PROPERTIES OF R-717
(ANHYDROUS AMMONIA)

Industrial Refrigeration Consortium
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Who we Are

The IRC is a collaborative effort between the University of Wisconsin-Madison and industry. Together we share a common goal of improving safety, efficiency, and productivity of industrial refrigeration systems and technologies. We realize this goal by conducting applied research, delivering knowledge transfer, and providing technical assistance. Although our efforts are focused on industrial refrigeration systems that utilize anhydrous ammonia, we also work with systems that use other refrigerants.

The IRC offers a unique combination of complementary resources that include academic qualifications, technical expertise, and practical experience. We provide objective information that is not biased by an affiliation with any particular organization.

Our primary product is knowledge. We create knowledge through research and technical assistance, and we transfer knowledge to the industry through our training and technology transfer activities.

These services provide substantial benefits to our members and to the entire refrigeration industry. The knowledge that we create and distribute helps to improve the capabilities of individuals at all levels. Increased knowledge can help improve safety, reduce operating costs, increase productivity, and make your organization more competitive.

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PROPERTIES OF R-717 (ANHYDROUS AMMONIA)

Foreword

R-717 is a pure working fluid used in many refrigeration systems. The term *anhydrous* means without water. Solutions of ammonia mixed with water, called *aqua-ammonia* refrigerants, are often used in many absorption refrigeration systems.

The tables attached were developed based on a refrigerant property database (REFPROP 7.0) developed by the National Institute of Standards and Technology (NIST) for ammonia. The thermophysical and transport properties given in the attached tables are based on the latest research and equations of state developed for this particular refrigerant. Fore more information on the equations used, see the References section below.

The property data includes both saturation properties (as a function of temperature and as a function of pressure), subcooled, and superheat properties. Note, the pressure emphasized in all tables is *absolute* pressure. This means that the local barometric pressure needs to be added to any gage pressure readings prior to using the values in the attached tables.

References

Tillner-Roth, R., Harms-Watzenberg, F., and Baehr, H.D., "Eine neue Fundamentalgleichung fuer Ammoniak," DKV-Tagungsbericht, 20:167-181, 1993.

Baehr, H.D. and Tillner-Roth, R. Thermodynamic Properties of Environmentally Acceptable Refrigerants; Equations of State and Tables for Ammonia, R22, R134a, R152a, and R123, Springer-Verlag, Berlin, 1994.

Fenghour, A., Wakeham, W.A., Vesovic, V., Watson, J.T.R., Millat, J., and Vogel, E., "The viscosity of ammonia," J. Phys. Chem. Ref. Data, 24:1649-1667, 1995.

Tufeu, R., Ivanov, D.Y., Garrabos, Y., and Le Neindre, B., "Thermal conductivity of ammonia in a large temperature and pressure range including the critical region," Ber. Bunsenges. Phys. Chem., 88:422-427, 1984.

Definitions

P (pressure)

Pressure is the force per unit area exerted by the working fluid. Pressure data is expressed in three units: psia, psig, and in Hg (vacuum). The primary unit expresses pressure as absolute pounds per square inch (psia). Converting between gage and absolute pressure can be accomplished by the following,

$$P_{absolute}\ [psia] = P_{gage}\ [psig] + P_{local}\ [psi]$$

where $P_{absolute}$ is the absolute pressure, P_{gage} is the gage pressure, and P_{local} is the local barometric pressure all expressed in units of lb/in^2.

ρ (density)

Density is the mass of refrigerant per unit volume [lb_m/ft^3]. The saturation tables express liquid in units of density. The density is inversely proportional to the specific volume,

$$\rho = 1/v$$

where ρ is the density and v is the fluid's specific volume.

v (specific volume)

Specific volume represents the volume occupied per unit mass of refrigerant. The saturation tables express all vapor states in terms of the specific volume [ft^3/lb_m]. The specific volume is inversely proportional to the fluid density (see definition above).

Cp (specific heat)

Specific heat is a measure of the energy storing capability of the working fluid [Btu/lb_m-R]. Fluids with large specific heats require significant amounts of energy input (or extraction) to sensibly increase (or decrease) their temperature.

Cp/Cv (spec heat ratio)

Specific heat ratio refers to the relationship between the isobaric (Cp) and isochoric (Cv) specific heat capacities.

h (enthalpy)

Enthalpy is a fluid property that is representative of the relative energy content of a flow stream [Btu/lb_m]. Reported values of enthalpy are dependent on the reference state. The values reported here have a reference state defining the enthalpy as 0 Btu/lb_m at -40 F (this is consistent with the ASHRAE reference state).

s (entropy)

Entropy is a property that is held constant during an ideal process (reversible and adiabatic, i.e. without heat loss). The entropy properties are sometimes used to characterize the behavior of compression processes. The entropy values are reported in units of [Btu/lb_m-R].

μ (viscosity)

The dynamic viscosity is a measure of the working fluid's resistance to flow [centipoise].

k (thermal cond)

The thermal conductivity is a measure of the heat conducting capability of the working fluid. Fluids with high thermal conductivity are effective at transferring energy with small temperature differences.

R-717 (anhydrous ammonia) Properties at Saturation

T [F]	P [psia]	ρ [lb/ft^3]	v [ft^3/lb]	h [Btu/lb]		s [Btu/R-lb]		Cp [Btu/R-lb]		Cp/Cv [unitless]		μ [centipose]		k [Btu/hr-ft-R]	
Bulk	Bulk	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
-100	1.237	45.467	182.1906	-61.99	572.26	-0.1592	1.6042	1.0100	0.4959	1.4439	1.3262	0.50926	0.00695	0.46473	0.01138
-99	1.291	45.430	175.1356	-60.98	572.71	-0.1564	1.6006	1.0108	0.4963	1.4455	1.3264	0.50330	0.00696	0.46360	0.01138
-98	1.346	45.393	168.3964	-59.97	573.15	-0.1536	1.5969	1.0115	0.4967	1.4471	1.3265	0.49744	0.00698	0.46247	0.01139
-97	1.403	45.355	161.9570	-58.96	573.60	-0.1508	1.5933	1.0123	0.4972	1.4487	1.3267	0.49169	0.00699	0.46134	0.01139
-96	1.462	45.318	155.8024	-57.95	574.04	-0.1480	1.5898	1.0131	0.4976	1.4503	1.3268	0.48604	0.00700	0.46021	0.01140
-95	1.523	45.280	149.9186	-56.93	574.48	-0.1453	1.5862	1.0138	0.4980	1.4519	1.3270	0.48048	0.00702	0.45908	0.01140
-94	1.587	45.243	144.2921	-55.92	574.93	-0.1425	1.5827	1.0146	0.4985	1.4535	1.3271	0.47503	0.00703	0.45795	0.01141
-93	1.653	45.205	138.9103	-54.90	575.37	-0.1397	1.5792	1.0153	0.4989	1.4551	1.3273	0.46967	0.00705	0.45682	0.01141
-92	1.721	45.167	133.7612	-53.89	575.81	-0.1369	1.5757	1.0161	0.4994	1.4567	1.3274	0.46440	0.00706	0.45569	0.01142
-91	1.791	45.129	128.8335	-52.87	576.25	-0.1342	1.5723	1.0169	0.4999	1.4583	1.3276	0.45922	0.00707	0.45456	0.01142
-90	1.864	45.091	124.1165	-51.85	576.69	-0.1314	1.5689	1.0176	0.5003	1.4599	1.3278	0.45414	0.00709	0.45343	0.01143
-89	1.939	45.053	119.6000	-50.84	577.13	-0.1287	1.5655	1.0184	0.5008	1.4616	1.3279	0.44914	0.00710	0.45231	0.01143
-88	2.017	45.015	115.2744	-49.82	577.56	-0.1259	1.5621	1.0192	0.5013	1.4632	1.3281	0.44422	0.00712	0.45118	0.01144
-87	2.097	44.976	111.1307	-48.80	578.00	-0.1232	1.5587	1.0200	0.5018	1.4648	1.3283	0.43939	0.00713	0.45005	0.01145
-86	2.180	44.938	107.1602	-47.78	578.44	-0.1205	1.5554	1.0207	0.5023	1.4664	1.3285	0.43464	0.00715	0.44892	0.01145
-85	2.266	44.900	103.3547	-46.76	578.87	-0.1177	1.5521	1.0215	0.5029	1.4681	1.3287	0.42997	0.00716	0.44780	0.01146
-84	2.355	44.861	99.7066	-45.73	579.31	-0.1150	1.5488	1.0223	0.5034	1.4697	1.3288	0.42538	0.00718	0.44667	0.01147
-83	2.446	44.823	96.2084	-44.71	579.74	-0.1123	1.5455	1.0231	0.5039	1.4714	1.3290	0.42087	0.00719	0.44554	0.01147
-82	2.541	44.784	92.8533	-43.69	580.17	-0.1096	1.5423	1.0238	0.5045	1.4730	1.3292	0.41643	0.00721	0.44442	0.01148
-81	2.639	44.745	89.6345	-42.66	580.60	-0.1069	1.5391	1.0246	0.5051	1.4746	1.3294	0.41207	0.00722	0.44329	0.01149
-80	2.739	44.706	86.5459	-41.64	581.03	-0.1042	1.5359	1.0254	0.5056	1.4763	1.3296	0.40777	0.00724	0.44217	0.01149
-79	2.843	44.667	83.5816	-40.61	581.46	-0.1015	1.5327	1.0261	0.5062	1.4779	1.3298	0.40355	0.00725	0.44105	0.01150
-78	2.951	44.628	80.7357	-39.58	581.89	-0.0988	1.5295	1.0269	0.5068	1.4796	1.3300	0.39940	0.00727	0.43992	0.01151
-77	3.061	44.589	78.0031	-38.56	582.32	-0.0961	1.5264	1.0277	0.5074	1.4812	1.3303	0.39531	0.00728	0.43880	0.01152
-76	3.175	44.550	75.3785	-37.53	582.75	-0.0934	1.5233	1.0285	0.5080	1.4828	1.3305	0.39129	0.00730	0.43768	0.01153
-75	3.293	44.510	72.8573	-36.50	583.17	-0.0907	1.5202	1.0292	0.5086	1.4845	1.3307	0.38734	0.00731	0.43656	0.01153
-74	3.414	44.471	70.4346	-35.47	583.60	-0.0880	1.5171	1.0300	0.5092	1.4861	1.3309	0.38345	0.00733	0.43544	0.01154
-73	3.539	44.432	68.1063	-34.44	584.02	-0.0854	1.5141	1.0308	0.5099	1.4877	1.3312	0.37962	0.00734	0.43432	0.01155
-72	3.668	44.392	65.8681	-33.41	584.45	-0.0827	1.5110	1.0315	0.5105	1.4894	1.3314	0.37585	0.00736	0.43320	0.01156
-71	3.801	44.352	63.7161	-32.37	584.87	-0.0801	1.5080	1.0323	0.5112	1.4910	1.3316	0.37214	0.00737	0.43208	0.01157
-70	3.937	44.313	61.6465	-31.34	585.29	-0.0774	1.5050	1.0330	0.5118	1.4926	1.3319	0.36849	0.00739	0.43096	0.01158
-69	4.078	44.273	59.6557	-30.31	585.71	-0.0748	1.5021	1.0338	0.5125	1.4942	1.3321	0.36490	0.00740	0.42984	0.01159
-68	4.223	44.233	57.7404	-29.27	586.13	-0.0721	1.4991	1.0346	0.5132	1.4958	1.3324	0.36137	0.00742	0.42873	0.01160
-67	4.372	44.193	55.8972	-28.24	586.54	-0.0695	1.4962	1.0353	0.5139	1.4975	1.3327	0.35789	0.00743	0.42761	0.01161
-66	4.526	44.153	54.1231	-27.20	586.96	-0.0668	1.4933	1.0361	0.5146	1.4991	1.3329	0.35446	0.00745	0.42649	0.01162
-65	4.684	44.113	52.4152	-26.16	587.38	-0.0642	1.4904	1.0368	0.5153	1.5007	1.3332	0.35109	0.00746	0.42538	0.01163
-64	4.846	44.073	50.7707	-25.13	587.79	-0.0616	1.4875	1.0376	0.5160	1.5023	1.3335	0.34776	0.00748	0.42427	0.01164

R-717 (anhydrous ammonia) Properties at Saturation

T [F]	P [psia]	ρ [lb/ft^3]	v [ft^3/lb]	h [Btu/lb]		s [Btu/R-lb]		Cp [Btu/R-lb]		Cp/Cv [unitless]		μ [centipose]		k [Btu/hr-ft-R]	
Bulk	Bulk	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
-63	5.013	44.032	49.1868	-24.09	588.21	-0.0590	1.4846	1.0383	0.5167	1.5039	1.3338	0.34449	0.00750	0.42315	0.01165
-62	5.185	43.992	47.6610	-23.05	588.62	-0.0564	1.4818	1.0391	0.5175	1.5055	1.3340	0.34127	0.00751	0.42204	0.01166
-61	5.362	43.952	46.1910	-22.01	589.03	-0.0537	1.4789	1.0398	0.5182	1.5071	1.3343	0.33810	0.00753	0.42093	0.01167
-60	5.544	43.911	44.7743	-20.97	589.44	-0.0511	1.4761	1.0406	0.5190	1.5087	1.3346	0.33498	0.00754	0.41982	0.01168
-59	5.731	43.870	43.4089	-19.93	589.85	-0.0485	1.4733	1.0413	0.5197	1.5103	1.3349	0.33190	0.00756	0.41871	0.01169
-58	5.923	43.830	42.0925	-18.89	590.26	-0.0459	1.4706	1.0420	0.5205	1.5119	1.3352	0.32887	0.00757	0.41761	0.01170
-57	6.120	43.789	40.8232	-17.84	590.66	-0.0434	1.4678	1.0428	0.5213	1.5135	1.3356	0.32588	0.00759	0.41650	0.01171
-56	6.323	43.748	39.5990	-16.80	591.07	-0.0408	1.4651	1.0435	0.5221	1.5150	1.3359	0.32294	0.00760	0.41539	0.01172
-55	6.531	43.707	38.4182	-15.75	591.47	-0.0382	1.4624	1.0442	0.5229	1.5166	1.3362	0.32004	0.00762	0.41429	0.01174
-54	6.745	43.666	37.2790	-14.71	591.88	-0.0356	1.4597	1.0450	0.5237	1.5182	1.3365	0.31719	0.00764	0.41318	0.01175
-53	6.965	43.625	36.1796	-13.66	592.28	-0.0330	1.4570	1.0457	0.5246	1.5198	1.3369	0.31437	0.00765	0.41208	0.01176
-52	7.190	43.584	35.1186	-12.62	592.68	-0.0305	1.4543	1.0464	0.5254	1.5213	1.3372	0.31160	0.00767	0.41098	0.01177
-51	7.422	43.543	34.0943	-11.57	593.08	-0.0279	1.4516	1.0471	0.5263	1.5229	1.3376	0.30887	0.00768	0.40988	0.01178
-50	7.659	43.502	33.1054	-10.52	593.48	-0.0253	1.4490	1.0478	0.5271	1.5245	1.3379	0.30617	0.00770	0.40878	0.01180
-49	7.903	43.460	32.1504	-9.47	593.87	-0.0228	1.4464	1.0486	0.5280	1.5260	1.3383	0.30352	0.00771	0.40768	0.01181
-48	8.153	43.419	31.2280	-8.42	594.27	-0.0202	1.4438	1.0493	0.5289	1.5276	1.3387	0.30090	0.00773	0.40658	0.01182
-47	8.410	43.377	30.3370	-7.37	594.66	-0.0177	1.4412	1.0500	0.5298	1.5291	1.3390	0.29832	0.00775	0.40549	0.01184
-46	8.673	43.336	29.4761	-6.32	595.06	-0.0152	1.4386	1.0507	0.5307	1.5307	1.3394	0.29578	0.00776	0.40439	0.01185
-45	8.943	43.294	28.6441	-5.27	595.45	-0.0126	1.4360	1.0514	0.5316	1.5322	1.3398	0.29327	0.00778	0.40330	0.01186
-44	9.220	43.252	27.8400	-4.22	595.84	-0.0101	1.4335	1.0521	0.5325	1.5338	1.3402	0.29080	0.00779	0.40221	0.01188
-43	9.504	43.211	27.0626	-3.16	596.23	-0.0076	1.4310	1.0528	0.5335	1.5353	1.3406	0.28836	0.00781	0.40111	0.01189
-42	9.794	43.169	26.3110	-2.11	596.62	-0.0050	1.4285	1.0535	0.5344	1.5368	1.3410	0.28595	0.00783	0.40002	0.01191
-41	10.093	43.127	25.5842	-1.06	597.00	-0.0025	1.4260	1.0542	0.5354	1.5384	1.3414	0.28358	0.00784	0.39893	0.01192
-40	10.398	43.085	24.8812	0.00	597.39	0.0000	1.4235	1.0549	0.5364	1.5399	1.3419	0.28124	0.00786	0.39785	0.01193
-39	10.711	43.043	24.2012	1.06	597.77	0.0025	1.4210	1.0556	0.5373	1.5414	1.3423	0.27894	0.00787	0.39676	0.01195
-38	11.032	43.000	23.5432	2.11	598.15	0.0050	1.4185	1.0563	0.5383	1.5429	1.3427	0.27666	0.00789	0.39568	0.01196
-37	11.360	42.958	22.9065	3.17	598.53	0.0075	1.4161	1.0570	0.5394	1.5444	1.3432	0.27442	0.00791	0.39459	0.01198
-36	11.697	42.916	22.2903	4.23	598.91	0.0100	1.4137	1.0576	0.5404	1.5460	1.3436	0.27220	0.00792	0.39351	0.01199
-35	12.041	42.873	21.6938	5.29	599.29	0.0125	1.4113	1.0583	0.5414	1.5475	1.3441	0.27002	0.00794	0.39243	0.01201
-34	12.394	42.831	21.1163	6.35	599.67	0.0150	1.4089	1.0590	0.5424	1.5490	1.3446	0.26786	0.00796	0.39135	0.01203
-33	12.755	42.788	20.5571	7.41	600.04	0.0175	1.4065	1.0597	0.5435	1.5505	1.3450	0.26573	0.00797	0.39027	0.01204
-32	13.124	42.746	20.0155	8.47	600.42	0.0200	1.4041	1.0604	0.5446	1.5520	1.3455	0.26363	0.00799	0.38919	0.01206
-31	13.503	42.703	19.4910	9.53	600.79	0.0224	1.4017	1.0610	0.5456	1.5535	1.3460	0.26156	0.00800	0.38811	0.01207
-30	13.890	42.660	18.9828	10.59	601.16	0.0249	1.3994	1.0617	0.5467	1.5550	1.3465	0.25952	0.00802	0.38704	0.01209
-29	14.286	42.617	18.4904	11.65	601.53	0.0274	1.3970	1.0624	0.5478	1.5565	1.3470	0.25750	0.00804	0.38597	0.01211
-28	14.691	42.575	18.0132	12.72	601.90	0.0298	1.3947	1.0631	0.5490	1.5580	1.3475	0.25551	0.00805	0.38489	0.01212
-27	15.105	42.532	17.5508	13.78	602.27	0.0323	1.3924	1.0637	0.5501	1.5595	1.3481	0.25354	0.00807	0.38382	0.01214

R-717 (anhydrous ammonia) Properties at Saturation

T [F]	P [psia]	ρ [lb/ft^3]	v [ft^3/lb]	h [Btu/lb]		s [Btu/R-lb]		Cp [Btu/R-lb]		Cp/Cv [unitless]		μ [centipose]		k [Btu/hr-ft-R]	
Bulk	Bulk	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
-26	15.529	42.489	17.1024	14.85	602.63	0.0348	1.3901	1.0644	0.5512	1.5610	1.3486	0.25160	0.00809	0.38276	0.01216
-25	15.962	42.445	16.6678	15.91	602.99	0.0372	1.3878	1.0651	0.5524	1.5625	1.3491	0.24968	0.00810	0.38169	0.01217
-24	16.406	42.402	16.2464	16.98	603.36	0.0396	1.3856	1.0657	0.5535	1.5640	1.3497	0.24779	0.00812	0.38062	0.01219
-23	16.859	42.359	15.8376	18.05	603.72	0.0421	1.3833	1.0664	0.5547	1.5655	1.3502	0.24592	0.00814	0.37956	0.01221
-22	17.322	42.316	15.4412	19.12	604.08	0.0445	1.3811	1.0670	0.5559	1.5669	1.3508	0.24407	0.00815	0.37849	0.01223
-21	17.795	42.272	15.0566	20.18	604.43	0.0470	1.3788	1.0677	0.5571	1.5684	1.3514	0.24225	0.00817	0.37743	0.01225
-20	18.279	42.229	14.6835	21.25	604.79	0.0494	1.3766	1.0684	0.5583	1.5699	1.3520	0.24045	0.00818	0.37637	0.01226
-19	18.773	42.185	14.3214	22.32	605.14	0.0518	1.3744	1.0690	0.5595	1.5714	1.3526	0.23867	0.00820	0.37531	0.01228
-18	19.278	42.142	13.9700	23.39	605.50	0.0542	1.3722	1.0697	0.5608	1.5729	1.3532	0.23692	0.00822	0.37425	0.01230
-17	19.794	42.098	13.6289	24.46	605.85	0.0567	1.3700	1.0703	0.5620	1.5743	1.3538	0.23518	0.00823	0.37320	0.01232
-16	20.320	42.054	13.2978	25.54	606.20	0.0591	1.3678	1.0710	0.5633	1.5758	1.3544	0.23347	0.00825	0.37214	0.01234
-15	20.859	42.010	12.9764	26.61	606.54	0.0615	1.3657	1.0716	0.5646	1.5773	1.3550	0.23177	0.00827	0.37109	0.01236
-14	21.408	41.966	12.6642	27.68	606.89	0.0639	1.3635	1.0723	0.5659	1.5788	1.3557	0.23010	0.00828	0.37004	0.01238
-13	21.969	41.922	12.3610	28.76	607.23	0.0663	1.3614	1.0730	0.5672	1.5803	1.3563	0.22845	0.00830	0.36899	0.01240
-12	22.542	41.878	12.0665	29.83	607.58	0.0687	1.3592	1.0736	0.5685	1.5817	1.3570	0.22681	0.00832	0.36794	0.01242
-11	23.127	41.834	11.7804	30.91	607.92	0.0711	1.3571	1.0743	0.5698	1.5832	1.3577	0.22520	0.00833	0.36689	0.01244
-10	23.723	41.790	11.5025	31.98	608.26	0.0735	1.3550	1.0749	0.5711	1.5847	1.3584	0.22360	0.00835	0.36584	0.01246
-9	24.333	41.746	11.2324	33.06	608.59	0.0759	1.3529	1.0756	0.5725	1.5862	1.3590	0.22203	0.00837	0.36480	0.01248
-8	24.954	41.701	10.9699	34.14	608.93	0.0782	1.3508	1.0762	0.5739	1.5876	1.3597	0.22047	0.00838	0.36376	0.01250
-7	25.588	41.657	10.7148	35.21	609.26	0.0806	1.3488	1.0769	0.5752	1.5891	1.3605	0.21893	0.00840	0.36272	0.01252
-6	26.235	41.612	10.4668	36.29	609.60	0.0830	1.3467	1.0775	0.5766	1.5906	1.3612	0.21740	0.00842	0.36168	0.01254
-5	26.895	41.568	10.2256	37.37	609.93	0.0854	1.3446	1.0782	0.5781	1.5921	1.3619	0.21590	0.00843	0.36064	0.01256
-4	27.569	41.523	9.9912	38.45	610.26	0.0877	1.3426	1.0788	0.5795	1.5936	1.3627	0.21441	0.00845	0.35960	0.01259
-3	28.255	41.478	9.7632	39.53	610.58	0.0901	1.3405	1.0795	0.5809	1.5950	1.3634	0.21294	0.00847	0.35857	0.01261
-2	28.955	41.434	9.5414	40.61	610.91	0.0924	1.3385	1.0801	0.5824	1.5965	1.3642	0.21148	0.00848	0.35753	0.01263
-1	29.669	41.389	9.3257	41.70	611.23	0.0948	1.3365	1.0808	0.5838	1.5980	1.3650	0.21004	0.00850	0.35650	0.01265
0	30.397	41.344	9.1159	42.78	611.55	0.0971	1.3345	1.0814	0.5853	1.5995	1.3657	0.20862	0.00852	0.35547	0.01267
1	31.139	41.299	8.9117	43.86	611.87	0.0995	1.3325	1.0821	0.5868	1.6010	1.3665	0.20721	0.00853	0.35444	0.01270
2	31.896	41.254	8.7130	44.95	612.19	0.1018	1.3305	1.0827	0.5883	1.6025	1.3673	0.20582	0.00855	0.35341	0.01272
3	32.667	41.208	8.5197	46.03	612.51	0.1042	1.3285	1.0834	0.5898	1.6040	1.3682	0.20444	0.00857	0.35239	0.01274
4	33.453	41.163	8.3315	47.12	612.82	0.1065	1.3266	1.0841	0.5914	1.6054	1.3690	0.20308	0.00858	0.35136	0.01277
5	34.253	41.118	8.1483	48.20	613.13	0.1088	1.3246	1.0847	0.5929	1.6069	1.3698	0.20173	0.00860	0.35034	0.01279
6	35.069	41.073	7.9699	49.29	613.45	0.1112	1.3227	1.0854	0.5945	1.6084	1.3707	0.20040	0.00862	0.34932	0.01281
7	35.900	41.027	7.7962	50.38	613.75	0.1135	1.3207	1.0860	0.5961	1.6099	1.3716	0.19908	0.00863	0.34830	0.01284
8	36.747	40.982	7.6271	51.47	614.06	0.1158	1.3188	1.0867	0.5976	1.6114	1.3724	0.19777	0.00865	0.34728	0.01286
9	37.609	40.936	7.4624	52.55	614.37	0.1181	1.3169	1.0874	0.5993	1.6129	1.3733	0.19648	0.00867	0.34627	0.01289
10	38.487	40.890	7.3020	53.64	614.67	0.1205	1.3150	1.0880	0.6009	1.6144	1.3742	0.19520	0.00868	0.34525	0.01291

R-717 (anhydrous ammonia) Properties at Saturation

T [F]	P [psia]	ρ [lb/ft^3]	v [ft^3/lb]	h [Btu/lb]		s [Btu/R-lb]		Cp [Btu/R-lb]		Cp/Cv [unitless]		μ [centipose]		k [Btu/hr-ft-R]	
Bulk	Bulk	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
11	39.382	40.844	7.1457	54.73	614.97	0.1228	1.3131	1.0887	0.6025	1.6160	1.3752	0.19394	0.00870	0.34424	0.01293
12	40.293	40.799	6.9935	55.83	615.27	0.1251	1.3112	1.0894	0.6042	1.6175	1.3761	0.19268	0.00872	0.34323	0.01296
13	41.220	40.753	6.8451	56.92	615.57	0.1274	1.3093	1.0900	0.6058	1.6190	1.3770	0.19145	0.00873	0.34222	0.01299
14	42.164	40.707	6.7006	58.01	615.86	0.1297	1.3074	1.0907	0.6075	1.6205	1.3780	0.19022	0.00875	0.34121	0.01301
15	43.126	40.661	6.5597	59.10	616.15	0.1320	1.3055	1.0914	0.6092	1.6220	1.3789	0.18901	0.00877	0.34020	0.01304
16	44.104	40.614	6.4224	60.20	616.45	0.1343	1.3037	1.0921	0.6109	1.6235	1.3799	0.18780	0.00878	0.33919	0.01306
17	45.100	40.568	6.2885	61.29	616.73	0.1365	1.3018	1.0928	0.6127	1.6251	1.3809	0.18661	0.00880	0.33819	0.01309
18	46.113	40.522	6.1580	62.39	617.02	0.1388	1.3000	1.0934	0.6144	1.6266	1.3819	0.18544	0.00882	0.33719	0.01312
19	47.145	40.475	6.0308	63.48	617.31	0.1411	1.2981	1.0941	0.6162	1.6281	1.3830	0.18427	0.00884	0.33619	0.01314
20	48.194	40.429	5.9067	64.58	617.59	0.1434	1.2963	1.0948	0.6179	1.6297	1.3840	0.18312	0.00885	0.33519	0.01317
21	49.262	40.382	5.7857	65.68	617.87	0.1457	1.2945	1.0955	0.6197	1.6312	1.3850	0.18197	0.00887	0.33419	0.01320
22	50.348	40.336	5.6677	66.77	618.15	0.1479	1.2927	1.0962	0.6215	1.6328	1.3861	0.18084	0.00889	0.33319	0.01322
23	51.453	40.289	5.5526	67.87	618.43	0.1502	1.2909	1.0969	0.6234	1.6343	1.3872	0.17972	0.00890	0.33220	0.01325
24	52.577	40.242	5.4403	68.97	618.70	0.1525	1.2891	1.0976	0.6252	1.6359	1.3883	0.17861	0.00892	0.33121	0.01328
25	53.720	40.195	5.3307	70.07	618.97	0.1547	1.2873	1.0983	0.6271	1.6375	1.3894	0.17751	0.00894	0.33021	0.01331
26	54.882	40.148	5.2238	71.17	619.24	0.1570	1.2855	1.0990	0.6289	1.6390	1.3905	0.17642	0.00895	0.32922	0.01333
27	56.064	40.101	5.1195	72.28	619.51	0.1593	1.2837	1.0997	0.6308	1.6406	1.3916	0.17534	0.00897	0.32824	0.01336
28	57.266	40.054	5.0176	73.38	619.78	0.1615	1.2819	1.1005	0.6327	1.6422	1.3928	0.17427	0.00899	0.32725	0.01339
29	58.488	40.007	4.9183	74.48	620.04	0.1638	1.2802	1.1012	0.6347	1.6438	1.3939	0.17321	0.00900	0.32626	0.01342
30	59.731	39.960	4.8213	75.58	620.31	0.1660	1.2784	1.1019	0.6366	1.6454	1.3951	0.17216	0.00902	0.32528	0.01345
31	60.993	39.912	4.7266	76.69	620.57	0.1682	1.2767	1.1026	0.6385	1.6470	1.3963	0.17112	0.00904	0.32430	0.01348
32	62.277	39.865	4.6341	77.79	620.82	0.1705	1.2749	1.1034	0.6405	1.6486	1.3975	0.17009	0.00906	0.32332	0.01351
33	63.582	39.817	4.5438	78.90	621.08	0.1727	1.2732	1.1041	0.6425	1.6502	1.3987	0.16907	0.00907	0.32234	0.01354
34	64.907	39.770	4.4556	80.01	621.33	0.1749	1.2715	1.1049	0.6445	1.6518	1.4000	0.16806	0.00909	0.32136	0.01357
35	66.255	39.722	4.3695	81.12	621.58	0.1772	1.2698	1.1056	0.6465	1.6535	1.4012	0.16706	0.00911	0.32038	0.01360
36	67.624	39.674	4.2854	82.22	621.83	0.1794	1.2680	1.1064	0.6486	1.6551	1.4025	0.16606	0.00912	0.31941	0.01363
37	69.015	39.626	4.2033	83.33	622.08	0.1816	1.2663	1.1071	0.6506	1.6567	1.4038	0.16508	0.00914	0.31844	0.01366
38	70.428	39.578	4.1230	84.44	622.32	0.1838	1.2646	1.1079	0.6527	1.6584	1.4051	0.16410	0.00916	0.31747	0.01369
39	71.864	39.530	4.0446	85.55	622.56	0.1861	1.2629	1.1087	0.6548	1.6600	1.4064	0.16314	0.00918	0.31650	0.01372
40	73.322	39.482	3.9680	86.67	622.80	0.1883	1.2613	1.1094	0.6569	1.6617	1.4078	0.16218	0.00919	0.31553	0.01376
41	74.803	39.434	3.8931	87.78	623.04	0.1905	1.2596	1.1102	0.6591	1.6634	1.4091	0.16123	0.00921	0.31456	0.01379
42	76.307	39.385	3.8199	88.89	623.28	0.1927	1.2579	1.1110	0.6612	1.6651	1.4105	0.16029	0.00923	0.31359	0.01382
43	77.835	39.337	3.7484	90.01	623.51	0.1949	1.2562	1.1118	0.6634	1.6667	1.4119	0.15935	0.00924	0.31263	0.01385
44	79.386	39.288	3.6785	91.12	623.74	0.1971	1.2546	1.1126	0.6656	1.6684	1.4133	0.15843	0.00926	0.31167	0.01389
45	80.962	39.240	3.6102	92.24	623.97	0.1993	1.2529	1.1134	0.6678	1.6701	1.4147	0.15751	0.00928	0.31071	0.01392
46	82.561	39.191	3.5434	93.35	624.19	0.2015	1.2513	1.1142	0.6700	1.6719	1.4162	0.15660	0.00930	0.30975	0.01395
47	84.185	39.142	3.4780	94.47	624.42	0.2037	1.2496	1.1150	0.6722	1.6736	1.4176	0.15569	0.00931	0.30879	0.01399

R-717 (anhydrous ammonia) Properties at Saturation

T [F]	P [psia]	ρ [lb/ft^3]	v [ft^3/lb]	h [Btu/lb]		s [Btu/R-lb]		Cp [Btu/R-lb]		Cp/Cv [unitless]		μ [centipose]		k [Btu/hr-ft-R]	
Bulk	Bulk	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
48	85.833	39.093	3.4142	95.59	624.64	0.2059	1.2480	1.1159	0.6745	1.6753	1.4191	0.15480	0.00933	0.30783	0.01402
49	87.507	39.044	3.3517	96.71	624.86	0.2081	1.2463	1.1167	0.6768	1.6771	1.4206	0.15391	0.00935	0.30688	0.01405
50	89.205	38.995	3.2906	97.83	625.07	0.2102	1.2447	1.1175	0.6791	1.6788	1.4222	0.15303	0.00936	0.30592	0.01409
51	90.929	38.946	3.2309	98.95	625.29	0.2124	1.2431	1.1184	0.6814	1.6806	1.4237	0.15216	0.00938	0.30497	0.01412
52	92.678	38.896	3.1724	100.07	625.50	0.2146	1.2415	1.1192	0.6837	1.6823	1.4253	0.15129	0.00940	0.30402	0.01416
53	94.454	38.847	3.1152	101.19	625.71	0.2168	1.2399	1.1201	0.6861	1.6841	1.4268	0.15043	0.00942	0.30307	0.01419
54	96.255	38.798	3.0593	102.32	625.91	0.2189	1.2383	1.1210	0.6885	1.6859	1.4284	0.14958	0.00943	0.30212	0.01423
55	98.083	38.748	3.0045	103.44	626.12	0.2211	1.2367	1.1218	0.6909	1.6877	1.4301	0.14873	0.00945	0.30118	0.01426
56	99.937	38.698	2.9510	104.57	626.32	0.2233	1.2351	1.1227	0.6933	1.6895	1.4317	0.14790	0.00947	0.30023	0.01430
57	101.819	38.648	2.8986	105.69	626.52	0.2254	1.2335	1.1236	0.6958	1.6914	1.4334	0.14706	0.00948	0.29929	0.01434
58	103.727	38.598	2.8473	106.82	626.71	0.2276	1.2319	1.1245	0.6982	1.6932	1.4350	0.14624	0.00950	0.29835	0.01437
59	105.664	38.548	2.7971	107.95	626.91	0.2298	1.2303	1.1254	0.7007	1.6950	1.4367	0.14542	0.00952	0.29741	0.01441
60	107.627	38.498	2.7479	109.08	627.10	0.2319	1.2287	1.1263	0.7032	1.6969	1.4385	0.14461	0.00954	0.29647	0.01445
61	109.619	38.448	2.6998	110.21	627.28	0.2341	1.2272	1.1273	0.7058	1.6988	1.4402	0.14380	0.00955	0.29553	0.01448
62	111.639	38.398	2.6527	111.34	627.47	0.2362	1.2256	1.1282	0.7083	1.7007	1.4420	0.14300	0.00957	0.29459	0.01452
63	113.687	38.347	2.6066	112.47	627.65	0.2384	1.2241	1.1292	0.7109	1.7026	1.4438	0.14220	0.00959	0.29366	0.01456
64	115.765	38.297	2.5614	113.60	627.84	0.2405	1.2225	1.1301	0.7135	1.7045	1.4456	0.14142	0.00961	0.29273	0.01460
65	117.871	38.246	2.5172	114.73	628.01	0.2427	1.2210	1.1311	0.7161	1.7064	1.4474	0.14063	0.00962	0.29179	0.01464
66	120.006	38.195	2.4739	115.87	628.19	0.2448	1.2194	1.1321	0.7187	1.7083	1.4493	0.13986	0.00964	0.29086	0.01468
67	122.172	38.144	2.4315	117.00	628.36	0.2469	1.2179	1.1330	0.7214	1.7103	1.4512	0.13909	0.00966	0.28993	0.01471
68	124.366	38.093	2.3899	118.14	628.53	0.2491	1.2163	1.1340	0.7241	1.7122	1.4531	0.13832	0.00968	0.28901	0.01475
69	126.591	38.042	2.3492	119.28	628.70	0.2512	1.2148	1.1350	0.7268	1.7142	1.4550	0.13756	0.00969	0.28808	0.01479
70	128.847	37.991	2.3094	120.42	628.86	0.2533	1.2133	1.1361	0.7295	1.7162	1.4570	0.13681	0.00971	0.28715	0.01483
71	131.133	37.940	2.2703	121.56	629.03	0.2555	1.2118	1.1371	0.7323	1.7182	1.4590	0.13606	0.00973	0.28623	0.01487
72	133.450	37.888	2.2320	122.70	629.19	0.2576	1.2102	1.1381	0.7351	1.7202	1.4610	0.13532	0.00975	0.28531	0.01492
73	135.798	37.837	2.1945	123.84	629.34	0.2597	1.2087	1.1392	0.7379	1.7223	1.4630	0.13458	0.00976	0.28439	0.01496
74	138.177	37.785	2.1578	124.98	629.50	0.2618	1.2072	1.1402	0.7407	1.7243	1.4651	0.13385	0.00978	0.28347	0.01500
75	140.589	37.733	2.1217	126.13	629.65	0.2640	1.2057	1.1413	0.7436	1.7264	1.4672	0.13312	0.00980	0.28255	0.01504
76	143.032	37.681	2.0864	127.27	629.79	0.2661	1.2042	1.1424	0.7465	1.7285	1.4693	0.13240	0.00982	0.28163	0.01508
77	145.508	37.629	2.0518	128.42	629.94	0.2682	1.2027	1.1435	0.7494	1.7306	1.4714	0.13168	0.00983	0.28071	0.01512
78	148.016	37.577	2.0179	129.56	630.08	0.2703	1.2012	1.1446	0.7523	1.7327	1.4736	0.13097	0.00985	0.27980	0.01517
79	150.557	37.525	1.9847	130.71	630.22	0.2724	1.1997	1.1457	0.7553	1.7348	1.4758	0.13027	0.00987	0.27888	0.01521
80	153.131	37.472	1.9521	131.86	630.36	0.2745	1.1982	1.1469	0.7582	1.7369	1.4780	0.12956	0.00989	0.27797	0.01525
81	155.739	37.420	1.9201	133.01	630.49	0.2766	1.1967	1.1480	0.7613	1.7391	1.4803	0.12887	0.00991	0.27706	0.01530
82	158.380	37.367	1.8888	134.16	630.62	0.2787	1.1953	1.1492	0.7643	1.7413	1.4826	0.12817	0.00992	0.27615	0.01534
83	161.055	37.314	1.8580	135.32	630.75	0.2808	1.1938	1.1504	0.7674	1.7435	1.4849	0.12749	0.00994	0.27524	0.01539
84	163.765	37.261	1.8279	136.47	630.88	0.2829	1.1923	1.1516	0.7705	1.7457	1.4872	0.12680	0.00996	0.27434	0.01543

R-717 (anhydrous ammonia) Properties at Saturation

T [F]	P [psia]	ρ [lb/ft^3]	v [ft^3/lb]	h [Btu/lb]		s [Btu/R-lb]		Cp [Btu/R-lb]		Cp/Cv [unitless]		μ [centipose]		k [Btu/hr-ft-R]	
Bulk	Bulk	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
85	166.509	37.208	1.7983	137.62	631.00	0.2850	1.1909	1.1528	0.7736	1.7479	1.4896	0.12613	0.00998	0.27343	0.01548
86	169.288	37.155	1.7693	138.78	631.12	0.2871	1.1894	1.1540	0.7768	1.7502	1.4920	0.12545	0.01000	0.27253	0.01552
87	172.102	37.102	1.7409	139.94	631.23	0.2892	1.1879	1.1552	0.7799	1.7525	1.4945	0.12478	0.01001	0.27162	0.01557
88	174.951	37.048	1.7130	141.10	631.35	0.2913	1.1865	1.1565	0.7832	1.7548	1.4969	0.12412	0.01003	0.27072	0.01561
89	177.836	36.995	1.6856	142.26	631.46	0.2934	1.1850	1.1577	0.7864	1.7571	1.4994	0.12346	0.01005	0.26982	0.01566
90	180.757	36.941	1.6588	143.42	631.56	0.2955	1.1836	1.1590	0.7897	1.7594	1.5020	0.12280	0.01007	0.26892	0.01571
91	183.715	36.887	1.6324	144.58	631.67	0.2976	1.1821	1.1603	0.7930	1.7618	1.5046	0.12215	0.01009	0.26802	0.01576
92	186.708	36.833	1.6066	145.74	631.77	0.2997	1.1807	1.1616	0.7963	1.7641	1.5072	0.12150	0.01010	0.26712	0.01580
93	189.739	36.779	1.5812	146.91	631.87	0.3017	1.1792	1.1629	0.7997	1.7665	1.5098	0.12086	0.01012	0.26623	0.01585
94	192.807	36.725	1.5563	148.07	631.96	0.3038	1.1778	1.1643	0.8031	1.7690	1.5125	0.12022	0.01014	0.26533	0.01590
95	195.913	36.670	1.5319	149.24	632.05	0.3059	1.1763	1.1656	0.8065	1.7714	1.5152	0.11958	0.01016	0.26444	0.01595
96	199.056	36.616	1.5079	150.41	632.14	0.3080	1.1749	1.1670	0.8100	1.7739	1.5179	0.11895	0.01018	0.26354	0.01600
97	202.237	36.561	1.4844	151.58	632.22	0.3100	1.1735	1.1684	0.8135	1.7764	1.5207	0.11832	0.01020	0.26265	0.01605
98	205.456	36.506	1.4612	152.75	632.31	0.3121	1.1720	1.1698	0.8170	1.7789	1.5235	0.11770	0.01021	0.26176	0.01610
99	208.714	36.451	1.4386	153.92	632.38	0.3142	1.1706	1.1713	0.8206	1.7814	1.5264	0.11708	0.01023	0.26087	0.01615
100	212.011	36.396	1.4163	155.10	632.46	0.3163	1.1692	1.1727	0.8242	1.7839	1.5293	0.11646	0.01025	0.25999	0.01620
101	215.348	36.340	1.3944	156.27	632.53	0.3183	1.1678	1.1742	0.8279	1.7865	1.5322	0.11585	0.01027	0.25910	0.01625
102	218.724	36.285	1.3729	157.45	632.60	0.3204	1.1664	1.1757	0.8315	1.7891	1.5352	0.11524	0.01029	0.25821	0.01630
103	222.139	36.229	1.3519	158.63	632.67	0.3225	1.1649	1.1772	0.8353	1.7918	1.5382	0.11464	0.01031	0.25733	0.01636
104	225.595	36.173	1.3311	159.81	632.73	0.3245	1.1635	1.1787	0.8390	1.7944	1.5413	0.11404	0.01033	0.25644	0.01641
105	229.091	36.117	1.3108	160.99	632.79	0.3266	1.1621	1.1803	0.8428	1.7971	1.5444	0.11344	0.01034	0.25556	0.01646
106	232.628	36.061	1.2908	162.17	632.84	0.3286	1.1607	1.1819	0.8466	1.7998	1.5476	0.11285	0.01036	0.25468	0.01651
107	236.206	36.005	1.2712	163.36	632.89	0.3307	1.1593	1.1834	0.8505	1.8026	1.5508	0.11226	0.01038	0.25380	0.01657
108	239.825	35.948	1.2519	164.54	632.94	0.3328	1.1579	1.1851	0.8544	1.8053	1.5540	0.11167	0.01040	0.25292	0.01662
109	243.486	35.892	1.2330	165.73	632.98	0.3348	1.1565	1.1867	0.8584	1.8081	1.5573	0.11108	0.01042	0.25204	0.01668
110	247.189	35.835	1.2144	166.92	633.02	0.3369	1.1551	1.1884	0.8624	1.8109	1.5606	0.11050	0.01044	0.25116	0.01673
111	250.934	35.778	1.1961	168.11	633.06	0.3389	1.1537	1.1900	0.8664	1.8138	1.5640	0.10993	0.01046	0.25028	0.01679
112	254.722	35.720	1.1782	169.30	633.10	0.3410	1.1523	1.1918	0.8705	1.8167	1.5674	0.10935	0.01048	0.24941	0.01685
113	258.553	35.663	1.1605	170.49	633.13	0.3430	1.1509	1.1935	0.8746	1.8196	1.5709	0.10878	0.01050	0.24853	0.01690
114	262.427	35.606	1.1432	171.69	633.15	0.3451	1.1495	1.1952	0.8788	1.8225	1.5744	0.10822	0.01052	0.24766	0.01696
115	266.344	35.548	1.1262	172.89	633.17	0.3471	1.1481	1.1970	0.8830	1.8255	1.5780	0.10765	0.01054	0.24679	0.01702
116	270.306	35.490	1.1094	174.09	633.19	0.3492	1.1467	1.1988	0.8872	1.8285	1.5816	0.10709	0.01055	0.24592	0.01708
117	274.311	35.432	1.0930	175.29	633.21	0.3512	1.1453	1.2007	0.8915	1.8315	1.5853	0.10653	0.01057	0.24505	0.01714
118	278.361	35.373	1.0768	176.49	633.22	0.3533	1.1439	1.2025	0.8959	1.8346	1.5890	0.10598	0.01059	0.24418	0.01719
119	282.456	35.315	1.0609	177.69	633.23	0.3553	1.1425	1.2044	0.9003	1.8377	1.5928	0.10543	0.01061	0.24331	0.01725
120	286.595	35.256	1.0452	178.90	633.23	0.3574	1.1411	1.2063	0.9047	1.8409	1.5967	0.10488	0.01063	0.24244	0.01732
121	290.781	35.197	1.0299	180.10	633.23	0.3594	1.1398	1.2082	0.9092	1.8440	1.6006	0.10433	0.01065	0.24157	0.01738

