

实用热能管理计算图表集

(上册)

实用热能管理计算图表集

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1—1

气体的物理性质

不同气体的分子量及标准状态下的密度、熔点、沸点和临界值

	分子量	密度 kg/m ³	摩尔体积 m ³ /kmol	大气压下的		临界		
				熔点	沸点	压力 ata	温度 °C	密度 kg/m ³
空气	28.96	1.2928	22.40		-190	37.2	-140.7	0.31
氦 He	4.002	0.1785	22.42		-268.9	2.26	-267.9	0.066
氢 H ₂	2.0156	0.08989	22.43	-257	-252.8	12.8	-239.9	0.031
氮 N ₂	28.016	1.2567	22.40	-210.5	-195.8	33.5	-147.1	0.311
氧 O ₂	32.0000	1.42895	22.39	-219	-183	49.7	-118.8	0.430
一氧化碳 CO	28.00	1.2500	22.40	-207	-190	34.6	-140.2	0.311
二氧化碳 CO ₂	44.00	1.9758	22.26	*-57	*-78.5	72.9	31.0	0.460
二氧化硫 SO ₂	64.06	2.9263	21.69	-72.7	-10	77.8	-157.2	0.52
甲烷 CH ₄	16.03	0.7168	22.36	-182	-164	45.7	-82.5	0.162
乙炔 C ₂ H ₂	26.02	1.1709	22.22	*-81.0	*-83.6	61.6	35.9	0.231
乙烯 C ₂ H ₄	28.03	1.2605	22.24	-169.4	-103.9	50.7	9.5	—
乙烷 C ₂ H ₆	30.05	1.356	22.16	-172	-88.3	48.8	32.1	0.21
丙烷 C ₃ H ₈	44.06	2.019	21.82	-180.0	-44.5	45	95.6	—
苯蒸气 C ₆ H ₆	78.05	(3.48)	(22.4)	+5.5	+80.5	49.5	288.5	0.305
氨气 NH ₃	17.031	0.7714	22.08	-77.7	-33.4	112	132.4	0.236
硫化氢 H ₂ S	34.08	1.5392	22.14	+60	-61	89	100.4	—
水蒸气 H ₂ O	18.0152	(0.804)	(22.4)	0.000	+100.0	218.5	374.1	0.324
正丁烷 C ₄ H ₁₀	58.03			-138	+0.5	35.7	152.2	—
苯 C ₆ H ₆	78.10			+6.3	-217.7	39.2	+468.2	—

* 三重点

* 升华点

气体压缩系数K

注脚。表示标准状态

$$v(P \cdot T) = v_0 \frac{P_0 T}{P T_0} \cdot K$$

P: 压力
T: 绝对温度

气体	ata	0°C	20°C	40°C	气体	ata	25°C	100°C
H ₂	50	1.03	1.02	1.015	CO ₂	50	0.97	0.88
	300	1.195	1.16	1.085		100	fl.	0.76
N ₂	50	0.985	1.025	1.02	NH ₃	50	fl.	0.74
	300	1.12	1.16	1.135	CH ₄	50	0.92	0.973

1—2

气 体 的 体 积 比 热

绝对大气压为 0 时各种气体平均恒压比热随温度的变化

t°	H ₂	N ₂	CO	O ₂	H ₂ O	CO ₂	空 气
0	0.310	0.310	0.310	0.312	0.354	0.392	0.311
100	0.310	0.311	0.311	0.314	0.359	0.408	0.312
200	0.310	0.311	0.313	0.319	0.362	0.429	0.313
300	0.310	0.313	0.315	0.324	0.367	0.448	0.315
400	0.310	0.315	0.318	0.329	0.372	0.464	0.318
500	0.311	0.318	0.321	0.333	0.378	0.473	0.321
600	0.311	0.321	0.325	0.337	0.384	0.491	0.324
700	0.312	0.324	0.328	0.341	0.390	0.502	0.327
800	0.313	0.327	0.331	0.344	0.396	0.512	0.330
900	0.314	0.330	0.334	0.348	0.402	0.521	0.333
1,000	0.315	0.333	0.337	0.350	0.409	0.530	0.336
1,100	0.317	0.336	0.340	0.353	0.415	0.537	0.339
1,200	0.318	0.338	0.342	0.355	0.421	0.543	0.341
1,300	0.320	0.340	0.344	0.357	0.427	0.548	0.343
1,400	0.321	0.343	0.346	0.359	0.432	0.553	0.346
1,500	0.323	0.345	0.348	0.361	0.438	0.558	0.348
1,600	0.325	0.347	0.350	0.363	0.443	0.563	0.350
1,700	0.326	0.349	0.352	0.364	0.448	0.568	0.352
1,800	0.328	0.351	0.354	0.366	0.453	0.572	0.354
1,900	0.329	0.352	0.356	0.367	0.458	0.576	0.355
2,000	0.331	0.354	0.357	0.368	0.462	0.579	0.357
2,100	0.333	0.355	0.358	0.369	0.466	0.582	0.358
2,200	0.334	0.356	0.359	0.370	0.470	0.585	0.359
2,300	0.336	0.358	0.361	0.371	0.474	0.588	0.361
2,400	0.337	0.359	0.362	0.372	0.478	0.590	0.362
2,500	0.338	0.360	0.363	0.373	0.482	0.593	0.363
3,000	0.344	0.365	0.368	0.378	0.487	0.600	0.368
t°	CH ₄	C ₂ H ₄	C ₂ H ₂	C ₆ H ₆ 蒸 气	NH ₃	H ₂ S	SO ₂
0	0.369	0.451	0.456	0.93	0.379	0.365	0.425
100	0.387	0.495	0.496	1.05	0.394	0.373	0.445
200	0.420	0.560	0.526	1.16	0.413	0.381	0.463
300	0.452	0.609	0.552	1.27	0.432	0.389	0.481
400	0.482	0.655	0.572	1.39	0.454	0.397	0.495
500	0.510	0.697	0.590	—	0.476	0.406	0.508
600	0.538	0.734	0.607	—	0.497	0.416	0.519
700	0.564	0.768	0.622	—	0.519	0.425	0.528
800	0.589	0.805	0.636	—	0.539	0.434	0.535

注：该表也适用于一个绝对大气压时的双原子气体

1-3

气体的摩尔比热

气体的平均摩尔比热

 C_p kcal/kmol $\cdot^\circ\text{C}$ 恒压 $p=0$ ata

t	H ₂	CO ₂ , N ₂ 空 气	O ₂	H ₂ O	C ₂ O
0	6.96	6.94	6.98	7.93	8.50
200	6.96	7.00	7.14	8.12	9.55
400	6.96	7.10	7.24	8.34	10.33
600	6.98	7.26	7.54	8.60	10.93
800	7.02	7.36	7.69	8.88	11.40
1,000	7.06	7.50	7.83	9.16	11.80
1,500	7.14	7.78	8.08	9.82	12.42
2,000	7.42	7.89	8.23	10.35	12.88
2,500	7.58	8.10	8.34	10.80	13.20
3,000	7.72	8.24	8.46	11.15	13.35

t	CH ₄	C ₂ H ₄	C ₂ H ₂	C ₂ H ₆	NH ₃	H ₂ S	SO ₂
0	8.25	10.03	10.14	20.9	8.37	8.10	9.30
200	9.39	12.45	11.70	26.0	9.12	8.44	10.13
400	10.78	14.57	12.91	31.2	10.03	8.80	10.83
600	12.03	16.32	13.49		10.98	9.22	11.36
800	13.17	17.90	14.14		11.90	9.61	11.71

