Table 1 Thermodynamic Properties of *MOIST AIR*, SI Units (Standard Atmospheric Pressure, 101.325 kPa)

Temp. °C	Humidity Ratio kg_w/kg_a W_s	Volume m^3/kg dry air v_a	v_{as}	v_s	Enthalpy kJ/kg dry air h_a	h_{as}	h_s	Entropy kJ/(kg dry air) · K s_a	s_{as}	s_s	Condensed Water Enthalpy kJ/kg h_w	Entropy kJ/kg · K s_w	Vapor Press. kPa p_s	Temp °C
−60	0.0000067	0.6027	0.0000	0.6027	−60.351	0.017	−60.334	−0.2495	0.0001	−0.2494	−446.29	−1.6854	0.00108	−60
−59	0.0000076	0.6056	0.0000	0.6056	−59.344	0.018	−59.326	−0.2448	0.0001	−0.2447	−444.63	−1.6776	0.00124	−59
−58	0.0000087	0.6084	0.0000	0.6084	−58.338	0.021	−58.317	−0.2401	0.0001	−0.2400	−442.95	−1.6698	0.00141	−58
−57	0.0000100	0.6113	0.0000	0.6113	−57.332	0.024	−57.308	−0.2354	0.0001	−0.2353	−441.27	−1.6620	0.00161	−57
−56	0.0000114	0.6141	0.0000	0.6141	−56.326	0.028	−56.298	−0.2308	0.0001	0.2306	−439.58	−1.6542	0.00184	−56
−55	0.0000129	0.6170	0.0000	0.6170	−55.319	0.031	−55.288	−0.2261	0.0002	−0.2260	−437.89	−1.6464	0.00209	−55
−54	0.0000147	0.6198	0.0000	0.6198	−54.313	0.036	−54.278	−0.2215	0.0002	−0.2214	−436.19	−1.6386	0.00238	−54
−53	0.0000167	0.6226	0.0000	0.6227	−53.307	0.041	−53.267	−0.2170	0.0002	−0.2168	−434.48	−1.6308	0.00271	−53
−52	0.0000190	0.6255	0.0000	0.6255	−52.301	0.046	−52.255	−0.2124	0.0002	−0.2122	−432.76	−1.6230	0.00307	−52
−51	0.0000215	0.6283	0.0000	0.6284	−51.295	0.052	−51.243	−0.2079	0.0002	−0.2076	−431.03	−1.6153	0.00348	−51
−50	0.0000243	0.6312	0.0000	0.6312	−50.289	0.059	−50.230	−0.2033	0.0003	−0.2031	−429.30	−1.6075	0.00394	−50
−49	0.0000275	0.6340	0.0000	0.6341	−49.283	0.067	−49.216	−0.1988	0.0003	−0.1985	−427.56	−1.5997	0.00445	−49
−48	0.0000311	0.6369	0.0000	0.6369	−48.277	0.075	−48.202	−0.1944	0.0004	−0.1940	−425.82	−1.5919	0.00503	−48
−47	0.0000350	0.6397	0.0000	0.6398	−47.271	0.085	−47.186	−0.1899	0.0004	−0.1895	−424.06	−1.5842	0.00568	−47
−46	0.0000395	0.6426	0.0000	0.6426	−46.265	0.095	−46.170	−0.1855	0.0004	−0.1850	−422.30	−1.5764	0.00640	−46
−45	0.0000445	0.6454	0.0000	0.6455	−45.259	0.108	−45.151	−0.1811	0.0005	−0.1805	−420.54	−1.5686	0.00721	−45
