



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	2.739	0.02237	86.5460	44.71	0.0116	-41.64	622.67	581.03	-0.1042	1.5359	-41.65	537.13	1.4763	1.3296	6512.7	1202.9
-79	2.843	0.02239	83.5820	44.67	0.0120	-40.61	622.07	581.46	-0.1015	1.5327	-40.62	537.46	1.4779	1.3298	6497.8	1204.3
-78	2.951	0.02241	80.7360	44.63	0.0124	-39.58	621.47	581.89	-0.0988	1.5295	-39.60	537.78	1.4796	1.3300	6483.1	1205.7
-77	3.061	0.02243	78.0030	44.59	0.0128	-38.56	620.88	582.32	-0.0961	1.5264	-38.57	538.10	1.4812	1.3303	6468.4	1207.1
-76	3.175	0.02245	75.3790	44.55	0.0133	-37.53	620.28	582.75	-0.0934	1.5233	-37.54	538.43	1.4828	1.3305	6453.8	1208.5
-75	3.293	0.02247	72.8570	44.51	0.0137	-36.50	619.67	583.17	-0.0907	1.5202	-36.51	538.75	1.4845	1.3307	6439.2	1209.9
-74	3.414	0.02249	70.4350	44.47	0.0142	-35.47	619.07	583.60	-0.0880	1.5171	-35.48	539.07	1.4861	1.3309	6424.7	1211.2
-73	3.539	0.02251	68.1060	44.43	0.0147	-34.44	618.46	584.02	-0.0854	1.5141	-34.45	539.39	1.4877	1.3312	6410.3	1212.6
-72	3.668	0.02253	65.8680	44.39	0.0152	-33.41	617.86	584.45	-0.0827	1.5110	-33.42	539.71	1.4894	1.3314	6396.0	1214.0
-71	3.801	0.02255	63.7160	44.35	0.0157	-32.37	617.24	584.87	-0.0801	1.5080	-32.39	540.02	1.4910	1.3316	6381.7	1215.3
-70	3.937	0.02257	61.6460	44.31	0.0162	-31.34	616.63	585.29	-0.0774	1.5050	-31.36	540.34	1.4926	1.3319	6367.4	1216.7
-69	4.078	0.02259	59.6560	44.27	0.0168	-30.31	616.02	585.71	-0.0748	1.5021	-30.33	540.66	1.4942	1.3321	6353.2	1218.0
-68	4.223	0.02261	57.7400	44.23	0.0173	-29.27	615.40	586.13	-0.0721	1.4991	-29.29	540.97	1.4958	1.3324	6339.1	1219.3
-67	4.372	0.02263	55.8970	44.19	0.0179	-28.24	614.78	586.54	-0.0695	1.4962	-28.26	541.29	1.4975	1.3327	6325.0	1220.6
-66	4.526	0.02265	54.1230	44.15	0.0185	-27.20	614.16	586.96	-0.0668	1.4933	-27.22	541.60	1.4991	1.3329	6311.0	1222.0
-65	4.684	0.02267	52.4150	44.11	0.0191	-26.17	613.55	587.38	-0.0642	1.4904	-26.18	541.92	1.5007	1.3332	6297.0	1223.3
-64	4.846	0.02269	50.7710	44.07	0.0197	-25.13	612.92	587.79	-0.0616	1.4875	-25.15	542.23	1.5023	1.3335	6283.1	1224.6
-63	5.013	0.02271	49.1870	44.03	0.0203	-24.09	612.30	588.21	-0.0590	1.4846	-24.11	542.54	1.5039	1.3338	6269.2	1225.9
-62	5.185	0.02273	47.6610	43.99	0.0210	-23.05	611.67	588.62	-0.0564	1.4818	-23.07	542.85	1.5055	1.3340	6255.3	1227.2
-61	5.362	0.02275	46.1910	43.95	0.0216	-22.01	611.04	589.03	-0.0537	1.4789	-22.03	543.16	1.5071	1.3343	6241.5	1228.5
-60	5.544	0.02277	44.7740	43.91	0.0223	-20.97	610.41	589.44	-0.0511	1.4761	-20.99	543.47	1.5087	1.3346	6227.8	1229.7
-59	5.731	0.02279	43.4090	43.87	0.0230	-19.93	609.78	589.85	-0.0485	1.4733	-19.95	543.78	1.5103	1.3349	6214.0	1231.0
-58	5.923	0.02282	42.0930	43.83	0.0238	-18.89	609.15	590.26	-0.0459	1.4706	-18.91	544.09	1.5119	1.3352	6200.3	1232.3
-57	6.120	0.02284	40.8230	43.79	0.0245	-17.84	608.50	590.66	-0.0434	1.4678	-17.87	544.40	1.5135	1.3356	6186.7	1233.5
-56	6.323	0.02286	39.5990	43.75	0.0253	-16.80	607.87	591.07	-0.0408	1.4651	-16.83	544.70	1.5150	1.3359	6173.0	1234.8
-55	6.531	0.02288	38.4180	43.71	0.0260	-15.75	607.22	591.47	-0.0382	1.4624	-15.78	545.01	1.5166	1.3362	6159.5	1236.0