R-717 (anhydrous ammonia) Properties at Saturation

T [F]	P [psia]	ρ [lb/ft^3]	v [ft^3/lb]	h [Btu/lb]		s [Btu/R-lb]		Cp [Btu/R-lb]		Cp/Cv [unitless]		μ [centipose]		k [Btu/hr-ft-R]	
Bulk	Bulk	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
122	295.011	35.138	1.0148	181.31	633.23	0.3614	1.1384	1.2102	0.9138	1.8472	1.6045	0.10379	0.01067	0.24070	0.01744
123	299.288	35.079	0.9999	182.52	633.22	0.3635	1.1370	1.2122	0.9184	1.8505	1.6085	0.10325	0.01069	0.23984	0.01750
124	303.612	35.020	0.9853	183.73	633.21	0.3655	1.1356	1.2142	0.9230	1.8538	1.6126	0.10271	0.01071	0.23898	0.01756
125	307.982	34.960	0.9710	184.95	633.19	0.3676	1.1342	1.2163	0.9278	1.8571	1.6168	0.10218	0.01073	0.23811	0.01763
126	312.399	34.900	0.9568	186.17	633.17	0.3696	1.1328	1.2184	0.9325	1.8605	1.6210	0.10165	0.01075	0.23725	0.01769
127	316.863	34.840	0.9429	187.38	633.15	0.3716	1.1315	1.2205	0.9374	1.8639	1.6252	0.10112	0.01077	0.23639	0.01775
128	321.376	34.780	0.9293	188.60	633.12	0.3737	1.1301	1.2226	0.9422	1.8673	1.6296	0.10059	0.01079	0.23553	0.01782
129	325.936	34.719	0.9158	189.83	633.09	0.3757	1.1287	1.2248	0.9472	1.8708	1.6340	0.10007	0.01082	0.23467	0.01789
130	330.544	34.658	0.9026	191.05	633.05	0.3778	1.1273	1.2270	0.9522	1.8743	1.6384	0.09955	0.01084	0.23381	0.01795
131	335.201	34.598	0.8896	192.28	633.01	0.3798	1.1260	1.2293	0.9572	1.8779	1.6430	0.09903	0.01086	0.23295	0.01802
132	339.907	34.536	0.8768	193.50	632.97	0.3818	1.1246	1.2316	0.9624	1.8815	1.6476	0.09852	0.01088	0.23209	0.01809
133	344.663	34.475	0.8643	194.73	632.92	0.3839	1.1232	1.2339	0.9676	1.8851	1.6523	0.09800	0.01090	0.23123	0.01815
134	349.468	34.413	0.8519	195.97	632.86	0.3859	1.1218	1.2363	0.9728	1.8889	1.6570	0.09749	0.01092	0.23038	0.01822
135	354.323	34.351	0.8397	197.20	632.81	0.3879	1.1204	1.2387	0.9781	1.8926	1.6619	0.09699	0.01094	0.22952	0.01829
136	359.229	34.289	0.8277	198.44	632.74	0.3900	1.1191	1.2411	0.9835	1.8964	1.6668	0.09648	0.01096	0.22866	0.01836
137	364.185	34.227	0.8159	199.67	632.68	0.3920	1.1177	1.2436	0.9890	1.9002	1.6718	0.09598	0.01098	0.22781	0.01844
138	369.192	34.164	0.8043	200.91	632.61	0.3940	1.1163	1.2461	0.9945	1.9041	1.6768	0.09548	0.01101	0.22696	0.01851
139	374.250	34.102	0.7929	202.16	632.53	0.3961	1.1149	1.2486	1.0001	1.9081	1.6820	0.09498	0.01103	0.22610	0.01858
140	379.361	34.038	0.7817	203.40	632.45	0.3981	1.1136	1.2512	1.0058	1.9121	1.6872	0.09448	0.01105	0.22525	0.01865
141	384.523	33.975	0.7706	204.65	632.37	0.4001	1.1122	1.2538	1.0116	1.9161	1.6926	0.09399	0.01107	0.22440	0.01873
142	389.737	33.912	0.7597	205.90	632.28	0.4021	1.1108	1.2565	1.0174	1.9202	1.6980	0.09350	0.01109	0.22355	0.01880
143	395.005	33.848	0.7490	207.15	632.18	0.4042	1.1094	1.2592	1.0233	1.9244	1.7035	0.09301	0.01112	0.22270	0.01888
144	400.325	33.784	0.7384	208.41	632.08	0.4062	1.1080	1.2620	1.0293	1.9286	1.7091	0.09252	0.01114	0.22185	0.01895
145	405.699	33.719	0.7280	209.66	631.98	0.4082	1.1067	1.2648	1.0354	1.9329	1.7148	0.09204	0.01116	0.22100	0.01903
146	411.126	33.655	0.7178	210.92	631.87	0.4103	1.1053	1.2677	1.0416	1.9372	1.7206	0.09156	0.01118	0.22015	0.01911
147	416.608	33.590	0.7078	212.18	631.76	0.4123	1.1039	1.2706	1.0478	1.9416	1.7265	0.09108	0.01121	0.21931	0.01919
148	422.144	33.524	0.6978	213.45	631.64	0.4143	1.1025	1.2736	1.0542	1.9460	1.7325	0.09060	0.01123	0.21846	0.01927
149	427.735	33.459	0.6881	214.71	631.51	0.4164	1.1011	1.2766	1.0606	1.9506	1.7386	0.09012	0.01125	0.21761	0.01935
150	433.381	33.393	0.6785	215.98	631.38	0.4184	1.0997	1.2796	1.0671	1.9551	1.7448	0.08965	0.01127	0.21677	0.01943
151	439.083	33.327	0.6690	217.26	631.25	0.4204	1.0984	1.2827	1.0738	1.9598	1.7511	0.08918	0.01130	0.21592	0.01951
152	444.840	33.261	0.6597	218.53	631.11	0.4225	1.0970	1.2859	1.0805	1.9645	1.7575	0.08871	0.01132	0.21507	0.01960
153	450.654	33.194	0.6505	219.81	630.96	0.4245	1.0956	1.2891	1.0873	1.9693	1.7641	0.08824	0.01135	0.21423	0.01968
154	456.524	33.127	0.6414	221.09	630.81	0.4265	1.0942	1.2924	1.0943	1.9741	1.7707	0.08778	0.01137	0.21339	0.01977
155	462.451	33.060	0.6325	222.37	630.66	0.4286	1.0928	1.2957	1.1013	1.9791	1.7775	0.08731	0.01139	0.21254	0.01986
156	468.436	32.992	0.6238	223.66	630.50	0.4306	1.0914	1.2991	1.1085	1.9841	1.7844	0.08685	0.01142	0.21170	0.01994
157	474.478	32.925	0.6151	224.94	630.33	0.4326	1.0900	1.3026	1.1157	1.9891	1.7915	0.08639	0.01144	0.21086	0.02003
158	480.579	32.856	0.6066	226.24	630.16	0.4347	1.0886	1.3061	1.1231	1.9943	1.7986	0.08593	0.01147	0.21001	0.02012

R-717 (anhydrous ammonia) Properties at Saturation

T [F]	P [psia]	ρ [lb/ft^3]	v [ft^3/lb]	h [Btu/lb]		s [Btu/R-lb]		Cp [Btu/R-lb]		Cp/Cv [unitless]		μ [centipose]		k [Btu/hr-ft-R]	
Bulk	Bulk	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
159	486.737	32.788	0.5982	227.53	629.98	0.4367	1.0872	1.3097	1.1306	1.9995	1.8059	0.08548	0.01149	0.20917	0.02021
160	492.955	32.719	0.5899	228.83	629.80	0.4387	1.0858	1.3133	1.1382	2.0048	1.8134	0.08502	0.01152	0.20833	0.02031
161	499.232	32.650	0.5818	230.13	629.61	0.4408	1.0844	1.3171	1.1459	2.0102	1.8209	0.08457	0.01154	0.20749	0.02040
162	505.568	32.580	0.5738	231.43	629.41	0.4428	1.0830	1.3209	1.1538	2.0157	1.8287	0.08412	0.01157	0.20665	0.02049
163	511.964	32.510	0.5658	232.74	629.21	0.4449	1.0816	1.3247	1.1618	2.0213	1.8366	0.08367	0.01159	0.20581	0.02059
164	518.421	32.440	0.5580	234.05	629.00	0.4469	1.0802	1.3286	1.1700	2.0269	1.8446	0.08322	0.01162	0.20497	0.02069
165	524.938	32.370	0.5504	235.36	628.79	0.4490	1.0788	1.3327	1.1782	2.0327	1.8528	0.08278	0.01165	0.20413	0.02079
166	531.516	32.299	0.5428	236.68	628.57	0.4510	1.0774	1.3367	1.1867	2.0385	1.8611	0.08233	0.01167	0.20329	0.02089
167	538.156	32.227	0.5353	237.99	628.35	0.4530	1.0759	1.3409	1.1952	2.0445	1.8697	0.08189	0.01170	0.20245	0.02099
168	544.857	32.156	0.5280	239.32	628.11	0.4551	1.0745	1.3451	1.2040	2.0505	1.8783	0.08145	0.01173	0.20161	0.02109
169	551.621	32.084	0.5207	240.64	627.87	0.4571	1.0731	1.3495	1.2128	2.0567	1.8872	0.08101	0.01175	0.20077	0.02119
170	558.447	32.011	0.5136	241.97	627.63	0.4592	1.0717	1.3539	1.2219	2.0630	1.8963	0.08057	0.01178	0.19993	0.02130
171	565.337	31.938	0.5065	243.31	627.38	0.4612	1.0702	1.3584	1.2311	2.0693	1.9055	0.08014	0.01181	0.19910	0.02141
172	572.289	31.865	0.4995	244.64	627.12	0.4633	1.0688	1.3630	1.2405	2.0758	1.9149	0.07970	0.01184	0.19826	0.02152
173	579.306	31.791	0.4927	245.98	626.85	0.4654	1.0674	1.3677	1.2500	2.0824	1.9246	0.07927	0.01187	0.19742	0.02163
174	586.386	31.717	0.4859	247.33	626.58	0.4674	1.0659	1.3725	1.2598	2.0891	1.9344	0.07884	0.01190	0.19658	0.02174
175	593.532	31.643	0.4793	248.67	626.30	0.4695	1.0645	1.3773	1.2697	2.0959	1.9445	0.07841	0.01192	0.19574	0.02185
176	600.742	31.568	0.4727	250.03	626.02	0.4715	1.0630	1.3823	1.2798	2.1029	1.9547	0.07798	0.01195	0.19491	0.02197
177	608.018	31.493	0.4662	251.38	625.72	0.4736	1.0616	1.3874	1.2901	2.1100	1.9652	0.07755	0.01198	0.19407	0.02209
178	615.359	31.417	0.4598	252.74	625.42	0.4757	1.0601	1.3926	1.3006	2.1172	1.9760	0.07713	0.01201	0.19323	0.02220
179	622.767	31.341	0.4535	254.10	625.11	0.4777	1.0586	1.3979	1.3114	2.1246	1.9869	0.07670	0.01204	0.19239	0.02233
180	630.241	31.264	0.4473	255.47	624.80	0.4798	1.0572	1.4034	1.3223	2.1321	1.9982	0.07628	0.01208	0.19156	0.02245
181	637.782	31.187	0.4411	256.84	624.47	0.4819	1.0557	1.4089	1.3335	2.1397	2.0096	0.07586	0.01211	0.19072	0.02257
182	645.391	31.109	0.4351	258.22	624.14	0.4839	1.0542	1.4146	1.3449	2.1475	2.0214	0.07543	0.01214	0.18988	0.02270
183	653.068	31.031	0.4291	259.60	623.80	0.4860	1.0527	1.4204	1.3566	2.1555	2.0334	0.07501	0.01217	0.18904	0.02283
184	660.813	30.952	0.4232	260.99	623.46	0.4881	1.0512	1.4263	1.3685	2.1636	2.0457	0.07460	0.01220	0.18821	0.02296
185	668.627	30.873	0.4174	262.37	623.10	0.4902	1.0497	1.4324	1.3806	2.1719	2.0583	0.07418	0.01223	0.18737	0.02310
186	676.510	30.794	0.4117	263.77	622.74	0.4923	1.0482	1.4386	1.3931	2.1803	2.0712	0.07376	0.01227	0.18653	0.02323
187	684.462	30.714	0.4060	265.17	622.36	0.4944	1.0467	1.4449	1.4058	2.1889	2.0844	0.07335	0.01230	0.18569	0.02337
188	692.485	30.633	0.4004	266.57	621.98	0.4965	1.0452	1.4514	1.4188	2.1977	2.0979	0.07293	0.01234	0.18486	0.02351
189	700.578	30.552	0.3949	267.98	621.59	0.4986	1.0437	1.4580	1.4321	2.2067	2.1117	0.07252	0.01237	0.18402	0.02366
190	708.742	30.470	0.3895	269.39	621.20	0.5007	1.0422	1.4649	1.4457	2.2159	2.1260	0.07211	0.01240	0.18318	0.02381
191	716.978	30.388	0.3841	270.81	620.79	0.5028	1.0406	1.4718	1.4597	2.2253	2.1405	0.07170	0.01244	0.18234	0.02396
192	725.285	30.305	0.3788	272.23	620.37	0.5049	1.0391	1.4790	1.4739	2.2350	2.1555	0.07129	0.01248	0.18150	0.02411
193	733.665	30.221	0.3735	273.66	619.95	0.5070	1.0375	1.4863	1.4885	2.2448	2.1708	0.07088	0.01251	0.18066	0.02426
194	742.117	30.137	0.3684	275.09	619.51	0.5091	1.0360	1.4938	1.5035	2.2548	2.1866	0.07047	0.01255	0.17983	0.02442
195	750.642	30.053	0.3633	276.53	619.06	0.5112	1.0344	1.5015	1.5189	2.2651	2.2027	0.07006	0.01259	0.17899	0.02458

R-717 (anhydrous ammonia) Properties at Saturation

T [F]	P [psia]	ρ [lb/ft^3]	v [ft^3/lb]	h [Btu/lb]		s [Btu/R-lb]		Cp [Btu/R-lb]		Cp/Cv [unitless]		μ [centipose]		k [Btu/hr-ft-R]	
Bulk	Bulk	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
196	759.242	29.967	0.3582	277.97	618.61	0.5133	1.0329	1.5094	1.5346	2.2757	2.2193	0.06965	0.01262	0.17815	0.02475
197	767.915	29.881	0.3533	279.42	618.14	0.5155	1.0313	1.5175	1.5507	2.2865	2.2364	0.06925	0.01266	0.17731	0.02492
198	776.663	29.795	0.3483	280.88	617.67	0.5176	1.0297	1.5258	1.5673	2.2975	2.2539	0.06884	0.01270	0.17647	0.02509
199	785.486	29.708	0.3435	282.34	617.18	0.5197	1.0281	1.5344	1.5843	2.3088	2.2719	0.06844	0.01274	0.17562	0.02527
200	794.385	29.620	0.3387	283.81	616.69	0.5219	1.0265	1.5432	1.6018	2.3204	2.2905	0.06803	0.01278	0.17478	0.02545

R-717 (anhydrous ammonia) Properties at Saturation

P [psia]	T [F]	ρ [lb/ft^3]	v [ft^3/lb]	h [Btu/lb]		s [Btu/R-lb]		Cp [Btu/R-lb]		Cp/Cv [unitless]		μ [centipose]		k [Btu/hr-ft-R]	
Bulk	Bulk	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
1	-104.962	45.651	222.4816	-67.00	570.04	-0.1732	1.6227	1.0064	0.4940	1.4363	1.3255	0.54052	0.00688	0.47034	0.01136
2	-88.212	45.023	116.1760	-50.03	577.47	-0.1265	1.5628	1.0190	0.5012	1.4628	1.3281	0.44526	0.00712	0.45142	0.01144
3	-77.550	44.610	79.4922	-39.12	582.09	-0.0976	1.5281	1.0273	0.5071	1.4803	1.3301	0.39755	0.00727	0.43942	0.01151
4	-69.551	44.295	60.7439	-30.88	585.48	-0.0762	1.5037	1.0334	0.5121	1.4933	1.3320	0.36687	0.00739	0.43046	0.01158
5	-63.079	44.036	49.3097	-24.17	588.17	-0.0592	1.4848	1.0383	0.5167	1.5038	1.3337	0.34475	0.00749	0.42324	0.01165
6	-57.606	43.814	41.5864	-18.47	590.42	-0.0449	1.4695	1.0423	0.5208	1.5125	1.3354	0.32768	0.00758	0.41717	0.01171
7	-52.842	43.619	36.0090	-13.50	592.34	-0.0326	1.4565	1.0458	0.5247	1.5200	1.3369	0.31393	0.00765	0.41191	0.01176
8	-48.609	43.444	31.7862	-9.06	594.03	-0.0218	1.4454	1.0488	0.5283	1.5266	1.3384	0.30249	0.00772	0.40725	0.01182
9	-44.792	43.285	28.4744	-5.05	595.53	-0.0121	1.4355	1.0515	0.5318	1.5325	1.3399	0.29275	0.00778	0.40307	0.01187
10	-41.308	43.140	25.8052	-1.38	596.88	-0.0033	1.4267	1.0540	0.5351	1.5379	1.3413	0.28431	0.00784	0.39927	0.01192
11	-38.098	43.005	23.6067	2.01	598.12	0.0048	1.4188	1.0562	0.5382	1.5428	1.3427	0.27688	0.00789	0.39578	0.01196
12	-35.118	42.878	21.7632	5.16	599.25	0.0122	1.4115	1.0582	0.5413	1.5473	1.3440	0.27027	0.00794	0.39255	0.01201
13	-32.334	42.760	20.1946	8.11	600.29	0.0191	1.4049	1.0601	0.5442	1.5515	1.3454	0.26433	0.00798	0.38955	0.01205
14	-29.719	42.648	18.8430	10.89	601.27	0.0256	1.3987	1.0619	0.5470	1.5554	1.3467	0.25895	0.00803	0.38674	0.01209
15	-27.252	42.542	17.6659	13.51	602.17	0.0317	1.3930	1.0636	0.5498	1.5591	1.3479	0.25403	0.00807	0.38409	0.01214
16	-24.914	42.442	16.6312	16.01	603.03	0.0374	1.3876	1.0651	0.5525	1.5626	1.3492	0.24952	0.00810	0.38160	0.01218
17	-22.692	42.346	15.7143	18.38	603.83	0.0428	1.3826	1.0666	0.5551	1.5659	1.3504	0.24535	0.00814	0.37923	0.01222
18	-20.573	42.254	14.8960	20.64	604.59	0.0480	1.3779	1.0680	0.5576	1.5691	1.3516	0.24148	0.00818	0.37698	0.01225
19	-18.547	42.165	14.1611	22.81	605.30	0.0529	1.3734	1.0693	0.5601	1.5721	1.3528	0.23787	0.00821	0.37483	0.01229
20	-16.606	42.081	13.4972	24.89	605.98	0.0576	1.3691	1.0706	0.5625	1.5749	1.3540	0.23450	0.00824	0.37278	0.01233
21	-14.741	41.999	12.8945	26.89	606.63	0.0621	1.3651	1.0718	0.5649	1.5777	1.3552	0.23134	0.00827	0.37082	0.01236
22	-12.945	41.920	12.3447	28.82	607.25	0.0664	1.3613	1.0730	0.5672	1.5803	1.3564	0.22836	0.00830	0.36893	0.01240
23	-11.215	41.844	11.8412	30.68	607.84	0.0706	1.3576	1.0741	0.5695	1.5829	1.3575	0.22554	0.00833	0.36712	0.01243
24	-9.543	41.770	11.3782	32.47	608.41	0.0746	1.3541	1.0752	0.5718	1.5854	1.3587	0.22288	0.00836	0.36537	0.01247
25	-7.927	41.698	10.9510	34.22	608.95	0.0784	1.3507	1.0763	0.5740	1.5878	1.3598	0.22035	0.00838	0.36368	0.01250
26	-6.361	41.628	10.5556	35.90	609.48	0.0821	1.3474	1.0773	0.5761	1.5901	1.3609	0.21795	0.00841	0.36205	0.01253
27	-4.843	41.561	10.1885	37.54	609.98	0.0857	1.3443	1.0783	0.5783	1.5923	1.3620	0.21566	0.00844	0.36048	0.01257
28	-3.369	41.495	9.8467	39.13	610.46	0.0892	1.3413	1.0792	0.5804	1.5945	1.3631	0.21348	0.00846	0.35895	0.01260
29	-1.937	41.431	9.5277	40.68	610.93	0.0926	1.3384	1.0802	0.5825	1.5966	1.3642	0.21139	0.00848	0.35747	0.01263
30	-0.543	41.368	9.2292	42.19	611.38	0.0959	1.3356	1.0811	0.5845	1.5987	1.3653	0.20939	0.00851	0.35603	0.01266
31	0.814	41.307	8.9493	43.66	611.81	0.0991	1.3329	1.0820	0.5865	1.6007	1.3664	0.20747	0.00853	0.35463	0.01269
32	2.136	41.247	8.6864	45.09	612.23	0.1022	1.3302	1.0828	0.5885	1.6027	1.3675	0.20563	0.00855	0.35327	0.01272
33	3.426	41.189	8.4388	46.49	612.64	0.1052	1.3277	1.0837	0.5905	1.6046	1.3685	0.20386	0.00857	0.35195	0.01275
34	4.686	41.132	8.2053	47.86	613.04	0.1081	1.3252	1.0845	0.5924	1.6065	1.3696	0.20215	0.00859	0.35066	0.01278
35	5.916	41.076	7.9847	49.20	613.42	0.1110	1.3228	1.0853	0.5943	1.6083	1.3706	0.20051	0.00862	0.34941	0.01281
36	7.119	41.022	7.7759	50.51	613.79	0.1138	1.3205	1.0861	0.5962	1.6101	1.3717	0.19892	0.00864	0.34818	0.01284
37	8.296	40.968	7.5780	51.79	614.15	0.1165	1.3182	1.0869	0.5981	1.6119	1.3727	0.19739	0.00866	0.34698	0.01287

R-717 (anhydrous ammonia) Properties at Saturation

P [psia]	T [F]	ρ [lb/ft^3]	v [ft^3/lb]	h [Btu/lb]		s [Btu/R-lb]		Cp [Btu/R-lb]		Cp/Cv [unitless]		μ [centipose]		k [Btu/hr-ft-R]	
Bulk	Bulk	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
38	9.447	40.915	7.3901	53.04	614.50	0.1192	1.3160	1.0877	0.6000	1.6136	1.3737	0.19591	0.00867	0.34581	0.01290
39	10.575	40.864	7.2116	54.27	614.84	0.1218	1.3139	1.0884	0.6018	1.6153	1.3748	0.19447	0.00869	0.34467	0.01292
40	11.681	40.813	7.0417	55.48	615.17	0.1243	1.3118	1.0892	0.6036	1.6170	1.3758	0.19308	0.00871	0.34355	0.01295
41	12.764	40.763	6.8798	56.66	615.50	0.1268	1.3097	1.0899	0.6054	1.6186	1.3768	0.19174	0.00873	0.34245	0.01298
42	13.827	40.715	6.7253	57.82	615.81	0.1293	1.3077	1.0906	0.6072	1.6202	1.3778	0.19043	0.00875	0.34138	0.01301
43	14.870	40.667	6.5778	58.96	616.12	0.1317	1.3058	1.0913	0.6090	1.6218	1.3788	0.18916	0.00877	0.34033	0.01303
44	15.894	40.619	6.4367	60.08	616.41	0.1340	1.3039	1.0920	0.6108	1.6234	1.3798	0.18793	0.00878	0.33930	0.01306
45	16.900	40.573	6.3017	61.18	616.71	0.1363	1.3020	1.0927	0.6125	1.6249	1.3808	0.18673	0.00880	0.33829	0.01309
46	17.889	40.527	6.1723	62.26	616.99	0.1386	1.3002	1.0934	0.6142	1.6264	1.3818	0.18557	0.00882	0.33730	0.01311
47	18.861	40.482	6.0483	63.33	617.27	0.1408	1.2984	1.0940	0.6159	1.6279	1.3828	0.18443	0.00883	0.33633	0.01314
48	19.816	40.437	5.9293	64.38	617.54	0.1430	1.2966	1.0947	0.6176	1.6294	1.3838	0.18333	0.00885	0.33537	0.01316
49	20.756	40.394	5.8149	65.41	617.80	0.1451	1.2949	1.0953	0.6193	1.6309	1.3848	0.18225	0.00887	0.33443	0.01319
50	21.681	40.351	5.7050	66.42	618.06	0.1472	1.2932	1.0960	0.6210	1.6323	1.3858	0.18120	0.00888	0.33351	0.01321
51	22.592	40.308	5.5992	67.42	618.31	0.1493	1.2916	1.0966	0.6226	1.6337	1.3867	0.18017	0.00890	0.33260	0.01324
52	23.489	40.266	5.4973	68.41	618.56	0.1513	1.2900	1.0973	0.6243	1.6351	1.3877	0.17917	0.00891	0.33171	0.01326
53	24.372	40.225	5.3992	69.38	618.80	0.1533	1.2884	1.0979	0.6259	1.6365	1.3887	0.17820	0.00893	0.33084	0.01329
54	25.243	40.184	5.3045	70.34	619.04	0.1553	1.2868	1.0985	0.6275	1.6379	1.3896	0.17724	0.00894	0.32997	0.01331
55	26.100	40.144	5.2132	71.28	619.27	0.1572	1.2853	1.0991	0.6291	1.6392	1.3906	0.17631	0.00896	0.32913	0.01334
56	26.946	40.104	5.1250	72.22	619.50	0.1591	1.2838	1.0997	0.6307	1.6405	1.3916	0.17540	0.00897	0.32829	0.01336
57	27.780	40.065	5.0398	73.13	619.72	0.1610	1.2823	1.1003	0.6323	1.6419	1.3925	0.17450	0.00898	0.32747	0.01339
58	28.602	40.026	4.9575	74.04	619.94	0.1629	1.2809	1.1009	0.6339	1.6432	1.3935	0.17363	0.00900	0.32666	0.01341
59	29.414	39.987	4.8778	74.94	620.15	0.1647	1.2794	1.1015	0.6355	1.6445	1.3944	0.17278	0.00901	0.32586	0.01343
60	30.215	39.949	4.8007	75.82	620.36	0.1665	1.2780	1.1021	0.6370	1.6457	1.3954	0.17194	0.00903	0.32507	0.01346
61	31.005	39.912	4.7261	76.70	620.57	0.1682	1.2767	1.1026	0.6386	1.6470	1.3963	0.17112	0.00904	0.32429	0.01348
62	31.786	39.875	4.6537	77.56	620.77	0.1700	1.2753	1.1032	0.6401	1.6483	1.3973	0.17031	0.00905	0.32353	0.01350
63	32.556	39.838	4.5836	78.41	620.96	0.1717	1.2740	1.1038	0.6416	1.6495	1.3982	0.16952	0.00907	0.32277	0.01353
64	33.317	39.802	4.5156	79.25	621.16	0.1734	1.2726	1.1044	0.6431	1.6507	1.3991	0.16875	0.00908	0.32203	0.01355
65	34.069	39.766	4.4496	80.08	621.35	0.1751	1.2714	1.1049	0.6447	1.6519	1.4001	0.16799	0.00909	0.32129	0.01357
66	34.812	39.731	4.3856	80.91	621.54	0.1768	1.2701	1.1055	0.6462	1.6532	1.4010	0.16725	0.00910	0.32057	0.01359
67	35.546	39.696	4.3233	81.72	621.72	0.1784	1.2688	1.1060	0.6477	1.6544	1.4019	0.16651	0.00912	0.31985	0.01362
68	36.272	39.661	4.2629	82.53	621.90	0.1800	1.2676	1.1066	0.6491	1.6555	1.4029	0.16580	0.00913	0.31914	0.01364
69	36.989	39.627	4.2041	83.32	622.07	0.1816	1.2663	1.1071	0.6506	1.6567	1.4038	0.16509	0.00914	0.31845	0.01366
70	37.699	39.593	4.1470	84.11	622.25	0.1832	1.2651	1.1077	0.6521	1.6579	1.4047	0.16440	0.00915	0.31776	0.01368
71	38.400	39.559	4.0914	84.89	622.42	0.1847	1.2640	1.1082	0.6536	1.6590	1.4056	0.16372	0.00916	0.31708	0.01371
72	39.094	39.525	4.0373	85.66	622.59	0.1863	1.2628	1.1087	0.6550	1.6602	1.4066	0.16305	0.00918	0.31640	0.01373
73	39.781	39.492	3.9846	86.42	622.75	0.1878	1.2616	1.1093	0.6565	1.6613	1.4075	0.16239	0.00919	0.31574	0.01375
74	40.460	39.460	3.9333	87.18	622.91	0.1893	1.2605	1.1098	0.6579	1.6625	1.4084	0.16174	0.00920	0.31508	0.01377

R-717 (anhydrous ammonia) Properties at Saturation

P [psia]	T [F]	ρ [lb/ft^3]	v [ft^3/lb]	h [Btu/lb]		s [Btu/R-lb]		Cp [Btu/R-lb]		Cp/Cv [unitless]		μ [centipose]		k [Btu/hr-ft-R]	
Bulk	Bulk	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
75	41.132	39.427	3.8834	87.93	623.07	0.1908	1.2593	1.1103	0.6593	1.6636	1.4093	0.16110	0.00921	0.31443	0.01379
76	41.797	39.395	3.8347	88.67	623.23	0.1922	1.2582	1.1108	0.6608	1.6647	1.4102	0.16048	0.00922	0.31379	0.01381
77	42.455	39.363	3.7872	89.40	623.38	0.1937	1.2571	1.1114	0.6622	1.6658	1.4111	0.15986	0.00923	0.31316	0.01383
78	43.107	39.332	3.7409	90.13	623.53	0.1951	1.2561	1.1119	0.6636	1.6669	1.4120	0.15925	0.00925	0.31253	0.01386
79	43.752	39.300	3.6957	90.84	623.68	0.1965	1.2550	1.1124	0.6650	1.6680	1.4130	0.15865	0.00926	0.31191	0.01388
80	44.391	39.269	3.6516	91.56	623.83	0.1980	1.2539	1.1129	0.6664	1.6691	1.4139	0.15807	0.00927	0.31129	0.01390
81	45.024	39.238	3.6086	92.26	623.97	0.1993	1.2529	1.1134	0.6678	1.6702	1.4148	0.15749	0.00928	0.31068	0.01392
82	45.651	39.208	3.5665	92.96	624.11	0.2007	1.2518	1.1139	0.6692	1.6713	1.4157	0.15691	0.00929	0.31008	0.01394
83	46.272	39.178	3.5255	93.66	624.25	0.2021	1.2508	1.1144	0.6706	1.6723	1.4166	0.15635	0.00930	0.30949	0.01396
84	46.887	39.148	3.4854	94.34	624.39	0.2034	1.2498	1.1149	0.6720	1.6734	1.4175	0.15580	0.00931	0.30890	0.01398
85	47.496	39.118	3.4462	95.03	624.53	0.2048	1.2488	1.1154	0.6734	1.6744	1.4184	0.15525	0.00932	0.30831	0.01400
86	48.100	39.088	3.4078	95.70	624.66	0.2061	1.2478	1.1159	0.6747	1.6755	1.4193	0.15471	0.00933	0.30774	0.01402
87	48.699	39.059	3.3704	96.37	624.79	0.2074	1.2468	1.1164	0.6761	1.6765	1.4202	0.15418	0.00934	0.30717	0.01404
88	49.292	39.030	3.3337	97.04	624.92	0.2087	1.2459	1.1169	0.6775	1.6776	1.4211	0.15365	0.00935	0.30660	0.01406
89	49.880	39.001	3.2979	97.69	625.05	0.2100	1.2449	1.1174	0.6788	1.6786	1.4220	0.15314	0.00936	0.30604	0.01408
90	50.463	38.972	3.2628	98.35	625.17	0.2112	1.2440	1.1179	0.6802	1.6796	1.4229	0.15263	0.00937	0.30548	0.01410
91	51.041	38.944	3.2284	98.99	625.29	0.2125	1.2430	1.1184	0.6815	1.6806	1.4238	0.15212	0.00938	0.30493	0.01412
92	51.614	38.915	3.1948	99.64	625.42	0.2138	1.2421	1.1189	0.6828	1.6817	1.4246	0.15162	0.00939	0.30439	0.01414
93	52.182	38.887	3.1619	100.28	625.53	0.2150	1.2412	1.1194	0.6842	1.6827	1.4255	0.15113	0.00940	0.30385	0.01416
94	52.746	38.860	3.1296	100.91	625.65	0.2162	1.2403	1.1199	0.6855	1.6837	1.4264	0.15065	0.00941	0.30331	0.01418
95	53.305	38.832	3.0980	101.54	625.77	0.2174	1.2394	1.1204	0.6868	1.6847	1.4273	0.15017	0.00942	0.30278	0.01420
96	53.859	38.804	3.0671	102.16	625.88	0.2186	1.2385	1.1208	0.6882	1.6857	1.4282	0.14970	0.00943	0.30226	0.01422
97	54.409	38.777	3.0367	102.78	626.00	0.2198	1.2376	1.1213	0.6895	1.6867	1.4291	0.14923	0.00944	0.30174	0.01424
98	54.955	38.750	3.0070	103.39	626.11	0.2210	1.2367	1.1218	0.6908	1.6876	1.4300	0.14877	0.00945	0.30122	0.01426
99	55.496	38.723	2.9778	104.00	626.22	0.2222	1.2359	1.1223	0.6921	1.6886	1.4309	0.14832	0.00946	0.30071	0.01428
100	56.034	38.697	2.9492	104.60	626.32	0.2234	1.2350	1.1227	0.6934	1.6896	1.4318	0.14787	0.00947	0.30020	0.01430
101	56.567	38.670	2.9211	105.20	626.43	0.2245	1.2342	1.1232	0.6947	1.6906	1.4326	0.14742	0.00948	0.29970	0.01432
102	57.096	38.644	2.8936	105.80	626.53	0.2257	1.2333	1.1237	0.6960	1.6915	1.4335	0.14698	0.00949	0.29920	0.01434
103	57.621	38.617	2.8666	106.39	626.64	0.2268	1.2325	1.1242	0.6973	1.6925	1.4344	0.14655	0.00950	0.29871	0.01436
104	58.142	38.591	2.8401	106.98	626.74	0.2279	1.2317	1.1246	0.6986	1.6935	1.4353	0.14612	0.00950	0.29821	0.01438
105	58.659	38.566	2.8141	107.56	626.84	0.2290	1.2309	1.1251	0.6999	1.6944	1.4362	0.14570	0.00951	0.29773	0.01440
106	59.172	38.540	2.7885	108.14	626.94	0.2301	1.2300	1.1256	0.7011	1.6954	1.4370	0.14528	0.00952	0.29725	0.01442
107	59.682	38.514	2.7634	108.72	627.04	0.2312	1.2292	1.1261	0.7024	1.6963	1.4379	0.14486	0.00953	0.29677	0.01443
108	60.188	38.489	2.7388	109.29	627.13	0.2323	1.2285	1.1265	0.7037	1.6973	1.4388	0.14445	0.00954	0.29629	0.01445
109	60.691	38.464	2.7146	109.86	627.23	0.2334	1.2277	1.1270	0.7050	1.6982	1.4397	0.14405	0.00955	0.29582	0.01447
110	61.190	38.439	2.6908	110.42	627.32	0.2345	1.2269	1.1274	0.7062	1.6991	1.4406	0.14365	0.00956	0.29535	0.01449
111	61.685	38.414	2.6674	110.98	627.41	0.2355	1.2261	1.1279	0.7075	1.7001	1.4414	0.14325	0.00957	0.29489	0.01451

R-717 (anhydrous ammonia) Properties at Saturation

P [psia]	T [F]	ρ [lb/ft^3]	v [ft^3/lb]	h [Btu/lb]		s [Btu/R-lb]		Cp [Btu/R-lb]		Cp/Cv [unitless]		μ [centipose]		k [Btu/hr-ft-R]	
Bulk	Bulk	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
112	62.177	38.389	2.6444	111.54	627.50	0.2366	1.2253	1.1284	0.7088	1.7010	1.4423	0.14286	0.00957	0.29443	0.01453
113	62.666	38.364	2.6219	112.09	627.59	0.2377	1.2246	1.1288	0.7100	1.7019	1.4432	0.14247	0.00958	0.29397	0.01455
114	63.151	38.340	2.5997	112.64	627.68	0.2387	1.2238	1.1293	0.7113	1.7028	1.4441	0.14209	0.00959	0.29352	0.01457
115	63.633	38.315	2.5779	113.19	627.77	0.2397	1.2231	1.1298	0.7125	1.7038	1.4449	0.14170	0.00960	0.29307	0.01458
116	64.112	38.291	2.5564	113.73	627.86	0.2408	1.2223	1.1302	0.7138	1.7047	1.4458	0.14133	0.00961	0.29262	0.01460
117	64.588	38.267	2.5353	114.27	627.94	0.2418	1.2216	1.1307	0.7150	1.7056	1.4467	0.14096	0.00962	0.29218	0.01462
118	65.061	38.243	2.5145	114.80	628.02	0.2428	1.2209	1.1311	0.7163	1.7065	1.4476	0.14059	0.00962	0.29174	0.01464
119	65.530	38.219	2.4941	115.34	628.11	0.2438	1.2201	1.1316	0.7175	1.7074	1.4484	0.14022	0.00963	0.29130	0.01466
120	65.997	38.195	2.4740	115.87	628.19	0.2448	1.2194	1.1321	0.7187	1.7083	1.4493	0.13986	0.00964	0.29087	0.01468
121	66.461	38.172	2.4542	116.39	628.27	0.2458	1.2187	1.1325	0.7200	1.7092	1.4502	0.13950	0.00965	0.29043	0.01469
122	66.921	38.148	2.4348	116.92	628.35	0.2468	1.2180	1.1330	0.7212	1.7101	1.4510	0.13915	0.00966	0.29001	0.01471
123	67.379	38.125	2.4156	117.44	628.43	0.2478	1.2173	1.1334	0.7224	1.7110	1.4519	0.13880	0.00967	0.28958	0.01473
124	67.834	38.102	2.3968	117.95	628.50	0.2487	1.2166	1.1339	0.7236	1.7119	1.4528	0.13845	0.00967	0.28916	0.01475
125	68.286	38.079	2.3782	118.47	628.58	0.2497	1.2159	1.1343	0.7249	1.7128	1.4537	0.13810	0.00968	0.28874	0.01477
126	68.735	38.056	2.3599	118.98	628.66	0.2506	1.2152	1.1348	0.7261	1.7137	1.4545	0.13776	0.00969	0.28832	0.01478
127	69.182	38.033	2.3419	119.49	628.73	0.2516	1.2145	1.1352	0.7273	1.7146	1.4554	0.13743	0.00970	0.28791	0.01480
128	69.626	38.010	2.3242	119.99	628.80	0.2525	1.2138	1.1357	0.7285	1.7155	1.4563	0.13709	0.00970	0.28750	0.01482
129	70.067	37.988	2.3067	120.49	628.88	0.2535	1.2132	1.1361	0.7297	1.7163	1.4571	0.13676	0.00971	0.28709	0.01484
130	70.506	37.965	2.2895	120.99	628.95	0.2544	1.2125	1.1366	0.7309	1.7172	1.4580	0.13643	0.00972	0.28669	0.01485
131	70.942	37.943	2.2725	121.49	629.02	0.2553	1.2118	1.1370	0.7321	1.7181	1.4589	0.13610	0.00973	0.28628	0.01487
132	71.376	37.920	2.2558	121.99	629.09	0.2563	1.2112	1.1375	0.7333	1.7190	1.4597	0.13578	0.00974	0.28588	0.01489
133	71.807	37.898	2.2393	122.48	629.15	0.2572	1.2105	1.1379	0.7345	1.7198	1.4606	0.13546	0.00974	0.28548	0.01491
134	72.236	37.876	2.2231	122.97	629.22	0.2581	1.2099	1.1384	0.7357	1.7207	1.4615	0.13514	0.00975	0.28509	0.01493
135	72.662	37.854	2.2071	123.45	629.29	0.2590	1.2092	1.1388	0.7369	1.7216	1.4623	0.13483	0.00976	0.28470	0.01494
136	73.085	37.832	2.1913	123.94	629.36	0.2599	1.2086	1.1393	0.7381	1.7224	1.4632	0.13452	0.00977	0.28431	0.01496
137	73.507	37.811	2.1758	124.42	629.42	0.2608	1.2080	1.1397	0.7393	1.7233	1.4641	0.13421	0.00977	0.28392	0.01498
138	73.926	37.789	2.1605	124.90	629.48	0.2617	1.2073	1.1402	0.7405	1.7242	1.4649	0.13390	0.00978	0.28353	0.01500
139	74.343	37.767	2.1453	125.37	629.55	0.2626	1.2067	1.1406	0.7417	1.7250	1.4658	0.13360	0.00979	0.28315	0.01501
140	74.757	37.746	2.1304	125.85	629.61	0.2634	1.2061	1.1411	0.7429	1.7259	1.4667	0.13330	0.00979	0.28277	0.01503
141	75.169	37.724	2.1157	126.32	629.67	0.2643	1.2054	1.1415	0.7441	1.7267	1.4675	0.13300	0.00980	0.28239	0.01505
142	75.579	37.703	2.1012	126.79	629.73	0.2652	1.2048	1.1419	0.7452	1.7276	1.4684	0.13270	0.00981	0.28201	0.01506
143	75.987	37.682	2.0869	127.26	629.79	0.2661	1.2042	1.1424	0.7464	1.7284	1.4693	0.13241	0.00982	0.28164	0.01508
144	76.393	37.661	2.0728	127.72	629.85	0.2669	1.2036	1.1428	0.7476	1.7293	1.4701	0.13212	0.00982	0.28127	0.01510
145	76.796	37.640	2.0588	128.18	629.91	0.2678	1.2030	1.1433	0.7488	1.7301	1.4710	0.13183	0.00983	0.28090	0.01512
146	77.197	37.619	2.0451	128.64	629.97	0.2686	1.2024	1.1437	0.7499	1.7310	1.4719	0.13154	0.00984	0.28053	0.01513
147	77.597	37.598	2.0315	129.10	630.03	0.2695	1.2018	1.1442	0.7511	1.7318	1.4727	0.13126	0.00985	0.28017	0.01515
148	77.994	37.577	2.0181	129.56	630.08	0.2703	1.2012	1.1446	0.7523	1.7327	1.4736	0.13098	0.00985	0.27980	0.01517

R-717 (anhydrous ammonia) Properties at Saturation

P [psia]	T [F]	ρ [lb/ft^3]	v [ft^3/lb]	h [Btu/lb]		s [Btu/R-lb]		Cp [Btu/R-lb]		Cp/Cv [unitless]		μ [centipose]		k [Btu/hr-ft-R]	
Bulk	Bulk	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
149	78.389	37.557	2.0049	130.01	630.14	0.2711	1.2006	1.1450	0.7534	1.7335	1.4745	0.13070	0.00986	0.27944	0.01518
150	78.782	37.536	1.9919	130.46	630.19	0.2720	1.2000	1.1455	0.7546	1.7343	1.4753	0.13042	0.00987	0.27908	0.01520
151	79.173	37.516	1.9790	130.91	630.25	0.2728	1.1995	1.1459	0.7558	1.7352	1.4762	0.13014	0.00987	0.27873	0.01522
152	79.562	37.495	1.9663	131.36	630.30	0.2736	1.1989	1.1464	0.7569	1.7360	1.4771	0.12987	0.00988	0.27837	0.01523
153	79.949	37.475	1.9537	131.80	630.35	0.2744	1.1983	1.1468	0.7581	1.7368	1.4779	0.12960	0.00989	0.27802	0.01525
154	80.335	37.455	1.9413	132.25	630.40	0.2752	1.1977	1.1473	0.7593	1.7377	1.4788	0.12933	0.00989	0.27767	0.01527
155	80.718	37.435	1.9291	132.69	630.46	0.2760	1.1972	1.1477	0.7604	1.7385	1.4797	0.12906	0.00990	0.27732	0.01529
156	81.100	37.415	1.9170	133.13	630.51	0.2768	1.1966	1.1481	0.7616	1.7393	1.4805	0.12880	0.00991	0.27697	0.01530
157	81.479	37.395	1.9050	133.56	630.56	0.2776	1.1960	1.1486	0.7627	1.7402	1.4814	0.12853	0.00991	0.27663	0.01532
158	81.857	37.375	1.8932	134.00	630.61	0.2784	1.1955	1.1490	0.7639	1.7410	1.4823	0.12827	0.00992	0.27628	0.01534
159	82.233	37.355	1.8816	134.43	630.65	0.2792	1.1949	1.1495	0.7650	1.7418	1.4831	0.12801	0.00993	0.27594	0.01535
160	82.607	37.335	1.8700	134.86	630.70	0.2800	1.1944	1.1499	0.7662	1.7426	1.4840	0.12776	0.00993	0.27560	0.01537
161	82.980	37.315	1.8587	135.29	630.75	0.2808	1.1938	1.1503	0.7673	1.7434	1.4848	0.12750	0.00994	0.27526	0.01539
162	83.350	37.296	1.8474	135.72	630.80	0.2816	1.1933	1.1508	0.7685	1.7443	1.4857	0.12725	0.00995	0.27493	0.01540
163	83.719	37.276	1.8363	136.14	630.84	0.2823	1.1927	1.1512	0.7696	1.7451	1.4866	0.12700	0.00995	0.27459	0.01542
164	84.086	37.257	1.8253	136.57	630.89	0.2831	1.1922	1.1517	0.7707	1.7459	1.4874	0.12675	0.00996	0.27426	0.01544
165	84.452	37.237	1.8145	136.99	630.93	0.2839	1.1917	1.1521	0.7719	1.7467	1.4883	0.12650	0.00997	0.27393	0.01545
166	84.816	37.218	1.8037	137.41	630.98	0.2846	1.1911	1.1525	0.7730	1.7475	1.4892	0.12625	0.00997	0.27360	0.01547
167	85.178	37.199	1.7931	137.83	631.02	0.2854	1.1906	1.1530	0.7742	1.7483	1.4900	0.12601	0.00998	0.27327	0.01548
168	85.538	37.180	1.7827	138.25	631.06	0.2862	1.1901	1.1534	0.7753	1.7492	1.4909	0.12576	0.00999	0.27294	0.01550
169	85.897	37.161	1.7723	138.66	631.11	0.2869	1.1895	1.1538	0.7764	1.7500	1.4918	0.12552	0.00999	0.27262	0.01552
170	86.254	37.142	1.7621	139.07	631.15	0.2877	1.1890	1.1543	0.7776	1.7508	1.4926	0.12528	0.01000	0.27230	0.01553
171	86.610	37.123	1.7519	139.49	631.19	0.2884	1.1885	1.1547	0.7787	1.7516	1.4935	0.12504	0.01001	0.27197	0.01555
172	86.964	37.104	1.7419	139.90	631.23	0.2891	1.1880	1.1552	0.7798	1.7524	1.4944	0.12481	0.01001	0.27165	0.01557
173	87.317	37.085	1.7320	140.30	631.27	0.2899	1.1875	1.1556	0.7810	1.7532	1.4952	0.12457	0.01002	0.27134	0.01558
174	87.668	37.066	1.7222	140.71	631.31	0.2906	1.1870	1.1560	0.7821	1.7540	1.4961	0.12434	0.01003	0.27102	0.01560
175	88.017	37.047	1.7125	141.12	631.35	0.2913	1.1864	1.1565	0.7832	1.7548	1.4970	0.12411	0.01003	0.27070	0.01561
176	88.365	37.029	1.7030	141.52	631.39	0.2921	1.1859	1.1569	0.7843	1.7556	1.4978	0.12388	0.01004	0.27039	0.01563
177	88.711	37.010	1.6935	141.92	631.43	0.2928	1.1854	1.1574	0.7855	1.7564	1.4987	0.12365	0.01004	0.27008	0.01565
178	89.056	36.992	1.6841	142.32	631.46	0.2935	1.1849	1.1578	0.7866	1.7572	1.4996	0.12342	0.01005	0.26977	0.01566
179	89.400	36.973	1.6748	142.72	631.50	0.2942	1.1844	1.1582	0.7877	1.7580	1.5005	0.12319	0.01006	0.26946	0.01568
180	89.742	36.955	1.6657	143.12	631.54	0.2949	1.1839	1.1587	0.7888	1.7588	1.5013	0.12297	0.01006	0.26915	0.01570
181	90.083	36.937	1.6566	143.51	631.57	0.2957	1.1834	1.1591	0.7900	1.7596	1.5022	0.12275	0.01007	0.26884	0.01571
182	90.422	36.918	1.6476	143.91	631.61	0.2964	1.1829	1.1595	0.7911	1.7604	1.5031	0.12253	0.01008	0.26854	0.01573
183	90.760	36.900	1.6387	144.30	631.64	0.2971	1.1825	1.1600	0.7922	1.7612	1.5039	0.12231	0.01008	0.26824	0.01574
184	91.096	36.882	1.6299	144.69	631.68	0.2978	1.1820	1.1604	0.7933	1.7620	1.5048	0.12209	0.01009	0.26793	0.01576
185	91.431	36.864	1.6212	145.08	631.71	0.2985	1.1815	1.1609	0.7944	1.7628	1.5057	0.12187	0.01009	0.26763	0.01578

