附表 B13　未饱和水与过热水蒸气的热力性质

p	0.001MPa			0.005MPa		
	$\{t_s\}_{℃}=6.949$ $\{v'\}_{m^3/kg}=0.0010001$，$\{v''\}_{m^3/kg}=129.185$ $\{h'\}_{kJ/kg}=29.21$，$\{h''\}_{kJ/kg}=2513.3$ $\{s'\}_{kJ/(kg\cdot K)}=0.1056$，$\{s''\}_{kJ/(kg\cdot K)}=8.9735$			$\{t_s\}_{℃}=32.879$ $\{v'\}_{m^3/kg}=0.0010053$，$\{v''\}_{m^3/kg}=28.191$ $\{h'\}_{kJ/kg}=137.72$，$\{h''\}_{kJ/kg}=2560.6$ $\{s'\}_{kJ/(kg\cdot K)}=0.4761$，$\{s''\}_{kJ/(kg\cdot K)}=8.3930$		
t	v	h	s	v	h	s
℃	m^3/kg	kJ/kg	kJ(kg·K)	m^3/kg	kJ/kg	kJ/(kg·K)
0	0.0010002	0.05	0.0002	0.0010002	0.05	0.0002
10	130.598	2519.0	8.9938	0.0010003	42.01	0.1510
20	135.226	2537.7	9.0588	0.0010018	83.87	0.2963
40	144.475	2575.2	9.1823	28.854	2574.0	8.4366
60	153.717	2612.7	9.2984	30.712	2611.8	8.5537
80	162.956	2650.3	9.4080	32.566	2649.7	8.6639
100	172.192	2688.0	9.5120	34.418	2687.5	8.7682
120	181.426	2725.9	9.6109	36.269	2725.5	8.8674
140	190.660	2764.0	9.7054	38.118	2763.7	8.9620
160	199.893	2802.3	9.7959	39.967	2802.0	9.0526
180	209.126	2840.7	9.8827	41.815	2840.5	9.1396
200	218.358	2879.4	9.9662	43.662	2879.2	9.2232
220	227.590	2918.3	10.0468	45.510	2918.2	9.3038
240	236.821	2957.5	10.1246	47.357	2957.3	9.3816
260	246.053	2996.8	10.1998	49.204	2996.7	9.4569
280	255.284	3036.4	10.2727	51.051	3036.3	9.5298
300	264.515	3076.2	10.3434	52.898	3076.1	9.6005
350	287.592	3176.8	10.5117	57.514	3176.7	9.7688
400	310.669	3278.9	10.6692	62.131	3278.8	9.9264
450	333.746	3382.4	10.8176	66.747	3382.4	10.0747
500	356.823	3487.5	10.9581	71.362	3487.5	10.2153
550	379.900	3594.4	11.0912	75.978	3594.4	10.3493
600	402.976	3703.4	11.2206	80.594	3703.4	10.4778

