

Temperature	Pressure	Liquid Density	Vapor Density	Liquid Enthalpy	Vapor Enthalpy	Liquid Entropy	Vapor Entropy
(°C)	(bar)	(kg/m ³)	(kg/m ³)	(kJ/kg)	(kJ/kg)	(kJ/kg-K)	(kJ/kg-K)
-70	0.10941	724.72	0.11101	32.343	1498.7	0.1622	7.3803
-69	0.11768	723.63	0.11886	36.591	1500.6	0.18306	7.3541
-68	0.12647	722.53	0.12715	40.846	1502.4	0.20384	7.3281
-67	0.13581	721.43	0.13593	45.106	1504.2	0.22455	7.3025
-66	0.14572	720.33	0.1452	49.372	1506.1	0.24519	7.2772
-65	0.15624	719.22	0.15499	53.645	1507.9	0.26576	7.2522
-64	0.16739	718.11	0.16532	57.922	1509.7	0.28625	7.2276
-63	0.17921	716.99	0.17621	62.206	1511.5	0.30668	7.2032
-62	0.19171	715.87	0.18769	66.496	1513.3	0.32703	7.1791
-61	0.20495	714.75	0.19978	70.792	1515.1	0.34732	7.1553
-60	0.21893	713.62	0.21251	75.093	1516.9	0.36754	7.1318
-59	0.23371	712.48	0.22589	79.4	1518.7	0.38769	7.1085
-58	0.24932	711.35	0.23997	83.714	1520.4	0.40778	7.0856
-57	0.26579	710.2	0.25475	88.033	1522.2	0.42779	7.0629
-56	0.28315	709.06	0.27028	92.357	1524	0.44774	7.0405
-55	0.30145	707.9	0.28657	96.688	1525.7	0.46763	7.0183
-54	0.32072	706.75	0.30366	101.02	1527.5	0.48745	6.9964
-53	0.34101	705.59	0.32157	105.37	1529.2	0.5072	6.9747
-52	0.36235	704.43	0.34034	109.71	1530.9	0.5269	6.9533
-51	0.38479	703.26	0.35999	114.07	1532.6	0.54652	6.9321
-50	0.40836	702.09	0.38055	118.43	1534.3	0.56609	6.9112
-49	0.43312	700.91	0.40207	122.79	1536	0.58559	6.8905
-48	0.45911	699.73	0.42456	127.16	1537.7	0.60503	6.87
-47	0.48637	698.55	0.44806	131.54	1539.4	0.6244	6.8498
-46	0.51495	697.36	0.47261	135.92	1541.1	0.64371	6.8298
-45	0.54489	696.17	0.49824	140.31	1542.7	0.66297	6.81
-44	0.57626	694.97	0.52498	144.7	1544.4	0.68216	6.7904
-43	0.60909	693.77	0.55287	149.1	1546	0.70129	6.771
-42	0.64345	692.57	0.58194	153.5	1547.7	0.72036	6.7518
-41	0.67937	691.36	0.61224	157.91	1549.3	0.73937	6.7329
-40	0.71692	690.15	0.6438	162.32	1550.9	0.75832	6.7141
-39	0.75615	688.94	0.67665	166.74	1552.5	0.77721	6.6955
-38	0.79711	687.72	0.71085	171.17	1554.1	0.79604	6.6772
-37	0.83986	686.49	0.74641	175.6	1555.7	0.81482	6.659
-36	0.88447	685.27	0.7834	180.03	1557.3	0.83353	6.641
-35	0.93098	684.04	0.82184	184.48	1558.8	0.85219	6.6232
-34	0.97946	682.8	0.86178	188.92	1560.4	0.87079	6.6055
-33	1.03	681.57	0.90326	193.37	1561.9	0.88933	6.588
-32	1.0826	680.32	0.94633	197.83	1563.4	0.90782	6.5708
-31	1.1373	679.08	0.99102	202.29	1565	0.92625	6.5536
-30	1.1943	677.83	1.0374	206.76	1566.5	0.94462	6.5367
-29	1.2535	676.58	1.0855	211.23	1568	0.96294	6.5199
-28	1.3151	675.32	1.1353	215.71	1569.4	0.9812	6.5033
-27	1.3792	674.06	1.187	220.19	1570.9	0.99941	6.4868
-26	1.4457	672.8	1.2405	224.68	1572.4	1.0176	6.4705
-25	1.5147	671.53	1.2959	229.17	1573.8	1.0357	6.4543
-24	1.5864	670.26	1.3533	233.66	1575.2	1.0537	6.4383
