



## ตารางภาคผนวก 1

คุณสมบัติทางอุณหพลศาสตร์ของน้ำ

ไอน้ำอิ่มตัว - ตารางอุณหภูมิ

Temp. °C T	Press. kPa P	ปริมาณจำเพาะ m <sup>3</sup> /kg		พลังงานภายใน kJ/kg			เอนทาลปี kJ/kg			เอนโทรปี kJ/kg K		
		Sat. Liquid v <sub>f</sub>	Sat. Vapor v <sub>g</sub>	Sal. Liquid u <sub>f</sub>	Evap. u <sub>fg</sub>	Sat. Vapor u <sub>g</sub>	Sat. Liquid h <sub>f</sub>	Evap. h <sub>fg</sub>	Sat. Vapor h <sub>g</sub>	Sat. Liquid s <sub>f</sub>	Evap. s <sub>fg</sub>	Sat. Vapor s <sub>g</sub>
0.01	0.61 1.3	0.001 0%	206.14	.00	2375.3	2375.3	.01	2501.3	2501.4	.0000	9.1562	9.1562
5	0.812 1	0.001 0%	147.12	20.97	2561.3	2382.3	20.98	2489.6	2510.6	.0761	8.94%	9.0257
10	1.2276	0.001 000	106.38	42.0	2347.2	2389.2	42.01	2477.7	2519.8	.1510	8.7498	8.9008
15	1.7051	0.001001	77.93	62.99	2333.1	2396.1	62.99	2465.9	2528.9	.2245	8.5569	8.7814
20		0.001 002	57.79	83.95	2319.0	2402.9	83.96	2454.1	2538.1	.2966	6.3706	8.6672
25	2.339 3.169	0.001 %a	43.36	104.88	2304.9	2409.8	104.89	2442.3	2547.2	.3674	8.1905	0.5580
30	4.246	0.001 004	32.89	125.78	2290.8	2416.6	125.79	2430.5	2556.9	.4369	8.0164	8.4553
35	5.628	0.001 0%	25.22	146.67	2276.7	2429.4	146.68	2418.6	2565.3	.5059	7.8478	8.3531
40	7.384	0.001 008	19.52	167.56	2262.6	2430.1	167.57	2406.7	2574.3	.5725	7.6045	8.2570
45	9.593	0.001 010	15.26	188.44	2248.4	2436.8	188.45	2394.8	2589.2	.6387	7.5261	8.1648
50	12.349	0.001 012	12.03	209.32	2234.2	2443.5	209.33	2382.7	2592.1	.7038	7.3725	8.0763
55		0.601015	9.568	290.21	2219.9	2450.1	230.23	2370.7	2600.9	.7679	7.2234	7.9913
60	15.758 19.940	0.001 017	7.671	251.11	2205.5	2456.6	251.13	2358.5	2609.6	.8312	7.0784	7.90%
65	25.03	0.001 020	6.197	272.02	2191.1	2463.1	272.06	2346.2	2618.3	.8935	6.9375	7.8310
70		0.001 023	5.042	292.95	2176.6	2469.6	292.98	2333.8	2626.8	.9549	6.8004	7.7553
75	31.19	0.001 026	4.131	319.90	2162.0	2475.9	319.93	2321.4	2635.3	1.0155	6.6669	7.6624
80		0.001 029	3.407	334.86	2147.4	2482.2	334.91	2308.8	2643.7	1.0753	6.5369	7.6122
85	47.39 57.63	0.001 033	2.826	355.84	2132.6	2488.4	355.90	2296.0	2651.9	1.1343	6.4102	7.5445
90	70.14	0.001 036	2.361	376.83	2117.7	2494.5	376.92	2283.2	2660.1	1.1925	6.2866	7.4791
95	04.55	0.001 040	1.982	397.88	2102.7	2500.6	397.96	2270.2	2668.1	1.2500	6.1659	7.4159
100	0.101 3	0.001 044	1.6729	418.94	2087.6	2506.5	419.04	2257.0	2676.1	1.3069	6.0460	7.3549
105	0.120 8	0.001 048	1.4194	440.02	2072.3	2512.4	440.15	2243.7	2683.8	1.3630	5.9328	7.2958
110	0.143 2	0.001 052	1.2102	461.14	2057.0	2518.1	461.30	2230.2	2691.5	1.4185	5.8202	7.2387
115	0.169 0	0.001 056	1.0366	482.30	2041.4	2523.7	482.46	2216.5	2699.0	1.4734	5.71%	7.1899
120	0.198 5	0.001 060	0.8919	509.50	2025.8	2529.9	503.71	2202.6	2706.3	1.5276	6.6020	7.1296