-54	6.745	0.02290	37.2790	43.67	0.0268	-14.71	606.59	591.88	-0.0356	1.4597	-14.74	545.31	1.5182	1.3365	6145.9	1237.3
-53	6.965	0.02292	36.1800	43.63	0.0276	-13.66	605.94	592.28	-0.0330	1.4570	-13.69	545.62	1.5198	1.3369	6132.4	1238.5
-52	7.190	0.02294	35.1190	43.58	0.0285	-12.62	605.30	592.68	-0.0305	1.4543	-12.65	545.92	1.5213	1.3372	6118.9	1239.7
-51	7.422	0.02297	34.0940	43.54	0.0293	-11.57	604.65	593.08	-0.0279	1.4516	-11.60	546.22	1.5229	1.3376	6105.4	1241.0
-50	7.659	0.02299	33.1050	43.50	0.0302	-10.52	604.00	593.48	-0.0253	1.4490	-10.55	546.52	1.5245	1.3379	6091.9	1242.2
-49	7.903	0.02301	32.1500	43.46	0.0311	-9.47	603.34	593.87	-0.0228	1.4464	-9.51	546.82	1.5260	1.3383	6078.5	1243.4
-48	8.153	0.02303	31.2280	43.42	0.0320	-8.42	602.69	594.27	-0.0202	1.4438	-8.46	547.12	1.5276	1.3387	6065.1	1244.6
-47	8.410	0.02305	30.3370	43.38	0.0330	-7.37	602.03	594.66	-0.0177	1.4412	-7.41	547.42	1.5291	1.3390	6051.8	1245.8
-46	8.673	0.02308	29.4760	43.34	0.0339	-6.32	601.38	595.06	-0.0152	1.4386	-6.36	547.72	1.5307	1.3394	6038.4	1247.0
-45	8.943	0.02310	28.6440	43.29	0.0349	-5.27	600.72	595.45	-0.0126	1.4360	-5.31	548.01	1.5322	1.3398	6025.1	1248.1
-44	9.220	0.02312	27.8400	43.25	0.0359	-4.22	600.06	595.84	-0.0101	1.4335	-4.26	548.31	1.5338	1.3402	6011.8	1249.3
-43	9.504	0.02314	27.0630	43.21	0.0370	-3.16	599.39	596.23	-0.0076	1.4310	-3.20	548.60	1.5353	1.3406	5998.5	1250.5
-42	9.794	0.02317	26.3110	43.17	0.0380	-2.11	598.73	596.62	-0.0050	1.4285	-2.15	548.90	1.5368	1.3410	5985.2	1251.6
-41	10.093	0.02319	25.5840	43.13	0.0391	-1.06	598.06	597.00	-0.0025	1.4260	-1.10	549.19	1.5384	1.3414	5972.0	1252.8

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Ammonia
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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	10.398	0.02321	24.8810	43.09	0.0402	0.00	597.39	597.39	0.0000	1.4235	-0.04	549.48	1.5399	1.3419	5958.8	1253.9
-39	10.711	0.02323	24.2010	43.04	0.0413	1.06	596.71	597.77	0.0025	1.4210	1.01	549.77	1.5414	1.3423	5945.6	1255.1
-38	11.032	0.02326	23.5430	43.00	0.0425	2.11	596.04	598.15	0.0050	1.4185	2.07	550.06	1.5429	1.3427	5932.4	1256.2
-37	11.360	0.02328	22.9070	42.96	0.0437	3.17	595.36	598.53	0.0075	1.4161	3.12	550.35	1.5444	1.3432	5919.2	1257.3
-36	11.697	0.02330	22.2900	42.92	0.0449	4.23	594.68	598.91	0.0100	1.4137	4.18	550.64	1.5460	1.3436	5906.0	1258.4
-35	12.041	0.02332	21.6940	42.87	0.0461	5.29	594.00	599.29	0.0125	1.4113	5.24	550.92	1.5475	1.3441	5892.9	1259.5
-34	12.394	0.02335	21.1160	42.83	0.0474	6.35	593.32	599.67	0.0150	1.4089	6.29	551.21	1.5490	1.3446	5879.8	1260.6
-33	12.755	0.02337	20.5570	42.79	0.0486	7.41	592.63	600.04	0.0175	1.4065	7.35	551.49	1.5505	1.3450	5866.6	1261.7
-32	13.124	0.02339	20.0160	42.75	0.0500	8.47	591.95	600.42	0.0200	1.4041	8.41	551.77	1.5520	1.3455	5853.5	1262.8
-31	13.503	0.02342	19.4910	42.70	0.0513	9.53	591.26	600.79	0.0224	1.4017	9.47	552.06	1.5535	1.3460	5840.4	1263.9
-30	13.890	0.02344	18.9830	42.66	0.0527	10.59	590.57	601.16	0.0249	1.3994	10.53	552.34	1.5550	1.3465	5827.4	1264.9
-29	14.286	0.02347	18.4900	42.62	0.0541	11.66	589.88	601.53	0.0274	1.3970	11.59	552.62	1.5565	1.3470	5814.3	1266.0
