

R410A Temperature (°C)	Liquid Phase Pressure (bar)	Vapor Phase Pressure (bar)	Liquid Phase Density (kg/m³)	Vapor Phase Density (kg/m³)	Liquid Phase Enthalpy (kJ/kg)	Vapor Phase Enthalpy (kJ/kg)	Liquid Phase Entropy (kJ/kg-K)	Vapor Phase Entropy (kJ/kg-K)
-80	0.18377	0.18266	1436.5	0.83767	87.625	383.5	0.51735	2.0495
-79	0.19706	0.19589	1433.5	0.89435	88.971	384.07	0.5243	2.0446
-78	0.21113	0.2099	1430.6	0.9541	90.317	384.65	0.53121	2.0398
-77	0.22602	0.22473	1427.6	1.0171	91.664	385.22	0.53809	2.035
-76	0.24176	0.2404	1424.6	1.0833	93.011	385.8	0.54493	2.0304
-75	0.25839	0.25697	1421.7	1.1531	94.358	386.37	0.55174	2.0257
-74	0.27595	0.27446	1418.7	1.2264	95.706	386.94	0.55852	2.0212
-73	0.29447	0.29291	1415.7	1.3034	97.055	387.5	0.56527	2.0167
-72	0.314	0.31236	1412.7	1.3843	98.404	388.07	0.57199	2.0124
-71	0.33458	0.33286	1409.7	1.4691	99.754	388.63	0.57868	2.008
-70	0.35624	0.35444	1406.7	1.5581	101.1	389.2	0.58533	2.0038
-69	0.37903	0.37715	1403.7	1.6514	102.46	389.76	0.59196	1.9996
-68	0.403	0.40103	1400.7	1.7491	103.81	390.32	0.59856	1.9954
-67	0.42818	0.42612	1397.7	1.8514	105.16	390.87	0.60513	1.9914
-66	0.45462	0.45247	1394.6	1.9585	106.51	391.43	0.61167	1.9874
-65	0.48237	0.48012	1391.6	2.0704	107.87	391.98	0.61819	1.9834
-64	0.51148	0.50912	1388.5	2.1874	109.23	392.53	0.62467	1.9795
-63	0.54199	0.53953	1385.5	2.3096	110.58	393.08	0.63113	1.9757
-62	0.57395	0.57138	1382.4	2.4372	111.94	393.63	0.63757	1.9719
-61	0.60742	0.60473	1379.4	2.5703	113.3	394.18	0.64397	1.9682
-60	0.64244	0.63962	1376.3	2.7092	114.66	394.72	0.65036	1.9645
-59	0.67906	0.67612	1373.2	2.854	116.02	395.26	0.65671	1.9609
-58	0.71733	0.71427	1370.1	3.0049	117.38	395.8	0.66305	1.9574
-57	0.75732	0.75412	1367	3.1621	118.74	396.33	0.66936	1.9538
-56	0.79908	0.79573	1363.9	3.3257	120.11	396.87	0.67564	1.9504
-55	0.84265	0.83916	1360.8	3.4959	121.47	397.4	0.6819	1.947
-54	0.8881	0.88446	1357.7	3.673	122.84	397.93	0.68814	1.9436
-53	0.93548	0.93169	1354.6	3.8572	124.21	398.45	0.69435	1.9403
-52	0.98486	0.9809	1351.4	4.0486	125.58	398.98	0.70055	1.937
-51	1.0363	1.0322	1348.3	4.2474	126.95	399.5	0.70672	1.9338
-50	1.0898	1.0855	1345.1	4.4539	128.32	400.02	0.71286	1.9306
-49	1.1455	1.141	1342	4.6683	129.7	400.53	0.71899	1.9275
-48	1.2035	1.1988	1338.8	4.8908	131.08	401.04	0.7251	1.9244
-47	1.2637	1.2588	1335.6	5.1215	132.45	401.55	0.73118	1.9213
-46	1.3263	1.3212	1332.4	5.3608	133.83	402.06	0.73725	1.9183
-45	1.3913	1.386	1329.2	5.6088	135.21	402.57	0.74329	1.9153
-44	1.4588	1.4533	1326	5.8658	136.6	403.07	0.74932	1.9124
-43	1.5288	1.5231	1322.8	6.132	137.98	403.57	0.75532	1.9095
-42	1.6015	1.5956	1319.5	6.4077	139.37	404.06	0.76131	1.9066
-41	1.6769	1.6707	1316.3	6.6931	140.76	404.55	0.76728	1.9038
-40	1.755	1.7485	1313	6.9885	142.15	405.04	0.77323	1.901
-39	1.8359	1.8292	1309.8	7.294	143.54	405.53	0.77916	1.8983
-38	1.9197	1.9127	1306.5	7.61	144.93	406.01	0.78508	1.8956
-37	2.0065	1.9993	1303.2	7.9368	146.33	406.49	0.79098	1.8929
-36	2.0963	2.0888	1299.9	8.2745	147.73	406.97	0.79686	1.8902
-35	2.1892	2.1814	1296.6	8.6236	149.13	407.44	0.80272	1.8876
-34	2.2853	2.2772	1293.2	8.9841	150.53	407.91	0.80857	1.885
