

**Table Thermodynamique R 134a**

	Liquide	Liquide	Vapeur	Liquide	Vapeur	Liquide	Vapeur
Temperature	Pression	Densité	Densité	Enthalpie	Enthalpie	Entropie	Entropie
(°C)	(bar abs)	(Kg/M <sup>3</sup> )	(Kg/M <sup>3</sup> )	(KJ/Kg)	(KJ/Kg)	(KJ/Kg-K)	(KJ/Kg-K)
-100	0.005594	1582.4	0.039694	75.362	336.85	0.4354	1.9456
-99	0.0062222	1579.7	0.043901	76.547	337.44	0.44222	1.9403
-98	0.0069109	1577.1	0.048487	77.731	338.02	0.449	1.9351
-97	0.007665	1574.5	0.053477	78.916	338.61	0.45575	1.93
-96	0.0084895	1571.8	0.058902	80.102	339.19	0.46246	1.925
-95	0.0093899	1569.1	0.06479	81.288	339.78	0.46913	1.9201
-94	0.010372	1566.5	0.071174	82.474	340.38	0.47578	1.9154
-93	0.011441	1563.8	0.078087	83.661	340.97	0.48238	1.9107
-92	0.012605	1561.2	0.085563	84.849	341.56	0.48896	1.9061
-91	0.013869	1558.5	0.09364	86.037	342.16	0.4955	1.9016
-90	0.015241	1555.8	0.10236	87.226	342.76	0.50201	1.8972
-89	0.016728	1553.2	0.11175	88.415	343.36	0.50848	1.8929
-88	0.018338	1550.5	0.12186	89.606	343.96	0.51493	1.8887
-87	0.020079	1547.8	0.13274	90.797	344.56	0.52134	1.8846
-86	0.02196	1545.1	0.14443	91.989	345.17	0.52773	1.8805
-85	0.02399	1542.5	0.15697	93.182	345.77	0.53409	1.8766
-84	0.026178	1539.8	0.17042	94.376	346.38	0.54041	1.8727
-83	0.028535	1537.1	0.18482	95.57	346.99	0.54671	1.8689
-82	0.03107	1534.4	0.20023	96.766	347.6	0.55298	1.8652
-81	0.033794	1531.7	0.2167	97.963	348.21	0.55923	1.8616
-80	0.036719	1529	0.23429	99.161	348.83	0.56544	1.858
-79	0.039856	1526.3	0.25306	100.36	349.44	0.57163	1.8546
-78	0.043217	1523.6	0.27307	101.56	350.06	0.5778	1.8512
-77	0.046816	1520.9	0.29438	102.76	350.67	0.58393	1.8478
-76	0.050665	1518.2	0.31705	103.96	351.29	0.59004	1.8446
-75	0.054777	1515.5	0.34116	105.17	351.91	0.59613	1.8414
-74	0.059168	1512.8	0.36677	106.37	352.53	0.60219	1.8382
-73	0.063851	1510.1	0.39395	107.58	353.15	0.60823	1.8352
-72	0.068843	1507.3	0.42278	108.78	353.77	0.61424	1.8322
-71	0.074158	1504.6	0.45333	109.99	354.4	0.62023	1.8293
-70	0.079814	1501.9	0.48568	111.2	355.02	0.62619	1.8264
-69	0.085826	1499.1	0.51991	112.41	355.65	0.63214	1.8236
-68	0.092213	1496.4	0.5561	113.62	356.27	0.63806	1.8209
-67	0.098992	1493.7	0.59433	114.83	356.9	0.64395	1.8182
-66	0.10618	1490.9	0.6347	116.05	357.53	0.64983	1.8155
-65	0.1138	1488.2	0.67728	117.26	358.16	0.65568	1.813
-64	0.12187	1485.4	0.72218	118.48	358.79	0.66151	1.8105
-63	0.13041	1482.6	0.76947	119.7	359.42	0.66732	1.808
-62	0.13944	1479.9	0.81927	120.92	360.05	0.67311	1.8056
-61	0.14899	1477.1	0.87167	122.14	360.68	0.67887	1.8033
-60	0.15906	1474.3	0.92676	123.36	361.31	0.68462	1.801
-59	0.1697	1471.6	0.98465	124.59	361.94	0.69035	1.7987

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(°C)	(bar abs)	(Kg/M <sup>3</sup> )	(Kg/M <sup>3</sup> )	(KJ/Kg)	(KJ/Kg)	(KJ/Kg-K)	(KJ/Kg-K)
-58	0.18091	1468.8	1.0454	125.81	362.58	0.69605	1.7965