R-717 (anhydrous ammonia) Properties at Saturation

P [psia]	T [F]	ρ [lb/ft^3]	v [ft^3/lb]	h [Btu/lb]		s [Btu/R-lb]		Cp [Btu/R-lb]		Cp/Cv [unitless]		μ [centipose]		k [Btu/hr-ft-R]	
Bulk	Bulk	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
186	91.764	36.846	1.6126	145.47	631.75	0.2992	1.1810	1.1613	0.7955	1.7636	1.5065	0.12165	0.01010	0.26733	0.01579
187	92.097	36.828	1.6041	145.86	631.78	0.2999	1.1805	1.1617	0.7967	1.7644	1.5074	0.12144	0.01011	0.26704	0.01581
188	92.428	36.810	1.5957	146.24	631.81	0.3005	1.1800	1.1622	0.7978	1.7652	1.5083	0.12123	0.01011	0.26674	0.01582
189	92.757	36.792	1.5873	146.62	631.84	0.3012	1.1796	1.1626	0.7989	1.7660	1.5092	0.12101	0.01012	0.26644	0.01584
190	93.085	36.774	1.5791	147.01	631.87	0.3019	1.1791	1.1631	0.8000	1.7668	1.5100	0.12080	0.01012	0.26615	0.01586
191	93.412	36.757	1.5709	147.39	631.91	0.3026	1.1786	1.1635	0.8011	1.7675	1.5109	0.12059	0.01013	0.26586	0.01587
192	93.738	36.739	1.5628	147.77	631.94	0.3033	1.1782	1.1639	0.8022	1.7683	1.5118	0.12039	0.01014	0.26557	0.01589
193	94.062	36.721	1.5548	148.15	631.97	0.3039	1.1777	1.1644	0.8033	1.7691	1.5126	0.12018	0.01014	0.26528	0.01590
194	94.386	36.704	1.5468	148.52	632.00	0.3046	1.1772	1.1648	0.8044	1.7699	1.5135	0.11997	0.01015	0.26499	0.01592
195	94.707	36.686	1.5390	148.90	632.03	0.3053	1.1768	1.1652	0.8055	1.7707	1.5144	0.11977	0.01015	0.26470	0.01593
196	95.028	36.669	1.5312	149.27	632.05	0.3060	1.1763	1.1657	0.8066	1.7715	1.5153	0.11956	0.01016	0.26441	0.01595
197	95.347	36.651	1.5235	149.65	632.08	0.3066	1.1758	1.1661	0.8077	1.7723	1.5161	0.11936	0.01017	0.26413	0.01597
198	95.665	36.634	1.5159	150.02	632.11	0.3073	1.1754	1.1666	0.8088	1.7730	1.5170	0.11916	0.01017	0.26384	0.01598
199	95.982	36.617	1.5083	150.39	632.14	0.3079	1.1749	1.1670	0.8099	1.7738	1.5179	0.11896	0.01018	0.26356	0.01600
200	96.298	36.599	1.5008	150.76	632.17	0.3086	1.1745	1.1674	0.8110	1.7746	1.5188	0.11876	0.01018	0.26328	0.01601
201	96.613	36.582	1.4934	151.13	632.19	0.3092	1.1740	1.1679	0.8121	1.7754	1.5196	0.11857	0.01019	0.26300	0.01603
202	96.926	36.565	1.4861	151.49	632.22	0.3099	1.1736	1.1683	0.8132	1.7762	1.5205	0.11837	0.01019	0.26272	0.01604
203	97.238	36.548	1.4788	151.86	632.24	0.3105	1.1731	1.1688	0.8143	1.7769	1.5214	0.11817	0.01020	0.26244	0.01606
204	97.549	36.531	1.4716	152.22	632.27	0.3112	1.1727	1.1692	0.8154	1.7777	1.5223	0.11798	0.01021	0.26216	0.01608
205	97.859	36.514	1.4645	152.59	632.30	0.3118	1.1722	1.1696	0.8165	1.7785	1.5231	0.11779	0.01021	0.26189	0.01609
206	98.168	36.497	1.4574	152.95	632.32	0.3125	1.1718	1.1701	0.8176	1.7793	1.5240	0.11760	0.01022	0.26161	0.01611
207	98.475	36.480	1.4504	153.31	632.34	0.3131	1.1714	1.1705	0.8187	1.7801	1.5249	0.11740	0.01022	0.26134	0.01612
208	98.782	36.463	1.4435	153.67	632.37	0.3137	1.1709	1.1710	0.8198	1.7808	1.5258	0.11722	0.01023	0.26107	0.01614
209	99.087	36.446	1.4366	154.03	632.39	0.3144	1.1705	1.1714	0.8209	1.7816	1.5267	0.11703	0.01023	0.26080	0.01615
210	99.391	36.429	1.4298	154.38	632.41	0.3150	1.1701	1.1718	0.8220	1.7824	1.5275	0.11684	0.01024	0.26053	0.01617
211	99.694	36.412	1.4230	154.74	632.44	0.3156	1.1696	1.1723	0.8231	1.7832	1.5284	0.11665	0.01025	0.26026	0.01618
212	99.997	36.396	1.4164	155.09	632.46	0.3163	1.1692	1.1727	0.8242	1.7839	1.5293	0.11647	0.01025	0.25999	0.01620
213	100.298	36.379	1.4097	155.45	632.48	0.3169	1.1688	1.1732	0.8253	1.7847	1.5302	0.11628	0.01026	0.25972	0.01621
214	100.597	36.363	1.4032	155.80	632.50	0.3175	1.1683	1.1736	0.8264	1.7855	1.5311	0.11610	0.01026	0.25945	0.01623
215	100.896	36.346	1.3967	156.15	632.52	0.3181	1.1679	1.1740	0.8275	1.7863	1.5319	0.11592	0.01027	0.25919	0.01625
216	101.194	36.329	1.3902	156.50	632.55	0.3187	1.1675	1.1745	0.8286	1.7870	1.5328	0.11573	0.01027	0.25893	0.01626
217	101.491	36.313	1.3838	156.85	632.57	0.3193	1.1671	1.1749	0.8297	1.7878	1.5337	0.11555	0.01028	0.25866	0.01628
218	101.787	36.297	1.3775	157.20	632.59	0.3200	1.1667	1.1754	0.8308	1.7886	1.5346	0.11537	0.01028	0.25840	0.01629
219	102.081	36.280	1.3712	157.55	632.61	0.3206	1.1662	1.1758	0.8318	1.7893	1.5355	0.11519	0.01029	0.25814	0.01631
220	102.375	36.264	1.3650	157.89	632.62	0.3212	1.1658	1.1763	0.8329	1.7901	1.5364	0.11502	0.01030	0.25788	0.01632
221	102.668	36.248	1.3588	158.24	632.64	0.3218	1.1654	1.1767	0.8340	1.7909	1.5372	0.11484	0.01030	0.25762	0.01634
222	102.959	36.231	1.3527	158.58	632.66	0.3224	1.1650	1.1771	0.8351	1.7917	1.5381	0.11466	0.01031	0.25736	0.01635

R-717 (anhydrous ammonia) Properties at Saturation

P [psia]	T [F]	ρ [lb/ft^3]	v [ft^3/lb]	h [Btu/lb]		s [Btu/R-lb]		Cp [Btu/R-lb]		Cp/Cv [unitless]		μ [centipose]		k [Btu/hr-ft-R]	
Bulk	Bulk	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
223	103.250	36.215	1.3466	158.92	632.68	0.3230	1.1646	1.1776	0.8362	1.7924	1.5390	0.11449	0.01031	0.25711	0.01637
224	103.540	36.199	1.3406	159.27	632.70	0.3236	1.1642	1.1780	0.8373	1.7932	1.5399	0.11431	0.01032	0.25685	0.01638
225	103.829	36.183	1.3347	159.61	632.72	0.3242	1.1638	1.1785	0.8384	1.7940	1.5408	0.11414	0.01032	0.25659	0.01640
226	104.116	36.167	1.3288	159.95	632.73	0.3248	1.1634	1.1789	0.8395	1.7947	1.5417	0.11397	0.01033	0.25634	0.01641
227	104.403	36.151	1.3229	160.28	632.75	0.3254	1.1630	1.1794	0.8405	1.7955	1.5426	0.11380	0.01033	0.25609	0.01643
228	104.689	36.135	1.3171	160.62	632.77	0.3259	1.1626	1.1798	0.8416	1.7963	1.5434	0.11363	0.01034	0.25583	0.01644
229	104.974	36.119	1.3113	160.96	632.78	0.3265	1.1621	1.1802	0.8427	1.7970	1.5443	0.11346	0.01034	0.25558	0.01646
230	105.258	36.103	1.3056	161.30	632.80	0.3271	1.1617	1.1807	0.8438	1.7978	1.5452	0.11329	0.01035	0.25533	0.01647
231	105.541	36.087	1.3000	161.63	632.82	0.3277	1.1613	1.1811	0.8449	1.7986	1.5461	0.11312	0.01035	0.25508	0.01649
232	105.823	36.071	1.2943	161.96	632.83	0.3283	1.1610	1.1816	0.8460	1.7993	1.5470	0.11295	0.01036	0.25483	0.01651
233	106.105	36.055	1.2888	162.30	632.85	0.3289	1.1606	1.1820	0.8470	1.8001	1.5479	0.11278	0.01037	0.25459	0.01652
234	106.385	36.039	1.2832	162.63	632.86	0.3294	1.1602	1.1825	0.8481	1.8009	1.5488	0.11262	0.01037	0.25434	0.01654
235	106.664	36.024	1.2778	162.96	632.87	0.3300	1.1598	1.1829	0.8492	1.8016	1.5497	0.11245	0.01038	0.25409	0.01655
236	106.943	36.008	1.2723	163.29	632.89	0.3306	1.1594	1.1834	0.8503	1.8024	1.5506	0.11229	0.01038	0.25385	0.01657
237	107.220	35.992	1.2669	163.62	632.90	0.3312	1.1590	1.1838	0.8514	1.8032	1.5515	0.11213	0.01039	0.25360	0.01658
238	107.497	35.977	1.2616	163.95	632.92	0.3317	1.1586	1.1843	0.8524	1.8039	1.5524	0.11196	0.01039	0.25336	0.01660
239	107.773	35.961	1.2563	164.27	632.93	0.3323	1.1582	1.1847	0.8535	1.8047	1.5533	0.11180	0.01040	0.25312	0.01661
240	108.048	35.945	1.2510	164.60	632.94	0.3329	1.1578	1.1851	0.8546	1.8054	1.5542	0.11164	0.01040	0.25288	0.01663
241	108.322	35.930	1.2458	164.92	632.95	0.3334	1.1574	1.1856	0.8557	1.8062	1.5551	0.11148	0.01041	0.25263	0.01664
242	108.595	35.914	1.2406	165.25	632.97	0.3340	1.1571	1.1860	0.8568	1.8070	1.5559	0.11132	0.01041	0.25239	0.01666
243	108.868	35.899	1.2355	165.57	632.98	0.3346	1.1567	1.1865	0.8578	1.8077	1.5568	0.11116	0.01042	0.25216	0.01667
244	109.139	35.884	1.2304	165.90	632.99	0.3351	1.1563	1.1869	0.8589	1.8085	1.5577	0.11100	0.01042	0.25192	0.01669
245	109.410	35.868	1.2253	166.22	633.00	0.3357	1.1559	1.1874	0.8600	1.8093	1.5586	0.11085	0.01043	0.25168	0.01670
246	109.680	35.853	1.2203	166.54	633.01	0.3362	1.1555	1.1878	0.8611	1.8100	1.5595	0.11069	0.01043	0.25144	0.01672
247	109.949	35.838	1.2153	166.86	633.02	0.3368	1.1552	1.1883	0.8622	1.8108	1.5604	0.11053	0.01044	0.25121	0.01673
248	110.217	35.822	1.2104	167.18	633.03	0.3373	1.1548	1.1887	0.8632	1.8115	1.5613	0.11038	0.01044	0.25097	0.01675
249	110.485	35.807	1.2055	167.50	633.04	0.3379	1.1544	1.1892	0.8643	1.8123	1.5622	0.11022	0.01045	0.25074	0.01676
250	110.752	35.792	1.2006	167.81	633.05	0.3384	1.1540	1.1896	0.8654	1.8131	1.5631	0.11007	0.01045	0.25050	0.01678
251	111.017	35.777	1.1958	168.13	633.06	0.3390	1.1537	1.1901	0.8665	1.8138	1.5640	0.10992	0.01046	0.25027	0.01679
252	111.282	35.762	1.1910	168.45	633.07	0.3395	1.1533	1.1905	0.8675	1.8146	1.5650	0.10976	0.01046	0.25004	0.01681
253	111.547	35.746	1.1863	168.76	633.08	0.3401	1.1529	1.1910	0.8686	1.8154	1.5659	0.10961	0.01047	0.24981	0.01682
254	111.810	35.731	1.1816	169.07	633.09	0.3406	1.1525	1.1914	0.8697	1.8161	1.5668	0.10946	0.01047	0.24958	0.01684
255	112.073	35.716	1.1769	169.39	633.10	0.3411	1.1522	1.1919	0.8708	1.8169	1.5677	0.10931	0.01048	0.24935	0.01685
256	112.335	35.701	1.1722	169.70	633.11	0.3417	1.1518	1.1923	0.8718	1.8176	1.5686	0.10916	0.01048	0.24912	0.01686
257	112.596	35.686	1.1676	170.01	633.11	0.3422	1.1514	1.1928	0.8729	1.8184	1.5695	0.10901	0.01049	0.24889	0.01688
258	112.856	35.671	1.1630	170.32	633.12	0.3427	1.1511	1.1932	0.8740	1.8192	1.5704	0.10886	0.01049	0.24866	0.01689
259	113.116	35.656	1.1585	170.63	633.13	0.3433	1.1507	1.1937	0.8751	1.8199	1.5713	0.10872	0.01050	0.24843	0.01691

R-717 (anhydrous ammonia) Properties at Saturation

P [psia]	T [F]	ρ [lb/ft^3]	v [ft^3/lb]	h [Btu/lb]		s [Btu/R-lb]		Cp [Btu/R-lb]		Cp/Cv [unitless]		μ [centipose]		k [Btu/hr-ft-R]	
Bulk	Bulk	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
260	113.375	35.642	1.1540	170.94	633.14	0.3438	1.1504	1.1941	0.8761	1.8207	1.5722	0.10857	0.01050	0.24821	0.01692
261	113.633	35.627	1.1495	171.25	633.14	0.3443	1.1500	1.1946	0.8772	1.8214	1.5731	0.10842	0.01051	0.24798	0.01694
262	113.890	35.612	1.1451	171.56	633.15	0.3449	1.1496	1.1950	0.8783	1.8222	1.5740	0.10828	0.01051	0.24776	0.01695
263	114.147	35.597	1.1407	171.87	633.16	0.3454	1.1493	1.1955	0.8794	1.8230	1.5749	0.10813	0.01052	0.24753	0.01697
264	114.403	35.582	1.1363	172.17	633.16	0.3459	1.1489	1.1960	0.8804	1.8237	1.5758	0.10799	0.01052	0.24731	0.01698
265	114.658	35.568	1.1320	172.48	633.17	0.3464	1.1486	1.1964	0.8815	1.8245	1.5768	0.10784	0.01053	0.24709	0.01700
266	114.913	35.553	1.1276	172.78	633.17	0.3470	1.1482	1.1969	0.8826	1.8252	1.5777	0.10770	0.01053	0.24686	0.01701
267	115.166	35.538	1.1234	173.09	633.18	0.3475	1.1479	1.1973	0.8837	1.8260	1.5786	0.10756	0.01054	0.24664	0.01703
268	115.419	35.524	1.1191	173.39	633.18	0.3480	1.1475	1.1978	0.8847	1.8267	1.5795	0.10742	0.01054	0.24642	0.01704
269	115.672	35.509	1.1149	173.69	633.19	0.3485	1.1472	1.1982	0.8858	1.8275	1.5804	0.10727	0.01055	0.24620	0.01706
270	115.923	35.494	1.1107	173.99	633.19	0.3490	1.1468	1.1987	0.8869	1.8283	1.5813	0.10713	0.01055	0.24598	0.01707
271	116.174	35.480	1.1065	174.29	633.20	0.3495	1.1465	1.1991	0.8880	1.8290	1.5823	0.10699	0.01056	0.24576	0.01709
272	116.424	35.465	1.1024	174.59	633.20	0.3501	1.1461	1.1996	0.8890	1.8298	1.5832	0.10685	0.01056	0.24555	0.01710
273	116.674	35.451	1.0983	174.89	633.20	0.3506	1.1458	1.2001	0.8901	1.8305	1.5841	0.10671	0.01057	0.24533	0.01712
274	116.923	35.436	1.0942	175.19	633.21	0.3511	1.1454	1.2005	0.8912	1.8313	1.5850	0.10658	0.01057	0.24511	0.01713
275	117.171	35.422	1.0902	175.49	633.21	0.3516	1.1451	1.2010	0.8923	1.8321	1.5859	0.10644	0.01058	0.24490	0.01715
276	117.418	35.407	1.0862	175.79	633.21	0.3521	1.1447	1.2014	0.8933	1.8328	1.5869	0.10630	0.01058	0.24468	0.01716
277	117.665	35.393	1.0822	176.08	633.22	0.3526	1.1444	1.2019	0.8944	1.8336	1.5878	0.10616	0.01059	0.24447	0.01717
278	117.911	35.379	1.0782	176.38	633.22	0.3531	1.1440	1.2023	0.8955	1.8343	1.5887	0.10603	0.01059	0.24425	0.01719
279	118.157	35.364	1.0743	176.68	633.22	0.3536	1.1437	1.2028	0.8966	1.8351	1.5896	0.10589	0.01060	0.24404	0.01720
280	118.402	35.350	1.0704	176.97	633.22	0.3541	1.1434	1.2033	0.8976	1.8358	1.5905	0.10576	0.01060	0.24383	0.01722
281	118.646	35.336	1.0665	177.26	633.23	0.3546	1.1430	1.2037	0.8987	1.8366	1.5915	0.10562	0.01061	0.24361	0.01723
282	118.889	35.321	1.0626	177.56	633.23	0.3551	1.1427	1.2042	0.8998	1.8374	1.5924	0.10549	0.01061	0.24340	0.01725
283	119.132	35.307	1.0588	177.85	633.23	0.3556	1.1424	1.2046	0.9009	1.8381	1.5933	0.10535	0.01062	0.24319	0.01726
284	119.374	35.293	1.0550	178.14	633.23	0.3561	1.1420	1.2051	0.9019	1.8389	1.5943	0.10522	0.01062	0.24298	0.01728
285	119.616	35.279	1.0512	178.43	633.23	0.3566	1.1417	1.2056	0.9030	1.8396	1.5952	0.10509	0.01063	0.24277	0.01729
286	119.857	35.265	1.0475	178.72	633.23	0.3571	1.1413	1.2060	0.9041	1.8404	1.5961	0.10496	0.01063	0.24256	0.01731
287	120.097	35.251	1.0437	179.01	633.23	0.3576	1.1410	1.2065	0.9052	1.8412	1.5970	0.10482	0.01064	0.24235	0.01732
288	120.337	35.237	1.0400	179.30	633.23	0.3581	1.1407	1.2070	0.9062	1.8419	1.5980	0.10469	0.01064	0.24215	0.01734
289	120.576	35.222	1.0364	179.59	633.23	0.3585	1.1403	1.2074	0.9073	1.8427	1.5989	0.10456	0.01064	0.24194	0.01735
290	120.814	35.208	1.0327	179.88	633.23	0.3590	1.1400	1.2079	0.9084	1.8434	1.5998	0.10443	0.01065	0.24173	0.01736
291	121.052	35.194	1.0291	180.17	633.23	0.3595	1.1397	1.2083	0.9095	1.8442	1.6008	0.10430	0.01065	0.24153	0.01738
292	121.289	35.180	1.0255	180.45	633.23	0.3600	1.1394	1.2088	0.9105	1.8450	1.6017	0.10418	0.01066	0.24132	0.01739
293	121.526	35.166	1.0219	180.74	633.23	0.3605	1.1390	1.2093	0.9116	1.8457	1.6026	0.10405	0.01066	0.24112	0.01741
294	121.762	35.152	1.0183	181.02	633.23	0.3610	1.1387	1.2097	0.9127	1.8465	1.6036	0.10392	0.01067	0.24091	0.01742
295	121.997	35.139	1.0148	181.31	633.23	0.3614	1.1384	1.2102	0.9138	1.8472	1.6045	0.10379	0.01067	0.24071	0.01744
296	122.232	35.125	1.0113	181.59	633.23	0.3619	1.1381	1.2107	0.9148	1.8480	1.6055	0.10366	0.01068	0.24050	0.01745

R-717 (anhydrous ammonia) Properties at Saturation

P [psia]	T [F]	ρ [lb/ft^3]	v [ft^3/lb]	h [Btu/lb]		s [Btu/R-lb]		Cp [Btu/R-lb]		Cp/Cv [unitless]		μ [centipose]		k [Btu/hr-ft-R]	
Bulk	Bulk	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
297	122.466	35.111	1.0078	181.88	633.23	0.3624	1.1377	1.2111	0.9159	1.8487	1.6064	0.10354	0.01068	0.24030	0.01747
298	122.700	35.097	1.0044	182.16	633.22	0.3629	1.1374	1.2116	0.9170	1.8495	1.6073	0.10341	0.01069	0.24010	0.01748
299	122.933	35.083	1.0009	182.44	633.22	0.3634	1.1371	1.2121	0.9181	1.8503	1.6083	0.10329	0.01069	0.23990	0.01750
300	123.165	35.069	0.9975	182.72	633.22	0.3638	1.1368	1.2125	0.9192	1.8510	1.6092	0.10316	0.01070	0.23970	0.01751
301	123.397	35.056	0.9941	183.00	633.22	0.3643	1.1364	1.2130	0.9202	1.8518	1.6102	0.10304	0.01070	0.23950	0.01752
302	123.628	35.042	0.9907	183.28	633.21	0.3648	1.1361	1.2135	0.9213	1.8525	1.6111	0.10291	0.01071	0.23930	0.01754
303	123.859	35.028	0.9874	183.56	633.21	0.3652	1.1358	1.2139	0.9224	1.8533	1.6120	0.10279	0.01071	0.23910	0.01755
304	124.089	35.014	0.9840	183.84	633.21	0.3657	1.1355	1.2144	0.9235	1.8541	1.6130	0.10267	0.01072	0.23890	0.01757
305	124.319	35.001	0.9807	184.12	633.20	0.3662	1.1352	1.2149	0.9245	1.8548	1.6139	0.10254	0.01072	0.23870	0.01758
306	124.548	34.987	0.9774	184.40	633.20	0.3666	1.1349	1.2154	0.9256	1.8556	1.6149	0.10242	0.01072	0.23850	0.01760
307	124.776	34.973	0.9741	184.68	633.20	0.3671	1.1345	1.2158	0.9267	1.8563	1.6158	0.10230	0.01073	0.23830	0.01761
308	125.004	34.960	0.9709	184.95	633.19	0.3676	1.1342	1.2163	0.9278	1.8571	1.6168	0.10218	0.01073	0.23811	0.01763
309	125.231	34.946	0.9677	185.23	633.19	0.3680	1.1339	1.2168	0.9289	1.8579	1.6177	0.10206	0.01074	0.23791	0.01764
310	125.458	34.933	0.9645	185.51	633.18	0.3685	1.1336	1.2172	0.9299	1.8586	1.6187	0.10193	0.01074	0.23772	0.01766
311	125.684	34.919	0.9613	185.78	633.18	0.3690	1.1333	1.2177	0.9310	1.8594	1.6196	0.10181	0.01075	0.23752	0.01767
312	125.910	34.906	0.9581	186.06	633.17	0.3694	1.1330	1.2182	0.9321	1.8602	1.6206	0.10169	0.01075	0.23733	0.01768
313	126.135	34.892	0.9549	186.33	633.17	0.3699	1.1327	1.2187	0.9332	1.8609	1.6215	0.10158	0.01076	0.23713	0.01770
314	126.360	34.879	0.9518	186.60	633.16	0.3703	1.1323	1.2191	0.9343	1.8617	1.6225	0.10146	0.01076	0.23694	0.01771
315	126.584	34.865	0.9487	186.88	633.16	0.3708	1.1320	1.2196	0.9353	1.8624	1.6235	0.10134	0.01077	0.23675	0.01773
316	126.807	34.852	0.9456	187.15	633.15	0.3712	1.1317	1.2201	0.9364	1.8632	1.6244	0.10122	0.01077	0.23655	0.01774
317	127.030	34.838	0.9425	187.42	633.15	0.3717	1.1314	1.2206	0.9375	1.8640	1.6254	0.10110	0.01077	0.23636	0.01776
318	127.253	34.825	0.9395	187.69	633.14	0.3722	1.1311	1.2210	0.9386	1.8647	1.6263	0.10099	0.01078	0.23617	0.01777
319	127.475	34.811	0.9364	187.96	633.14	0.3726	1.1308	1.2215	0.9397	1.8655	1.6273	0.10087	0.01078	0.23598	0.01779
320	127.696	34.798	0.9334	188.23	633.13	0.3731	1.1305	1.2220	0.9407	1.8663	1.6283	0.10075	0.01079	0.23579	0.01780
321	127.917	34.785	0.9304	188.50	633.12	0.3735	1.1302	1.2225	0.9418	1.8670	1.6292	0.10064	0.01079	0.23560	0.01781
322	128.138	34.771	0.9274	188.77	633.12	0.3740	1.1299	1.2229	0.9429	1.8678	1.6302	0.10052	0.01080	0.23541	0.01783
323	128.357	34.758	0.9244	189.04	633.11	0.3744	1.1296	1.2234	0.9440	1.8685	1.6311	0.10041	0.01080	0.23522	0.01784
324	128.577	34.745	0.9215	189.31	633.10	0.3749	1.1293	1.2239	0.9451	1.8693	1.6321	0.10029	0.01081	0.23503	0.01786
325	128.796	34.732	0.9186	189.58	633.10	0.3753	1.1290	1.2244	0.9462	1.8701	1.6331	0.10018	0.01081	0.23484	0.01787
326	129.014	34.718	0.9157	189.84	633.09	0.3757	1.1287	1.2249	0.9472	1.8708	1.6340	0.10006	0.01082	0.23465	0.01789
327	129.232	34.705	0.9128	190.11	633.08	0.3762	1.1284	1.2253	0.9483	1.8716	1.6350	0.09995	0.01082	0.23447	0.01790
328	129.449	34.692	0.9099	190.37	633.07	0.3766	1.1281	1.2258	0.9494	1.8724	1.6360	0.09984	0.01082	0.23428	0.01792
329	129.666	34.679	0.9070	190.64	633.07	0.3771	1.1278	1.2263	0.9505	1.8731	1.6369	0.09972	0.01083	0.23409	0.01793
330	129.882	34.666	0.9042	190.91	633.06	0.3775	1.1275	1.2268	0.9516	1.8739	1.6379	0.09961	0.01083	0.23391	0.01794
331	130.098	34.652	0.9013	191.17	633.05	0.3780	1.1272	1.2273	0.9527	1.8747	1.6389	0.09950	0.01084	0.23372	0.01796
332	130.314	34.639	0.8985	191.43	633.04	0.3784	1.1269	1.2277	0.9538	1.8754	1.6399	0.09939	0.01084	0.23354	0.01797
333	130.529	34.626	0.8957	191.70	633.03	0.3788	1.1266	1.2282	0.9549	1.8762	1.6408	0.09927	0.01085	0.23335	0.01799

R-717 (anhydrous ammonia) Properties at Saturation

P [psia]	T [F]	ρ [lb/ft^3]	v [ft^3/lb]	h [Btu/lb]		s [Btu/R-lb]		Cp [Btu/R-lb]		Cp/Cv [unitless]		μ [centipose]		k [Btu/hr-ft-R]	
Bulk	Bulk	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
334	130.743	34.613	0.8929	191.96	633.02	0.3793	1.1263	1.2287	0.9559	1.8770	1.6418	0.09916	0.01085	0.23317	0.01800
335	130.957	34.600	0.8902	192.22	633.01	0.3797	1.1260	1.2292	0.9570	1.8777	1.6428	0.09905	0.01086	0.23298	0.01802
336	131.170	34.587	0.8874	192.48	633.00	0.3801	1.1257	1.2297	0.9581	1.8785	1.6438	0.09894	0.01086	0.23280	0.01803
337	131.383	34.574	0.8847	192.75	633.00	0.3806	1.1254	1.2302	0.9592	1.8793	1.6447	0.09883	0.01086	0.23262	0.01804
338	131.596	34.561	0.8820	193.01	632.99	0.3810	1.1251	1.2307	0.9603	1.8800	1.6457	0.09872	0.01087	0.23244	0.01806
339	131.808	34.548	0.8793	193.27	632.98	0.3814	1.1248	1.2311	0.9614	1.8808	1.6467	0.09861	0.01087	0.23225	0.01807
340	132.020	34.535	0.8766	193.53	632.97	0.3819	1.1245	1.2316	0.9625	1.8816	1.6477	0.09851	0.01088	0.23207	0.01809
341	132.231	34.522	0.8739	193.79	632.96	0.3823	1.1243	1.2321	0.9636	1.8823	1.6487	0.09840	0.01088	0.23189	0.01810
342	132.441	34.509	0.8713	194.05	632.95	0.3827	1.1240	1.2326	0.9647	1.8831	1.6497	0.09829	0.01089	0.23171	0.01812
343	132.652	34.496	0.8686	194.30	632.94	0.3831	1.1237	1.2331	0.9657	1.8839	1.6506	0.09818	0.01089	0.23153	0.01813
344	132.861	34.483	0.8660	194.56	632.93	0.3836	1.1234	1.2336	0.9668	1.8846	1.6516	0.09807	0.01090	0.23135	0.01815
345	133.070	34.471	0.8634	194.82	632.91	0.3840	1.1231	1.2341	0.9679	1.8854	1.6526	0.09797	0.01090	0.23117	0.01816
346	133.279	34.458	0.8608	195.08	632.90	0.3844	1.1228	1.2346	0.9690	1.8862	1.6536	0.09786	0.01090	0.23099	0.01817
347	133.488	34.445	0.8582	195.33	632.89	0.3848	1.1225	1.2350	0.9701	1.8869	1.6546	0.09775	0.01091	0.23081	0.01819
348	133.696	34.432	0.8556	195.59	632.88	0.3853	1.1222	1.2355	0.9712	1.8877	1.6556	0.09765	0.01091	0.23064	0.01820
349	133.903	34.419	0.8531	195.85	632.87	0.3857	1.1220	1.2360	0.9723	1.8885	1.6566	0.09754	0.01092	0.23046	0.01822
350	134.110	34.406	0.8505	196.10	632.86	0.3861	1.1217	1.2365	0.9734	1.8893	1.6576	0.09744	0.01092	0.23028	0.01823
351	134.317	34.394	0.8480	196.36	632.85	0.3865	1.1214	1.2370	0.9745	1.8900	1.6586	0.09733	0.01093	0.23010	0.01825
352	134.523	34.381	0.8455	196.61	632.84	0.3870	1.1211	1.2375	0.9756	1.8908	1.6596	0.09723	0.01093	0.22993	0.01826
353	134.728	34.368	0.8430	196.86	632.82	0.3874	1.1208	1.2380	0.9767	1.8916	1.6606	0.09712	0.01094	0.22975	0.01827
354	134.934	34.356	0.8405	197.12	632.81	0.3878	1.1205	1.2385	0.9778	1.8924	1.6616	0.09702	0.01094	0.22958	0.01829
355	135.139	34.343	0.8380	197.37	632.80	0.3882	1.1203	1.2390	0.9789	1.8931	1.6625	0.09691	0.01094	0.22940	0.01830
356	135.343	34.330	0.8356	197.62	632.79	0.3886	1.1200	1.2395	0.9800	1.8939	1.6635	0.09681	0.01095	0.22923	0.01832
357	135.547	34.317	0.8331	197.88	632.77	0.3890	1.1197	1.2400	0.9811	1.8947	1.6645	0.09671	0.01095	0.22905	0.01833
358	135.751	34.305	0.8307	198.13	632.76	0.3894	1.1194	1.2405	0.9822	1.8954	1.6656	0.09661	0.01096	0.22888	0.01835
359	135.954	34.292	0.8283	198.38	632.75	0.3899	1.1191	1.2410	0.9833	1.8962	1.6666	0.09650	0.01096	0.22870	0.01836
360	136.156	34.280	0.8259	198.63	632.73	0.3903	1.1188	1.2415	0.9844	1.8970	1.6676	0.09640	0.01097	0.22853	0.01837
361	136.359	34.267	0.8235	198.88	632.72	0.3907	1.1186	1.2420	0.9855	1.8978	1.6686	0.09630	0.01097	0.22836	0.01839
362	136.560	34.254	0.8211	199.13	632.71	0.3911	1.1183	1.2425	0.9866	1.8985	1.6696	0.09620	0.01097	0.22819	0.01840
363	136.762	34.242	0.8187	199.38	632.69	0.3915	1.1180	1.2430	0.9877	1.8993	1.6706	0.09610	0.01098	0.22801	0.01842
364	136.963	34.229	0.8164	199.63	632.68	0.3919	1.1177	1.2435	0.9888	1.9001	1.6716	0.09600	0.01098	0.22784	0.01843
365	137.164	34.217	0.8140	199.88	632.67	0.3923	1.1175	1.2440	0.9899	1.9009	1.6726	0.09590	0.01099	0.22767	0.01845
366	137.364	34.204	0.8117	200.13	632.65	0.3927	1.1172	1.2445	0.9910	1.9017	1.6736	0.09579	0.01099	0.22750	0.01846
367	137.564	34.192	0.8094	200.37	632.64	0.3931	1.1169	1.2450	0.9921	1.9024	1.6746	0.09569	0.01100	0.22733	0.01848
368	137.763	34.179	0.8071	200.62	632.62	0.3935	1.1166	1.2455	0.9932	1.9032	1.6756	0.09560	0.01100	0.22716	0.01849
369	137.962	34.167	0.8048	200.87	632.61	0.3939	1.1164	1.2460	0.9943	1.9040	1.6767	0.09550	0.01100	0.22699	0.01850
370	138.160	34.154	0.8025	201.11	632.60	0.3943	1.1161	1.2465	0.9954	1.9048	1.6777	0.09540	0.01101	0.22682	0.01852

R-717 (anhydrous ammonia) Properties at Saturation

P [psia]	T [F]	ρ [lb/ft^3]	v [ft^3/lb]	h [Btu/lb]		s [Btu/R-lb]		Cp [Btu/R-lb]		Cp/Cv [unitless]		μ [centipose]		k [Btu/hr-ft-R]	
Bulk	Bulk	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
371	138.359	34.142	0.8002	201.36	632.58	0.3947	1.1158	1.2470	0.9965	1.9055	1.6787	0.09530	0.01101	0.22665	0.01853
372	138.556	34.129	0.7979	201.61	632.57	0.3951	1.1155	1.2475	0.9976	1.9063	1.6797	0.09520	0.01102	0.22648	0.01855
373	138.754	34.117	0.7957	201.85	632.55	0.3955	1.1153	1.2480	0.9988	1.9071	1.6807	0.09510	0.01102	0.22631	0.01856
374	138.951	34.105	0.7935	202.10	632.53	0.3960	1.1150	1.2485	0.9999	1.9079	1.6817	0.09500	0.01103	0.22615	0.01858
375	139.147	34.092	0.7912	202.34	632.52	0.3963	1.1147	1.2490	1.0010	1.9087	1.6828	0.09491	0.01103	0.22598	0.01859
376	139.344	34.080	0.7890	202.58	632.50	0.3967	1.1145	1.2495	1.0021	1.9094	1.6838	0.09481	0.01103	0.22581	0.01860
377	139.539	34.068	0.7868	202.83	632.49	0.3971	1.1142	1.2500	1.0032	1.9102	1.6848	0.09471	0.01104	0.22564	0.01862
378	139.735	34.055	0.7846	203.07	632.47	0.3975	1.1139	1.2505	1.0043	1.9110	1.6858	0.09461	0.01104	0.22548	0.01863
379	139.930	34.043	0.7824	203.32	632.46	0.3979	1.1137	1.2510	1.0054	1.9118	1.6869	0.09452	0.01105	0.22531	0.01865
380	140.124	34.031	0.7803	203.56	632.44	0.3983	1.1134	1.2515	1.0065	1.9126	1.6879	0.09442	0.01105	0.22515	0.01866
381	140.319	34.018	0.7781	203.80	632.42	0.3987	1.1131	1.2520	1.0076	1.9134	1.6889	0.09433	0.01106	0.22498	0.01868
382	140.513	34.006	0.7760	204.04	632.41	0.3991	1.1128	1.2526	1.0088	1.9141	1.6900	0.09423	0.01106	0.22482	0.01869
383	140.706	33.994	0.7738	204.28	632.39	0.3995	1.1126	1.2531	1.0099	1.9149	1.6910	0.09413	0.01106	0.22465	0.01871
384	140.899	33.982	0.7717	204.52	632.37	0.3999	1.1123	1.2536	1.0110	1.9157	1.6920	0.09404	0.01107	0.22449	0.01872
385	141.092	33.969	0.7696	204.76	632.36	0.4003	1.1121	1.2541	1.0121	1.9165	1.6931	0.09394	0.01107	0.22432	0.01873
386	141.284	33.957	0.7675	205.01	632.34	0.4007	1.1118	1.2546	1.0132	1.9173	1.6941	0.09385	0.01108	0.22416	0.01875
387	141.476	33.945	0.7654	205.24	632.32	0.4011	1.1115	1.2551	1.0143	1.9181	1.6951	0.09376	0.01108	0.22400	0.01876
388	141.668	33.933	0.7633	205.48	632.31	0.4015	1.1113	1.2556	1.0155	1.9189	1.6962	0.09366	0.01109	0.22383	0.01878
389	141.859	33.920	0.7612	205.72	632.29	0.4019	1.1110	1.2561	1.0166	1.9196	1.6972	0.09357	0.01109	0.22367	0.01879
390	142.050	33.908	0.7592	205.96	632.27	0.4022	1.1107	1.2567	1.0177	1.9204	1.6983	0.09347	0.01109	0.22351	0.01881
391	142.241	33.896	0.7571	206.20	632.25	0.4026	1.1105	1.2572	1.0188	1.9212	1.6993	0.09338	0.01110	0.22335	0.01882
392	142.431	33.884	0.7551	206.44	632.24	0.4030	1.1102	1.2577	1.0200	1.9220	1.7003	0.09329	0.01110	0.22318	0.01883
393	142.621	33.872	0.7530	206.68	632.22	0.4034	1.1099	1.2582	1.0211	1.9228	1.7014	0.09320	0.01111	0.22302	0.01885
394	142.810	33.860	0.7510	206.91	632.20	0.4038	1.1097	1.2587	1.0222	1.9236	1.7024	0.09310	0.01111	0.22286	0.01886
395	142.999	33.848	0.7490	207.15	632.18	0.4042	1.1094	1.2592	1.0233	1.9244	1.7035	0.09301	0.01112	0.22270	0.01888
396	143.188	33.836	0.7470	207.39	632.16	0.4046	1.1092	1.2598	1.0245	1.9252	1.7045	0.09292	0.01112	0.22254	0.01889
397	143.376	33.824	0.7450	207.62	632.14	0.4049	1.1089	1.2603	1.0256	1.9260	1.7056	0.09283	0.01112	0.22238	0.01891
398	143.564	33.812	0.7430	207.86	632.13	0.4053	1.1086	1.2608	1.0267	1.9268	1.7066	0.09274	0.01113	0.22222	0.01892
399	143.752	33.800	0.7410	208.09	632.11	0.4057	1.1084	1.2613	1.0278	1.9276	1.7077	0.09264	0.01113	0.22206	0.01894
400	143.939	33.787	0.7391	208.33	632.09	0.4061	1.1081	1.2618	1.0290	1.9283	1.7088	0.09255	0.01114	0.22190	0.01895
401	144.126	33.775	0.7371	208.56	632.07	0.4065	1.1079	1.2624	1.0301	1.9291	1.7098	0.09246	0.01114	0.22174	0.01896
402	144.313	33.763	0.7352	208.80	632.05	0.4068	1.1076	1.2629	1.0312	1.9299	1.7109	0.09237	0.01114	0.22158	0.01898
403	144.499	33.751	0.7332	209.03	632.03	0.4072	1.1074	1.2634	1.0324	1.9307	1.7119	0.09228	0.01115	0.22143	0.01899
404	144.685	33.740	0.7313	209.27	632.01	0.4076	1.1071	1.2639	1.0335	1.9315	1.7130	0.09219	0.01115	0.22127	0.01901
405	144.871	33.728	0.7294	209.50	631.99	0.4080	1.1068	1.2645	1.0346	1.9323	1.7140	0.09210	0.01116	0.22111	0.01902
406	145.056	33.716	0.7275	209.73	631.97	0.4084	1.1066	1.2650	1.0358	1.9331	1.7151	0.09201	0.01116	0.22095	0.01904
407	145.241	33.704	0.7256	209.97	631.95	0.4087	1.1063	1.2655	1.0369	1.9339	1.7162	0.09192	0.01117	0.22080	0.01905

R-717 (anhydrous ammonia) Properties at Saturation

P [psia]	T [F]	ρ [lb/ft^3]	v [ft^3/lb]	h [Btu/lb]		s [Btu/R-lb]		Cp [Btu/R-lb]		Cp/Cv [unitless]		μ [centipose]		k [Btu/hr-ft-R]	
Bulk	Bulk	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
408	145.425	33.692	0.7237	210.20	631.93	0.4091	1.1061	1.2660	1.0380	1.9347	1.7172	0.09183	0.01117	0.22064	0.01906
409	145.609	33.680	0.7218	210.43	631.91	0.4095	1.1058	1.2666	1.0392	1.9355	1.7183	0.09175	0.01117	0.22048	0.01908
410	145.793	33.668	0.7199	210.66	631.89	0.4099	1.1056	1.2671	1.0403	1.9363	1.7194	0.09166	0.01118	0.22033	0.01909
411	145.977	33.656	0.7181	210.89	631.87	0.4102	1.1053	1.2676	1.0414	1.9371	1.7204	0.09157	0.01118	0.22017	0.01911
412	146.160	33.644	0.7162	211.12	631.85	0.4106	1.1051	1.2681	1.0426	1.9379	1.7215	0.09148	0.01119	0.22002	0.01912
413	146.343	33.632	0.7143	211.35	631.83	0.4110	1.1048	1.2687	1.0437	1.9387	1.7226	0.09139	0.01119	0.21986	0.01914
414	146.525	33.620	0.7125	211.58	631.81	0.4113	1.1046	1.2692	1.0449	1.9395	1.7237	0.09130	0.01119	0.21971	0.01915
415	146.708	33.609	0.7107	211.81	631.79	0.4117	1.1043	1.2697	1.0460	1.9403	1.7247	0.09122	0.01120	0.21955	0.01917
416	146.890	33.597	0.7089	212.04	631.77	0.4121	1.1041	1.2703	1.0471	1.9411	1.7258	0.09113	0.01120	0.21940	0.01918
417	147.071	33.585	0.7070	212.27	631.75	0.4124	1.1038	1.2708	1.0483	1.9419	1.7269	0.09104	0.01121	0.21924	0.01919
418	147.252	33.573	0.7052	212.50	631.73	0.4128	1.1036	1.2713	1.0494	1.9427	1.7280	0.09096	0.01121	0.21909	0.01921
419	147.433	33.561	0.7034	212.73	631.70	0.4132	1.1033	1.2719	1.0506	1.9435	1.7291	0.09087	0.01122	0.21894	0.01922
420	147.614	33.550	0.7016	212.96	631.68	0.4135	1.1031	1.2724	1.0517	1.9443	1.7301	0.09078	0.01122	0.21878	0.01924
421	147.794	33.538	0.6999	213.19	631.66	0.4139	1.1028	1.2729	1.0529	1.9451	1.7312	0.09070	0.01122	0.21863	0.01925
422	147.974	33.526	0.6981	213.42	631.64	0.4143	1.1026	1.2735	1.0540	1.9459	1.7323	0.09061	0.01123	0.21848	0.01927
423	148.154	33.514	0.6963	213.64	631.62	0.4146	1.1023	1.2740	1.0552	1.9467	1.7334	0.09053	0.01123	0.21833	0.01928
424	148.333	33.503	0.6946	213.87	631.60	0.4150	1.1021	1.2745	1.0563	1.9475	1.7345	0.09044	0.01124	0.21818	0.01930
425	148.512	33.491	0.6928	214.10	631.57	0.4154	1.1018	1.2751	1.0575	1.9484	1.7356	0.09036	0.01124	0.21802	0.01931
426	148.691	33.479	0.6911	214.32	631.55	0.4157	1.1016	1.2756	1.0586	1.9492	1.7367	0.09027	0.01124	0.21787	0.01932
427	148.869	33.468	0.6893	214.55	631.53	0.4161	1.1013	1.2762	1.0598	1.9500	1.7378	0.09019	0.01125	0.21772	0.01934
428	149.047	33.456	0.6876	214.77	631.51	0.4165	1.1011	1.2767	1.0609	1.9508	1.7389	0.09010	0.01125	0.21757	0.01935
429	149.225	33.444	0.6859	215.00	631.48	0.4168	1.1008	1.2772	1.0621	1.9516	1.7400	0.09002	0.01126	0.21742	0.01937
430	149.402	33.433	0.6842	215.23	631.46	0.4172	1.1006	1.2778	1.0632	1.9524	1.7410	0.08993	0.01126	0.21727	0.01938
431	149.579	33.421	0.6825	215.45	631.44	0.4175	1.1003	1.2783	1.0644	1.9532	1.7421	0.08985	0.01127	0.21712	0.01940
432	149.756	33.409	0.6808	215.67	631.42	0.4179	1.1001	1.2789	1.0655	1.9540	1.7432	0.08977	0.01127	0.21697	0.01941
433	149.933	33.398	0.6791	215.90	631.39	0.4183	1.0998	1.2794	1.0667	1.9548	1.7444	0.08968	0.01127	0.21682	0.01943
434	150.109	33.386	0.6774	216.12	631.37	0.4186	1.0996	1.2800	1.0679	1.9556	1.7455	0.08960	0.01128	0.21667	0.01944
435	150.285	33.374	0.6757	216.35	631.35	0.4190	1.0994	1.2805	1.0690	1.9565	1.7466	0.08952	0.01128	0.21652	0.01946
436	150.461	33.363	0.6741	216.57	631.32	0.4193	1.0991	1.2810	1.0702	1.9573	1.7477	0.08943	0.01129	0.21638	0.01947
437	150.636	33.351	0.6724	216.79	631.30	0.4197	1.0989	1.2816	1.0713	1.9581	1.7488	0.08935	0.01129	0.21623	0.01948
438	150.811	33.340	0.6708	217.02	631.27	0.4200	1.0986	1.2821	1.0725	1.9589	1.7499	0.08927	0.01129	0.21608	0.01950
439	150.986	33.328	0.6691	217.24	631.25	0.4204	1.0984	1.2827	1.0737	1.9597	1.7510	0.08919	0.01130	0.21593	0.01951
440	151.160	33.317	0.6675	217.46	631.23	0.4208	1.0981	1.2832	1.0748	1.9605	1.7521	0.08910	0.01130	0.21578	0.01953
441	151.334	33.305	0.6659	217.68	631.20	0.4211	1.0979	1.2838	1.0760	1.9614	1.7532	0.08902	0.01131	0.21564	0.01954
442	151.508	33.293	0.6642	217.90	631.18	0.4215	1.0977	1.2843	1.0772	1.9622	1.7543	0.08894	0.01131	0.21549	0.01956
443	151.681	33.282	0.6626	218.12	631.15	0.4218	1.0974	1.2849	1.0783	1.9630	1.7555	0.08886	0.01131	0.21534	0.01957
444	151.855	33.270	0.6610	218.35	631.13	0.4222	1.0972	1.2854	1.0795	1.9638	1.7566	0.08878	0.01132	0.21520	0.01959

