

TABLE 4A: Properties of saturated water (liquid–vapor): temperature table

Temp T, °C	Specific volume, m ³ /kg		Internal energy, kJ/kg				Enthalpy, kJ/kg				Entropy, kJ/(kg·K)	
	Sat. liq- uid	Sat. vapor	Sat. liquid	Evap.	Sat. vapor	Sat. liquid	Evap.	Sat. vapor	Sat. liquid	Evap.	Sat. liquid	Sat. vapor
	v_f	v_g	u_f	u_{fg}	u_g	h_f	h_{fg}	h_g	s_f	s_{fg}	s_f	s_g
0.01	0.0006113	206.14	0.0	2375.3	2375.3	0.01	2501.3	2501.4	0.000	9.1562	0.000	9.1562
5	0.0008721	147.12	20.97	2361.3	2382.3	20.98	2489.6	2510.6	0.0761	8.9496	0.0761	8.9496
10	0.0012276	106.38	42.00	2347.2	2389.2	42.01	2477.7	2519.8	0.1510	8.7498	0.1510	8.9008
15	0.0017051	77.93	62.99	2333.1	2396.1	62.99	2465.9	2528.9	0.2245	8.5569	0.2245	8.7814
20	0.002339	57.79	83.95	2319.0	2402.9	83.96	2454.1	2538.1	0.2966	8.3706	0.2966	8.6672
25	0.003169	43.36	104.88	2304.9	2409.8	104.89	2442.3	2547.2	0.3674	8.1905	0.3674	8.5580
30	0.004246	32.89	125.78	2290.8	2416.6	125.79	2430.5	2556.3	0.4369	8.0164	0.4369	8.4533
35	0.005628	25.22	146.67	2276.7	2423.4	146.68	2418.6	2565.3	0.5053	7.8478	0.5053	8.3531
40	0.007384	19.52	167.56	2262.6	2430.1	167.57	2406.7	2574.3	0.5725	7.6845	0.5725	8.2570
45	0.009593	15.26	188.44	2248.4	2436.8	188.45	2394.8	2583.2	0.6387	7.5261	0.6387	8.1648
50	0.012349	12.03	209.32	2234.2	2443.5	209.33	2382.7	2592.1	0.7038	7.3725	0.7038	8.0763
55	0.015758	9.568	230.21	2219.9	2450.1	230.23	2370.7	2600.9	0.7679	7.2234	0.7679	7.9913
60	0.019940	7.671	251.11	2205.5	2456.6	251.13	2358.5	2609.6	0.8312	7.0784	0.8312	7.9096
65	0.02503	6.197	272.02	2191.1	2463.1	272.06	2346.2	2618.3	0.8935	6.9375	0.8935	7.8310
70	0.03119	5.042	292.95	2176.6	2469.6	292.98	2333.8	2626.8	0.9549	6.8004	0.9549	7.7553
75	0.03858	4.131	313.90	2162.0	2475.9	313.93	2321.4	2635.3	1.0155	6.6669	1.0155	7.6824
80	0.04739	3.407	334.86	2147.4	2482.2	334.91	2308.8	2643.7	1.0753	6.5369	1.0753	7.6122
85	0.05783	2.828	355.84	2132.6	2488.4	355.90	2296.0	2651.9	1.1343	6.4102	1.1343	7.5445
90	0.07014	2.361	376.85	2117.7	2494.5	376.92	2283.2	2660.1	1.1925	6.2866	1.1925	7.4791
95	0.08455	1.982	397.88	2102.7	2500.6	397.96	2270.2	2668.1	1.2500	6.1659	1.2500	7.4159
100	0.10135	1.6729	418.94	2087.6	2506.5	419.04	2257.0	2676.1	1.3069	6.0480	1.3069	7.3549
105	0.12082	1.4194	440.02	2072.3	2512.4	440.15	2243.7	2683.8	1.3630	5.9328	1.3630	7.2958
110	0.14327	1.2102	461.14	2057.0	2518.1	461.30	2230.2	2691.5	1.4185	5.8202	1.4185	7.2387