-28	14.691	0.02349	18.0130	42.58	0.0555	12.72	589.18	601.90	0.0298	1.3947	12.66	552.90	1.5580	1.3475	5801.2	1267.1
-27	15.105	0.02351	17.5510	42.53	0.0570	13.78	588.49	602.27	0.0323	1.3924	13.72	553.18	1.5595	1.3481	5788.2	1268.1
-26	15.529	0.02354	17.1020	42.49	0.0585	14.85	587.78	602.63	0.0348	1.3901	14.78	553.45	1.5610	1.3486	5775.1	1269.1
-25	15.962	0.02356	16.6680	42.45	0.0600	15.91	587.08	602.99	0.0372	1.3878	15.84	553.73	1.5625	1.3491	5762.1	1270.2
-24	16.406	0.02358	16.2460	42.40	0.0616	16.98	586.38	603.36	0.0396	1.3856	16.91	554.00	1.5640	1.3497	5749.1	1271.2
-23	16.859	0.02361	15.8380	42.36	0.0631	18.05	585.67	603.72	0.0421	1.3833	17.97	554.28	1.5655	1.3502	5736.0	1272.2
-22	17.322	0.02363	15.4410	42.32	0.0648	19.12	584.97	604.08	0.0445	1.3811	19.04	554.55	1.5669	1.3508	5723.0	1273.2
-21	17.795	0.02366	15.0570	42.27	0.0664	20.18	584.25	604.43	0.0470	1.3788	20.11	554.82	1.5684	1.3514	5710.0	1274.2
-20	18.279	0.02368	14.6830	42.23	0.0681	21.25	583.54	604.79	0.0494	1.3766	21.17	555.09	1.5699	1.3520	5697.0	1275.2
-19	18.773	0.02371	14.3210	42.19	0.0698	22.32	582.82	605.14	0.0518	1.3744	22.24	555.36	1.5714	1.3526	5684.0	1276.2
-18	19.278	0.02373	13.9700	42.14	0.0716	23.39	582.11	605.50	0.0542	1.3722	23.31	555.63	1.5729	1.3532	5671.0	1277.2
-17	19.794	0.02375	13.6290	42.10	0.0734	24.47	581.39	605.85	0.0567	1.3700	24.38	555.89	1.5743	1.3538	5658.1	1278.1
-16	20.320	0.02378	13.2980	42.05	0.0752	25.54	580.66	606.20	0.0591	1.3678	25.45	556.16	1.5758	1.3544	5645.1	1279.1
-15	20.859	0.02380	12.9760	42.01	0.0771	26.61	579.93	606.54	0.0615	1.3657	26.52	556.42	1.5773	1.3550	5632.1	1280.0
-14	21.408	0.02383	12.6640	41.97	0.0790	27.68	579.21	606.89	0.0639	1.3635	27.59	556.69	1.5788	1.3557	5619.1	1281.0
-13	21.969	0.02385	12.3610	41.92	0.0809	28.76	578.47	607.23	0.0663	1.3614	28.66	556.95	1.5803	1.3563	5606.2	1281.9
-12	22.542	0.02388	12.0670	41.88	0.0829	29.83	577.75	607.58	0.0687	1.3592	29.73	557.21	1.5817	1.3570	5593.2	1282.8
-11	23.127	0.02390	11.7800	41.83	0.0849	30.91	577.01	607.92	0.0711	1.3571	30.80	557.47	1.5832	1.3577	5580.2	1283.8
-10	23.723	0.02393	11.5020	41.79	0.0869	31.98	576.28	608.26	0.0735	1.3550	31.88	557.73	1.5847	1.3584	5567.3	1284.7
-9	24.333	0.02396	11.2320	41.75	0.0890	33.06	575.53	608.59	0.0759	1.3529	32.95	557.98	1.5862	1.3590	5554.3	1285.6
-8	24.954	0.02398	10.9700	41.70	0.0912	34.14	574.79	608.93	0.0782	1.3508	34.03	558.24	1.5876	1.3597	5541.4	1286.5
-7	25.588	0.02401	10.7150	41.66	0.0933	35.21	574.05	609.26	0.0806	1.3488	35.10	558.49	1.5891	1.3605	5528.4	1287.4
-6	26.235	0.02403	10.4670	41.61	0.0955	36.29	573.31	609.60	0.0830	1.3467	36.18	558.75	1.5906	1.3612	5515.5	1288.2
-5	26.895	0.02406	10.2260	41.57	0.0978	37.37	572.56	609.93	0.0854	1.3446	37.25	559.00	1.5921	1.3619	5502.5	1289.1
-4	27.569	0.02408	9.9912	41.52	0.1001	38.45	571.81	610.26	0.0877	1.3426	38.33	559.25	1.5936	1.3627	5489.6	1290.0
-3	28.255	0.02411	9.7632	41.48	0.1024	39.53	571.05	610.58	0.0901	1.3405	39.41	559.50	1.5950	1.3634	5476.6	1290.8
-2	28.955	0.02414	9.5414	41.43	0.1048	40.61	570.30	610.91	0.0924	1.3385	40.49	559.75	1.5965	1.3642	5463.7	1291.7