−44	0.0000500	0.6483	0.0001	0.6483	−44.253	0.121	−44.132	−0.1767	0.0006	−0.1761	−418.76	−1.5609	0.00811	−44
−43	0.0000562	0.6511	0.0001	0.6512	−43.247	0.137	−43.111	−0.1723	0.0006	−0.1716	−416.98	−1.5531	0.00911	−43
−42	0.0000631	0.6540	0.0001	0.6540	−42.241	0.153	−42.088	−0.1679	0.0007	−0.1672	−415.19	−1.5453	0.01022	−42
−41	0.0000708	0.6568	0.0001	0.6569	−41.235	0.172	−41.063	−0.1636	0.0008	−0.1628	−413.39	−1.5376	0.01147	−41
−40	0.0000793	0.6597	0.0001	0.6597	−40.229	0.192	−40.037	−0.1592	0.0009	−0.1584	−411.59	−1.5298	0.01285	−40
−39	0.0000887	0.6625	0.0001	0.6626	−39.224	0.216	−39.007	−0.1549	0.0010	−0.1540	−409.77	−1.5221	0.01438	−39
−38	0.0000992	0.6653	0.0001	0.6654	−38.218	0.241	−37.976	−0.1507	0.0011	−0.1496	−407.96	−1.5143	0.01608	−38
−37	0.0001108	0.6682	0.0001	0.6683	−37.212	0.270	−36.942	−0.1464	0.0012	−0.1452	−406.13	−1.5066	0.01796	−37
−36	0.0001237	0.6710	0.0001	0.6712	−36.206	0.302	−35.905	−0.1421	0.0014	−0.1408	−404.29	−1.4988	0.02005	−36
−35	0.0001379	0.6739	0.0001	0.6740	−35.200	0.336	−34.864	−0.1379	0.0015	−0.1364	−402.45	−1.4911	0.02235	−35
−34	0.0001536	0.6767	0.0002	0.6769	−34.195	0.375	−33.820	−0.1337	0.0017	−0.1320	−400.60	−1.4833	0.02490	−34
−33	0.0001710	0.6796	0.0002	0.6798	−33.189	0.417	−32.772	−0.1295	0.0018	−0.1276	−398.75	−1.4756	0.02772	−33
−32	0.0001902	0.6824	0.0002	0.6826	−32.183	0.464	−31.718	−0.1253	0.0020	−0.1233	−396.89	−1.4678	0.03082	−32
−31	0.0002113	0.6853	0.0002	0.6855	−31.178	0.517	−30.661	−0.1212	0.0023	−0.1189	−395.01	−1.4601	0.03425	−31
−30	0.0002346	0.6881	0.0003	0.6884	−30.171	0.574	−29.597	−0.1170	0.0025	−0.1145	−393.14	−1.4524	0.03802	−30
−29	0.0002602	0.6909	0.0003	0.6912	−29.166	0.636	−28.529	−0.1129	0.0028	−0.1101	−391.25	−1.4446	0.04217	−29
−28	0.0002883	0.6938	0.0003	0.6941	−28.160	0.707	−27.454	−0.1088	0.0031	−0.1057	−389.36	−1.4369	0.04673	−28
−27	0.0003193	0.6966	0.0004	0.6970	−27.154	0.782	−26.372	−0.1047	0.0034	−0.1013	−387.46	−1.4291	0.05175	−27
−26	0.0003533	0.6995	0.0004	0.6999	−26.149	0.867	−25.282	−0.1006	0.0037	−0.0969	−385.55	−1.4214	0.05725	−26
−25	0.0003905	0.7023	0.0004	0.7028	−25.143	0.959	−24.184	−0.0965	0.0041	−0.0924	−383.63	−1.4137	0.06329	−25