-23	1.6608	668.98	1.4126	238.17	1576.7	1.0717	6.4224
-22	1.7379	667.71	1.474	242.67	1578.1	1.0896	6.4067
-21	1.8179	666.42	1.5376	247.19	1579.5	1.1075	6.3911
-20	1.9008	665.14	1.6033	251.71	1580.8	1.1253	6.3757

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(°C)	(bar)	(kg/m ³)	(kg/m ³)	(kJ/kg)	(kJ/kg)	(kJ/kg-K)	(kJ/kg-K)
-19	1.9867	663.85	1.6711	256.23	1582.2	1.1431	6.3604
-18	2.0756	662.55	1.7413	260.76	1583.5	1.1609	6.3452
-17	2.1677	661.25	1.8138	265.29	1584.9	1.1785	6.3302
-16	2.263	659.95	1.8886	269.83	1586.2	1.1962	6.3153
-15	2.3617	658.65	1.9659	274.37	1587.5	1.2137	6.3005
-14	2.4637	657.34	2.0456	278.92	1588.8	1.2313	6.2859
-13	2.5691	656.02	2.1279	283.47	1590.1	1.2487	6.2713
-12	2.6782	654.7	2.2128	288.03	1591.4	1.2662	6.2569
-11	2.7908	653.38	2.3003	292.6	1592.6	1.2835	6.2426
-10	2.9071	652.06	2.3906	297.16	1593.9	1.3009	6.2285
-9	3.0273	650.73	2.4837	301.74	1595.1	1.3181	6.2144
-8	3.1513	649.39	2.5795	306.32	1596.3	1.3354	6.2004
-7	3.2793	648.06	2.6783	310.9	1597.5	1.3526	6.1866
-6	3.4114	646.71	2.7801	315.49	1598.7	1.3697	6.1729
-5	3.5476	645.37	2.8849	320.09	1599.8	1.3868	6.1592
-4	3.688	644.02	2.9928	324.69	1601	1.4038	6.1457
-3	3.8327	642.66	3.1038	329.3	1602.1	1.4209	6.1323
-2	3.9819	641.3	3.2181	333.91	1603.2	1.4378	6.119
-1	4.1356	639.94	3.3357	338.53	1604.3	1.4547	6.1058
0	4.2938	638.57	3.4567	343.15	1605.4	1.4716	6.0926
1	4.4568	637.2	3.5811	347.78	1606.5	1.4884	6.0796
2	4.6246	635.82	3.709	352.42	1607.5	1.5052	6.0667
3	4.7972	634.44	3.8405	357.06	1608.5	1.5219	6.0538
4	4.9748	633.06	3.9757	361.71	1609.6	1.5386	6.041
5	5.1575	631.66	4.1146	366.36	1610.5	1.5553	6.0284
6	5.3453	630.27	4.2573	371.02	1611.5	1.5719	6.0158
7	5.5385	628.87	4.4039	375.69	1612.5	1.5885	6.0033
8	5.737	627.46	4.5545	380.36	1613.4	1.605	5.9908
9	5.9409	626.05	4.7092	385.04	1614.4	1.6215	5.9785
10	6.1505	624.64	4.8679	389.72	1615.3	1.638	5.9662
11	6.3657	623.22	5.0309	394.41	1616.2	1.6544	5.954
12	6.5866	621.79	5.1983	399.11	1617	1.6708	5.9419
13	6.8135	620.36	5.37	403.81	1617.9	1.6871	5.9299
14	7.0463	618.93	5.5461	408.52	1618.7	1.7034	5.9179
15	7.2852	617.49	5.7269	413.24	1619.5	1.7197	5.906
16	7.5303	616.04	5.9123	417.97	1620.3	1.7359	5.8941
17	7.7817	614.59	6.1025	422.7	1621.1	1.7521	5.8824
18	8.0395	613.13	6.2975	427.44	1621.9	1.7682	5.8707
19	8.3038	611.67	6.4975	432.18	1622.6	1.7844	5.859
20	8.5748	610.2	6.7025	436.94	1623.3	1.8005	5.8475
21	8.8524	608.72	6.9127	441.7	1624	1.8165	5.8359
22	9.1369	607.24	7.1281	446.47	1624.7	1.8326	5.8245
23	9.4283	605.76	7.3488	451.24	1625.3	1.8485	5.8131
24	9.7268	604.26	7.5751	456.03	1626	1.8645	5.8017
25	10.032	602.76	7.8069	460.82	1626.6	1.8804	5.7904
26	10.345	601.26	8.0443	465.62	1627.2	1.8963	5.7792
27	10.666	599.75	8.2876	470.43	1627.7	1.9122	5.768