R-717 (anhydrous ammonia) Properties at Saturation

P [psia]	T [F]	ρ [lb/ft^3]	v [ft^3/lb]	h [Btu/lb]		s [Btu/R-lb]		Cp [Btu/R-lb]		Cp/Cv [unitless]		μ [centipose]		k [Btu/hr-ft-R]	
Bulk	Bulk	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
445	152.028	33.259	0.6594	218.57	631.11	0.4225	1.0969	1.2860	1.0807	1.9646	1.7577	0.08870	0.01132	0.21505	0.01960
446	152.200	33.247	0.6578	218.79	631.08	0.4229	1.0967	1.2865	1.0819	1.9655	1.7588	0.08862	0.01133	0.21491	0.01961
447	152.373	33.236	0.6562	219.01	631.06	0.4232	1.0965	1.2871	1.0830	1.9663	1.7599	0.08853	0.01133	0.21476	0.01963
448	152.545	33.225	0.6546	219.23	631.03	0.4236	1.0962	1.2876	1.0842	1.9671	1.7611	0.08845	0.01133	0.21461	0.01964
449	152.717	33.213	0.6531	219.45	631.01	0.4239	1.0960	1.2882	1.0854	1.9679	1.7622	0.08837	0.01134	0.21447	0.01966
450	152.888	33.202	0.6515	219.66	630.98	0.4243	1.0957	1.2888	1.0866	1.9687	1.7633	0.08829	0.01134	0.21432	0.01967
451	153.059	33.190	0.6499	219.88	630.96	0.4246	1.0955	1.2893	1.0877	1.9696	1.7645	0.08821	0.01135	0.21418	0.01969
452	153.230	33.179	0.6484	220.10	630.93	0.4250	1.0953	1.2899	1.0889	1.9704	1.7656	0.08813	0.01135	0.21404	0.01970
453	153.401	33.167	0.6468	220.32	630.91	0.4253	1.0950	1.2904	1.0901	1.9712	1.7667	0.08805	0.01136	0.21389	0.01972
454	153.571	33.156	0.6453	220.54	630.88	0.4257	1.0948	1.2910	1.0913	1.9720	1.7679	0.08798	0.01136	0.21375	0.01973
455	153.741	33.145	0.6438	220.76	630.85	0.4260	1.0946	1.2915	1.0925	1.9729	1.7690	0.08790	0.01136	0.21360	0.01975
456	153.911	33.133	0.6422	220.97	630.83	0.4264	1.0943	1.2921	1.0936	1.9737	1.7701	0.08782	0.01137	0.21346	0.01976
457	154.081	33.122	0.6407	221.19	630.80	0.4267	1.0941	1.2927	1.0948	1.9745	1.7713	0.08774	0.01137	0.21332	0.01978
458	154.250	33.110	0.6392	221.41	630.78	0.4270	1.0938	1.2932	1.0960	1.9754	1.7724	0.08766	0.01138	0.21317	0.01979
459	154.419	33.099	0.6377	221.62	630.75	0.4274	1.0936	1.2938	1.0972	1.9762	1.7735	0.08758	0.01138	0.21303	0.01980
460	154.588	33.088	0.6362	221.84	630.72	0.4277	1.0934	1.2944	1.0984	1.9770	1.7747	0.08750	0.01138	0.21289	0.01982
461	154.756	33.076	0.6347	222.06	630.70	0.4281	1.0931	1.2949	1.0996	1.9779	1.7758	0.08743	0.01139	0.21275	0.01983
462	154.924	33.065	0.6332	222.27	630.67	0.4284	1.0929	1.2955	1.1008	1.9787	1.7770	0.08735	0.01139	0.21261	0.01985
463	155.092	33.054	0.6317	222.49	630.64	0.4288	1.0927	1.2960	1.1020	1.9795	1.7781	0.08727	0.01140	0.21246	0.01986
464	155.260	33.042	0.6302	222.70	630.62	0.4291	1.0924	1.2966	1.1031	1.9804	1.7793	0.08719	0.01140	0.21232	0.01988
465	155.427	33.031	0.6288	222.92	630.59	0.4294	1.0922	1.2972	1.1043	1.9812	1.7804	0.08712	0.01140	0.21218	0.01989
466	155.594	33.020	0.6273	223.13	630.56	0.4298	1.0920	1.2977	1.1055	1.9820	1.7816	0.08704	0.01141	0.21204	0.01991
467	155.761	33.009	0.6258	223.35	630.54	0.4301	1.0917	1.2983	1.1067	1.9829	1.7828	0.08696	0.01141	0.21190	0.01992
468	155.927	32.997	0.6244	223.56	630.51	0.4305	1.0915	1.2989	1.1079	1.9837	1.7839	0.08688	0.01142	0.21176	0.01994
469	156.094	32.986	0.6229	223.78	630.48	0.4308	1.0913	1.2995	1.1091	1.9845	1.7851	0.08681	0.01142	0.21162	0.01995
470	156.260	32.975	0.6215	223.99	630.46	0.4311	1.0911	1.3000	1.1103	1.9854	1.7862	0.08673	0.01142	0.21148	0.01997
471	156.426	32.964	0.6201	224.20	630.43	0.4315	1.0908	1.3006	1.1115	1.9862	1.7874	0.08665	0.01143	0.21134	0.01998
472	156.591	32.952	0.6186	224.42	630.40	0.4318	1.0906	1.3012	1.1127	1.9870	1.7886	0.08658	0.01143	0.21120	0.02000
473	156.756	32.941	0.6172	224.63	630.37	0.4321	1.0904	1.3017	1.1139	1.9879	1.7897	0.08650	0.01144	0.21106	0.02001
474	156.921	32.930	0.6158	224.84	630.34	0.4325	1.0901	1.3023	1.1151	1.9887	1.7909	0.08643	0.01144	0.21092	0.02002
475	157.086	32.919	0.6144	225.06	630.32	0.4328	1.0899	1.3029	1.1163	1.9896	1.7921	0.08635	0.01145	0.21078	0.02004
476	157.250	32.907	0.6130	225.27	630.29	0.4331	1.0897	1.3035	1.1176	1.9904	1.7932	0.08628	0.01145	0.21065	0.02005
477	157.415	32.896	0.6116	225.48	630.26	0.4335	1.0894	1.3040	1.1188	1.9913	1.7944	0.08620	0.01145	0.21051	0.02007
478	157.578	32.885	0.6102	225.69	630.23	0.4338	1.0892	1.3046	1.1200	1.9921	1.7956	0.08613	0.01146	0.21037	0.02008
479	157.742	32.874	0.6088	225.90	630.20	0.4341	1.0890	1.3052	1.1212	1.9929	1.7968	0.08605	0.01146	0.21023	0.02010
480	157.906	32.863	0.6074	226.11	630.18	0.4345	1.0888	1.3058	1.1224	1.9938	1.7979	0.08598	0.01147	0.21009	0.02011
481	158.069	32.852	0.6060	226.32	630.15	0.4348	1.0885	1.3064	1.1236	1.9946	1.7991	0.08590	0.01147	0.20996	0.02013

R-717 (anhydrous ammonia) Properties at Saturation

P [psia]	T [F]	ρ [lb/ft^3]	v [ft^3/lb]	h [Btu/lb]		s [Btu/R-lb]		Cp [Btu/R-lb]		Cp/Cv [unitless]		μ [centipose]		k [Btu/hr-ft-R]	
Bulk	Bulk	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
482	158.232	32.841	0.6046	226.54	630.12	0.4351	1.0883	1.3069	1.1248	1.9955	1.8003	0.08583	0.01147	0.20982	0.02014
483	158.394	32.829	0.6033	226.75	630.09	0.4355	1.0881	1.3075	1.1260	1.9963	1.8015	0.08575	0.01148	0.20968	0.02016
484	158.557	32.818	0.6019	226.96	630.06	0.4358	1.0878	1.3081	1.1273	1.9972	1.8027	0.08568	0.01148	0.20955	0.02017
485	158.719	32.807	0.6005	227.17	630.03	0.4361	1.0876	1.3087	1.1285	1.9980	1.8039	0.08560	0.01149	0.20941	0.02019
486	158.881	32.796	0.5992	227.38	630.00	0.4365	1.0874	1.3093	1.1297	1.9989	1.8050	0.08553	0.01149	0.20927	0.02020
487	159.042	32.785	0.5978	227.58	629.97	0.4368	1.0872	1.3099	1.1309	1.9997	1.8062	0.08546	0.01149	0.20914	0.02022
488	159.204	32.774	0.5965	227.79	629.94	0.4371	1.0869	1.3104	1.1321	2.0006	1.8074	0.08538	0.01150	0.20900	0.02023
489	159.365	32.763	0.5952	228.00	629.91	0.4375	1.0867	1.3110	1.1334	2.0014	1.8086	0.08531	0.01150	0.20886	0.02025
490	159.526	32.752	0.5938	228.21	629.89	0.4378	1.0865	1.3116	1.1346	2.0023	1.8098	0.08524	0.01151	0.20873	0.02026
491	159.687	32.741	0.5925	228.42	629.86	0.4381	1.0863	1.3122	1.1358	2.0032	1.8110	0.08516	0.01151	0.20859	0.02028
492	159.847	32.730	0.5912	228.63	629.83	0.4384	1.0860	1.3128	1.1370	2.0040	1.8122	0.08509	0.01151	0.20846	0.02029
493	160.007	32.718	0.5899	228.84	629.80	0.4388	1.0858	1.3134	1.1383	2.0049	1.8134	0.08502	0.01152	0.20832	0.02031
494	160.167	32.707	0.5886	229.04	629.77	0.4391	1.0856	1.3140	1.1395	2.0057	1.8146	0.08495	0.01152	0.20819	0.02032
495	160.327	32.696	0.5873	229.25	629.74	0.4394	1.0854	1.3146	1.1407	2.0066	1.8158	0.08487	0.01153	0.20806	0.02034
496	160.486	32.685	0.5860	229.46	629.71	0.4397	1.0851	1.3151	1.1420	2.0074	1.8170	0.08480	0.01153	0.20792	0.02035
497	160.646	32.674	0.5847	229.67	629.68	0.4401	1.0849	1.3157	1.1432	2.0083	1.8182	0.08473	0.01153	0.20779	0.02037
498	160.805	32.663	0.5834	229.87	629.65	0.4404	1.0847	1.3163	1.1444	2.0092	1.8195	0.08466	0.01154	0.20765	0.02038
499	160.963	32.652	0.5821	230.08	629.62	0.4407	1.0845	1.3169	1.1457	2.0100	1.8207	0.08459	0.01154	0.20752	0.02040
500	161.122	32.641	0.5808	230.29	629.58	0.4410	1.0842	1.3175	1.1469	2.0109	1.8219	0.08452	0.01155	0.20739	0.02041
501	161.280	32.630	0.5795	230.49	629.55	0.4414	1.0840	1.3181	1.1481	2.0118	1.8231	0.08444	0.01155	0.20725	0.02043
502	161.438	32.619	0.5782	230.70	629.52	0.4417	1.0838	1.3187	1.1494	2.0126	1.8243	0.08437	0.01155	0.20712	0.02044
503	161.596	32.608	0.5770	230.90	629.49	0.4420	1.0836	1.3193	1.1506	2.0135	1.8255	0.08430	0.01156	0.20699	0.02046
504	161.753	32.597	0.5757	231.11	629.46	0.4423	1.0834	1.3199	1.1519	2.0144	1.8268	0.08423	0.01156	0.20686	0.02047
505	161.911	32.586	0.5745	231.31	629.43	0.4426	1.0831	1.3205	1.1531	2.0152	1.8280	0.08416	0.01157	0.20672	0.02049
506	162.068	32.576	0.5732	231.52	629.40	0.4430	1.0829	1.3211	1.1544	2.0161	1.8292	0.08409	0.01157	0.20659	0.02050
507	162.225	32.565	0.5720	231.72	629.37	0.4433	1.0827	1.3217	1.1556	2.0170	1.8304	0.08402	0.01157	0.20646	0.02052
508	162.381	32.554	0.5707	231.93	629.34	0.4436	1.0825	1.3223	1.1569	2.0178	1.8317	0.08395	0.01158	0.20633	0.02053
509	162.538	32.543	0.5695	232.13	629.31	0.4439	1.0823	1.3229	1.1581	2.0187	1.8329	0.08388	0.01158	0.20620	0.02055
510	162.694	32.532	0.5682	232.34	629.27	0.4442	1.0820	1.3235	1.1594	2.0196	1.8341	0.08381	0.01159	0.20607	0.02056
511	162.850	32.521	0.5670	232.54	629.24	0.4446	1.0818	1.3241	1.1606	2.0204	1.8354	0.08374	0.01159	0.20593	0.02058
512	163.006	32.510	0.5658	232.74	629.21	0.4449	1.0816	1.3247	1.1619	2.0213	1.8366	0.08367	0.01159	0.20580	0.02059
513	163.161	32.499	0.5646	232.95	629.18	0.4452	1.0814	1.3253	1.1631	2.0222	1.8378	0.08360	0.01160	0.20567	0.02061
514	163.316	32.488	0.5634	233.15	629.15	0.4455	1.0812	1.3260	1.1644	2.0231	1.8391	0.08353	0.01160	0.20554	0.02062
515	163.471	32.477	0.5621	233.35	629.11	0.4458	1.0809	1.3266	1.1656	2.0239	1.8403	0.08346	0.01161	0.20541	0.02064
516	163.626	32.466	0.5609	233.56	629.08	0.4461	1.0807	1.3272	1.1669	2.0248	1.8416	0.08339	0.01161	0.20528	0.02065
517	163.781	32.456	0.5597	233.76	629.05	0.4465	1.0805	1.3278	1.1682	2.0257	1.8428	0.08332	0.01162	0.20515	0.02067
518	163.935	32.445	0.5585	233.96	629.02	0.4468	1.0803	1.3284	1.1694	2.0266	1.8441	0.08325	0.01162	0.20502	0.02068

R-717 (anhydrous ammonia) Properties at Saturation

P [psia]	T [F]	ρ [lb/ft^3]	v [ft^3/lb]	h [Btu/lb]		s [Btu/R-lb]		Cp [Btu/R-lb]		Cp/Cv [unitless]		μ [centipose]		k [Btu/hr-ft-R]	
Bulk	Bulk	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
519	164.089	32.434	0.5574	234.16	628.99	0.4471	1.0801	1.3290	1.1707	2.0275	1.8453	0.08318	0.01162	0.20489	0.02070
520	164.243	32.423	0.5562	234.37	628.95	0.4474	1.0798	1.3296	1.1720	2.0283	1.8466	0.08311	0.01163	0.20476	0.02071
521	164.397	32.412	0.5550	234.57	628.92	0.4477	1.0796	1.3302	1.1732	2.0292	1.8478	0.08305	0.01163	0.20463	0.02073
522	164.550	32.401	0.5538	234.77	628.89	0.4480	1.0794	1.3308	1.1745	2.0301	1.8491	0.08298	0.01164	0.20451	0.02074
523	164.704	32.391	0.5526	234.97	628.85	0.4483	1.0792	1.3315	1.1758	2.0310	1.8503	0.08291	0.01164	0.20438	0.02076
524	164.857	32.380	0.5515	235.17	628.82	0.4487	1.0790	1.3321	1.1770	2.0319	1.8516	0.08284	0.01164	0.20425	0.02077
525	165.009	32.369	0.5503	235.37	628.79	0.4490	1.0788	1.3327	1.1783	2.0328	1.8529	0.08277	0.01165	0.20412	0.02079
526	165.162	32.358	0.5491	235.57	628.76	0.4493	1.0785	1.3333	1.1796	2.0336	1.8541	0.08271	0.01165	0.20399	0.02080
527	165.314	32.347	0.5480	235.77	628.72	0.4496	1.0783	1.3339	1.1809	2.0345	1.8554	0.08264	0.01166	0.20386	0.02082
528	165.467	32.337	0.5468	235.97	628.69	0.4499	1.0781	1.3346	1.1822	2.0354	1.8567	0.08257	0.01166	0.20374	0.02083
529	165.619	32.326	0.5457	236.17	628.66	0.4502	1.0779	1.3352	1.1834	2.0363	1.8579	0.08250	0.01166	0.20361	0.02085
530	165.770	32.315	0.5445	236.37	628.62	0.4505	1.0777	1.3358	1.1847	2.0372	1.8592	0.08244	0.01167	0.20348	0.02086
531	165.922	32.304	0.5434	236.57	628.59	0.4508	1.0775	1.3364	1.1860	2.0381	1.8605	0.08237	0.01167	0.20335	0.02088
532	166.073	32.293	0.5422	236.77	628.56	0.4512	1.0773	1.3370	1.1873	2.0390	1.8617	0.08230	0.01168	0.20323	0.02089
533	166.224	32.283	0.5411	236.97	628.52	0.4515	1.0770	1.3377	1.1886	2.0399	1.8630	0.08223	0.01168	0.20310	0.02091
534	166.375	32.272	0.5400	237.17	628.49	0.4518	1.0768	1.3383	1.1899	2.0408	1.8643	0.08217	0.01168	0.20297	0.02092
535	166.526	32.261	0.5388	237.37	628.45	0.4521	1.0766	1.3389	1.1912	2.0417	1.8656	0.08210	0.01169	0.20285	0.02094
536	166.676	32.250	0.5377	237.57	628.42	0.4524	1.0764	1.3395	1.1924	2.0426	1.8669	0.08203	0.01169	0.20272	0.02095
537	166.827	32.240	0.5366	237.77	628.39	0.4527	1.0762	1.3402	1.1937	2.0435	1.8682	0.08197	0.01170	0.20260	0.02097
538	166.977	32.229	0.5355	237.96	628.35	0.4530	1.0760	1.3408	1.1950	2.0444	1.8694	0.08190	0.01170	0.20247	0.02098
539	167.126	32.218	0.5344	238.16	628.32	0.4533	1.0758	1.3414	1.1963	2.0453	1.8707	0.08184	0.01170	0.20234	0.02100
540	167.276	32.208	0.5333	238.36	628.28	0.4536	1.0756	1.3421	1.1976	2.0462	1.8720	0.08177	0.01171	0.20222	0.02102
541	167.426	32.197	0.5322	238.56	628.25	0.4539	1.0753	1.3427	1.1989	2.0471	1.8733	0.08170	0.01171	0.20209	0.02103
542	167.575	32.186	0.5311	238.75	628.21	0.4542	1.0751	1.3433	1.2002	2.0480	1.8746	0.08164	0.01172	0.20197	0.02105
543	167.724	32.175	0.5300	238.95	628.18	0.4545	1.0749	1.3440	1.2015	2.0489	1.8759	0.08157	0.01172	0.20184	0.02106
544	167.873	32.165	0.5289	239.15	628.14	0.4548	1.0747	1.3446	1.2028	2.0498	1.8772	0.08151	0.01172	0.20172	0.02108
545	168.021	32.154	0.5278	239.35	628.11	0.4551	1.0745	1.3452	1.2041	2.0507	1.8785	0.08144	0.01173	0.20159	0.02109
546	168.170	32.143	0.5267	239.54	628.07	0.4554	1.0743	1.3459	1.2055	2.0516	1.8798	0.08138	0.01173	0.20147	0.02111
547	168.318	32.133	0.5256	239.74	628.04	0.4557	1.0741	1.3465	1.2068	2.0525	1.8811	0.08131	0.01174	0.20134	0.02112
548	168.466	32.122	0.5246	239.93	628.00	0.4560	1.0739	1.3472	1.2081	2.0534	1.8825	0.08125	0.01174	0.20122	0.02114
549	168.614	32.111	0.5235	240.13	627.97	0.4564	1.0736	1.3478	1.2094	2.0543	1.8838	0.08118	0.01174	0.20110	0.02115
550	168.761	32.101	0.5224	240.33	627.93	0.4567	1.0734	1.3484	1.2107	2.0552	1.8851	0.08112	0.01175	0.20097	0.02117
551	168.909	32.090	0.5214	240.52	627.90	0.4570	1.0732	1.3491	1.2120	2.0561	1.8864	0.08105	0.01175	0.20085	0.02118
552	169.056	32.080	0.5203	240.72	627.86	0.4573	1.0730	1.3497	1.2133	2.0570	1.8877	0.08099	0.01176	0.20073	0.02120
553	169.203	32.069	0.5192	240.91	627.83	0.4576	1.0728	1.3504	1.2147	2.0580	1.8890	0.08092	0.01176	0.20060	0.02122
554	169.350	32.058	0.5182	241.11	627.79	0.4579	1.0726	1.3510	1.2160	2.0589	1.8904	0.08086	0.01176	0.20048	0.02123
555	169.496	32.048	0.5171	241.30	627.75	0.4582	1.0724	1.3517	1.2173	2.0598	1.8917	0.08079	0.01177	0.20036	0.02125

R-717 (anhydrous ammonia) Properties at Saturation

P [psia]	T [F]	ρ [lb/ft^3]	v [ft^3/lb]	h [Btu/lb]		s [Btu/R-lb]		Cp [Btu/R-lb]		Cp/Cv [unitless]		μ [centipose]		k [Btu/hr-ft-R]	
Bulk	Bulk	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
556	169.643	32.037	0.5161	241.50	627.72	0.4585	1.0722	1.3523	1.2186	2.0607	1.8930	0.08073	0.01177	0.20023	0.02126
557	169.789	32.026	0.5151	241.69	627.68	0.4588	1.0720	1.3530	1.2200	2.0616	1.8943	0.08067	0.01178	0.20011	0.02128
558	169.935	32.016	0.5140	241.89	627.65	0.4591	1.0718	1.3536	1.2213	2.0625	1.8957	0.08060	0.01178	0.19999	0.02129
559	170.081	32.005	0.5130	242.08	627.61	0.4594	1.0716	1.3543	1.2226	2.0635	1.8970	0.08054	0.01178	0.19987	0.02131
560	170.226	31.995	0.5119	242.27	627.57	0.4597	1.0713	1.3549	1.2239	2.0644	1.8983	0.08047	0.01179	0.19974	0.02132
561	170.372	31.984	0.5109	242.47	627.54	0.4600	1.0711	1.3556	1.2253	2.0653	1.8997	0.08041	0.01179	0.19962	0.02134
562	170.517	31.974	0.5099	242.66	627.50	0.4603	1.0709	1.3562	1.2266	2.0662	1.9010	0.08035	0.01180	0.19950	0.02135
563	170.662	31.963	0.5089	242.85	627.46	0.4606	1.0707	1.3569	1.2280	2.0672	1.9024	0.08028	0.01180	0.19938	0.02137
564	170.807	31.952	0.5079	243.05	627.43	0.4608	1.0705	1.3575	1.2293	2.0681	1.9037	0.08022	0.01181	0.19926	0.02139
565	170.951	31.942	0.5068	243.24	627.39	0.4611	1.0703	1.3582	1.2306	2.0690	1.9051	0.08016	0.01181	0.19914	0.02140
566	171.096	31.931	0.5058	243.43	627.35	0.4614	1.0701	1.3588	1.2320	2.0699	1.9064	0.08010	0.01181	0.19901	0.02142
567	171.240	31.921	0.5048	243.63	627.32	0.4617	1.0699	1.3595	1.2333	2.0709	1.9078	0.08003	0.01182	0.19889	0.02143
568	171.384	31.910	0.5038	243.82	627.28	0.4620	1.0697	1.3602	1.2347	2.0718	1.9091	0.07997	0.01182	0.19877	0.02145
569	171.528	31.900	0.5028	244.01	627.24	0.4623	1.0695	1.3608	1.2360	2.0727	1.9105	0.07991	0.01183	0.19865	0.02146
570	171.672	31.889	0.5018	244.20	627.20	0.4626	1.0693	1.3615	1.2374	2.0737	1.9118	0.07985	0.01183	0.19853	0.02148
571	171.815	31.879	0.5008	244.40	627.17	0.4629	1.0691	1.3621	1.2387	2.0746	1.9132	0.07978	0.01183	0.19841	0.02150
572	171.959	31.868	0.4998	244.59	627.13	0.4632	1.0689	1.3628	1.2401	2.0755	1.9146	0.07972	0.01184	0.19829	0.02151
573	172.102	31.858	0.4988	244.78	627.09	0.4635	1.0687	1.3635	1.2414	2.0765	1.9159	0.07966	0.01184	0.19817	0.02153
574	172.245	31.847	0.4979	244.97	627.05	0.4638	1.0684	1.3641	1.2428	2.0774	1.9173	0.07960	0.01185	0.19805	0.02154
575	172.387	31.837	0.4969	245.16	627.02	0.4641	1.0682	1.3648	1.2441	2.0783	1.9187	0.07953	0.01185	0.19793	0.02156
576	172.530	31.826	0.4959	245.35	626.98	0.4644	1.0680	1.3655	1.2455	2.0793	1.9200	0.07947	0.01185	0.19781	0.02157
577	172.672	31.816	0.4949	245.54	626.94	0.4647	1.0678	1.3661	1.2469	2.0802	1.9214	0.07941	0.01186	0.19769	0.02159
578	172.815	31.805	0.4940	245.73	626.90	0.4650	1.0676	1.3668	1.2482	2.0812	1.9228	0.07935	0.01186	0.19757	0.02161
579	172.957	31.795	0.4930	245.92	626.87	0.4653	1.0674	1.3675	1.2496	2.0821	1.9242	0.07929	0.01187	0.19746	0.02162
580	173.098	31.784	0.4920	246.12	626.83	0.4656	1.0672	1.3681	1.2510	2.0830	1.9255	0.07923	0.01187	0.19734	0.02164
581	173.240	31.774	0.4911	246.31	626.79	0.4658	1.0670	1.3688	1.2523	2.0840	1.9269	0.07917	0.01187	0.19722	0.02165
582	173.382	31.763	0.4901	246.50	626.75	0.4661	1.0668	1.3695	1.2537	2.0849	1.9283	0.07910	0.01188	0.19710	0.02167
583	173.523	31.753	0.4891	246.69	626.71	0.4664	1.0666	1.3702	1.2551	2.0859	1.9297	0.07904	0.01188	0.19698	0.02168
584	173.664	31.742	0.4882	246.87	626.67	0.4667	1.0664	1.3708	1.2565	2.0868	1.9311	0.07898	0.01189	0.19686	0.02170
585	173.805	31.732	0.4872	247.06	626.64	0.4670	1.0662	1.3715	1.2578	2.0878	1.9325	0.07892	0.01189	0.19674	0.02172
586	173.946	31.721	0.4863	247.25	626.60	0.4673	1.0660	1.3722	1.2592	2.0887	1.9339	0.07886	0.01189	0.19663	0.02173
587	174.086	31.711	0.4854	247.44	626.56	0.4676	1.0658	1.3729	1.2606	2.0897	1.9353	0.07880	0.01190	0.19651	0.02175
588	174.227	31.701	0.4844	247.63	626.52	0.4679	1.0656	1.3736	1.2620	2.0906	1.9367	0.07874	0.01190	0.19639	0.02176
589	174.367	31.690	0.4835	247.82	626.48	0.4682	1.0654	1.3742	1.2634	2.0916	1.9381	0.07868	0.01191	0.19627	0.02178
590	174.507	31.680	0.4825	248.01	626.44	0.4685	1.0652	1.3749	1.2648	2.0925	1.9395	0.07862	0.01191	0.19616	0.02180
591	174.647	31.669	0.4816	248.20	626.40	0.4687	1.0650	1.3756	1.2661	2.0935	1.9409	0.07856	0.01191	0.19604	0.02181
592	174.786	31.659	0.4807	248.39	626.36	0.4690	1.0648	1.3763	1.2675	2.0945	1.9423	0.07850	0.01192	0.19592	0.02183

R-717 (anhydrous ammonia) Properties at Saturation

P [psia]	T [F]	ρ [lb/ft^3]	v [ft^3/lb]	h [Btu/lb]		s [Btu/R-lb]		Cp [Btu/R-lb]		Cp/Cv [unitless]		μ [centipose]		k [Btu/hr-ft-R]	
Bulk	Bulk	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
593	174.926	31.648	0.4798	248.57	626.32	0.4693	1.0646	1.3770	1.2689	2.0954	1.9437	0.07844	0.01192	0.19581	0.02184
594	175.065	31.638	0.4788	248.76	626.28	0.4696	1.0644	1.3777	1.2703	2.0964	1.9451	0.07838	0.01193	0.19569	0.02186
595	175.204	31.628	0.4779	248.95	626.24	0.4699	1.0642	1.3784	1.2717	2.0973	1.9466	0.07832	0.01193	0.19557	0.02188
596	175.343	31.617	0.4770	249.14	626.20	0.4702	1.0640	1.3790	1.2731	2.0983	1.9480	0.07826	0.01193	0.19546	0.02189
597	175.482	31.607	0.4761	249.33	626.16	0.4705	1.0638	1.3797	1.2745	2.0993	1.9494	0.07820	0.01194	0.19534	0.02191
598	175.621	31.596	0.4752	249.51	626.13	0.4708	1.0636	1.3804	1.2759	2.1002	1.9508	0.07814	0.01194	0.19522	0.02192
599	175.759	31.586	0.4743	249.70	626.09	0.4710	1.0634	1.3811	1.2773	2.1012	1.9523	0.07808	0.01195	0.19511	0.02194
600	175.898	31.576	0.4734	249.89	626.05	0.4713	1.0632	1.3818	1.2787	2.1022	1.9537	0.07802	0.01195	0.19499	0.02196
601	176.036	31.565	0.4725	250.07	626.01	0.4716	1.0630	1.3825	1.2802	2.1031	1.9551	0.07796	0.01196	0.19488	0.02197
602	176.174	31.555	0.4716	250.26	625.97	0.4719	1.0628	1.3832	1.2816	2.1041	1.9565	0.07790	0.01196	0.19476	0.02199
603	176.311	31.545	0.4707	250.45	625.93	0.4722	1.0626	1.3839	1.2830	2.1051	1.9580	0.07785	0.01196	0.19465	0.02200
604	176.449	31.534	0.4698	250.63	625.88	0.4725	1.0624	1.3846	1.2844	2.1061	1.9594	0.07779	0.01197	0.19453	0.02202
605	176.586	31.524	0.4689	250.82	625.84	0.4727	1.0622	1.3853	1.2858	2.1070	1.9609	0.07773	0.01197	0.19441	0.02204
606	176.724	31.513	0.4680	251.01	625.80	0.4730	1.0620	1.3860	1.2872	2.1080	1.9623	0.07767	0.01198	0.19430	0.02205
607	176.861	31.503	0.4671	251.19	625.76	0.4733	1.0618	1.3867	1.2887	2.1090	1.9638	0.07761	0.01198	0.19419	0.02207
608	176.998	31.493	0.4662	251.38	625.72	0.4736	1.0616	1.3874	1.2901	2.1100	1.9652	0.07755	0.01198	0.19407	0.02209
609	177.134	31.482	0.4653	251.56	625.68	0.4739	1.0614	1.3881	1.2915	2.1109	1.9667	0.07749	0.01199	0.19396	0.02210
610	177.271	31.472	0.4645	251.75	625.64	0.4742	1.0612	1.3888	1.2929	2.1119	1.9681	0.07744	0.01199	0.19384	0.02212
611	177.407	31.462	0.4636	251.94	625.60	0.4744	1.0610	1.3895	1.2944	2.1129	1.9696	0.07738	0.01200	0.19373	0.02213
612	177.544	31.451	0.4627	252.12	625.56	0.4747	1.0608	1.3902	1.2958	2.1139	1.9710	0.07732	0.01200	0.19361	0.02215
613	177.680	31.441	0.4619	252.31	625.52	0.4750	1.0606	1.3909	1.2972	2.1149	1.9725	0.07726	0.01200	0.19350	0.02217
614	177.816	31.431	0.4610	252.49	625.48	0.4753	1.0604	1.3917	1.2987	2.1159	1.9740	0.07720	0.01201	0.19339	0.02218
615	177.951	31.421	0.4601	252.67	625.44	0.4756	1.0602	1.3924	1.3001	2.1168	1.9754	0.07715	0.01201	0.19327	0.02220
616	178.087	31.410	0.4593	252.86	625.39	0.4758	1.0600	1.3931	1.3016	2.1178	1.9769	0.07709	0.01202	0.19316	0.02222
617	178.222	31.400	0.4584	253.04	625.35	0.4761	1.0598	1.3938	1.3030	2.1188	1.9784	0.07703	0.01202	0.19304	0.02223
618	178.358	31.390	0.4575	253.23	625.31	0.4764	1.0596	1.3945	1.3044	2.1198	1.9799	0.07697	0.01202	0.19293	0.02225
619	178.493	31.379	0.4567	253.41	625.27	0.4767	1.0594	1.3952	1.3059	2.1208	1.9813	0.07692	0.01203	0.19282	0.02226
620	178.628	31.369	0.4558	253.60	625.23	0.4770	1.0592	1.3959	1.3073	2.1218	1.9828	0.07686	0.01203	0.19271	0.02228
621	178.762	31.359	0.4550	253.78	625.19	0.4772	1.0590	1.3967	1.3088	2.1228	1.9843	0.07680	0.01204	0.19259	0.02230
622	178.897	31.348	0.4542	253.96	625.14	0.4775	1.0588	1.3974	1.3102	2.1238	1.9858	0.07674	0.01204	0.19248	0.02231
623	179.031	31.338	0.4533	254.15	625.10	0.4778	1.0586	1.3981	1.3117	2.1248	1.9873	0.07669	0.01205	0.19237	0.02233
624	179.166	31.328	0.4525	254.33	625.06	0.4781	1.0584	1.3988	1.3132	2.1258	1.9888	0.07663	0.01205	0.19226	0.02235
625	179.300	31.318	0.4516	254.51	625.02	0.4784	1.0582	1.3995	1.3146	2.1268	1.9903	0.07657	0.01205	0.19214	0.02236
626	179.434	31.307	0.4508	254.70	624.98	0.4786	1.0580	1.4003	1.3161	2.1278	1.9918	0.07652	0.01206	0.19203	0.02238
627	179.567	31.297	0.4500	254.88	624.93	0.4789	1.0578	1.4010	1.3175	2.1288	1.9933	0.07646	0.01206	0.19192	0.02240
628	179.701	31.287	0.4491	255.06	624.89	0.4792	1.0576	1.4017	1.3190	2.1298	1.9948	0.07640	0.01207	0.19181	0.02241
629	179.835	31.277	0.4483	255.25	624.85	0.4795	1.0574	1.4025	1.3205	2.1308	1.9963	0.07635	0.01207	0.19169	0.02243

R-717 (anhydrous ammonia) Properties at Saturation

P [psia]	T [F]	ρ [lb/ft^3]	v [ft^3/lb]	h [Btu/lb]		s [Btu/R-lb]		Cp [Btu/R-lb]		Cp/Cv [unitless]		μ [centipose]		k [Btu/hr-ft-R]	
Bulk	Bulk	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
630	179.968	31.266	0.4475	255.43	624.81	0.4797	1.0572	1.4032	1.3220	2.1318	1.9978	0.07629	0.01207	0.19158	0.02245
631	180.101	31.256	0.4467	255.61	624.76	0.4800	1.0570	1.4039	1.3234	2.1328	1.9993	0.07623	0.01208	0.19147	0.02246
632	180.234	31.246	0.4458	255.79	624.72	0.4803	1.0568	1.4046	1.3249	2.1338	2.0008	0.07618	0.01208	0.19136	0.02248
633	180.367	31.236	0.4450	255.98	624.68	0.4806	1.0566	1.4054	1.3264	2.1349	2.0023	0.07612	0.01209	0.19125	0.02249
634	180.500	31.225	0.4442	256.16	624.64	0.4808	1.0564	1.4061	1.3279	2.1359	2.0039	0.07607	0.01209	0.19114	0.02251
635	180.632	31.215	0.4434	256.34	624.59	0.4811	1.0562	1.4069	1.3294	2.1369	2.0054	0.07601	0.01209	0.19103	0.02253
636	180.764	31.205	0.4426	256.52	624.55	0.4814	1.0560	1.4076	1.3308	2.1379	2.0069	0.07595	0.01210	0.19092	0.02254
637	180.897	31.195	0.4418	256.70	624.51	0.4817	1.0558	1.4083	1.3323	2.1389	2.0084	0.07590	0.01210	0.19081	0.02256
638	181.029	31.185	0.4410	256.88	624.46	0.4819	1.0557	1.4091	1.3338	2.1399	2.0100	0.07584	0.01211	0.19070	0.02258
639	181.161	31.174	0.4402	257.06	624.42	0.4822	1.0555	1.4098	1.3353	2.1410	2.0115	0.07579	0.01211	0.19058	0.02259
640	181.292	31.164	0.4394	257.25	624.38	0.4825	1.0553	1.4105	1.3368	2.1420	2.0130	0.07573	0.01212	0.19047	0.02261
641	181.424	31.154	0.4386	257.43	624.33	0.4828	1.0551	1.4113	1.3383	2.1430	2.0146	0.07568	0.01212	0.19036	0.02263
642	181.555	31.144	0.4378	257.61	624.29	0.4830	1.0549	1.4120	1.3398	2.1440	2.0161	0.07562	0.01212	0.19025	0.02265
643	181.687	31.134	0.4370	257.79	624.25	0.4833	1.0547	1.4128	1.3413	2.1450	2.0177	0.07557	0.01213	0.19014	0.02266
644	181.818	31.123	0.4362	257.97	624.20	0.4836	1.0545	1.4135	1.3428	2.1461	2.0192	0.07551	0.01213	0.19003	0.02268
645	181.949	31.113	0.4354	258.15	624.16	0.4838	1.0543	1.4143	1.3443	2.1471	2.0208	0.07546	0.01214	0.18992	0.02270
646	182.080	31.103	0.4346	258.33	624.12	0.4841	1.0541	1.4150	1.3458	2.1481	2.0223	0.07540	0.01214	0.18982	0.02271
647	182.210	31.093	0.4338	258.51	624.07	0.4844	1.0539	1.4158	1.3473	2.1492	2.0239	0.07535	0.01214	0.18971	0.02273
648	182.341	31.083	0.4330	258.69	624.03	0.4847	1.0537	1.4165	1.3489	2.1502	2.0254	0.07529	0.01215	0.18960	0.02275
649	182.471	31.072	0.4323	258.87	623.98	0.4849	1.0535	1.4173	1.3504	2.1512	2.0270	0.07524	0.01215	0.18949	0.02276
650	182.601	31.062	0.4315	259.05	623.94	0.4852	1.0533	1.4180	1.3519	2.1523	2.0286	0.07518	0.01216	0.18938	0.02278
651	182.731	31.052	0.4307	259.23	623.89	0.4855	1.0531	1.4188	1.3534	2.1533	2.0301	0.07513	0.01216	0.18927	0.02280
652	182.861	31.042	0.4299	259.41	623.85	0.4857	1.0529	1.4196	1.3549	2.1543	2.0317	0.07507	0.01217	0.18916	0.02281
653	182.991	31.032	0.4292	259.59	623.81	0.4860	1.0527	1.4203	1.3565	2.1554	2.0333	0.07502	0.01217	0.18905	0.02283
654	183.121	31.022	0.4284	259.77	623.76	0.4863	1.0525	1.4211	1.3580	2.1564	2.0348	0.07496	0.01217	0.18894	0.02285
655	183.250	31.011	0.4276	259.95	623.72	0.4865	1.0524	1.4218	1.3595	2.1575	2.0364	0.07491	0.01218	0.18883	0.02286
656	183.380	31.001	0.4269	260.13	623.67	0.4868	1.0522	1.4226	1.3611	2.1585	2.0380	0.07486	0.01218	0.18873	0.02288
657	183.509	30.991	0.4261	260.30	623.63	0.4871	1.0520	1.4234	1.3626	2.1596	2.0396	0.07480	0.01219	0.18862	0.02290
658	183.638	30.981	0.4254	260.48	623.58	0.4874	1.0518	1.4241	1.3641	2.1606	2.0412	0.07475	0.01219	0.18851	0.02292
659	183.767	30.971	0.4246	260.66	623.54	0.4876	1.0516	1.4249	1.3657	2.1617	2.0428	0.07469	0.01219	0.18840	0.02293
660	183.895	30.961	0.4238	260.84	623.49	0.4879	1.0514	1.4257	1.3672	2.1627	2.0444	0.07464	0.01220	0.18829	0.02295
661	184.024	30.951	0.4231	261.02	623.45	0.4882	1.0512	1.4264	1.3688	2.1638	2.0460	0.07459	0.01220	0.18819	0.02297
662	184.152	30.940	0.4223	261.20	623.40	0.4884	1.0510	1.4272	1.3703	2.1648	2.0476	0.07453	0.01221	0.18808	0.02298
663	184.281	30.930	0.4216	261.37	623.36	0.4887	1.0508	1.4280	1.3719	2.1659	2.0492	0.07448	0.01221	0.18797	0.02300
664	184.409	30.920	0.4208	261.55	623.31	0.4890	1.0506	1.4288	1.3734	2.1669	2.0508	0.07442	0.01222	0.18786	0.02302
665	184.537	30.910	0.4201	261.73	623.27	0.4892	1.0504	1.4295	1.3750	2.1680	2.0524	0.07437	0.01222	0.18776	0.02304
666	184.665	30.900	0.4194	261.91	623.22	0.4895	1.0502	1.4303	1.3765	2.1691	2.0540	0.07432	0.01222	0.18765	0.02305

R-717 (anhydrous ammonia) Properties at Saturation

P [psia]	T [F]	ρ [lb/ft^3]	v [ft^3/lb]	h [Btu/lb]		s [Btu/R-lb]		Cp [Btu/R-lb]		Cp/Cv [unitless]		μ [centipose]		k [Btu/hr-ft-R]	
Bulk	Bulk	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
667	184.793	30.890	0.4186	262.09	623.17	0.4898	1.0501	1.4311	1.3781	2.1701	2.0556	0.07426	0.01223	0.18754	0.02307
668	184.920	30.880	0.4179	262.26	623.13	0.4900	1.0499	1.4319	1.3797	2.1712	2.0572	0.07421	0.01223	0.18744	0.02309
669	185.048	30.870	0.4171	262.44	623.08	0.4903	1.0497	1.4326	1.3812	2.1723	2.0589	0.07416	0.01224	0.18733	0.02310
670	185.175	30.859	0.4164	262.62	623.04	0.4906	1.0495	1.4334	1.3828	2.1733	2.0605	0.07411	0.01224	0.18722	0.02312
671	185.302	30.849	0.4157	262.79	622.99	0.4908	1.0493	1.4342	1.3844	2.1744	2.0621	0.07405	0.01224	0.18712	0.02314
672	185.429	30.839	0.4149	262.97	622.94	0.4911	1.0491	1.4350	1.3859	2.1755	2.0638	0.07400	0.01225	0.18701	0.02316
673	185.556	30.829	0.4142	263.15	622.90	0.4914	1.0489	1.4358	1.3875	2.1765	2.0654	0.07395	0.01225	0.18690	0.02317
674	185.683	30.819	0.4135	263.32	622.85	0.4916	1.0487	1.4366	1.3891	2.1776	2.0670	0.07389	0.01226	0.18680	0.02319
675	185.809	30.809	0.4128	263.50	622.81	0.4919	1.0485	1.4374	1.3907	2.1787	2.0687	0.07384	0.01226	0.18669	0.02321
676	185.936	30.799	0.4120	263.68	622.76	0.4921	1.0483	1.4382	1.3923	2.1798	2.0703	0.07379	0.01227	0.18659	0.02323
677	186.062	30.789	0.4113	263.85	622.71	0.4924	1.0481	1.4389	1.3939	2.1808	2.0720	0.07374	0.01227	0.18648	0.02324
678	186.188	30.779	0.4106	264.03	622.67	0.4927	1.0480	1.4397	1.3955	2.1819	2.0736	0.07368	0.01227	0.18637	0.02326
679	186.314	30.769	0.4099	264.21	622.62	0.4929	1.0478	1.4405	1.3970	2.1830	2.0753	0.07363	0.01228	0.18627	0.02328
680	186.440	30.759	0.4092	264.38	622.57	0.4932	1.0476	1.4413	1.3986	2.1841	2.0769	0.07358	0.01228	0.18616	0.02329
681	186.566	30.748	0.4085	264.56	622.53	0.4935	1.0474	1.4421	1.4002	2.1852	2.0786	0.07353	0.01229	0.18606	0.02331
682	186.691	30.738	0.4078	264.73	622.48	0.4937	1.0472	1.4429	1.4018	2.1862	2.0802	0.07347	0.01229	0.18595	0.02333
683	186.817	30.728	0.4070	264.91	622.43	0.4940	1.0470	1.4437	1.4034	2.1873	2.0819	0.07342	0.01229	0.18585	0.02335
684	186.942	30.718	0.4063	265.09	622.39	0.4942	1.0468	1.4445	1.4051	2.1884	2.0836	0.07337	0.01230	0.18574	0.02336
685	187.067	30.708	0.4056	265.26	622.34	0.4945	1.0466	1.4453	1.4067	2.1895	2.0853	0.07332	0.01230	0.18564	0.02338
686	187.192	30.698	0.4049	265.44	622.29	0.4948	1.0464	1.4461	1.4083	2.1906	2.0869	0.07327	0.01231	0.18553	0.02340
687	187.317	30.688	0.4042	265.61	622.24	0.4950	1.0463	1.4469	1.4099	2.1917	2.0886	0.07322	0.01231	0.18543	0.02342
688	187.442	30.678	0.4035	265.79	622.20	0.4953	1.0461	1.4478	1.4115	2.1928	2.0903	0.07316	0.01232	0.18532	0.02344
689	187.567	30.668	0.4028	265.96	622.15	0.4956	1.0459	1.4486	1.4131	2.1939	2.0920	0.07311	0.01232	0.18522	0.02345
690	187.691	30.658	0.4021	266.14	622.10	0.4958	1.0457	1.4494	1.4148	2.1950	2.0937	0.07306	0.01232	0.18512	0.02347
691	187.816	30.648	0.4014	266.31	622.05	0.4961	1.0455	1.4502	1.4164	2.1961	2.0954	0.07301	0.01233	0.18501	0.02349
692	187.940	30.638	0.4008	266.48	622.01	0.4963	1.0453	1.4510	1.4180	2.1972	2.0971	0.07296	0.01233	0.18491	0.02351
693	188.064	30.628	0.4001	266.66	621.96	0.4966	1.0451	1.4518	1.4196	2.1983	2.0988	0.07291	0.01234	0.18480	0.02352
694	188.188	30.618	0.3994	266.83	621.91	0.4969	1.0449	1.4526	1.4213	2.1994	2.1005	0.07285	0.01234	0.18470	0.02354
695	188.312	30.608	0.3987	267.01	621.86	0.4971	1.0447	1.4534	1.4229	2.2005	2.1022	0.07280	0.01235	0.18460	0.02356
696	188.435	30.598	0.3980	267.18	621.81	0.4974	1.0446	1.4543	1.4246	2.2016	2.1039	0.07275	0.01235	0.18449	0.02358
697	188.559	30.588	0.3973	267.36	621.77	0.4976	1.0444	1.4551	1.4262	2.2028	2.1056	0.07270	0.01235	0.18439	0.02359
698	188.682	30.578	0.3967	267.53	621.72	0.4979	1.0442	1.4559	1.4278	2.2039	2.1073	0.07265	0.01236	0.18428	0.02361
699	188.806	30.568	0.3960	267.70	621.67	0.4982	1.0440	1.4567	1.4295	2.2050	2.1090	0.07260	0.01236	0.18418	0.02363
700	188.929	30.558	0.3953	267.88	621.62	0.4984	1.0438	1.4576	1.4311	2.2061	2.1108	0.07255	0.01237	0.18408	0.02365
701	189.052	30.548	0.3946	268.05	621.57	0.4987	1.0436	1.4584	1.4328	2.2072	2.1125	0.07250	0.01237	0.18397	0.02367
702	189.175	30.538	0.3939	268.22	621.52	0.4989	1.0434	1.4592	1.4345	2.2083	2.1142	0.07245	0.01238	0.18387	0.02368
703	189.298	30.527	0.3933	268.40	621.48	0.4992	1.0432	1.4601	1.4361	2.2095	2.1159	0.07240	0.01238	0.18377	0.02370