-1	29.669	0.02416	9.3257	41.39	0.1072	41.70	569.53	611.23	0.0948	1.3365	41.56	560.00	1.5980	1.3650	5450.7	1292.5

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Ammonia
NH3



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	30.397	0.02419	9.1159	41.34	0.1097	42.78	568.77	611.55	0.0971	1.3345	42.64	560.24	1.5995	1.3657	5437.8	1293.3
1	31.139	0.02421	8.9117	41.30	0.1122	43.86	568.01	611.87	0.0995	1.3325	43.72	560.49	1.6010	1.3665	5424.8	1294.1
2	31.896	0.02424	8.7130	41.25	0.1148	44.95	567.24	612.19	0.1018	1.3305	44.80	560.73	1.6025	1.3673	5411.9	1294.9
3	32.667	0.02427	8.5197	41.21	0.1174	46.03	566.48	612.51	0.1042	1.3285	45.89	560.97	1.6040	1.3682	5398.9	1295.7
4	33.453	0.02429	8.3315	41.16	0.1200	47.12	565.70	612.82	0.1065	1.3266	46.97	561.21	1.6054	1.3690	5386.0	1296.5
5	34.253	0.02432	8.1483	41.12	0.1227	48.20	564.93	613.13	0.1089	1.3246	48.05	561.45	1.6069	1.3698	5373.0	1297.3
6	35.069	0.02435	7.9699	41.07	0.1255	49.29	564.16	613.45	0.1112	1.3227	49.13	561.69	1.6084	1.3707	5360.0	1298.1
7	35.900	0.02437	7.7962	41.03	0.1283	50.38	563.37	613.75	0.1135	1.3207	50.22	561.93	1.6099	1.3716	5347.1	1298.9
8	36.747	0.02440	7.6271	40.98	0.1311	51.47	562.59	614.06	0.1158	1.3188	51.30	562.16	1.6114	1.3724	5334.1	1299.6
9	37.609	0.02443	7.4624	40.94	0.1340	52.56	561.82	614.37	0.1181	1.3169	52.38	562.40	1.6129	1.3733	5321.1	1300.4
10	38.487	0.02446	7.3020	40.89	0.1370	53.64	561.03	614.67	0.1205	1.3150	53.47	562.63	1.6144	1.3742	5308.2	1301.1
11	39.382	0.02448	7.1457	40.84	0.1399	54.73	560.24	614.97	0.1228	1.3131	54.56	562.86	1.6160	1.3752	5295.2	1301.8
12	40.293	0.02451	6.9935	40.80	0.1430	55.83	559.45	615.27	0.1251	1.3112	55.64	563.09	1.6175	1.3761	5282.2	1302.6
13	41.220	0.02454	6.8451	40.75	0.1461	56.92	558.65	615.57	0.1274	1.3093	56.73	563.32	1.6190	1.3770	5269.2	1303.3
14	42.164	0.02457	6.7006	40.71	0.1492	58.01	557.85	615.86	0.1297	1.3074	57.82	563.54	1.6205	1.3780	5256.2	1304.0
15	43.126	0.02459	6.5597	40.66	0.1525	59.10	557.05	616.15	0.1320	1.3055	58.91	563.77	1.6220	1.3789	5243.2	1304.7
16	44.104	0.02462	6.4224	40.61	0.1557	60.20	556.25	616.45	0.1343	1.3037	60.00	563.99	1.6235	1.3799	5230.2	1305.4
17	45.100	0.02465	6.2885	40.57	0.1590	61.29	555.44	616.73	0.1366	1.3018	61.09	564.22	1.6251	1.3809	5217.2	1306.0
18	46.113	0.02468	6.1580	40.52	0.1624	62.39	554.63	617.02	0.1388	1.3000	62.18	564.44	1.6266	1.3819	5204.2	1306.7
19	47.145	0.02471	6.0308	40.48	0.1658	63.48	553.83	617.31	0.1411	1.2981	63.27	564.66	1.6281	1.3830	5191.2	1307.4
20	48.194	0.02474	5.9067	40.43	0.1693	64.58	553.01	617.59	0.1434	1.2963	64.36	564.88	1.6297	1.3840	5178.2	1308.0
21	49.262	0.02476	5.7857	40.38	0.1728	65.68	552.19	617.87	0.1457	1.2945	65.45	565.09	1.6312	1.3850	5165.1	1308.6
22	50.348	0.02479	5.6677	40.34	0.1764	66.77	551.38	618.15	0.1479	1.2927	66.54	565.31	1.6328	1.3861	5152.1	1309.3
23	51.453	0.02482	5.5526	40.29	0.1801	67.87	550.56	618.43	0.1502	1.2909	67.64	565.52	1.6343	1.3872	5139.1	1309.9
24	52.577	0.02485	5.4403	40.24	0.1838	68.97	549.73	618.70	0.1525	1.2891	68.73	565.74	1.6359	1.3883	5126.0	1310.5
25	53.720	0.02488	5.3307	40.20	0.1876	70.07	548.90	618.97	0.1547	1.2873	69.83	565.95	1.6375	1.3894	5113.0	1311.1