125	0.2321	0.001 065	0.77%	524.74	2009.9	2534.6	524.99	2188.5	2713.5	1.5813	5.4962	7.0775
130	0.2701	0.001070	0.6685	546.02	1993.9	2539.9	546.31	2174.2	2720.5	1.6344	5.3925	7.0269
135	0.3130	0.001 075	0.5822	567.35	1977.7	2545.0	567.69	2159.6	2727.3	1.6870	5.2907	6.9777
140	0.3613	0.001 080	0.5089	588.74	1961.3	2550.0	589.13	2144.7	2739.9	1.7391	5.1908	6.9299
145	0.4154	0.001 085	0.4463	610.18	1944.7	2554.9	610.63	2129.6	2740.9	1.7907	5.0926	6.8833
150	0.4758	0.001 091	0.3928	631.68	1927.9	2559.5	632.20	2114.3	2746.5	1.8418	4.9960	6.8379
155	0.5431	0.001 0%	0.3468	653.24	1910.8	2564.1	653.64	2098.6	2752.4	1.8925	4.9010	6.7995
160	0.6178	0.001 102	0.3071	674.87	1893.5	2568.4	675.55	2082.6	2758.1	1.9427	4.8075	6.7502
165	0.7005	0.001 108	0.2727	696.56	1876.0	2572.5	697.34	2066.2	2763.5	1.9925	4.7153	6.7078
170	0.7917	0.001 114	0.2428	718.33	1858.1	2576.5	719.21	2049.5	2768.7	2.0419	4.6244	6.6663
175	0.8920	0.001 121	0.2166	740.17	1840.0	2580.2	741.17	2032.4	2773.6	2.0909	4.5347	6.6256
180	1.0021	0.001 127	0.19405	762.09	1821.6	2583.7	763.22	2015.0	2778.2	2.1396	4.4461	6.5857
185	1.1227	0.061 134	0.174 09	784.10	1802.9	2587.0	785.97	1997.1	2782.4	2.1879	4.3566	6.5465
190	1.2544	0.001 141	0.15654	806.19	1783.8	2590.0	807.62	1978.8	2786.4	2.2359	4.2720	6.5079
195	1.3978	0.001 149	0.141 05	828.37	1764.4	2592.8	829.98	1960.0	2790.0	2.2835	4.1863	6.4698
200	1.5538	0.001 157	0.127 36	850.65	1744.7	2595.3	852.45	1940.7	2793.2	2.3309	4.1014	6.4323
205	1.7230	0.001 164	0.115 21	873.04	1724.5	2597.5	875.04	1921.0	2796.0	2.3780	4.0172	6.3952
210	1.9062	0.001 173	0.104 41	895.59	1703.9	2599.5	897.76	1900.7	2798.5	2.4248	3.9337	6.3585
215	2.104	0.001 181	0.094 79	918.14	1682.9	2601.1	920.62	1879.9	2800.5	2.4714	3.8567	6.3221
220	2.318	0.001 1%	0.086 15	940.87	1661.5	2602.4	943.62	1856.5	2802.1	2.5178	3.7883	6.2861
225	2.548	0.001 1%	0.07849	963.75	1639.6	2603.3	966.78	1836.5	2803.3	2.5639	3.6863	6.2503
230	2.795	0.001 209	0.071 58	986.74	1617.2	2603.9	990.12	1813.8	2804.0	2.6099	3.6047	6.2146
235	3.060	0.001219	0.065 37	1009.89	1594.2	2604.1	1013.62	1790.5	2804.2	2.6558	3.5293	6.1791
240	3.344	0.001 2%	0.05976	1033.21	1570.8	2604.0	1037.32	1766.5	2803.8	2.7015	3.4422	6.1437
245	3.648	0.001240	0.05471	1056.71	1546.7	2603.4	1061.23	1741.7	2803.0	2.7472	3.3612	6.1085
250	3.973	0.001 251	0.050 13	1080.99	1522.0	2602.4	1085.36	1716.2	2801.5	2.7927	3.2802	6.0730
255	4.319	0.001 263	0.04598	1104.28	1496.7	2600.9	1109.73	1689.8	2799.5	2.8383	3.1992	6.0375
260	4.688	0.001 276	0.042 11	1128.39	1470.6	2599.0	1134.37	1662.5	2796.9	2.8838	3.1181	6.0019
265	5.081	0.001 289	0.036 77	1152.74	1443.9	2596.6	1159.26	1634.4	2799.6	2.9294	3.0368	5.9662
270	5.499	0.001 302	0.03564	1177.36	1416.3	2593.7	1184.51	1605.2	2789.7	2.9751	2.9551	5.9301

