.69	130.09	219.78	0.1797	0.4089	88.36	200.33	1.6917	1.3631	1973.5	680.1
109	211.660	0.03464	0.4956	28.87	2.0176	90.39	129.58	219.97	0.1809	0.4088	89.04	200.54	1.6944	1.3669	1960.8	679.0
110	214.340	0.03471	0.4889	28.81	2.0455	91.10	129.05	220.15	0.1821	0.4087	89.72	200.75	1.6972	1.3707	1948.1	677.9
111	217.050	0.03479	0.4822	28.75	2.0739	91.80	128.53	220.33	0.1833	0.4086	90.40	200.95	1.7000	1.3747	1935.4	676.7
112	219.780	0.03487	0.4756	28.68	2.1026	92.51	128.02	220.52	0.1845	0.4085	91.09	201.16	1.7029	1.3787	1922.6	675.6
113	222.530	0.03494	0.4691	28.62	2.1316	93.21	127.49	220.70	0.1857	0.4083	91.77	201.36	1.7058	1.3829	1909.9	674.4
114	225.310	0.03502	0.4627	28.55	2.1611	93.92	126.95	220.87	0.1869	0.4082	92.46	201.57	1.7088	1.3871	1897.1	673.3
115	228.120	0.03510	0.4564	28.49	2.1910	94.63	126.42	221.05	0.1881	0.4081	93.15	201.77	1.7119	1.3914	1884.3	672.1
116	230.950	0.03518	0.4502	28.42	2.2212	95.35	125.87	221.22	0.1894	0.4080	93.84	201.97	1.7151	1.3959	1871.4	670.9
117	233.810	0.03527	0.4441	28.36	2.2519	96.06	125.33	221.39	0.1906	0.4079	94.54	202.17	1.7183	1.4004	1858.6	669.6
118	236.700	0.03535	0.4380	28.29	2.2830	96.78	124.78	221.56	0.1918	0.4078	95.23	202.36	1.7216	1.4051	1845.7	668.4
119	239.610	0.03543	0.4321	28.22	2.3145	97.50	124.23	221.73	0.1930	0.4077	95.93	202.56	1.7250	1.4099	1832.8	667.1



Temp. (°F)	Pressure (psia)	Volume (ft <sup>3</sup> /lbm)		Density (lbm/ft <sup>3</sup> )		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	242.540	0.03552	0.4262	28.16	2.3464	98.22	123.68	221.90	0.1942	0.4076	96.63	202.75	1.7285	1.4148	1819.9	665.9
121	245.500	0.03560	0.4204	28.09	2.3788	98.94	123.12	222.06	0.1954	0.4074	97.33	202.95	1.7321	1.4199	1806.9	664.6
122	248.490	0.03569	0.4147	28.02	2.4116	99.67	122.55	222.22	0.1966	0.4073	98.03	203.14	1.7357	1.4250	1794.0	663.3
123	251.510	0.03577	0.4090	27.95	2.4449	100.40	121.98	222.38	0.1978	0.4072	98.73	203.33	1.7395	1.4303	1781.0	662.0
124	254.550	0.03586	0.4035	27.89	2.4786	101.13	121.40	222.53	0.1991	0.4071	99.44	203.52	1.7433	1.4358	1768.0	660.6
125	257.620	0.03595	0.3980	27.82	2.5128	101.86	120.83	222.69	0.2003	0.4069	100.15	203.70	1.7473	1.4414	1754.9	659.3
126	260.720	0.03604	0.3926	27.75	2.5475	102.60	120.24	222.84	0.2015	0.4068	100.86	203.89	1.7513	1.4471	1741.8	657.9
127	263.840	0.03613	0.3872	27.68	2.5827	103.33	119.66	222.99	0.2027	0.4067	101.57	204.07	1.7555	1.4530	1728.7	656.5
128	266.990	0.03622	0.3819	27.61	2.6183	104.07	119.07	223.14	0.2040	0.4066	102.28	204.25	1.7597	1.4591	1715.6	655.1
129	270.170	0.03632	0.3767	27.54	2.6545	104.82	118.46	223.28	0.2052	0.4064	103.00	204.43	1.7641	1.4653	1702.5	653.7
130	273.380	0.03641	0.3716	27.46	2.6912	105.56	117.86	223.42	0.2064	0.4063	103.72	204.61	1.7686	1.4717	1689.3	652.2
131	276.610	0.03651	0.3665	27.39	2.7285	106.31	117.25	223.56	0.2076	0.4061	104.44	204.79	1.7733	1.4784	1676.1	650.7
132	279.870	0.03661	0.3615	27.32	2.7663	107.06	116.63	223.69	0.2089	0.4060	105.16	204.96	1.7780	1.4852	1662.9	649.3
133	283.170	0.03670	0.3566	27.25	2.8046	107.81	116.02	223.83	0.2101	0.4059	105.88	205.13	1.7829	1.4922	1649.6	647.8
134	286.480	0.03680	0.3517	27.17	2.8435	108.56	115.40	223.96	0.2113	0.4057	106.61	205.30	1.7880	1.4994	1636.3	646.2
135	289.830	0.03690	0.3469	27.10	2.8830	109.32	114.76	224.08	0.2126	0.4056	107.34	205.47	1.7931	1.5068	1623.0	644.7
136	293.210	0.03701	0.3421	27.02	2.9231	110.08	114.13	224.21	0.2138	0.4054	108.07	205.63	1.7985	1.5145	1609.6	643.1
137	296.620	0.03711	0.3374	26.95	2.9638	110.84	113.49	224.33	0.2150	0.4052	108.81	205.80	1.8040	1.5224	1596.2	641.6
138	300.050	0.03721	0.3328	26.87	3.0052	111.61	112.84	224.45	0.2163	0.4051	109.54	205.96	1.8096	1.5306	1582.8	640.0
139	303.520	0.03732	0.3282	26.80	3.0471	112.38	112.18	224.56	0.2175	0.4049	110.28	206.12	1.8155	1.5390	1569.3	638.4
140	307.010	0.03743	0.3237	26.72	3.0897	113.15	111.52	224.67	0.2188	0.4048	111.02	206.27	1.8215	1.5477	1555.8	636.7