

R-404A thermodynamic properties (temperature standard)-1

Temperature (°C)	Pressure (kPa)		Density (kg/m ³)		Specific volume (m ³ /kg)		Specific enthalpy (kJ/kg)			Specific entropy (kJ/kg/K)		Constant pressure specific heat (kJ/kgK)	
	Liquid	Steam	Liquid	Steam	Liquid	Steam	Liquid	Steam	Latent heat	Liquid	Steam	Liquid	Steam
-70	28.38	26.74	1377	1.574	0.00073	0.6355	111.1	324.6	213.5	0.6272	1.682	1.182	0.6957
-68	32.06	30.28	1372	1.767	0.00073	0.5658	113.4	325.9	212.5	0.6388	1.678	1.186	0.7016
-66	36.12	34.19	1366	1.98	0.00073	0.5051	115.8	327.1	211.3	0.6503	1.673	1.19	0.7076
-64	40.58	38.49	1360	2.212	0.00074	0.452	118.2	328.3	210.1	0.6618	1.669	1.194	0.7137
-62	45.48	43.23	1354	2.466	0.00074	0.4056	120.6	329.6	209	0.6732	1.666	1.198	0.7199
-60	50.84	48.42	1348	2.742	0.00074	0.3647	123	330.8	207.8	0.6845	1.662	1.203	0.7262
-58	56.69	54.1	1343	3.042	0.00074	0.3288	125.4	332	206.6	0.6957	1.659	1.207	0.7326
-56	63.08	60.29	1337	3.367	0.00075	0.297	127.8	333.3	205.5	0.7069	1.655	1.211	0.7391
-54	70.02	67.04	1331	3.719	0.00075	0.2689	130.3	334.5	204.2	0.718	1.652	1.215	0.7457
-52	77.55	74.38	1325	4.099	0.00075	0.2439	132.7	335.7	203	0.729	1.649	1.22	0.7524
-50	85.72	82.33	1319	4.51	0.00076	0.2217	135.2	336.9	201.7	0.74	1.646	1.225	0.7593
-48	94.55	90.95	1313	4.952	0.00076	0.202	137.6	338.2	200.6	0.751	1.644	1.229	0.7663
-46.56	101.3	97.58	1308	5.29	0.00076	0.189	139.4	339	199.6	0.7588	1.642	1.233	0.7713
-46	104.1	100.3	1306	5.427	0.00077	0.1843	140.1	339.4	199.3	0.7618	1.641	1.234	0.7733
-44	114.4	110.3	1300	5.937	0.00077	0.1684	142.6	340.6	198	0.7727	1.639	1.239	0.7806
-42	125.4	121.1	1294	6.485	0.00077	0.1542	145	341.8	196.8	0.7834	1.636	1.244	0.7879
-40	137.3	132.7	1288	7.071	0.00078	0.1414	147.5	343	195.5	0.7941	1.634	1.249	0.7954
-38	150	145.2	1282	7.698	0.00078	0.1299	150	344.2	194.2	0.8048	1.632	1.254	0.8031
-36	163.6	158.6	1275	8.368	0.00078	0.1195	152.6	345.4	192.8	0.8154	1.63	1.259	0.8108
-34	178.2	172.9	1269	9.082	0.00079	0.1101	155.1	346.5	191.4	0.826	1.628	1.265	0.8188
-32	193.8	188.2	1263	9.844	0.00079	0.1016	157.6	347.7	190.1	0.8365	1.626	1.27	0.8269
-30	210.3	204.5	1256	10.66	0.0008	0.09385	160.2	348.9	188.7	0.847	1.624	1.276	0.8352
-28	228	221.9	1250	11.52	0.0008	0.08682	162.7	350	187.3	0.8574	1.623	1.281	0.8436
-26	246.8	240.4	1243	12.44	0.0008	0.08042	165.3	351.2	185.9	0.8678	1.621	1.287	0.8523
-24	266.7	260	1236	13.41	0.00081	0.07458	167.9	352.4	184.5	0.8782	1.62	1.293	0.8611