## ตารางภาคผนวก 2

## ไอน้ำอิ่มตัว - ตารางความดัน

Press. MPa <i>P</i>	Temp. °C <i>T</i>	ปริมาณจำเพาะ m <sup>3</sup> /kg		พลังงานภายใน kJ/kg			เอนทาลปี kJ/kg			เอนโทรปี kJ/kg K		
		Sat. Liquid <i>v<sub>f</sub></i>	Sat. Vapor <i>v<sub>g</sub></i>	Sat. Liquid <i>u<sub>f</sub></i>	Evap. <i>u<sub>fg</sub></i>	Sat. Vapor <i>u<sub>g</sub></i>	Sat. Liquid <i>h<sub>f</sub></i>	Evap. <i>h<sub>fg</sub></i>	Sat. Vapor <i>h<sub>g</sub></i>	Sat. Liquid <i>s<sub>f</sub></i>	Evap. <i>s<sub>fg</sub></i>	Sat. Vapor <i>s<sub>g</sub></i>
0.250	127.44	0.001 067	0.7187	535.10	2002.1	2537.2	535.37	2181.5	2716.9	1.6072	5.4455	7.0527
0.275	130.60	0.001 070	0.6573	548.59	1991.9	2540.5	548.89	2172.4	2721.3	1.6408	5.3801	7.0209
0.300	133.55	0.001 073	0.6058	561.15	1982.4	2543.6	561.47	2163.8	2725.3	1.6718	5.3201	6.9919
0.325	136.30	0.001 076	0.5620	572.90	1973.5	2546.4	573.25	2155.8	2729.0	1.7006	5.2646	6.9652
0.350	138.88	0.001 079	0.5243	583.95	1965.0	2548.9	584.53	2148.1	2732.4	1.7275	5.2130	6.9405
0.375	141.32	0.001 081	0.4914	594.40	1956.9	2551.3	594.81	2140.8	2735.6	1.7528	5.1647	6.9175
0.40	143.63	0.001 084	0.4625	604.31	1949.3	2553.6	604.74	2133.8	2738.6	1.7766	5.1193	6.8959
0.45	147.93	0.001 088	0.4140	622.77	1934.9	2557.6	623.25	2120.7	2743.9	1.8207	5.0359	6.8565
0.50	151.86	0.001 093	0.3749	639.68	1921.6	2561.2	640.23	2108.5	2748.7	1.8607	4.9606	6.8213
0.55	155.48	0.001 097	0.3427	655.32	1909.2	2564.5	655.93	2097.0	2753.0	1.8973	4.8920	6.7893
0.60	158.85	0.001 101	0.3157	669.90	1897.5	2567.4	670.56	2086.3	2756.8	1.9312	4.8288	6.7600
0.65	162.01	0.001 104	0.2927	683.56	1886.5	2570.1	684.28	2076.0	2760.3	1.9627	4.7703	6.7331
0.70	164.97	0.001 108	0.2729	696.44	1876.1	2572.5	697.22	2066.3	2763.5	1.9922	4.7158	6.7080
0.75	167.78	0.001 112	0.2556	708.64	1866.1	2574.7	709.47	2057.0	2766.4	2.0200	4.6647	6.6847
0.80	170.43	0.001 115	0.2404	720.22	1856.6	2576.8	721.11	2048.0	2769.1	2.0462	4.6166	6.6628
0.85	172.96	0.001 118	0.2270	731.27	1847.4	2578.7	732.22	2039.4	2771.6	2.0710	4.5711	6.6421
0.90	175.38	0.001 121	0.2150	741.83	1838.6	2580.5	742.83	2031.1	2773.9	2.0946	4.5280	6.6226
0.95	177.69	0.001 124	0.2042	751.95	1830.2	2582.1	753.02	2023.1	2776.1	2.1172	4.4869	6.6041
1.00	179.91	0.001 127	0.194 44	761.68	1822.0	2583.6	762.81	2015.3	2778.1	2.1387	4.4478	6.5865
1.10	184.09	0.001 133	0.177 53	780.09	1806.3	2586.4	781.34	2000.4	2781.7	2.1792	4.3744	6.5536
1.20	187.99	0.001 139	0.163 33	797.29	1791.5	2588.8	798.65	1986.2	2784.8	2.2166	4.3067	6.5233
1.30	191.64	0.001 144	0.151 25	813.44	1777.5	2591.0	814.93	1972.7	2787.6	2.2515	4.2438	6.4953
1.40	195.07	0.001 149	0.140 84	828.70	1764.1	2592.8	830.30	1959.7	2790.0	2.2842	4.1850	6.4693
1.50	198.32	0.001 154	0.131 77	843.16	1751.3	2594.5	844.89	1947.3	2792.2	2.3150	4.1298	6.4448
1.75	205.76	0.001 166	0.113 49	876.46	1721.4	2597.8	878.50	1917.9	2796.4	2.3851	4.0044	6.3896
2.00	212.42	0.001 177	0.099 63	906.44	1693.8	2600.3	908.79	1890.7	2799.5	2.4474	3.8935	6.3409
2.25	218.45	0.001 187	0.088 75	933.83	1668.2	2602.0	936.49	1865.2	2801.7	2.5035	3.7937	6.2972
2.5	223.99	0.001 197	0.079 98	959.11	1644.0	2603.1	962.11	1841.0	2803.1	2.5547	3.7028	6.2575
3.0	233.90	0.001 217	0.066 68	1004.78	1599.3	2604.1	1008.42	1795.7	2804.2	2.6457	3.5412	6.1869
3.5	242.60	0.001 235	0.057 07	1045.43	1558.3	2603.7	1049.75	1753.7	2803.4	2.7253	3.4000	6.1253
4	250.40	0.001 252	0.049 78	1082.31	1520.0	2602.3	1087.31	1714.1	2801.4	2.7964	3.2737	6.0701
5	263.99	0.001 286	0.039 44	1147.81	1449.3	2597.1	1154.23	1640.1	2794.3	2.9202	3.0532	5.9734
6	275.64	0.001 319	0.032 44	1205.44	1384.3	2589.7	1213.35	1571.0	2784.3	3.0267	2.8625	5.8892
7	285.88	0.001 351	0.027 37	1257.55	1323.0	2580.5	1267.00	1505.1	2772.1	3.1211	2.6922	5.8133
8	295.06	0.001 384	0.023 52	1305.57	1264.2	2569.8	1316.64	1441.3	2758.0	3.2068	2.5564	5.7432
9	303.40	0.001 418	0.020 48	1350.51	1207.3	2557.8	1363.26	1378.9	2742.1	3.2858	2.3915	5.6772
10	311.06	0.001 452	0.018 026	1393.04	1151.4	2544.4	1407.56	1317.1	2724.7	3.3596	2.2544	5.6141
11	318.15	0.001 489	0.015 987	1433.7	1096.0	2529.8	1450.1	1255.5	2705.6	3.4293	2.1233	5.5527
12	324.75	0.001 527	0.014 263	1473.0	1040.7	2513.7	1491.3	1193.6	2684.9	3.4962	1.9962	5.4924
13	330.93	0.001 567	0.012 780	1511.1	985.0	2496.1	1531.5	1130.7	2662.2	3.5606	1.8718	5.4323
14	336.75	0.001 611	0.011 485	1548.6	928.2	2476.8	1571.1	1066.5	2637.6	3.6232	1.7485	5.3717
15	342.24	0.001 658	0.010 337	1585.6	869.8	2455.5	1610.5	1000.0	2610.5	3.6848	1.6249	5.3098
16	347.44	0.001 711	0.009 306	1622.7	809.0	2431.7	1650.1	930.6	2580.6	3.7461	1.4994	5.2455
17	352.37	0.001 770	0.008 364	1660.2	744.8	2405.0	1690.3	856.9	2547.2	3.8079	1.3698	5.1777
18	357.06	0.001 840	0.007 489	1698.9	675.4	2374.3	1732.0	777.1	2509.1	3.8715	1.2329	5.1044
19	361.54	0.001 924	0.006 657	1739.9	598.1	2338.1	1776.5	688.0	2464.5	3.9388	1.0839	5.0228
20	365.81	0.002 036	0.005 834	1785.6	507.5	2293.0	1826.3	583.4	2409.7	4.0139	.9130	4.9269
21	369.89	0.002 207	0.004 952	1842.1	388.5	2230.6	1888.4	446.2	2334.6	4.1075	.6938	4.8013
22	373.80	0.002 742	0.003 568	1961.9	125.2	2087.1	2022.2	143.4	2165.6	4.3110	.2216	4.5327
22.09	374.14	0.003 155	0.003 155	2029.6	0	2029.6	2099.3	0	2099.3	4.4298	0	4.4298