-33	2.3847	2.3762	1289.9	9.3565	151.94	408.38	0.8144	1.8824
-32	2.4874	2.4786	1286.5	9.7411	153.34	408.84	0.82022	1.8799
-31	2.5934	2.5843	1283.2	10.138	154.75	409.3	0.82602	1.8774
-30	2.703	2.6935	1279.8	10.548	156.17	409.75	0.8318	1.8749
-29	2.8161	2.8062	1276.4	10.97	157.58	410.2	0.83757	1.8725
-28	2.9328	2.9226	1273	11.406	159	410.65	0.84333	1.8701
-27	3.0532	3.0426	1269.6	11.856	160.42	411.1	0.84907	1.8677
-26	3.1774	3.1664	1266.1	12.32	161.84	411.53	0.8548	1.8653
-25	3.3055	3.2941	1262.7	12.798	163.27	411.97	0.86052	1.8629
-24	3.4375	3.4257	1259.2	13.291	164.7	412.4	0.86622	1.8606
-23	3.5735	3.5613	1255.7	13.798	166.13	412.83	0.87191	1.8583
-22	3.7137	3.701	1252.2	14.322	167.56	413.25	0.87759	1.856
-21	3.858	3.8448	1248.7	14.86	169	413.67	0.88325	1.8538
-20	4.0066	3.993	1245.1	15.415	170.44	414.09	0.8889	1.8516
-19	4.1595	4.1454	1241.6	15.987	171.88	414.5	0.89455	1.8493
-18	4.3169	4.3023	1238	16.575	173.33	414.9	0.90018	1.8471
-17	4.4788	4.4637	1234.4	17.181	174.78	415.3	0.9058	1.845
-16	4.6453	4.6296	1230.8	17.805	176.23	415.7	0.9114	1.8428
-15	4.8165	4.8003	1227.1	18.446	177.69	416.09	0.917	1.8407
-14	4.9924	4.9756	1223.5	19.106	179.15	416.47	0.92259	1.8386
-13	5.1733	5.1559	1219.8	19.786	180.61	416.86	0.92817	1.8365
-12	5.359	5.3411	1216.1	20.484	182.08	417.23	0.93374	1.8344
-11	5.5498	5.5312	1212.4	21.203	183.55	417.6	0.9393	1.8323
-10	5.7458	5.7265	1208.7	21.942	185.02	417.97	0.94486	1.8303
-9	5.9469	5.927	1204.9	22.702	186.5	418.33	0.9504	1.8282
-8	6.1534	6.1328	1201.1	23.484	187.99	418.68	0.95594	1.8262
-7	6.3652	6.344	1197.3	24.288	189.47	419.03	0.96147	1.8242
-6	6.5826	6.5606	1193.5	25.114	190.96	419.38	0.96699	1.8222
-5	6.8055	6.7828	1189.6	25.963	192.46	419.71	0.97251	1.8202
-4	7.0341	7.0107	1185.8	26.836	193.96	420.04	0.97802	1.8182

R410A	Liquid Phase	Vapor Phase	Liquid Phase	Vapor Phase	Liquid Phase	Vapor Phase	Liquid Phase	Vapor Phase
Temperature	Pressure	Pressure	Density	Density	Enthalpy	Enthalpy	Entropy	Entropy
(°C)	(bar)	(bar)	(kg/m ³)	(kg/m ³)	(kJ/kg)	(kJ/kg)	(kJ/kg-K)	(kJ/kg-K)
-3	7.2684	7.2443	1181.9	27.733	195.46	420.37	0.98352	1.8162
-2	7.5086	7.4837	1177.9	28.655	196.97	420.69	0.98902	1.8143
-1	7.7548	7.7291	1174	29.603	198.48	421	0.99451	1.8123
0	8.007	7.9805	1170	30.576	200	421.31	1	1.8104
1	8.2654	8.2381	1166	31.577	201.52	421.6	1.0055	1.8084
2	8.53	8.5019	1161.9	32.605	203.05	421.9	1.011	1.8065
3	8.801	8.772	1157.8	33.662	204.58	422.18	1.0164	1.8046
4	9.0784	9.0485	1153.7	34.747	206.12	422.46	1.0219	1.8027
5	9.3623	9.3315	1149.6	35.863	207.66	422.73	1.0274	1.8007
6	9.6529	9.6212	1145.4	37.009	209.21	422.99	1.0328	1.7988
7	9.9502	9.9176	1141.2	38.187	210.77	423.25	1.0383	1.7969
8	10.254	10.221	1137	39.397	212.33	423.49	1.0438	1.795
9	10.565	10.531	1132.7	40.64	213.89	423.73	1.0492	1.7931
10	10.884	10.848	1128.4	41.917	215.46	423.96	1.0547	1.7912
11	11.209	11.172	1124	43.23	217.04	424.18	1.0602	1.7893
12	11.541	11.504	1119.7	44.579	218.63	424.39	1.0656	1.7874
13	11.881	11.843	1115.2	45.966	220.22	424.6	1.0711	1.7855
14	12.229	12.189	1110.8	47.39	221.81	424.79	1.0765	1.7836
15	12.584	12.543	1106.3	48.855	223.42	424.97	1.082	1.7816
16	12.946	12.905	1101.7	50.36	225.03	425.14	1.0875	1.7797