R-717 (anhydrous ammonia) Properties at Saturation

P [psia]	T [F]	ρ [lb/ft^3]	v [ft^3/lb]	h [Btu/lb]		s [Btu/R-lb]		Cp [Btu/R-lb]		Cp/Cv [unitless]		μ [centipose]		k [Btu/hr-ft-R]	
Bulk	Bulk	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
704	189.420	30.517	0.3926	268.57	621.43	0.4994	1.0431	1.4609	1.4378	2.2106	2.1177	0.07235	0.01238	0.18367	0.02372
705	189.543	30.507	0.3919	268.74	621.38	0.4997	1.0429	1.4617	1.4395	2.2117	2.1194	0.07230	0.01239	0.18356	0.02374
706	189.665	30.497	0.3913	268.92	621.33	0.5000	1.0427	1.4626	1.4411	2.2128	2.1212	0.07225	0.01239	0.18346	0.02376
707	189.787	30.487	0.3906	269.09	621.28	0.5002	1.0425	1.4634	1.4428	2.2140	2.1229	0.07219	0.01240	0.18336	0.02377
708	189.909	30.477	0.3900	269.26	621.23	0.5005	1.0423	1.4642	1.4445	2.2151	2.1247	0.07214	0.01240	0.18326	0.02379
709	190.031	30.467	0.3893	269.43	621.18	0.5007	1.0421	1.4651	1.4462	2.2162	2.1264	0.07209	0.01241	0.18315	0.02381
710	190.153	30.457	0.3886	269.61	621.13	0.5010	1.0419	1.4659	1.4478	2.2174	2.1282	0.07204	0.01241	0.18305	0.02383
711	190.275	30.447	0.3880	269.78	621.08	0.5012	1.0418	1.4668	1.4495	2.2185	2.1299	0.07199	0.01241	0.18295	0.02385
712	190.397	30.437	0.3873	269.95	621.03	0.5015	1.0416	1.4676	1.4512	2.2196	2.1317	0.07194	0.01242	0.18285	0.02386
713	190.518	30.427	0.3867	270.12	620.99	0.5017	1.0414	1.4684	1.4529	2.2208	2.1335	0.07189	0.01242	0.18275	0.02388
714	190.639	30.417	0.3860	270.30	620.94	0.5020	1.0412	1.4693	1.4546	2.2219	2.1352	0.07184	0.01243	0.18264	0.02390
715	190.761	30.407	0.3854	270.47	620.89	0.5023	1.0410	1.4701	1.4563	2.2231	2.1370	0.07179	0.01243	0.18254	0.02392
716	190.882	30.397	0.3847	270.64	620.84	0.5025	1.0408	1.4710	1.4580	2.2242	2.1388	0.07174	0.01244	0.18244	0.02394
717	191.003	30.387	0.3841	270.81	620.79	0.5028	1.0406	1.4718	1.4597	2.2254	2.1406	0.07169	0.01244	0.18234	0.02396
718	191.124	30.378	0.3834	270.98	620.74	0.5030	1.0404	1.4727	1.4614	2.2265	2.1424	0.07165	0.01244	0.18224	0.02397
719	191.244	30.368	0.3828	271.15	620.69	0.5033	1.0403	1.4736	1.4631	2.2277	2.1442	0.07160	0.01245	0.18214	0.02399
720	191.365	30.358	0.3821	271.33	620.64	0.5035	1.0401	1.4744	1.4648	2.2288	2.1459	0.07155	0.01245	0.18204	0.02401
721	191.485	30.348	0.3815	271.50	620.59	0.5038	1.0399	1.4753	1.4665	2.2300	2.1477	0.07150	0.01246	0.18193	0.02403
722	191.606	30.338	0.3809	271.67	620.54	0.5040	1.0397	1.4761	1.4683	2.2311	2.1495	0.07145	0.01246	0.18183	0.02405
723	191.726	30.328	0.3802	271.84	620.49	0.5043	1.0395	1.4770	1.4700	2.2323	2.1514	0.07140	0.01247	0.18173	0.02407
724	191.846	30.318	0.3796	272.01	620.44	0.5045	1.0393	1.4779	1.4717	2.2335	2.1532	0.07135	0.01247	0.18163	0.02408
725	191.966	30.308	0.3790	272.18	620.39	0.5048	1.0392	1.4787	1.4734	2.2346	2.1550	0.07130	0.01247	0.18153	0.02410
726	192.086	30.298	0.3783	272.35	620.33	0.5051	1.0390	1.4796	1.4752	2.2358	2.1568	0.07125	0.01248	0.18143	0.02412
727	192.205	30.288	0.3777	272.52	620.28	0.5053	1.0388	1.4805	1.4769	2.2370	2.1586	0.07120	0.01248	0.18133	0.02414
728	192.325	30.278	0.3771	272.69	620.23	0.5056	1.0386	1.4813	1.4786	2.2381	2.1604	0.07115	0.01249	0.18123	0.02416
729	192.444	30.268	0.3764	272.86	620.18	0.5058	1.0384	1.4822	1.4804	2.2393	2.1623	0.07110	0.01249	0.18113	0.02418
730	192.564	30.258	0.3758	273.03	620.13	0.5061	1.0382	1.4831	1.4821	2.2405	2.1641	0.07106	0.01250	0.18103	0.02420
731	192.683	30.248	0.3752	273.21	620.08	0.5063	1.0380	1.4840	1.4839	2.2416	2.1659	0.07101	0.01250	0.18093	0.02421
732	192.802	30.238	0.3746	273.38	620.03	0.5066	1.0379	1.4848	1.4856	2.2428	2.1678	0.07096	0.01250	0.18083	0.02423
733	192.921	30.228	0.3740	273.55	619.98	0.5068	1.0377	1.4857	1.4874	2.2440	2.1696	0.07091	0.01251	0.18073	0.02425
734	193.040	30.218	0.3733	273.72	619.93	0.5071	1.0375	1.4866	1.4891	2.2452	2.1714	0.07086	0.01251	0.18063	0.02427
735	193.159	30.208	0.3727	273.89	619.88	0.5073	1.0373	1.4875	1.4909	2.2464	2.1733	0.07081	0.01252	0.18053	0.02429
736	193.277	30.198	0.3721	274.06	619.83	0.5076	1.0371	1.4884	1.4926	2.2475	2.1752	0.07076	0.01252	0.18043	0.02431
737	193.396	30.188	0.3715	274.22	619.77	0.5078	1.0369	1.4892	1.4944	2.2487	2.1770	0.07071	0.01253	0.18033	0.02433
738	193.514	30.178	0.3709	274.39	619.72	0.5081	1.0368	1.4901	1.4962	2.2499	2.1789	0.07067	0.01253	0.18023	0.02434
739	193.632	30.168	0.3703	274.56	619.67	0.5083	1.0366	1.4910	1.4980	2.2511	2.1807	0.07062	0.01254	0.18013	0.02436
740	193.750	30.158	0.3697	274.73	619.62	0.5086	1.0364	1.4919	1.4997	2.2523	2.1826	0.07057	0.01254	0.18003	0.02438

R-717 (anhydrous ammonia) Properties at Saturation

P [psia]	T [F]	ρ [lb/ft^3]	v [ft^3/lb]	h [Btu/lb]		s [Btu/R-lb]		Cp [Btu/R-lb]		Cp/Cv [unitless]		μ [centipose]		k [Btu/hr-ft-R]	
Bulk	Bulk	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
741	193.868	30.148	0.3691	274.90	619.57	0.5088	1.0362	1.4928	1.5015	2.2535	2.1845	0.07052	0.01254	0.17994	0.02440
742	193.986	30.138	0.3684	275.07	619.52	0.5091	1.0360	1.4937	1.5033	2.2547	2.1864	0.07047	0.01255	0.17984	0.02442
743	194.104	30.129	0.3678	275.24	619.46	0.5093	1.0358	1.4946	1.5051	2.2559	2.1882	0.07043	0.01255	0.17974	0.02444
744	194.222	30.119	0.3672	275.41	619.41	0.5096	1.0356	1.4955	1.5069	2.2571	2.1901	0.07038	0.01256	0.17964	0.02446
745	194.339	30.109	0.3666	275.58	619.36	0.5098	1.0355	1.4964	1.5087	2.2583	2.1920	0.07033	0.01256	0.17954	0.02448
746	194.457	30.099	0.3660	275.75	619.31	0.5101	1.0353	1.4973	1.5105	2.2595	2.1939	0.07028	0.01257	0.17944	0.02450
747	194.574	30.089	0.3654	275.92	619.26	0.5103	1.0351	1.4982	1.5123	2.2607	2.1958	0.07023	0.01257	0.17934	0.02451
748	194.691	30.079	0.3648	276.09	619.20	0.5106	1.0349	1.4991	1.5141	2.2619	2.1977	0.07019	0.01257	0.17925	0.02453
749	194.808	30.069	0.3642	276.25	619.15	0.5108	1.0347	1.5000	1.5159	2.2631	2.1996	0.07014	0.01258	0.17915	0.02455
750	194.925	30.059	0.3637	276.42	619.10	0.5111	1.0345	1.5009	1.5177	2.2643	2.2015	0.07009	0.01258	0.17905	0.02457
751	195.042	30.049	0.3631	276.59	619.05	0.5113	1.0344	1.5018	1.5195	2.2656	2.2034	0.07004	0.01259	0.17895	0.02459
752	195.158	30.039	0.3625	276.76	618.99	0.5116	1.0342	1.5027	1.5213	2.2668	2.2053	0.07000	0.01259	0.17885	0.02461
753	195.275	30.029	0.3619	276.93	618.94	0.5118	1.0340	1.5037	1.5231	2.2680	2.2073	0.06995	0.01260	0.17875	0.02463
754	195.391	30.019	0.3613	277.10	618.89	0.5120	1.0338	1.5046	1.5250	2.2692	2.2092	0.06990	0.01260	0.17866	0.02465
755	195.508	30.009	0.3607	277.26	618.83	0.5123	1.0336	1.5055	1.5268	2.2704	2.2111	0.06985	0.01261	0.17856	0.02467
756	195.624	30.000	0.3601	277.43	618.78	0.5125	1.0335	1.5064	1.5286	2.2717	2.2130	0.06981	0.01261	0.17846	0.02469
757	195.740	29.990	0.3595	277.60	618.73	0.5128	1.0333	1.5073	1.5305	2.2729	2.2150	0.06976	0.01261	0.17836	0.02471
758	195.856	29.980	0.3590	277.77	618.68	0.5130	1.0331	1.5083	1.5323	2.2741	2.2169	0.06971	0.01262	0.17827	0.02473
759	195.972	29.970	0.3584	277.93	618.62	0.5133	1.0329	1.5092	1.5341	2.2754	2.2189	0.06967	0.01262	0.17817	0.02474
760	196.088	29.960	0.3578	278.10	618.57	0.5135	1.0327	1.5101	1.5360	2.2766	2.2208	0.06962	0.01263	0.17807	0.02476
761	196.203	29.950	0.3572	278.27	618.52	0.5138	1.0325	1.5110	1.5378	2.2778	2.2228	0.06957	0.01263	0.17798	0.02478
762	196.319	29.940	0.3566	278.44	618.46	0.5140	1.0324	1.5120	1.5397	2.2791	2.2247	0.06952	0.01264	0.17788	0.02480
763	196.434	29.930	0.3561	278.60	618.41	0.5143	1.0322	1.5129	1.5416	2.2803	2.2267	0.06948	0.01264	0.17778	0.02482
764	196.550	29.920	0.3555	278.77	618.35	0.5145	1.0320	1.5138	1.5434	2.2816	2.2287	0.06943	0.01265	0.17768	0.02484
765	196.665	29.910	0.3549	278.94	618.30	0.5148	1.0318	1.5148	1.5453	2.2828	2.2306	0.06938	0.01265	0.17759	0.02486
766	196.780	29.900	0.3543	279.10	618.25	0.5150	1.0316	1.5157	1.5471	2.2841	2.2326	0.06934	0.01265	0.17749	0.02488
767	196.895	29.891	0.3538	279.27	618.19	0.5152	1.0314	1.5167	1.5490	2.2853	2.2346	0.06929	0.01266	0.17739	0.02490
768	197.010	29.881	0.3532	279.44	618.14	0.5155	1.0313	1.5176	1.5509	2.2866	2.2366	0.06924	0.01266	0.17730	0.02492
769	197.124	29.871	0.3526	279.61	618.09	0.5157	1.0311	1.5185	1.5528	2.2878	2.2385	0.06920	0.01267	0.17720	0.02494
770	197.239	29.861	0.3521	279.77	618.03	0.5160	1.0309	1.5195	1.5547	2.2891	2.2405	0.06915	0.01267	0.17711	0.02496
771	197.354	29.851	0.3515	279.94	617.98	0.5162	1.0307	1.5204	1.5565	2.2903	2.2425	0.06910	0.01268	0.17701	0.02498
772	197.468	29.841	0.3509	280.10	617.92	0.5165	1.0305	1.5214	1.5584	2.2916	2.2445	0.06906	0.01268	0.17691	0.02500
773	197.582	29.831	0.3504	280.27	617.87	0.5167	1.0304	1.5223	1.5603	2.2929	2.2465	0.06901	0.01269	0.17682	0.02502
774	197.696	29.821	0.3498	280.44	617.81	0.5170	1.0302	1.5233	1.5622	2.2941	2.2485	0.06897	0.01269	0.17672	0.02504
775	197.811	29.811	0.3493	280.60	617.76	0.5172	1.0300	1.5242	1.5641	2.2954	2.2506	0.06892	0.01269	0.17662	0.02506
776	197.924	29.801	0.3487	280.77	617.70	0.5174	1.0298	1.5252	1.5660	2.2967	2.2526	0.06887	0.01270	0.17653	0.02508
777	198.038	29.792	0.3482	280.94	617.65	0.5177	1.0296	1.5262	1.5679	2.2979	2.2546	0.06883	0.01270	0.17643	0.02510

R-717 (anhydrous ammonia) Properties at Saturation

P [psia]	T [F]	ρ [lb/ft^3]	v [ft^3/lb]	h [Btu/lb]		s [Btu/R-lb]		Cp [Btu/R-lb]		Cp/Cv [unitless]		μ [centipose]		k [Btu/hr-ft-R]	
Bulk	Bulk	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor	Liquid	Vapor
778	198.152	29.782	0.3476	281.10	617.60	0.5179	1.0294	1.5271	1.5699	2.2992	2.2566	0.06878	0.01271	0.17634	0.02512
779	198.266	29.772	0.3470	281.27	617.54	0.5182	1.0293	1.5281	1.5718	2.3005	2.2587	0.06874	0.01271	0.17624	0.02514
780	198.379	29.762	0.3465	281.43	617.49	0.5184	1.0291	1.5291	1.5737	2.3018	2.2607	0.06869	0.01272	0.17615	0.02516

R-717 (anhydrous ammonia) Properties in the Subcooled Superheat Regions

P=10 psia (-41.31 F)

T	P	ρ	v	h	s	Cp	Cp/Cv	Quality	μ	k
[F]	[psia]	[lb/ft^3]	[ft^3/lb]	[Btu/lb]	[Btu/R-lb]	[Btu/R-lb]	[unitless]	[unitless]	[centipoise]	[Btu/h-ft-R]
-50	10	43.5021	0.0230	-10.51	-0.0254	1.0478	1.5244	Subcooled	0.30619	0.408791
-45	10	43.2943	0.0231	-5.27	-0.0126	1.0514	1.5322	Subcooled	0.29328	0.403304
-40	10	0.0386	25.8942	597.58	1.4284	0.5342	1.3408	Superheated	0.00786	0.011932
-35	10	0.0381	26.2334	600.24	1.4347	0.5309	1.3392	Superheated	0.00795	0.011998
-30	10	0.0376	26.5709	602.89	1.4409	0.5280	1.3376	Superheated	0.00804	0.012067
-25	10	0.0372	26.9070	605.52	1.4470	0.5254	1.3360	Superheated	0.00813	0.012140
-20	10	0.0367	27.2417	608.15	1.4530	0.5231	1.3346	Superheated	0.00822	0.012217
-15	10	0.0363	27.5752	610.76	1.4589	0.5211	1.3332	Superheated	0.00831	0.012297
-10	10	0.0358	27.9075	613.36	1.4647	0.5193	1.3318	Superheated	0.00841	0.012381
-5	10	0.0354	28.2388	615.95	1.4704	0.5177	1.3305	Superheated	0.00850	0.012469
0	10	0.0350	28.5692	618.53	1.4761	0.5164	1.3292	Superheated	0.00859	0.012560
5	10	0.0346	28.8987	621.11	1.4817	0.5152	1.3280	Superheated	0.00869	0.012655
10	10	0.0342	29.2273	623.69	1.4872	0.5142	1.3268	Superheated	0.00878	0.012753
15	10	0.0338	29.5552	626.26	1.4926	0.5134	1.3256	Superheated	0.00888	0.012855
20	10	0.0335	29.8825	628.82	1.4980	0.5127	1.3244	Superheated	0.00897	0.012960
25	10	0.0331	30.2090	631.38	1.5033	0.5121	1.3233	Superheated	0.00907	0.013068
30	10	0.0327	30.5350	633.94	1.5086	0.5116	1.3221	Superheated	0.00917	0.013180
35	10	0.0324	30.8604	636.50	1.5138	0.5113	1.3210	Superheated	0.00926	0.013296
40	10	0.0321	31.1853	639.06	1.5189	0.5110	1.3199	Superheated	0.00936	0.013415
45	10	0.0317	31.5097	641.61	1.5240	0.5109	1.3188	Superheated	0.00946	0.013537
50	10	0.0314	31.8336	644.16	1.5290	0.5108	1.3178	Superheated	0.00956	0.013662
55	10	0.0311	32.1572	646.72	1.5340	0.5108	1.3167	Superheated	0.00966	0.013791
60	10	0.0308	32.4803	649.27	1.5389	0.5109	1.3157	Superheated	0.00976	0.013923
65	10	0.0305	32.8031	651.83	1.5438	0.5111	1.3146	Superheated	0.00986	0.014058
70	10	0.0302	33.1255	654.38	1.5487	0.5113	1.3136	Superheated	0.00996	0.014196
75	10	0.0299	33.4476	656.94	1.5535	0.5116	1.3126	Superheated	0.01006	0.014338
80	10	0.0296	33.7694	659.50	1.5583	0.5119	1.3115	Superheated	0.01016	0.014482
85	10	0.0293	34.0909	662.06	1.5630	0.5123	1.3105	Superheated	0.01026	0.014630
90	10	0.0291	34.4121	664.62	1.5677	0.5128	1.3095	Superheated	0.01037	0.014781
95	10	0.0288	34.7331	667.19	1.5723	0.5132	1.3085	Superheated	0.01047	0.014935
100	10	0.0285	35.0539	669.76	1.5769	0.5138	1.3075	Superheated	0.01057	0.015091
105	10	0.0283	35.3744	672.33	1.5815	0.5143	1.3065	Superheated	0.01067	0.015251
110	10	0.0280	35.6947	674.90	1.5860	0.5150	1.3055	Superheated	0.01078	0.015414
115	10	0.0278	36.0148	677.48	1.5905	0.5156	1.3045	Superheated	0.01088	0.015580
120	10	0.0275	36.3347	680.05	1.5950	0.5163	1.3036	Superheated	0.01098	0.015748
125	10	0.0273	36.6544	682.64	1.5994	0.5170	1.3026	Superheated	0.01109	0.015920
130	10	0.0270	36.9740	685.22	1.6038	0.5177	1.3016	Superheated	0.01119	0.016094
135	10	0.0268	37.2934	687.82	1.6082	0.5185	1.3006	Superheated	0.01130	0.016271
140	10	0.0266	37.6126	690.41	1.6126	0.5193	1.2997	Superheated	0.01140	0.016450
145	10	0.0264	37.9317	693.01	1.6169	0.5201	1.2987	Superheated	0.01151	0.016633
150	10	0.0261	38.2507	695.61	1.6212	0.5210	1.2977	Superheated	0.01161	0.016818

R-717 (anhydrous ammonia) Properties in the Subcooled Superheat Regions

P=15 psia (-27.25 F)

T	P	ρ	v	h	s	Cp	Cp/Cv	Quality	μ	k
[F]	[psia]	[lb/ft^3]	[ft^3/lb]	[Btu/lb]	[Btu/R-lb]	[Btu/R-lb]	[unitless]	[unitless]	[centipoise]	[Btu/h-ft-R]
-50	15	43.5031	0.0230	-10.50	-0.0254	1.0478	1.5243	Subcooled	0.30624	0.408817
-45	15	43.2953	0.0231	-5.25	-0.0126	1.0514	1.5321	Subcooled	0.29333	0.403330
-40	15	43.0856	0.0232	0.01	0.0000	1.0549	1.5398	Subcooled	0.28129	0.397871
-35	15	42.8740	0.0233	5.29	0.0125	1.0583	1.5474	Subcooled	0.27004	0.392443
-30	15	42.6606	0.0234	10.59	0.0249	1.0617	1.5550	Subcooled	0.25953	0.387046
-25	15	0.0563	17.7701	603.41	1.3958	0.5478	1.3469	Superheated	0.00811	0.012169
-20	15	0.0556	18.0005	606.14	1.4021	0.5439	1.3448	Superheated	0.00820	0.012245
-15	15	0.0549	18.2296	608.85	1.4082	0.5403	1.3428	Superheated	0.00829	0.012325
-10	15	0.0542	18.4575	611.54	1.4142	0.5371	1.3409	Superheated	0.00839	0.012409
-5	15	0.0535	18.6843	614.22	1.4202	0.5343	1.3391	Superheated	0.00848	0.012496
0	15	0.0529	18.9101	616.89	1.4260	0.5318	1.3373	Superheated	0.00857	0.012587
5	15	0.0523	19.1349	619.54	1.4317	0.5296	1.3357	Superheated	0.00867	0.012681
10	15	0.0517	19.3589	622.18	1.4374	0.5276	1.3341	Superheated	0.00877	0.012779
15	15	0.0511	19.5820	624.82	1.4430	0.5259	1.3325	Superheated	0.00886	0.012881
20	15	0.0505	19.8045	627.44	1.4485	0.5244	1.3310	Superheated	0.00896	0.012986
25	15	0.0499	20.0263	630.06	1.4539	0.5231	1.3296	Superheated	0.00906	0.013094
30	15	0.0494	20.2474	632.67	1.4593	0.5219	1.3282	Superheated	0.00915	0.013206
35	15	0.0489	20.4680	635.28	1.4646	0.5210	1.3268	Superheated	0.00925	0.013321
40	15	0.0483	20.6880	637.88	1.4698	0.5201	1.3254	Superheated	0.00935	0.013439
45	15	0.0478	20.9076	640.48	1.4750	0.5195	1.3241	Superheated	0.00945	0.013561
50	15	0.0473	21.1266	643.08	1.4801	0.5189	1.3228	Superheated	0.00955	0.013686
55	15	0.0468	21.3453	645.67	1.4852	0.5185	1.3216	Superheated	0.00965	0.013815
60	15	0.0464	21.5635	648.26	1.4902	0.5181	1.3203	Superheated	0.00975	0.013946
65	15	0.0459	21.7813	650.85	1.4951	0.5179	1.3191	Superheated	0.00985	0.014081
70	15	0.0455	21.9988	653.44	1.5000	0.5177	1.3179	Superheated	0.00995	0.014219
75	15	0.0450	22.2160	656.03	1.5049	0.5177	1.3167	Superheated	0.01005	0.014361
80	15	0.0446	22.4328	658.62	1.5097	0.5177	1.3155	Superheated	0.01015	0.014505
85	15	0.0442	22.6494	661.21	1.5145	0.5178	1.3144	Superheated	0.01026	0.014652
90	15	0.0437	22.8656	663.80	1.5192	0.5180	1.3132	Superheated	0.01036	0.014803
95	15	0.0433	23.0816	666.39	1.5239	0.5182	1.3121	Superheated	0.01046	0.014957
100	15	0.0429	23.2974	668.98	1.5286	0.5185	1.3109	Superheated	0.01056	0.015113
105	15	0.0425	23.5130	671.57	1.5332	0.5188	1.3098	Superheated	0.01067	0.015273
110	15	0.0421	23.7283	674.17	1.5378	0.5192	1.3087	Superheated	0.01077	0.015435
115	15	0.0418	23.9434	676.76	1.5423	0.5197	1.3076	Superheated	0.01087	0.015601
120	15	0.0414	24.1583	679.36	1.5468	0.5202	1.3065	Superheated	0.01098	0.015769
125	15	0.0410	24.3731	681.97	1.5513	0.5207	1.3055	Superheated	0.01108	0.015940
130	15	0.0407	24.5876	684.57	1.5557	0.5213	1.3044	Superheated	0.01119	0.016114
135	15	0.0403	24.8020	687.18	1.5601	0.5219	1.3033	Superheated	0.01129	0.016291
140	15	0.0400	25.0163	689.79	1.5645	0.5226	1.3023	Superheated	0.01140	0.016471
145	15	0.0396	25.2304	692.41	1.5688	0.5233	1.3012	Superheated	0.01150	0.016653
150	15	0.0393	25.4443	695.02	1.5731	0.5240	1.3002	Superheated	0.01161	0.016838

R-717 (anhydrous ammonia) Properties in the Subcooled Superheat Regions

P=20 psia (-16.61 F)

T	P	ρ	v	h	s	Cp	Cp/Cv	Quality	μ	k
[F]	[psia]	[lb/ft^3]	[ft^3/lb]	[Btu/lb]	[Btu/R-lb]	[Btu/R-lb]	[unitless]	[unitless]	[centipoise]	[Btu/h-ft-R]
-50	20	43.5040	0.0230	-10.49	-0.0254	1.0478	1.5243	Subcooled	0.30629	0.408842
-45	20	43.2963	0.0231	-5.24	-0.0127	1.0513	1.5320	Subcooled	0.29337	0.403356
-40	20	43.0866	0.0232	0.02	0.0000	1.0548	1.5397	Subcooled	0.28133	0.397897
-35	20	42.8751	0.0233	5.31	0.0125	1.0583	1.5473	Subcooled	0.27009	0.392470
-30	20	42.6616	0.0234	10.61	0.0249	1.0617	1.5549	Subcooled	0.25957	0.387073
-25	20	42.4463	0.0236	15.92	0.0372	1.0650	1.5624	Subcooled	0.24971	0.381709
-20	20	42.2291	0.0237	21.26	0.0494	1.0684	1.5699	Subcooled	0.24046	0.376379
-15	20	0.0738	13.5540	606.89	1.3712	0.5609	1.3532	Superheated	0.00827	0.012354
-10	20	0.0728	13.7299	609.68	1.3774	0.5561	1.3506	Superheated	0.00837	0.012437
-5	20	0.0719	13.9047	612.45	1.3836	0.5519	1.3482	Superheated	0.00846	0.012524
0	20	0.0710	14.0784	615.20	1.3896	0.5481	1.3460	Superheated	0.00856	0.012615
5	20	0.0702	14.2512	617.93	1.3955	0.5447	1.3438	Superheated	0.00865	0.012709
10	20	0.0693	14.4230	620.65	1.4013	0.5417	1.3418	Superheated	0.00875	0.012806
15	20	0.0685	14.5940	623.35	1.4070	0.5390	1.3398	Superheated	0.00885	0.012907
20	20	0.0677	14.7642	626.04	1.4126	0.5367	1.3380	Superheated	0.00894	0.013012
25	20	0.0670	14.9337	628.72	1.4182	0.5345	1.3362	Superheated	0.00904	0.013120
30	20	0.0662	15.1026	631.38	1.4237	0.5327	1.3344	Superheated	0.00914	0.013231
35	20	0.0655	15.2708	634.04	1.4291	0.5310	1.3328	Superheated	0.00924	0.013346
40	20	0.0648	15.4385	636.69	1.4344	0.5296	1.3311	Superheated	0.00934	0.013464
45	20	0.0641	15.6057	639.34	1.4397	0.5283	1.3296	Superheated	0.00944	0.013586
50	20	0.0634	15.7724	641.98	1.4449	0.5272	1.3280	Superheated	0.00954	0.013711
55	20	0.0627	15.9386	644.61	1.4500	0.5263	1.3266	Superheated	0.00964	0.013839
60	20	0.0621	16.1044	647.24	1.4551	0.5255	1.3251	Superheated	0.00974	0.013970
65	20	0.0615	16.2699	649.87	1.4601	0.5249	1.3237	Superheated	0.00984	0.014105
70	20	0.0608	16.4349	652.49	1.4651	0.5244	1.3223	Superheated	0.00994	0.014243
75	20	0.0602	16.5997	655.11	1.4700	0.5240	1.3209	Superheated	0.01004	0.014384
80	20	0.0597	16.7641	657.73	1.4749	0.5236	1.3196	Superheated	0.01014	0.014528
85	20	0.0591	16.9282	660.35	1.4797	0.5234	1.3183	Superheated	0.01025	0.014675
90	20	0.0585	17.0920	662.96	1.4845	0.5233	1.3170	Superheated	0.01035	0.014825
95	20	0.0580	17.2556	665.58	1.4893	0.5233	1.3157	Superheated	0.01045	0.014979
100	20	0.0574	17.4189	668.20	1.4940	0.5233	1.3144	Superheated	0.01056	0.015135
105	20	0.0569	17.5819	670.81	1.4986	0.5234	1.3132	Superheated	0.01066	0.015295
110	20	0.0564	17.7448	673.43	1.5032	0.5236	1.3120	Superheated	0.01076	0.015457
115	20	0.0558	17.9074	676.05	1.5078	0.5239	1.3108	Superheated	0.01087	0.015622
120	20	0.0553	18.0699	678.67	1.5123	0.5242	1.3096	Superheated	0.01097	0.015790
125	20	0.0548	18.2321	681.29	1.5169	0.5245	1.3084	Superheated	0.01108	0.015961
130	20	0.0544	18.3942	683.92	1.5213	0.5249	1.3072	Superheated	0.01118	0.016135
135	20	0.0539	18.5561	686.54	1.5258	0.5254	1.3061	Superheated	0.01129	0.016312
140	20	0.0534	18.7179	689.17	1.5302	0.5259	1.3049	Superheated	0.01139	0.016491
145	20	0.0530	18.8795	691.80	1.5345	0.5265	1.3038	Superheated	0.01150	0.016673
150	20	0.0525	19.0410	694.43	1.5389	0.5271	1.3027	Superheated	0.01160	0.016858

R-717 (anhydrous ammonia) Properties in the Subcooled Superheat Regions

P=25 psia (-7.93 F)

T	P	ρ	v	h	s	Cp	Cp/Cv	Quality	μ	k
[F]	[psia]	[lb/ft^3]	[ft^3/lb]	[Btu/lb]	[Btu/R-lb]	[Btu/R-lb]	[unitless]	[unitless]	[centipoise]	[Btu/h-ft-R]
-50	25	43.5050	0.0230	-10.48	-0.0254	1.0477	1.5242	Subcooled	0.30634	0.408868
-45	25	43.2972	0.0231	-5.23	-0.0127	1.0513	1.5319	Subcooled	0.29342	0.403381
-40	25	43.0876	0.0232	0.04	-0.0001	1.0548	1.5396	Subcooled	0.28138	0.397924
-35	25	42.8761	0.0233	5.32	0.0125	1.0582	1.5473	Subcooled	0.27013	0.392496
-30	25	42.6627	0.0234	10.62	0.0249	1.0616	1.5548	Subcooled	0.25961	0.387100
-25	25	42.4474	0.0236	15.94	0.0372	1.0650	1.5623	Subcooled	0.24976	0.381737
-20	25	42.2302	0.0237	21.27	0.0494	1.0683	1.5698	Subcooled	0.24050	0.376407
-15	25	42.0111	0.0238	26.62	0.0615	1.0716	1.5772	Subcooled	0.23181	0.371112
-10	25	41.7902	0.0239	31.99	0.0735	1.0749	1.5847	Subcooled	0.22361	0.365852
-5	25	0.0906	11.0351	610.63	1.3544	0.5706	1.3580	Superheated	0.00844	0.012553
0	25	0.0895	11.1777	613.47	1.3606	0.5654	1.3551	Superheated	0.00854	0.012643
5	25	0.0883	11.3194	616.28	1.3667	0.5607	1.3525	Superheated	0.00863	0.012736
10	25	0.0873	11.4601	619.08	1.3727	0.5566	1.3499	Superheated	0.00873	0.012834
15	25	0.0862	11.5999	621.85	1.3785	0.5528	1.3475	Superheated	0.00883	0.012934
20	25	0.0852	11.7389	624.61	1.3843	0.5495	1.3452	Superheated	0.00893	0.013038
25	25	0.0842	11.8772	627.35	1.3900	0.5465	1.3430	Superheated	0.00903	0.013146
30	25	0.0832	12.0147	630.07	1.3956	0.5438	1.3410	Superheated	0.00912	0.013257
35	25	0.0823	12.1517	632.79	1.4011	0.5415	1.3390	Superheated	0.00922	0.013372
40	25	0.0814	12.2881	635.49	1.4065	0.5394	1.3371	Superheated	0.00932	0.013490
45	25	0.0805	12.4239	638.18	1.4119	0.5375	1.3352	Superheated	0.00942	0.013611
50	25	0.0796	12.5592	640.86	1.4172	0.5359	1.3334	Superheated	0.00952	0.013735
55	25	0.0788	12.6941	643.54	1.4224	0.5344	1.3317	Superheated	0.00963	0.013863
60	25	0.0780	12.8285	646.21	1.4276	0.5332	1.3300	Superheated	0.00973	0.013994
65	25	0.0771	12.9625	648.87	1.4327	0.5321	1.3284	Superheated	0.00983	0.014129
70	25	0.0764	13.0962	651.53	1.4377	0.5312	1.3268	Superheated	0.00993	0.014266
75	25	0.0756	13.2295	654.18	1.4427	0.5304	1.3253	Superheated	0.01003	0.014407
80	25	0.0748	13.3625	656.83	1.4476	0.5297	1.3237	Superheated	0.01013	0.014551
85	25	0.0741	13.4951	659.48	1.4525	0.5292	1.3223	Superheated	0.01024	0.014698
90	25	0.0734	13.6275	662.12	1.4573	0.5288	1.3208	Superheated	0.01034	0.014848
95	25	0.0727	13.7596	664.77	1.4621	0.5285	1.3194	Superheated	0.01044	0.015001
100	25	0.0720	13.8915	667.41	1.4669	0.5282	1.3180	Superheated	0.01055	0.015158
105	25	0.0713	14.0231	670.05	1.4716	0.5281	1.3166	Superheated	0.01065	0.015317
110	25	0.0706	14.1545	672.69	1.4762	0.5281	1.3153	Superheated	0.01076	0.015479
115	25	0.0700	14.2857	675.33	1.4808	0.5281	1.3140	Superheated	0.01086	0.015644
120	25	0.0694	14.4166	677.97	1.4854	0.5282	1.3127	Superheated	0.01096	0.015812
125	25	0.0687	14.5474	680.61	1.4900	0.5284	1.3114	Superheated	0.01107	0.015983
130	25	0.0681	14.6780	683.26	1.4945	0.5286	1.3101	Superheated	0.01117	0.016156
135	25	0.0675	14.8085	685.90	1.4989	0.5289	1.3089	Superheated	0.01128	0.016333
140	25	0.0669	14.9387	688.55	1.5033	0.5293	1.3076	Superheated	0.01139	0.016512
145	25	0.0664	15.0689	691.19	1.5077	0.5297	1.3064	Superheated	0.01149	0.016694
150	25	0.0658	15.1988	693.84	1.5121	0.5301	1.3052	Superheated	0.01160	0.016878

R-717 (anhydrous ammonia) Properties in the Subcooled Superheat Regions

P=30 psia (-0.54 F)

T	P	ρ	v	h	s	Cp	Cp/Cv	Quality	μ	k
[F]	[psia]	[lb/ft^3]	[ft^3/lb]	[Btu/lb]	[Btu/R-lb]	[Btu/R-lb]	[unitless]	[unitless]	[centipoise]	[Btu/h-ft-R]
-50	30	43.5059	0.0230	-10.46	-0.0254	1.0477	1.5241	Subcooled	0.30639	0.408893
-45	30	43.2982	0.0231	-5.22	-0.0127	1.0513	1.5319	Subcooled	0.29347	0.403407
-40	30	43.0886	0.0232	0.05	-0.0001	1.0548	1.5396	Subcooled	0.28142	0.397950
-35	30	42.8771	0.0233	5.33	0.0124	1.0582	1.5472	Subcooled	0.27017	0.392523
-30	30	42.6637	0.0234	10.63	0.0248	1.0616	1.5547	Subcooled	0.25965	0.387127
-25	30	42.4485	0.0236	15.95	0.0371	1.0650	1.5622	Subcooled	0.24980	0.381764
-20	30	42.2313	0.0237	21.28	0.0493	1.0683	1.5697	Subcooled	0.24055	0.376435
-15	30	42.0123	0.0238	26.63	0.0614	1.0716	1.5771	Subcooled	0.23185	0.371140
-10	30	41.7914	0.0239	32.00	0.0734	1.0749	1.5846	Subcooled	0.22365	0.365880
-5	30	41.5685	0.0241	37.38	0.0853	1.0781	1.5920	Subcooled	0.21592	0.360656
0	30	0.1082	9.2424	611.70	1.3363	0.5838	1.3649	Superheated	0.00852	0.012672
5	30	0.1068	9.3635	614.60	1.3426	0.5777	1.3616	Superheated	0.00862	0.012765
10	30	0.1054	9.4836	617.47	1.3487	0.5722	1.3585	Superheated	0.00871	0.012862
15	30	0.1041	9.6028	620.32	1.3548	0.5673	1.3556	Superheated	0.00881	0.012962
20	30	0.1029	9.7211	623.15	1.3607	0.5629	1.3528	Superheated	0.00891	0.013066
25	30	0.1016	9.8386	625.95	1.3665	0.5590	1.3502	Superheated	0.00901	0.013173
30	30	0.1004	9.9554	628.74	1.3722	0.5555	1.3478	Superheated	0.00911	0.013284
35	30	0.0993	10.0716	631.51	1.3778	0.5523	1.3454	Superheated	0.00921	0.013398
40	30	0.0982	10.1871	634.26	1.3834	0.5495	1.3432	Superheated	0.00931	0.013515
45	30	0.0971	10.3021	637.00	1.3888	0.5470	1.3410	Superheated	0.00941	0.013636
50	30	0.0960	10.4166	639.73	1.3942	0.5448	1.3390	Superheated	0.00951	0.013760
55	30	0.0950	10.5306	642.45	1.3995	0.5428	1.3370	Superheated	0.00961	0.013888
60	30	0.0939	10.6441	645.16	1.4048	0.5410	1.3351	Superheated	0.00972	0.014019
65	30	0.0930	10.7573	647.86	1.4099	0.5395	1.3332	Superheated	0.00982	0.014153
70	30	0.0920	10.8700	650.56	1.4150	0.5381	1.3314	Superheated	0.00992	0.014290
75	30	0.0911	10.9824	653.25	1.4201	0.5370	1.3297	Superheated	0.01002	0.014431
80	30	0.0901	11.0944	655.93	1.4251	0.5359	1.3280	Superheated	0.01013	0.014574
85	30	0.0892	11.2062	658.61	1.4300	0.5351	1.3264	Superheated	0.01023	0.014721
90	30	0.0884	11.3176	661.28	1.4349	0.5343	1.3247	Superheated	0.01033	0.014871
95	30	0.0875	11.4288	663.95	1.4398	0.5337	1.3232	Superheated	0.01044	0.015024
100	30	0.0867	11.5397	666.62	1.4445	0.5333	1.3216	Superheated	0.01054	0.015180
105	30	0.0858	11.6503	669.28	1.4493	0.5329	1.3201	Superheated	0.01064	0.015339
110	30	0.0850	11.7608	671.95	1.4540	0.5326	1.3187	Superheated	0.01075	0.015501
115	30	0.0842	11.8710	674.61	1.4586	0.5324	1.3172	Superheated	0.01085	0.015666
120	30	0.0835	11.9810	677.27	1.4632	0.5323	1.3158	Superheated	0.01096	0.015833
125	30	0.0827	12.0908	679.93	1.4678	0.5323	1.3144	Superheated	0.01106	0.016004
130	30	0.0820	12.2004	682.59	1.4723	0.5324	1.3130	Superheated	0.01117	0.016177
135	30	0.0812	12.3099	685.25	1.4768	0.5325	1.3117	Superheated	0.01127	0.016354
140	30	0.0805	12.4192	687.92	1.4813	0.5327	1.3103	Superheated	0.01138	0.016532
145	30	0.0798	12.5283	690.58	1.4857	0.5330	1.3090	Superheated	0.01149	0.016714
150	30	0.0791	12.6373	693.25	1.4901	0.5333	1.3077	Superheated	0.01159	0.016898

R-717 (anhydrous ammonia) Properties in the Subcooled Superheat Regions

P=35 psia (5.92 F)

T	P	ρ	v	h	s	Cp	Cp/Cv	Quality	μ	k
[F]	[psia]	[lb/ft^3]	[ft^3/lb]	[Btu/lb]	[Btu/R-lb]	[Btu/R-lb]	[unitless]	[unitless]	[centipoise]	[Btu/h-ft-R]
-50	35	43.5069	0.0230	-10.45	-0.0255	1.0477	1.5240	Subcooled	0.30644	0.408919
-45	35	43.2992	0.0231	-5.20	-0.0127	1.0512	1.5318	Subcooled	0.29351	0.403433
-40	35	43.0896	0.0232	0.06	-0.0001	1.0547	1.5395	Subcooled	0.28147	0.397976
-35	35	42.8781	0.0233	5.34	0.0124	1.0582	1.5471	Subcooled	0.27022	0.392549
-30	35	42.6648	0.0234	10.64	0.0248	1.0616	1.5546	Subcooled	0.25970	0.387154
-25	35	42.4496	0.0236	15.96	0.0371	1.0649	1.5621	Subcooled	0.24984	0.381791
-20	35	42.2325	0.0237	21.29	0.0493	1.0682	1.5696	Subcooled	0.24059	0.376462
-15	35	42.0135	0.0238	26.64	0.0614	1.0715	1.5771	Subcooled	0.23188	0.371168
-10	35	41.7925	0.0239	32.01	0.0734	1.0748	1.5845	Subcooled	0.22369	0.365909
-5	35	41.5697	0.0241	37.39	0.0853	1.0781	1.5919	Subcooled	0.21596	0.360685
0	35	41.3449	0.0242	42.79	0.0971	1.0814	1.5994	Subcooled	0.20865	0.355497
5	35	41.1181	0.0243	48.20	0.1088	1.0847	1.6069	Subcooled	0.20173	0.350345
10	35	0.1239	8.0707	615.84	1.3280	0.5888	1.3676	Superheated	0.00870	0.012890
15	35	0.1223	8.1753	618.76	1.3342	0.5826	1.3641	Superheated	0.00880	0.012990
20	35	0.1208	8.2789	621.66	1.3403	0.5771	1.3608	Superheated	0.00890	0.013093
25	35	0.1193	8.3817	624.53	1.3462	0.5721	1.3578	Superheated	0.00900	0.013200
30	35	0.1179	8.4838	627.38	1.3521	0.5676	1.3549	Superheated	0.00910	0.013310
35	35	0.1165	8.5851	630.21	1.3578	0.5637	1.3521	Superheated	0.00920	0.013424
40	35	0.1151	8.6859	633.02	1.3635	0.5601	1.3495	Superheated	0.00930	0.013541
45	35	0.1138	8.7860	635.81	1.3690	0.5569	1.3471	Superheated	0.00940	0.013662
50	35	0.1125	8.8857	638.59	1.3745	0.5540	1.3447	Superheated	0.00950	0.013786
55	35	0.1113	8.9848	641.35	1.3799	0.5514	1.3425	Superheated	0.00960	0.013913
60	35	0.1101	9.0835	644.11	1.3852	0.5491	1.3403	Superheated	0.00970	0.014044
65	35	0.1089	9.1817	646.85	1.3905	0.5471	1.3382	Superheated	0.00981	0.014178
70	35	0.1078	9.2796	649.58	1.3957	0.5453	1.3362	Superheated	0.00991	0.014315
75	35	0.1066	9.3770	652.30	1.4008	0.5437	1.3342	Superheated	0.01001	0.014455
80	35	0.1056	9.4741	655.01	1.4058	0.5423	1.3324	Superheated	0.01012	0.014598
85	35	0.1045	9.5710	657.72	1.4108	0.5411	1.3305	Superheated	0.01022	0.014745
90	35	0.1034	9.6675	660.43	1.4158	0.5400	1.3287	Superheated	0.01032	0.014894
95	35	0.1024	9.7637	663.12	1.4206	0.5391	1.3270	Superheated	0.01043	0.015047
100	35	0.1014	9.8596	665.82	1.4255	0.5384	1.3253	Superheated	0.01053	0.015203
105	35	0.1004	9.9553	668.51	1.4303	0.5377	1.3237	Superheated	0.01064	0.015361
110	35	0.0995	10.0508	671.19	1.4350	0.5372	1.3221	Superheated	0.01074	0.015523
115	35	0.0986	10.1460	673.88	1.4397	0.5368	1.3205	Superheated	0.01085	0.015688
120	35	0.0976	10.2411	676.56	1.4443	0.5365	1.3190	Superheated	0.01095	0.015855
125	35	0.0967	10.3359	679.24	1.4490	0.5363	1.3175	Superheated	0.01106	0.016026
130	35	0.0959	10.4306	681.93	1.4535	0.5362	1.3160	Superheated	0.01116	0.016199
135	35	0.0950	10.5251	684.61	1.4580	0.5361	1.3145	Superheated	0.01127	0.016375
140	35	0.0942	10.6194	687.29	1.4625	0.5362	1.3131	Superheated	0.01137	0.016553
145	35	0.0933	10.7135	689.97	1.4670	0.5363	1.3117	Superheated	0.01148	0.016735
150	35	0.0925	10.8075	692.65	1.4714	0.5364	1.3103	Superheated	0.01159	0.016919

R-717 (anhydrous ammonia) Properties in the Subcooled Superheat Regions

P=40 psia (11.68 F)