-57	0.19273	1466	1.1092	127.04	363.21	0.70174	1.7944
-56	0.20518	1463.2	1.1762	128.27	363.84	0.70741	1.7922
-55	0.21828	1460.4	1.2463	129.5	364.48	0.71305	1.7902
-54	0.23206	1457.6	1.3198	130.73	365.11	0.71868	1.7882
-53	0.24655	1454.8	1.3968	131.96	365.75	0.72429	1.7862
-52	0.26176	1452	1.4773	133.2	366.38	0.72988	1.7843
-51	0.27774	1449.1	1.5616	134.44	367.02	0.73546	1.7824
-50	0.29451	1446.3	1.6496	135.67	367.65	0.74101	1.7806
-49	0.31209	1443.5	1.7416	136.91	368.29	0.74655	1.7788
-48	0.33051	1440.6	1.8377	138.15	368.92	0.75207	1.777
-47	0.34982	1437.8	1.938	139.4	369.56	0.75757	1.7753
-46	0.37003	1434.9	2.0427	140.64	370.19	0.76305	1.7736
-45	0.39117	1432.1	2.1518	141.89	370.83	0.76852	1.772
-44	0.41329	1429.2	2.2655	143.14	371.46	0.77397	1.7704
-43	0.4364	1426.4	2.384	144.39	372.1	0.77941	1.7688
-42	0.46055	1423.5	2.5074	145.64	372.73	0.78482	1.7673
-41	0.48577	1420.6	2.6359	146.89	373.37	0.79023	1.7658
-40	0.51209	1417.7	2.7695	148.14	374	0.79561	1.7643
-39	0.53955	1414.8	2.9085	149.4	374.64	0.80098	1.7629
-38	0.56817	1411.9	3.0529	150.66	375.27	0.80633	1.7615
-37	0.59801	1409	3.2031	151.92	375.9	0.81167	1.7602
-36	0.62908	1406.1	3.359	153.18	376.54	0.817	1.7588
-35	0.66144	1403.1	3.5209	154.44	377.17	0.8223	1.7575
-34	0.69512	1400.2	3.689	155.71	377.8	0.8276	1.7563
-33	0.73015	1397.3	3.8633	156.98	378.43	0.83288	1.755
-32	0.76658	1394.3	4.0441	158.25	379.06	0.83814	1.7538
-31	0.80444	1391.4	4.2316	159.52	379.69	0.84339	1.7526
-30	0.84378	1388.4	4.4259	160.79	380.32	0.84863	1.7515
-29	0.88463	1385.4	4.6271	162.07	380.95	0.85385	1.7503
-28	0.92703	1382.4	4.8356	163.34	381.57	0.85906	1.7492
-27	0.97104	1379.5	5.0514	164.62	382.2	0.86425	1.7482
-26	1.0167	1376.5	5.2748	165.9	382.82	0.86943	1.7471
-25	1.064	1373.4	5.5059	167.19	383.45	0.8746	1.7461
-24	1.113	1370.4	5.745	168.47	384.07	0.87975	1.7451
-23	1.1639	1367.4	5.9922	169.76	384.69	0.8849	1.7441
-22	1.2165	1364.4	6.2477	171.05	385.32	0.89002	1.7432
-21	1.271	1361.3	6.5117	172.34	385.94	0.89514	1.7422
-20	1.3273	1358.3	6.7845	173.64	386.55	0.90025	1.7413
-19	1.3857	1355.2	7.0662	174.93	387.17	0.90534	1.7404
-18	1.446	1352.1	7.3571	176.23	387.79	0.91042	1.7396
-17	1.5084	1349	7.6574	177.53	388.4	0.91549	1.7387

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(°C)	(bar abs)	(Kg/M <sup>3</sup> )	(Kg/M <sup>3</sup> )	(KJ/Kg)	(KJ/Kg)	(KJ/Kg-K)	(KJ/Kg-K)
-16	1.5728	1345.9	7.9673	178.83	389.02	0.92054	1.7379
-15	1.6394	1342.8	8.287	180.14	389.63	0.92559	1.7371
-14	1.7082	1339.7	8.6168	181.44	390.24	0.93062	1.7363
-13	1.7792	1336.6	8.9568	182.75	390.85	0.93564	1.7355
-12	1.8524	1333.4	9.3074	184.07	391.46	0.94066	1.7348
-11	1.928	1330.3	9.6688	185.38	392.06	0.94566	1.7341
-10	2.006	1327.1	10.041	186.7	392.66	0.95065	1.7334
-9	2.0864	1323.9	10.425	188.02	393.27	0.95563	1.7327
-8	2.1693	1320.8	10.82	189.34	393.87	0.9606	1.732
-7	2.2548	1317.6	11.227	190.66	394.47	0.96556	1.7313
