

THERMODYNAMIC PROPERTIES OF WATER (STEAM TABLES)

TABLE A.1 TWO-PHASE, BY TEMPERATURE

Temp. °C <i>T</i>	Press. kPa, MPa <i>P</i>	Specific Volume, m ³ /kg		Internal Energy		Enthalpy, kJ/kg			Entropy, kJ/kg K	
		Sat. Liquid <i>v_f</i>	Sat. Vapor <i>v_g</i>	Sat. Liquid <i>u_f</i>	Sat. Vapor <i>u_g</i>	Sat. Liquid <i>h_f</i>	Evap. <i>h_{fg}</i>	Sat. Vapor <i>h_g</i>	Sat. Liquid <i>s_f</i>	Sat. Vapor <i>s_g</i>
0.01	0.6113	0.001000	206.132	0.00	2375.3	0.00	2501.3	2501.3	0.0000	9.1562
5	0.8721	0.001000	147.118	20.97	2382.2	20.98	2489.6	2510.5	0.0761	9.0257
10	1.2276	0.001000	106.377	41.99	2389.2	41.99	2477.7	2519.7	0.1510	8.9007
15	1.7051	0.001001	77.925	62.98	2396.0	62.98	2465.9	2528.9	0.2245	8.7813
20	2.3385	0.001002	57.790	83.94	2402.9	83.94	2454.1	2538.1	0.2966	8.6671
25	3.1691	0.001003	43.359	104.86	2409.8	104.87	2442.3	2547.2	0.3673	8.5579
30	4.2461	0.001004	32.893	125.77	2416.6	125.77	2430.5	2556.2	0.4369	8.4533
35	5.6280	0.001006	25.216	146.65	2423.4	146.66	2418.6	2565.3	0.5052	8.3530
40	7.3837	0.001008	19.523	167.53	2430.1	167.54	2406.7	2574.3	0.5724	8.2569
45	9.5934	0.001010	15.258	188.41	2436.8	188.42	2394.8	2583.2	0.6386	8.1647
50	12.350	0.001012	12.032	209.30	2443.5	209.31	2382.7	2592.1	0.7037	8.0762
55	15.758	0.001015	9.568	230.19	2450.1	230.20	2370.7	2600.9	0.7679	7.9912
60	19.941	0.001017	7.671	251.09	2456.6	251.11	2358.5	2609.6	0.8311	7.9095
65	25.033	0.001020	6.197	272.00	2463.1	272.03	2346.2	2618.2	0.8934	7.8309
70	31.188	0.001023	5.042	292.93	2469.5	292.96	2333.8	2626.8	0.9548	7.7552
75	38.578	0.001026	4.131	313.87	2475.9	313.91	2321.4	2635.3	1.0154	7.6824
80	47.390	0.001029	3.407	334.84	2482.2	334.88	2308.8	2643.7	1.0752	7.6121
85	57.834	0.001032	2.828	355.82	2488.4	355.88	2296.0	2651.9	1.1342	7.5444
90	70.139	0.001036	2.361	376.82	2494.5	376.90	2283.2	2660.1	1.1924	7.4790
95	84.554	0.001040	1.982	397.86	2500.6	397.94	2270.2	2668.1	1.2500	7.4158
100	0.10135	0.001044	1.6729	418.91	2506.5	419.02	2257.0	2676.0	1.3068	7.3548
105	0.12082	0.001047	1.4194	440.00	2512.3	440.13	2243.7	2683.8	1.3629	7.2958
110	0.14328	0.001052	1.2102	461.12	2518.1	461.27	2230.2	2691.5	1.4184	7.2386
115	0.16906	0.001056	1.0366	482.28	2523.7	482.46	2216.5	2699.0	1.4733	7.1832
120	0.19853	0.001060	0.8919	503.48	2529.2	503.69	2202.6	2706.3	1.5275	7.1295
125	0.2321	0.001065	0.77059	524.72	2534.6	524.96	2188.5	2713.5	1.5812	7.0774
130	0.2701	0.001070	0.66850	546.00	2539.9	546.29	2174.2	2720.5	1.6343	7.0269
135	0.3130	0.001075	0.58217	567.34	2545.0	567.67	2159.6	2727.3	1.6869	6.9777
140	0.3613	0.001080	0.50885	588.72	2550.0	589.11	2144.8	2733.9	1.7390	6.9298
145	0.4154	0.001085	0.44632	610.16	2554.9	610.61	2129.6	2740.3	1.7906	6.8832
150	0.4759	0.001090	0.39278	631.66	2559.5	632.18	2114.3	2746.4	1.8417	6.8378
155	0.5431	0.001096	0.34676	653.23	2564.0	653.82	2098.6	2752.4	1.8924	6.7934
160	0.6178	0.001102	0.30706	674.85	2568.4	675.53	2082.6	2758.1	1.9426	6.7501
165	0.7005	0.001108	0.27269	696.55	2572.5	697.32	2066.2	2763.5	1.9924	6.7078
170	0.7917	0.001114	0.24283	718.31	2576.5	719.20	2049.5	2768.7	2.0418	6.6663
175	0.8920	0.001121	0.21680	740.16	2580.2	741.16	2032.4	2773.6	2.0909	6.6256
180	1.0022	0.001127	0.19405	762.08	2583.7	763.21	2015.0	2778.2	2.1395	6.5857