1) Eucken, Grundriß der Phys. Chemie, 1934

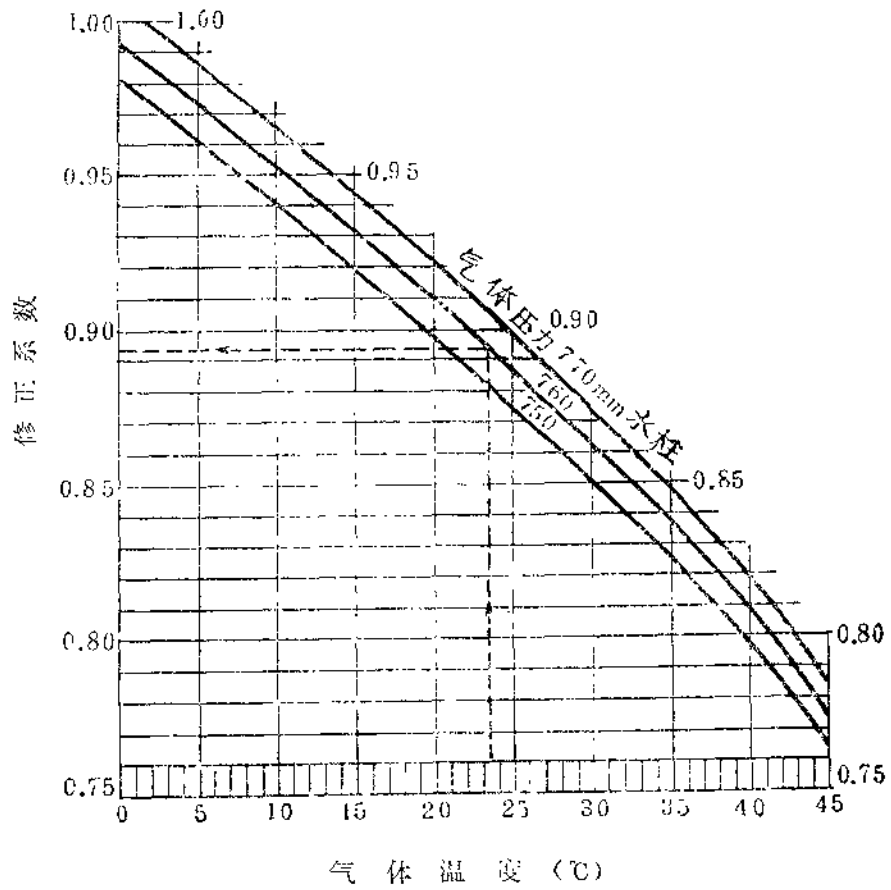
气体的真摩尔比热

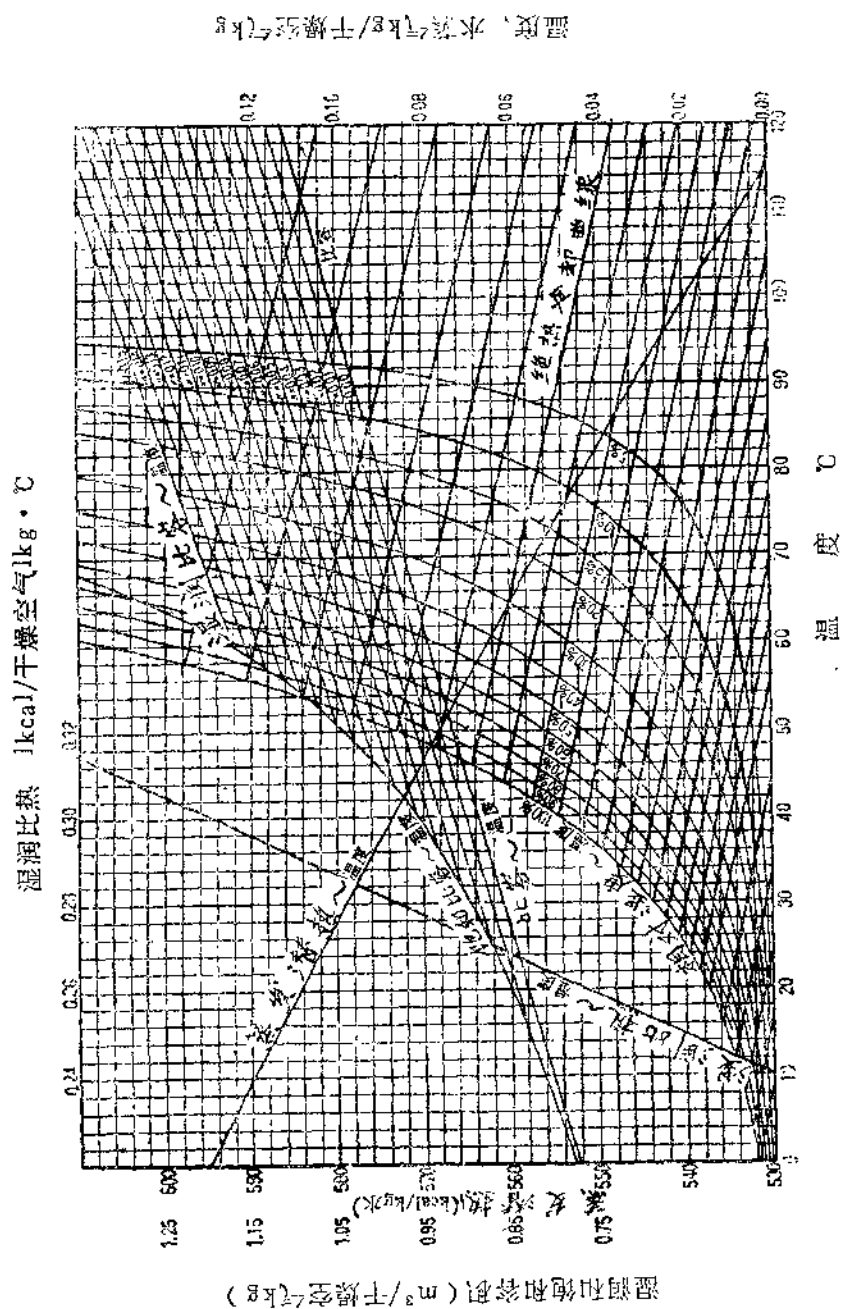
 C_p kcal/kmol $\cdot^\circ\text{C}$ 恒压 $p=0$ ata

t	H ₂	N ₂	CO	O ₂	H ₂ O	CO ₂	空 气
0	6.95	6.95	6.94	6.99	7.98	8.55	6.96
100	6.95	6.98	6.99	7.13	8.19	9.68	7.01
200	6.95	7.03	7.08	7.36	8.32	10.47	7.10
300	6.96	7.15	7.22	7.59	8.57	11.23	7.24
400	6.97	7.30	7.39	7.81	8.85	11.79	7.40
500	7.00	7.46	7.57	7.99	9.13	12.25	7.57
600	7.05	7.61	7.73	8.13	9.43	12.63	7.71
700	7.11	7.76	7.87	8.26	9.72	12.94	7.86
800	7.19	7.89	8.00	8.35	10.01	13.20	7.98
900	7.27	8.00	8.11	8.43	10.29	13.41	8.09
1,000	7.36	8.10	8.20	8.50	10.56	13.60	8.18
1,200	7.54	8.27	8.35	8.60	11.04	13.87	8.34
1,400	7.71	8.39	8.46	8.67	11.46	14.07	8.45
1,600	7.86	8.48	8.55	8.72	11.80	14.22	8.53
1,800	7.99	8.56	8.61	8.76	12.09	14.33	8.60
2,000	8.10	8.61	8.66	8.79	12.34	14.42	8.65
2,200	8.20	8.66	8.70	8.81	12.53	14.49	8.69
2,400	8.28	8.70	8.73	8.83	12.69	14.54	8.73
2,600	8.36	8.73	8.76	8.84	12.83	14.59	8.75
3,000	8.47	8.78	8.80	8.86	13.05	14.66	8.79