26	54.882	0.02491	5.2238	40.15	0.1914	71.17	548.07	619.24	0.1570	1.2855	70.92	566.16	1.6390	1.3905	5099.9	1311.7
27	56.064	0.02494	5.1195	40.10	0.1953	72.28	547.24	619.51	0.1593	1.2837	72.02	566.36	1.6406	1.3916	5086.8	1312.3
28	57.266	0.02497	5.0176	40.05	0.1993	73.38	546.40	619.78	0.1615	1.2819	73.11	566.57	1.6422	1.3928	5073.8	1312.8
29	58.488	0.02500	4.9183	40.01	0.2033	74.48	545.56	620.04	0.1638	1.2802	74.21	566.78	1.6438	1.3939	5060.7	1313.4
30	59.731	0.02503	4.8213	39.96	0.2074	75.59	544.73	620.31	0.1660	1.2784	75.31	566.98	1.6454	1.3951	5047.6	1314.0
31	60.993	0.02506	4.7266	39.91	0.2116	76.69	543.88	620.57	0.1682	1.2767	76.41	567.18	1.6470	1.3963	5034.5	1314.5
32	62.277	0.02509	4.6341	39.87	0.2158	77.80	543.03	620.82	0.1705	1.2749	77.51	567.38	1.6486	1.3975	5021.4	1315.0
33	63.582	0.02512	4.5438	39.82	0.2201	78.90	542.18	621.08	0.1727	1.2732	78.61	567.58	1.6502	1.3987	5008.3	1315.6
34	64.907	0.02515	4.4556	39.77	0.2244	80.01	541.32	621.33	0.1749	1.2715	79.71	567.78	1.6518	1.4000	4995.1	1316.1
35	66.255	0.02518	4.3695	39.72	0.2289	81.12	540.46	621.58	0.1772	1.2698	80.81	567.97	1.6535	1.4012	4982.0	1316.6
36	67.624	0.02521	4.2854	39.67	0.2334	82.22	539.61	621.83	0.1794	1.2680	81.91	568.17	1.6551	1.4025	4968.9	1317.1
37	69.015	0.02524	4.2033	39.63	0.2379	83.33	538.75	622.08	0.1816	1.2663	83.01	568.36	1.6567	1.4038	4955.7	1317.6
38	70.428	0.02527	4.1230	39.58	0.2425	84.44	537.88	622.32	0.1838	1.2646	84.11	568.55	1.6584	1.4051	4942.6	1318.0
39	71.864	0.02530	4.0446	39.53	0.2472	85.56	537.01	622.56	0.1861	1.2629	85.22	568.74	1.6600	1.4064	4929.4	1318.5

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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	73.322	0.02533	3.9680	39.48	0.2520	86.67	536.13	622.80	0.1883	1.2613	86.32	568.93	1.6617	1.4078	4916.2	1319.0
41	74.803	0.02536	3.8931	39.43	0.2569	87.78	535.26	623.04	0.1905	1.2596	87.43	569.12	1.6634	1.4091	4903.0	1319.4
42	76.307	0.02539	3.8199	39.39	0.2618	88.89	534.39	623.28	0.1927	1.2579	88.53	569.30	1.6651	1.4105	4889.8	1319.8
43	77.835	0.02542	3.7484	39.34	0.2668	90.01	533.50	623.51	0.1949	1.2562	89.64	569.48	1.6667	1.4119	4876.6	1320.3
44	79.386	0.02545	3.6785	39.29	0.2719	91.12	532.62	623.74	0.1971	1.2546	90.75	569.66	1.6684	1.4133	4863.4	1320.7
45	80.962	0.02548	3.6102	39.24	0.2770	92.24	531.73	623.97	0.1993	1.2529	91.86	569.84	1.6701	1.4147	4850.1	1321.1
46	82.561	0.02552	3.5434	39.19	0.2822	93.35	530.84	624.19	0.2015	1.2513	92.96	570.02	1.6719	1.4162	4836.9	1321.5
47	84.185	0.02555	3.4780	39.14	0.2875	94.47	529.95	624.42	0.2037	1.2496	94.07	570.20	1.6736	1.4176	4823.6	1321.9
48	85.833	0.02558	3.4142	39.09	0.2929	95.59	529.05	624.64	0.2059	1.2480	95.18	570.37	1.6753	1.4191	4810.4	1322.2
49	87.507	0.02561	3.3517	39.04	0.2984	96.71	528.15	624.86	0.2081	1.2463	96.29	570.54	1.6771	1.4206	4797.1	1322.6
50	89.205	0.02564	3.2906	39.00	0.3039	97.83	527.24	625.07	0.2102	1.2447	97.41	570.72	1.6788	1.4222	4783.8	1323.0
51	90.929	0.02568	3.2309	38.95	0.3095	98.95	526.34	625.29	0.2124	1.2431	98.52	570.89	1.6806	1.4237	4770.5	1323.3