## ตารางภาคผนวก 3

คุณสมบัติที่จุดวิกฤต

สาร	สูตรเคมี	น้ำหนัก โมเลกุล	จุดทวิภูมิ K	ความดัน MPa	ปริมาตร m <sup>3</sup> /kmol
Ammonia	NH <sub>3</sub>	17.03	405.5	11.28	.0724
Argon	Ar	39.948	151	4.86	.0749
Bromine	Br <sub>2</sub>	159.808	584	10.34	.1355
Carbon Dioxide	CO <sub>2</sub>	44.01	304.2	7.39	.0943
Carbon Monoxide	CO	28.011	133	3.50	.0930
Chlorine	Cl <sub>2</sub>	70.906	417	7.71	.1242
Deuterium (Normal)	D <sub>2</sub>	4.00	38.4	1.66	—
Helium	He	4.003	5.3	0.23	.0578
Helium <sup>3</sup>	He	3.00	3.3	0.12	—
Hydrogen (Normal)	H <sub>2</sub>	2.016	33.3	1.30	.0649
Krypton	Kr	83.80	209.4	5.50	.0924
Neon	Ne	20.183	44.5	2.73	.0417
Nitrogen	N <sub>2</sub>	28.013	126.2	3.39	.0899
Nitrous Oxide	N <sub>2</sub> O	44.013	309.7	7.27	.0961
Oxygen	O <sub>2</sub>	31.999	154.8	5.08	.0780
Sulfur Dioxide	SO <sub>2</sub>	64.063	430.7	7.88	.1217
Water	H <sub>2</sub> O	18.015	647.3	22.09	.0568
Xenon	Xe	131.30	289.8	5.88	.1186
Benzene	C <sub>6</sub> H <sub>6</sub>	78.115	562	4.92	.2603
n-Butane	C <sub>4</sub> H <sub>10</sub>	58.124	425.2	3.80	.2547
Carbon Tetrachloride	CCl <sub>4</sub>	153.82	556.4	4.56	.2759
Chloroform	CHCl <sub>3</sub>	119.38	536.6	5.47	.2403
Dichlorodifluoromethane	CCl <sub>2</sub> F <sub>2</sub>	120.91	384.7	4.01	.2179
Dichlorofluoromethane	CHCl <sub>2</sub> F	102.92	451.7	5.17	.1973
Ethane	C <sub>2</sub> H <sub>6</sub>	30.070	305.5	4.88	.1480
Ethyl Alcohol	C <sub>2</sub> H <sub>5</sub> OH	46.07	516	6.98	.1673
Ethylene	C <sub>2</sub> H <sub>4</sub>	28.054	282.4	5.12	.1242
n-Hexane	C <sub>6</sub> H <sub>14</sub>	86.178	507.9	3.03	.3677
Methane	CH <sub>4</sub>	16.043	191.1	4.64	.0993
Methyl Alcohol	CH <sub>3</sub> OH	32.042	513.2	7.95	.1180
Methyl Chloride	CH <sub>3</sub> Cl	50.488	416.3	6.68	.1430

## ตารางภาคผนวก 4

คุณสมบัติทางอุณหพลศาสตร์ของปรอท

Press., MPa	Temp., °C	เอนทาลปี kJ/kg			เอนโทรปี kJ/kg K			ปริมาตรจำเพาะ $v_f$ m <sup>3</sup> /kg
		$h_f$	$h_g$	$h_{fg}$	$s_f$	$s_g$	$s_{fg}$	
0.9	508.5	68.42	289.68	358.10	0.1415	0.3706	0.5121	0.035 84
1.0	517.8	69.61	289.50	359.11	0.1429	0.3660	0.5082	0.032 66
1.2	534.4	71.75	289.19	360.94	0.1455	0.3581	0.5036	0.027 81
1.4	549.0	73.63	288.92	362.55	0.1478	0.3514	0.4992	0.024 29
1.6	562.0	75.37	288.67	364.04	0.1498	0.3456	0.4954	0.021 61
1.8	574.0	76.83	288.45	365.28	0.1515	0.3405	0.4920	0.019 49
2.0	584.9	78.23	288.24	366.47	0.1531	0.3359	0.4890	0.017 78
2.2	595.1	79.54	288.05	367.59	0.1546	0.3318	0.4864	0.016 37
2.4	604.6	80.75	287.87	368.62	0.1559	0.3280	0.4839	0.015 18
2.6	613.5	81.89	287.70	369.59	0.1571	0.3245	0.4816	0.014 16
2.8	622.0	82.96	287.54	370.50	0.1583	0.3212	0.4795	0.013 29
3.0	630.0	83.97	287.39	371.36	0.1594	0.3182	0.4776	0.012 52
3.5	648.5	86.33	287.04	373.37	0.1619	0.3115	0.4734	0.010 96
4.0	665.1	88.43	286.73	375.16	0.1641	0.3056	0.4697	0.009 78
4.5	680.3	90.35	286.44	376.79	0.1660	0.3004	0.4664	0.008 85
5.0	694.4	92.11	286.18	378.29	0.1678	0.2958	0.4636	0.008 09
5.5	707.4	93.76	285.93	379.69	0.1694	0.2916	0.4610	0.007 46
6.0	719.7	95.30	285.70	381.00	0.1709	0.2878	0.4587	0.006 93
6.5	731.3	96.75	285.48	382.23	0.1723	0.2842	0.4565	0.006 48
7.0	742.3	98.12	285.28	383.40	0.1736	0.2809	0.4545	0.006 09
7.5	752.7	99.42	285.08	384.50	0.1748	0.2779	0.4527	0.005 75