1—4

气体体积与温度的关系





温度 t °C	饱和 水蒸气 压力 p_{ws} (kg/cm ²)	水蒸气		纯净空气		饱和 水蒸气 压力 p_{ws} (kg/cm ²)	水蒸气 含量 x_s (kg/kg)	水蒸气		纯净空气	
		焓 h_s (kcal/kg)	比容 v_s (m ³ /kg)	焓 h_a (kcal/kg)	比容 v_a (m ³ /kg)			焓 h_s (kg/kg)	比容 v_s (m ³ /kg)	焓 h_a (kcal/kg)	比容 v_a (m ³ /kg)
-50	4.012 × 10 ⁻⁵	-12.000	0.6312	-12.01	0.6312	-20	1.052 × 10 ⁻³	5.370 × 10 ⁻⁴	-4.429	0.7173	0.7165
-45	4.537	-11.760	0.6341	-11.77	0.6340	-19	1.158	7.012	-4.151	0.7202	0.7194
-40	5.125	-11.520	0.6369	-11.53	0.6369	-18	1.273	7.709	-3.876	0.7232	0.7222
-35	5.783	-11.270	0.6398	-11.28	0.6397	-17	1.396	8.467	-3.574	0.7261	0.7251
-30	6.519	-11.030	0.6429	-11.05	0.6426	-16	1.535	9.239	-3.294	0.7290	0.7279
-25	7.340	-10.790	0.6455	-10.81	0.6454	-15	1.684	1.020 × 10 ⁻³	-3.001	0.7320	0.7307
-20	8.256	-10.540	0.6483	-10.57	0.6483	-14	1.846	1.119	-2.702	0.7349	0.7336
-15	9.278	-10.300	0.6512	-10.33	0.6511	-13	2.023	1.225	-2.398	0.7379	0.7364
-10	1.041 × 10 ⁻⁴	-10.050	0.6540	-10.09	0.6540	-12	2.214	1.342	-2.088	0.7407	0.7393
-5	1.168	-9.809	0.6569	-9.850	0.6568	-11	2.422	1.468	-1.773	0.7439	0.7421
0	1.309	-9.563	0.6597	-9.610	0.6597	-10	2.648	1.606	-1.451	0.7469	0.7450
5	1.465	-9.318	0.6626	-9.369	0.6625	-9	2.893	1.755	-1.121	0.7499	0.7478
10	1.638	-9.071	0.6654	-9.129	0.6653	-8	3.159	1.916	-0.784	0.7530	0.7506
15	1.830	-8.824	0.6683	-8.889	0.6682	-7	3.446	2.091	-0.440	0.7560	0.7535
20	2.042	-8.576	0.6712	-8.649	0.6710	-6	3.757	2.280	-0.086	0.7590	0.7563
25	2.277	-8.328	0.6740	-8.408	0.6739	-5	4.094	2.486	0.278	0.7622	0.7592
30	2.535	-8.078	0.6769	-8.168	0.6767	-4	4.458	2.707	0.651	0.7653	0.7620
35	2.823	-7.828	0.6797	-7.928	0.6796	-3	4.851	2.947	1.035	0.7685	0.7648
40	3.140	-7.576	0.6826	-7.687	0.6824	-2	5.275	3.206	1.431	0.7718	0.7677
45	3.439	-7.323	0.6855	-7.447	0.6853	-1	5.734	3.486	1.840	0.7749	0.7705
50	3.873	-7.070	0.6884	-7.207	0.6881	0	6.228	3.789	2.262	0.7781	0.7734
55	4.296	-6.814	0.6912	-6.967	0.6907						
60	4.761	-6.557	0.6941	-6.729	0.6938						
65	5.272	-6.299	0.6970	-6.486	0.6966						
70	5.833	-6.039	0.6999	-6.246	0.6995						
75	6.448 × 10 ⁻⁴	-5.774	0.7028	-6.006	0.7023						
80	7.123	-5.512	0.7059	-5.765	0.7052						
85	7.861	-5.246	0.7085	-5.525	0.7080						
90	8.670	-4.978	0.7114	-5.285	0.7105						
95	9.554	-4.704	0.7144	-5.045	0.7137						

1-7

与水相接的饱和空气 (1)

温度 θ °C	饱和 水蒸气 p_{sat} (kg/cm ²)	水蒸气 含量 x (kg/kg)	水蒸气		纯净空气	温度 θ °C	饱和 水蒸气 p_{sat} (kg/cm ²)	水蒸气 含量 x (kg/kg)	水蒸气		纯净空气
			焓 h_s (kcal/kg)	比容 v_s (m ³ /kg)					焓 h_s (kcal/kg)	比容 v_s (m ³ /kg)	
-50	6.481 × 10 ⁻⁵	3.924 × 10 ⁻⁵	-11.990	0.6312	-12.01	-50	6.481 × 10 ⁻⁵	3.924 × 10 ⁻⁵	-11.990	0.6312	-12.01
-48	7.266 "	4.359 "	-11.750	0.6341	-11.77	-48	7.266 "	4.359 "	-11.750	0.6341	-11.77
-46	8.132 "	4.824 "	-11.500	0.6369	-11.53	-46	8.132 "	4.824 "	-11.500	0.6369	-11.53
-44	9.094 "	5.306 "	-11.260	0.6396	-11.29	-44	9.094 "	5.306 "	-11.260	0.6396	-11.29
-42	1.016 × 10 ⁻⁴	6.151 "	-11.020	0.6426	-11.05	-42	1.016 × 10 ⁻⁴	6.151 "	-11.020	0.6426	-11.05
-40	1.116 "	6.757 "	-10.770	0.6455	-10.81	-40	1.116 "	6.757 "	-10.770	0.6455	-10.81
-38	1.263 "	7.647 "	-10.530	0.6483	-10.57	-38	1.263 "	7.647 "	-10.530	0.6483	-10.57
-36	1.405 "	8.513 "	-10.280	0.6512	-10.33	-36	1.405 "	8.513 "	-10.280	0.6512	-10.33
-34	1.564 "	9.470 "	-10.040	0.6541	-10.09	-34	1.564 "	9.470 "	-10.040	0.6541	-10.09
-32	1.738 "	1.052 × 10 ⁻⁴	-9.7890	0.6569	-9.850	-32	1.738 "	1.052 × 10 ⁻⁴	-9.7890	0.6569	-9.850
-30	1.929 "	1.168 "	-9.5410	0.6598	-9.610	-30	1.929 "	1.168 "	-9.5410	0.6598	-9.610
-28	2.138 "	1.295 "	-9.2940	0.6626	-9.369	-28	2.138 "	1.295 "	-9.2940	0.6626	-9.369
-26	2.369 "	1.434 "	-9.0450	0.6655	-9.129	-26	2.369 "	1.434 "	-9.0450	0.6655	-9.129
-24	2.621 "	1.587 "	-8.7960	0.6684	-8.889	-24	2.621 "	1.587 "	-8.7960	0.6684	-8.889
-22	2.896 "	1.755 "	-8.5460	0.6712	-8.649	-22	2.896 "	1.755 "	-8.5460	0.6712	-8.649
-20	3.201 "	1.938 "	-8.2950	0.6741	-8.408	-20	3.201 "	1.938 "	-8.2950	0.6741	-8.408
-18	3.532 "	2.139 "	-8.0430	0.6769	-8.168	-18	3.532 "	2.139 "	-8.0430	0.6769	-8.168
-16	3.893 "	2.357 "	-7.7900	0.6798	-7.928	-16	3.893 "	2.357 "	-7.7900	0.6798	-7.928
-14	4.288 "	2.596 "	-7.5360	0.6827	-7.687	-14	4.288 "	2.596 "	-7.5360	0.6827	-7.687
-12	4.719 "	2.857 "	-7.2800	0.6856	-7.447	-12	4.719 "	2.857 "	-7.2800	0.6856	-7.447
-10	5.188 "	3.141 "	-7.0230	0.6884	-7.207	-10	5.188 "	3.141 "	-7.0230	0.6884	-7.207
-8	5.699 "	3.450 "	-6.7650	0.6913	-6.967	-8	5.699 "	3.450 "	-6.7650	0.6913	-6.967
-6	6.255 "	3.787 "	-6.5040	0.6942	-6.726	-6	6.255 "	3.787 "	-6.5040	0.6942	-6.726
-4	6.860 "	4.153 "	-6.2430	0.6971	-6.486	-4	6.860 "	4.153 "	-6.2430	0.6971	-6.486
-2	7.516 "	4.550 "	-5.9790	0.7000	-6.246	-2	7.516 "	4.550 "	-5.9790	0.7000	-6.246
0	8.229 "	4.982 "	-5.7130	0.7028	-6.006	0	8.229 "	4.982 "	-5.7130	0.7028	-6.006
2	9.002 "	5.450 "	-5.4450	0.7058	-5.765	2	9.002 "	5.450 "	-5.4450	0.7058	-5.765
4	9.839 "	5.956 "	-5.1750	0.7087	-5.525	4	9.839 "	5.956 "	-5.1750	0.7087	-5.525
6	1.074 × 10 ⁻³	6.502 "	-4.9030	0.7116	-5.285	6	1.074 × 10 ⁻³	6.502 "	-4.9030	0.7116	-5.285
8	1.173 "	7.102 "	-4.6270	0.7145	-5.045	8	1.173 "	7.102 "	-4.6270	0.7145	-5.045
10	1.279 "	7.744 "	-4.3490	0.7174	-4.804	10	1.279 "	7.744 "	-4.3490	0.7174	-4.804
12	1.393 "	8.435 "	-4.0670	0.7203	-4.564	12	1.393 "	8.435 "	-4.0670	0.7203	-4.564
14	1.517 "	9.186 "	-3.7830	0.7233	-4.324	14	1.517 "	9.186 "	-3.7830	0.7233	-4.324
16	1.651 "	9.987 "	-3.4940	0.7262	-4.084	16	1.651 "	9.987 "	-3.4940	0.7262	-4.084
18	1.794 "	1.086 × 10 ⁻³	-3.2020	0.7292	-3.844	18	1.794 "	1.086 × 10 ⁻³	-3.2020	0.7292	-3.844
20	1.948 "					20	1.948 "				
22	2.117 "					22	2.117 "				
24	2.301 "					24	2.301 "				
26	2.500 "					26	2.500 "				
28	2.715 "					28	2.715 "				
30	2.948 "					30	2.948 "				
32	3.200 "					32	3.200 "				
34	3.472 "					34	3.472 "				
36	3.765 "					36	3.765 "				
38	4.080 "					38	4.080 "				
40	4.417 "					40	4.417 "				
42	4.777 "					42	4.777 "				
44	5.160 "					44	5.160 "				
46	5.567 "					46	5.567 "				
48	5.998 "					48	5.998 "				
50	6.454 "					50	6.454 "				