续 表

p	0.01MPa			0.1MPa		
	$\{t_s\}_{℃}=45.799$ $\{v'\}_{m^3/kg}=0.0010103$，$\{v''\}_{m^3/kg}=14.673$ $\{h'\}_{kJ/kg}=191.76$，$\{h''\}_{kJ/kg}=2583.7$ $\{s'\}_{kJ/(kg\cdot K)}=0.6490$，$\{s''\}_{kJ/(kg\cdot K)}=8.1481$			$\{t_s\}_{℃}=99.634$ $\{v'\}_{m^3/kg}=0.0010431$，$\{v''\}_{m^3/kg}=1.6943$ $\{h'\}_{kJ/kg}=417.52$，$\{h''\}_{kJ/kg}=2675.1$ $\{s'\}_{kJ/(kg\cdot K)}=1.3028$，$\{s''\}_{kJ/(kg\cdot K)}=7.3589$		
t	v	h	s	v	h	s
℃	m^3/kg	kJ/kg	kJ(kg·K)	m^3/kg	kJ/kg	kJ/(kg·K)
0	0.0010002	−0.04	−0.0002	0.0010002	0.05	−0.0002
10	0.0010003	42.01	0.1510	0.0010003	42.10	0.1510
20	0.0010018	83.87	0.2963	0.0010018	83.96	0.2963
40	0.0010079	167.51	0.5723	0.0010078	167.59	0.5723
60	15.336	2610.8	8.2313	0.0010171	251.22	0.8312
80	16.268	2648.9	8.3422	0.0010290	334.97	1.0753
100	17.196	2686.9	8.4471	1.6961	2675.9	7.3609
120	18.124	2725.1	8.5466	1.7931	2716.3	7.4665
140	19.050	2763.3	8.6414	1.8889	2756.2	7.5654
160	19.976	2801.7	8.7322	1.9838	2795.8	7.6590
180	20.901	2840.2	8.8192	2.0783	2835.3	7.7482
200	21.826	2879.0	8.9029	2.1723	2874.8	7.8334
220	22.750	2918.0	8.9835	2.2659	2914.3	7.9152
240	23.674	2957.1	9.0614	2.3594	2953.9	7.9940
260	24.598	2996.5	9.1367	2.4527	2993.7	8.0701
280	25.522	3036.2	9.2097	2.5458	3033.6	8.1436
300	26.446	3076.0	9.2805	3.6388	3073.8	8.2148
350	28.755	3176.6	9.4488	2.8709	3174.9	8.3840
400	31.063	3278.7	9.6064	3.1027	3277.3	8.5422
450	33.372	3382.3	9.7548	3.3342	3381.2	8.6909
500	35.680	3487.4	9.8953	3.5656	3486.5	8.8317
550	37.988	3594.3	10.0293	3.7968	3593.5	8.9659

续 表

p	0.5MPa			1MPa		
	$\{t_s\}_{℃}=151.867$ $\{v'\}_{m^3/kg}=0.0010925$，$\{v''\}_{m^3/kg}=0.37490$ $\{h'\}_{kJ/kg}=640.35$，$\{h''\}_{kJ/kg}=2748.6$ $\{s'\}_{kJ/(kg\cdot K)}=1.8610$，$\{s''\}_{kJ/(kg\cdot K)}=6.8214$			$\{t_s\}_{℃}=179.916$ $\{v'\}_{m^3/kg}=0.0011272$，$\{v''\}_{m^3/kg}=0.19440$ $\{h'\}_{kJ/kg}=762.84$，$\{h''\}_{kJ/kg}=2777.7$ $\{s'\}_{kJ/(kg\cdot K)}=2.1388$，$\{s''\}_{kJ/(kg\cdot K)}=6.5859$		
t	v	h	s	v	h	s
℃	m^3/kg	kJ/kg	kJ(kg·K)	m^3/kg	kJ/kg	kJ/(kg·K)
0	0.0010000	0.46	−0.0001	0.0009997	0.97	−0.0001
10	0.0010001	42.49	0.1510	0.0009999	42.98	0.1509
20	0.0010016	84.33	0.2962	0.0010014	84.80	0.2961
40	0.0010077	167.94	0.5721	0.0010074	168.38	0.5719
60	0.0010169	251.56	0.8310	0.0010167	251.98	0.8307
80	0.0010288	335.29	1.0750	0.0010286	335.69	1.0747
100	0.0010432	419.36	1.3066	0.0010430	419.74	1.3062
120	0.0010601	503.97	1.5275	0.0010599	504.32	1.5270
140	0.0010796	589.30	1.7392	0.0010793	589.62	1.7386
160	0.38358	2767.2	6.8647	0.0011017	675.84	1.9424
180	0.40450	2811.7	6.9651	0.19443	2777.9	6.5864
200	0.42487	2854.9	7.0585	0.20590	2827.3	6.6931
220	0.44485	2897.3	7.1462	0.21686	2874.2	6.7903
240	0.46455	2939.2	7.2295	0.22745	2919.6	6.8804
260	0.48404	2980.8	7.3091	0.23779	2963.8	6.9650
280	0.50336	3022.2	7.3853	0.24793	3007.3	7.0451
300	0.52255	3063.6	7.4588	0.25793	3050.4	7.1216
350	0.57012	3167.0	7.6319	0.28247	3157.0	7.2999
400	0.61729	3271.1	7.7924	0.30658	3263.1	7.4638
420	0.63608	3312.9	7.8537	0.31615	3305.6	7.5260
440	0.65483	3354.9	7.9135	0.32568	3348.2	7.5866
450	0.66420	3376.0	7.9428	0.33043	3369.6	7.6163
460	0.67356	3397.2	7.9719	0.33518	3390.9	7.6456
480	0.69226	3439.6	8.0289	0.34465	3433.8	7.7033
500	0.71094	3482.2	8.0848	0.35410	3476.8	7.7597
550	0.75755	3589.9	8.2198	0.37764	3585.4	7.8958
600	0.80408	3699.6	8.3491	0.40109	3695.7	8.0259