TABLE A.1 (continued)

Temp. °C <i>T</i>	Press. MPa <i>P</i>	Specific Volume, m ³ /kg		Internal Energy		Enthalpy, kJ/kg			Entropy, kJ/kg K	
		Sat. Liquid <i>v_f</i>	Sat. Vapor <i>v_g</i>	Sat. Liquid <i>u_f</i>	Sat. Vapor <i>u_g</i>	Sat. Liquid <i>h_f</i>	Evap. <i>h_{fg}</i>	Sat. Vapor <i>h_g</i>	Sat. Liquid <i>s_f</i>	Sat. Vapor <i>s_g</i>
185	1.1227	0.001134	0.17409	784.08	2587.0	785.36	1997.1	2782.4	2.1878	6.5464
190	1.2544	0.001141	0.15654	806.17	2590.0	807.61	1978.8	2786.4	2.2358	6.5078
195	1.3978	0.001149	0.14105	828.36	2592.8	829.96	1960.0	2790.0	2.2835	6.4697
200	1.5538	0.001156	0.12736	850.64	2595.3	852.43	1940.7	2793.2	2.3308	6.4322
205	1.7230	0.001164	0.11521	873.02	2597.5	875.03	1921.0	2796.0	2.3779	6.3951
210	1.9063	0.001173	0.10441	895.51	2599.4	897.75	1900.7	2798.5	2.4247	6.3584
215	2.1042	0.001181	0.09479	918.12	2601.1	920.61	1879.9	2800.5	2.4713	6.3221
220	2.3178	0.001190	0.08619	940.85	2602.3	943.61	1858.5	2802.1	2.5177	6.2860
225	2.5477	0.001199	0.07849	963.72	2603.3	966.77	1836.5	2803.3	2.5639	6.2502
230	2.7949	0.001209	0.07158	986.72	2603.9	990.10	1813.8	2803.9	2.6099	6.2146
235	3.0601	0.001219	0.06536	1009.88	2604.1	1013.61	1790.5	2804.1	2.6557	6.1791
240	3.3442	0.001229	0.05976	1033.19	2603.9	1037.31	1766.5	2803.8	2.7015	6.1436
245	3.6482	0.001240	0.05470	1056.69	2603.4	1061.21	1741.7	2802.9	2.7471	6.1083
250	3.9730	0.001251	0.05013	1080.37	2602.4	1085.34	1716.2	2801.5	2.7927	6.0729
255	4.3195	0.001263	0.04598	1104.26	2600.9	1109.72	1689.8	2799.5	2.8382	6.0374
260	4.6886	0.001276	0.04220	1128.37	2599.0	1134.35	1662.5	2796.9	2.8837	6.0018
265	5.0813	0.001289	0.03877	1152.72	2596.6	1159.27	1634.3	2793.6	2.9293	5.9661
270	5.4987	0.001302	0.03564	1177.33	2593.7	1184.49	1605.2	2789.7	2.9750	5.9301
275	5.9418	0.001317	0.03279	1202.23	2590.2	1210.05	1574.9	2785.0	3.0208	5.8937
280	6.4117	0.001332	0.03017	1227.43	2586.1	1235.97	1543.6	2779.5	3.0667	5.8570
285	6.9094	0.001348	0.02777	1252.98	2581.4	1262.29	1511.0	2773.3	3.1129	5.8198
290	7.4360	0.001366	0.02557	1278.89	2576.0	1289.04	1477.1	2766.1	3.1593	5.7821
295	7.9928	0.001384	0.02354	1305.21	2569.9	1316.27	1441.8	2758.0	3.2061	5.7436
300	8.5810	0.001404	0.02167	1331.97	2563.0	1344.01	1404.9	2748.9	3.2533	5.7044
305	9.2018	0.001425	0.01995	1359.22	2555.2	1372.33	1366.4	2738.7	3.3009	5.6642
310	9.8566	0.001447	0.01835	1387.03	2546.4	1401.29	1326.0	2727.3	3.3492	5.6229
315	10.547	0.001472	0.01687	1415.44	2536.6	1430.97	1283.5	2714.4	3.3981	5.5803
320	11.274	0.001499	0.01549	1444.55	2525.5	1461.45	1238.6	2700.1	3.4479	5.5361
330	12.845	0.001561	0.012996	1505.24	2498.9	1525.29	1140.6	2665.8	3.5506	5.4416
340	14.586	0.001638	0.010797	1570.26	2464.5	1594.15	1027.9	2622.0	3.6593	5.3356
350	16.514	0.001740	0.008813	1641.81	2418.4	1670.54	893.4	2563.9	3.7776	5.2111
360	18.651	0.001892	0.006945	1725.19	2351.5	1760.48	720.5	2481.0	3.9146	5.0525
370	21.028	0.002213	0.004926	1843.84	2228.5	1890.37	441.8	2332.1	4.1104	4.7972
374.14	22.089	0.003155	0.003155	2029.58	2029.6	2099.26	0	2099.3	4.4297	4.4297

kg