−24	0.0004314	0.7052	0.0005	0.7057	−24.137	1.059	−23.078	−0.0925	0.0045	−0.0880	−381.71	−1.4059	0.06991	−24
−23	0.0004762	0.7080	0.0005	0.7086	−23.132	1.171	−21.961	−0.0885	0.0050	−0.0835	−379.78	−1.3982	0.07716	−23
−22	0.0005251	0.7109	0.0006	0.7115	−22.126	1.292	−20.834	−0.0845	0.0054	−0.0790	−377.84	−1.3905	0.08510	−22
−21	0.0005787	0.7137	0.0007	0.7144	−21.120	1.425	−19.695	−0.0805	0.0060	−0.0745	−375.90	−1.3828	0.09378	−21
−20	0.0006373	0.7165	0.0007	0.7173	−20.115	1.570	−18.545	−0.0765	0.0066	−0.0699	−373.95	−1.3750	0.10326	−20
−19	0.0007013	0.7194	0.0008	0.7202	−19.109	1.729	−17.380	−0.0725	0.0072	−0.0653	−371.99	−1.3673	0.11362	−19
−18	0.0007711	0.7222	0.0009	0.7231	−18.103	1.902	−16.201	−0.0686	0.0079	−0.0607	−370.02	−1.3596	0.12492	−18
−17	0.0008473	0.7251	0.0010	0.7261	−17.098	2.092	−15.006	−0.0646	0.0086	−0.0560	−368.04	−1.3518	0.13725	−17
−16	0.0009303	0.7279	0.0011	0.7290	−16.092	2.299	−13.793	−0.0607	0.0094	−0.0513	−366.06	−1.3441	0.15068	−16
−15	0.0010207	0.7308	0.0012	0.7320	−15.086	2.524	−12.562	−0.0568	0.0103	−0.0465	−364.07	−1.3364	0.16530	−15
−14	0.0011191	0.7336	0.0013	0.7349	−14.080	2.769	−11.311	−0.0529	0.0113	−0.0416	−362.07	−1.3287	0.18122	−14
−13	0.0012262	0.7364	0.0014	0.7379	−13.075	3.036	−10.039	−0.0490	0.0123	−0.0367	−360.07	−1.3210	0.19852	−13
−12	0.0013425	0.7393	0.0016	0.7409	−12.069	3.327	−8.742	−0.0452	0.0134	−0.0318	−358.06	−1.3132	0.21732	−12
−11	0.0014690	0.7421	0.0017	0.7439	−11.063	3.642	−7.421	−0.0413	0.0146	−0.0267	−356.04	−1.3055	0.23775	−11
−10	0.0016062	0.7450	0.0019	0.7469	−10.057	3.986	−6.072	−0.0375	0.0160	−0.0215	−354.01	−1.2978	0.25991	−10
−9	0.0017551	0.7478	0.0021	0.7499	−9.052	4.358	−4.693	−0.0337	0.0174	−0.0163	−351.97	−1.2901	0.28395	−9
−8	0.0019166	0.7507	0.0023	0.7530	−8.046	4.764	−3.283	−0.0299	0.0189	−0.0110	−349.93	−1.2824	0.30999	−8
−7	0.0020916	0.7535	0.0025	0.7560	−7.040	5.202	−1.838	−0.0261	0.0206	−0.0055	−347.88	−1.2746	0.33821	−7
−6	0.0022811	0.7563	0.0028	0.7591	−6.035	5.677	−0.357	−0.0223	0.0224	0.0000	−345.82	−1.2669	0.36874	−6
−5	0.0024862	0.7592	0.0030	0.7622	−5.029	6.192	1.164	−0.0186	0.0243	0.0057	−343.76	−1.2592	0.40178	−5