-6	2.3428	1314.3	11.646	191.99	395.06	0.97051	1.7307
-5	2.4334	1311.1	12.077	193.32	395.66	0.97544	1.73
-4	2.5268	1307.9	12.521	194.65	396.25	0.98037	1.7294
-3	2.6228	1304.6	12.978	195.98	396.84	0.98529	1.7288
-2	2.7217	1301.4	13.448	197.32	397.43	0.99021	1.7282
-1	2.8234	1298.1	13.931	198.66	398.02	0.99511	1.7276
0	2.928	1294.8	14.428	200	398.6	1	1.7271
1	3.0356	1291.5	14.939	201.34	399.19	1.0049	1.7265
2	3.1462	1288.1	15.465	202.69	399.77	1.0098	1.726
3	3.2598	1284.8	16.005	204.04	400.34	1.0146	1.7255
4	3.3766	1281.4	16.56	205.4	400.92	1.0195	1.725
5	3.4966	1278.1	17.131	206.75	401.49	1.0243	1.7245
6	3.6198	1274.7	17.717	208.11	402.06	1.0292	1.724
7	3.7463	1271.3	18.319	209.47	402.63	1.034	1.7235
8	3.8761	1267.9	18.938	210.84	403.2	1.0388	1.723
9	4.0094	1264.4	19.573	212.21	403.76	1.0437	1.7226
10	4.1461	1261	20.226	213.58	404.32	1.0485	1.7221
11	4.2863	1257.5	20.896	214.95	404.88	1.0533	1.7217
12	4.4301	1254	21.584	216.33	405.43	1.0581	1.7212
13	4.5776	1250.5	22.29	217.71	405.98	1.0629	1.7208
14	4.7288	1246.9	23.015	219.09	406.53	1.0677	1.7204
15	4.8837	1243.4	23.758	220.48	407.07	1.0724	1.72
16	5.0425	1239.8	24.522	221.87	407.61	1.0772	1.7196
17	5.2052	1236.2	25.305	223.26	408.15	1.082	1.7192
18	5.3718	1232.6	26.109	224.66	408.69	1.0867	1.7188
19	5.5424	1229	26.934	226.06	409.22	1.0915	1.7184
20	5.7171	1225.3	27.78	227.47	409.75	1.0962	1.718
21	5.8959	1221.7	28.648	228.88	410.27	1.101	1.7177
22	6.0789	1218	29.539	230.29	410.79	1.1057	1.7173
23	6.2662	1214.2	30.452	231.7	411.31	1.1105	1.7169
24	6.4578	1210.5	31.389	233.12	411.82	1.1152	1.7166
25	6.6538	1206.7	32.35	234.55	412.33	1.1199	1.7162

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(°C)	(bar abs)	(Kg/M <sup>3</sup> )	(Kg/M <sup>3</sup> )	(KJ/Kg)	(KJ/Kg)	(KJ/Kg-K)	(KJ/Kg-K)
26	6.8543	1202.9	33.335	235.97	412.84	1.1246	1.7159
27	7.0592	1199.1	34.346	237.4	413.34	1.1294	1.7155
28	7.2688	1195.2	35.382	238.84	413.84	1.1341	1.7152
29	7.483	1191.4	36.445	240.28	414.33	1.1388	1.7148
30	7.702	1187.5	37.535	241.72	414.82	1.1435	1.7145
31	7.9257	1183.5	38.653	243.17	415.3	1.1482	1.7142
32	8.1543	1179.6	39.799	244.62	415.78	1.1529	1.7138
33	8.3878	1175.6	40.974	246.08	416.26	1.1576	1.7135
34	8.6263	1171.6	42.18	247.54	416.72	1.1623	1.7131
35	8.8698	1167.5	43.416	249.01	417.19	1.167	1.7128
36	9.1185	1163.4	44.683	250.48	417.65	1.1717	1.7124
37	9.3724	1159.3	45.983	251.95	418.1	1.1764	1.7121
38	9.6315	1155.1	47.316	253.43	418.55	1.1811	1.7118
39	9.896	1151	48.683	254.92	418.99	1.1858	1.7114
40	10.166	1146.7	50.085	256.41	419.43	1.1905	1.7111
41	10.441	1142.5	51.523	257.91	419.86	1.1952	1.7107
42	10.722	1138.2	52.998	259.41	420.28	1.1999	1.7103
43	11.009	1133.8	54.512	260.91	420.7	1.2046	1.71
44	11.301	1129.5	56.064	262.43	421.11	1.2092	1.7096
45	11.599	1125.1	57.657	263.94	421.52	1.2139	1.7092