续 表

p	3MPa			5MPa		
	$\{t_s\}_{℃}=233.893$ $\{v'\}_{m^3/kg}=0.0012166$，$\{v''\}_{m^3/kg}=0.066700$ $\{h'\}_{kJ/kg}=1008.2$，$\{h''\}_{kJ/kg}=2803.2$ $\{s'\}_{kJ/(kg\cdot K)}=2.6454$，$\{s''\}_{kJ/(kg\cdot K)}=6.1854$			$\{t_s\}_{℃}=263.980$ $\{v'\}_{m^3/kg}=0.0012861$，$\{v''\}_{m^3/kg}=0.039400$ $\{h'\}_{kJ/kg}=1154.2$，$\{h''\}_{kJ/kg}=2793.6$ $\{s'\}_{kJ/(kg\cdot K)}=2.9200$，$\{s''\}_{kJ/(kg\cdot K)}=5.9724$		
t	v	h	s	v	h	s
℃	m^3/kg	kJ/kg	kJ(kg·K)	m^3/kg	kJ/kg	kJ/(kg·K)
0	0.0009987	3.01	0.0000	0.0009977	5.04	0.0002
10	0.0009989	44.92	0.1507	0.0009979	46.87	0.1506
20	0.0010005	86.68	0.2957	0.0009996	88.55	0.2952
40	0.0010066	170.15	0.5711	0.0010057	171.92	0.5704
60	0.0010158	253.66	0.8296	0.0010149	255.34	0.8286
80	0.0010276	337.28	1.0734	0.0010267	338.87	1.0721
100	0.0010420	421.24	1.3047	0.0010410	422.75	1.3031
120	0.0010587	505.73	1.5252	0.0010576	507.14	1.5234
140	0.0010781	590.92	1.7366	0.0010768	592.23	1.7345
160	0.0011002	677.01	1.9400	0.0010988	678.19	1.9377
180	0.0011256	764.23	2.1369	0.0011240	765.25	2.1342
200	0.0011549	852.93	2.3284	0.0011529	853.75	2.3253
220	0.0011891	943.65	2.5162	0.0011867	944.21	2.5125
240	0.068184	2823.4	6.2250	0.0012266	1037.3	2.6976
260	0.072828	2884.4	6.3417	0.0012751	1134.3	2.8829
280	0.077101	2940.1	6.4443	0.042228	2855.8	6.0864
300	0.081226	2992.4	6.5371	0.045301	2923.3	6.2064
350	0.090520	3114.4	6.7414	0.051932	3067.4	6.4477
400	0.099352	3230.1	6.9199	0.057804	3194.9	6.6446
420	0.102787	3275.4	6.9864	0.060033	3243.6	6.7159
440	0.106180	3320.5	7.0505	0.062216	3291.5	6.7840
450	0.107864	3343.0	7.0817	0.063291	3315.2	6.8170
460	0.109540	3365.4	7.1125	0.064358	3338.8	6.8494
480	0.112870	3410.1	7.1728	0.066469	3385.6	6.9125
500	0.116174	3454.9	7.2314	0.068552	3432.2	6.9735
550	0.124349	3566.9	7.3718	0.073664	3548.0	7.1187
600	0.132427	3679.9	7.5051	0.078675	3663.9	7.2553