−4	0.0027081	0.7620	0.0033	0.7653	−4.023	6.751	2.728	−0.0148	0.0264	0.0115	−341.69	−1.2515	0.43748	−4
−3	0.0029480	0.7649	0.0036	0.7685	−3.017	7.353	4.336	−0.0111	0.0286	0.0175	−339.61	−1.2438	0.47606	−3
−2	0.0032074	0.7677	0.0039	0.7717	−2.011	8.007	5.995	−0.0074	0.0310	0.0236	−337.52	−1.2361	0.51773	−2
−1	0.0034874	0.7705	0.0043	0.7749	−1.006	8.712	7.706	−0.0037	0.0336	0.0299	−335.42	−1.2284	0.56268	−1
0	0.0037895	0.7734	0.0047	0.7781	−0.000	9.473	9.473	0.0000	0.0364	0.0364	−333.32	−1.2206	0.61117	0
0 *	0.003789	0.7734	0.0047	0.7781	−0.000	9.473	9.473	0.0000	0.0364	0.0364	0.06	−0.0001	0.6112	0
1	0.004076	0.7762	0.0051	0.7813	1.006	10.197	11.203	0.0037	0.0391	0.0427	4.28	0.0153	0.6571	1
2	0.004381	0.7791	0.0055	0.7845	2.012	10.970	12.982	0.0073	0.0419	0.0492	8.49	0.0306	0.7060	2
3	0.004707	0.7819	0.0059	0.7878	3.018	11.793	14.811	0.0110	0.0449	0.0559	12.70	0.0459	0.7581	3
4	0.005054	0.7848	0.0064	0.7911	4.024	12.672	16.696	0.0146	0.0480	0.0627	16.91	0.0611	0.8135	4
5	0.005424	0.7876	0.0068	0.7944	5.029	13.610	18.639	0.0182	0.0514	0.0697	21.12	0.0762	0.8725	5
6	0.005818	0.7904	0.0074	0.7978	6.036	14.608	20.644	0.0219	0.0550	0.0769	25.32	0.0913	0.9353	6
7	0.006237	0.7933	0.0079	0.8012	7.041	15.671	22.713	0.0255	0.0588	0.0843	29.52	0.1064	1.0020	7
8	0.006683	0.7961	0.0085	0.8046	8.047	16.805	24.852	0.0290	0.0628	0.0919	33.72	0.1213	1.0729	8
9	0.007157	0.7990	0.0092	0.8081	9.053	18.010	27.064	0.0326	0.0671	0.0997	37.92	0.1362	1.1481	9
10	0.007661	0.8018	0.0098	0.8116	10.059	19.293	29.352	0.0362	0.0717	0.1078	42.11	0.1511	1.2280	10
11	0.008197	0.8046	0.0106	0.8152	11.065	20.658	31.724	0.0397	0.0765	0.1162	46.31	0.1659	1.3128	11
12	0.008766	0.8075	0.0113	0.8188	12.071	22.108	34.179	0.0433	0.0816	0.1248	50.50	0.1806	1.4026	12
13	0.009370	0.8103	0.0122	0.8225	13.077	23.649	36.726	0.0468	0.0870	0.1337	54.69	0.1953	1.4979	13
14	0.010012	0.8132	0.0131	0.8262	14.084	25.286	39.370	0.0503	0.0927	0.1430	58.88	0.2099	1.5987	14
15	0.010692	0.8160	0.0140	0.8300	15.090	27.023	42.113	0.0538	0.0987	0.1525	63.07	0.2244	1.7055	15

*Extrapolated to represent metastable equilibrium with undercooled liquid.