52	92.678	0.02571	3.1724	38.90	0.3152	100.07	525.43	625.50	0.2146	1.2415	99.63	571.05	1.6823	1.4253	4757.2	1323.6
53	94.454	0.02574	3.1152	38.85	0.3210	101.19	524.52	625.71	0.2168	1.2399	100.74	571.22	1.6841	1.4268	4743.8	1324.0
54	96.255	0.02578	3.0593	38.80	0.3269	102.32	523.59	625.91	0.2189	1.2383	101.86	571.38	1.6859	1.4284	4730.5	1324.3
55	98.083	0.02581	3.0045	38.75	0.3328	103.44	522.68	626.12	0.2211	1.2367	102.97	571.55	1.6877	1.4301	4717.1	1324.6
56	99.937	0.02584	2.9510	38.70	0.3389	104.57	521.75	626.32	0.2233	1.2351	104.09	571.71	1.6895	1.4317	4703.8	1324.9
57	101.820	0.02587	2.8986	38.65	0.3450	105.69	520.83	626.52	0.2255	1.2335	105.20	571.87	1.6914	1.4334	4690.4	1325.1
58	103.730	0.02591	2.8473	38.60	0.3512	106.82	519.89	626.71	0.2276	1.2319	106.32	572.02	1.6932	1.4350	4677.0	1325.4
59	105.660	0.02594	2.7971	38.55	0.3575	107.95	518.96	626.91	0.2298	1.2303	107.44	572.18	1.6950	1.4367	4663.6	1325.7
60	107.630	0.02598	2.7479	38.50	0.3639	109.08	518.02	627.10	0.2319	1.2287	108.56	572.33	1.6969	1.4385	4650.2	1325.9
61	109.620	0.02601	2.6998	38.45	0.3704	110.21	517.07	627.28	0.2341	1.2272	109.68	572.48	1.6988	1.4402	4636.7	1326.2
62	111.640	0.02604	2.6527	38.40	0.3770	111.34	516.13	627.47	0.2362	1.2256	110.80	572.63	1.7007	1.4420	4623.3	1326.4
63	113.690	0.02608	2.6066	38.35	0.3837	112.47	515.18	627.65	0.2384	1.2241	111.92	572.78	1.7026	1.4438	4609.8	1326.6
64	115.760	0.02611	2.5614	38.30	0.3904	113.60	514.24	627.84	0.2405	1.2225	113.04	572.93	1.7045	1.4456	4596.3	1326.8
65	117.870	0.02615	2.5172	38.25	0.3973	114.73	513.28	628.01	0.2427	1.2210	114.16	573.07	1.7064	1.4474	4582.8	1327.0
66	120.010	0.02618	2.4739	38.20	0.4042	115.87	512.32	628.19	0.2448	1.2194	115.29	573.21	1.7083	1.4493	4569.3	1327.2
67	122.170	0.02622	2.4315	38.14	0.4113	117.00	511.36	628.36	0.2469	1.2179	116.41	573.35	1.7103	1.4512	4555.8	1327.4
68	124.370	0.02625	2.3899	38.09	0.4184	118.14	510.39	628.53	0.2491	1.2163	117.54	573.49	1.7122	1.4531	4542.2	1327.5
69	126.590	0.02629	2.3492	38.04	0.4257	119.28	509.42	628.70	0.2512	1.2148	118.66	573.63	1.7142	1.4550	4528.7	1327.7
70	128.850	0.02632	2.3094	37.99	0.4330	120.42	508.44	628.86	0.2533	1.2133	119.79	573.77	1.7162	1.4570	4515.1	1327.8
71	131.130	0.02636	2.2703	37.94	0.4405	121.56	507.47	629.03	0.2555	1.2118	120.92	573.90	1.7182	1.4590	4501.5	1327.9
72	133.450	0.02639	2.2320	37.89	0.4480	122.70	506.49	629.19	0.2576	1.2102	122.05	574.03	1.7202	1.4610	4487.9	1328.0
73	135.800	0.02643	2.1945	37.84	0.4557	123.84	505.50	629.34	0.2597	1.2087	123.17	574.16	1.7223	1.4630	4474.3	1328.2
74	138.180	0.02647	2.1578	37.79	0.4634	124.98	504.52	629.50	0.2618	1.2072	124.30	574.29	1.7243	1.4651	4460.6	1328.2
75	140.590	0.02650	2.1217	37.73	0.4713	126.13	503.52	629.65	0.2640	1.2057	125.44	574.41	1.7264	1.4672	4447.0	1328.3
76	143.030	0.02654	2.0864	37.68	0.4793	127.27	502.52	629.79	0.2661	1.2042	126.57	574.53	1.7285	1.4693	4433.3	1328.4
77	145.510	0.02658	2.0518	37.63	0.4874	128.42	501.52	629.94	0.2682	1.2027	127.70	574.65	1.7306	1.4714	4419.6	1328.5
78	148.020	0.02661	2.0179	37.58	0.4956	129.56	500.52	630.08	0.2703	1.2012	128.83	574.77	1.7327	1.4736	4405.9	1328.5