Temp T, °C	Specific volume, m ³ /kg			Internal energy, kJ/kg			Enthalpy, kJ/kg			Entropy, kJ/(kg·K)		
	Sat. press. P _{sat} , MPa	Sat. liq- uid v _f	Sat. vapor v _g	Sat. liquid u _f	Evap. u _{fg}	Sat. vapor u _g	Sat. liquid h _f	Evap. h _{fg}	Sat. vapor h _g	Sat. liquid s _f	Evap. s _{fg}	Sat. vapor s _g
115	0.16906	0.001056	1.0366	482.30	2041.4	2523.7	482.48	2216.5	2699.0	1.4734	5.7100	7.1833
120	0.19853	0.001060	0.8919	503.50	2025.8	2529.3	503.71	2202.6	2706.3	1.5276	5.6020	7.1296
125	0.2321	0.001065	0.7706	524.74	2009.9	2534.6	524.99	2188.5	2713.5	1.5813	5.4962	7.0775
130	0.2701	0.001070	0.6685	546.02	1993.9	2539.9	546.31	2174.2	2720.5	1.6344	5.3925	7.0269
135	0.3130	0.001075	0.5822	567.35	1977.7	2545.0	567.69	2159.6	2727.3	1.6870	5.2907	6.9777
140	0.3613	0.001080	0.5089	588.74	1961.3	2550.0	589.13	2144.7	2733.9	1.7391	5.1908	6.9299
145	0.4154	0.001085	0.4463	610.18	1944.7	2554.9	610.63	2129.6	2740.3	1.7907	5.0926	6.8833
150	0.4758	0.001091	0.3928	631.68	1927.9	2559.5	632.20	2114.3	2746.5	1.8418	4.9960	6.8379
155	0.5431	0.001096	0.3468	653.24	1910.8	2564.1	653.84	2098.6	2752.4	1.8925	4.9010	6.7935
160	0.6178	0.001102	0.3071	674.87	1893.5	2568.4	675.55	2082.6	2758.1	1.9427	4.8075	6.7502
165	0.7005	0.001108	0.2727	696.56	1876.0	2572.5	697.34	2066.2	2763.5	1.9925	4.7153	6.7078
170	0.7917	0.001114	0.2428	718.33	1858.1	2576.5	719.21	2049.5	2768.7	2.0419	4.6244	6.6663
175	0.8920	0.001121	0.2168	740.17	1840.0	2580.2	741.17	2032.4	2773.6	2.0909	4.5347	6.6256
180	1.0021	0.001127	0.19405	762.09	1821.6	2583.7	763.22	2015.0	2778.2	2.1396	4.4461	6.5857
185	1.1227	0.001134	0.17409	784.10	1802.9	2587.0	785.37	1997.1	2782.4	2.1879	4.3586	6.5465
190	1.2544	0.001141	0.15654	806.19	1783.8	2590.0	807.62	1978.8	2786.4	2.2359	4.2720	6.5079
195	1.3978	0.001149	0.14105	828.37	1764.4	2592.8	829.98	1960.0	2790.0	2.2835	4.1863	6.4698
200	1.5538	0.001157	0.12736	850.65	1744.7	2595.3	852.45	1940.7	2793.2	2.3309	4.1014	6.432
205	1.7230	0.001164	0.11521	873.04	1724.5	2597.5	875.04	1921.0	2796.0	2.3780	4.0172	6.3952
210	1.9062	0.001173	0.10441	895.53	1703.9	2599.5	897.76	1900.7	2798.5	2.4248	3.9337	6.3585
215	2.104	0.001181	0.09479	918.14	1682.9	2601.1	920.62	1879.9	2800.5	2.4714	3.8507	6.3221
220	2.318	0.001190	0.08619	940.87	1661.5	2602.4	943.62	1858.5	2802.1	2.5178	3.7683	6.2861
225	2.548	0.001199	0.07849	963.73	1639.6	2603.3	966.78	1836.5	2803.3	2.5639	3.6863	6.2503
230	2.795	0.001209	0.07158	986.74	1617.2	2603.9	990.12	1813.8	2804.0	2.6099	3.6047	6.2146