T	P	ρ	v	h	s	Cp	Cp/Cv	Quality	μ	k
[F]	[psia]	[lb/ft^3]	[ft^3/lb]	[Btu/lb]	[Btu/R-lb]	[Btu/R-lb]	[unitless]	[unitless]	[centipoise]	[Btu/h-ft-R]
-50	40	43.5078	0.0230	-10.44	-0.0255	1.0476	1.5239	Subcooled	0.30649	0.408944
-45	40	43.3002	0.0231	-5.19	-0.0127	1.0512	1.5317	Subcooled	0.29356	0.403459
-40	40	43.0906	0.0232	0.08	-0.0001	1.0547	1.5394	Subcooled	0.28151	0.398002
-35	40	42.8792	0.0233	5.36	0.0124	1.0581	1.5470	Subcooled	0.27026	0.392576
-30	40	42.6659	0.0234	10.66	0.0248	1.0615	1.5546	Subcooled	0.25974	0.387181
-25	40	42.4507	0.0236	15.97	0.0371	1.0649	1.5621	Subcooled	0.24988	0.381819
-20	40	42.2336	0.0237	21.31	0.0493	1.0682	1.5695	Subcooled	0.24063	0.376490
-15	40	42.0146	0.0238	26.65	0.0614	1.0715	1.5770	Subcooled	0.23192	0.371196
-10	40	41.7937	0.0239	32.02	0.0734	1.0748	1.5844	Subcooled	0.22373	0.365937
-5	40	41.5709	0.0241	37.40	0.0853	1.0781	1.5918	Subcooled	0.21600	0.360714
0	40	41.3462	0.0242	42.80	0.0971	1.0814	1.5993	Subcooled	0.20869	0.355526
5	40	41.1194	0.0243	48.22	0.1088	1.0847	1.6068	Subcooled	0.20177	0.350375
10	40	40.8906	0.0245	53.65	0.1204	1.0880	1.6144	Subcooled	0.19521	0.345260
15	40	0.1408	7.1038	617.17	1.3160	0.5987	1.3731	Superheated	0.00878	0.013018
20	40	0.1390	7.1965	620.15	1.3222	0.5919	1.3692	Superheated	0.00888	0.013121
25	40	0.1372	7.2883	623.09	1.3283	0.5858	1.3656	Superheated	0.00898	0.013228
30	40	0.1355	7.3794	626.00	1.3343	0.5803	1.3623	Superheated	0.00908	0.013338
35	40	0.1339	7.4697	628.89	1.3402	0.5754	1.3591	Superheated	0.00918	0.013451
40	40	0.1323	7.5594	631.76	1.3459	0.5710	1.3562	Superheated	0.00928	0.013568
45	40	0.1307	7.6485	634.60	1.3516	0.5671	1.3533	Superheated	0.00939	0.013688
50	40	0.1292	7.7371	637.43	1.3572	0.5635	1.3506	Superheated	0.00949	0.013812
55	40	0.1278	7.8251	640.24	1.3627	0.5604	1.3481	Superheated	0.00959	0.013939
60	40	0.1264	7.9126	643.04	1.3681	0.5575	1.3457	Superheated	0.00969	0.014069
65	40	0.1250	7.9997	645.82	1.3734	0.5550	1.3433	Superheated	0.00980	0.014202
70	40	0.1237	8.0864	648.59	1.3787	0.5527	1.3411	Superheated	0.00990	0.014339
75	40	0.1224	8.1727	651.34	1.3838	0.5507	1.3389	Superheated	0.01000	0.014479
80	40	0.1211	8.2587	654.09	1.3890	0.5489	1.3368	Superheated	0.01011	0.014622
85	40	0.1198	8.3443	656.83	1.3940	0.5473	1.3348	Superheated	0.01021	0.014768
90	40	0.1186	8.4296	659.57	1.3990	0.5459	1.3328	Superheated	0.01031	0.014918
95	40	0.1174	8.5147	662.29	1.4039	0.5447	1.3309	Superheated	0.01042	0.015070
100	40	0.1163	8.5994	665.01	1.4088	0.5436	1.3291	Superheated	0.01052	0.015226
105	40	0.1152	8.6839	667.73	1.4137	0.5427	1.3273	Superheated	0.01063	0.015384
110	40	0.1140	8.7682	670.44	1.4184	0.5419	1.3256	Superheated	0.01073	0.015545
115	40	0.1130	8.8522	673.15	1.4232	0.5413	1.3239	Superheated	0.01084	0.015710
120	40	0.1119	8.9360	675.85	1.4279	0.5407	1.3222	Superheated	0.01094	0.015877
125	40	0.1109	9.0197	678.55	1.4325	0.5403	1.3206	Superheated	0.01105	0.016047
130	40	0.1099	9.1031	681.26	1.4371	0.5400	1.3190	Superheated	0.01116	0.016220
135	40	0.1089	9.1863	683.95	1.4417	0.5398	1.3174	Superheated	0.01126	0.016396
140	40	0.1079	9.2694	686.65	1.4462	0.5397	1.3159	Superheated	0.01137	0.016575
145	40	0.1069	9.3524	689.35	1.4507	0.5396	1.3144	Superheated	0.01147	0.016756
150	40	0.1060	9.4352	692.05	1.4551	0.5396	1.3129	Superheated	0.01158	0.016940

R-717 (anhydrous ammonia) Properties in the Subcooled Superheat Regions

P=45 psia (16.90 F)

T	P	ρ	v	h	s	Cp	Cp/Cv	Quality	μ	k
[F]	[psia]	[lb/ft^3]	[ft^3/lb]	[Btu/lb]	[Btu/R-lb]	[Btu/R-lb]	[unitless]	[unitless]	[centipoise]	[Btu/h-ft-R]
-50	45	43.5088	0.0230	-10.42	-0.0255	1.0476	1.5238	Subcooled	0.30653	0.408970
-45	45	43.3011	0.0231	-5.18	-0.0128	1.0512	1.5316	Subcooled	0.29361	0.403485
-40	45	43.0916	0.0232	0.09	-0.0001	1.0547	1.5393	Subcooled	0.28156	0.398029
-35	45	42.8802	0.0233	5.37	0.0124	1.0581	1.5469	Subcooled	0.27031	0.392603
-30	45	42.6669	0.0234	10.67	0.0248	1.0615	1.5545	Subcooled	0.25978	0.387208
-25	45	42.4517	0.0236	15.98	0.0371	1.0648	1.5620	Subcooled	0.24992	0.381846
-20	45	42.2347	0.0237	21.32	0.0493	1.0682	1.5694	Subcooled	0.24067	0.376518
-15	45	42.0158	0.0238	26.67	0.0614	1.0715	1.5769	Subcooled	0.23196	0.371224
-10	45	41.7949	0.0239	32.03	0.0734	1.0747	1.5843	Subcooled	0.22377	0.365965
-5	45	41.5721	0.0241	37.41	0.0853	1.0780	1.5917	Subcooled	0.21603	0.360743
0	45	41.3474	0.0242	42.81	0.0971	1.0813	1.5992	Subcooled	0.20872	0.355556
5	45	41.1207	0.0243	48.23	0.1088	1.0846	1.6067	Subcooled	0.20181	0.350405
10	45	40.8919	0.0245	53.66	0.1204	1.0880	1.6143	Subcooled	0.19525	0.345290
15	45	40.6610	0.0246	59.11	0.1320	1.0914	1.6220	Subcooled	0.18902	0.340211
20	45	0.1574	6.3538	618.60	1.3059	0.6075	1.3781	Superheated	0.00886	0.013150
25	45	0.1553	6.4373	621.62	1.3122	0.6002	1.3739	Superheated	0.00896	0.013256
30	45	0.1534	6.5198	624.60	1.3183	0.5936	1.3700	Superheated	0.00907	0.013365
35	45	0.1515	6.6017	627.55	1.3243	0.5877	1.3664	Superheated	0.00917	0.013478
40	45	0.1496	6.6828	630.48	1.3302	0.5824	1.3630	Superheated	0.00927	0.013595
45	45	0.1479	6.7634	633.38	1.3360	0.5777	1.3598	Superheated	0.00937	0.013715
50	45	0.1461	6.8433	636.26	1.3417	0.5734	1.3568	Superheated	0.00948	0.013838
55	45	0.1445	6.9227	639.11	1.3472	0.5696	1.3539	Superheated	0.00958	0.013964
60	45	0.1428	7.0017	641.95	1.3527	0.5661	1.3512	Superheated	0.00968	0.014094
65	45	0.1412	7.0801	644.77	1.3581	0.5630	1.3486	Superheated	0.00979	0.014227
70	45	0.1397	7.1582	647.58	1.3635	0.5603	1.3461	Superheated	0.00989	0.014364
75	45	0.1382	7.2358	650.38	1.3687	0.5578	1.3437	Superheated	0.00999	0.014504
80	45	0.1367	7.3131	653.16	1.3739	0.5556	1.3414	Superheated	0.01010	0.014646
85	45	0.1353	7.3901	655.93	1.3790	0.5536	1.3392	Superheated	0.01020	0.014792
90	45	0.1339	7.4667	658.70	1.3841	0.5518	1.3370	Superheated	0.01031	0.014941
95	45	0.1326	7.5430	661.45	1.3891	0.5503	1.3349	Superheated	0.01041	0.015094
100	45	0.1312	7.6191	664.20	1.3940	0.5489	1.3329	Superheated	0.01052	0.015249
105	45	0.1300	7.6949	666.94	1.3989	0.5477	1.3310	Superheated	0.01062	0.015407
110	45	0.1287	7.7704	669.68	1.4037	0.5467	1.3291	Superheated	0.01073	0.015568
115	45	0.1275	7.8458	672.41	1.4085	0.5458	1.3273	Superheated	0.01083	0.015732
120	45	0.1262	7.9209	675.14	1.4132	0.5451	1.3255	Superheated	0.01094	0.015899
125	45	0.1251	7.9958	677.86	1.4179	0.5444	1.3237	Superheated	0.01104	0.016069
130	45	0.1239	8.0705	680.58	1.4225	0.5439	1.3220	Superheated	0.01115	0.016242
135	45	0.1228	8.1450	683.30	1.4271	0.5435	1.3204	Superheated	0.01126	0.016418
140	45	0.1217	8.2194	686.02	1.4316	0.5432	1.3187	Superheated	0.01136	0.016596
145	45	0.1206	8.2936	688.73	1.4361	0.5430	1.3171	Superheated	0.01147	0.016777
150	45	0.1195	8.3677	691.45	1.4406	0.5429	1.3156	Superheated	0.01158	0.016961

R-717 (anhydrous ammonia) Properties in the Subcooled Superheat Regions

P=50 psia (21.68 F)

T	P	ρ	v	h	s	Cp	Cp/Cv	Quality	μ	k
[F]	[psia]	[lb/ft^3]	[ft^3/lb]	[Btu/lb]	[Btu/R-lb]	[Btu/R-lb]	[unitless]	[unitless]	[centipoise]	[Btu/h-ft-R]
-50	50	43.5097	0.0230	-10.41	-0.0255	1.0476	1.5238	Subcooled	0.30658	0.408996
-45	50	43.3021	0.0231	-5.16	-0.0128	1.0511	1.5315	Subcooled	0.29365	0.403511
-40	50	43.0926	0.0232	0.10	-0.0002	1.0546	1.5392	Subcooled	0.28160	0.398055
-35	50	42.8812	0.0233	5.38	0.0123	1.0581	1.5468	Subcooled	0.27035	0.392629
-30	50	42.6680	0.0234	10.68	0.0247	1.0615	1.5544	Subcooled	0.25983	0.387235
-25	50	42.4528	0.0236	16.00	0.0370	1.0648	1.5619	Subcooled	0.24996	0.381873
-20	50	42.2358	0.0237	21.33	0.0492	1.0681	1.5693	Subcooled	0.24071	0.376545
-15	50	42.0169	0.0238	26.68	0.0613	1.0714	1.5768	Subcooled	0.23200	0.371252
-10	50	41.7961	0.0239	32.04	0.0733	1.0747	1.5842	Subcooled	0.22380	0.365994
-5	50	41.5734	0.0241	37.42	0.0852	1.0780	1.5917	Subcooled	0.21607	0.360771
0	50	41.3487	0.0242	42.82	0.0971	1.0813	1.5991	Subcooled	0.20876	0.355585
5	50	41.1220	0.0243	48.24	0.1088	1.0846	1.6066	Subcooled	0.20184	0.350434
10	50	40.8932	0.0245	53.67	0.1204	1.0879	1.6142	Subcooled	0.19528	0.345320
15	50	40.6624	0.0246	59.12	0.1319	1.0913	1.6219	Subcooled	0.18905	0.340241
20	50	40.4294	0.0247	64.58	0.1434	1.0948	1.6297	Subcooled	0.18313	0.335199
25	50	0.1737	5.7558	620.11	1.2975	0.6153	1.3826	Superheated	0.00895	0.013285
30	50	0.1715	5.8317	623.17	1.3038	0.6075	1.3782	Superheated	0.00905	0.013394
35	50	0.1693	5.9068	626.19	1.3099	0.6006	1.3740	Superheated	0.00915	0.013506
40	50	0.1672	5.9811	629.18	1.3159	0.5943	1.3702	Superheated	0.00926	0.013622
45	50	0.1652	6.0549	632.13	1.3218	0.5887	1.3665	Superheated	0.00936	0.013742
50	50	0.1632	6.1280	635.06	1.3276	0.5837	1.3631	Superheated	0.00946	0.013864
55	50	0.1613	6.2005	637.97	1.3332	0.5791	1.3599	Superheated	0.00957	0.013991
60	50	0.1594	6.2726	640.86	1.3388	0.5750	1.3569	Superheated	0.00967	0.014120
65	50	0.1576	6.3442	643.72	1.3443	0.5714	1.3540	Superheated	0.00977	0.014253
70	50	0.1559	6.4153	646.57	1.3497	0.5681	1.3512	Superheated	0.00988	0.014389
75	50	0.1542	6.4861	649.40	1.3550	0.5651	1.3486	Superheated	0.00998	0.014528
80	50	0.1525	6.5565	652.22	1.3603	0.5624	1.3460	Superheated	0.01009	0.014671
85	50	0.1509	6.6265	655.03	1.3655	0.5601	1.3436	Superheated	0.01019	0.014817
90	50	0.1493	6.6962	657.82	1.3706	0.5579	1.3413	Superheated	0.01030	0.014965
95	50	0.1478	6.7656	660.61	1.3756	0.5560	1.3390	Superheated	0.01040	0.015117
100	50	0.1463	6.8347	663.38	1.3806	0.5544	1.3368	Superheated	0.01051	0.015272
105	50	0.1449	6.9035	666.15	1.3855	0.5529	1.3347	Superheated	0.01061	0.015430
110	50	0.1434	6.9721	668.91	1.3904	0.5516	1.3327	Superheated	0.01072	0.015591
115	50	0.1420	7.0405	671.67	1.3952	0.5504	1.3307	Superheated	0.01082	0.015755
120	50	0.1407	7.1087	674.42	1.4000	0.5494	1.3288	Superheated	0.01093	0.015922
125	50	0.1393	7.1766	677.16	1.4047	0.5486	1.3269	Superheated	0.01104	0.016091
130	50	0.1380	7.2443	679.90	1.4093	0.5479	1.3251	Superheated	0.01114	0.016264
135	50	0.1368	7.3119	682.64	1.4140	0.5473	1.3233	Superheated	0.01125	0.016439
140	50	0.1355	7.3793	685.38	1.4186	0.5468	1.3216	Superheated	0.01136	0.016617
145	50	0.1343	7.4465	688.11	1.4231	0.5464	1.3199	Superheated	0.01146	0.016798
150	50	0.1331	7.5136	690.84	1.4276	0.5462	1.3182	Superheated	0.01157	0.016982

R-717 (anhydrous ammonia) Properties in the Subcooled Superheat Regions

P=60 psia (30.21 F)

T	P	ρ	v	h	s	Cp	Cp/Cv	Quality	μ	k
[F]	[psia]	[lb/ft^3]	[ft^3/lb]	[Btu/lb]	[Btu/R-lb]	[Btu/R-lb]	[unitless]	[unitless]	[centipoise]	[Btu/h-ft-R]
-50	60	43.5116	0.0230	-10.38	-0.0256	1.0475	1.5236	Subcooled	0.30668	0.409047
-45	60	43.3041	0.0231	-5.14	-0.0128	1.0511	1.5314	Subcooled	0.29375	0.403563
-40	60	43.0946	0.0232	0.13	-0.0002	1.0546	1.5391	Subcooled	0.28169	0.398107
-35	60	42.8833	0.0233	5.41	0.0123	1.0580	1.5467	Subcooled	0.27044	0.392682
-30	60	42.6701	0.0234	10.71	0.0247	1.0614	1.5542	Subcooled	0.25991	0.387289
-25	60	42.4550	0.0236	16.02	0.0370	1.0647	1.5617	Subcooled	0.25005	0.381928
-20	60	42.2380	0.0237	21.35	0.0492	1.0681	1.5692	Subcooled	0.24079	0.376601
-15	60	42.0192	0.0238	26.70	0.0613	1.0713	1.5766	Subcooled	0.23208	0.371308
-10	60	41.7985	0.0239	32.07	0.0733	1.0746	1.5840	Subcooled	0.22388	0.366051
-5	60	41.5758	0.0241	37.45	0.0852	1.0779	1.5915	Subcooled	0.21614	0.360829
0	60	41.3512	0.0242	42.85	0.0970	1.0812	1.5989	Subcooled	0.20883	0.355643
5	60	41.1245	0.0243	48.26	0.1087	1.0845	1.6064	Subcooled	0.20191	0.350493
10	60	40.8959	0.0245	53.69	0.1203	1.0878	1.6140	Subcooled	0.19535	0.345380
15	60	40.6651	0.0246	59.14	0.1319	1.0912	1.6217	Subcooled	0.18912	0.340302
20	60	40.4322	0.0247	64.60	0.1433	1.0947	1.6294	Subcooled	0.18319	0.335260
25	60	40.1971	0.0249	70.08	0.1547	1.0983	1.6373	Subcooled	0.17755	0.330254
30	60	39.9597	0.0250	75.59	0.1660	1.1019	1.6454	Subcooled	0.17216	0.325282
35	60	0.2056	4.8630	623.39	1.2842	0.6280	1.3903	Superheated	0.00913	0.013563
40	60	0.2029	4.9274	626.51	1.2905	0.6196	1.3854	Superheated	0.00923	0.013678
45	60	0.2004	4.9910	629.59	1.2966	0.6121	1.3808	Superheated	0.00933	0.013797
50	60	0.1979	5.0540	632.63	1.3026	0.6053	1.3765	Superheated	0.00944	0.013919
55	60	0.1955	5.1164	635.64	1.3085	0.5992	1.3726	Superheated	0.00954	0.014044
60	60	0.1931	5.1782	638.62	1.3142	0.5937	1.3688	Superheated	0.00965	0.014173
65	60	0.1909	5.2396	641.58	1.3199	0.5888	1.3653	Superheated	0.00975	0.014305
70	60	0.1887	5.3004	644.51	1.3255	0.5843	1.3619	Superheated	0.00986	0.014440
75	60	0.1865	5.3609	647.42	1.3309	0.5803	1.3588	Superheated	0.00996	0.014579
80	60	0.1845	5.4209	650.31	1.3363	0.5767	1.3557	Superheated	0.01007	0.014721
85	60	0.1825	5.4806	653.19	1.3416	0.5735	1.3529	Superheated	0.01017	0.014866
90	60	0.1805	5.5400	656.05	1.3469	0.5706	1.3501	Superheated	0.01028	0.015014
95	60	0.1786	5.5990	658.90	1.3520	0.5679	1.3475	Superheated	0.01039	0.015165
100	60	0.1767	5.6577	661.73	1.3571	0.5656	1.3449	Superheated	0.01049	0.015320
105	60	0.1749	5.7162	664.55	1.3621	0.5635	1.3425	Superheated	0.01060	0.015477
110	60	0.1732	5.7744	667.36	1.3671	0.5616	1.3401	Superheated	0.01070	0.015637
115	60	0.1715	5.8323	670.17	1.3720	0.5599	1.3378	Superheated	0.01081	0.015801
120	60	0.1698	5.8901	672.96	1.3768	0.5584	1.3356	Superheated	0.01092	0.015967
125	60	0.1681	5.9476	675.75	1.3816	0.5572	1.3335	Superheated	0.01102	0.016136
130	60	0.1665	6.0049	678.54	1.3863	0.5560	1.3314	Superheated	0.01113	0.016308
135	60	0.1650	6.0620	681.31	1.3910	0.5550	1.3294	Superheated	0.01124	0.016483
140	60	0.1634	6.1189	684.09	1.3957	0.5542	1.3274	Superheated	0.01135	0.016661
145	60	0.1619	6.1757	686.86	1.4003	0.5535	1.3255	Superheated	0.01145	0.016841
150	60	0.1605	6.2323	689.62	1.4048	0.5529	1.3237	Superheated	0.01156	0.017025

R-717 (anhydrous ammonia) Properties in the Subcooled Superheat Regions

P=70 psia (37.70 F)

T	P	ρ	v	h	s	Cp	Cp/Cv	Quality	μ	k
[F]	[psia]	[lb/ft^3]	[ft^3/lb]	[Btu/lb]	[Btu/R-lb]	[Btu/R-lb]	[unitless]	[unitless]	[centipoise]	[Btu/h-ft-R]
-50	70	43.5135	0.0230	-10.36	-0.0256	1.0475	1.5234	Subcooled	0.30678	0.409098
-45	70	43.3060	0.0231	-5.11	-0.0129	1.0510	1.5312	Subcooled	0.29384	0.403615
-40	70	43.0966	0.0232	0.15	-0.0003	1.0545	1.5389	Subcooled	0.28178	0.398160
-35	70	42.8854	0.0233	5.43	0.0123	1.0579	1.5465	Subcooled	0.27053	0.392736
-30	70	42.6722	0.0234	10.73	0.0247	1.0613	1.5540	Subcooled	0.26000	0.387343
-25	70	42.4572	0.0236	16.05	0.0370	1.0647	1.5615	Subcooled	0.25013	0.381982
-20	70	42.2403	0.0237	21.38	0.0492	1.0680	1.5690	Subcooled	0.24087	0.376656
-15	70	42.0215	0.0238	26.73	0.0613	1.0713	1.5764	Subcooled	0.23216	0.371364
-10	70	41.8008	0.0239	32.09	0.0732	1.0745	1.5838	Subcooled	0.22396	0.366108
-5	70	41.5782	0.0241	37.47	0.0851	1.0778	1.5913	Subcooled	0.21622	0.360887
0	70	41.3537	0.0242	42.87	0.0970	1.0811	1.5987	Subcooled	0.20891	0.355701
5	70	41.1271	0.0243	48.28	0.1087	1.0844	1.6062	Subcooled	0.20198	0.350553
10	70	40.8985	0.0245	53.71	0.1203	1.0877	1.6138	Subcooled	0.19542	0.345440
15	70	40.6679	0.0246	59.16	0.1318	1.0911	1.6215	Subcooled	0.18919	0.340363
20	70	40.4351	0.0247	64.62	0.1433	1.0946	1.6292	Subcooled	0.18326	0.335322
25	70	40.2000	0.0249	70.10	0.1546	1.0981	1.6371	Subcooled	0.17761	0.330316
30	70	39.9627	0.0250	75.60	0.1659	1.1018	1.6452	Subcooled	0.17223	0.325345
35	70	39.7230	0.0252	81.12	0.1772	1.1056	1.6534	Subcooled	0.16708	0.320408
40	70	0.2396	4.1733	623.74	1.2681	0.6472	1.4019	Superheated	0.00920	0.013736
45	70	0.2364	4.2299	626.95	1.2745	0.6374	1.3962	Superheated	0.00931	0.013854
50	70	0.2333	4.2858	630.12	1.2808	0.6286	1.3910	Superheated	0.00941	0.013975
55	70	0.2304	4.3410	633.24	1.2869	0.6208	1.3861	Superheated	0.00952	0.014099
60	70	0.2275	4.3956	636.33	1.2928	0.6137	1.3816	Superheated	0.00962	0.014227
65	70	0.2247	4.4497	639.38	1.2987	0.6073	1.3773	Superheated	0.00973	0.014358
70	70	0.2221	4.5033	642.40	1.3044	0.6016	1.3733	Superheated	0.00984	0.014493
75	70	0.2195	4.5565	645.40	1.3100	0.5964	1.3695	Superheated	0.00994	0.014631
80	70	0.2170	4.6092	648.37	1.3156	0.5918	1.3659	Superheated	0.01005	0.014772
85	70	0.2145	4.6616	651.32	1.3210	0.5876	1.3625	Superheated	0.01016	0.014916
90	70	0.2122	4.7136	654.24	1.3264	0.5838	1.3593	Superheated	0.01026	0.015064
95	70	0.2099	4.7653	657.15	1.3316	0.5804	1.3562	Superheated	0.01037	0.015214
100	70	0.2076	4.8166	660.05	1.3368	0.5773	1.3533	Superheated	0.01048	0.015368
105	70	0.2054	4.8677	662.93	1.3420	0.5745	1.3505	Superheated	0.01058	0.015525
110	70	0.2033	4.9185	665.79	1.3470	0.5720	1.3478	Superheated	0.01069	0.015685
115	70	0.2012	4.9690	668.65	1.3520	0.5698	1.3452	Superheated	0.01080	0.015848
120	70	0.1992	5.0193	671.49	1.3569	0.5678	1.3427	Superheated	0.01090	0.016013
125	70	0.1973	5.0694	674.33	1.3618	0.5660	1.3403	Superheated	0.01101	0.016182
130	70	0.1953	5.1193	677.15	1.3666	0.5644	1.3379	Superheated	0.01112	0.016354
135	70	0.1935	5.1690	679.97	1.3714	0.5630	1.3357	Superheated	0.01123	0.016528
140	70	0.1916	5.2185	682.78	1.3761	0.5618	1.3335	Superheated	0.01133	0.016705
145	70	0.1898	5.2678	685.59	1.3807	0.5607	1.3313	Superheated	0.01144	0.016885
150	70	0.1881	5.3170	688.39	1.3853	0.5597	1.3293	Superheated	0.01155	0.017068

R-717 (anhydrous ammonia) Properties in the Subcooled Superheat Regions

P=80 psia (44.39 F)

T	P	ρ	v	h	s	Cp	Cp/Cv	Quality	μ	k
[F]	[psia]	[lb/ft^3]	[ft^3/lb]	[Btu/lb]	[Btu/R-lb]	[Btu/R-lb]	[unitless]	[unitless]	[centipoise]	[Btu/h-ft-R]
-50	80	43.5154	0.0230	-10.33	-0.0256	1.0474	1.5233	Subcooled	0.30687	0.409149
-45	80	43.3080	0.0231	-5.09	-0.0129	1.0509	1.5310	Subcooled	0.29393	0.403666
-40	80	43.0986	0.0232	0.18	-0.0003	1.0544	1.5387	Subcooled	0.28188	0.398212
-35	80	42.8874	0.0233	5.46	0.0122	1.0579	1.5463	Subcooled	0.27061	0.392789
-30	80	42.6743	0.0234	10.76	0.0246	1.0613	1.5539	Subcooled	0.26008	0.387397
-25	80	42.4594	0.0236	16.07	0.0369	1.0646	1.5614	Subcooled	0.25021	0.382037
-20	80	42.2425	0.0237	21.40	0.0491	1.0679	1.5688	Subcooled	0.24095	0.376711
-15	80	42.0238	0.0238	26.75	0.0612	1.0712	1.5762	Subcooled	0.23224	0.371420
-10	80	41.8032	0.0239	32.11	0.0732	1.0745	1.5837	Subcooled	0.22403	0.366164
-5	80	41.5806	0.0240	37.49	0.0851	1.0777	1.5911	Subcooled	0.21629	0.360944
0	80	41.3562	0.0242	42.89	0.0969	1.0810	1.5985	Subcooled	0.20898	0.355760
5	80	41.1297	0.0243	48.30	0.1086	1.0843	1.6060	Subcooled	0.20205	0.350612
10	80	40.9012	0.0244	53.73	0.1202	1.0876	1.6136	Subcooled	0.19549	0.345500
15	80	40.6706	0.0246	59.18	0.1318	1.0910	1.6213	Subcooled	0.18926	0.340424
20	80	40.4379	0.0247	64.64	0.1432	1.0945	1.6290	Subcooled	0.18333	0.335384
25	80	40.2029	0.0249	70.12	0.1546	1.0980	1.6369	Subcooled	0.17768	0.330379
30	80	39.9657	0.0250	75.62	0.1659	1.1017	1.6449	Subcooled	0.17229	0.325409
35	80	39.7261	0.0252	81.14	0.1771	1.1054	1.6531	Subcooled	0.16714	0.320473
40	80	39.4839	0.0253	86.68	0.1882	1.1093	1.6615	Subcooled	0.16222	0.315570
45	80	0.2734	3.6578	624.23	1.2547	0.6650	1.4130	Superheated	0.00928	0.013913
50	80	0.2697	3.7085	627.53	1.2612	0.6539	1.4066	Superheated	0.00939	0.014032
55	80	0.2661	3.7585	630.77	1.2676	0.6440	1.4007	Superheated	0.00949	0.014156
60	80	0.2626	3.8078	633.97	1.2737	0.6351	1.3952	Superheated	0.00960	0.014283
65	80	0.2593	3.8566	637.13	1.2798	0.6271	1.3901	Superheated	0.00971	0.014413
70	80	0.2561	3.9048	640.24	1.2857	0.6200	1.3853	Superheated	0.00982	0.014547
75	80	0.2530	3.9526	643.33	1.2915	0.6135	1.3809	Superheated	0.00992	0.014684
80	80	0.2500	3.9999	646.38	1.2972	0.6077	1.3767	Superheated	0.01003	0.014824
85	80	0.2471	4.0468	649.41	1.3028	0.6024	1.3727	Superheated	0.01014	0.014968
90	80	0.2443	4.0933	652.41	1.3082	0.5977	1.3690	Superheated	0.01025	0.015115
95	80	0.2416	4.1395	655.38	1.3136	0.5934	1.3654	Superheated	0.01035	0.015265
100	80	0.2389	4.1854	658.34	1.3189	0.5895	1.3621	Superheated	0.01046	0.015418
105	80	0.2364	4.2309	661.28	1.3242	0.5860	1.3588	Superheated	0.01057	0.015574
110	80	0.2339	4.2762	664.20	1.3293	0.5828	1.3558	Superheated	0.01068	0.015733
115	80	0.2314	4.3212	667.11	1.3344	0.5800	1.3528	Superheated	0.01078	0.015895
120	80	0.2290	4.3660	670.00	1.3394	0.5774	1.3500	Superheated	0.01089	0.016061
125	80	0.2267	4.4105	672.88	1.3444	0.5751	1.3473	Superheated	0.01100	0.016229
130	80	0.2245	4.4548	675.75	1.3492	0.5730	1.3446	Superheated	0.01111	0.016400
135	80	0.2223	4.4990	678.61	1.3541	0.5712	1.3421	Superheated	0.01122	0.016574
140	80	0.2201	4.5429	681.47	1.3589	0.5695	1.3397	Superheated	0.01132	0.016751
145	80	0.2180	4.5867	684.31	1.3636	0.5681	1.3373	Superheated	0.01143	0.016930
150	80	0.2160	4.6302	687.15	1.3682	0.5668	1.3350	Superheated	0.01154	0.017112

R-717 (anhydrous ammonia) Properties in the Subcooled Superheat Regions

P=90 psia (50.46 F)

T	P	ρ	v	h	s	Cp	Cp/Cv	Quality	μ	k
[F]	[psia]	[lb/ft^3]	[ft^3/lb]	[Btu/lb]	[Btu/R-lb]	[Btu/R-lb]	[unitless]	[unitless]	[centipoise]	[Btu/h-ft-R]
-50	90	43.5173	0.0230	-10.31	-0.0257	1.0473	1.5231	Subcooled	0.30697	0.409200
-45	90	43.3099	0.0231	-5.06	-0.0130	1.0509	1.5309	Subcooled	0.29403	0.403718
-40	90	43.1006	0.0232	0.20	-0.0003	1.0544	1.5386	Subcooled	0.28197	0.398265
-35	90	42.8895	0.0233	5.48	0.0122	1.0578	1.5462	Subcooled	0.27070	0.392842
-30	90	42.6764	0.0234	10.78	0.0246	1.0612	1.5537	Subcooled	0.26017	0.387450
-25	90	42.4615	0.0236	16.09	0.0369	1.0645	1.5612	Subcooled	0.25030	0.382092
-20	90	42.2448	0.0237	21.42	0.0491	1.0678	1.5686	Subcooled	0.24103	0.376767
-15	90	42.0261	0.0238	26.77	0.0612	1.0711	1.5761	Subcooled	0.23232	0.371476
-10	90	41.8055	0.0239	32.14	0.0732	1.0744	1.5835	Subcooled	0.22411	0.366221
-5	90	41.5831	0.0240	37.52	0.0851	1.0776	1.5909	Subcooled	0.21637	0.361002
0	90	41.3587	0.0242	42.91	0.0969	1.0809	1.5984	Subcooled	0.20905	0.355818
5	90	41.1323	0.0243	48.33	0.1086	1.0842	1.6058	Subcooled	0.20213	0.350671
10	90	40.9038	0.0244	53.75	0.1202	1.0875	1.6134	Subcooled	0.19556	0.345560
15	90	40.6733	0.0246	59.20	0.1317	1.0909	1.6210	Subcooled	0.18932	0.340485
20	90	40.4407	0.0247	64.66	0.1432	1.0944	1.6288	Subcooled	0.18339	0.335445
25	90	40.2058	0.0249	70.14	0.1545	1.0979	1.6367	Subcooled	0.17774	0.330441
30	90	39.9687	0.0250	75.64	0.1658	1.1016	1.6447	Subcooled	0.17236	0.325472
35	90	39.7291	0.0252	81.16	0.1770	1.1053	1.6529	Subcooled	0.16721	0.320537
40	90	39.4871	0.0253	86.70	0.1882	1.1092	1.6613	Subcooled	0.16228	0.315636
45	90	39.2425	0.0255	92.25	0.1992	1.1133	1.6699	Subcooled	0.15756	0.310767
50	90	38.9952	0.0256	97.83	0.2102	1.1175	1.6788	Subcooled	0.15304	0.305930
55	90	0.3026	3.3045	628.23	1.2499	0.6691	1.4164	Superheated	0.00947	0.014214
60	90	0.2985	3.3498	631.55	1.2564	0.6581	1.4098	Superheated	0.00958	0.014340
65	90	0.2946	3.3945	634.81	1.2626	0.6483	1.4038	Superheated	0.00969	0.014470
70	90	0.2908	3.4387	638.03	1.2687	0.6395	1.3981	Superheated	0.00979	0.014602
75	90	0.2872	3.4823	641.21	1.2747	0.6316	1.3929	Superheated	0.00990	0.014739
80	90	0.2837	3.5254	644.35	1.2805	0.6245	1.3880	Superheated	0.01001	0.014878
85	90	0.2803	3.5682	647.46	1.2863	0.6181	1.3834	Superheated	0.01012	0.015021
90	90	0.2770	3.6105	650.53	1.2919	0.6123	1.3791	Superheated	0.01023	0.015167
95	90	0.2738	3.6524	653.58	1.2974	0.6070	1.3750	Superheated	0.01034	0.015316
100	90	0.2707	3.6941	656.60	1.3028	0.6023	1.3712	Superheated	0.01044	0.015468
105	90	0.2677	3.7354	659.60	1.3082	0.5980	1.3675	Superheated	0.01055	0.015624
110	90	0.2648	3.7764	662.58	1.3134	0.5941	1.3640	Superheated	0.01066	0.015782
115	90	0.2620	3.8171	665.55	1.3186	0.5906	1.3607	Superheated	0.01077	0.015944
120	90	0.2592	3.8576	668.49	1.3237	0.5874	1.3575	Superheated	0.01088	0.016109
125	90	0.2566	3.8978	671.42	1.3287	0.5846	1.3545	Superheated	0.01099	0.016276
130	90	0.2539	3.9378	674.34	1.3337	0.5820	1.3516	Superheated	0.01109	0.016447
135	90	0.2514	3.9777	677.24	1.3386	0.5797	1.3487	Superheated	0.01120	0.016620
140	90	0.2489	4.0173	680.13	1.3434	0.5776	1.3460	Superheated	0.01131	0.016796
145	90	0.2465	4.0567	683.02	1.3482	0.5757	1.3434	Superheated	0.01142	0.016976
150	90	0.2441	4.0960	685.89	1.3530	0.5740	1.3409	Superheated	0.01153	0.017157

R-717 (anhydrous ammonia) Properties in the Subcooled Superheat Regions

P=100 psia (56.03 F)

T	P	ρ	v	h	s	Cp	Cp/Cv	Quality	μ	k
[F]	[psia]	[lb/ft^3]	[ft^3/lb]	[Btu/lb]	[Btu/R-lb]	[Btu/R-lb]	[unitless]	[unitless]	[centipoise]	[Btu/h-ft-R]
-50	100	43.5192	0.0230	-10.28	-0.0257	1.0473	1.5229	Subcooled	0.30707	0.409251
-45	100	43.3119	0.0231	-5.04	-0.0130	1.0508	1.5307	Subcooled	0.29412	0.403770
-40	100	43.1027	0.0232	0.23	-0.0004	1.0543	1.5384	Subcooled	0.28206	0.398317
-35	100	42.8915	0.0233	5.51	0.0121	1.0577	1.5460	Subcooled	0.27079	0.392895
-30	100	42.6786	0.0234	10.80	0.0245	1.0611	1.5535	Subcooled	0.26025	0.387504
-25	100	42.4637	0.0235	16.12	0.0368	1.0644	1.5610	Subcooled	0.25038	0.382146
-20	100	42.2470	0.0237	21.45	0.0490	1.0677	1.5685	Subcooled	0.24111	0.376822
-15	100	42.0284	0.0238	26.80	0.0611	1.0710	1.5759	Subcooled	0.23239	0.371532
-10	100	41.8079	0.0239	32.16	0.0731	1.0743	1.5833	Subcooled	0.22419	0.366278
-5	100	41.5855	0.0240	37.54	0.0850	1.0776	1.5907	Subcooled	0.21644	0.361059
0	100	41.3612	0.0242	42.93	0.0968	1.0808	1.5982	Subcooled	0.20912	0.355876
5	100	41.1348	0.0243	48.35	0.1085	1.0841	1.6057	Subcooled	0.20220	0.350730
10	100	40.9065	0.0244	53.78	0.1201	1.0874	1.6132	Subcooled	0.19563	0.345620
15	100	40.6761	0.0246	59.22	0.1317	1.0908	1.6208	Subcooled	0.18939	0.340545
20	100	40.4435	0.0247	64.68	0.1431	1.0943	1.6286	Subcooled	0.18346	0.335507
25	100	40.2087	0.0249	70.16	0.1545	1.0978	1.6364	Subcooled	0.17781	0.330504
30	100	39.9717	0.0250	75.66	0.1658	1.1014	1.6445	Subcooled	0.17242	0.325536
35	100	39.7322	0.0252	81.18	0.1770	1.1052	1.6527	Subcooled	0.16727	0.320602
40	100	39.4903	0.0253	86.71	0.1881	1.1091	1.6610	Subcooled	0.16234	0.315701
45	100	39.2458	0.0255	92.27	0.1992	1.1131	1.6697	Subcooled	0.15762	0.310834
50	100	38.9986	0.0256	97.85	0.2102	1.1174	1.6785	Subcooled	0.15310	0.305997
55	100	38.7486	0.0258	103.44	0.2211	1.1218	1.6877	Subcooled	0.14875	0.301191
60	100	0.3353	2.9826	629.05	1.2403	0.6829	1.4256	Superheated	0.00955	0.014400
65	100	0.3307	3.0242	632.44	1.2468	0.6710	1.4184	Superheated	0.00966	0.014528
70	100	0.3263	3.0651	635.77	1.2531	0.6604	1.4118	Superheated	0.00977	0.014660
75	100	0.3220	3.1055	639.04	1.2592	0.6509	1.4057	Superheated	0.00988	0.014795
80	100	0.3179	3.1454	642.28	1.2653	0.6423	1.4000	Superheated	0.00999	0.014933
85	100	0.3140	3.1848	645.47	1.2712	0.6346	1.3947	Superheated	0.01010	0.015075
90	100	0.3102	3.2238	648.62	1.2769	0.6276	1.3898	Superheated	0.01021	0.015220
95	100	0.3065	3.2624	651.74	1.2826	0.6213	1.3851	Superheated	0.01032	0.015369
100	100	0.3030	3.3007	654.84	1.2881	0.6156	1.3807	Superheated	0.01043	0.015520
105	100	0.2995	3.3386	657.90	1.2936	0.6105	1.3766	Superheated	0.01054	0.015675
110	100	0.2962	3.3762	660.94	1.2989	0.6058	1.3726	Superheated	0.01065	0.015833
115	100	0.2930	3.4135	663.96	1.3042	0.6016	1.3689	Superheated	0.01076	0.015994
120	100	0.2898	3.4506	666.96	1.3094	0.5978	1.3653	Superheated	0.01086	0.016158
125	100	0.2867	3.4874	669.94	1.3145	0.5943	1.3619	Superheated	0.01097	0.016325
130	100	0.2838	3.5240	672.90	1.3196	0.5912	1.3587	Superheated	0.01108	0.016495
135	100	0.2809	3.5604	675.85	1.3246	0.5884	1.3556	Superheated	0.01119	0.016668
140	100	0.2780	3.5966	678.79	1.3295	0.5858	1.3526	Superheated	0.01130	0.016843
145	100	0.2753	3.6326	681.71	1.3343	0.5835	1.3497	Superheated	0.01141	0.017022
150	100	0.2726	3.6684	684.62	1.3391	0.5815	1.3469	Superheated	0.01152	0.017203

R-717 (anhydrous ammonia) Properties in the Subcooled Superheat Regions

P=125 psia (68.29 F)

T	P	ρ	v	h	s	Cp	Cp/Cv	Quality	μ	k
[F]	[psia]	[lb/ft^3]	[ft^3/lb]	[Btu/lb]	[Btu/R-lb]	[Btu/R-lb]	[unitless]	[unitless]	[centipoise]	[Btu/h-ft-R]
-50	125	43.5240	0.0230	-10.22	-0.0258	1.0471	1.5225	Subcooled	0.30731	0.409379
-45	125	43.3168	0.0231	-4.97	-0.0131	1.0507	1.5303	Subcooled	0.29436	0.403899
-40	125	43.1077	0.0232	0.29	-0.0005	1.0541	1.5380	Subcooled	0.28228	0.398448
-35	125	42.8967	0.0233	5.57	0.0120	1.0576	1.5456	Subcooled	0.27101	0.393028
-30	125	42.6838	0.0234	10.87	0.0244	1.0609	1.5531	Subcooled	0.26047	0.387639
-25	125	42.4691	0.0235	16.18	0.0367	1.0643	1.5606	Subcooled	0.25059	0.382283
-20	125	42.2526	0.0237	21.51	0.0489	1.0676	1.5680	Subcooled	0.24131	0.376960
-15	125	42.0341	0.0238	26.85	0.0610	1.0708	1.5754	Subcooled	0.23259	0.371672
-10	125	41.8138	0.0239	32.22	0.0730	1.0741	1.5828	Subcooled	0.22438	0.366420
-5	125	41.5916	0.0240	37.60	0.0849	1.0773	1.5903	Subcooled	0.21663	0.361203
0	125	41.3674	0.0242	42.99	0.0967	1.0806	1.5977	Subcooled	0.20931	0.356022
5	125	41.1413	0.0243	48.40	0.1084	1.0839	1.6052	Subcooled	0.20237	0.350878
10	125	40.9131	0.0244	53.83	0.1200	1.0872	1.6127	Subcooled	0.19580	0.345769
15	125	40.6829	0.0246	59.27	0.1315	1.0906	1.6203	Subcooled	0.18956	0.340697
20	125	40.4505	0.0247	64.74	0.1430	1.0940	1.6280	Subcooled	0.18363	0.335661
25	125	40.2159	0.0249	70.21	0.1544	1.0975	1.6359	Subcooled	0.17797	0.330660
30	125	39.9791	0.0250	75.71	0.1656	1.1011	1.6439	Subcooled	0.17258	0.325694
35	125	39.7399	0.0252	81.23	0.1768	1.1049	1.6521	Subcooled	0.16743	0.320763
40	125	39.4983	0.0253	86.76	0.1880	1.1088	1.6604	Subcooled	0.16250	0.315865
45	125	39.2540	0.0255	92.31	0.1990	1.1128	1.6690	Subcooled	0.15778	0.311000
50	125	39.0071	0.0256	97.89	0.2100	1.1170	1.6779	Subcooled	0.15324	0.306166
55	125	38.7574	0.0258	103.48	0.2209	1.1214	1.6870	Subcooled	0.14889	0.301363
60	125	38.5046	0.0260	109.10	0.2318	1.1261	1.6964	Subcooled	0.14471	0.296590
65	125	38.2488	0.0261	114.74	0.2426	1.1309	1.7062	Subcooled	0.14068	0.291844
70	125	0.4184	2.3903	629.82	1.2182	0.7194	1.4504	Superheated	0.00972	0.014810
75	125	0.4124	2.4251	633.38	1.2249	0.7048	1.4415	Superheated	0.00983	0.014942
80	125	0.4066	2.4593	636.87	1.2314	0.6918	1.4334	Superheated	0.00994	0.015078
85	125	0.4011	2.4930	640.30	1.2377	0.6802	1.4259	Superheated	0.01006	0.015217
90	125	0.3959	2.5262	643.67	1.2439	0.6698	1.4190	Superheated	0.01017	0.015360
95	125	0.3908	2.5589	647.00	1.2499	0.6604	1.4126	Superheated	0.01028	0.015506
100	125	0.3859	2.5913	650.28	1.2558	0.6519	1.4066	Superheated	0.01039	0.015655
105	125	0.3812	2.6232	653.52	1.2616	0.6443	1.4010	Superheated	0.01050	0.015808
110	125	0.3767	2.6549	656.72	1.2672	0.6374	1.3958	Superheated	0.01061	0.015964
115	125	0.3723	2.6862	659.89	1.2728	0.6312	1.3909	Superheated	0.01072	0.016123
120	125	0.3680	2.7172	663.04	1.2782	0.6255	1.3862	Superheated	0.01083	0.016285
125	125	0.3639	2.7479	666.15	1.2836	0.6204	1.3818	Superheated	0.01094	0.016450
130	125	0.3599	2.7784	669.24	1.2888	0.6157	1.3776	Superheated	0.01105	0.016619
135	125	0.3560	2.8087	672.31	1.2940	0.6115	1.3737	Superheated	0.01116	0.016790
140	125	0.3523	2.8388	675.36	1.2991	0.6076	1.3699	Superheated	0.01127	0.016964
145	125	0.3486	2.8686	678.38	1.3042	0.6042	1.3662	Superheated	0.01139	0.017141
150	125	0.3450	2.8982	681.40	1.3091	0.6010	1.3628	Superheated	0.01150	0.017321

R-717 (anhydrous ammonia) Properties in the Subcooled Superheat Regions

P=150 psia (78.78 F)

T	P	ρ	v	h	s	Cp	Cp/Cv	Quality	μ	k
[F]	[psia]	[lb/ft^3]	[ft^3/lb]	[Btu/lb]	[Btu/R-lb]	[Btu/R-lb]	[unitless]	[unitless]	[centipoise]	[Btu/h-ft-R]
-50	150	43.5287	0.0230	-10.15	-0.0259	1.0470	1.5221	Subcooled	0.30755	0.409506
-45	150	43.3216	0.0231	-4.91	-0.0132	1.0505	1.5299	Subcooled	0.29459	0.404028
-40	150	43.1127	0.0232	0.35	-0.0006	1.0540	1.5376	Subcooled	0.28251	0.398579
-35	150	42.9018	0.0233	5.63	0.0119	1.0574	1.5452	Subcooled	0.27123	0.393161
-30	150	42.6891	0.0234	10.93	0.0243	1.0608	1.5527	Subcooled	0.26068	0.387773
-25	150	42.4746	0.0235	16.24	0.0366	1.0641	1.5602	Subcooled	0.25079	0.382419
-20	150	42.2581	0.0237	21.57	0.0488	1.0674	1.5676	Subcooled	0.24151	0.377098
-15	150	42.0399	0.0238	26.91	0.0609	1.0706	1.5750	Subcooled	0.23279	0.371812
-10	150	41.8197	0.0239	32.28	0.0729	1.0739	1.5824	Subcooled	0.22457	0.366561
-5	150	41.5976	0.0240	37.65	0.0848	1.0771	1.5898	Subcooled	0.21681	0.361347
0	150	41.3736	0.0242	43.05	0.0966	1.0804	1.5972	Subcooled	0.20949	0.356168
5	150	41.1477	0.0243	48.46	0.1083	1.0837	1.6047	Subcooled	0.20255	0.351025
10	150	40.9197	0.0244	53.88	0.1199	1.0870	1.6122	Subcooled	0.19597	0.345919
15	150	40.6897	0.0246	59.33	0.1314	1.0903	1.6198	Subcooled	0.18973	0.340849
20	150	40.4575	0.0247	64.79	0.1429	1.0937	1.6275	Subcooled	0.18379	0.335815
25	150	40.2232	0.0249	70.26	0.1542	1.0972	1.6353	Subcooled	0.17813	0.330816
30	150	39.9866	0.0250	75.76	0.1655	1.1008	1.6433	Subcooled	0.17274	0.325853
35	150	39.7476	0.0252	81.27	0.1767	1.1046	1.6515	Subcooled	0.16758	0.320924
40	150	39.5062	0.0253	86.80	0.1878	1.1084	1.6598	Subcooled	0.16265	0.316028
45	150	39.2622	0.0255	92.36	0.1989	1.1124	1.6684	Subcooled	0.15793	0.311166
50	150	39.0156	0.0256	97.93	0.2099	1.1166	1.6772	Subcooled	0.15339	0.306335
55	150	38.7661	0.0258	103.52	0.2208	1.1210	1.6863	Subcooled	0.14904	0.301535
60	150	38.5137	0.0260	109.14	0.2317	1.1256	1.6957	Subcooled	0.14485	0.296765
65	150	38.2582	0.0261	114.78	0.2425	1.1305	1.7054	Subcooled	0.14082	0.292022
70	150	37.9994	0.0263	120.45	0.2532	1.1357	1.7155	Subcooled	0.13693	0.287306
75	150	37.7371	0.0265	126.14	0.2639	1.1411	1.7261	Subcooled	0.13318	0.282616
80	150	0.5002	1.9993	631.11	1.2017	0.7502	1.4726	Superheated	0.00989	0.015234
85	150	0.4927	2.0294	634.82	1.2086	0.7333	1.4621	Superheated	0.01001	0.015369
90	150	0.4857	2.0590	638.45	1.2152	0.7184	1.4526	Superheated	0.01012	0.015509
95	150	0.4789	2.0881	642.00	1.2217	0.7050	1.4439	Superheated	0.01024	0.015652
100	150	0.4724	2.1167	645.50	1.2279	0.6931	1.4359	Superheated	0.01035	0.015799
105	150	0.4662	2.1448	648.94	1.2340	0.6823	1.4285	Superheated	0.01046	0.015949
110	150	0.4603	2.1726	652.32	1.2400	0.6727	1.4216	Superheated	0.01057	0.016102
115	150	0.4545	2.2000	655.66	1.2459	0.6640	1.4152	Superheated	0.01069	0.016259
120	150	0.4490	2.2271	658.96	1.2516	0.6561	1.4092	Superheated	0.01080	0.016419
125	150	0.4437	2.2539	662.23	1.2572	0.6489	1.4036	Superheated	0.01091	0.016582
130	150	0.4385	2.2804	665.45	1.2627	0.6424	1.3983	Superheated	0.01102	0.016749
135	150	0.4335	2.3067	668.65	1.2681	0.6366	1.3933	Superheated	0.01114	0.016918
140	150	0.4287	2.3327	671.82	1.2734	0.6312	1.3885	Superheated	0.01125	0.017091
145	150	0.4240	2.3585	674.96	1.2786	0.6264	1.3841	Superheated	0.01136	0.017266
150	150	0.4194	2.3841	678.09	1.2837	0.6220	1.3798	Superheated	0.01147	0.017445