1-7

与水相接的饱和空气 (2)

温度 $t, ^\circ\text{C}$	饱和 水蒸气压力 P_{sat} (kg/cm 2)	水蒸气		纯净空气		温度 $t, ^\circ\text{C}$	饱和 水蒸气压力 P_{sat} (kg/cm 2)	水蒸气		纯净空气	
		焓 h_s (kcal/kg)	比容 v_s (m 3 /kg)	焓 h_a (kcal/kg)	比容 v_a (m 3 /kg)			焓 h_s (kcal/kg)	比容 v_s (m 3 /kg)	焓 h_a (kcal/kg)	比容 v_a (m 3 /kg)
21	2.535 $\times 10^{-2}$	14.580	85.40	5.046	0.8330	56	1.684 $\times 10^{-1}$	89.24	1.114	13.46	0.9324
22	2.695	15.440	85.82	5.286	0.8355	57	1.766	93.99	1.128	13.70	0.9352
23	2.864	16.350	86.26	5.526	0.8387	58	1.851	99.60	1.143	13.94	0.9381
24	3.042	17.290	86.71	5.767	0.8415	59	1.940	104.3	1.158	14.19	0.9400
25	3.230	18.270	87.16	6.007	0.8444	60	2.032	110.0	1.175	14.43	0.9437
26	3.427	19.300	87.63	6.247	0.8472	61	2.128 $\times 10^{-1}$	116.0	1.192	14.67	0.9466
27	3.635	20.370	88.10	6.488	0.8501	62	2.228	122.4	1.211	14.91	0.9494
28	3.854	21.490	88.59	6.728	0.8529	63	2.331	129.1	1.230	15.15	0.9522
29	4.081	22.650	89.10	6.969	0.8557	64	2.439	136.4	1.250	15.39	0.9551
30	4.327	23.860	89.61	7.209	0.8586	65	2.551	144.1	1.272	15.63	0.9579
31	4.581	25.160	90.14	7.449	0.8614	66	2.667	152.4	1.295	15.87	0.9608
32	4.849	26.500	90.68	7.690	0.8642	67	2.788	161.2	1.320	16.11	0.9636
33	5.130	27.940	91.24	7.930	0.8671	68	2.913	170.6	1.346	16.35	0.9664
34	5.425	29.370	91.82	8.171	0.8699	69	3.043	180.8	1.374	16.59	0.9693
35	5.735	30.910	92.41	8.411	0.8726	70	3.178	191.7	1.404	16.84	0.9721
36	6.059	32.520	93.02	8.652	0.8756	71	3.318	203.4	1.436	17.08	0.9749
37	6.400	34.210	93.65	8.891	0.8784	72	3.464	216.1	1.471	17.32	0.9778
38	6.757	35.980	94.30	9.133	0.8813	73	3.614	229.8	1.508	17.56	0.9806
39	7.131	37.850	94.97	9.373	0.8841	74	3.770	244.6	1.549	17.80	0.9835
40	7.523	39.790	95.67	9.614	0.8870	75	3.932	260.8	1.592	18.04	0.9863
41	7.934	41.850	96.39	9.854	0.8896	76	4.099	278.3	1.640	18.28	0.9891
42	8.363	44.000	97.13	10.09	0.8926	77	4.273 $\times 10^{-1}$	297.6	1.692	18.52	0.9920
43	8.813	46.200	97.90	10.34	0.8955	78	4.452	318.7	1.748	18.76	0.9948
44	9.284	48.630	98.71	10.58	0.8983	79	4.638	342.0	1.811	19.00	0.9976
45	9.775	51.140	99.64	10.82	0.9012	80	4.830	367.6	1.879	19.25	1.000
46	1.029 $\times 10^{-1}$	53.76	1.004	11.06	0.9040	81	5.029	396.1	1.955	19.49	1.003
47	1.083	56.52	1.013	11.30	0.9068	82	5.235	427.9	2.040	19.73	1.006
48	1.139	59.44	1.022	11.54	0.9097	83	5.448	463.6	2.135	19.97	1.009
49	1.197	62.51	1.032	11.78	0.9125	84	5.668	503.9	2.241	20.21	1.012
50	1.258	65.73	1.042	12.02	0.9154	85	5.895	549.7	2.363	20.45	1.015
51	1.322	69.13	1.053	12.26	0.9182	86	6.130	602.3	2.502	20.69	1.018
52	1.389	72.73	1.064	12.50	0.9210	87	6.373	662.3	2.663	20.93	1.020
53	1.453	76.53	1.076	12.74	0.9236	88	6.623	734.3	2.850	21.17	1.023
54	1.530	80.54	1.088	12.98	0.9267	89	6.882	818.8	3.073	21.42	1.026
55	1.606	84.77	1.101	13.22	0.9298	90	7.165	921.0	3.341	21.66	1.029