17	13.317	13.274	1097.1	51.907	226.64	425.31	1.0929	1.7778
18	13.695	13.651	1092.5	53.497	228.27	425.46	1.0984	1.7758
19	14.082	14.036	1087.8	55.133	229.9	425.6	1.1039	1.7739
20	14.476	14.43	1083.1	56.814	231.54	425.73	1.1094	1.7719
21	14.879	14.831	1078.3	58.544	233.19	425.85	1.1148	1.77
22	15.29	15.241	1073.4	60.323	234.85	425.95	1.1203	1.768
23	15.709	15.66	1068.6	62.152	236.51	426.04	1.1258	1.766
24	16.138	16.087	1063.6	64.035	238.18	426.12	1.1313	1.764
25	16.574	16.522	1058.6	65.972	239.86	426.19	1.1368	1.7619
26	17.02	16.967	1053.6	67.966	241.55	426.25	1.1424	1.7599
27	17.475	17.42	1048.4	70.019	243.25	426.28	1.1479	1.7578
28	17.938	17.883	1043.3	72.133	244.96	426.31	1.1534	1.7558
29	18.411	18.354	1038	74.31	246.68	426.32	1.159	1.7537
30	18.893	18.835	1032.7	76.553	248.41	426.31	1.1645	1.7515
31	19.385	19.326	1027.3	78.864	250.15	426.29	1.1701	1.7494
32	19.886	19.826	1021.9	81.246	251.9	426.25	1.1757	1.7472
33	20.397	20.335	1016.4	83.703	253.66	426.2	1.1813	1.745
34	20.918	20.855	1010.8	86.237	255.43	426.12	1.1869	1.7428
35	21.449	21.385	1005.1	88.851	257.22	426.03	1.1925	1.7405
36	21.989	21.924	999.32	91.55	259.01	425.92	1.1982	1.7382
37	22.54	22.474	993.47	94.338	260.82	425.79	1.2038	1.7359
38	23.102	23.035	987.52	97.218	262.65	425.63	1.2095	1.7335
39	23.674	23.605	981.48	100.19	264.48	425.46	1.2152	1.7311
40	24.256	24.187	975.33	103.27	266.33	425.26	1.221	1.7286
41	24.85	24.779	969.08	106.46	268.2	425.04	1.2267	1.7261
42	25.454	25.383	962.72	109.76	270.08	424.79	1.2325	1.7235
43	26.07	25.998	956.23	113.18	271.98	424.52	1.2383	1.7209
44	26.697	26.624	949.62	116.72	273.9	424.21	1.2442	1.7182
45	27.335	27.261	942.88	120.4	275.84	423.88	1.2501	1.7155
46	27.985	27.911	935.99	124.23	277.8	423.52	1.256	1.7127
47	28.647	28.572	928.95	128.2	279.77	423.12	1.2619	1.7098
48	29.321	29.245	921.75	132.33	281.77	422.69	1.268	1.7069
49	30.007	29.93	914.37	136.64	283.8	422.22	1.274	1.7038
50	30.706	30.628	906.8	141.14	285.85	421.72	1.2801	1.7007
51	31.417	31.339	899.03	145.83	287.93	421.17	1.2863	1.6975
52	32.14	32.062	891.03	150.74	290.03	420.57	1.2926	1.6941
53	32.877	32.799	882.79	155.89	292.17	419.92	1.2989	1.6906
54	33.627	33.549	874.27	161.29	294.35	419.22	1.3053	1.6871
55	34.391	34.313	865.46	166.97	296.57	418.46	1.3118	1.6833
56	35.168	35.09	856.31	172.96	298.83	417.64	1.3184	1.6794
57	35.959	35.882	846.8	179.29	301.13	416.74	1.3251	1.6753
58	36.764	36.687	836.86	186.01	303.5	415.77	1.3319	1.6711
59	37.584	37.508	826.45	193.15	305.92	414.71	1.339	1.6666
60	38.418	38.344	815.49	200.78	308.41	413.54	1.3461	1.6618
61	39.268	39.195	803.9	208.97	310.99	412.27	1.3535	1.6567
62	40.133	40.061	791.57	217.81	313.66	410.86	1.3612	1.6513
63	41.014	40.944	778.34	227.41	316.44	409.3	1.3691	1.6455
64	41.911	41.843	764.04	237.94	319.35	407.56	1.3775	1.6392
65	42.824	42.76	748.4	249.59	322.43	405.6	1.3862	1.6322
66	43.754	43.693	731.03	262.68	325.73	403.35	1.3956	1.6245
67	44.702	44.645	711.34	277.66	329.32	400.74	1.4058	1.6158
68	45.668	45.616	688.29	295.31	333.32	397.62	1.4171	1.6056
69	46.651	46.606	659.83	317.07	338.01	393.72	1.4304	1.5933
70	47.653	47.617	620.47	346.39	344.1	388.43	1.4477	1.5769