R-717 (anhydrous ammonia) Properties in the Subcooled Superheat Regions

P=175 psia (88.02 F)

T	P	ρ	v	h	s	Cp	Cp/Cv	Quality	μ	k
[F]	[psia]	[lb/ft^3]	[ft^3/lb]	[Btu/lb]	[Btu/R-lb]	[Btu/R-lb]	[unitless]	[unitless]	[centipoise]	[Btu/h-ft-R]
-50	175	43.5334	0.0230	-10.09	-0.0260	1.0468	1.5217	Subcooled	0.30779	0.409633
-45	175	43.3265	0.0231	-4.84	-0.0133	1.0503	1.5295	Subcooled	0.29482	0.404158
-40	175	43.1177	0.0232	0.42	-0.0007	1.0538	1.5371	Subcooled	0.28274	0.398710
-35	175	42.9070	0.0233	5.70	0.0118	1.0572	1.5447	Subcooled	0.27145	0.393293
-30	175	42.6944	0.0234	10.99	0.0242	1.0606	1.5523	Subcooled	0.26089	0.387908
-25	175	42.4800	0.0235	16.30	0.0365	1.0639	1.5597	Subcooled	0.25100	0.382555
-20	175	42.2637	0.0237	21.63	0.0487	1.0672	1.5672	Subcooled	0.24171	0.377236
-15	175	42.0456	0.0238	26.97	0.0608	1.0704	1.5746	Subcooled	0.23298	0.371952
-10	175	41.8256	0.0239	32.33	0.0728	1.0737	1.5819	Subcooled	0.22476	0.366703
-5	175	41.6037	0.0240	37.71	0.0846	1.0769	1.5893	Subcooled	0.21700	0.361490
0	175	41.3799	0.0242	43.10	0.0964	1.0802	1.5967	Subcooled	0.20967	0.356313
5	175	41.1541	0.0243	48.51	0.1081	1.0834	1.6042	Subcooled	0.20273	0.351173
10	175	40.9263	0.0244	53.94	0.1198	1.0867	1.6117	Subcooled	0.19615	0.346068
15	175	40.6965	0.0246	59.38	0.1313	1.0901	1.6193	Subcooled	0.18990	0.341001
20	175	40.4645	0.0247	64.84	0.1427	1.0935	1.6270	Subcooled	0.18396	0.335969
25	175	40.2304	0.0249	70.31	0.1541	1.0970	1.6348	Subcooled	0.17830	0.330972
30	175	39.9940	0.0250	75.81	0.1654	1.1006	1.6428	Subcooled	0.17290	0.326011
35	175	39.7553	0.0252	81.32	0.1766	1.1043	1.6509	Subcooled	0.16774	0.321085
40	175	39.5141	0.0253	86.85	0.1877	1.1081	1.6592	Subcooled	0.16281	0.316192
45	175	39.2704	0.0255	92.40	0.1987	1.1121	1.6677	Subcooled	0.15808	0.311332
50	175	39.0240	0.0256	97.97	0.2097	1.1163	1.6765	Subcooled	0.15354	0.306504
55	175	38.7749	0.0258	103.56	0.2206	1.1206	1.6856	Subcooled	0.14919	0.301707
60	175	38.5228	0.0260	109.18	0.2315	1.1252	1.6949	Subcooled	0.14500	0.296939
65	175	38.2676	0.0261	114.82	0.2423	1.1301	1.7046	Subcooled	0.14096	0.292200
70	175	38.0091	0.0263	120.48	0.2530	1.1352	1.7147	Subcooled	0.13707	0.287488
75	175	37.7472	0.0265	126.17	0.2637	1.1406	1.7252	Subcooled	0.13332	0.282801
80	175	37.4816	0.0267	131.89	0.2744	1.1464	1.7362	Subcooled	0.12969	0.278137
85	175	37.2121	0.0269	137.63	0.2850	1.1526	1.7476	Subcooled	0.12617	0.273496
90	175	0.5803	1.7233	632.89	1.1893	0.7752	1.4919	Superheated	0.01008	0.015669
95	175	0.5715	1.7499	636.72	1.1962	0.7566	1.4801	Superheated	0.01019	0.015809
100	175	0.5631	1.7760	640.46	1.2029	0.7402	1.4694	Superheated	0.01031	0.015952
105	175	0.5551	1.8016	644.13	1.2094	0.7255	1.4596	Superheated	0.01042	0.016099
110	175	0.5474	1.8268	647.72	1.2158	0.7124	1.4506	Superheated	0.01054	0.016249
115	175	0.5401	1.8516	651.25	1.2219	0.7006	1.4424	Superheated	0.01065	0.016404
120	175	0.5331	1.8760	654.73	1.2280	0.6900	1.4347	Superheated	0.01077	0.016561
125	175	0.5263	1.9001	658.16	1.2338	0.6804	1.4276	Superheated	0.01088	0.016722
130	175	0.5198	1.9238	661.54	1.2396	0.6718	1.4209	Superheated	0.01100	0.016886
135	175	0.5135	1.9473	664.87	1.2452	0.6640	1.4147	Superheated	0.01111	0.017053
140	175	0.5075	1.9705	668.18	1.2508	0.6569	1.4088	Superheated	0.01122	0.017224
145	175	0.5016	1.9935	671.44	1.2562	0.6504	1.4033	Superheated	0.01134	0.017397
150	175	0.4960	2.0163	674.68	1.2615	0.6445	1.3981	Superheated	0.01145	0.017574

R-717 (anhydrous ammonia) Properties in the Subcooled Superheat Regions

P=200 psia (96.30 F)

T	P	ρ	v	h	s	Cp	Cp/Cv	Quality	μ	k
[F]	[psia]	[lb/ft^3]	[ft^3/lb]	[Btu/lb]	[Btu/R-lb]	[Btu/R-lb]	[unitless]	[unitless]	[centipoise]	[Btu/h-ft-R]
-50	200	43.5382	0.0230	-10.02	-0.0261	1.0467	1.5213	Subcooled	0.30803	0.409761
-45	200	43.3313	0.0231	-4.78	-0.0134	1.0502	1.5291	Subcooled	0.29506	0.404287
-40	200	43.1226	0.0232	0.48	-0.0008	1.0536	1.5367	Subcooled	0.28296	0.398841
-35	200	42.9121	0.0233	5.76	0.0117	1.0571	1.5443	Subcooled	0.27167	0.393426
-30	200	42.6997	0.0234	11.05	0.0241	1.0604	1.5518	Subcooled	0.26111	0.388042
-25	200	42.4854	0.0235	16.36	0.0364	1.0637	1.5593	Subcooled	0.25121	0.382691
-20	200	42.2693	0.0237	21.69	0.0486	1.0670	1.5667	Subcooled	0.24191	0.377374
-15	200	42.0513	0.0238	27.03	0.0607	1.0703	1.5741	Subcooled	0.23318	0.372092
-10	200	41.8315	0.0239	32.39	0.0726	1.0735	1.5815	Subcooled	0.22495	0.366845
-5	200	41.6097	0.0240	37.77	0.0845	1.0767	1.5889	Subcooled	0.21719	0.361633
0	200	41.3861	0.0242	43.16	0.0963	1.0799	1.5963	Subcooled	0.20985	0.356458
5	200	41.1605	0.0243	48.57	0.1080	1.0832	1.6037	Subcooled	0.20290	0.351320
10	200	40.9329	0.0244	53.99	0.1196	1.0865	1.6112	Subcooled	0.19632	0.346218
15	200	40.7032	0.0246	59.43	0.1312	1.0898	1.6188	Subcooled	0.19007	0.341152
20	200	40.4715	0.0247	64.89	0.1426	1.0932	1.6265	Subcooled	0.18412	0.336122
25	200	40.2376	0.0249	70.36	0.1539	1.0967	1.6343	Subcooled	0.17846	0.331128
30	200	40.0014	0.0250	75.86	0.1652	1.1003	1.6422	Subcooled	0.17306	0.326169
35	200	39.7629	0.0251	81.37	0.1764	1.1039	1.6503	Subcooled	0.16790	0.321245
40	200	39.5220	0.0253	86.90	0.1875	1.1078	1.6586	Subcooled	0.16296	0.316355
45	200	39.2786	0.0255	92.44	0.1986	1.1117	1.6671	Subcooled	0.15823	0.311497
50	200	39.0325	0.0256	98.01	0.2096	1.1159	1.6759	Subcooled	0.15369	0.306672
55	200	38.7836	0.0258	103.60	0.2205	1.1202	1.6849	Subcooled	0.14934	0.301878
60	200	38.5318	0.0260	109.22	0.2313	1.1248	1.6942	Subcooled	0.14514	0.297113
65	200	38.2769	0.0261	114.85	0.2421	1.1296	1.7039	Subcooled	0.14111	0.292377
70	200	38.0188	0.0263	120.51	0.2529	1.1347	1.7139	Subcooled	0.13722	0.287668
75	200	37.7572	0.0265	126.20	0.2636	1.1401	1.7244	Subcooled	0.13346	0.282985
80	200	37.4920	0.0267	131.91	0.2742	1.1458	1.7353	Subcooled	0.12983	0.278325
85	200	37.2229	0.0269	137.66	0.2848	1.1520	1.7467	Subcooled	0.12631	0.273688
90	200	36.9497	0.0271	143.43	0.2953	1.1585	1.7586	Subcooled	0.12291	0.269070
95	200	36.6721	0.0273	149.24	0.3059	1.1655	1.7712	Subcooled	0.11961	0.264470
100	200	0.6584	1.5189	635.14	1.1798	0.7947	1.5083	Superheated	0.01027	0.016116
105	200	0.6482	1.5428	639.06	1.1868	0.7750	1.4953	Superheated	0.01039	0.016259
110	200	0.6385	1.5662	642.89	1.1935	0.7575	1.4836	Superheated	0.01050	0.016406
115	200	0.6293	1.5891	646.64	1.2001	0.7419	1.4730	Superheated	0.01062	0.016557
120	200	0.6205	1.6116	650.31	1.2065	0.7279	1.4632	Superheated	0.01074	0.016711
125	200	0.6121	1.6337	653.92	1.2127	0.7154	1.4542	Superheated	0.01085	0.016869
130	200	0.6040	1.6555	657.47	1.2187	0.7042	1.4459	Superheated	0.01097	0.017031
135	200	0.5963	1.6770	660.96	1.2246	0.6940	1.4382	Superheated	0.01108	0.017196
140	200	0.5889	1.6982	664.41	1.2304	0.6848	1.4310	Superheated	0.01120	0.017364
145	200	0.5817	1.7191	667.81	1.2360	0.6765	1.4243	Superheated	0.01131	0.017535
150	200	0.5748	1.7398	671.18	1.2416	0.6690	1.4179	Superheated	0.01143	0.017710

R-717 (anhydrous ammonia) Properties in the Subcooled Superheat Regions

P=225 psia (103.83 F)

T	P	ρ	v	h	s	Cp	Cp/Cv	Quality	μ	k
[F]	[psia]	[lb/ft^3]	[ft^3/lb]	[Btu/lb]	[Btu/R-lb]	[Btu/R-lb]	[unitless]	[unitless]	[centipoise]	[Btu/h-ft-R]
-50	225	43.5429	0.0230	-9.96	-0.0262	1.0465	1.5209	Subcooled	0.30827	0.409888
-45	225	43.3362	0.0231	-4.71	-0.0135	1.0500	1.5287	Subcooled	0.29529	0.404416
-40	225	43.1276	0.0232	0.54	-0.0009	1.0535	1.5363	Subcooled	0.28319	0.398972
-35	225	42.9172	0.0233	5.82	0.0116	1.0569	1.5439	Subcooled	0.27189	0.393558
-30	225	42.7049	0.0234	11.11	0.0240	1.0602	1.5514	Subcooled	0.26132	0.388176
-25	225	42.4908	0.0235	16.42	0.0363	1.0635	1.5589	Subcooled	0.25141	0.382827
-20	225	42.2748	0.0237	21.75	0.0485	1.0668	1.5663	Subcooled	0.24212	0.377512
-15	225	42.0570	0.0238	27.09	0.0605	1.0701	1.5737	Subcooled	0.23337	0.372231
-10	225	41.8373	0.0239	32.45	0.0725	1.0733	1.5810	Subcooled	0.22514	0.366986
-5	225	41.6158	0.0240	37.82	0.0844	1.0765	1.5884	Subcooled	0.21737	0.361777
0	225	41.3923	0.0242	43.21	0.0962	1.0797	1.5958	Subcooled	0.21003	0.356604
5	225	41.1669	0.0243	48.62	0.1079	1.0830	1.6032	Subcooled	0.20308	0.351467
10	225	40.9395	0.0244	54.04	0.1195	1.0862	1.6107	Subcooled	0.19649	0.346367
15	225	40.7100	0.0246	59.48	0.1310	1.0896	1.6183	Subcooled	0.19024	0.341303
20	225	40.4785	0.0247	64.94	0.1425	1.0929	1.6259	Subcooled	0.18429	0.336276
25	225	40.2448	0.0248	70.41	0.1538	1.0964	1.6337	Subcooled	0.17862	0.331284
30	225	40.0088	0.0250	75.90	0.1651	1.1000	1.6416	Subcooled	0.17322	0.326327
35	225	39.7706	0.0251	81.41	0.1763	1.1036	1.6497	Subcooled	0.16805	0.321405
40	225	39.5299	0.0253	86.94	0.1874	1.1074	1.6580	Subcooled	0.16311	0.316518
45	225	39.2867	0.0255	92.49	0.1984	1.1114	1.6665	Subcooled	0.15838	0.311663
50	225	39.0409	0.0256	98.06	0.2094	1.1155	1.6752	Subcooled	0.15384	0.306840
55	225	38.7923	0.0258	103.64	0.2203	1.1198	1.6842	Subcooled	0.14948	0.302049
60	225	38.5408	0.0259	109.25	0.2312	1.1244	1.6935	Subcooled	0.14529	0.297287
65	225	38.2863	0.0261	114.89	0.2420	1.1292	1.7031	Subcooled	0.14125	0.292554
70	225	38.0285	0.0263	120.55	0.2527	1.1342	1.7131	Subcooled	0.13736	0.287849
75	225	37.7673	0.0265	126.23	0.2634	1.1396	1.7235	Subcooled	0.13360	0.283169
80	225	37.5025	0.0267	131.94	0.2740	1.1453	1.7344	Subcooled	0.12997	0.278513
85	225	37.2338	0.0269	137.68	0.2846	1.1514	1.7457	Subcooled	0.12645	0.273879
90	225	36.9610	0.0271	143.46	0.2952	1.1579	1.7576	Subcooled	0.12305	0.269266
95	225	36.6839	0.0273	149.26	0.3057	1.1648	1.7702	Subcooled	0.11974	0.264671
100	225	36.4020	0.0275	155.11	0.3162	1.1723	1.7834	Subcooled	0.11654	0.260092
105	225	0.7463	1.3399	633.69	1.1655	0.8325	1.5369	Superheated	0.01035	0.016432
110	225	0.7342	1.3621	637.80	1.1727	0.8093	1.5216	Superheated	0.01047	0.016574
115	225	0.7227	1.3837	641.79	1.1797	0.7888	1.5079	Superheated	0.01059	0.016721
120	225	0.7118	1.4049	645.69	1.1865	0.7707	1.4954	Superheated	0.01071	0.016871
125	225	0.7014	1.4256	649.50	1.1930	0.7546	1.4841	Superheated	0.01082	0.017026
130	225	0.6916	1.4460	653.24	1.1994	0.7402	1.4737	Superheated	0.01094	0.017184
135	225	0.6821	1.4660	656.91	1.2056	0.7272	1.4641	Superheated	0.01106	0.017346
140	225	0.6731	1.4857	660.51	1.2116	0.7155	1.4553	Superheated	0.01117	0.017511
145	225	0.6644	1.5050	664.06	1.2175	0.7050	1.4471	Superheated	0.01129	0.017680
150	225	0.6561	1.5242	667.57	1.2233	0.6955	1.4395	Superheated	0.01141	0.017852

R-717 (anhydrous ammonia) Properties in the Subcooled Superheat Regions

P=250 psia (110.75 F)

T	P	ρ	v	h	s	Cp	Cp/Cv	Quality	μ	k
[F]	[psia]	[lb/ft^3]	[ft^3/lb]	[Btu/lb]	[Btu/R-lb]	[Btu/R-lb]	[unitless]	[unitless]	[centipoise]	[Btu/h-ft-R]
-50	250	43.5476	0.0230	-9.89	-0.0263	1.0463	1.5205	Subcooled	0.30852	0.410016
-45	250	43.3411	0.0231	-4.65	-0.0136	1.0499	1.5282	Subcooled	0.29553	0.404545
-40	250	43.1326	0.0232	0.61	-0.0010	1.0533	1.5359	Subcooled	0.28342	0.399103
-35	250	42.9223	0.0233	5.88	0.0115	1.0567	1.5435	Subcooled	0.27211	0.393691
-30	250	42.7102	0.0234	11.18	0.0239	1.0601	1.5510	Subcooled	0.26153	0.388310
-25	250	42.4962	0.0235	16.48	0.0362	1.0634	1.5584	Subcooled	0.25162	0.382963
-20	250	42.2804	0.0237	21.81	0.0483	1.0666	1.5659	Subcooled	0.24232	0.377650
-15	250	42.0627	0.0238	27.15	0.0604	1.0699	1.5732	Subcooled	0.23357	0.372371
-10	250	41.8432	0.0239	32.51	0.0724	1.0731	1.5806	Subcooled	0.22533	0.367127
-5	250	41.6218	0.0240	37.88	0.0843	1.0763	1.5879	Subcooled	0.21756	0.361920
0	250	41.3985	0.0242	43.27	0.0961	1.0795	1.5953	Subcooled	0.21021	0.356749
5	250	41.1733	0.0243	48.68	0.1078	1.0827	1.6027	Subcooled	0.20326	0.351614
10	250	40.9460	0.0244	54.10	0.1194	1.0860	1.6102	Subcooled	0.19667	0.346516
15	250	40.7168	0.0246	59.54	0.1309	1.0893	1.6178	Subcooled	0.19041	0.341454
20	250	40.4854	0.0247	64.99	0.1423	1.0927	1.6254	Subcooled	0.18445	0.336429
25	250	40.2519	0.0248	70.46	0.1537	1.0961	1.6332	Subcooled	0.17878	0.331439
30	250	40.0162	0.0250	75.95	0.1649	1.0997	1.6411	Subcooled	0.17338	0.326485
35	250	39.7782	0.0251	81.46	0.1761	1.1033	1.6491	Subcooled	0.16821	0.321566
40	250	39.5378	0.0253	86.99	0.1873	1.1071	1.6574	Subcooled	0.16327	0.316680
45	250	39.2948	0.0254	92.53	0.1983	1.1111	1.6658	Subcooled	0.15853	0.311828
50	250	39.0493	0.0256	98.10	0.2093	1.1152	1.6745	Subcooled	0.15399	0.307008
55	250	38.8010	0.0258	103.68	0.2202	1.1195	1.6835	Subcooled	0.14963	0.302220
60	250	38.5498	0.0259	109.29	0.2310	1.1240	1.6928	Subcooled	0.14543	0.297461
65	250	38.2956	0.0261	114.92	0.2418	1.1287	1.7024	Subcooled	0.14139	0.292731
70	250	38.0381	0.0263	120.58	0.2525	1.1338	1.7123	Subcooled	0.13750	0.288029
75	250	37.7773	0.0265	126.26	0.2632	1.1391	1.7227	Subcooled	0.13374	0.283352
80	250	37.5129	0.0267	131.97	0.2738	1.1448	1.7335	Subcooled	0.13011	0.278700
85	250	37.2446	0.0268	137.71	0.2844	1.1508	1.7448	Subcooled	0.12659	0.274071
90	250	36.9723	0.0270	143.48	0.2950	1.1573	1.7566	Subcooled	0.12318	0.269461
95	250	36.6956	0.0273	149.28	0.3055	1.1642	1.7691	Subcooled	0.11988	0.264871
100	250	36.4143	0.0275	155.12	0.3160	1.1716	1.7822	Subcooled	0.11667	0.260296
105	250	36.1279	0.0277	161.00	0.3264	1.1796	1.7961	Subcooled	0.11355	0.255735
110	250	35.8362	0.0279	166.92	0.3369	1.1883	1.8108	Subcooled	0.11052	0.251185
115	250	0.8208	1.2183	636.68	1.1604	0.8429	1.5481	Superheated	0.01056	0.016896
120	250	0.8074	1.2385	640.84	1.1676	0.8194	1.5321	Superheated	0.01068	0.017042
125	250	0.7948	1.2582	644.88	1.1745	0.7988	1.5178	Superheated	0.01080	0.017192
130	250	0.7828	1.2775	648.83	1.1812	0.7804	1.5048	Superheated	0.01091	0.017347
135	250	0.7714	1.2964	652.69	1.1878	0.7640	1.4930	Superheated	0.01103	0.017505
140	250	0.7605	1.3150	656.47	1.1941	0.7494	1.4822	Superheated	0.01115	0.017667
145	250	0.7501	1.3332	660.18	1.2003	0.7363	1.4722	Superheated	0.01127	0.017833
150	250	0.7401	1.3511	663.83	1.2063	0.7244	1.4630	Superheated	0.01138	0.018003

R-717 (anhydrous ammonia) Properties in the Subcooled Superheat Regions

P=275 psia (117.17 F)

T	P	ρ	v	h	s	Cp	Cp/Cv	Quality	μ	k
[F]	[psia]	[lb/ft^3]	[ft^3/lb]	[Btu/lb]	[Btu/R-lb]	[Btu/R-lb]	[unitless]	[unitless]	[centipoise]	[Btu/h-ft-R]
-50	275	43.5523	0.0230	-9.82	-0.0264	1.0462	1.5201	Subcooled	0.30876	0.410143
-45	275	43.3459	0.0231	-4.59	-0.0137	1.0497	1.5278	Subcooled	0.29576	0.404674
-40	275	43.1376	0.0232	0.67	-0.0011	1.0532	1.5355	Subcooled	0.28364	0.399233
-35	275	42.9274	0.0233	5.95	0.0114	1.0566	1.5431	Subcooled	0.27233	0.393823
-30	275	42.7154	0.0234	11.24	0.0238	1.0599	1.5506	Subcooled	0.26174	0.388445
-25	275	42.5016	0.0235	16.55	0.0361	1.0632	1.5580	Subcooled	0.25183	0.383099
-20	275	42.2859	0.0236	21.87	0.0482	1.0664	1.5654	Subcooled	0.24252	0.377787
-15	275	42.0684	0.0238	27.21	0.0603	1.0697	1.5728	Subcooled	0.23376	0.372510
-10	275	41.8491	0.0239	32.57	0.0723	1.0729	1.5801	Subcooled	0.22552	0.367269
-5	275	41.6278	0.0240	37.94	0.0842	1.0761	1.5875	Subcooled	0.21774	0.362063
0	275	41.4047	0.0242	43.33	0.0960	1.0793	1.5949	Subcooled	0.21039	0.356894
5	275	41.1796	0.0243	48.73	0.1077	1.0825	1.6023	Subcooled	0.20343	0.351761
10	275	40.9526	0.0244	54.15	0.1193	1.0858	1.6097	Subcooled	0.19684	0.346665
15	275	40.7235	0.0246	59.59	0.1308	1.0891	1.6172	Subcooled	0.19058	0.341605
20	275	40.4924	0.0247	65.04	0.1422	1.0924	1.6249	Subcooled	0.18462	0.336582
25	275	40.2591	0.0248	70.51	0.1535	1.0959	1.6326	Subcooled	0.17895	0.331595
30	275	40.0236	0.0250	76.00	0.1648	1.0994	1.6405	Subcooled	0.17353	0.326643
35	275	39.7858	0.0251	81.51	0.1760	1.1030	1.6485	Subcooled	0.16837	0.321726
40	275	39.5456	0.0253	87.03	0.1871	1.1068	1.6568	Subcooled	0.16342	0.316843
45	275	39.3030	0.0254	92.58	0.1981	1.1107	1.6652	Subcooled	0.15868	0.311993
50	275	39.0577	0.0256	98.14	0.2091	1.1148	1.6739	Subcooled	0.15414	0.307176
55	275	38.8097	0.0258	103.72	0.2200	1.1191	1.6828	Subcooled	0.14978	0.302390
60	275	38.5588	0.0259	109.33	0.2309	1.1236	1.6920	Subcooled	0.14558	0.297635
65	275	38.3049	0.0261	114.96	0.2416	1.1283	1.7016	Subcooled	0.14154	0.292908
70	275	38.0478	0.0263	120.61	0.2524	1.1333	1.7115	Subcooled	0.13764	0.288209
75	275	37.7873	0.0265	126.29	0.2630	1.1386	1.7218	Subcooled	0.13388	0.283536
80	275	37.5233	0.0267	132.00	0.2737	1.1442	1.7326	Subcooled	0.13025	0.278887
85	275	37.2554	0.0268	137.74	0.2842	1.1502	1.7439	Subcooled	0.12673	0.274262
90	275	36.9835	0.0270	143.50	0.2948	1.1566	1.7556	Subcooled	0.12332	0.269657
95	275	36.7073	0.0272	149.30	0.3053	1.1635	1.7680	Subcooled	0.12002	0.265070
100	275	36.4265	0.0275	155.14	0.3158	1.1709	1.7811	Subcooled	0.11681	0.260500
105	275	36.1407	0.0277	161.01	0.3262	1.1788	1.7949	Subcooled	0.11369	0.255945
110	275	35.8495	0.0279	166.93	0.3366	1.1874	1.8095	Subcooled	0.11066	0.251400
115	275	35.5527	0.0281	172.89	0.3471	1.1967	1.8250	Subcooled	0.10770	0.246864
120	275	0.9081	1.1012	635.71	1.1494	0.8756	1.5746	Superheated	0.01065	0.017225
125	275	0.8927	1.1202	640.02	1.1568	0.8491	1.5563	Superheated	0.01077	0.017370
130	275	0.8781	1.1388	644.21	1.1639	0.8258	1.5400	Superheated	0.01089	0.017520
135	275	0.8644	1.1569	648.28	1.1708	0.8053	1.5254	Superheated	0.01101	0.017674
140	275	0.8513	1.1746	652.26	1.1775	0.7870	1.5121	Superheated	0.01113	0.017832
145	275	0.8389	1.1920	656.16	1.1839	0.7707	1.4999	Superheated	0.01125	0.017995
150	275	0.8271	1.2090	659.97	1.1902	0.7561	1.4888	Superheated	0.01137	0.018161

R-717 (anhydrous ammonia) Properties in the Subcooled Superheat Regions

P=300 psia (123.16 F)

T	P	ρ	v	h	s	Cp	Cp/Cv	Quality	μ	k
[F]	[psia]	[lb/ft^3]	[ft^3/lb]	[Btu/lb]	[Btu/R-lb]	[Btu/R-lb]	[unitless]	[unitless]	[centipoise]	[Btu/h-ft-R]
-50	300	43.5570	0.0230	-9.76	-0.0265	1.0460	1.5197	Subcooled	0.30900	0.410270
-45	300	43.3507	0.0231	-4.52	-0.0138	1.0495	1.5274	Subcooled	0.29599	0.404803
-40	300	43.1426	0.0232	0.74	-0.0012	1.0530	1.5351	Subcooled	0.28387	0.399364
-35	300	42.9326	0.0233	6.01	0.0113	1.0564	1.5427	Subcooled	0.27255	0.393955
-30	300	42.7207	0.0234	11.30	0.0237	1.0597	1.5502	Subcooled	0.26196	0.388579
-25	300	42.5070	0.0235	16.61	0.0359	1.0630	1.5576	Subcooled	0.25203	0.383235
-20	300	42.2915	0.0236	21.93	0.0481	1.0663	1.5650	Subcooled	0.24272	0.377925
-15	300	42.0741	0.0238	27.27	0.0602	1.0695	1.5723	Subcooled	0.23396	0.372650
-10	300	41.8549	0.0239	32.62	0.0722	1.0727	1.5797	Subcooled	0.22571	0.367410
-5	300	41.6339	0.0240	38.00	0.0841	1.0759	1.5870	Subcooled	0.21793	0.362206
0	300	41.4109	0.0241	43.38	0.0958	1.0791	1.5944	Subcooled	0.21057	0.357039
5	300	41.1860	0.0243	48.79	0.1075	1.0823	1.6018	Subcooled	0.20361	0.351908
10	300	40.9591	0.0244	54.21	0.1191	1.0855	1.6092	Subcooled	0.19701	0.346814
15	300	40.7303	0.0246	59.64	0.1306	1.0888	1.6167	Subcooled	0.19074	0.341756
20	300	40.4993	0.0247	65.09	0.1421	1.0922	1.6243	Subcooled	0.18478	0.336735
25	300	40.2663	0.0248	70.56	0.1534	1.0956	1.6321	Subcooled	0.17911	0.331750
30	300	40.0310	0.0250	76.05	0.1647	1.0991	1.6399	Subcooled	0.17369	0.326800
35	300	39.7934	0.0251	81.55	0.1759	1.1027	1.6480	Subcooled	0.16852	0.321886
40	300	39.5535	0.0253	87.08	0.1870	1.1065	1.6562	Subcooled	0.16357	0.317005
45	300	39.3111	0.0254	92.62	0.1980	1.1104	1.6646	Subcooled	0.15883	0.312158
50	300	39.0661	0.0256	98.18	0.2090	1.1144	1.6732	Subcooled	0.15429	0.307344
55	300	38.8183	0.0258	103.76	0.2199	1.1187	1.6821	Subcooled	0.14992	0.302561
60	300	38.5677	0.0259	109.37	0.2307	1.1232	1.6913	Subcooled	0.14572	0.297808
65	300	38.3142	0.0261	115.00	0.2415	1.1279	1.7008	Subcooled	0.14168	0.293084
70	300	38.0574	0.0263	120.65	0.2522	1.1328	1.7107	Subcooled	0.13778	0.288388
75	300	37.7973	0.0265	126.33	0.2629	1.1381	1.7210	Subcooled	0.13402	0.283719
80	300	37.5336	0.0266	132.03	0.2735	1.1437	1.7317	Subcooled	0.13038	0.279074
85	300	37.2662	0.0268	137.76	0.2841	1.1496	1.7429	Subcooled	0.12687	0.274452
90	300	36.9947	0.0270	143.53	0.2946	1.1560	1.7547	Subcooled	0.12346	0.269851
95	300	36.7190	0.0272	149.32	0.3051	1.1628	1.7670	Subcooled	0.12016	0.265269
100	300	36.4387	0.0274	155.16	0.3156	1.1701	1.7800	Subcooled	0.11695	0.260704
105	300	36.1534	0.0277	161.03	0.3260	1.1780	1.7937	Subcooled	0.11383	0.256154
110	300	35.8629	0.0279	166.94	0.3364	1.1865	1.8082	Subcooled	0.11079	0.251614
115	300	35.5666	0.0281	172.89	0.3468	1.1957	1.8236	Subcooled	0.10784	0.247084
120	300	35.2642	0.0284	178.90	0.3572	1.2057	1.8400	Subcooled	0.10495	0.242560
125	300	0.9958	1.0043	634.89	1.1396	0.9072	1.6010	Superheated	0.01074	0.017562
130	300	0.9782	1.0223	639.35	1.1472	0.8777	1.5803	Superheated	0.01086	0.017706
135	300	0.9617	1.0399	643.68	1.1545	0.8519	1.5620	Superheated	0.01099	0.017855
140	300	0.9461	1.0570	647.88	1.1616	0.8291	1.5456	Superheated	0.01111	0.018008
145	300	0.9314	1.0737	651.97	1.1684	0.8090	1.5308	Superheated	0.01123	0.018166
150	300	0.9174	1.0900	655.97	1.1750	0.7911	1.5173	Superheated	0.01135	0.018329

R-717 (anhydrous ammonia) Properties in the Subcooled Superheat Regions

P=325 psia (128.79 F)

T	P	ρ	v	h	s	Cp	Cp/Cv	Quality	μ	k
[F]	[psia]	[lb/ft^3]	[ft^3/lb]	[Btu/lb]	[Btu/R-lb]	[Btu/R-lb]	[unitless]	[unitless]	[centipoise]	[Btu/h-ft-R]
-50	325	43.5618	0.0230	-9.69	-0.0266	1.0459	1.5193	Subcooled	0.30924	0.410397
-45	325	43.3556	0.0231	-4.46	-0.0139	1.0494	1.5270	Subcooled	0.29623	0.404931
-40	325	43.1475	0.0232	0.80	-0.0013	1.0528	1.5347	Subcooled	0.28409	0.399494
-35	325	42.9377	0.0233	6.07	0.0112	1.0562	1.5422	Subcooled	0.27277	0.394088
-30	325	42.7259	0.0234	11.36	0.0236	1.0595	1.5497	Subcooled	0.26217	0.388713
-25	325	42.5124	0.0235	16.67	0.0358	1.0628	1.5572	Subcooled	0.25224	0.383370
-20	325	42.2970	0.0236	21.99	0.0480	1.0661	1.5646	Subcooled	0.24292	0.378062
-15	325	42.0798	0.0238	27.33	0.0601	1.0693	1.5719	Subcooled	0.23415	0.372789
-10	325	41.8608	0.0239	32.68	0.0721	1.0725	1.5792	Subcooled	0.22590	0.367551
-5	325	41.6399	0.0240	38.05	0.0839	1.0757	1.5866	Subcooled	0.21811	0.362349
0	325	41.4171	0.0241	43.44	0.0957	1.0789	1.5939	Subcooled	0.21075	0.357184
5	325	41.1924	0.0243	48.84	0.1074	1.0821	1.6013	Subcooled	0.20379	0.352055
10	325	40.9657	0.0244	54.26	0.1190	1.0853	1.6087	Subcooled	0.19718	0.346963
15	325	40.7370	0.0245	59.69	0.1305	1.0886	1.6162	Subcooled	0.19091	0.341907
20	325	40.5063	0.0247	65.15	0.1419	1.0919	1.6238	Subcooled	0.18495	0.336888
25	325	40.2734	0.0248	70.61	0.1533	1.0953	1.6315	Subcooled	0.17927	0.331905
30	325	40.0384	0.0250	76.10	0.1645	1.0988	1.6394	Subcooled	0.17385	0.326958
35	325	39.8010	0.0251	81.60	0.1757	1.1024	1.6474	Subcooled	0.16868	0.322045
40	325	39.5613	0.0253	87.12	0.1868	1.1062	1.6556	Subcooled	0.16373	0.317167
45	325	39.3192	0.0254	92.66	0.1979	1.1100	1.6639	Subcooled	0.15899	0.312323
50	325	39.0744	0.0256	98.22	0.2088	1.1141	1.6726	Subcooled	0.15444	0.307511
55	325	38.8270	0.0258	103.80	0.2197	1.1183	1.6814	Subcooled	0.15007	0.302731
60	325	38.5767	0.0259	109.41	0.2306	1.1227	1.6906	Subcooled	0.14587	0.297981
65	325	38.3234	0.0261	115.03	0.2413	1.1274	1.7001	Subcooled	0.14182	0.293260
70	325	38.0670	0.0263	120.68	0.2520	1.1324	1.7099	Subcooled	0.13792	0.288568
75	325	37.8072	0.0264	126.36	0.2627	1.1376	1.7202	Subcooled	0.13416	0.283902
80	325	37.5440	0.0266	132.06	0.2733	1.1431	1.7308	Subcooled	0.13052	0.279260
85	325	37.2769	0.0268	137.79	0.2839	1.1491	1.7420	Subcooled	0.12701	0.274642
90	325	37.0059	0.0270	143.55	0.2944	1.1554	1.7537	Subcooled	0.12360	0.270046
95	325	36.7306	0.0272	149.34	0.3049	1.1622	1.7659	Subcooled	0.12029	0.265468
100	325	36.4508	0.0274	155.17	0.3154	1.1694	1.7788	Subcooled	0.11708	0.260908
105	325	36.1661	0.0277	161.04	0.3258	1.1772	1.7925	Subcooled	0.11396	0.256362
110	325	35.8762	0.0279	166.95	0.3362	1.1857	1.8069	Subcooled	0.11093	0.251828
115	325	35.5806	0.0281	172.90	0.3466	1.1948	1.8222	Subcooled	0.10797	0.247304
120	325	35.2788	0.0283	178.89	0.3570	1.2047	1.8385	Subcooled	0.10509	0.242786
125	325	34.9705	0.0286	184.95	0.3674	1.2155	1.8560	Subcooled	0.10227	0.238270
130	325	1.0837	0.9228	634.23	1.1309	0.9376	1.6270	Superheated	0.01084	0.017905
135	325	1.0638	0.9400	638.83	1.1387	0.9050	1.6039	Superheated	0.01096	0.018048
140	325	1.0453	0.9567	643.29	1.1461	0.8767	1.5836	Superheated	0.01109	0.018196
145	325	1.0278	0.9729	647.61	1.1533	0.8518	1.5654	Superheated	0.01121	0.018349
150	325	1.0114	0.9887	651.81	1.1602	0.8299	1.5491	Superheated	0.01133	0.018507

R-717 (anhydrous ammonia) Properties in the Subcooled Superheat Regions

P=350 psia (134.11 F)

T	P	ρ	v	h	s	Cp	Cp/Cv	Quality	μ	k
[F]	[psia]	[lb/ft^3]	[ft^3/lb]	[Btu/lb]	[Btu/R-lb]	[Btu/R-lb]	[unitless]	[unitless]	[centipoise]	[Btu/h-ft-R]
-50	350	43.5665	0.0230	-9.63	-0.0267	1.0457	1.5189	Subcooled	0.30948	0.410524
-45	350	43.3604	0.0231	-4.39	-0.0140	1.0492	1.5266	Subcooled	0.29646	0.405060
-40	350	43.1525	0.0232	0.86	-0.0014	1.0527	1.5343	Subcooled	0.28432	0.399625
-35	350	42.9428	0.0233	6.13	0.0111	1.0561	1.5418	Subcooled	0.27299	0.394220
-30	350	42.7312	0.0234	11.42	0.0234	1.0594	1.5493	Subcooled	0.26238	0.388846
-25	350	42.5178	0.0235	16.73	0.0357	1.0627	1.5568	Subcooled	0.25245	0.383506
-20	350	42.3026	0.0236	22.05	0.0479	1.0659	1.5641	Subcooled	0.24312	0.378200
-15	350	42.0855	0.0238	27.39	0.0600	1.0691	1.5715	Subcooled	0.23435	0.372928
-10	350	41.8666	0.0239	32.74	0.0719	1.0723	1.5788	Subcooled	0.22609	0.367692
-5	350	41.6459	0.0240	38.11	0.0838	1.0755	1.5861	Subcooled	0.21830	0.362492
0	350	41.4232	0.0241	43.50	0.0956	1.0786	1.5934	Subcooled	0.21093	0.357328
5	350	41.1987	0.0243	48.90	0.1073	1.0818	1.6008	Subcooled	0.20396	0.352201
10	350	40.9722	0.0244	54.31	0.1189	1.0851	1.6082	Subcooled	0.19736	0.347111
15	350	40.7437	0.0245	59.75	0.1304	1.0883	1.6157	Subcooled	0.19108	0.342058
20	350	40.5132	0.0247	65.20	0.1418	1.0917	1.6233	Subcooled	0.18511	0.337041
25	350	40.2806	0.0248	70.66	0.1531	1.0950	1.6310	Subcooled	0.17943	0.332060
30	350	40.0457	0.0250	76.15	0.1644	1.0985	1.6388	Subcooled	0.17401	0.327115
35	350	39.8086	0.0251	81.65	0.1756	1.1021	1.6468	Subcooled	0.16883	0.322205
40	350	39.5692	0.0253	87.17	0.1867	1.1058	1.6550	Subcooled	0.16388	0.317329
45	350	39.3272	0.0254	92.71	0.1977	1.1097	1.6633	Subcooled	0.15914	0.312487
50	350	39.0828	0.0256	98.27	0.2087	1.1137	1.6719	Subcooled	0.15459	0.307678
55	350	38.8356	0.0257	103.85	0.2196	1.1179	1.6808	Subcooled	0.15022	0.302901
60	350	38.5856	0.0259	109.45	0.2304	1.1223	1.6899	Subcooled	0.14601	0.298154
65	350	38.3327	0.0261	115.07	0.2412	1.1270	1.6993	Subcooled	0.14197	0.293436
70	350	38.0766	0.0263	120.72	0.2519	1.1319	1.7092	Subcooled	0.13807	0.288747
75	350	37.8172	0.0264	126.39	0.2625	1.1371	1.7193	Subcooled	0.13430	0.284084
80	350	37.5543	0.0266	132.09	0.2731	1.1426	1.7300	Subcooled	0.13066	0.279447
85	350	37.2876	0.0268	137.82	0.2837	1.1485	1.7411	Subcooled	0.12714	0.274832
90	350	37.0171	0.0270	143.57	0.2942	1.1548	1.7527	Subcooled	0.12373	0.270240
95	350	36.7423	0.0272	149.36	0.3047	1.1615	1.7649	Subcooled	0.12043	0.265666
100	350	36.4629	0.0274	155.19	0.3152	1.1687	1.7777	Subcooled	0.11722	0.261111
105	350	36.1788	0.0276	161.05	0.3256	1.1765	1.7913	Subcooled	0.11410	0.256570
110	350	35.8894	0.0279	166.95	0.3360	1.1848	1.8056	Subcooled	0.11107	0.252041
115	350	35.5944	0.0281	172.90	0.3464	1.1939	1.8208	Subcooled	0.10811	0.247523
120	350	35.2934	0.0283	178.89	0.3568	1.2037	1.8370	Subcooled	0.10523	0.243011
125	350	34.9858	0.0286	184.94	0.3672	1.2144	1.8544	Subcooled	0.10241	0.238502
130	350	34.6710	0.0288	191.04	0.3776	1.2261	1.8729	Subcooled	0.09966	0.233992
135	350	1.1716	0.8535	633.72	1.1231	0.9665	1.6526	Superheated	0.01094	0.018256
140	350	1.1495	0.8700	638.46	1.1311	0.9310	1.6271	Superheated	0.01107	0.018397
145	350	1.1288	0.8859	643.04	1.1387	0.9002	1.6046	Superheated	0.01119	0.018544
150	350	1.1095	0.9013	647.47	1.1460	0.8733	1.5846	Superheated	0.01131	0.018696

R-717 (anhydrous ammonia) Properties in the Subcooled Superheat Regions

P=375 psia (139.15 F)

T	P	ρ	v	h	s	Cp	Cp/Cv	Quality	μ	k
[F]	[psia]	[lb/ft^3]	[ft^3/lb]	[Btu/lb]	[Btu/R-lb]	[Btu/R-lb]	[unitless]	[unitless]	[centipoise]	[Btu/h-ft-R]
-50	375	43.5712	0.0230	-9.56	-0.0268	1.0456	1.5185	Subcooled	0.30972	0.410651
-45	375	43.3652	0.0231	-4.33	-0.0141	1.0491	1.5262	Subcooled	0.29669	0.405189
-40	375	43.1575	0.0232	0.93	-0.0015	1.0525	1.5339	Subcooled	0.28455	0.399755
-35	375	42.9479	0.0233	6.20	0.0110	1.0559	1.5414	Subcooled	0.27320	0.394352
-30	375	42.7364	0.0234	11.49	0.0233	1.0592	1.5489	Subcooled	0.26259	0.388980
-25	375	42.5232	0.0235	16.79	0.0356	1.0625	1.5563	Subcooled	0.25265	0.383642
-20	375	42.3081	0.0236	22.11	0.0478	1.0657	1.5637	Subcooled	0.24332	0.378337
-15	375	42.0912	0.0238	27.45	0.0599	1.0689	1.5710	Subcooled	0.23454	0.373067
-10	375	41.8724	0.0239	32.80	0.0718	1.0721	1.5783	Subcooled	0.22628	0.367833
-5	375	41.6519	0.0240	38.17	0.0837	1.0753	1.5857	Subcooled	0.21848	0.362635
0	375	41.4294	0.0241	43.55	0.0955	1.0784	1.5930	Subcooled	0.21111	0.357473
5	375	41.2051	0.0243	48.95	0.1072	1.0816	1.6003	Subcooled	0.20414	0.352348
10	375	40.9788	0.0244	54.37	0.1188	1.0848	1.6077	Subcooled	0.19753	0.347260
15	375	40.7505	0.0245	59.80	0.1303	1.0881	1.6152	Subcooled	0.19125	0.342208
20	375	40.5201	0.0247	65.25	0.1417	1.0914	1.6228	Subcooled	0.18528	0.337193
25	375	40.2877	0.0248	70.71	0.1530	1.0948	1.6305	Subcooled	0.17959	0.332215
30	375	40.0531	0.0250	76.20	0.1643	1.0982	1.6383	Subcooled	0.17417	0.327272
35	375	39.8162	0.0251	81.70	0.1754	1.1018	1.6462	Subcooled	0.16899	0.322364
40	375	39.5770	0.0253	87.22	0.1865	1.1055	1.6544	Subcooled	0.16403	0.317491
45	375	39.3353	0.0254	92.75	0.1976	1.1094	1.6627	Subcooled	0.15929	0.312652
50	375	39.0911	0.0256	98.31	0.2085	1.1134	1.6713	Subcooled	0.15473	0.307845
55	375	38.8442	0.0257	103.89	0.2194	1.1175	1.6801	Subcooled	0.15036	0.303070
60	375	38.5945	0.0259	109.48	0.2302	1.1219	1.6892	Subcooled	0.14616	0.298326
65	375	38.3419	0.0261	115.11	0.2410	1.1266	1.6986	Subcooled	0.14211	0.293612
70	375	38.0861	0.0263	120.75	0.2517	1.1314	1.7084	Subcooled	0.13821	0.288926
75	375	37.8271	0.0264	126.42	0.2624	1.1366	1.7185	Subcooled	0.13444	0.284267
80	375	37.5646	0.0266	132.12	0.2730	1.1421	1.7291	Subcooled	0.13080	0.279632
85	375	37.2983	0.0268	137.84	0.2835	1.1479	1.7401	Subcooled	0.12728	0.275022
90	375	37.0282	0.0270	143.60	0.2940	1.1542	1.7517	Subcooled	0.12387	0.270433
95	375	36.7538	0.0272	149.38	0.3045	1.1608	1.7638	Subcooled	0.12057	0.265864
100	375	36.4750	0.0274	155.21	0.3150	1.1680	1.7766	Subcooled	0.11736	0.261313
105	375	36.1914	0.0276	161.07	0.3254	1.1757	1.7901	Subcooled	0.11424	0.256777
110	375	35.9026	0.0279	166.96	0.3358	1.1840	1.8043	Subcooled	0.11120	0.252254
115	375	35.6083	0.0281	172.91	0.3462	1.1929	1.8195	Subcooled	0.10825	0.247741
120	375	35.3079	0.0283	178.90	0.3566	1.2027	1.8356	Subcooled	0.10536	0.243235
125	375	35.0011	0.0286	184.93	0.3669	1.2133	1.8527	Subcooled	0.10255	0.238733
130	375	34.6871	0.0288	191.03	0.3773	1.2248	1.8712	Subcooled	0.09980	0.234231
135	375	34.3655	0.0291	197.18	0.3877	1.2375	1.8910	Subcooled	0.09710	0.229724
140	375	1.2595	0.7940	633.37	1.1161	0.9938	1.6776	Superheated	0.01105	0.018613
145	375	1.2350	0.8097	638.24	1.1242	0.9555	1.6495	Superheated	0.01118	0.018752
150	375	1.2121	0.8250	642.93	1.1320	0.9224	1.6250	Superheated	0.01130	0.018898