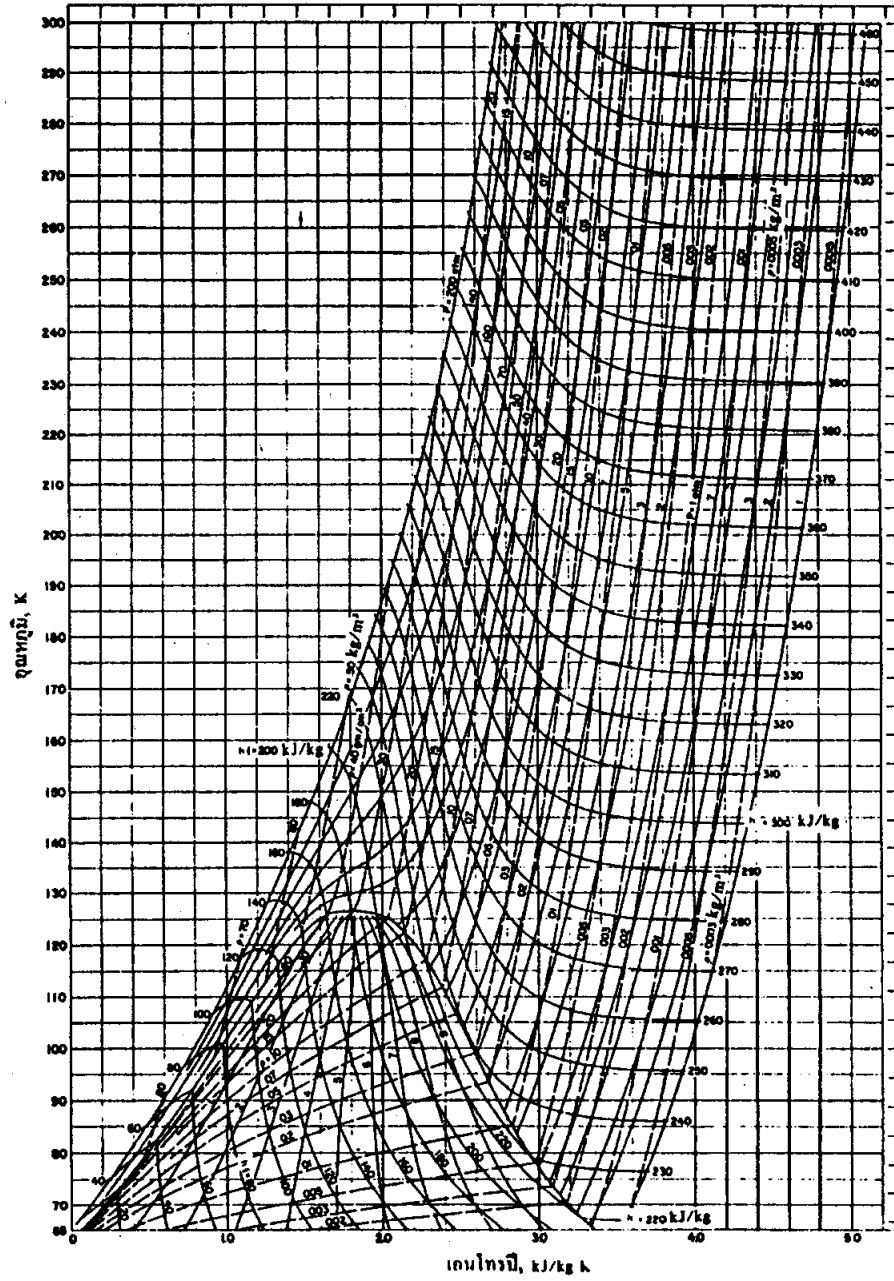
## ตารางภาคผนวก 5

คุณสมบัติของการผสมบูรณิกต่าง ๆ

ก๊าซ	สูตรเคมี	น้ำหนักโมเลกุล	$R$ $\frac{\text{kJ}}{\text{kg K}}$	$C_{\infty}$ $\frac{\text{kJ}}{\text{kg K}}$	$C_{\infty}$ $\frac{\text{kJ}}{\text{kg K}}$	$k$
Air	-	28.97	0.287 00	1.0035	0.7165	1.400
Argon	Ar	39.948	0.208 13	0.5203	0.3122	1.667
Butane	C <sub>4</sub> H <sub>10</sub>	58.124	0.143 04	1.7164	1.5734	1.091
Carbon Dioxide	CO <sub>2</sub>	44.01	0.188 92	0.8418	0.6529	1.289
Carbon Monoxide	CO	28.01	0.296 83	1.0413	0.7445	1.400
Ethane	C <sub>2</sub> H <sub>6</sub>	30.07	0.276 50	1.7662	1.4897	1.186
Ethylene	C <sub>2</sub> H <sub>4</sub>	28.054	0.296 37	1.5482	1.2518	1.237
Helium	He	4.003	2.077 03	5.1926	3.1156	1.667
Hydrogen	H <sub>2</sub>	2.016	4.124 18	14.2091	10.0849	1.409
Methane	CH <sub>4</sub>	16.04	0.518 35	2.2537	1.7354	1.299
Neon	Ne	20.183	0.411 95	1.0299	0.6179	1.667
Nitrogen	N <sub>2</sub>	28.013	0.296 80	1.0416	0.7448	1.400
Octane	C <sub>8</sub> H <sub>18</sub>	114.23	0.072 79	1.7113	1.6385	1.044
Oxygen	O <sub>2</sub>	31.999	0.259 83	0.9216	0.6618	1.393
Propane	C <sub>3</sub> H <sub>8</sub>	44.097	0.188 55	1.6794	1.4909	1.126
Steam	H <sub>2</sub> O	18.015	0.461 52	1.8723	1.4108	1.327