续 表

p	7MPa			10MPa		
	$\{t_s\}_{℃}=285.869$ $\{v'\}_{m^3/kg}=0.0013515$，$\{v''\}_{m^3/kg}=0.027400$ $\{h'\}_{kJ/kg}=1266.9$，$\{h''\}_{kJ/kg}=2771.7$ $\{s'\}_{kJ/(kg\cdot K)}=3.1210$，$\{s''\}_{kJ/(kg\cdot K)}=5.8129$			$\{t_s\}_{℃}=311.037$ $\{v'\}_{m^3/kg}=0.0014522$，$\{v''\}_{m^3/kg}=0.018000$ $\{h'\}_{kJ/kg}=1407.2$，$\{h''\}_{kJ/kg}=2724.5$ $\{s'\}_{kJ/(kg\cdot K)}=3.3591$，$\{s''\}_{kJ/(kg\cdot K)}=5.6139$		
t	v	h	s	v	h	s
℃	m^3/kg	kJ/kg	kJ(kg·K)	m^3/kg	kJ/kg	kJ/(kg·K)
0	0.0009967	7.07	0.0003	0.0009952	10.09	0.0004
10	0.0009970	48.80	0.1504	0.0009956	51.7	0.1500
20	0.0009986	90.42	0.2948	0.0009973	93.22	0.2942
40	0.0010048	173.69	0.5696	0.0010035	176.34	0.5684
60	0.0010140	257.01	0.8275	0.0010127	259.53	0.8259
80	0.0010258	340.46	1.0708	0.0010244	342.85	1.0688
100	0.0010399	424.25	1.3016	0.0010385	426.51	1.2993
120	0.0010565	508.55	1.5216	0.0010549	510.68	1.5190
140	0.0010756	593.54	1.7325	0.0010738	595.50	1.7294
160	0.0010974	679.37	1.9353	0.0010953	681.16	1.9319
180	0.0011223	766.28	2.1315	0.0011199	767.84	2.1275
200	0.0011510	854.59	2.3222	0.0011481	855.88	2.3176
220	0.0011842	944.79	2.5089	0.0011807	945.71	2.5036
240	0.0012235	1037.6	2.6933	0.0012190	1038.0	2.6870
260	0.0012710	1134.0	2.8776	0.0012650	1133.6	2.8698
280	0.0013307	1235.7	3.0648	0.0013222	1234.2	3.0549
300	0.029457	2837.5	5.9291	0.0013975	1342.3	3.2469
350	0.035225	3014.8	6.2265	0.022415	2922.1	5.9423
400	0.039917	3157.3	6.4465	0.026402	3095.8	6.2109
450	0.044143	3286.2	6.6314	0.029735	3240.5	6.4184
500	0.048110	3408.9	6.7954	0.032750	3372.8	6.5954
520	0.049649	3457.0	6.8569	0.033900	3423.8	6.6605
540	0.051166	3504.8	6.9164	0.035027	3474.1	6.7232
550	0.051917	3528.7	6.9456	0.035582	3499.1	6.7537
560	0.052664	3552.4	6.9743	0.036133	3523.9	6.7837
580	0.054147	3600.0	7.0306	0.037222	3573.3	6.8423
600	0.055617	3647.5	7.0857	0.038297	3622.5	6.8992