28	10.993	598.23	8.5368	475.25	1628.3	1.9281	5.7569
29	11.329	596.7	8.792	480.08	1628.8	1.9439	5.7458
30	11.672	595.17	9.0533	484.91	1629.3	1.9597	5.7347
31	12.023	593.63	9.3209	489.76	1629.8	1.9754	5.7237

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(°C)	(bar)	(kg/m ³)	(kg/m ³)	(kJ/kg)	(kJ/kg)	(kJ/kg-K)	(kJ/kg-K)
32	12.382	592.08	9.595	494.61	1630.3	1.9911	5.7128
33	12.749	590.53	9.8755	499.47	1630.7	2.0069	5.7019
34	13.124	588.97	10.163	504.34	1631.1	2.0225	5.691
35	13.508	587.4	10.457	509.23	1631.5	2.0382	5.6801
36	13.9	585.82	10.758	514.12	1631.9	2.0538	5.6693
37	14.3	584.24	11.066	519.02	1632.2	2.0694	5.6586
38	14.709	582.65	11.381	523.93	1632.5	2.085	5.6479
39	15.127	581.05	11.703	528.86	1632.8	2.1006	5.6372
40	15.554	579.44	12.034	533.79	1633.1	2.1161	5.6265
41	15.99	577.82	12.371	538.74	1633.3	2.1317	5.6159
42	16.435	576.2	12.717	543.69	1633.5	2.1472	5.6053
43	16.89	574.56	13.071	548.66	1633.7	2.1627	5.5947
44	17.353	572.92	13.432	553.64	1633.9	2.1781	5.5841
45	17.827	571.27	13.803	558.63	1634	2.1936	5.5736
46	18.31	569.61	14.181	563.63	1634.1	2.209	5.5631
47	18.802	567.94	14.569	568.65	1634.2	2.2244	5.5526
48	19.305	566.25	14.965	573.68	1634.2	2.2398	5.5422
49	19.818	564.56	15.371	578.72	1634.2	2.2552	5.5317
50	20.34	562.86	15.785	583.77	1634.2	2.2706	5.5213
51	20.873	561.15	16.209	588.84	1634.2	2.286	5.5109
52	21.417	559.43	16.643	593.92	1634.1	2.3013	5.5005
53	21.971	557.7	17.087	599.02	1634	2.3167	5.4901
54	22.536	555.95	17.541	604.13	1633.9	2.332	5.4797
55	23.111	554.2	18.006	609.26	1633.7	2.3473	5.4693
56	23.698	552.43	18.481	614.4	1633.5	2.3627	5.4589
57	24.295	550.65	18.967	619.56	1633.3	2.378	5.4486
58	24.904	548.86	19.464	624.73	1633	2.3933	5.4382
59	25.524	547.06	19.973	629.92	1632.7	2.4086	5.4278
60	26.156	545.24	20.493	635.12	1632.4	2.4239	5.4174
61	26.799	543.41	21.025	640.35	1632.1	2.4392	5.4071
62	27.454	541.57	21.57	645.59	1631.7	2.4545	5.3967
63	28.121	539.72	22.127	650.84	1631.2	2.4698	5.3863
64	28.8	537.85	22.697	656.12	1630.8	2.4851	5.3759
65	29.491	535.96	23.28	661.42	1630.2	2.5004	5.3655
66	30.195	534.06	23.877	666.73	1629.7	2.5157	5.355
67	30.911	532.15	24.488	672.07	1629.1	2.531	5.3446
68	31.639	530.22	25.113	677.42	1628.5	2.5463	5.3341
69	32.381	528.27	25.753	682.8	1627.8	2.5617	5.3236
70	33.135	526.31	26.407	688.2	1627.1	2.577	5.3131
71	33.902	524.33	27.078	693.62	1626.3	2.5923	5.3026
72	34.682	522.33	27.764	699.06	1625.5	2.6077	5.292
73	35.476	520.32	28.467	704.53	1624.7	2.6231	5.2814
74	36.284	518.28	29.186	710.02	1623.8	2.6385	5.2707
75	37.105	516.23	29.923	715.53	1622.9	2.6539	5.2601
76	37.939	514.16	30.678	721.07	1621.9	2.6693	5.2493
77	38.788	512.07	31.451	726.64	1620.9	2.6847	5.2386
78	39.651	509.96	32.244	732.23	1619.8	2.7002	5.2278
79	40.528	507.83	33.056	737.85	1618.6	2.7157	5.2169