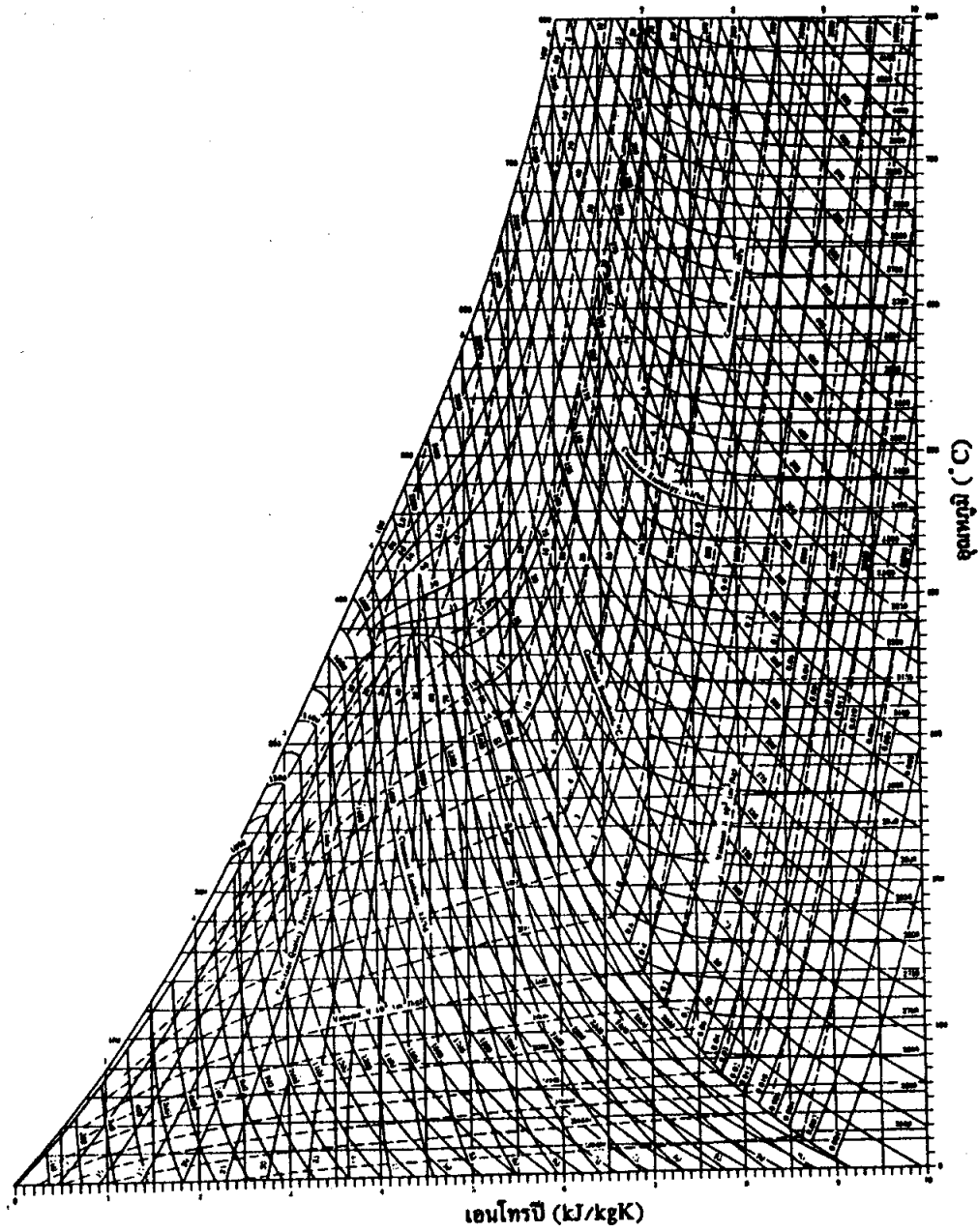




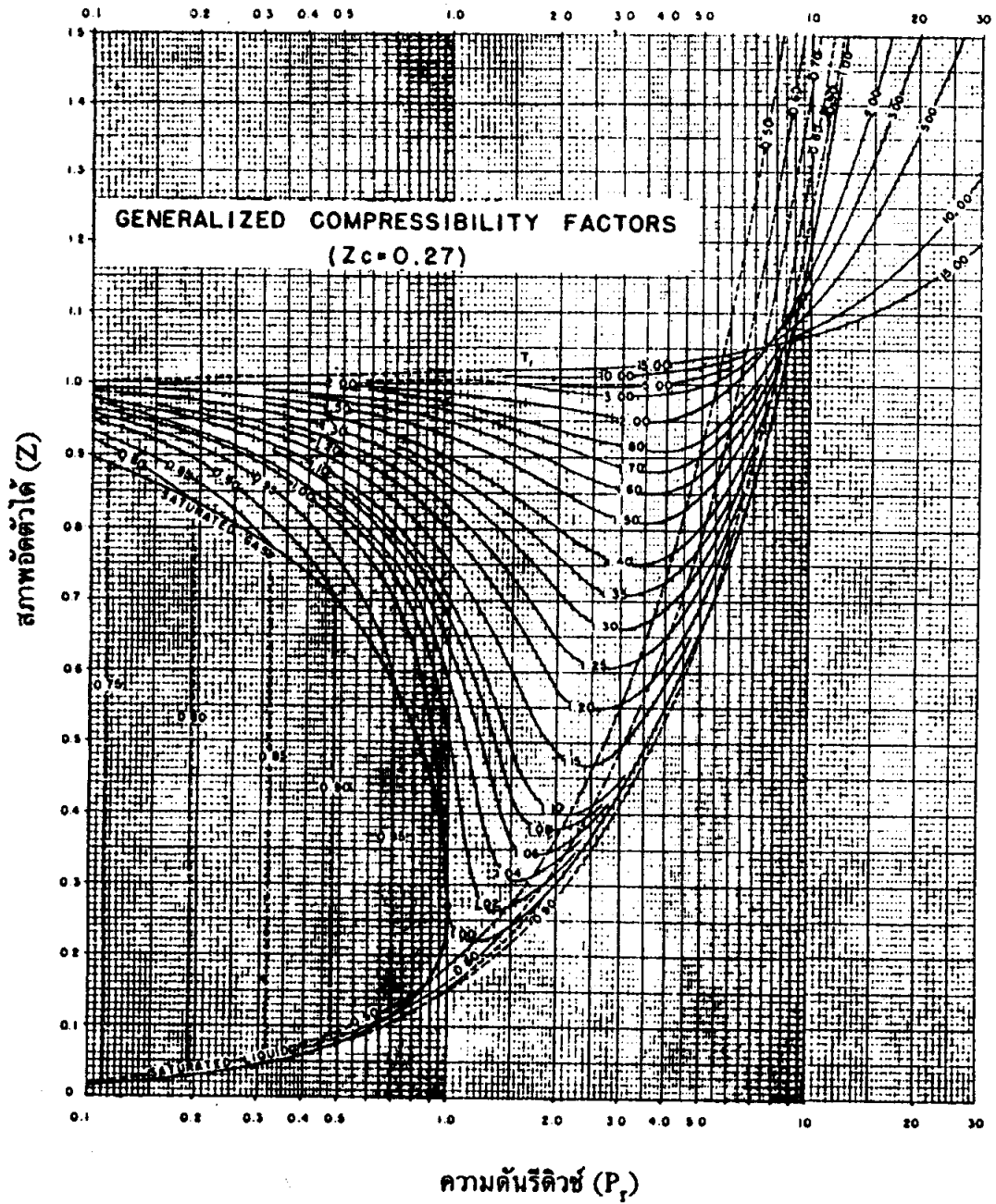


รูปภาคผนวกที่ 3 แสดงแผนภาพจุดความชื้น - เอนโทรปีของก๊าซในโครเจน





รูปภาคผนวกที่ 4 แสดงแผนภาพอุณหภูมิ - เอนโทรปีสำหรับไอน้ำ



รูปภาคผนวกที่ 5 แสดงแผนภาพของสภาพการอัดตัวได้แบบทั่วไป

## ตารางภาคผนวก 7

ค่าของ  $F_{0-\lambda}(T)$  และ  $F_{b\lambda}(T)/T^5$  ใน  $\lambda T$  ตาราง ๗

$\frac{E_{b\lambda}(T)}{T^5}$				$\frac{E_{b\lambda}(T)}{T^5}$			
$\lambda T$	$\lambda T$	$\frac{W}{m^2 K^2 \mu m}$	$F_{0-\lambda}(T)$	$\lambda T$	$\lambda T$	$\frac{W}{m^2 K^2 \mu m}$	$F_{0-\lambda}(T)$
$\mu m$	$\mu m \text{ } ^\circ R$	$\times 10^{11}$		$\mu m$	$\mu m \text{ } ^\circ R$	$\times 10^{11}$	
555.6	1,000	0.400 × 10 <sup>-5</sup>	0.000001	5,777.8	10,400	0.52517	0.71806
666.7	1,200	0.120 × 10 <sup>-3</sup>	0.000000	5,888.9	10,600	0.50261	0.72813
777.8	1,400	0.00122	0.000000	6,000.0	10,800	0.48107	0.73777
888.9	1,600	0.00630	0.000007	6,111.1	11,000	0.46051	0.74700
1,000.0	1,800	0.02111	0.000032	6,222.2	11,200	0.44089	0.75583
1,111.1	2,000	0.05254	0.00101	6,333.3	11,400	0.42218	0.76429
1,222.2	2,200	0.10587	0.00252	6,444.4	11,600	0.40434	0.77238
1,333.3	2,400	0.18275	0.00531	6,555.6	11,800	0.38732	0.78014
1,444.4	2,600	0.28091	0.00983	6,666.7	12,000	0.37111	0.78757
1,555.6	2,800	0.39505	0.01643	6,777.8	12,200	0.35565	0.79469
1,666.7	3,000	0.51841	0.02537	6,888.9	12,400	0.34091	0.80152
1,777.8	3,200	0.64404	0.03677	7,000.0	12,600	0.32687	0.80806
1,888.9	3,400	0.76578	0.05059	7,111.1	12,800	0.31338	0.81433
2,000.0	3,600	0.87878	0.06672	7,222.2	13,000	0.30071	0.82035
2,111.1	3,800	0.97963	0.08496	7,333.3	13,200	0.28855	0.82612
2,222.2	4,000	1.0663	0.10503	7,444.4	13,400	0.27689	0.83166
2,333.3	4,200	1.1378	0.12665	7,555.6	13,600	0.26589	0.83698
2,444.4	4,400	1.1942	0.14953	7,666.7	13,800	0.25534	0.84209
2,555.6	4,600	1.2361	0.17337	7,777.8	14,000	0.24527	0.84699
2,666.7	4,800	1.2645	0.19789	7,888.9	14,200	0.23567	0.85171
2,777.8	5,000	1.2808	0.22285	8,000.0	14,400	0.22651	0.85624
2,888.9	5,200	1.2864	0.24803	8,111.1	14,600	0.21777	0.86059
3,000.0	5,400	1.2827	0.27322	8,222.2	14,800	0.20942	0.86477
3,111.1	5,600	1.2713	0.29825	8,333.3	15,000	0.20145	0.86880
3,222.2	5,800	1.2532	0.32300	8,444.4	15,200	0.19387	0.87273
3,333.3	6,000	1.2299	0.34734	8,555.6	15,400	0.18662	0.87677
3,444.4	6,200	1.2023	0.37118	8,666.7	15,600	0.17977	0.88080