水蒸气含量、焓及比容表示一公斤纯净空气的值

1、饱和蒸汽性质与温度的关系

温度 [°C]	饱和压力		比容 [m³/kg]		焓 [kcal/kg]			熵 [kcal/kgK]		
	[kg/cm²]	[mmHg]	v'	v''	h'	h''	$r = h'' - h'$	s'	s''	$r/T_s = s'' - s'$
0	0.00629	4.6	0.0010022	206.375	-0.010	597.42	597.52	-0.00004	2.16729	2.16733
2	0.007194	5.3	0.0010009	179.475	2.003	598.35	596.35	0.00731	2.17461	2.16731
4	0.008289	6.1	0.0010003	157.212	4.013	599.24	595.23	0.01459	2.18217	2.16759
6	0.009550	7.0	0.0010004	137.780	6.021	600.12	594.10	0.02180	2.18996	2.16816
8	0.010931	8.0	0.0010011	120.965	8.026	600.99	592.97	0.02896	2.19797	2.16901
10	0.012512	9.0	0.0010025	106.450	10.030	601.87	591.84	0.03606	2.20520	2.20913
12	0.014290	10.5	0.0010044	93.8354	12.042	602.74	590.71	0.04311	2.21164	2.21553
14	0.016298	12.0	0.0010063	82.8975	14.053	603.62	589.59	0.05010	2.21828	2.22318
16	0.018525	13.6	0.0010082	73.3843	16.063	604.49	588.46	0.05704	2.22513	2.23209
18	0.020930	15.5	0.0010103	65.0872	18.072	605.37	587.33	0.06393	2.23217	2.24224
20	0.023526	17.5	0.0010127	57.8383	20.080	606.25	586.17	0.07077	2.23941	1.99964
22	0.026342	19.8	0.0010154	51.4221	22.089	607.11	585.02	0.07756	2.24684	1.98228
24	0.029400	22.4	0.0010183	45.9260	24.095	607.97	583.86	0.08430	2.25445	1.96514
26	0.032729	25.2	0.0010215	41.0343	26.099	608.81	582.72	0.09100	2.26224	1.94824
28	0.036352	28.3	0.0010251	36.7276	28.101	609.67	581.59	0.09765	2.27020	1.93155
30	0.040281	31.8	0.0010291	32.9269	30.104	610.52	580.42	0.10426	2.27843	1.91508
32	0.044541	35.7	0.0010334	29.5724	32.099	611.37	579.27	0.11082	2.28694	1.89882
34	0.049159	39.9	0.0010380	26.6114	34.092	612.21	578.12	0.11734	2.29571	1.88277
36	0.054171	44.6	0.0010428	23.9971	36.083	613.06	576.97	0.12382	2.30473	1.86691
38	0.059596	49.7	0.0010478	21.6774	38.072	613.91	575.82	0.13025	2.31401	1.85126
40	0.065454	55.3	0.0010530	19.5461	39.995	614.77	574.78	0.13663	2.32354	1.83580
42	0.071761	61.1	0.0010584	17.6916	41.992	615.62	573.74	0.14300	2.33331	1.82053
44	0.078543	68.3	0.0010640	16.0365	43.968	616.48	572.69	0.14932	2.34334	1.80545
46	0.103285	75.6	0.0010700	14.5672	45.985	617.33	571.65	0.15559	2.35361	1.79054
48	0.11382	83.7	0.0010763	13.2329	47.982	618.18	570.60	0.16183	2.36414	1.77582
50	0.12570	92.5	0.0010829	12.0457	49.980	619.03	569.55	0.16803	2.37490	1.76126
52	0.13894	102.1	0.0010898	9.8384	51.975	620.00	568.50	0.17417	2.38589	1.74682
54	0.15361	112.4	0.0010970	7.6364	53.972	620.97	567.45	0.18025	2.39709	1.73252
56	0.16981	123.4	0.0011045	5.4409	55.972	621.94	566.40	0.18628	2.40849	1.71836
58	0.18764	135.1	0.0011123	3.2613	57.972	622.91	565.35	0.19225	2.42009	1.70434
60	0.20721	147.6	0.0011204	1.9971	59.972	623.88	564.30	0.19817	2.43189	1.69046
62	0.22864	161.9	0.0011288	1.1740	61.993	624.85	563.25	0.20404	2.44389	1.67672
64	0.25204	178.1	0.0011375	0.7384	63.995	625.82	562.20	0.20986	2.45609	1.66312
66	0.27751	196.4	0.0011465	0.4309	65.999	626.79	561.15	0.21563	2.46849	1.64966
68	0.30516	216.9	0.0011558	0.2581	67.999	627.76	560.10	0.22135	2.48109	1.63634
70	0.33501	240.6	0.0011654	0.1613	69.999	628.73	559.05	0.22702	2.49389	1.62314
72	0.36726	267.6	0.0011753	0.0983	71.999	629.70	558.00	0.23264	2.50689	1.61004
74	0.40201	298.1	0.0011854	0.0596	73.999	630.67	556.95	0.23821	2.51999	1.59704
76	0.43936	332.1	0.0011958	0.0349	75.999	631.64	555.90	0.24373	2.53319	1.58414
78	0.47951	369.6	0.0012064	0.0209	77.999	632.61	554.85	0.24920	2.54649	1.57134
80	0.52256	410.6	0.0012172	0.0134	79.999	633.58	553.80	0.25462	2.55989	1.55864
82	0.56861	455.1	0.0012282	0.0079	81.999	634.55	552.75	0.26000	2.57339	1.54604
84	0.61776	503.1	0.0012394	0.0044	83.999	635.52	551.70	0.26533	2.58699	1.53354
86	0.67011	554.6	0.0012508	0.0026	85.999	636.49	550.65	0.27061	2.60069	1.52114
88	0.72576	609.6	0.0012624	0.0015	87.999	637.46	549.60	0.27584	2.61449	1.50884
90	0.78481	669.1	0.0012742	0.0009	89.999	638.43	548.55	0.28102	2.62839	1.49664
92	0.84736	733.1	0.0012862	0.0005	91.999	639.40	547.50	0.28615	2.64239	1.48454
94	0.91351	801.6	0.0012984	0.0003	93.999	640.37	546.45	0.29123	2.65649	1.47254
96	0.98336	874.6	0.0013108	0.0002	95.999	641.34	545.40	0.29626	2.67069	1.46064
98	1.05701	952.1	0.0013234	0.0001	97.999	642.31	544.35	0.30123	2.68499	1.44884
100	1.13456	1034.1	0.0013362	0.0001	99.999	643.28	543.30	0.30615	2.69939	1.43714
102	1.21611	1120.6	0.0013492	0.0001	101.999	644.25	542.25	0.31102	2.71389	1.42554
104	1.30176	1211.6	0.0013624	0.0001	103.999	645.22	541.20	0.31584	2.72849	1.41404
106	1.39161	1307.1	0.0013758	0.0001	105.999	646.19	540.15	0.32061	2.74319	1.40264
108	1.48576	1407.1	0.0013894	0.0001	107.999	647.16	539.10	0.32533	2.75799	1.39134
110	1.58431	1511.6	0.0014032	0.0001	109.999	648.13	538.05	0.33000	2.77289	1.38014
112	1.68736	1620.6	0.0014172	0.0001	111.999	649.10	537.00	0.33462	2.78789	1.36904
114	1.79501	1734.1	0.0014314	0.0001	113.999	650.07	535.95	0.33919	2.80299	1.35804
116	1.90726	1852.1	0.0014458	0.0001	115.999	651.04	534.90	0.34371	2.81819	1.34714
118	2.02421	1974.6	0.0014604	0.0001	117.999	652.01	533.85	0.34818	2.83349	1.33634
120	2.14606	2101.6	0.0014752	0.0001	119.999	652.98	532.80	0.35260	2.84889	1.32564
122	2.27291	2233.1	0.0014902	0.0001	121.999	653.95	531.75	0.35697	2.86439	1.31504
124	2.40486	2369.1	0.0015054	0.0001	123.999	654.92	530.70	0.36129	2.87999	1.30454
126	2.54191	2509.6	0.0015208	0.0001	125.999	655.89	529.65	0.36556	2.89569	1.29414
128	2.68406	2654.6	0.0015364	0.0001	127.999	656.86	528.60	0.36978	2.91149	1.28384
130	2.83131	2804.1	0.0015522	0.0001	129.999	657.83	527.55	0.37395	2.92739	1.27354
132	2.98376	2958.1	0.0015682	0.0001	131.999	658.80	526.50	0.37807	2.94339	1.26334
134	3.14141	3116.6	0.0015844	0.0001	133.999	659.77	525.45	0.38214	2.95949	1.25324
136	3.30426	3279.6	0.0016008	0.0001	135.999	660.74	524.40	0.38616	2.97569	1.24324
138	3.47241	3447.1	0.0016174	0.0001	137.999	661.71	523.35	0.39013	2.99189	1.23334
140	3.64586	3619.1	0.0016342	0.0001	139.999	662.68	522.30	0.39405	3.00819	1.22354
142	3.82461	3795.6	0.0016512	0.0001	141.999	663.65	521.25	0.39792	3.02459	1.21384
144	4.00876	3976.6	0.0016684	0.0001	143.999	664.62	520.20	0.40174	3.04109	1.20424
146	4.19831	4161.6	0.0016858	0.0001	145.999	665.59	519.15	0.40551	3.05769	1.19474
148	4.39336	4350.6	0.0017034	0.0001	147.999	666.56	518.10	0.40923	3.07439	1.18534
150	4.59401	4543.6	0.0017212	0.0001	149.999	667.53	517.05	0.41290	3.09119	1.17604
152	4.80026	4740.6	0.0017392	0.0001	151.999	668.50	516.00	0.41652	3.10809	1.16684
154	5.01221	4941.6	0.0017574	0.0001	153.999	669.47	514.95	0.42009	3.12509	1.15774
156	5.23006	5146.6	0.0017758	0.0001	155.999	670.44	513.90	0.42361	3.14219	1.14874
158	5.45391	5355.6	0.0017944	0.0001	157.999	671.41	512.85	0.42708	3.15939	1.13984
160	5.68386	5568.6	0.0018132	0.0001	159.999	672.38	511.80	0.43050	3.17669	1.13104
162	5.91991	5785.6	0.0018322	0.0001	161.999	673.35	510.75	0.43387	3.19409	1.12234
164	6.16206	6006.6	0.0018514	0.0001	163.999	674.32	509.70	0.43719	3.21159	1.11374
166	6.41041	6231.6	0.0018708	0.0001	165.999	675.29	508.65	0.44056	3.22919	1.10524
168	6.66506	6460.6	0.0018904	0.0001	167.999	676.26	507.60	0.44388	3.24679	1.09684
170	6.92611	6693.6	0.0019102	0.0001	169.999	677.23	506.55	0.44715	3.26449	1.08854
172	7.19356	6930.6	0.0019302	0.0001	171.999	678.20	505.50	0.45037	3.28219	1.08024
174	7.46741	7171.6	0.0019504	0.0001	173.999	679.17	504.45	0.45354	3.30009	1.07204
176	7.74766	7416.6	0.0019708	0.0001	175.999	680.14	503.40	0.45666	3.31809	1.06394
178	8.03431	7665.6	0.0019914	0.0001	177.999	681.11	502.35	0.45973	3.33619	1.05594
180	8.32746	7918.6	0.0020122	0.0001	179.999	682.08	501.30	0.46275	3.35439	1.04804
182	8.62711	8175.6	0.0020332	0.0001	181.999	683.05	500.25	0.46572	3.37269	1.04024
184	8.93326									