R-717 (anhydrous ammonia) Properties in the Subcooled Superheat Regions

P=400 psia (143.94 F)

T	P	ρ	v	h	s	Cp	Cp/Cv	Quality	μ	k
[F]	[psia]	[lb/ft^3]	[ft^3/lb]	[Btu/lb]	[Btu/R-lb]	[Btu/R-lb]	[unitless]	[unitless]	[centipoise]	[Btu/h-ft-R]
-50	400	43.5759	0.0229	-9.50	-0.0269	1.0454	1.5181	Subcooled	0.30996	0.410778
-45	400	43.3701	0.0231	-4.26	-0.0142	1.0489	1.5258	Subcooled	0.29693	0.405317
-40	400	43.1624	0.0232	0.99	-0.0016	1.0524	1.5335	Subcooled	0.28477	0.399886
-35	400	42.9530	0.0233	6.26	0.0109	1.0557	1.5410	Subcooled	0.27342	0.394484
-30	400	42.7416	0.0234	11.55	0.0232	1.0590	1.5485	Subcooled	0.26281	0.389114
-25	400	42.5285	0.0235	16.85	0.0355	1.0623	1.5559	Subcooled	0.25286	0.383777
-20	400	42.3136	0.0236	22.17	0.0477	1.0655	1.5633	Subcooled	0.24352	0.378474
-15	400	42.0969	0.0238	27.51	0.0597	1.0687	1.5706	Subcooled	0.23474	0.373206
-10	400	41.8783	0.0239	32.86	0.0717	1.0719	1.5779	Subcooled	0.22647	0.367973
-5	400	41.6579	0.0240	38.23	0.0836	1.0751	1.5852	Subcooled	0.21867	0.362777
0	400	41.4356	0.0241	43.61	0.0954	1.0782	1.5925	Subcooled	0.21129	0.357617
5	400	41.2114	0.0243	49.01	0.1070	1.0814	1.5999	Subcooled	0.20432	0.352494
10	400	40.9853	0.0244	54.42	0.1186	1.0846	1.6073	Subcooled	0.19770	0.347408
15	400	40.7572	0.0245	59.85	0.1301	1.0878	1.6147	Subcooled	0.19142	0.342359
20	400	40.5270	0.0247	65.30	0.1415	1.0911	1.6223	Subcooled	0.18544	0.337346
25	400	40.2948	0.0248	70.76	0.1529	1.0945	1.6299	Subcooled	0.17975	0.332369
30	400	40.0604	0.0250	76.25	0.1641	1.0980	1.6377	Subcooled	0.17433	0.327429
35	400	39.8238	0.0251	81.74	0.1753	1.1015	1.6457	Subcooled	0.16914	0.322523
40	400	39.5848	0.0253	87.26	0.1864	1.1052	1.6538	Subcooled	0.16419	0.317653
45	400	39.3434	0.0254	92.80	0.1974	1.1090	1.6621	Subcooled	0.15944	0.312816
50	400	39.0994	0.0256	98.35	0.2084	1.1130	1.6706	Subcooled	0.15488	0.308012
55	400	38.8528	0.0257	103.93	0.2193	1.1172	1.6794	Subcooled	0.15051	0.303240
60	400	38.6034	0.0259	109.52	0.2301	1.1215	1.6885	Subcooled	0.14630	0.298499
65	400	38.3511	0.0261	115.14	0.2408	1.1261	1.6979	Subcooled	0.14225	0.293787
70	400	38.0957	0.0262	120.79	0.2515	1.1310	1.7076	Subcooled	0.13835	0.289104
75	400	37.8370	0.0264	126.45	0.2622	1.1361	1.7177	Subcooled	0.13458	0.284448
80	400	37.5748	0.0266	132.15	0.2728	1.1416	1.7282	Subcooled	0.13094	0.279818
85	400	37.3090	0.0268	137.87	0.2834	1.1474	1.7392	Subcooled	0.12742	0.275211
90	400	37.0393	0.0270	143.62	0.2939	1.1536	1.7507	Subcooled	0.12401	0.270626
95	400	36.7654	0.0272	149.41	0.3043	1.1602	1.7628	Subcooled	0.12070	0.266062
100	400	36.4871	0.0274	155.22	0.3148	1.1673	1.7755	Subcooled	0.11749	0.261515
105	400	36.2040	0.0276	161.08	0.3252	1.1749	1.7889	Subcooled	0.11437	0.256984
110	400	35.9158	0.0278	166.97	0.3356	1.1831	1.8031	Subcooled	0.11134	0.252466
115	400	35.6220	0.0281	172.91	0.3460	1.1920	1.8181	Subcooled	0.10838	0.247959
120	400	35.3224	0.0283	178.90	0.3563	1.2017	1.8341	Subcooled	0.10550	0.243459
125	400	35.0163	0.0286	184.93	0.3667	1.2122	1.8511	Subcooled	0.10269	0.238964
130	400	34.7032	0.0288	191.02	0.3771	1.2236	1.8694	Subcooled	0.09993	0.234468
135	400	34.3824	0.0291	197.17	0.3875	1.2362	1.8891	Subcooled	0.09724	0.229970
140	400	34.0533	0.0294	203.38	0.3979	1.2500	1.9103	Subcooled	0.09460	0.225462
145	400	1.3470	0.7424	633.17	1.1099	1.0194	1.7017	Superheated	0.01116	0.018978
150	400	1.3201	0.7575	638.17	1.1181	0.9783	1.6711	Superheated	0.01129	0.019115

R-717 (anhydrous ammonia) Properties in the Subcooled Superheat Regions

P=450 psia (152.89 F)

T	P	ρ	v	h	s	Cp	Cp/Cv	Quality	μ	k
[F]	[psia]	[lb/ft^3]	[ft^3/lb]	[Btu/lb]	[Btu/R-lb]	[Btu/R-lb]	[unitless]	[unitless]	[centipoise]	[Btu/h-ft-R]
-50	450	43.5853	0.0229	-9.37	-0.0271	1.0451	1.5173	Subcooled	0.31044	0.411032
-45	450	43.3797	0.0231	-4.13	-0.0144	1.0486	1.5250	Subcooled	0.29739	0.405574
-40	450	43.1723	0.0232	1.12	-0.0018	1.0520	1.5326	Subcooled	0.28522	0.400146
-35	450	42.9631	0.0233	6.39	0.0106	1.0554	1.5402	Subcooled	0.27386	0.394748
-30	450	42.7521	0.0234	11.67	0.0230	1.0587	1.5477	Subcooled	0.26323	0.389381
-25	450	42.5393	0.0235	16.97	0.0353	1.0619	1.5551	Subcooled	0.25327	0.384048
-20	450	42.3246	0.0236	22.29	0.0475	1.0652	1.5624	Subcooled	0.24392	0.378748
-15	450	42.1082	0.0237	27.62	0.0595	1.0683	1.5697	Subcooled	0.23513	0.373484
-10	450	41.8899	0.0239	32.97	0.0715	1.0715	1.5770	Subcooled	0.22685	0.368255
-5	450	41.6698	0.0240	38.34	0.0833	1.0746	1.5843	Subcooled	0.21904	0.363062
0	450	41.4479	0.0241	43.72	0.0951	1.0778	1.5916	Subcooled	0.21165	0.357906
5	450	41.2240	0.0243	49.12	0.1068	1.0809	1.5989	Subcooled	0.20467	0.352787
10	450	40.9983	0.0244	54.53	0.1184	1.0841	1.6063	Subcooled	0.19804	0.347705
15	450	40.7706	0.0245	59.96	0.1299	1.0874	1.6137	Subcooled	0.19175	0.342659
20	450	40.5408	0.0247	65.40	0.1413	1.0906	1.6212	Subcooled	0.18577	0.337651
25	450	40.3090	0.0248	70.87	0.1526	1.0940	1.6289	Subcooled	0.18008	0.332678
30	450	40.0750	0.0250	76.34	0.1639	1.0974	1.6366	Subcooled	0.17464	0.327742
35	450	39.8388	0.0251	81.84	0.1750	1.1009	1.6445	Subcooled	0.16945	0.322841
40	450	39.6003	0.0253	87.35	0.1861	1.1046	1.6526	Subcooled	0.16449	0.317975
45	450	39.3594	0.0254	92.89	0.1971	1.1084	1.6608	Subcooled	0.15974	0.313143
50	450	39.1160	0.0256	98.44	0.2081	1.1123	1.6693	Subcooled	0.15518	0.308345
55	450	38.8700	0.0257	104.01	0.2190	1.1164	1.6781	Subcooled	0.15080	0.303578
60	450	38.6211	0.0259	109.60	0.2298	1.1207	1.6871	Subcooled	0.14659	0.298843
65	450	38.3694	0.0261	115.22	0.2405	1.1253	1.6964	Subcooled	0.14254	0.294138
70	450	38.1147	0.0262	120.86	0.2512	1.1301	1.7060	Subcooled	0.13863	0.289461
75	450	37.8567	0.0264	126.52	0.2619	1.1351	1.7161	Subcooled	0.13486	0.284812
80	450	37.5953	0.0266	132.21	0.2725	1.1405	1.7265	Subcooled	0.13122	0.280188
85	450	37.3302	0.0268	137.92	0.2830	1.1463	1.7374	Subcooled	0.12769	0.275589
90	450	37.0614	0.0270	143.67	0.2935	1.1524	1.7488	Subcooled	0.12428	0.271012
95	450	36.7884	0.0272	149.45	0.3040	1.1589	1.7608	Subcooled	0.12097	0.266456
100	450	36.5110	0.0274	155.26	0.3144	1.1659	1.7733	Subcooled	0.11776	0.261918
105	450	36.2290	0.0276	161.11	0.3248	1.1734	1.7866	Subcooled	0.11464	0.257397
110	450	35.9419	0.0278	166.99	0.3352	1.1815	1.8006	Subcooled	0.11161	0.252889
115	450	35.6495	0.0281	172.92	0.3455	1.1902	1.8154	Subcooled	0.10865	0.248393
120	450	35.3511	0.0283	178.90	0.3559	1.1997	1.8312	Subcooled	0.10577	0.243905
125	450	35.0465	0.0285	184.92	0.3662	1.2100	1.8480	Subcooled	0.10296	0.239423
130	450	34.7350	0.0288	191.00	0.3766	1.2212	1.8660	Subcooled	0.10021	0.234942
135	450	34.4160	0.0291	197.14	0.3869	1.2335	1.8853	Subcooled	0.09752	0.230459
140	450	34.0889	0.0293	203.34	0.3973	1.2470	1.9062	Subcooled	0.09488	0.225968
145	450	33.7527	0.0296	209.61	0.4077	1.2619	1.9288	Subcooled	0.09229	0.221466
150	450	33.4065	0.0299	215.96	0.4182	1.2784	1.9535	Subcooled	0.08975	0.216946

R-717 (anhydrous ammonia) Properties in the Subcooled Superheat Regions

P=500 psia (161.12 F)

T	P	ρ	v	h	s	Cp	Cp/Cv	Quality	μ	k
[F]	[psia]	[lb/ft^3]	[ft^3/lb]	[Btu/lb]	[Btu/R-lb]	[Btu/R-lb]	[unitless]	[unitless]	[centipoise]	[Btu/h-ft-R]
-50	500	43.5946	0.0229	-9.24	-0.0273	1.0448	1.5165	Subcooled	0.31093	0.411285
-45	500	43.3894	0.0230	-4.00	-0.0146	1.0483	1.5242	Subcooled	0.29786	0.405831
-40	500	43.1822	0.0232	1.25	-0.0020	1.0517	1.5318	Subcooled	0.28568	0.400406
-35	500	42.9733	0.0233	6.51	0.0104	1.0551	1.5394	Subcooled	0.27430	0.395011
-30	500	42.7625	0.0234	11.80	0.0228	1.0584	1.5468	Subcooled	0.26366	0.389648
-25	500	42.5500	0.0235	17.10	0.0351	1.0616	1.5542	Subcooled	0.25368	0.384318
-20	500	42.3356	0.0236	22.41	0.0472	1.0648	1.5616	Subcooled	0.24432	0.379022
-15	500	42.1195	0.0237	27.74	0.0593	1.0680	1.5689	Subcooled	0.23552	0.373761
-10	500	41.9015	0.0239	33.09	0.0712	1.0711	1.5761	Subcooled	0.22723	0.368536
-5	500	41.6818	0.0240	38.46	0.0831	1.0742	1.5834	Subcooled	0.21941	0.363347
0	500	41.4602	0.0241	43.83	0.0949	1.0774	1.5907	Subcooled	0.21201	0.358194
5	500	41.2367	0.0243	49.23	0.1065	1.0805	1.5980	Subcooled	0.20502	0.353079
10	500	41.0113	0.0244	54.64	0.1181	1.0837	1.6053	Subcooled	0.19839	0.348000
15	500	40.7839	0.0245	60.07	0.1296	1.0869	1.6127	Subcooled	0.19209	0.342959
20	500	40.5546	0.0247	65.51	0.1410	1.0901	1.6202	Subcooled	0.18610	0.337955
25	500	40.3232	0.0248	70.97	0.1523	1.0934	1.6278	Subcooled	0.18040	0.332987
30	500	40.0896	0.0249	76.44	0.1636	1.0968	1.6355	Subcooled	0.17496	0.328055
35	500	39.8539	0.0251	81.94	0.1747	1.1003	1.6434	Subcooled	0.16976	0.323159
40	500	39.6159	0.0252	87.45	0.1858	1.1040	1.6514	Subcooled	0.16480	0.318297
45	500	39.3754	0.0254	92.98	0.1968	1.1077	1.6596	Subcooled	0.16004	0.313470
50	500	39.1325	0.0256	98.52	0.2078	1.1116	1.6680	Subcooled	0.15547	0.308677
55	500	38.8870	0.0257	104.09	0.2187	1.1157	1.6767	Subcooled	0.15109	0.303916
60	500	38.6388	0.0259	109.68	0.2295	1.1200	1.6857	Subcooled	0.14688	0.299186
65	500	38.3877	0.0260	115.29	0.2402	1.1244	1.6949	Subcooled	0.14282	0.294487
70	500	38.1336	0.0262	120.93	0.2509	1.1292	1.7045	Subcooled	0.13891	0.289816
75	500	37.8763	0.0264	126.58	0.2615	1.1342	1.7145	Subcooled	0.13514	0.285174
80	500	37.6156	0.0266	132.27	0.2721	1.1395	1.7248	Subcooled	0.13149	0.280557
85	500	37.3514	0.0268	137.98	0.2826	1.1451	1.7356	Subcooled	0.12797	0.275965
90	500	37.0834	0.0270	143.72	0.2931	1.1512	1.7469	Subcooled	0.12455	0.271396
95	500	36.8113	0.0272	149.49	0.3036	1.1576	1.7587	Subcooled	0.12124	0.266848
100	500	36.5349	0.0274	155.30	0.3140	1.1645	1.7712	Subcooled	0.11803	0.262319
105	500	36.2539	0.0276	161.14	0.3244	1.1719	1.7843	Subcooled	0.11491	0.257808
110	500	35.9679	0.0278	167.02	0.3348	1.1798	1.7981	Subcooled	0.11188	0.253310
115	500	35.6767	0.0280	172.94	0.3451	1.1884	1.8127	Subcooled	0.10892	0.248825
120	500	35.3797	0.0283	178.90	0.3554	1.1977	1.8283	Subcooled	0.10604	0.244349
125	500	35.0765	0.0285	184.92	0.3658	1.2078	1.8449	Subcooled	0.10323	0.239879
130	500	34.7666	0.0288	190.98	0.3761	1.2188	1.8626	Subcooled	0.10049	0.235412
135	500	34.4494	0.0290	197.11	0.3864	1.2309	1.8816	Subcooled	0.09780	0.230944
140	500	34.1241	0.0293	203.29	0.3968	1.2441	1.9021	Subcooled	0.09516	0.226471
145	500	33.7901	0.0296	209.55	0.4072	1.2586	1.9243	Subcooled	0.09258	0.221987
150	500	33.4464	0.0299	215.88	0.4176	1.2747	1.9484	Subcooled	0.09004	0.217487

R-717 (anhydrous ammonia) Properties in the Subcooled Superheat Regions

P=550 psia (168.76 F)

T	P	ρ	v	h	s	Cp	Cp/Cv	Quality	μ	k
[F]	[psia]	[lb/ft^3]	[ft^3/lb]	[Btu/lb]	[Btu/R-lb]	[Btu/R-lb]	[unitless]	[unitless]	[centipoise]	[Btu/h-ft-R]
-50	550	43.6040	0.0229	-9.11	-0.0275	1.0445	1.5157	Subcooled	0.31141	0.411538
-45	550	43.3990	0.0230	-3.88	-0.0148	1.0480	1.5234	Subcooled	0.29832	0.406088
-40	550	43.1921	0.0232	1.37	-0.0022	1.0514	1.5310	Subcooled	0.28613	0.400666
-35	550	42.9834	0.0233	6.64	0.0102	1.0547	1.5386	Subcooled	0.27474	0.395274
-30	550	42.7729	0.0234	11.92	0.0226	1.0580	1.5460	Subcooled	0.26408	0.389915
-25	550	42.5607	0.0235	17.22	0.0349	1.0612	1.5534	Subcooled	0.25409	0.384588
-20	550	42.3466	0.0236	22.53	0.0470	1.0644	1.5607	Subcooled	0.24472	0.379295
-15	550	42.1308	0.0237	27.86	0.0591	1.0676	1.5680	Subcooled	0.23591	0.374038
-10	550	41.9131	0.0239	33.21	0.0710	1.0707	1.5753	Subcooled	0.22761	0.368816
-5	550	41.6937	0.0240	38.57	0.0829	1.0738	1.5825	Subcooled	0.21977	0.363631
0	550	41.4724	0.0241	43.95	0.0946	1.0769	1.5898	Subcooled	0.21237	0.358482
5	550	41.2493	0.0242	49.34	0.1063	1.0801	1.5970	Subcooled	0.20537	0.353370
10	550	41.0242	0.0244	54.75	0.1179	1.0832	1.6043	Subcooled	0.19873	0.348296
15	550	40.7973	0.0245	60.17	0.1294	1.0864	1.6117	Subcooled	0.19242	0.343259
20	550	40.5683	0.0246	65.61	0.1408	1.0896	1.6192	Subcooled	0.18643	0.338258
25	550	40.3373	0.0248	71.07	0.1521	1.0929	1.6267	Subcooled	0.18072	0.333294
30	550	40.1042	0.0249	76.54	0.1633	1.0963	1.6344	Subcooled	0.17527	0.328367
35	550	39.8689	0.0251	82.03	0.1745	1.0997	1.6422	Subcooled	0.17007	0.323475
40	550	39.6313	0.0252	87.54	0.1855	1.1033	1.6502	Subcooled	0.16510	0.318619
45	550	39.3914	0.0254	93.06	0.1966	1.1070	1.6584	Subcooled	0.16034	0.313797
50	550	39.1490	0.0255	98.61	0.2075	1.1109	1.6668	Subcooled	0.15577	0.309008
55	550	38.9041	0.0257	104.17	0.2184	1.1149	1.6754	Subcooled	0.15138	0.304253
60	550	38.6564	0.0259	109.76	0.2292	1.1192	1.6843	Subcooled	0.14716	0.299528
65	550	38.4059	0.0260	115.37	0.2399	1.1236	1.6935	Subcooled	0.14310	0.294835
70	550	38.1525	0.0262	121.00	0.2506	1.1283	1.7030	Subcooled	0.13919	0.290171
75	550	37.8958	0.0264	126.65	0.2612	1.1332	1.7128	Subcooled	0.13541	0.285534
80	550	37.6359	0.0266	132.33	0.2718	1.1385	1.7231	Subcooled	0.13177	0.280925
85	550	37.3724	0.0268	138.03	0.2823	1.1441	1.7338	Subcooled	0.12824	0.276340
90	550	37.1052	0.0270	143.77	0.2928	1.1500	1.7450	Subcooled	0.12482	0.271779
95	550	36.8340	0.0271	149.54	0.3032	1.1563	1.7567	Subcooled	0.12151	0.267239
100	550	36.5586	0.0274	155.33	0.3136	1.1631	1.7690	Subcooled	0.11830	0.262719
105	550	36.2786	0.0276	161.17	0.3240	1.1704	1.7820	Subcooled	0.11518	0.258217
110	550	35.9938	0.0278	167.04	0.3343	1.1782	1.7956	Subcooled	0.11215	0.253729
115	550	35.7037	0.0280	172.95	0.3447	1.1867	1.8101	Subcooled	0.10919	0.249255
120	550	35.4080	0.0282	178.91	0.3550	1.1958	1.8254	Subcooled	0.10631	0.244791
125	550	35.1063	0.0285	184.91	0.3653	1.2057	1.8418	Subcooled	0.10350	0.240333
130	550	34.7979	0.0287	190.97	0.3756	1.2165	1.8592	Subcooled	0.10076	0.235880
135	550	34.4824	0.0290	197.08	0.3859	1.2283	1.8780	Subcooled	0.09807	0.231427
140	550	34.1590	0.0293	203.25	0.3963	1.2412	1.8981	Subcooled	0.09544	0.226970
145	550	33.8271	0.0296	209.49	0.4066	1.2554	1.9199	Subcooled	0.09286	0.222504
150	550	33.4858	0.0299	215.81	0.4170	1.2711	1.9435	Subcooled	0.09032	0.218024

R-717 (anhydrous ammonia) Properties in the Subcooled Superheat Regions

P=600 psia (175.90 F)

T	P	ρ	v	h	s	Cp	Cp/Cv	Quality	μ	k
[F]	[psia]	[lb/ft^3]	[ft^3/lb]	[Btu/lb]	[Btu/R-lb]	[Btu/R-lb]	[unitless]	[unitless]	[centipoise]	[Btu/h-ft-R]
-50	600	43.6133	0.0229	-8.98	-0.0277	1.0442	1.5149	Subcooled	0.31189	0.411791
-45	600	43.4086	0.0230	-3.75	-0.0150	1.0477	1.5226	Subcooled	0.29879	0.406344
-40	600	43.2020	0.0231	1.50	-0.0025	1.0511	1.5302	Subcooled	0.28658	0.400926
-35	600	42.9935	0.0233	6.77	0.0100	1.0544	1.5378	Subcooled	0.27517	0.395537
-30	600	42.7833	0.0234	12.05	0.0224	1.0577	1.5452	Subcooled	0.26450	0.390181
-25	600	42.5713	0.0235	17.34	0.0346	1.0609	1.5526	Subcooled	0.25451	0.384858
-20	600	42.3576	0.0236	22.65	0.0468	1.0641	1.5599	Subcooled	0.24512	0.379568
-15	600	42.1420	0.0237	27.98	0.0588	1.0672	1.5671	Subcooled	0.23630	0.374314
-10	600	41.9247	0.0239	33.33	0.0708	1.0703	1.5744	Subcooled	0.22798	0.369096
-5	600	41.7056	0.0240	38.69	0.0826	1.0734	1.5816	Subcooled	0.22014	0.363914
0	600	41.4846	0.0241	44.06	0.0944	1.0765	1.5888	Subcooled	0.21273	0.358769
5	600	41.2618	0.0242	49.45	0.1061	1.0796	1.5961	Subcooled	0.20572	0.353662
10	600	41.0371	0.0244	54.86	0.1176	1.0828	1.6034	Subcooled	0.19907	0.348591
15	600	40.8106	0.0245	60.28	0.1291	1.0859	1.6107	Subcooled	0.19276	0.343557
20	600	40.5820	0.0246	65.72	0.1405	1.0891	1.6182	Subcooled	0.18676	0.338561
25	600	40.3514	0.0248	71.17	0.1518	1.0924	1.6257	Subcooled	0.18104	0.333602
30	600	40.1187	0.0249	76.64	0.1630	1.0957	1.6333	Subcooled	0.17559	0.328678
35	600	39.8838	0.0251	82.13	0.1742	1.0992	1.6411	Subcooled	0.17038	0.323791
40	600	39.6468	0.0252	87.63	0.1853	1.1027	1.6491	Subcooled	0.16540	0.318940
45	600	39.4073	0.0254	93.15	0.1963	1.1064	1.6572	Subcooled	0.16063	0.314122
50	600	39.1655	0.0255	98.70	0.2072	1.1102	1.6655	Subcooled	0.15606	0.309339
55	600	38.9210	0.0257	104.26	0.2181	1.1142	1.6741	Subcooled	0.15167	0.304588
60	600	38.6740	0.0259	109.84	0.2288	1.1184	1.6829	Subcooled	0.14745	0.299870
65	600	38.4241	0.0260	115.44	0.2396	1.1228	1.6920	Subcooled	0.14339	0.295182
70	600	38.1712	0.0262	121.07	0.2502	1.1274	1.7015	Subcooled	0.13947	0.290524
75	600	37.9153	0.0264	126.72	0.2609	1.1323	1.7113	Subcooled	0.13569	0.285894
80	600	37.6561	0.0266	132.39	0.2714	1.1375	1.7214	Subcooled	0.13204	0.281291
85	600	37.3934	0.0267	138.09	0.2819	1.1430	1.7320	Subcooled	0.12851	0.276714
90	600	37.1270	0.0269	143.82	0.2924	1.1488	1.7431	Subcooled	0.12509	0.272160
95	600	36.8567	0.0271	149.58	0.3028	1.1551	1.7547	Subcooled	0.12178	0.267629
100	600	36.5822	0.0273	155.37	0.3132	1.1618	1.7669	Subcooled	0.11857	0.263117
105	600	36.3032	0.0275	161.20	0.3236	1.1689	1.7797	Subcooled	0.11545	0.258624
110	600	36.0195	0.0278	167.06	0.3339	1.1766	1.7932	Subcooled	0.11241	0.254146
115	600	35.7306	0.0280	172.97	0.3443	1.1850	1.8075	Subcooled	0.10946	0.249683
120	600	35.4362	0.0282	178.91	0.3546	1.1939	1.8226	Subcooled	0.10658	0.245230
125	600	35.1358	0.0285	184.91	0.3649	1.2037	1.8388	Subcooled	0.10377	0.240785
130	600	34.8290	0.0287	190.95	0.3751	1.2142	1.8560	Subcooled	0.10103	0.236345
135	600	34.5151	0.0290	197.05	0.3855	1.2258	1.8744	Subcooled	0.09835	0.231906
140	600	34.1936	0.0292	203.21	0.3958	1.2384	1.8942	Subcooled	0.09572	0.227465
145	600	33.8638	0.0295	209.44	0.4061	1.2523	1.9155	Subcooled	0.09314	0.223017
150	600	33.5247	0.0298	215.74	0.4165	1.2676	1.9387	Subcooled	0.09061	0.218556

R-717 (anhydrous ammonia) Properties in the Subcooled Superheat Regions

P=650 psia (182.60 F)

T	P	ρ	v	h	s	Cp	Cp/Cv	Quality	μ	k
[F]	[psia]	[lb/ft^3]	[ft^3/lb]	[Btu/lb]	[Btu/R-lb]	[Btu/R-lb]	[unitless]	[unitless]	[centipoise]	[Btu/h-ft-R]
-50	650	43.6227	0.0229	-8.84	-0.0279	1.0439	1.5141	Subcooled	0.31237	0.412044
-45	650	43.4181	0.0230	-3.62	-0.0152	1.0474	1.5218	Subcooled	0.29925	0.406600
-40	650	43.2118	0.0231	1.63	-0.0027	1.0508	1.5294	Subcooled	0.28703	0.401185
-35	650	43.0036	0.0233	6.89	0.0098	1.0541	1.5370	Subcooled	0.27561	0.395800
-30	650	42.7937	0.0234	12.17	0.0222	1.0573	1.5444	Subcooled	0.26493	0.390447
-25	650	42.5820	0.0235	17.46	0.0344	1.0606	1.5517	Subcooled	0.25492	0.385127
-20	650	42.3685	0.0236	22.78	0.0466	1.0637	1.5590	Subcooled	0.24552	0.379841
-15	650	42.1533	0.0237	28.10	0.0586	1.0668	1.5663	Subcooled	0.23668	0.374591
-10	650	41.9362	0.0238	33.44	0.0706	1.0699	1.5735	Subcooled	0.22836	0.369376
-5	650	41.7174	0.0240	38.80	0.0824	1.0730	1.5807	Subcooled	0.22051	0.364198
0	650	41.4968	0.0241	44.17	0.0942	1.0761	1.5879	Subcooled	0.21309	0.359056
5	650	41.2744	0.0242	49.56	0.1058	1.0792	1.5952	Subcooled	0.20607	0.353952
10	650	41.0500	0.0244	54.97	0.1174	1.0823	1.6024	Subcooled	0.19941	0.348885
15	650	40.8238	0.0245	60.39	0.1289	1.0854	1.6097	Subcooled	0.19309	0.343856
20	650	40.5956	0.0246	65.82	0.1403	1.0886	1.6171	Subcooled	0.18708	0.338864
25	650	40.3654	0.0248	71.27	0.1516	1.0919	1.6246	Subcooled	0.18136	0.333908
30	650	40.1332	0.0249	76.74	0.1628	1.0952	1.6322	Subcooled	0.17590	0.328989
35	650	39.8988	0.0251	82.22	0.1739	1.0986	1.6400	Subcooled	0.17069	0.324107
40	650	39.6621	0.0252	87.73	0.1850	1.1021	1.6479	Subcooled	0.16571	0.319260
45	650	39.4232	0.0254	93.25	0.1960	1.1058	1.6560	Subcooled	0.16093	0.314447
50	650	39.1818	0.0255	98.78	0.2069	1.1095	1.6643	Subcooled	0.15635	0.309669
55	650	38.9379	0.0257	104.34	0.2178	1.1135	1.6728	Subcooled	0.15196	0.304924
60	650	38.6914	0.0258	109.92	0.2285	1.1176	1.6815	Subcooled	0.14773	0.300210
65	650	38.4421	0.0260	115.52	0.2393	1.1220	1.6906	Subcooled	0.14367	0.295528
70	650	38.1899	0.0262	121.14	0.2499	1.1265	1.7000	Subcooled	0.13975	0.290876
75	650	37.9347	0.0264	126.78	0.2605	1.1314	1.7097	Subcooled	0.13597	0.286253
80	650	37.6762	0.0265	132.45	0.2711	1.1365	1.7198	Subcooled	0.13231	0.281657
85	650	37.4142	0.0267	138.15	0.2816	1.1419	1.7303	Subcooled	0.12878	0.277086
90	650	37.1486	0.0269	143.87	0.2920	1.1477	1.7413	Subcooled	0.12536	0.272540
95	650	36.8792	0.0271	149.63	0.3025	1.1539	1.7527	Subcooled	0.12205	0.268017
100	650	36.6056	0.0273	155.41	0.3129	1.1604	1.7648	Subcooled	0.11884	0.263514
105	650	36.3277	0.0275	161.23	0.3232	1.1675	1.7775	Subcooled	0.11572	0.259029
110	650	36.0450	0.0277	167.09	0.3335	1.1751	1.7908	Subcooled	0.11268	0.254562
115	650	35.7573	0.0280	172.98	0.3438	1.1833	1.8049	Subcooled	0.10973	0.250108
120	650	35.4641	0.0282	178.92	0.3541	1.1921	1.8199	Subcooled	0.10685	0.245666
125	650	35.1651	0.0284	184.91	0.3644	1.2016	1.8358	Subcooled	0.10404	0.241234
130	650	34.8598	0.0287	190.94	0.3747	1.2120	1.8527	Subcooled	0.10130	0.236807
135	650	34.5476	0.0289	197.03	0.3850	1.2233	1.8708	Subcooled	0.09862	0.232382
140	650	34.2279	0.0292	203.17	0.3953	1.2357	1.8903	Subcooled	0.09599	0.227957
145	650	33.9001	0.0295	209.39	0.4056	1.2492	1.9113	Subcooled	0.09342	0.223525
150	650	33.5632	0.0298	215.67	0.4159	1.2642	1.9340	Subcooled	0.09089	0.219084

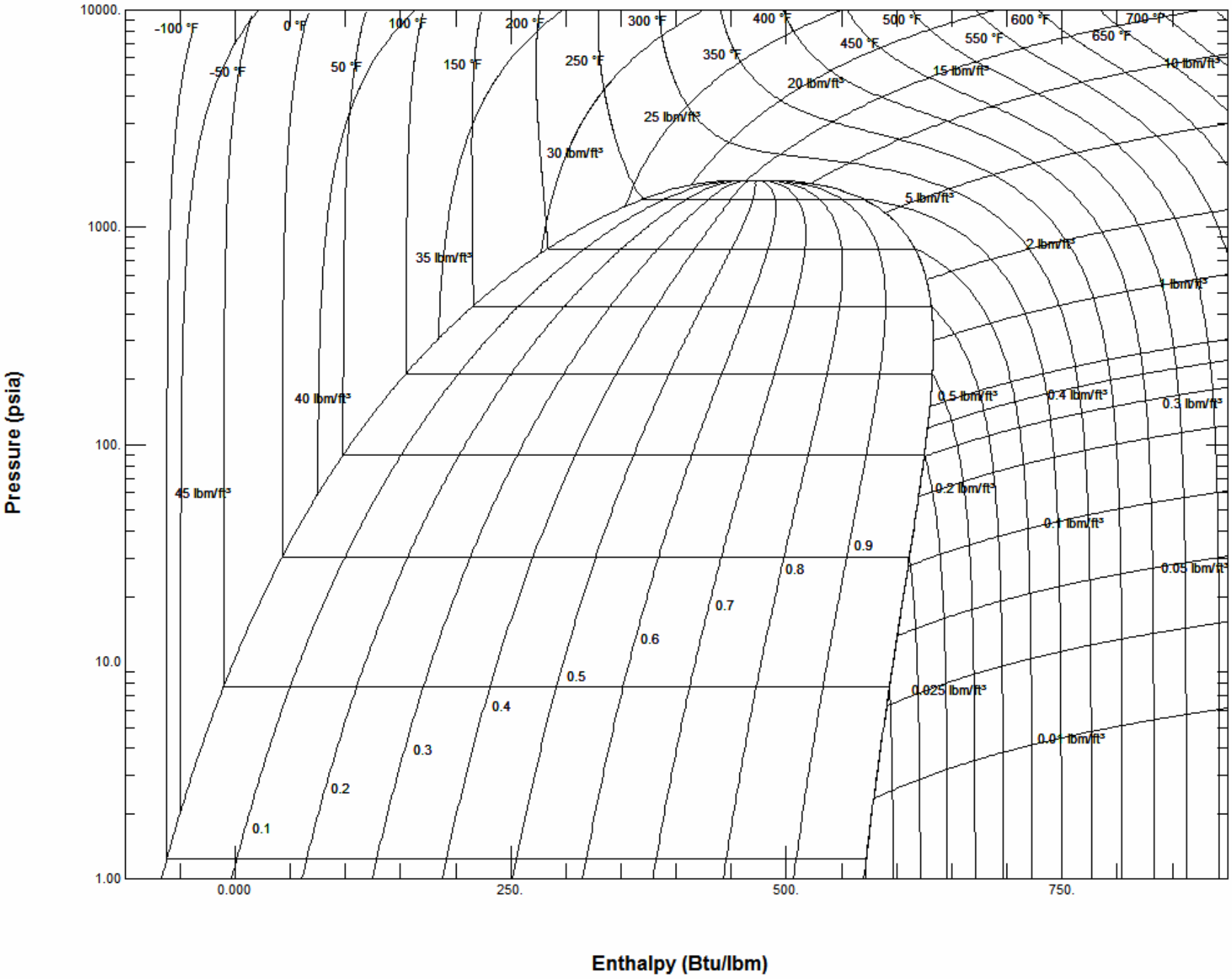
R-717 (anhydrous ammonia) Properties in the Subcooled Superheat Regions

P=700 psia (188.93 F)

T	P	ρ	v	h	s	Cp	Cp/Cv	Quality	μ	k
[F]	[psia]	[lb/ft^3]	[ft^3/lb]	[Btu/lb]	[Btu/R-lb]	[Btu/R-lb]	[unitless]	[unitless]	[centipoise]	[Btu/h-ft-R]
-50	700	43.6320	0.0229	-8.71	-0.0281	1.0436	1.5133	Subcooled	0.31285	0.412296
-45	700	43.4277	0.0230	-3.49	-0.0154	1.0471	1.5210	Subcooled	0.29972	0.406856
-40	700	43.2216	0.0231	1.76	-0.0029	1.0504	1.5286	Subcooled	0.28748	0.401444
-35	700	43.0137	0.0232	7.02	0.0096	1.0538	1.5362	Subcooled	0.27604	0.396062
-30	700	42.8041	0.0234	12.29	0.0220	1.0570	1.5436	Subcooled	0.26535	0.390713
-25	700	42.5926	0.0235	17.59	0.0342	1.0602	1.5509	Subcooled	0.25533	0.385396
-20	700	42.3794	0.0236	22.90	0.0463	1.0634	1.5582	Subcooled	0.24592	0.380114
-15	700	42.1645	0.0237	28.22	0.0584	1.0665	1.5654	Subcooled	0.23707	0.374867
-10	700	41.9478	0.0238	33.56	0.0703	1.0696	1.5726	Subcooled	0.22874	0.369655
-5	700	41.7293	0.0240	38.92	0.0822	1.0726	1.5798	Subcooled	0.22088	0.364481
0	700	41.5090	0.0241	44.29	0.0939	1.0757	1.5870	Subcooled	0.21345	0.359343
5	700	41.2869	0.0242	49.67	0.1056	1.0788	1.5942	Subcooled	0.20642	0.354242
10	700	41.0629	0.0244	55.08	0.1171	1.0818	1.6015	Subcooled	0.19976	0.349179
15	700	40.8370	0.0245	60.49	0.1286	1.0850	1.6088	Subcooled	0.19343	0.344154
20	700	40.6092	0.0246	65.93	0.1400	1.0881	1.6161	Subcooled	0.18741	0.339166
25	700	40.3794	0.0248	71.37	0.1513	1.0913	1.6236	Subcooled	0.18168	0.334214
30	700	40.1476	0.0249	76.84	0.1625	1.0946	1.6312	Subcooled	0.17622	0.329300
35	700	39.9136	0.0251	82.32	0.1736	1.0980	1.6389	Subcooled	0.17100	0.324422
40	700	39.6774	0.0252	87.82	0.1847	1.1015	1.6467	Subcooled	0.16601	0.319579
45	700	39.4390	0.0254	93.34	0.1957	1.1051	1.6548	Subcooled	0.16123	0.314771
50	700	39.1981	0.0255	98.87	0.2066	1.1089	1.6630	Subcooled	0.15665	0.309998
55	700	38.9548	0.0257	104.42	0.2175	1.1128	1.6715	Subcooled	0.15225	0.305258
60	700	38.7088	0.0258	110.00	0.2282	1.1169	1.6802	Subcooled	0.14802	0.300550
65	700	38.4601	0.0260	115.59	0.2389	1.1212	1.6892	Subcooled	0.14395	0.295874
70	700	38.2086	0.0262	121.21	0.2496	1.1257	1.6985	Subcooled	0.14003	0.291228
75	700	37.9540	0.0263	126.85	0.2602	1.1305	1.7081	Subcooled	0.13624	0.286611
80	700	37.6962	0.0265	132.52	0.2707	1.1355	1.7181	Subcooled	0.13259	0.282021
85	700	37.4350	0.0267	138.21	0.2812	1.1409	1.7285	Subcooled	0.12905	0.277458
90	700	37.1702	0.0269	143.92	0.2917	1.1466	1.7394	Subcooled	0.12563	0.272919
95	700	36.9016	0.0271	149.67	0.3021	1.1526	1.7508	Subcooled	0.12232	0.268403
100	700	36.6289	0.0273	155.45	0.3125	1.1591	1.7627	Subcooled	0.11910	0.263909
105	700	36.3520	0.0275	161.26	0.3228	1.1661	1.7752	Subcooled	0.11598	0.259433
110	700	36.0703	0.0277	167.11	0.3331	1.1735	1.7884	Subcooled	0.11295	0.254975
115	700	35.7838	0.0279	173.00	0.3434	1.1816	1.8024	Subcooled	0.10999	0.250532
120	700	35.4919	0.0282	178.93	0.3537	1.1903	1.8171	Subcooled	0.10712	0.246101
125	700	35.1942	0.0284	184.90	0.3640	1.1996	1.8328	Subcooled	0.10431	0.241680
130	700	34.8904	0.0287	190.93	0.3742	1.2098	1.8495	Subcooled	0.10157	0.237266
135	700	34.5798	0.0289	197.00	0.3845	1.2209	1.8674	Subcooled	0.09889	0.232856
140	700	34.2619	0.0292	203.14	0.3947	1.2330	1.8865	Subcooled	0.09627	0.228445
145	700	33.9360	0.0295	209.34	0.4050	1.2462	1.9071	Subcooled	0.09370	0.224031
150	700	33.6013	0.0298	215.60	0.4154	1.2608	1.9294	Subcooled	0.09117	0.219608

R-717 (anhydrous ammonia) Properties in the Subcooled Superheat Regions

P=750 psia (194.92 F)

T	P	ρ	v	h	s	Cp	Cp/Cv	Quality	μ	k
[F]	[psia]	[lb/ft^3]	[ft^3/lb]	[Btu/lb]	[Btu/R-lb]	[Btu/R-lb]	[unitless]	[unitless]	[centipoise]	[Btu/h-ft-R]
-50	750	43.6413	0.0229	-8.58	-0.0283	1.0433	1.5125	Subcooled	0.31333	0.412548
-45	750	43.4373	0.0230	-3.36	-0.0156	1.0468	1.5203	Subcooled	0.30018	0.407111
-40	750	43.2314	0.0231	1.89	-0.0031	1.0501	1.5278	Subcooled	0.28793	0.401703
-35	750	43.0238	0.0232	7.14	0.0094	1.0534	1.5354	Subcooled	0.27648	0.396324
-30	750	42.8144	0.0234	12.42	0.0217	1.0567	1.5428	Subcooled	0.26577	0.390978
-25	750	42.6032	0.0235	17.71	0.0340	1.0599	1.5501	Subcooled	0.25574	0.385665
-20	750	42.3903	0.0236	23.02	0.0461	1.0630	1.5574	Subcooled	0.24632	0.380386
-15	750	42.1757	0.0237	28.34	0.0582	1.0661	1.5646	Subcooled	0.23746	0.375142
-10	750	41.9592	0.0238	33.68	0.0701	1.0692	1.5718	Subcooled	0.22912	0.369934
-5	750	41.7411	0.0240	39.03	0.0819	1.0722	1.5790	Subcooled	0.22125	0.364763
0	750	41.5211	0.0241	44.40	0.0937	1.0753	1.5861	Subcooled	0.21381	0.359629
5	750	41.2993	0.0242	49.79	0.1053	1.0783	1.5933	Subcooled	0.20677	0.354532
10	750	41.0757	0.0243	55.19	0.1169	1.0814	1.6005	Subcooled	0.20010	0.349473
15	750	40.8502	0.0245	60.60	0.1284	1.0845	1.6078	Subcooled	0.19376	0.344451
20	750	40.6228	0.0246	66.03	0.1397	1.0876	1.6151	Subcooled	0.18774	0.339467
25	750	40.3934	0.0248	71.48	0.1510	1.0908	1.6226	Subcooled	0.18200	0.334520
30	750	40.1620	0.0249	76.94	0.1622	1.0941	1.6301	Subcooled	0.17653	0.329610
35	750	39.9284	0.0250	82.42	0.1734	1.0974	1.6378	Subcooled	0.17131	0.324736
40	750	39.6927	0.0252	87.91	0.1844	1.1009	1.6456	Subcooled	0.16631	0.319898
45	750	39.4547	0.0253	93.43	0.1954	1.1045	1.6536	Subcooled	0.16153	0.315095
50	750	39.2144	0.0255	98.96	0.2063	1.1082	1.6618	Subcooled	0.15694	0.310326
55	750	38.9716	0.0257	104.51	0.2172	1.1121	1.6702	Subcooled	0.15254	0.305591
60	750	38.7262	0.0258	110.08	0.2279	1.1161	1.6788	Subcooled	0.14830	0.300889
65	750	38.4781	0.0260	115.67	0.2386	1.1204	1.6877	Subcooled	0.14423	0.296218
70	750	38.2271	0.0262	121.28	0.2493	1.1248	1.6970	Subcooled	0.14030	0.291578
75	750	37.9732	0.0263	126.92	0.2599	1.1295	1.7065	Subcooled	0.13652	0.286967
80	750	37.7161	0.0265	132.58	0.2704	1.1345	1.7165	Subcooled	0.13286	0.282384
85	750	37.4556	0.0267	138.26	0.2809	1.1398	1.7268	Subcooled	0.12932	0.277828
90	750	37.1916	0.0269	143.98	0.2913	1.1454	1.7376	Subcooled	0.12590	0.273296
95	750	36.9239	0.0271	149.72	0.3017	1.1514	1.7488	Subcooled	0.12259	0.268788
100	750	36.6521	0.0273	155.49	0.3121	1.1578	1.7607	Subcooled	0.11937	0.264302
105	750	36.3761	0.0275	161.30	0.3224	1.1647	1.7730	Subcooled	0.11625	0.259835
110	750	36.0956	0.0277	167.14	0.3327	1.1720	1.7861	Subcooled	0.11321	0.255387
115	750	35.8101	0.0279	173.02	0.3430	1.1799	1.7999	Subcooled	0.11026	0.250953
120	750	35.5194	0.0282	178.94	0.3533	1.1885	1.8144	Subcooled	0.10738	0.246533
125	750	35.2231	0.0284	184.91	0.3635	1.1977	1.8299	Subcooled	0.10458	0.242124
130	750	34.9207	0.0286	190.92	0.3737	1.2077	1.8464	Subcooled	0.10184	0.237723
135	750	34.6117	0.0289	196.98	0.3840	1.2185	1.8639	Subcooled	0.09916	0.233326
140	750	34.2955	0.0292	203.11	0.3942	1.2304	1.8828	Subcooled	0.09654	0.228930
145	750	33.9716	0.0294	209.29	0.4045	1.2433	1.9030	Subcooled	0.09397	0.224532
150	750	33.6391	0.0297	215.54	0.4148	1.2576	1.9249	Subcooled	0.09145	0.220127

Pressure – Enthalpy Diagram for Refrigerant 717 (anhydrous ammonia)