Table 1 Thermodynamic Properties of *MOIST AIR*, SI Units (Standard Atmospheric Pressure, 101.325 kPa) (*Concluded*)

Temp. °C	Humidity Ratio kg_w/kg_a W_s	Volume m^3/kg dry air v_a	v_{as}	v_s	Enthalpy kJ/kg dry air h_a	h_{as}	h_s	Entropy kJ/(kg dry air) · K s_a	s_{as}	s_s	Condensed Water Enthalpy kJ/kg h_w	Entropy kJ/kg·K s_w	Vapor Press. kPa p_s	Temp °C
16	0.011413	0.8188	0.0150	0.8338	16.096	28.867	44.963	0.0573	0.1051	0.1624	67.26	0.2389	1.8185	16
17	0.012178	0.8217	0.0160	0.8377	17.102	30.824	47.926	0.0607	0.1119	0.1726	71.44	0.2534	1.9380	17
18	0.012989	0.8245	0.0172	0.8417	18.108	32.900	51.008	0.0642	0.1190	0.1832	75.63	0.2678	2.0643	18
19	0.013848	0.8274	0.0184	0.8457	19.114	35.101	54.216	0.0677	0.1266	0.1942	79.81	0.2821	2.1979	19
20	0.014758	0.8302	0.0196	0.8498	20.121	37.434	57.555	0.0711	0.1346	0.2057	84.00	0.2965	2.3389	20
21	0.015721	0.8330	0.0210	0.8540	21.127	39.908	61.035	0.0745	0.1430	0.2175	88.18	0.3107	2.4878	21
22	0.016741	0.8359	0.0224	0.8583	22.133	42.527	64.660	0.0779	0.1519	0.2298	92.36	0.3249	2.6448	22
23	0.017821	0.8387	0.0240	0.8627	23.140	45.301	68.440	0.0813	0.1613	0.2426	96.55	0.3390	2.8105	23
24	0.018963	0.8416	0.0256	0.8671	24.146	48.239	72.385	0.0847	0.1712	0.2559	100.73	0.3531	2.9852	24
25	0.020170	0.8444	0.0273	0.8717	25.153	51.347	76.500	0.1881	0.1817	0.2698	104.91	0.3672	3.1693	25
26	0.021448	0.8472	0.0291	0.8764	26.159	54.638	80.798	0.0915	0.1927	0.2842	109.09	0.3812	3.3633	26
27	0.022798	0.8501	0.0311	0.8811	27.165	58.120	85.285	0.0948	0.2044	0.2992	113.27	0.3951	3.5674	27
28	0.024226	0.8529	0.0331	0.8860	28.172	61.804	89.976	0.0982	0.2166	0.3148	117.45	0.4090	3.7823	28
29	0.025735	0.8558	0.0353	0.8910	29.179	65.699	94.878	0.1015	0.2296	0.3311	121.63	0.4229	4.0084	29
30	0.027329	0.8586	0.0376	0.8962	30.185	69.820	100.006	0.1048	0.2432	0.3481	125.81	0.4367	4.2462	30
31	0.029014	0.8614	0.0400	0.9015	31.192	74.177	105.369	0.1082	0.2576	0.3658	129.99	0.4505	4.4961	31
32	0.030793	0.8643	0.0426	0.9069	32.198	78.780	110.979	0.1115	0.2728	0.3842	134.17	0.4642	4.7586	32
33	0.032674	0.8671	0.0454	0.9125	33.205	83.652	116.857	0.1148	0.2887	0.4035	138.35	0.4779	5.0345	33
34	0.034660	0.8700	0.0483	0.9183	34.212	88.799	123.011	0.1180	0.3056	0.4236	142.53	0.4915	5.3242	34
35	0.036756	0.8728	0.0514	0.9242	35.219	94.236	129.455	0.1213	0.3233	0.4446	146.71	0.5051	5.6280	35
36	0.038971	0.8756	0.0546	0.9303	36.226	99.983	136.209	0.1246	0.3420	0.4666	150.89	0.5186	5.9468	36
37	0.041309	0.8785	0.0581	0.9366	37.233	106.058	143.290	0.1278	0.3617	0.4895	155.07	0.5321	6.2812	37
28	0.043778	0.8813	0.0618	0.9431	38.239	112.474	150.713	0.1311	0.3824	0.5135	159.25	0.5456	6.6315	38