Temp T, °C	Sat. press. P _{sat} , MPa	Specific volume, m ³ /kg		Internal energy, kJ/kg			Enthalpy, kJ/kg			Entropy, kJ/(kg·K)		
		Sat. liq- uid v _f	Sat. vapor v _g	Sat. liquid u _f	Evap. u _{fg}	Sat. vapor u _g	Sat. liquid h _f	Evap. h _{fg}	Sat. vapor h _g	Sat. liquid s _f	Evap. s _{fg}	Sat. vapor s _g
235	3.060	0.001219	0.06537	1009.89	1594.2	2604.1	1013.62	1790.5	2804.2	2.6558	3.5233	6.1791
240	3.344	0.001229	0.05976	1033.21	1570.8	2604.0	1037.32	1766.5	2803.8	2.7015	3.4422	6.1437
245	3.648	0.001240	0.05471	1056.71	1546.7	2603.4	1061.23	1741.7	2803.0	2.7472	3.3612	6.1083
250	3.973	0.001251	0.05013	1080.39	1522.0	2602.4	1085.36	1716.2	2801.5	2.7927	3.2802	6.0730

TABLE4A: Saturated water – temperature table (continued)

T°C	P _{sat} , MPa	V _f	V _g	u _f	u _{fg}	u _g	h _f	h _{fg}	h _g	S _f	S _{fg}	S _g
255	4.319	0.001263	0.04598	1104.28	1596.7	2600.9	1109.73	1689.8	2799.5	2.8383	3.1992	6.0375
260	4.688	0.001276	0.04221	1128.39	1470.6	2599.0	1134.37	1662.5	2796.9	2.8838	3.1181	6.0019
265	5.081	0.001289	0.03877	1152.74	1443.9	2596.6	1159.28	1634.4	2793.6	2.9294	3.0368	5.9662
270	5.499	0.001302	0.03564	1177.36	1416.3	2593.7	1184.51	1605.2	2789.7	2.9751	2.9551	5.9301
275	5.942	0.001317	0.03279	1202.25	1387.9	2590.2	1210.07	1574.9	2785.0	3.0208	2.8730	5.8938
280	6.412	0.001332	0.03017	1227.46	1358.7	2586.1	1235.99	1543.6	2779.6	3.0668	2.7903	5.8571
285	6.909	0.001348	0.02777	1253.00	1328.4	2581.4	1262.31	1511.0	2773.3	3.1130	2.7070	5.8199
290	7.436	0.001366	0.02557	1278.92	1297.1	2576.0	1289.07	1477.1	2766.2	3.1594	2.6227	5.7821
295	7.993	0.001384	0.02354	1305.2	1264.7	2569.9	1316.3	1441.8	2758.1	3.2062	2.5375	5.7437
300	8.581	0.001404	0.02167	1332.0	1231.0	2563.0	1344.0	1404.9	2749.0	3.2534	2.4511	5.7045
305	9.202	0.001425	0.019948	1359.3	1195.9	2555.2	1372.4	1366.4	2738.7	3.3010	2.3633	5.6643
310	9.856	0.001447	0.018350	1387.1	1159.4	2546.4	1401.3	1326.0	2727.3	3.3493	2.2737	5.6230
315	10.547	0.001472	0.016867	1415.5	1121.1	2536.6	1431.0	1283.5	2714.5	3.3982	2.1821	5.5804
320	11.274	0.001499	0.015488	1444.6	1080.9	2525.5	1461.5	1238.6	2700.1	3.4480	2.0882	5.5362
330	12.845	0.001561	0.012996	1505.3	993.7	2498.9	1525.3	1140.6	2665.9	3.5507	1.8909	5.4417
340	14.586	0.001638	0.010797	1570.3	894.3	2464.6	1594.2	1027.9	2622.0	3.6594	1.6763	5.3357
350	16.513	0.001740	0.008813	1641.9	776.6	2418.4	1670.6	893.4	2563.9	3.7777	1.4335	5.2112
360	18.651	0.001893	0.006945	1725.2	626.3	2351.5	1760.5	720.3	2481.0	3.9147	1.1379	5.0526
370	21.03	0.002213	0.004925	1844.0	384.5	2228.5	1890.5	441.6	2332.1	4.1106	0.6865	4.7971
374.14	22.09	0.003155	0.003155	2029.6	0	2029.6	2099.3	0	2099.3	4.4298	0	4.4298

Tables A-4A to A-4 C adapted from G. J. Wylen, and R. Sonntag, *Fundamentals of Classical Thermodynamics*, 3rd Ed. John Wiley & Sons, 1986; originally published in J. H. Keenan and F. G. Keyes, P. G. Hill and J. G. Moore, *Steam Tables*, John Wiley & Sons, 1978.