46	11.903	1120.6	59.292	265.47	421.92	1.2186	1.7089
47	12.213	1116.1	60.969	267	422.31	1.2233	1.7085
48	12.529	1111.5	62.69	268.53	422.69	1.228	1.7081
49	12.851	1106.9	64.458	270.07	423.07	1.2327	1.7077
50	13.179	1102.3	66.272	271.62	423.44	1.2375	1.7072
51	13.513	1097.6	68.134	273.18	423.8	1.2422	1.7068
52	13.854	1092.9	70.047	274.74	424.15	1.2469	1.7064
53	14.201	1088.1	72.012	276.31	424.49	1.2516	1.7059
54	14.555	1083.2	74.03	277.89	424.83	1.2563	1.7055
55	14.915	1078.3	76.104	279.47	425.15	1.2611	1.705
56	15.282	1073.4	78.235	281.06	425.47	1.2658	1.7045
57	15.656	1068.3	80.426	282.66	425.77	1.2705	1.704
58	16.036	1063.2	82.679	284.27	426.07	1.2753	1.7035
59	16.423	1058.1	84.996	285.88	426.36	1.2801	1.703
60	16.818	1052.9	87.379	287.5	426.63	1.2848	1.7024
61	17.219	1047.6	89.832	289.14	426.89	1.2896	1.7019
62	17.628	1042.2	92.358	290.78	427.14	1.2944	1.7013
63	18.044	1036.8	94.958	292.43	427.38	1.2992	1.7006
64	18.467	1031.2	97.637	294.09	427.61	1.304	1.7
65	18.898	1025.6	100.4	295.76	427.82	1.3088	1.6993
66	19.337	1020	103.24	297.44	428.02	1.3137	1.6987
67	19.783	1014.2	106.18	299.14	428.2	1.3185	1.6979

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68	20.237	1008.3	109.21	300.84	428.36	1.3234	1.6972
69	20.698	1002.3	112.34	302.55	428.52	1.3283	1.6964
70	21.168	996.25	115.57	304.28	428.65	1.3332	1.6956
71	21.646	990.06	118.91	306.02	428.77	1.3381	1.6948
72	22.132	983.76	122.37	307.78	428.86	1.343	1.6939
73	22.627	977.33	125.95	309.55	428.94	1.348	1.6929
74	23.13	970.78	129.65	311.33	429	1.353	1.692
75	23.641	964.09	133.49	313.13	429.03	1.358	1.6909
76	24.161	957.25	137.48	314.94	429.04	1.3631	1.6899
77	24.69	950.26	141.62	316.78	429.03	1.3682	1.6887
78	25.228	943.1	145.93	318.63	428.98	1.3733	1.6876
79	25.776	935.77	150.41	320.5	428.91	1.3784	1.6863
80	26.332	928.24	155.08	322.39	428.81	1.3836	1.685
81	26.898	920.51	159.95	324.3	428.68	1.3889	1.6836
82	27.473	912.56	165.05	326.24	428.51	1.3942	1.6821
83	28.058	904.37	170.38	328.21	428.3	1.3995	1.6806
84	28.653	895.91	175.97	330.2	428.05	1.4049	1.6789
85	29.258	887.16	181.85	332.22	427.76	1.4104	1.6771
86	29.874	878.1	188.05	334.28	427.42	1.4159	1.6752
87	30.499	868.68	194.59	336.38	427.02	1.4215	1.6732
88	31.136	858.86	201.52	338.51	426.55	1.4273	1.671
89	31.783	848.6	208.89	340.69	426.02	1.4331	1.6687
90	32.442	837.83	216.76	342.93	425.42	1.439	1.6662
91	33.112	826.47	225.2	345.22	424.72	1.4451	1.6634
92	33.793	814.43	234.31	347.59	423.92	1.4514	1.6604
93	34.487	801.58	244.22	350.03	422.99	1.4578	1.6571
94	35.193	787.75	255.08	352.58	421.92	1.4645	1.6534
95	35.912	772.7	267.14	355.25	420.67	1.4715	1.6492
96	36.645	756.09	280.73	358.07	419.18	1.4789	1.6445
97	37.391	737.34	296.41	361.12	417.39	1.4869	1.6389
98	38.152	715.51	315.13	364.47	415.14	1.4957	1.6322
99	38.929	688.6	338.85	368.34	412.16	1.5058	1.6235
100	39.724	651.18	373.01	373.3	407.68	1.5188	1.6109