39	0.046386	0.8842	0.0657	0.9498	39.246	119.258	158.504	0.1343	0.4043	0.5386	163.43	0.5590	6.9988	39
40	0.049141	0.8870	0.0698	0.9568	40.253	126.430	166.683	0.1375	0.4273	0.5649	167.61	0.5724	7.3838	40
41	0.052049	0.8898	0.0741	0.9640	41.261	134.005	175.265	0.1407	0.4516	0.5923	171.79	0.5857	7.7866	41
42	0.055119	0.8927	0.0788	0.9714	42.268	142.007	184.275	0.1439	0.4771	0.6211	175.97	0.5990	8.2081	42
43	0.058365	0.8955	0.0837	0.9792	43.275	150.475	193.749	0.1471	0.5041	0.6512	180.15	0.6122	8.6495	43
44	0.061791	0.8983	0.0888	0.9872	44.282	159.417	203.699	0.1503	0.5325	0.6828	184.33	0.6254	9.1110	44
45	0.065411	0.9012	0.0943	0.9955	45.289	168.874	214.164	0.1535	0.5624	0.7159	188.51	0.6386	9.5935	45
46	0.069239	0.9040	0.1002	1.0042	46.296	178.882	225.179	0.1566	0.5940	0.7507	192.69	0.6517	10.0982	46
47	0.073282	0.9069	0.1063	1.0132	47.304	189.455	236.759	0.1598	0.6273	0.7871	196.88	0.6648	10.6250	47
48	0.077556	0.9097	0.1129	1.0226	48.311	200.644	248.955	0.1629	0.6624	0.8253	201.06	0.6778	11.1754	48
49	0.082077	0.9125	0.1198	1.0323	49.319	212.485	261.803	0.1661	0.6994	0.8655	205.24	0.6908	11.7502	49
50	0.086858	0.9154	0.1272	1.0425	50.326	225.019	275.345	0.1692	0.7385	0.9077	209.42	0.7038	12.3503	50
51	0.091918	0.9182	0.1350	1.0532	51.334	238.290	289.624	0.1723	0.7798	0.9521	213.60	0.7167	12.9764	51
52	0.097272	0.9211	0.1433	1.0643	52.341	252.340	304.682	0.1754	0.8234	0.9988	217.78	0.7296	13.6293	52
53	0.102948	0.9239	0.1521	1.0760	53.349	267.247	320.596	0.1785	0.8695	1.0480	221.97	0.7424	14.3108	53
54	0.108954	0.9267	0.1614	1.0882	54.357	283.031	337.388	0.1816	0.9182	1.0998	226.15	0.7552	15.0205	54
55	0.115321	0.9296	0.1713	1.1009	55.365	299.772	355.137	0.1847	0.9698	1.1544	230.33	0.7680	15.7601	55
56	0.122077	0.9324	0.1819	1.1143	56.373	317.549	373.922	0.1877	1.0243	1.2120	234.52	0.7807	16.5311	56
57	0.129243	0.9353	0.1932	1.1284	57.381	336.417	393.798	0.1908	1.0820	1.2728	238.70	0.7934	17.3337	57
58	0.136851	0.9381	0.2051	1.1432	58.389	356.461	414.850	0.1938	1.1432	1.3370	242.88	0.8061	18.1691	58
59	0.144942	0.9409	0.2179	1.1588	59.397	377.788	437.185	0.1969	1.2081	1.4050	247.07	0.8187	19.0393	59
60	0.15354	0.9438	0.2315	1.1752	60.405	400.458	460.863	0.1999	1.2769	1.4768	251.25	0.8313	19.9439	60
61	0.16269	0.9466	0.2460	1.1926	61.413	424.624	486.036	0.2029	1.3500	1.5530	255.44	0.8438	20.8858	61
62	0.17244	0.9494	0.2614	1.2109	62.421	450.377	512.798	0.2059	1.4278	1.6337	259.62	0.8563	21.8651	62
63	0.18284	0.9523	0.2780	1.2303	63.429	477.837	541.266	0.2089	1.5104	1.7194	263.81	0.8688	22.8826	63
64	0.19393	0.9551	0.2957	1.2508	64.438	507.177	571.615	0.2119	1.5985	1.8105	268.00	0.8812	23.9405	64