-22	287.9	280.9	1230	14.44	0.00081	0.06924	170.5	353.5	183	0.8885	1.618	1.3	0.8701
-20	310.3	303	1223	15.54	0.00082	0.06436	173.1	354.6	181.5	0.8988	1.617	1.306	0.8794
-18	334	326.4	1216	16.7	0.00082	0.05989	175.7	355.7	180	0.909	1.616	1.313	0.8889
-16	359.1	351.2	1209	17.93	0.00083	0.05579	178.4	356.8	178.4	0.9192	1.614	1.32	0.8986
-14	385.6	377.4	1202	19.23	0.00083	0.05202	181	357.9	176.9	0.9294	1.613	1.327	0.9086
-12	413.5	405	1195	20.6	0.00084	0.04855	183.7	359	175.3	0.9396	1.612	1.334	0.9188
-10	443	434.1	1188	22.05	0.00084	0.04535	186.4	360.1	173.7	0.9497	1.611	1.341	0.9294
-8	474	464.8	1181	23.59	0.00085	0.0424	189.1	361.2	172.1	0.9598	1.61	1.349	0.9402
-6	506.6	497.1	1174	25.21	0.00085	0.03967	191.8	362.2	170.4	0.9699	1.609	1.357	0.9514
-4	540.8	531.1	1166	26.92	0.00086	0.03715	194.5	363.3	168.8	0.9799	1.608	1.365	0.963
-2	576.8	566.8	1159	28.72	0.00086	0.03482	197.2	364.3	167.1	0.99	1.607	1.374	0.9749
0	614.6	604.2	1151	30.62	0.00087	0.03265	200	365.3	165.3	1	1.606	1.383	0.9873
2	654.2	643.5	1143	32.63	0.00087	0.03065	202.8	366.3	163.5	1.01	1.605	1.392	1
4	695.7	684.7	1136	34.75	0.00088	0.02878	205.6	367.3	161.7	1.02	1.604	1.402	1.013
6	739.1	727.8	1128	36.98	0.00089	0.02704	208.4	368.2	159.8	1.03	1.603	1.412	1.027
8	784.5	772.9	1120	39.33	0.00089	0.02542	211.2	369.2	158	1.04	1.602	1.422	1.042

R-404A thermodynamic properties (temperature standard)-2

Temperature (°C)	Pressure (kPa)		Density (kg/m ³)		Specific volume (m ³ /kg)		Specific enthalpy (kJ/kg)			Specific entropy (kJ/kg/K)		Constant pressure specific heat (kJ/kgK)	
	Liquid	Steam	Liquid	Steam	Liquid	Steam	Liquid	Steam	Latent heat	Liquid	Steam	Liquid	Steam
	10	832	820	1112	41.81	0.0009	0.02392	214.1	370.1	156	1.05	1.601	1.434
12	881.5	869.3	1103	44.43	0.00091	0.02251	216.9	371	154.1	1.06	1.601	1.445	1.073
14	933.3	920.8	1095	47.19	0.00091	0.02119	219.8	371.9	152.1	1.07	1.6	1.457	1.089
16	987.3	974.5	1086	50.1	0.00092	0.01996	222.8	372.7	149.9	1.08	1.599	1.47	1.106
18	1044	1030	1077	53.17	0.00093	0.01881	225.7	373.5	147.8	1.09	1.598	1.484	1.125
20	1102	1089	1068	56.4	0.00094	0.01773	228.7	374.3	145.6	1.1	1.597	1.499	1.144
22	1163	1150	1059	59.82	0.00094	0.01672	231.7	375.1	143.4	1.11	1.596	1.514	1.165
24	1227	1213	1050	63.44	0.00095	0.01576	234.7	375.9	141.2	1.12	1.595	1.53	1.187
26	1293	1279	1040	67.26	0.00096	0.01487	237.7	376.6	138.9	1.13	1.594	1.548	1.21
28	1362	1347	1031	71.3	0.00097	0.01403	240.8	377.3	136.5	1.14	1.593	1.567	1.236
30	1433	1419	1021	75.57	0.00098	0.01323	243.9	377.9	134	1.15	1.592	1.587	1.263