2、饱和蒸汽性质与压力的关系

压 力		饱和温度	比 容		焓			熵		
[kg/cm ²]	[mmHg]	[°C]	v'	v''	h'	h''	i = h'' - h'	s'	s''	s/T ₀ = s'' - s'
0.01	7.4	6.899	0.00100006	131.62401	6.722	600.42	593.70	0.02431	2.14575	2.12144
0.02	14.7	17.204	0.00100119	68.2556	17.236	605.02	587.78	0.06119	2.08551	2.02432
0.04	29.4	28.645	0.00100390	35.4496	28.662	609.99	581.33	0.09979	2.02600	1.92621
0.06	44.1	35.63	0.00100625	24.1820	35.631	613.09	577.26	0.12526	1.99154	1.86627
0.08	58.8	41.16	0.00100827	18.4405	41.158	615.37	574.22	0.14935	1.96724	1.82689
0.10	73.6	45.45	0.00101006	14.9467	45.438	617.20	571.76	0.15388	1.94849	1.79461
0.20	147.1	59.66	0.00101696	7.79127	59.637	623.18	563.54	0.19747	1.89075	1.69328
0.30	220.7	68.68	0.00102206	5.32592	68.650	626.89	558.24	0.22419	1.85732	1.63314
0.4	294.2	75.42	0.00102621	4.06715	75.400	629.62	554.22	0.24373	1.83376	1.59002
0.5	367.8	80.86	0.00102976	3.30001	80.855	631.79	550.94	0.25826	1.81556	1.55630
0.6	441.3	85.45	0.00103291	2.78214	85.465	633.60	548.13	0.27219	1.80074	1.52855
0.8	588.4	92.99	0.00103834	2.12544	93.034	636.51	543.48	0.29306	1.77744	1.48436
1.0	735.6	99.99	0.00104299	1.72495	99.172	638.81	539.64	0.30967	1.75944	1.44976
1.03323	760.0	100.00	0.00104371	1.67300	100.092	639.15	539.06	0.31214	1.75680	1.44466
1.5	1103.3	110.79	0.00105253	1.8041	110.980	643.09	532.11	0.34087	1.72684	1.38586
2.0	1471.1	115.61	0.00106028	0.901776	119.921	646.18	526.26	0.36387	1.70376	1.33991
3.0	2206.7	132.83	0.00107284	0.616754	133.417	650.56	517.15	0.39760	1.67131	1.27371
4	2942.2	142.92	0.00108312	0.470785	143.762	653.66	509.96	0.42256	1.64825	1.22560
5	3677.8	151.11	0.00109202	0.381632	152.131	656.04	503.90	0.44256	1.63031	1.18775
6	4413.4	158.08	0.00109997	0.321345	159.338	657.93	498.59	0.45935	1.61559	1.15624
7		164.17	0.00110723	0.277768	165.672	659.49	493.82	0.47387	1.60309	1.12922
8		169.41	0.00111396	0.244751	171.347	660.81	489.46	0.48671	1.59221	1.10550
9		174.53	0.00112026	0.218840	176.508	661.93	485.42	0.49825	1.58257	1.08432
10		179.64	0.00112622	0.197945	181.252	662.90	481.65	0.50873	1.57369	1.06516
12		187.08	0.00113732	0.166284	189.766	664.48	474.72	0.52728	1.55875	1.03148
14		194.13	0.00114757	0.143394	197.285	665.71	468.42	0.54338	1.54581	1.00243
16		200.43	0.00115717	0.126047	204.053	666.67	462.61	0.55765	1.53447	0.97688
18		206.15	0.00116625	0.112434	210.233	667.42	457.19	0.57050	1.52435	0.95384
20		211.39	0.00117493	0.101455	215.937	668.01	452.07	0.58225	1.51519	0.93297
22		216.24	0.00118327	0.0924081	221.248	668.46	447.21	0.59302	1.50631	0.91379
24		220.76	0.00119133	0.0848196	226.229	668.80	442.57	0.60304	1.49907	0.89603
26		224.96	0.00119913	0.0783601	230.928	669.05	438.12	0.61240	1.49187	0.87947
28		228.98	0.00120674	0.0727929	235.382	669.21	433.83	0.62119	1.48512	0.86393
30		232.76	0.00121417	0.0679431	239.624	669.30	429.68	0.62950	1.47877	0.84927
32		236.35	0.00122145	0.0636793	243.677	669.33	425.65	0.63737	1.47275	0.83539
34		239.77	0.00122859	0.0599001	247.563	669.30	421.74	0.64486	1.46704	0.82218
36		243.04	0.00123562	0.0565266	251.300	669.22	417.92	0.65201	1.46159	0.80958
38		246.17	0.00124255	0.0534959	254.901	669.09	414.19	0.65885	1.45637	0.79752
40		249.18	0.00124938	0.0507578	258.381	668.93	410.55	0.66542	1.45136	0.78594
42		252.07	0.00125615	0.0482713	261.745	668.72	406.97	0.67174	1.44654	0.77480
44		254.86	0.00126294	0.0460028	265.015	668.48	403.46	0.67783	1.44189	0.76406
46		257.56	0.00126947	0.0439246	268.185	668.20	400.01	0.68371	1.43733	0.75368
48		260.17	0.00127606	0.0420132	271.276	667.89	396.62	0.68940	1.43302	0.74362
50		262.69	0.00128260	0.0402491	274.294	667.55	393.27	0.69492	1.42879	0.73387
55		268.69	0.00129602	0.0363798	281.495	666.59	385.10	0.70802	1.41869	0.71067
60		274.28	0.00131489	0.0331317	288.320	665.47	377.15	0.72027	1.40917	0.68890
65		279.53	0.00133089	0.0303641	294.821	664.22	369.39	0.73180	1.40013	0.66833
70		284.47	0.00134683	0.0279761	301.043	662.83	361.79	0.74273	1.39149	0.64876
80		293.61	0.00137912	0.0240593	312.800	659.72	346.92	0.76308	1.37515	0.61208
90		301.91	0.00141194	0.0209758	323.329	656.20	332.37	0.78122	1.35977	0.57756
100		309.53	0.00145375	0.0184791	334.256	652.31	318.02	0.79932	1.34510	0.54577
110		316.58	0.00149595	0.0164099	344.333	648.07	303.74	0.81596	1.33091	0.51505
120		323.15	0.00153774	0.0146594	354.044	643.45	289.41	0.83194	1.31699	0.48534
130		329.31	0.00157927	0.0131514	363.515	638.38	274.86	0.84684	1.30310	0.45825
140		335.10	0.00162053	0.0118316	372.827	632.77	259.95	0.86162	1.28901	0.43279
150		340.57	0.00166174	0.0106617	382.057	626.55	244.50	0.87610	1.27452	0.40842
160		345.75	0.00170245	0.0096451	391.292	619.68	228.39	0.89045	1.25983	0.38509
170		350.57	0.00174301	0.0086722	400.66	612.18	211.52	0.90465	1.24505	0.36303
180		355.35	0.00178339	0.0077945	410.78	603.69	192.91	0.91864	1.22736	0.34250
190		359.81	0.00182321	0.0069743	420.92	594.09	173.17	0.93244	1.20939	0.32354
200		364.07	0.00186262	0.0062127	431.64	582.79	151.15	0.94591	1.18917	0.23716
210		368.15	0.00190162	0.00553845	444.14	568.40	124.26	0.95911	1.16455	0.19374
220		372.35	0.00194028	0.00494231	457.63	545.80	83.15	0.97217	1.12763	0.12886
225 CG		374.15	0.00197000	0.00431700	503.34	503.30	0.	1.06116	1.06116	0.00000

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饱和氨性质表 (1)