3,555.6	6,400	1.1714	0.39445	8,777.8	15,800	0.17338	0.88491
3,666.7	6,600	1.1380	0.41708	8,888.9	16,000	0.16742	0.88909
3,777.8	6,800	1.1029	0.43905	9,000.0	16,200	0.16187	0.89334
3,888.9	7,000	1.0665	0.46031	9,111.1	16,400	0.15671	0.89764
4,000.0	7,200	1.0295	0.48085	9,222.2	16,600	0.15184	0.90198
4,111.1	7,400	0.99221	0.50066	9,333.3	16,800	0.14725	0.90636
4,222.2	7,600	0.95499	0.51974	9,444.4	17,000	0.14293	0.91077
4,333.3	7,800	0.91813	0.53809	9,555.6	17,200	0.13887	0.91521
4,444.4	8,000	0.88184	0.55573	9,666.7	17,400	0.13505	0.91967
4,555.6	8,200	0.84629	0.57267	9,777.8	17,600	0.13146	0.92415
4,666.7	8,400	0.81163	0.58891	9,888.9	17,800	0.12809	0.92864
4,777.8	8,600	0.77796	0.60449	10,000.0	18,000	0.12492	0.93314
4,888.9	8,800	0.74534	0.61941	10,111.1	18,200	0.12194	0.93764
5,000.0	9,000	0.71383	0.63371	10,222.2	18,400	0.11914	0.94214
5,111.1	9,200	0.68346	0.64740	10,333.3	18,600	0.11651	0.94664
5,222.2	9,400	0.65423	0.66051	10,444.4	18,800	0.11403	0.95114
5,333.3	9,600	0.62617	0.67305	10,555.6	19,000	0.11169	0.95564
5,444.4	9,800	0.59925	0.68506	10,666.7	19,200	0.10948	0.96014
5,555.6	10,000	0.57346	0.69655	10,777.8	19,400	0.10738	0.96464
5,666.7	10,200	0.54877	0.70754	10,888.9	19,600	0.10538	0.96914
				11,000.0	19,800	0.10348	0.97364
				11,111.1	20,000	0.10167	0.97814
				11,222.2	20,200	0.09995	0.98264
				11,333.3	20,400	0.09832	0.98714
				11,444.4	20,600	0.09677	0.99164
				11,555.6	20,800	0.09530	0.99614
				11,666.7	21,000	0.09390	0.99999
				11,777.8	21,200	0.09257	1.00000
				11,888.9	21,400	0.09130	
				12,000.0	21,600	0.09008	
				12,111.1	21,800	0.08891	
				12,222.2	22,000	0.08778	
				12,333.3	22,200	0.08669	
				12,444.4	22,400	0.08564	
				12,555.6	22,600	0.08462	
				12,666.7	22,800	0.08363	
				12,777.8	23,000	0.08267	
				12,888.9	23,200	0.08173	
				13,000.0	23,400	0.08081	
				13,111.1	23,600	0.08000	
				13,222.2	23,800	0.07920	
				13,333.3	24,000	0.07841	
				13,444.4	24,200	0.07763	
				13,555.6	24,400	0.07686	
				13,666.7	24,600	0.07610	
				13,777.8	24,800	0.07535	
				13,888.9	25,000	0.07461	
				14,000.0	25,200	0.07388	
				14,111.1	25,400	0.07316	
				14,222.2	25,600	0.07244	
				14,333.3	25,800	0.07173	
				14,444.4	26,000	0.07103	
				14,555.6	26,200	0.07034	
				14,666.7	26,400	0.06965	
				14,777.8	26,600	0.06897	
				14,888.9	26,800	0.06830	
				15,000.0	27,000	0.06764	
				15,111.1	27,200	0.06698	