65	0.20579	0.9580	0.3147	1.2726	65.446	538.548	603.995	0.2149	1.6925	1.9074	272.18	0.8936	25.0397	65
66	0.21848	0.9608	0.3350	1.2958	66.455	572.116	638.571	0.2179	1.7927	2.0106	276.37	0.9060	26.1810	66
67	0.23207	0.9636	0.3568	1.3204	67.463	608.103	675.566	0.2209	1.8999	2.1208	280.56	0.9183	27.3664	67
68	0.24664	0.9665	0.3803	1.3467	68.472	646.724	715.196	0.2238	2.0147	2.2385	284.75	0.9306	28.5967	68
69	0.26231	0.9693	0.4055	1.3749	69.481	688.261	757.742	0.2268	2.1378	2.3646	288.94	0.9429	29.8741	69
70	0.27916	0.9721	0.4328	1.4049	70.489	732.959	803.448	0.2297	2.2699	2.4996	293.13	0.9551	31.1986	70
71	0.29734	0.9750	0.4622	1.4372	71.498	781.208	852.706	0.2327	2.4122	2.6448	297.32	0.9673	32.5734	71
72	0.31698	0.9778	0.4941	1.4719	72.507	833.335	905.842	0.2356	2.5655	2.8010	301.51	0.9794	33.9983	72
73	0.33824	0.9807	0.5287	1.5093	73.516	889.807	963.323	0.2385	2.7311	2.9696	305.70	0.9916	35.4759	73
74	0.36130	0.9835	0.5662	1.5497	74.525	951.077	1025.603	0.2414	2.9104	3.1518	309.89	1.0037	37.0063	74
75	0.38641	0.9863	0.6072	1.5935	75.535	1017.841	1093.375	0.2443	3.1052	3.3496	314.08	1.0157	38.5940	75
76	0.41377	0.9892	0.6519	1.6411	76.543	1090.628	1167.172	0.2472	3.3171	3.5644	318.28	1.0278	40.2369	76
77	0.44372	0.9920	0.7010	1.6930	77.553	1170.328	1247.881	0.2501	3.5486	3.7987	322.47	1.0398	41.9388	77
78	0.47663	0.9948	0.7550	1.7498	78.562	1257.921	1336.483	0.2530	3.8023	4.0553	326.67	1.0517	43.7020	78
79	0.51284	0.9977	0.8145	1.8121	79.572	1354.347	1433.918	0.2559	4.0810	4.3368	330.86	1.0636	45.5248	79
80	0.55295	1.0005	0.8805	1.8810	80.581	1461.200	1541.781	0.2587	4.3890	4.6477	335.06	1.0755	47.4135	80
81	0.59751	1.0034	0.9539	1.9572	81.591	1579.961	1661.552	0.2616	4.7305	4.9921	339.25	1.0874	49.3670	81
82	0.64724	1.0062	1.0360	2.0422	82.600	1712.547	1795.148	0.2644	5.1108	5.3753	343.45	1.0993	51.3860	82
83	0.70311	1.0090	1.1283	2.1373	83.610	1861.548	1945.158	0.2673	5.5372	5.8045	347.65	1.1111	53.4746	83
84	0.76624	1.0119	1.2328	2.2446	84.620	2029.983	2114.603	0.2701	6.0181	6.2882	351.85	1.1228	55.6337	84
85	0.83812	1.0147	1.3518	2.3666	85.630	2221.806	2307.436	0.2729	6.5644	6.8373	356.05	1.1346	57.8658	85
86	0.92062	1.0175	1.4887	2.5062	86.640	2442.036	2528.677	0.2757	7.1901	7.4658	360.25	1.1463	60.1727	86
87	1.01611	1.0204	1.6473	2.6676	87.650	2697.016	2784.666	0.2785	7.9128	8.1914	364.45	1.1580	62.5544	87
88	1.12800	1.0232	1.8333	2.8565	88.661	2995.890	3084.551	0.2813	8.7580	9.0393	368.65	1.1696	65.0166	88
89	1.26064	1.0261	2.0540	3.0800	89.671	3350.254	3439.925	0.2841	9.7577	10.0419	372.86	1.1812	67.5581	89
90	1.42031	1.0289	2.3199	3.3488	90.681	3776.918	3867.599	0.2869	10.9586	11.2455	377.06	1.1928	70.1817	90