79	150.560	0.02665	1.9847	37.53	0.5039	130.71	499.51	630.22	0.2724	1.1997	129.97	574.89	1.7348	1.4758	4392.2	1328.5

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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	153.130	0.02669	1.9521	37.47	0.5123	131.86	498.50	630.36	0.2745	1.1982	131.10	575.01	1.7369	1.4780	4378.4	1328.6
81	155.740	0.02672	1.9201	37.42	0.5208	133.01	497.48	630.49	0.2766	1.1967	132.24	575.12	1.7391	1.4803	4364.7	1328.6
82	158.380	0.02676	1.8888	37.37	0.5294	134.16	496.46	630.62	0.2787	1.1953	133.38	575.23	1.7413	1.4826	4350.9	1328.6
83	161.060	0.02680	1.8580	37.31	0.5382	135.32	495.43	630.75	0.2808	1.1938	134.52	575.34	1.7435	1.4849	4337.1	1328.6
84	163.760	0.02684	1.8279	37.26	0.5471	136.47	494.41	630.88	0.2829	1.1923	135.66	575.45	1.7457	1.4872	4323.2	1328.6
85	166.510	0.02688	1.7983	37.21	0.5561	137.62	493.38	631.00	0.2850	1.1909	136.80	575.55	1.7479	1.4896	4309.4	1328.5
86	169.290	0.02691	1.7693	37.16	0.5652	138.78	492.34	631.12	0.2871	1.1894	137.94	575.65	1.7502	1.4920	4295.5	1328.5
87	172.100	0.02695	1.7409	37.10	0.5744	139.94	491.29	631.23	0.2892	1.1879	139.08	575.75	1.7525	1.4945	4281.6	1328.4
88	174.950	0.02699	1.7130	37.05	0.5838	141.10	490.25	631.35	0.2913	1.1865	140.22	575.85	1.7548	1.4969	4267.7	1328.3
89	177.840	0.02703	1.6856	37.00	0.5933	142.26	489.20	631.46	0.2934	1.1850	141.37	575.95	1.7571	1.4994	4253.8	1328.3
90	180.760	0.02707	1.6588	36.94	0.6029	143.42	488.14	631.56	0.2955	1.1836	142.51	576.04	1.7594	1.5020	4239.9	1328.2
91	183.710	0.02711	1.6324	36.89	0.6126	144.58	487.09	631.67	0.2976	1.1821	143.66	576.13	1.7618	1.5046	4225.9	1328.1
92	186.710	0.02715	1.6066	36.83	0.6224	145.74	486.03	631.77	0.2997	1.1807	144.80	576.22	1.7641	1.5072	4211.9	1328.0
93	189.740	0.02719	1.5812	36.78	0.6324	146.91	484.96	631.87	0.3017	1.1792	145.95	576.31	1.7665	1.5098	4197.9	1327.8
94	192.810	0.02723	1.5563	36.73	0.6425	148.07	483.89	631.96	0.3038	1.1778	147.10	576.40	1.7690	1.5125	4183.9	1327.7
95	195.910	0.02727	1.5319	36.67	0.6528	149.24	482.81	632.05	0.3059	1.1763	148.25	576.48	1.7714	1.5152	4169.8	1327.5
96	199.060	0.02731	1.5079	36.62	0.6632	150.41	481.73	632.14	0.3080	1.1749	149.40	576.56	1.7739	1.5179	4155.8	1327.4
97	202.240	0.02735	1.4844	36.56	0.6737	151.58	480.64	632.22	0.3101	1.1735	150.56	576.64	1.7764	1.5207	4141.7	1327.2
98	205.460	0.02739	1.4612	36.51	0.6844	152.75	479.56	632.31	0.3121	1.1720	151.71	576.71	1.7789	1.5235	4127.6	1327.0
99	208.710	0.02743	1.4386	36.45	0.6951	153.92	478.46	632.38	0.3142	1.1706	152.86	576.79	1.7814	1.5264	4113.4	1326.8
100	212.010	0.02748	1.4163	36.40	0.7061	155.10	477.36	632.46	0.3163	1.1692	154.02	576.86	1.7839	1.5293	4099.3	1326.6
101	215.350	0.02752	1.3944	36.34	0.7172	156.27	476.26	632.53	0.3183	1.1678	155.18	576.93	1.7865	1.5322	4085.1	1326.3
102	218.720	0.02756	1.3729	36.29	0.7284	157.45	475.15	632.60	0.3204	1.1664	156.33	576.99	1.7891	1.5352	4070.9	1326.1
103	222.140	0.02760	1.3519	36.23	0.7397	158.63	474.04	632.67	0.3225	1.1649	157.49	577.06	1.7918	1.5382	4056.6	1325.8
104	225.590	0.02765	1.3311	36.17	0.7512	159.81	472.92	632.73	0.3245	1.1635	158.65	577.12	1.7944	1.5413	4042.4	1325.6