温度 t/°C	压力 P kg/cm ²	比容		比重		焓		潜热 h ^v -h ^l kcal/kg	熵		温度 t/°C
		液体 v ^l l/kg	蒸气 v ^v m ³ /kg	液体 ρ ^l g/l	蒸气 ρ ^v kg/m ³	液体 h ^l kcal/kg	蒸气 h ^v kcal/kg		液体 s ^l kcal/kg·K	蒸气 s ^v kcal/kg·K	
-70	0.1114	1.3788	9.009	0.7253	0.1110	25.9	375.7	349.8	0.6878	2.4101	-70
-68	0.1287	1.3832	7.870	0.7230	0.1271	27.9	376.6	348.7	0.6975	2.3976	-68
-66	0.1485	1.3876	6.882	0.7207	0.1453	29.9	377.4	347.5	0.7074	2.3853	-66
-64	0.1706	1.3920	6.044	0.7184	0.1655	32.0	378.3	346.3	0.7173	2.3734	-64
-62	0.1954	1.3965	5.324	0.7161	0.1878	34.0	379.1	345.1	0.7270	2.3618	-62
-60	0.2233	1.4010	4.699	0.7138	0.2123	36.1	380.0	343.9	0.7366	2.3507	-60
-58	0.2543	1.4056	4.161	0.7114	0.2403	38.1	380.8	342.7	0.7461	2.3393	-58
-56	0.2889	1.4103	3.693	0.7091	0.2708	40.2	381.7	341.5	0.7555	2.3285	-56
-54	0.3272	1.4150	3.268	0.7067	0.3041	42.2	382.5	340.3	0.7648	2.3180	-54
-52	0.3697	1.4197	2.883	0.7044	0.3409	44.2	383.3	339.1	0.7741	2.3078	-52
-50	0.4169	1.4245	2.623	0.7020	0.3812	46.2	384.1	337.9	0.7832	2.2978	-50
-48	0.4686	1.4293	2.351	0.6996	0.425	48.4	384.9	336.6	0.7931	2.2886	-48
-46	0.5256	1.4342	2.112	0.6972	0.473	50.4	385.7	335.3	0.8021	2.2785	-46
-44	0.5882	1.4392	1.901	0.6948	0.526	52.5	386.5	334.0	0.8112	2.2692	-44
-42	0.6568	1.4442	1.715	0.6924	0.583	54.6	387.3	332.7	0.8203	2.2600	-42
-40	0.7318	1.4493	1.550	0.6900	0.645	56.8	388.1	331.3	0.8295	2.2510	-40
-39	0.7719	1.4519	1.4752	0.6888	0.678	57.82	388.49	330.67	0.8340	2.2465	-39
-38	0.8137	1.4545	1.4045	0.6875	0.712	58.88	388.88	329.99	0.8385	2.2461	-38
-37	0.8573	1.4571	1.3377	0.6863	0.748	59.94	389.27	329.31	0.8430	2.2378	-37
-36	0.9028	1.4597	1.2746	0.6851	0.785	61.01	389.65	328.61	0.8475	2.2336	-36
-35	0.9503	1.4623	1.2151	0.6839	0.823	62.08	390.03	327.95	0.8520	2.2294	-35
-34	0.9999	1.4649	1.1589	0.6826	0.863	63.15	390.41	327.26	0.8565	2.2252	-34
-33	1.0515	1.4676	1.1058	0.6814	0.905	64.21	390.79	326.57	0.8610	2.2211	-33
-32	1.1052	1.4703	1.0555	0.6801	0.948	65.28	391.17	325.88	0.8654	2.2170	-32
-31	1.1519	1.4730	1.0080	0.6789	0.992	66.35	391.54	325.19	0.8698	2.2130	-31
-30	1.2190	1.4757	0.9630	0.6777	1.038	67.42	391.91	324.49	0.8742	2.2090	-30
-29	1.279	1.4784	0.9204	0.6764	1.086	68.49	392.28	323.79	0.8789	2.2050	-29
-28	1.342	1.4811	0.8801	0.6752	1.136	69.56	392.64	323.08	0.8830	2.2011	-28
-27	1.407	1.4839	0.8418	0.6739	1.188	70.63	393.00	322.37	0.8874	2.1972	-27
-26	1.475	1.4867	0.8056	0.6726	1.242	71.71	393.36	321.66	0.8917	2.1934	-26
-25	1.546	1.4895	0.7712	0.6714	1.297	72.78	393.72	320.94	0.8960	2.1896	-25
-24	1.619	1.4923	0.7386	0.6701	1.354	73.86	394.07	320.22	0.9003	2.1853	-24
-23	1.695	1.4951	0.7076	0.6688	1.413	74.93	394.42	319.49	0.9046	2.1821	-23
-22	1.774	1.4980	0.6782	0.6676	1.474	76.01	394.77	318.76	0.9089	2.1784	-22
-21	1.856	1.5008	0.6502	0.6663	1.538	77.09	395.12	318.03	0.9132	2.1747	-21
-20	1.940	1.5037	0.6236	0.6650	1.604	78.17	395.46	317.29	0.9175	2.1710	-20
-19	2.027	1.5066	0.5983	0.6637	1.762	79.25	395.80	316.55	0.9217	2.1674	-19
-18	2.117	1.5096	0.5742	0.6624	1.742	80.33	396.13	315.80	0.9259	2.1638	-18
-17	2.211	1.5125	0.5513	0.6611	1.814	81.41	396.46	315.05	0.9301	2.1602	-17
-16	2.309	1.5155	0.5285	0.6598	1.889	82.50	396.79	314.29	0.9343	2.1567	-16
-15	2.410	1.5185	0.5087	0.6585	1.966	83.59	397.12	313.53	0.9385	2.1532	-15
-14	2.514	1.5215	0.4889	0.6572	2.046	84.68	397.44	312.76	0.9427	2.1498	-14
-13	2.621	1.5245	0.4700	0.6559	2.128	85.76	397.75	311.99	0.9469	2.1464	-13
-12	2.732	1.5276	0.4520	0.6546	2.213	86.85	398.06	311.21	0.9511	2.1430	-12
-11	2.847	1.5307	0.4348	0.6533	2.300	87.94	398.37	310.43	0.9552	2.1396	-11
-10	2.966	1.5338	0.4184	0.6520	2.390	89.03	398.67	309.64	0.9593	2.1362	-10
-9	3.089	1.5369	0.4028	0.6503	2.483	90.12	398.97	308.85	0.9634	2.1329	-9
-8	3.216	1.5400	0.3878	0.6497	2.579	91.21	399.27	308.05	0.9675	2.1296	-8
-7	3.347	1.5432	0.3735	0.6480	2.678	92.30	399.56	307.25	0.9716	2.1263	-7
-6	3.481	1.5464	0.3599	0.6467	2.779	93.40	399.85	306.46	0.9757	2.1231	-6
-5	3.619	1.5496	0.3469	0.6453	2.883	94.50	400.14	305.64	0.9798	2.1199	-5
-4	3.761	1.5528	0.3344	0.6440	2.991	95.59	400.42	304.83	0.9839	2.1167	-4
-3	3.908	1.5561	0.3225	0.6426	3.102	96.69	400.70	304.01	0.9880	2.1135	-3
-2	4.060	1.5594	0.3111	0.6413	3.216	97.79	400.98	303.19	0.9920	2.1103	-2
-1	4.217	1.5627	0.3002	0.6399	3.332	98.89	401.25	302.36	0.9960	2.1075	-1
0	4.379	1.5660	0.2897	0.6386	3.452	100.00	401.52	301.52	1.0000	2.1041	0

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饱和氨性质表 (2)