32	1507	1493	1010	80.11	0.00099	0.01248	247.1	378.5	131.4	1.16	1.591	1.609	1.292
34	1584	1570	999.7	84.92	0.001	0.01178	250.2	379	128.8	1.17	1.59	1.633	1.324
36	1664	1649	988.8	90.03	0.00101	0.01111	253.5	379.5	126	1.18	1.588	1.659	1.359
38	1747	1732	977.5	95.46	0.00102	0.01048	256.7	380	123.3	1.19	1.587	1.687	1.398
40	1834	1818	965.9	101.3	0.00104	0.00988	260	380.4	120.4	1.201	1.585	1.719	1.441
42	1923	1907	953.9	107.5	0.00105	0.00931	263.4	380.7	117.3	1.211	1.584	1.754	1.49
44	2015	2000	941.4	114.1	0.00106	0.00877	266.8	381	114.2	1.222	1.582	1.793	1.544
46	2111	2096	928.4	121.2	0.00108	0.00825	270.2	381.2	111	1.232	1.58	1.838	1.606
48	2210	2195	914.9	128.9	0.00109	0.00776	273.8	381.3	107.5	1.243	1.578	1.889	1.678
50	2313	2298	900.7	137.2	0.00111	0.00729	277.4	381.3	103.9	1.254	1.575	1.949	1.762
52	2420	2405	885.8	146.2	0.00113	0.00684	281.1	381.1	100	1.265	1.573	2.019	1.862
54	2530	2515	870	156	0.00115	0.00641	284.8	380.9	96.1	1.276	1.57	2.104	1.982
56	2645	2630	853.2	166.9	0.00117	0.00599	288.7	380.5	91.8	1.287	1.566	2.209	2.132
58	2763	2748	835.1	178.9	0.0012	0.00559	292.7	379.9	87.2	1.299	1.562	2.341	2.322
60	2886	2871	815.6	192.5	0.00123	0.0052	296.9	379.1	82.2	1.311	1.558	2.516	2.573
62	3013	2999	794.1	207.9	0.00126	0.00481	301.3	377.9	76.6	1.324	1.553	2.758	2.92
64	3144	3131	769.9	225.9	0.0013	0.00443	305.9	376.4	70.5	1.337	1.546	3.118	3.434
66	3281	3269	741.8	247.7	0.00135	0.00404	311	374.3	63.3	1.351	1.538	3.716	4.276
68	3423	3412	707.4	275.5	0.00141	0.00363	316.7	371.3	54.6	1.368	1.528	4.914	5.916

R-404A thermodynamic properties (pressure standard)

Pressure (kPa)	Temperature (°C)		Density (kg/m³)		Specific volume (m³/kg)		Specific enthalpy (kJ/kg)			Specific entropy kJ/kg/K		Constant pressure specific heat (kJ/kgK)	
	Liquid	Steam	Liquid	Steam	Liquid	Steam	Liquid	Steam	Latent heat	Liquid	Steam	Liquid	Steam
20	-75.49	-74.49	1393	1.199	0.00072	0.8337	104.6	321.9	217.3	0.5949	1.692	1.172	0.6828
40	-64.25	-63.34	1361	2.293	0.00073	0.4361	117.9	328.8	210.9	0.6604	1.668	1.194	0.7157
60	-56.94	-56.09	1339	3.352	0.00075	0.2984	126.7	333.2	206.5	0.7016	1.656	1.209	0.7388
80	-51.38	-50.57	1323	4.389	0.00076	0.2278	133.5	336.6	203.1	0.7324	1.647	1.221	0.7573
100	-46.84	-46.05	1309	5.414	0.00076	0.1847	139	339.3	200.3	0.7573	1.641	1.232	0.7732
101.325	-46.56	-45.78	1308	5.481	0.00076	0.1824	139.4	339.5	200.1	0.7588	1.641	1.233	0.7741
150	-38	-37.27	1282	7.938	0.00078	0.126	150	344.6	194.6	0.8048	1.631	1.254	0.8059