				15,222.2	27,400	0.06633	
				15,333.3	27,600	0.06568	
				15,444.4	27,800	0.06504	
				15,555.6	28,000	0.06440	
				15,666.7	28,200	0.06377	
				15,777.8	28,400	0.06314	
				15,888.9	28,600	0.06251	
				16,000.0	28,800	0.06189	
				16,111.1	29,000	0.06127	
				16,222.2	29,200	0.06066	
				16,333.3	29,400	0.06005	
				16,444.4	29,600	0.05944	
				16,555.6	29,800	0.05884	
				16,666.7	30,000	0.05824	
				16,777.8	30,200	0.05764	
				16,888.9	30,400	0.05704	
				17,000.0	30,600	0.05644	
				17,111.1	30,800	0.05584	
				17,222.2	31,000	0.05524	
				17,333.3	31,200	0.05464	
				17,444.4	31,400	0.05404	
				17,555.6	31,600	0.05344	
				17,666.7	31,800	0.05284	
				17,777.8	32,000	0.05224	
				17,888.9	32,200	0.05164	
				18,000.0	32,400	0.05104	
				18,111.1	32,600	0.05044	
				18,222.2	32,800	0.04984	
				18,333.3	33,000	0.04924	
				18,444.4	33,200	0.04864	
				18,555.6	33,400	0.04804	
				18,666.7	33,600	0.04744	
				18,777.8	33,800	0.04684	
				18,888.9	34,000	0.04624	
				19,000.0	34,200	0.04564	
				19,111.1	34,400	0.04504	
				19,222.2	34,600	0.04444	
				19,333.3	34,800	0.04384	
				19,444.4	35,000	0.04324	
				19,555.6	35,200	0.04264	
				19,666.7	35,400	0.04204	
				19,777.8	35,600	0.04144	
				19,888.9	35,800	0.04084	
				20,000.0	36,000	0.04024	
				20,111.1	36,200	0.03964	
				20,222.2	36,400	0.03904	
				20,333.3	36,600	0.03844	
				20,444.4	36,800	0.03784	
				20,555.6	37,000	0.03724	
				20,666.7	37,200	0.03664	
				20,777.8	37,400	0.03604	
				20,888.9	37,600	0.03544	
				21,000.0	37,800	0.03484	
				21,111.1	38,000	0.03424	
				21,222.2	38,200	0.03364	
				21,333.3	38,400	0.03304	
				21,444.4	38,600	0.03244	
				21,555.6	38,800	0.03184	
				21,666.7	39,000	0.03124	
				21,777.8	39,200	0.03064	
				21,888.9	39,400	0.03004	
				22,000.0	39,600	0.02944	
				22,111.1	39,800	0.02884	
				22,222.2	40,000	0.02824	
				22,333.3	40,200	0.02764	
				22,444.4	40,400	0.02704	
				22,555.6	40,600	0.02644	
				22,666.7	40,800	0.02584	
				22,777.8	41,000	0.02524	
				22,888.9	41,200	0.02464	
				23,000.0	41,400	0.02404	
				23,111.1	41,600	0.02344	
				23,222.2	41,800	0.02284	
				23,333.3	42,000	0.02224	
				23,444.4	42,200	0.02164	
				23,555.6	42,400	0.02104	
				23,666.7	42,600	0.02044	
				23,777.8	42,800	0.01984	
				23,888.9	43,000	0.01924	
				24,000.0	43,200	0.01864	



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