105	229.090	0.02769	1.3108	36.12	0.7629	160.99	471.80	632.79	0.3266	1.1621	159.82	577.18	1.7971	1.5444	4028.1	1325.3
106	232.630	0.02773	1.2908	36.06	0.7747	162.17	470.67	632.84	0.3287	1.1607	160.98	577.24	1.7998	1.5476	4013.8	1325.0
107	236.210	0.02777	1.2712	36.01	0.7867	163.36	469.53	632.89	0.3307	1.1593	162.14	577.29	1.8026	1.5508	3999.5	1324.7
108	239.830	0.02782	1.2519	35.95	0.7988	164.54	468.40	632.94	0.3328	1.1579	163.31	577.34	1.8053	1.5540	3985.1	1324.4
109	243.490	0.02786	1.2330	35.89	0.8110	165.73	467.25	632.98	0.3348	1.1565	164.47	577.39	1.8081	1.5573	3970.7	1324.0
110	247.190	0.02791	1.2144	35.84	0.8235	166.92	466.10	633.02	0.3369	1.1551	165.64	577.44	1.8109	1.5606	3956.3	1323.7
111	250.930	0.02795	1.1961	35.78	0.8360	168.11	464.95	633.06	0.3389	1.1537	166.81	577.48	1.8138	1.5640	3941.9	1323.3
112	254.720	0.02800	1.1782	35.72	0.8488	169.30	463.80	633.10	0.3410	1.1523	167.98	577.52	1.8167	1.5674	3927.4	1323.0
113	258.550	0.02804	1.1605	35.66	0.8617	170.49	462.64	633.13	0.3430	1.1509	169.15	577.56	1.8196	1.5709	3912.9	1322.6
114	262.430	0.02809	1.1432	35.61	0.8747	171.69	461.46	633.15	0.3451	1.1495	170.32	577.60	1.8225	1.5744	3898.4	1322.2
115	266.340	0.02813	1.1262	35.55	0.8880	172.89	460.28	633.17	0.3471	1.1481	171.50	577.63	1.8255	1.5780	3883.9	1321.8
116	270.310	0.02818	1.1094	35.49	0.9014	174.09	459.10	633.19	0.3492	1.1467	172.67	577.66	1.8285	1.5816	3869.3	1321.3
117	274.310	0.02822	1.0930	35.43	0.9150	175.29	457.92	633.21	0.3512	1.1453	173.85	577.69	1.8315	1.5853	3854.7	1320.9
118	278.360	0.02827	1.0768	35.37	0.9287	176.49	456.73	633.22	0.3533	1.1439	175.03	577.72	1.8346	1.5890	3840.1	1320.4
119	282.460	0.02832	1.0609	35.32	0.9426	177.69	455.54	633.23	0.3553	1.1425	176.21	577.74	1.8377	1.5928	3825.5	1320.0

R-717

Ammonia
NH3



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	286.600	0.02836	1.0452	35.26	0.9567	178.90	454.33	633.23	0.3574	1.1411	177.39	577.76	1.8409	1.5967	3810.8	1319.5
121	290.780	0.02841	1.0299	35.20	0.9710	180.10	453.13	633.23	0.3594	1.1398	178.57	577.78	1.8440	1.6006	3796.1	1319.0
122	295.010	0.02846	1.0148	35.14	0.9854	181.31	451.92	633.23	0.3615	1.1384	179.76	577.79	1.8472	1.6045	3781.4	1318.5
123	299.290	0.02851	0.9999	35.08	1.0001	182.52	450.70	633.22	0.3635	1.1370	180.94	577.80	1.8505	1.6085	3766.6	1318.0
124	303.610	0.02856	0.9853	35.02	1.0149	183.73	449.48	633.21	0.3655	1.1356	182.13	577.81	1.8538	1.6126	3751.8	1317.4
125	307.980	0.02860	0.9710	34.96	1.0299	184.95	448.24	633.19	0.3676	1.1342	183.32	577.82	1.8571	1.6168	3737.0	1316.9
126	312.400	0.02865	0.9568	34.90	1.0451	186.17	447.00	633.17	0.3696	1.1328	184.51	577.82	1.8605	1.6210	3722.2	1316.3
127	316.860	0.02870	0.9429	34.84	1.0605	187.38	445.77	633.15	0.3716	1.1315	185.70	577.82	1.8639	1.6252	3707.3	1315.7
128	321.380	0.02875	0.9293	34.78	1.0761	188.60	444.52	633.12	0.3737	1.1301	186.89	577.82	1.8673	1.6296	3692.4	1315.2
129	325.940	0.02880	0.9158	34.72	1.0919	189.83	443.26	633.09	0.3757	1.1287	188.09	577.81	1.8708	1.6340	3677.4	1314.5
130	330.540	0.02885	0.9026	34.66	1.1079	191.05	442.00	633.05	0.3778	1.1273	189.28	577.80	1.8743	1.6384	3662.5	1313.9