80	41.42	505.67	33.888	743.5	1617.5	2.7312	5.206
81	42.326	503.49	34.741	749.18	1616.2	2.7468	5.195
82	43.247	501.29	35.615	754.88	1614.9	2.7623	5.184

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(°C)	(bar)	(kg/m ³)	(kg/m ³)	(kJ/kg)	(kJ/kg)	(kJ/kg-K)	(kJ/kg-K)
83	44.183	499.07	36.512	760.62	1613.6	2.778	5.1729
84	45.134	496.82	37.432	766.39	1612.2	2.7936	5.1617
85	46.1	494.54	38.376	772.2	1610.7	2.8093	5.1504
86	47.082	492.24	39.344	778.04	1609.1	2.825	5.1391
87	48.079	489.91	40.338	783.91	1607.5	2.8408	5.1277
88	49.093	487.56	41.359	789.82	1605.9	2.8566	5.1162
89	50.122	485.17	42.407	795.77	1604.1	2.8725	5.1046
90	51.167	482.75	43.484	801.76	1602.3	2.8884	5.0929
91	52.229	480.31	44.59	807.79	1600.5	2.9043	5.0811
92	53.307	477.82	45.728	813.86	1598.5	2.9204	5.0692
93	54.402	475.31	46.898	819.97	1596.5	2.9365	5.0572
94	55.514	472.76	48.101	826.13	1594.4	2.9526	5.045
95	56.643	470.17	49.34	832.34	1592.2	2.9689	5.0327
96	57.79	467.55	50.615	838.6	1589.9	2.9852	5.0203
97	58.954	464.88	51.928	844.91	1587.5	3.0016	5.0078
98	60.135	462.18	53.282	851.27	1585	3.018	4.995
99	61.335	459.43	54.677	857.68	1582.5	3.0346	4.9821
100	62.553	456.63	56.117	864.16	1579.8	3.0513	4.9691
101	63.789	453.79	57.603	870.69	1577	3.068	4.9558
102	65.044	450.9	59.138	877.29	1574.1	3.0849	4.9424
103	66.318	447.95	60.724	883.96	1571.1	3.1019	4.9287
104	67.61	444.95	62.365	890.7	1568	3.119	4.9148
105	68.923	441.9	64.063	897.51	1564.7	3.1363	4.9007
106	70.255	438.78	65.822	904.4	1561.3	3.1537	4.8863
107	71.606	435.59	67.646	911.37	1557.8	3.1712	4.8716
108	72.978	432.34	69.539	918.43	1554.1	3.1889	4.8567
109	74.37	429.01	71.505	925.58	1550.2	3.2068	4.8414
110	75.783	425.61	73.55	932.84	1546.2	3.2249	4.8258
111	77.217	422.12	75.679	940.2	1542	3.2432	4.8099
112	78.673	418.54	77.899	947.68	1537.6	3.2618	4.7935
113	80.15	414.86	80.217	955.28	1533	3.2805	4.7768
114	81.649	411.08	82.642	963.01	1528.2	3.2996	4.7595
115	83.17	407.18	85.182	970.89	1523.1	3.319	4.7418
116	84.714	403.15	87.849	978.93	1517.8	3.3387	4.7235
117	86.281	398.99	90.654	987.15	1512.2	3.3588	4.7046
118	87.872	394.67	93.614	995.56	1506.3	3.3793	4.685
119	89.486	390.18	96.745	1004.2	1500	3.4003	4.6647
120	91.125	385.49	100.07	1013.1	1493.4	3.4218	4.6435
121	92.789	380.57	103.61	1022.2	1486.3	3.444	4.6214
122	94.478	375.4	107.4	1031.7	1478.7	3.4669	4.5982
123	96.192	369.93	111.48	1041.6	1470.6	3.4907	4.5737
124	97.934	364.08	115.9	1051.9	1461.8	3.5156	4.5477
125	99.702	357.8	120.73	1062.8	1452.3	3.5417	4.5199
126	101.5	350.95	126.06	1074.4	1441.8	3.5696	4.4899
127	103.32	343.37	132.03	1087	1430.1	3.5996	4.457
128	105.18	334.79	138.85	1100.8	1416.8	3.6327	4.4205
129	107.06	324.74	146.87	1116.4	1401.3	3.6702	4.3787
130	108.98	312.29	156.77	1135.2	1382.5	3.7153	4.3287