200	-31.23	-30.54	1260	10.43	0.00079	0.09586	158.6	348.6	190	0.8405	1.625	1.272	0.8329
250	-25.67	-25	1242	12.91	0.00081	0.07744	165.7	351.8	186.1	0.8695	1.62	1.288	0.8566
300	-20.9	-20.26	1226	15.39	0.00082	0.06498	171.9	354.5	182.6	0.8941	1.617	1.303	0.8782
350	-16.71	-16.09	1212	17.87	0.00083	0.05597	177.4	356.8	179.4	0.9156	1.614	1.317	0.8981
400	-12.95	-12.35	1199	20.35	0.00083	0.04914	182.4	358.8	176.4	0.9347	1.612	1.33	0.917
450	-9.54	-8.95	1186	22.84	0.00084	0.04377	187	360.7	173.7	0.9521	1.61	1.343	0.935
500	-6.39	-5.83	1175	25.35	0.00085	0.03945	191.2	362.3	171.1	0.9679	1.609	1.355	0.9524
550	-3.48	-2.93	1164	27.87	0.00086	0.03588	195.2	363.8	168.6	0.9826	1.607	1.367	0.9694
600	-0.76	-0.22	1154	30.41	0.00087	0.03289	198.9	365.2	166.3	0.9962	1.606	1.379	0.9859
650	1.79	2.32	1144	32.96	0.00087	0.03034	202.5	366.5	164	1.009	1.605	1.391	1.002
700	4.2	4.72	1135	35.54	0.00088	0.02814	205.9	367.6	161.7	1.021	1.604	1.403	1.018
750	6.49	7	1126	38.14	0.00089	0.02622	209.1	368.7	159.6	1.032	1.603	1.414	1.034
800	8.66	9.16	1117	40.76	0.0009	0.02454	212.2	369.7	157.5	1.043	1.602	1.426	1.05
850	10.74	11.23	1108	43.4	0.0009	0.02304	215.1	370.6	155.5	1.054	1.601	1.438	1.066
900	12.72	13.2	1100	46.07	0.00091	0.02171	218	371.5	153.5	1.063	1.6	1.45	1.082
950	14.63	15.1	1092	48.77	0.00092	0.02051	220.8	372.3	151.5	1.073	1.599	1.461	1.098
1000	16.46	16.92	1084	51.49	0.00092	0.01942	223.4	373.1	149.7	1.082	1.599	1.473	1.115
1200	23.17	23.6	1054	62.69	0.00095	0.01595	233.4	375.7	142.3	1.115	1.595	1.523	1.182
1400	29.08	29.48	1025	74.45	0.00098	0.01343	242.5	377.7	135.2	1.145	1.592	1.577	1.255
1600	34.39	34.77	997.5	86.85	0.001	0.01151	250.9	379.2	128.3	1.172	1.589	1.638	1.337
1800	39.23	39.58	970.4	100	0.00103	0.01	258.7	380.3	121.6	1.197	1.586	1.706	1.432
2000	43.67	44.01	943.5	114.1	0.00106	0.00876	266.2	381	114.8	1.22	1.582	1.787	1.544
2200	47.79	48.1	916.3	129.3	0.00109	0.00774	273.4	381.3	107.9	1.242	1.578	1.884	1.682
2400	51.63	51.92	888.6	145.8	0.00113	0.00686	280.4	381.2	100.8	1.263	1.573	2.005	1.857
2600	55.23	55.49	859.8	164	0.00116	0.0061	287.2	380.6	93.4	1.283	1.567	2.165	2.09
2800	58.61	58.85	829.3	184.5	0.00121	0.00542	294	379.6	85.6	1.303	1.561	2.389	2.419
3000	61.8	62.02	796.3	208	0.00126	0.00481	300.8	377.9	77.1	1.322	1.553	2.73	2.923
3200	64.82	65.01	758.9	236.3	0.00132	0.00423	307.9	375.4	67.5	1.343	1.542	3.324	3.799
3400	67.68	67.84	713.5	272.9	0.0014	0.00366	315.7	371.6	55.9	1.365	1.529	4.649	5.721