续 表

p	14MPa			20MPa		
	$\{t_s\}_{℃}=336.707$ $\{v'\}_{m^3/kg}=0.0016097$，$\{v''\}_{m^3/kg}=0.011500$ $\{h'\}_{kJ/kg}=1570.4$，$\{h''\}_{kJ/kg}=2637.1$ $\{s'\}_{kJ/(kg\cdot K)}=3.6220$，$\{s''\}_{kJ/(kg\cdot K)}=5.3711$			$\{t_s\}_{℃}=365.789$ $\{v'\}_{m^3/kg}=0.0020379$，$\{v''\}_{m^3/kg}=0.0058702$ $\{h'\}_{kJ/kg}=1827.2$，$\{h''\}_{kJ/kg}=2413.1$ $\{s'\}_{kJ/(kg\cdot K)}=4.0153$，$\{s''\}_{kJ/(kg\cdot K)}=4.9322$		
t	v	h	s	v	h	s
℃	m^3/kg	kJ/kg	kJ(kg·K)	m^3/kg	kJ/kg	kJ/(kg·K)
0	0.0009933	14.10	0.0005	0.0009904	20.08	0.0006
10	0.0009938	55.55	0.1496	0.0009911	61.29	0.1488
20	0.0009955	96.95	0.2932	0.0009929	102.50	0.2919
40	0.0010018	179.86	0.5669	0.0009992	185.13	0.5645
60	0.0010109	262.88	0.8239	0.0010084	267.90	0.8207
80	0.0010226	346.04	1.0663	0.0010199	350.82	1.0624
100	0.0010365	429.53	1.2962	0.0010336	434.06	1.2917
120	0.0010527	513.52	1.5155	0.0010496	517.79	1.5103
140	0.0010714	598.14	1.7254	0.0010679	602.12	1.7195
160	0.0010926	683.56	1.9273	0.0010886	687.20	1.9206
180	0.0011167	769.96	2.1223	0.0011121	773.19	2.1147
200	0.0011443	857.63	2.3116	0.0011389	860.36	2.3029
220	0.0011761	947.00	2.4966	0.0011695	949.07	2.4865
240	0.0012132	1038.6	2.6788	0.0012051	1039.8	2.6670
260	0.0012574	1133.4	2.8599	0.0012469	1133.4	2.8457
280	0.0013117	1232.5	3.0424	0.0012974	1230.7	3.0249
300	0.0013814	1338.2	3.2300	0.0013605	1333.4	3.2072
350	0.013218	2751.2	5.5564	0.0016645	1645.3	3.7275
400	0.017218	3001.1	5.9436	0.0099458	2816.8	5.5520
450	0.020074	3174.2	6.1919	0.0127013	3060.7	5.9025
500	0.022512	3322.3	6.3900	0.0147681	3239.3	6.1415
520	0.023418	3377.9	6.4610	0.0155046	3303.0	6.2229
540	0.024295	3432.1	6.5285	0.0162067	3364.0	6.2989
550	0.024724	3458.7	6.5611	0.0165471	3393.7	6.3552
560	0.025147	3485.2	6.5931	0.0168811	3422.9	6.3705
580	0.25978	3537.5	6.6551	0.0175328	3480.3	6.4385
600	0.026792	3589.1	6.7149	0.0181655	3536.3	6.5035

续 表

p	25MPa			30MPa		
t	v	h	s	v	h	s
℃	m^3/kg	kJ/kg	kJ(kg·K)	m^3/kg	kJ/kg	kJ/(kg·K)
0	0.0009880	25.01	0.0006	0.0009857	29.92	0.0005
10	0.0009888	66.04	0.1481	0.0009866	70.77	0.1474
20	0.0009908	107.11	0.2907	0.0009887	111.71	0.2895
40	0.0009972	189.51	0.5626	0.0009951	193.87	0.5606
60	0.0010063	272.08	0.8182	0.0010042	276.25	0.8156
80	0.0010177	354.80	1.0593	0.0010155	358.78	1.0562
100	0.0010313	437.85	1.2880	0.0010290	441.64	1.2844
120	0.0010470	521.36	1.5061	0.0010445	524.95	1.5019
140	0.0010650	605.46	1.7147	0.0010622	608.82	1.7100
160	0.0010854	690.27	1.9152	0.0010822	693.36	1.9098
180	0.0011084	775.94	2.1085	0.0011048	778.72	2.1024
200	0.0011345	862.71	2.2959	0.0011303	865.12	2.2890
220	0.0011643	950.91	2.4785	0.0011593	952.85	2.4706
240	0.0011986	1041.0	2.6575	0.0011925	1042.3	2.6485
260	0.0012387	1133.6	2.8346	0.0012311	1134.1	2.8239
280	0.0012866	1229.6	3.0113	0.0012766	1229.0	2.9985
300	0.0013453	1330.3	3.1901	0.0013317	1327.9	3.1742
350	0.0015981	1623.1	3.6788	0.0015522	1608.0	3.6420
400	0.0060014	2578.0	5.1386	0.0027929	2150.6	4.4721
450	0.0091666	2950.5	5.6754	0.0067363	2822.1	5.4433
500	0.0111229	3164.1	5.9614	0.0086761	3083.3	5.7934
520	0.0117897	3236.1	6.0534	0.0093033	3165.4	5.8982
540	0.0124156	3303.8	6.1377	0.0098825	3240.8	5.9921
550	0.0127161	3336.4	6.1775	0.0101580	3276.6	6.0359
560	0.0130095	3368.2	6.2160	0.0104254	3311.4	6.0780
580	0.0135778	3430.2	6.2895	0.0109397	3378.5	6.1576
600	0.0141249	3490.2	6.3591	0.0114310	3442.9	6.2321

注：粗水平线之上为未饱和水，粗水平线之下为过热水蒸气。

此表引自严家禄编著《工程热力学》(第三版)，2001。