温度 t °C	压力 P kg/cm ²	比容		比重		焓		蒸发热 r $h''-h'$ kcal/kg	熵		温度 t °C
		液体 v' l/kg	蒸气 v'' m ³ /kg	液体 ρ' kg/l	蒸气 ρ'' kg/m ³	液体 h' kcal/kg	蒸气 h'' kcal/kg		液体 s' kcal/kg·K	蒸气 s'' kcal/kg·K	
1	4.545	1.5694	0.2797	0.6372	3.576	101.10	401.78	300.68	1.0040	2.1010	1
2	4.716	1.5727	0.2700	0.6358	3.703	102.21	402.04	299.84	1.0080	2.0979	2
3	4.892	1.5761	0.2608	0.6345	3.834	103.32	402.30	298.99	1.0120	2.0949	3
4	5.073	1.5796	0.2520	0.6331	3.969	104.43	402.55	298.13	1.0160	2.0919	4
5	5.259	1.5831	0.2435	0.6317	4.108	105.54	402.80	297.26	1.0200	2.0889	5
6	5.450	1.5866	0.2353	0.6303	4.250	106.65	403.04	296.39	1.0240	2.0859	6
7	5.647	1.5901	0.2275	0.6289	4.396	107.76	403.27	295.51	1.0280	2.0829	7
8	5.849	1.5936	0.2200	0.6275	4.546	108.87	403.50	294.63	1.0319	2.0799	8
9	6.057	1.5972	0.2128	0.6261	4.700	109.99	403.73	293.73	1.0358	2.0770	9
10	6.271	1.6008	0.2058	0.6247	4.859	111.11	403.96	292.84	1.0397	2.0741	10
11	6.490	1.6045	0.1992	0.6233	5.022	112.23	404.17	291.94	1.0436	2.0712	11
12	6.715	1.6081	0.1927	0.6218	5.189	113.35	404.38	291.03	1.0475	2.0683	12
13	6.946	1.6118	0.1866	0.6204	5.361	114.47	404.59	290.12	1.0514	2.0654	13
14	7.183	1.6156	0.1806	0.6190	5.537	115.59	404.79	289.20	1.0553	2.0626	14
15	7.427	1.6193	0.1749	0.6175	5.718	116.72	404.99	288.27	1.0592	2.0598	15
16	7.677	1.6231	0.1694	0.6161	5.904	117.85	405.19	287.34	1.0631	2.0570	16
17	7.933	1.6270	0.1642	0.6146	6.094	118.98	405.38	286.40	1.0670	2.0542	17
18	8.196	1.6308	0.1591	0.6132	6.289	120.11	405.57	285.46	1.0709	2.0514	18
19	8.465	1.6347	0.1542	0.6117	6.489	121.24	405.75	284.51	1.0747	2.0486	19
20	8.741	1.6386	0.1494	0.6103	6.694	122.38	405.93	283.55	1.0785	2.0459	20
21	9.024	1.6426	0.1449	0.6088	6.904	123.52	406.10	282.58	1.0824	2.0432	21
22	9.314	1.6466	0.1405	0.6073	7.119	124.66	406.27	281.61	1.0862	2.0405	22
23	9.611	1.6507	0.1363	0.6058	7.339	125.80	406.43	280.63	1.0900	2.0378	23
24	9.915	1.6546	0.1322	0.6043	7.564	126.94	406.59	279.65	1.0938	2.0351	24
25	10.225	1.6588	0.1283	0.6028	7.795	128.09	406.75	278.66	1.0976	2.0324	25
26	10.544	1.6630	0.1245	0.6013	8.031	129.24	406.89	277.66	1.1014	2.0297	26
27	10.870	1.6672	0.1209	0.5998	8.273	130.39	407.03	276.65	1.1052	2.0270	27
28	11.204	1.6714	0.1174	0.5983	8.521	131.54	407.17	275.64	1.1090	2.0243	28
29	11.546	1.6757	0.1140	0.5968	8.775	132.69	407.30	274.62	1.1128	2.0217	29
30	11.895	1.6800	0.1107	0.5952	9.034	133.84	407.43	273.59	1.1165	2.0191	30
31	12.252	1.6844	0.1075	0.5937	9.300	135.00	407.55	272.55	1.1203	2.0165	31
32	12.617	1.6888	0.1045	0.5921	9.573	136.16	407.67	271.50	1.1241	2.0139	32
33	12.991	1.6932	0.1015	0.5906	9.852	137.32	407.78	270.45	1.1278	2.0113	33
34	13.374	1.6977	0.0986	0.5890	10.138	138.48	407.88	269.39	1.1315	2.0087	34
35	13.765	1.7023	0.0959	0.5875	10.431	139.65	407.97	268.32	1.1352	2.0061	35
36	14.165	1.7069	0.0932	0.5859	10.731	140.82	408.06	267.24	1.1390	2.0035	36
37	14.573	1.7115	0.0906	0.5843	11.038	141.99	408.15	266.15	1.1427	2.0009	37
38	14.990	1.7162	0.0881	0.5827	11.353	143.16	408.23	265.06	1.1464	1.9984	38
39	15.415	1.7209	0.0857	0.5811	11.675	144.34	408.30	263.96	1.1501	1.9958	39
40	15.850	1.7257	0.0833	0.5795	12.005	145.52	408.37	262.85	1.1538	1.9933	40
41	16.294	1.7305	0.0810	0.5779	12.340	146.70	408.43	261.73	1.1575	1.9908	41
42	16.747	1.7354	0.0788	0.5762	12.689	147.88	408.49	260.60	1.1612	1.9882	42
43	17.210	1.7404	0.0767	0.5746	13.042	149.06	408.54	259.47	1.1649	1.9857	43
44	17.682	1.7454	0.0746	0.5729	13.404	150.24	408.58	258.33	1.1686	1.9832	44
45	18.165	1.7504	0.0726	0.5713	13.774	151.43	408.61	257.18	1.1722	1.9807	45
46	18.658	1.7555	0.0707	0.5696	14.153	152.62	408.64	256.02	1.1759	1.9781	46
47	19.161	1.7607	0.0683	0.5680	14.540	153.81	408.66	254.85	1.1796	1.9756	47
48	19.673	1.7659	0.0670	0.5663	14.936	155.00	408.68	253.67	1.1832	1.9731	48
49	20.195	1.7712	0.0652	0.5646	15.341	156.20	408.69	252.48	1.1868	1.9706	49
50	20.727	1.7766	0.0635	0.5629	15.756	157.40	408.69	251.29	1.1904	1.9681	50

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饱和二氧化碳性质表

温度 t °C	压力 P kg/cm ²	比容		比重		焓		蒸发热 r kcal/kg	焓		温度 t °C
		液体 v' l/kg	蒸气 v'' m ³ /kg	液体 ρ' kg/l	蒸气 ρ'' kg/m ³	液体 h' kcal/kg	蒸气 h'' kcal/kg		液体 s' kcal/kg·K	蒸气 s'' kcal/kg·K	
31	74.96	2.155	2.156	0.4639	463.9	133.50	133.50	0.00	1.1098	1.1098	31
30	73.34	1.677	2.979	0.5964	335.7	125.90	140.95	15.05	1.0854	1.1351	30
27.5	69.35	1.501	3.679	0.6610	271.8	122.00	144.55	22.55	1.0730	1.1487	27.5
25	65.59	1.417	4.232	0.7058	236.3	118.80	147.33	28.53	1.0628	1.1585	25
22.5	61.85	1.353	4.753	0.7412	210.4	116.20	149.50	33.30	1.0543	1.1666	22.5
20	58.46	1.298	5.269	0.7707	189.8	114.00	151.10	37.10	1.0468	1.1734	20
17.5	55.10	1.253	5.774	0.7955	173.2	111.90	152.27	40.37	1.0400	1.1790	17.5
15	51.93	1.223	6.323	0.8179	158.0	110.10	153.17	43.07	1.0340	1.1835	15
12.5	48.83	1.193	6.910	0.8385	144.7	108.20	153.95	45.75	1.0274	1.1875	12.5
10	45.95	1.166	7.519	0.8580	133.0	106.50	154.59	48.09	1.0218	1.1917	10
7.5	43.20	1.142	8.175	0.8760	122.3	104.78	155.08	50.30	1.0155	1.1952	7.5
5	40.50	1.120	8.850	0.8910	113.0	103.10	155.45	52.35	1.0103	1.1985	5
2.5	37.95	1.100	9.584	0.9100	104.3	101.84	155.82	53.98	1.0050	1.2022	2.5
0	35.54	1.081	10.383	0.9248	96.3	100.60	156.13	56.13	1.0000	1.2055	0
-2.5	33.21	1.063	11.230	0.9400	89.0	98.38	156.27	57.89	0.9942	1.2082	-2.5
-5	31.05	1.048	12.141	0.9538	82.4	96.91	156.41	59.50	0.9890	1.2109	-5
-7.5	29.00	1.033	13.120	0.9680	76.2	95.48	156.51	61.03	0.9835	1.2135	-7.5
-10	26.99	1.019	14.190	0.9808	70.5	94.09	156.60	62.51	0.9787	1.2163	-10
-12.5	25.10	1.006	15.320	0.9938	65.3	92.75	156.65	63.90	0.9740	1.2188	-12.5
-15	23.34	0.994	16.609	1.0061	60.2	91.44	156.70	65.26	0.9690	1.2218	-15
-17.5	21.71	0.982	17.950	1.0185	55.7	90.18	156.72	66.54	0.9644	1.2243	-17.5
-20	20.06	0.971	19.466	1.0295	51.4	88.93	156.78	67.79	0.9594	1.2272	-20
-22.5	18.68	0.960	21.070	1.0415	47.5	87.73	156.70	68.97	0.9550	1.2298	-22.5
-25	17.14	0.950	22.885	1.0528	43.8	86.53	156.67	70.11	0.9501	1.2328	-25
-27.5	15.76	0.940	24.850	1.0636	40.2	85.33	156.62	71.27	0.9460	1.2355	-27.5
-30	14.55	0.931	27.001	1.0742	37.0	84.19	156.56	72.37	0.9408	1.2385	-30
-32.5	13.35	0.922	29.480	1.0845	33.9	83.01	156.48	73.47	0.9362	1.2414	-32.5
-35	12.26	0.913	32.008	1.0949	31.2	81.80	156.39	74.51	0.9314	1.2443	-35
-37.5	11.20	0.905	34.900	1.1053	28.7	80.72	156.28	75.56	0.9266	1.2473	-37.5
-40	10.25	0.897	38.164	1.1150	26.2	79.59	156.17	76.58	0.9218	1.2503	-40
-42.5	9.33	0.889	41.780	1.1250	23.9	78.42	156.03	77.61	0.9170	1.2534	-42.5
-45	8.49	0.881	45.809	1.1345	21.8	77.30	155.89	78.59	0.9120	1.2565	-45
-47.5	7.70	0.873	50.250	1.1440	19.9	76.15	155.73	79.55	0.9070	1.2598	-47.5
-50	6.97	0.866	55.407	1.1535	18.1	75.01	155.57	80.55	0.9020	1.2631	-50
-52.5	6.29	0.859	61.145	1.1629	16.4	73.87	155.40	81.57	0.8969	1.2665	-52.5
-55	5.66	0.853	67.620	1.1721	14.8	72.72	155.22	82.50	0.8917	1.2700	-55
-56.6	5.28	0.849	72.220	1.1779	13.8	71.97	155.09	83.12	0.8886	1.2724	-56.6